

**SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL**  
**SCIENTIFIC AND STATISTICAL COMMITTEE**

**Webinar**

**October 27-29, 2021**

**TRANSCRIPT**

**SSC MEMBERS**

Dr. Genny Nesslage, Chair  
Dustin Addis  
Dr. Jie Cao  
Dr. Chris Dumas  
Dr. Eric Johnson  
Dr. Wilson Laney  
Dr. Fred Scharf  
Dr. Fred Serchuk  
Dr. Jennifer Sweeney-Tookes

Dr. Jeff Buckel, Vice Chair  
Dr. Walter Bubley  
Dr. Scott Crosson  
Dr. Jared Flowers  
Anne Lange  
Dr. Yan Li  
Dr. Amy Schueller  
Dr. Alexei Sharov

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Kathleen Howington  
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**ATTENDEES AND INVITED PARTICIPANTS**

Rick DeVictor

Shep Grimes

Additional attendees and invited participants attached.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council convened via webinar on October 27, 2021 and was called to order by Chairman Genny Nesslage.

## **INTRODUCTION**

DR. NESSLAGE: Welcome, everyone, to the October 2021 meeting of the South Atlantic Fishery Management Council's Scientific and Statistical Committee. My name is Genny Nesslage, and I am faculty at the University of Maryland Center for Environmental Science at the Chesapeake Biological Lab, and I am chair of this committee. Thank you all for being here.

I will draw your attention to the agenda, and, for SSC members, the overview, in particular, and, also, Attachment 1, as we start introductions and review the agenda and approve the minutes from our last meeting, and so let's start with introductions. I have already introduced myself, but perhaps we could go down the list of SSC members, starting with our Vice Chair, Jeff Buckel, as listed on the screen. If you could just introduce yourself, very briefly, so we have your voice on the record. Thank you.

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

MR. ADDIS: Good morning. This is Dustin Addis, and I'm with the Florida Fish and Wildlife Research Institute, stock assessment.

DR. BUBLEY: Wally Bublely with the South Carolina Department of Natural Resources.

DR. CAO: Good morning. This is Jie Cao, and I am with North Carolina State University.

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

DR. DUMAS: Chris Dumas, University of North Carolina at Wilmington.

DR. FLOWERS: Jared Flowers, Georgia Department of Natural Resources, Coastal Resources Division.

MS. LANGE: Anne Lange, retired from National Marine Fisheries Service.

DR. LANEY: Good morning, everyone. Wilson Laney, retired from the U.S. Fish and Wildlife Service and now affiliated with North Carolina State University, Department of Applied Ecology.

DR. LI: Good morning, everyone. This is Yan Li, and I'm with the North Carolina Division of Marine Fisheries.

DR. SCHARF: Fred Scharf, University of North Carolina, Wilmington.

DR. SCHUELLER: Amy Schueller, NOAA Fisheries, Southeast Fisheries Science Center.

DR. SHAROV: Alexei Sharov with the Maryland Department of Natural Resources.

DR. NESSLAGE: Great. Thank you, everyone. Some of our members are teaching or have other engagements first thing this morning, and so they will be joining us shortly. The other name that you may notice that missing from the list is Churchill Grimes. I am sad to say that he has resigned from the SSC, after ten years of service, and I believe he became a member in 2011. He has stepped down, and we will miss his contributions greatly. Just so the SSC knows, I will be sending out a letter of appreciation to both Church and Tracy this week, and so, if you do have a chance to shoot him an email or say something, if you happen to see him, please let him know how much we appreciate his service on this committee. I believe we also have some staff and council members that we should introduce. Chip, would you mind doing that?

DR. COLLIER: Sure. On the line, we have our chair, Mel Bell.

MR. BELL: Good morning.

DR. COLLIER: Then we also have one of our new council members, Trish Murphey.

MS. MURPHEY: Hi.

DR. COLLIER: Sorry to catch you off-guard, Trish. Then one other thing that I wanted to note for the SSC is Steve was our old liaison with the council, and he is no longer on the council. Trish has taken over for him, and, when that switch occurred, Carolyn Belcher became the new liaison for the council, and so she's going to be attending a lot of these meetings. Unfortunately, she could not make it today, but she is going to be here tomorrow and Friday.

DR. NESSLAGE: Fabulous. We know Carolyn well, and so that's great, and thank you, everyone, for being here this morning. I believe that's it for introductions, right, Chip?

DR. COLLIER: That's correct.

DR. NESSLAGE: Okay. Then let's go to move on to reviewing and approving the agenda. There is two things that I wanted to note that have changed from earlier versions. The first thing is that we'll have another item of Other Business, where we'll be talking a little bit about changes to the SEDAR schedule. Also, there will be no breakout rooms for the gag discussion, and we'll do that all together on the main webinar, and that's Item Number 7, I believe, and then the ABC Control Rule discussion we have moved up to Thursday afternoon, given that it's pretty sizable, and we want to make sure that we have adequate time for that. Are there any concerns with those changes and/or additional suggested changes that folks would like to make to the agenda? If so, please raise your hand.

I am not hearing anything, and so we will consider the agenda approved. Thank you, all. Then, if you could take a moment to look at, if you haven't already, at the July meeting minutes, and are there any edits to those minutes?

DR. COLLIER: There are no hands raised right now.

DR. NESSLAGE: Great. All right. Hearing no edits to the July meeting minutes, we will consider them approved, and I believe that's everything for our Introduction, Agenda Item 1.

DR. CURTIS: Genny, I just had one thing to add. We got a couple of revised versions of documents earlier this week, and so I just want the committee to look -- They are posted in the late materials on the briefing book, but it's Attachment 8b, the EwE red snapper workshop findings, and then also Attachment 12d, the ABC Control Rule amendment presentation, and they were up there before, but they have additions now, and so I just wanted to bring that to your attention.

DR. NESSLAGE: Excellent. Thank you. If folks can't find what they need, do ping myself or staff. Probably staff, because they would know better where everything is. All right. Then I think we will move to Agenda Item 2, Public Comment. Please know, if you're visiting us today, there will be opportunities to comment for each agenda item, but, if there's anything you would like to say before the meeting begins, in general, or before we get to specific agenda items, this would be the time. I think Chip usually will go through the hands raised, or someone from staff will go through the hands raised process.

DR. COLLIER: In general, there is a little icon the right, and it looks like everybody is very familiar with this process, and so I don't think I need to go over it in great detail, but, on the control panel for the webinar, you will see a little icon that looks like a turkey, and it represents a hand. If you click on that, that's going to show -- It should turn from green to red. Red indicates that your hand is raised, and then, once you raise your hand, I will unmute you and then put your name on the hands raised list, and the Chair will recognize you, and so, Rusty, you are unmuted right now.

## **PUBLIC COMMENT**

MR. HUDSON: Chip, thank you, and thank you, Genny and the SSC, for what you do. On my iPad, my hand is blank, and then it turns blue, and the same thing with my microphone, but there's a couple of items, through the course of the meeting, that I may comment on, and I guess I make my comment after the presentation, and before the discussion, and is that how that works, Chip?

DR. COLLIER: That's correct.

MR. HUDSON: Then that's my plan, and so I will be listening. Thank you.

DR. NESSLAGE: Thank you, Rusty. Any other hands raised? All right. Excellent. Thank you, everyone. Let's move right into Agenda Item 3 then. We have been asked to review the Atlantic scamp research track assessment that was prepared through SEDAR 68. I draw your attention to Attachments 3a, b, and c. This, just so you know, and I'm sure that Francesca will go through this, but this was the first research track assessment conducted through the SEDAR process, and it was done alongside the Gulf of Mexico scamp assessment, and so just know that this is a research track assessment.

There will be no management advice provided by this assessment, but we will be reviewing the statement of work for the scamp operational assessment, that will begin in 2022, right after this agenda item, and so, as we go along, and we ask questions and think of things, and I will touch on this later, but keep in mind that, if we have any suggestions for future versus short-term recommendations, that we'll need to think both short and long-term here, and so we have Dr. Francesca Forrestal here from the Southeast Center to present on this assessment. Are you all ready, Francesca?

DR. FORRESTAL: Yes, I am. Good morning.

DR. NESSLAGE: Good morning. Excellent. If there's no other items of business, we can just let her take it away. I believe we're ready. Francesca, go right ahead. Thank you.

### **SEDAR 68: ATLANTIC SCAMP RESEARCH TRACK ASSESSMENT REVIEW**

DR. FORRESTAL: Thank you very much. Good morning, everyone. My name is Francesca Forrestal, and I'm at the Sustainable Fisheries Division at NOAA Fisheries down in Miami, and I am going to be presenting on SEDAR 68, the U.S. South Atlantic scamp assessment.

I am going to give a brief outline of what I will be going through this morning. First, I'm going to go into a review of the data that was used in the assessment, including the stock definition, life history that was included, the removals, the age and length compositions, as well as the indices of abundance, and then I'm going to go into the catch/age model. I will present both the assessment webinar base run and then the review workshop base model, and then I will go into the diagnostics for each of these, the sensitivities, as well as some uncertainty analysis. Then I'm going to go into the review workshop and some of the analyses that were requested. Finally, I'm going to go into the recommendations for the upcoming operational assessment.

As mentioned, this is the first ever research track assessment in the SEDAR process, and research track assessments are not used for providing management advice, and it does not rely on the most recent data, and so, for example, the terminal year for this assessment is 2017. This research track assessment took a little bit longer, because, obviously, due to COVID, and the stock ID workshop was conducted from June through September of 2019, and then the data workshop was originally scheduled for March 16 of 2020, and, as I'm sure we can remember all too well, that's kind of when the world shut down, and so the webinars had to be rescheduled over the course of several months, and so they ran from April to September of 2020.

The assessment webinars were conducted from December through May of 2021, and then we just had the review workshop with the CIE reviewers in September, just this past month, and all of this was done in conjunction with the Gulf of Mexico scamp assessment as well, and so we had a lot of great support on the assessment team.

Now I am going to shift into the data that was used for the assessment. Because this was conducted with the Gulf of Mexico, a lot of these slides take that into account, and so the South Atlantic stock is separated from the Gulf of Mexico at the council boundary line, which occurs just at U.S. Highway 1 in the Florida Keys, and this separation is also supported by the stock ID workshop. There is a size limit of sixteen inches in the Gulf of Mexico, while, in the South Atlantic, it's larger, at twenty inches, and there are also some differences in the various life history parameters.

This represents an assessment of two separate species, actually, and it's the scamp and yellowmouth grouper, and they are pictured below. They are very difficult to identify between the two species, as they have very similar morphometrics and life history characteristics, and it's really hard even for the trained fisheries biologists to differentiate between the two. There is some

differentiation seen in the number of gill rakers, the number of lateral line scales, and the pectoral fin rays.

The life history working group recommended that all the data be combined for the two species, including data for landings, indices, life history data, et cetera, and so these two species are treated as the scamp complex within the assessment.

SEDAR 68 is the first formal assessment of scamp and yellowmouth grouper under SEDAR. There were two localized assessments done, and one was from 1998, and that used scamp landing and size frequency data collected from 1986 to 1996 in the South Atlantic, and they used a separable virtual population analysis, and the SPR was estimated between 30 and 52 percent. A very localized assessment was conducted in the Florida Keys in 1998 as well, and this looked at - - This used the average length of exploitable phase from visual surveys from 1979 to 1996, and this yielded an SPR of 3 percent for scamp and 22 percent for yellowmouth.

There are some management regulations in place for the South Atlantic. There is a size limit of twenty inches. As I mentioned, this started in 1992, and this applies for both recreational and commercial catches, and then there is a recreational grouper bag limit that was also implemented in 1992 of five groupers, and then that decreased to three in 2009. There are commercial trip limits, the ACLs, that started in 2012, and then there is a seasonal closure for the shallow-water groupers beginning in 2010, and this closed season runs from January 1 to April 30.

Some of the life history I will be presented are the age and growth models, the maturity schedule, the sex transition, and then natural mortality. For the age and growth, the life history working group from the data workshop recommended four models, and the ones that were used within the assessment are highlighted in gray, and they are the population model and the fisheries post-1992 model. The differences between the two models are in the figure on the bottom, and so the two curves are the population curve and then the fisheries model curve.

The  $L_{\infty}$  for the population is lower than the fisheries post-1992, and so the growth curve is applied to the population prior to 1992, and then the fishery model kicks in 1992, and just on the landings. Within BAM, the  $L_{\infty}$ ,  $K$ , and  $t_0$  are fixed, and then the CVs were estimated for both the population model and the fishery model.

The maturity schedule for female scamp, and so the fork length at 50 percent mature is about thirty-seven centimeters, and then the calendar age is 2.9 years for 50 percent maturity. This data was collected from 1979 to 2017, and, within the data workshop, the spawning frequency and batch fecundity were presented and discussed, but, as the total spawning biomass was recommended by the life history working group, these data were not applicable, and then they were not included in the assessment.

Scamp are a hermaphroditic species, and they transition from female to male. The best fit for the female age at sex transition for fork length was sixty-five centimeters, and you will remember the  $L_{\infty}$  is above 700 millimeters, and then the age at 50 percent transition to male is at 10.6 years. The data that was used within this model included all females, both juvenile and adult, but any specimens that were undergoing sex transition were omitted, as length of transition was unknown.

Hermaphroditism is entered into BAM as a vector, and so you have the proportion female at-age included in the data file as a vector, and so the model presented was the proportion male, and what was entered in is just the inverse proportion female at-age.

The natural mortality for the assessment was using a target  $M$  of 0.155, and then this Lorenzen scale mortality vector used a maximum age of thirty-four. The life history group spent quite a bit of time doing different research and analyses into the natural mortality, and the Lorenzen method was selected as the best option for this, and the Then et al. dataset was used to get the target  $M$ . Just using the dataset would yield a target  $M$  of 0.194, but then it was scaled to just serranids, yielding a target  $M$  of 0.15. You have the Lorenzen scale vector to the right, which has the decreasing natural mortality as age increases, and the line that was used within the model is the purple, scaled to serranids from Then et al.

Now I am going to shift into the removal streams, and so including the different fleets, the landings, and the discards, as well as the surveys used. This is just a really brief overview of all the available data. For the commercial fleets, we had vertical line or handline and then other gears, which include longline and spearfishing and diving. The length comps and age comps were available for these, and the length comps began in 1984, while the age comps began in 2004.

The recreational fleets included the headboat and MRIP, and there were length comps available for a single recreational fleet from 1972, and then age comps began in 1979 for headboat, and then they're a little more sporadic for MRIP beginning in 2001. Discard data is a little sparse, but it was available for the commercial handline, longline, recreational headboat, and MRIP. There were no age comps associated with the discards, but there were length comps, and then there were four indices available. We have the commercial vertical line, or handline, the recreational headboat, chevron trap, and the video. There were length and age comps available for the chevron trap beginning in 1990.

The fleet structure is split into two different removal streams. We have a commercial fleet and a recreational fleet. The commercial fleet is composed of the handline, longline, spear/diving, and other, while the recreational is the MRIP, and so the private and charter modes, and then headboat. The majority of the landings come from the commercial fleet, especially in the mid part of the time series.

Going into a bit more detail for the commercial landings, prior to 1980, all groupers are reported as unclassified groupers, and so this does require proportioning, and this is consistent with previous SEDARs, and so unclassified groupers are proportioned by year, state, and gear, and then the average proportion are applied to grouper landings.

The landings are reported in whole weights, and the underreporting is most likely to have occurred in the earliest part of the time series. Landings were collected annually from 1962 to 1977, and then monthly landings started to be collected, and the start years for these vary by state, and so this gives an overview of the commercial landings uncertainty, so you can see where different collecting schemes started in each different state, and so where that falls in with the uncertainty.

There are all commercial landings for the South Atlantic, including the four gears and all four states, and the landings from Georgia come from the ACCSP. South Carolina initially came from ACCSP, the Atlantic Coastal Cooperative Statistics Program. Then, beginning in 2004, it was SC

DNR, and then North Carolina all comes from North Carolina DMF, and then, in Florida, it was the ACCSP, and then, beginning in 1986, the Florida trip ticket started. This just gives you an overview of where the effort occurs for scamp. In the South Atlantic, the majority of the trips occur just off the coast in North Carolina and South Carolina.

This is the commercial length composition across all years. The handline comps were weighted, while the other gears are just nominal, as there was not enough sample sizes. There isn't really -- These distributions represent each state, and if they are weighted or unweighted, and there isn't a big shift in the distribution of lengths across states.

This is the breakdown of commercial length comps for hook-and-line, longline, and then the other gear, and there is not a lot of difference between the length comps, and there is two plots, and they are broken down prior to 1992 and then after 1992, when the size limit was in place. Because of this, it was recommended that all of this data be combined, and so there is just a single commercial fleet.

Just a note on how compositions are weighted, and we use a thirty-fish minimum per year per state annually for length comps, and then a ten-fish minimum sample size for age comps. The reason for this is it prevents very small composition sample sizes to be scaled up by a very large landings, and a Dirichlet multinomial was used for likelihoods. This is a self-weighting, and it also allows for zeroes in the data, and so iterative reweighting is not necessary. There are some years that, while there is data available, the sample sizes are not sufficient for inclusion, and so you still see that for a few years.

The commercial age compositions, across all years, the handline and other gears -- Handline was weighted, and then other gears were nominal data. 95 percent of the age data occurred before twelve years of age, and so we initially had twelve years as the plus group, but the recommended plus group was fifteen years, and this is what was eventually used in the model.

Commercial discards, there was not a lot of information, and the data was available from two datasets, the discard logbook and then the coastal logbook. The discard logbook provided the rate data, while the coastal logbook provided the effort data. The observer data is not sufficient to calculate discards in the South Atlantic, and what has been seen in the Gulf is that, generally, the logbook discards are higher than what the observers report, and so, because of this, the logbook discards for the South Atlantic were scaled, using a bias correction factor, and this bias correction factor used South Atlantic logbook discards and the Gulf of Mexico logbook discards and then applied that ratio to the Gulf of Mexico observer discards, giving an estimate for the South Atlantic.

What was reported for the logbooks is in blue, and then the red line is the amount of discards, using the bias correction factor, and the total discards and associated standard error are in the figure to the bottom, and this data is only available for the Florida east coast, and so it's not very large spatial coverage, and the bottom longline discards -- There are only -- It was less than eighty fish a year, using the bias correction factor, and so this was considered negligible and not included in the stock assessment.

There were some data available for commercial discards, just for the length compositions, and so the pink density cloud is the length, the fork length, of fish discarded, and the blue is what was retained. The fork length size limit is seven centimeters, and so the overlap of these two density



clouds is where the size limit is, and so most of the fish that are being discarded are below the size limit.

This data was pooled to include the discard length composition, because the sample sizes were not sufficient, and then, unfortunately, the longline discard length comps were -- There were only four available, and so they were not included.

Shifting now into the recreational landings, this comes from the headboat survey, and these were recommended to begin in 1981, because there was a lack of full survey coverage prior to 1981, and there is a large uncertainty in species ID, also, prior to that. The MRIP landing data also began in 1981. Landings in Monroe County, in the Florida Keys, were allocated to the South Atlantic region, but this data was excluded from the MRIP headboat mode for 1981 to 1985. The general shore mode was also excluded, as it seemed unlikely that scamp would be caught in that mode.

These are the recreational landings from 1981 onward, and there is a lot of variability, interannual variability, between the different modes, and you will notice that 2014 has a -- The private mode has a very large landings, particularly in respect to surrounding the neighboring years, and this represents -- The working group did investigate the 2014 landings, and it is an estimate of close to 40,000 fish, and this estimate comes primarily from east Florida in a single wave, and only five trips contributed to the estimate, each with a harvest of three fish, that were not seen by the interviewers, and so the corresponding CV for this is also quite large, and this year will come back in the assessment as we go on.

The recreational historical landings are from the National Survey of Fishing, Hunting, and Wildlife. The survey is conducted every five years of U.S. anglers and U.S. saltwater anglers since 1955, and it was used to estimate the recreational landings prior to 1981, and so from 1955 to 1980. The CVs for these, for every year, was set at 0.47, and it was recommended that this data be included in SEDAR 68 for the South Atlantic.

The recreational length composition, the headboat survey had close to 12,000 samples. However, this only accounts for about 37 percent of the landings, and so there's a lot more samples that are not associated with the landings, and then the MRIP is the majority of the landings, but it only represented 13 percent of the recreational length compositions. However, there were very similar densities between the headboat and the MRIP charter/private modes, and so the recommendation from the recreational workgroup was that we use a single recreational fleet for the model.

These are the age comps, and so 95 percent of the age data did occur, again, before twelve years, including the weighted and the nominal. For recreational discards for headboat, they applied a mean discard landing ratio from 2004 to 2018 to estimate headboat landings prior to 2004, and no CVs were provided for these. The MRIP discards, the CVs were provided, and the majority of the recreational discards in the South Atlantic did come from the private mode.

There were some recreational length comps for discards, and the recommendation from the data workshop was to use the headboat weighted length comp, when available, to represent the recreational discard lengths, and the recommendation was also to exclude the charter length comps, as it only represents a single state and has very a minimal sample of five, and so it was very small.

Then, for the discard mortality, this was -- A point estimate was provided for the total discard mortality, and this was found by combining the immediate and delayed mortality, and so, for the commercial gear, the total discard mortality was estimated at 39 percent, with bootstrapped ranges from 33 to 45 percent, and then the headboat yielded a 26 percent total mortality, ranging from sixteen to forty-percent. Then these methods are detailed in the Pulver 2017 approach, and there is also a working paper.

Putting all of the variables together, we have the two fleets, commercial and recreational, and the commercial fleet is comprised mainly of landings, and the discards are minimal compared to the total removals from landings, and then the recreational landings are in the blue color, and then the discards are in the green, and these are the total discards, and they are not dead discards.

Now we're shifting into the chevron trap data, and I'm going to spend a little bit of time on this, as this was -- We discussed this quite a bit in the assessment webinar process, and so the chevron trap survey was conducted until 2009, and then SEAMAP joined the program, the Southeast Area Monitoring and Assessment Program. With this, SEFIS was created in 2010, the Southeast Fisheries Independent Survey, and this partnership is currently referred to as SERFS, the Southeast Reef Fish Survey.

With the formation of this new program, sampling coverage increased, particularly into Florida, and how this is conducted is they use chevron traps that are baited, and then they are randomly deployed at live-bottom stations, which are located on the continental shelf and shelf edge, and these are soaked for ninety minutes before being sampled.

In initial model runs, and this is a cohort analysis, and, beginning in about 2010, overfished began to appear, and that was not expected, based on the previous years' age classes, and so this could potentially represent an increase in the proportion of older fish relative to the younger fish, or perhaps it could represent that chevron traps are sampling larger, older fish with the formation in 2010, and so we tried to do some research into what this could be.

Looking at the raw chevron trap data, you can see that the collections greatly increased really beginning in 2010, and so it went from about 300 collected every year to about 1,400, and this has a corresponding change on the proportion positive, and so the proportion positive rates went from about 0.1 in 2005 down to about 0.04, really starting in 2008, and this does correspond to an increase in coverage, and so you can see the sampling sites located along the southeast coastline, starting in 2005, and then, in 2010, when SERFS was formed, the sampling coverage increased down into Florida and then also a little bit more up into North Carolina.

Looking at the sample depths, the depth bins, these are the density distributions for the depths post-SEFIS and then pre-SEFIS formation, and you do see that, in North Carolina, we do begin sampling a little deeper. However, on the North Carolina proportion positive, it also really -- Also, the proportion positive increased for North Carolina, but North Carolina only represents 10 percent of the catch since SEFIS started.

Also, looking at the length of scamp caught in the survey, they also -- They didn't appear to increase, looking the density plots. However, if you look at the raw data, there really isn't a difference between the lengths caught post-SEFIS and pre-SEFIS, and so, potentially, older fish could be sampled in this new expanded coverage, or it could be an effect of the proportion of large

fish increasing, with a corresponding decline in the smallest fish, and this was discussed in the Bachelier and Ballenger paper in 2018.

Now I'm going to shift into the indices of abundance that were used in the assessment, and four were recommended for use at the data workshop, including the commercial handline, the recreational headboat, the SERFS chevron trap survey, and then the SERFS video index. The fishery-dependent indices were -- The CVs were scaled to a common mean of 0.2, as it was potentially that these are a little bit more uncertain than the surveys.

The provided errors were used for the fishery-independent indices, and both the commercial and recreational indices were available through 2017, or through 2018, actually, but these were both truncated in 2009, due to management concerns that affected both the commercial fleet and the recreational fleets, and these potentially could influence how data was subset, using the Stephens and MacCall method, which is how this data is brought in to analyze these indices.

Initially, because there are no length or age comps associated yet for the video index, the index working group recommended SERFS trap and video indices, and there are some preliminary data available, but it's not enough within the timeframe of the assessment, and so the preliminary recommendation was to assume a flat-top selectivity for video and then borrow the ascending limb parameter from the trap length information, due to the fact that there is no comp data for the video survey, and so these are just some preliminary length information from both the video and the traps, and they are -- They do seem to be sampling up to some of the largest fish.

Within the model, these two indices were initially fit separately, and there was some discussion, both within the data workshop and the assessment process, that, as the videos are placed on top of the traps, there is a potential for bias, and, again, there is no composition data associated with the video index. The model was having problems fitting both of them, and so the figures to the left are the chevron trap index, and so the open circles with the associated errors are what was observed, and then the blue line is the fit, and then the bottom figure are the scaled residuals.

The figure to the right is the fit to the video index, and so it's a shorter index beginning in 2011, and you can see that the model is not fitting the video index quite as well, and, additionally, there was a conflict between fitting these two indices. The model would, alternatively, downweight or upweight between the two when the weighting was applied to them.

Then, in the initial examination, it does look like the indices have different trends. However, when the video index -- When the chevron index was rescaled to the 2011 to 2017 average, there is actually very minimal difference between the two trends, between the video and the chevron trap trend, and so it was recommended that these be combined, using the Conn model averaging method, and this is a hierarchical framework for analyzing multiple indices to get a single time series of abundance, and so the orange line is the video index, the blue is the chevron trap, and then the red is the combined -- Those two indices combined, and that was what was entered into the model.

Then, finally, the start year was set at 1969. There were historical landings available from 1955. However, length comps did not begin until 1972 for the recreational fleet, and so it was suggested -- The ADT recommended that we start the model three years prior to the start of these rec comps. However, as the model progressed, we did not end up using these length comps from 1972 to 1977.

Now, the earliest length comp year is 1978, and the earliest age comp is in 1990. I am going to pause here and ask if there are any questions thus far about what I presented on the data.

DR. NESSLAGE: Thank you. All right. Let's see if SSC members have questions for Francesca. I will give folks a second here. Fred Serchuk, go right ahead.

DR. SERCHUK: Good morning, Chair. First, let me compliment the presentation so far. It's been excellent, and it's clear that a lot of work and a lot of thought went into the data, and so I compliment everybody involved in the process. I just had one thought about the chevron trap data that you presented, where the older fish start to -- They appear beginning in 2010, and my interpretation, at least of the chart, looks like there have been a couple of good year classes that came in, and the chevron data start tracking these good year classes beginning in 2003, and you can see it in 2004 and 2005. They move on in 2007 and 2008, and then a good year class apparently appears in 2010 and 2011, and you see it in 2013, and so there appear to be, from my perspective, not only an increase in the proportion of older fish, but there are actually some good year classes, based on the size of the bars. Thank you.

DR. FORRESTAL: Yes, there do appear to be some good year classes coming through, and, unfortunately, the best age data we have does come from the chevron trap, and so it's kind of -- It's hard to validate this with other data sources.

DR. NESSLAGE: Any other questions for Francesca? If not, I have one, while folks are thinking. I guess, have we used -- We, as in has the Center used the Conn method for combining the chevron and video trap? They're essentially the same survey, and just different aspects of it, right, and so have they used the Conn? Have you guys used the Conn method for that before? I have usually seen it for different surveys and not the same -- Two aspects of the same survey.

DR. FORRESTAL: I think the Conn method has been used in previous assessments, but I think Katie might have more insight on this.

DR. NESSLAGE: Sure. Okay. Go ahead, Katie.

DR. SIEGFRIED: Thanks, Madam Chair. Hi, Genny. How are you doing?

DR. NESSLAGE: Good. How are you?

DR. SIEGFRIED: Good. We used that method to create the CVID index. If you will remember, from red snapper, SEDAR 41, that was one that I had used there, and I think that we have investigated it before, and I'm not sure where it's carried through for the base run, other than SEDAR 41, and then I know that Kyle has looked into different ways to separate these two indices, and he was part of our panel to discuss how to do this, but it has been used before.

DR. NESSLAGE: All right. Thanks. Are there other questions for Francesca for the moment? We'll keep going, if not, and I'm not seeing any hands on the list, and so why don't you keep going, and folks can -- I assume you will have another breakpoint coming up here.

DR. FORRESTAL: Yes, I will. Thank you very much. We're now going to discuss the catch-age model used, and so we have two different base runs. The accepted base model run after the

review workshop is slightly different than what the base model for the assessment workshop was, and so I will go into those two different ones, and then the diagnostics and the model fits for those, and then the sensitivity analyses that were conducted for both the assessment -- The AW and RW base runs. Then, finally, we'll go into some uncertainty analyses for these.

The assessment was conducted using a catch-age model, the Beaufort Assessment Model, and the start year was set at 1969, and the terminal year is 2017. It is a one-area, one-season model, and it has a combined SSB. The growth is a von Bertalanffy, and that is fixed, and then the natural mortality is the Lorenzen scaled, and that is also fixed. We used a Beverton-Holt spawner-recruitment relationship, and there are two time blocks in place for the selectivities. Block 1 runs from 1969 until 1991, and then, with the implementation of the size limit, there is a second block from 1992 until 2017.

The indices were iteratively reweighted. The likelihood component for them, in order to achieve the standard deviation of normalized residuals, were SDNR of 1, and so this is the Francis reweighting method. The model had constant catchability, and BAM uses age-based selectivity, and this is in contrast with the Stock Synthesis model that was presented in the Gulf, which has the length-based selectivity, and so this was a bit of a discussion in the review workshop, and it just raises a little confusion, but the plus group for compositions were set to fifteen. However, the ages included in the model were from one to twenty, and twenty was set as the plus group, even though there were available data, and there were some twenty-seven-year-old fish and thirty-four-year-old fish, but the life history parameters reached saturation at twenty.

The recreational landings had annual CVs provided, and, in the initial model, these provided CVs caused the model to greatly overestimate landings in 1980, and that's the figure in the top-right, and you can see that very alarming spike, and so, until the model was better parameterized, we used a placeholder CV of 0.05, and so that is what the figure to the left is, and so the open circles are the observed data, and then the blue lines are the fits, the model fits, to those. Once the model was further developed, we were able to use the provided CVs, and you will notice that that 2014 year that I mentioned when I was showing the data, and that is the year that has the very large CVs, as the estimates are not quite certain.

In the review workshop base model, you have 160 parameters estimated, and this is a little different than what is in the assessment report initially, because the model was slightly different, but we have ninety-eight parameters for the annual fishing mortality rates for each fleet, the average fishing mortality for each fleet, and there are ten selectivity parameters. There are six Dirichlet multinomial variance inflation factors, and then the catchability coefficients associated with each index, and so that's three parameters, and then we estimated the recruitment parameters of sigma-R, steepness, and R0, and then we have annual recruitment deviation, and that was estimated from 1980 until 2015. Then, finally, we have the CVs of size-at-age for the population and landings growth curves, and that is two parameters.

The initial fishing mortality, we attempted to estimate it. However, it did hit a lower bound of zero, and so, even though fishing mortality occurred prior to the initial start year of 1969, which was that red line in the figure on the right, we assumed equilibrium age conditions at the first year.

These are the likelihood components used in this BAM model, and so landings were lognormal with an assumed CV of 0.05 for commercial, and then, eventually, we were provided CVs for

recreational. The sort of indices, we had a lognormal with annual CVs, and, again, the fishery-dependent indices were weighted to a -- The CVs were weighted using a common SE of 0.2. Age compositions were a Dirichlet multinomial with the annual number of sampled fish, and then the length compositions were a Dirichlet multinomial with number of sampled trips, and then recruitment deviations were lognormal, with an estimated variance of the recreational devs, or sigma-R.

The selectivities for recreational and commercial are both two-parameter logistic, and so they are flat-topped, and there is one selectivity curve for each time block. The dome-shaped selectivity, or a double logistic, which is four parameters, was explored in the review workshop, and these -- The figures below are the fits to those, and the fleets would not fit dome-shaped. They had problems with the descending limb, and so the figure on the left are the commercial selectivities, with the early time period in blue, 1969, and then the second time block in red, and then the recreational fits are in the middle, and the earliest time block could not fit a dome-shaped. Then, additionally, the age comp fits were quite poor using dome-shaped, and so we retained the two-parameter logistic for recreational and commercial.

For the chevron trap, this is also two-parameter logistic. The dome-shaped was attempted in the assessment workshop. The rationale was that perhaps the chevron traps don't sample the largest and oldest fish, but, with scamp, they are finding their way into the traps, and so the dome-shaped is not appropriate, as both the age of 50 percent selectivity for the descending limb and the descending slope were hitting the bounds.

In the review workshop, they recommended not to include the discard fleets, and so the assessment webinar base run had two separate discard fleets, one for commercial and one for recreational, and the review panel recommended combining the dead discards with the landings for commercial and recreational.

The reasons for this were model parsimony as well as the fact that there is currently no way to separate discard retention from the landings in BAM, and so the figures at the bottom have the fishing mortality rates for each component of the removals in the assessment webinar model, and then in the middle is B1s, with just the recreational and commercial, and there is very little difference between the overall time series trends for fishing mortality and SSB between the assessment webinar and the review workshop models, and those are shown to the right.

Again, the review workshop base model removed the discards from the landings, and so what we did is we applied the dead discards and added them to the landings, and so we applied the discard mortality rate to the reported discards, which is 26 percent for recreational and 39 percent for commercial.

The commercial are the top two figures, and then the recreational is the bottom two, and so the green line is the combined total removal of catches for the commercial fleet, and these are in whole weights, and so, if you look at the reported, or the estimated, discards that were used using that bias correction factor, there were only about 5,000 pounds discarded, and then, when you apply the discard mortality rate, there is only about 2,000 pounds of dead discards for commercial. Recreational had a little bit more of an effect, and so the landings are in blue, and then the combined, and so the catches, are in green, and so the discard mortality rate is lower for

recreational, but, just because there were more discards, there were slightly more discards included for the recreational.

I am now going to go into the fits to the models, and so these are the fits to the landings and the catches. There were no differences between the assessment webinar and the review workshop model fits to the commercial landings or catch, but, for the recreational, there was a slight difference, and so, in the assessment webinar run, the earliest years in the time series fit slightly better, as compared to what was seen in the review workshop, and so the model slightly underestimates what was observed in the earliest part of the model, the earliest part of the time series, and then that 2014 year is still an outlier.

This is the breakdown in landings, or, actually, catches, for the review workshop, and so the majority of the catches come from the commercial fleet, and then looking at it as a proportion, in the figure to the bottom-right.

These are the fits to the age comps, and so the top three figures are the fits for the review workshop base model, while the bottom three are the fits to the assessment webinar base run. The first are the fits to the commercial age comps model, and both of them fit quite well, and they are just slightly underestimating the plus group. The age comps for recreational, again, also had a good fit, and then the chevron traps were not quite able to capture the oldest fits to the age comps for the oldest age classes of fourteen and fifteen. I want to note that the year, in the upper-right hand corner, corresponds to when this data became available, and we had age comp data beginning for commercial in 2004, and recreational is 1996, and then the chevron trap is 1990.

These are pooled for all years, and then these are the yearly fits to the age comps, and so these are the deviance residuals, and the big thing to note is the size of the circles, and then the legend on top might be hard to see, but, hopefully, in the briefing book, you can see, and so the largest circle for the commercial age comps corresponds to 0.09, and so it's not very large, but recreational is 0.26, and the largest circle for chevron trap is 0.27. Again, the top three panels are from the review workshop base model, and the bottom is from the assessment webinar. There are no patterns that are seen in these residuals, with the exception of the chevron traps, those largest fish in the most recent years, from about 2012 onwards, are being underestimated in the model.

These are the fits to the length comps, and so the length comp data, again, we have earlier years starting with the length comps, and so, for the commercial length comps, again, in 1984, and the model fits these better for the commercial in the review workshop base run, as compared to the assessment webinar. However, the model does have problems fitting in the 400 to about 600 millimeters.

Because the recreational data started earlier, there is a fit to the first time block, and so this data began in 1978. The recreational fits to the length comps beginning in 1972 are quite poor, but they only represent a single year of data, and so that's just 1992, and then the chevron trap length comps don't fit quite a well at the midpoint of the lengths.

These are the deviance residuals for the length comps, and there is a slight pattern for the commercial length comps, and then the same for the recreational, and the model is underestimating more of the fish in the earliest part of the time series.

One of the biggest points of discussion during the review workshop were these selectivity curves. These are the curves for the review workshop and the assessment webinar. There are two curves for each, as they do correspond to the different time blocks, and so beginning in 1969 is the blue curve, and it is selecting for older fish, as compared to the red curve, which begins in 1992, which is after the size limit went into effect, and so this is counterintuitive, because you would expect that the implementation of a size limit would not target smaller fish.

However, this has been seen in the South Atlantic before, and one of the reason for this, with this model, is that the earliest -- The earliest time block uses length compositions, while the data in the second time block, beginning in 1992, uses the age compositions, and so there is also a bit of a mismatch there, and so we looked at the parameters for each of these curves between the review workshop and the assessment workshop. By including the dead discards with the landings, there was not a lot of changes in the parameter values. The largest effect was seen with the recreational age at 50 percent selectivity for the second time block, and it shifted from 4.7 years to 4.67, and so it was not quite large, but, looking at it visually, the two curves do appear slightly closer.

As I mentioned before, there was a mismatch between the length and age comps, and there was also very poor initial fits to the earlier length comps, and you can see that here, and so these are the commercial length comps, and you can see that pattern beginning about 1992. Then, for the recreational, the years from -- It's just about 1977, and so these were pulled from the final model, and so all the length comps were pulled where age comps were available, and so the model was fit using age comps for the second time block and then essentially fit using length comps for the earliest time block.

Shifting now into the three indices, the top figure is the review workshop, and the bottom are the assessment webinars, and the observed are the circles, and then the model fits are in the blue lines. The commercial index fits relatively well. In the recreational, there is a slight overestimation in the start of the index, but then it follows the data quite well. The chevron trap doesn't fit quite as well in the middle part of the time series, and then it does have a problem making that transition, beginning in about 2008, but then it does fit quite well towards the end.

The starting values for the SDNR are in that table for each of the indices, and so the goal is to get those values as close to one as possible, and the final weights for each index are listed, and so, for the commercial index, it was essentially upweighted to 1.4, and then the recreational and chevron traps, the combined chevron trap video index, is downweighted to 0.8.

This is the estimated recruitment, and so, from 1980 until 2015, it was estimated, and you can kind of see, beginning in about 2005, there is a large decrease in recruitment. This is the fit to the spawning stock-recruitment curve, and, again, this is the Beverton-Holt, and then you have just in the log space. Here are the numbers at-age for each class, and then the spawning stock biomass over time. Then this is the fishing mortality rate over time and how it is working down between the two fleets.

Now I'm going to go into steepness and how it was estimated. This was a bit of a process, and so please bear with me. We were able to estimate steepness, and a lot of this comes from the assessment webinar.



Initially, we set steepness using a beta prior, and the beta prior yielded a steepness of 0.86, and the likelihood profile was very influenced by this beta prior, and so, by removing the prior, the steepness hit a bound of 0.99, and, in the process of this, we were estimating the number at-age deviations. However, these were very poorly estimated, and so we set -- The model now begins with equilibrium N at-age, and this is conditioned on the natural mortality at the youngest ages and then the initial fishing mortality. When we did that, we were able to estimate steepness, and so this is the likelihood profile of steepness with no prior, and that yields a value of 0.57, and this is with the indices reweighted.

Looking at each different component of the likelihood, and so those are the figures to the left, and so we have the top figure is the likelihood based on the length and then ages and the recreational index, and then the middle panels have the commercial index, the chevron trap index, the spawner-recruitment relationship parameters, and then, finally, all of the data and then the penalized negative loglikelihood, and so steepness is most influenced by the age compositions, as well as the chevron trap index.

These are all of the steepness sensitivity analyses that were conducted during the assessment webinar, and so the base has steepness estimated with fixed N age devs, and there is no prior. Runs also used a -- Run 2 had the beta prior, which was shown first, and then -- Sorry. Run 1 was the beta prior, and Run 2 had no prior and estimated N age devs, and then Run 3 had N age devs fixed, but with the beta prior, and then Run 4 is with everything fixed, and there is not a large difference between the various trends seen, and so the first panel is spawning stock biomass, and F is fishing mortality, and that just has an incorrect label, and then the one to the right are recruits. We reran the steepness likelihood profile on the review workshop model, and there was really no difference between the assessment webinar and the review workshop.

I am going to go into the other likelihood profiles. We ran the majority of the selectivity parameters and the Dirichlet multinomials, and I'm just going to present the ones related to recruitment, and so this is the sigma-R likelihood profile, and it does appear to be well estimated.

DR. CURTIS: Francesca, just one second. Fred Serchuk has a question, if that's all right.

DR. FORRESTAL: Yes, of course.

DR. CURTIS: Go ahead, Fred.

DR. SERCHUK: Thank you. Can we go back to the stock recruitment curve for a second? I know I'm a little bit concerned about that, and I guess you are too, or would be, and that's page 71. My concern is that you put it below 3,000 metric tons, except for the few points near the end of the series, and the stock-recruitment curve does a very poor job of fitting, and it would tend to overestimate recruitment, in my mind, if I'm reading the graph correctly, until you get to about 3,000 metric tons, and then it underestimates recruitment.

I am just wondering whether there was any discussion about that, and the same pattern goes when you look at the logs, and the log recruitment is really overestimating recruitment up until about 3,000 metric tons, and was there any discussion of this? I can see that there is actually two phases to these diagrams, and the average doesn't really fit very well, in my eyes, and was there any discussion about that? Thank you.

DR. FORRESTAL: Thank you very much. That is a good point, and there wasn't much discussion about that within the assessment workshop or the review workshop. One of the CIE reviewers did note that the most recent years on that curve to the left is probably why we were able to estimate steepness, because recruitment went so low, but that wasn't -- That hasn't been discussed thus far.

DR. SERCHUK: Thank you for that.

DR. FORRESTAL: Thank you. Are there any other questions on that or on the likelihood profiles?

DR. CURTIS: It doesn't look like there is any other questions, Francesca, and so go ahead and proceed.

DR. FORRESTAL: Okay. Thank you very much. This the R0 likelihood profile, and there is a clear minimum, and so this was considered to be well estimable as well. Going into the jitter analysis, and so this is the starting value analysis, we did it with 100 runs, with a 10 percent jitter applied to the parameter starting values, there were 100 runs, and the 101 represents the base run, the base model.

Looking at the overall likelihood for the totals, we did an unweighted, and there is no difference in those, and, looking at the landings indices and steepness, there are some differences in the parameters that the end model reaches. However, if you look at the Y-axis, the scale -- The differences in scale are quite small. For steepness, for example, it's out to the seventh decimal place, and so the model does appear to be running well with the jitter analysis.

These are some of the sensitivity runs now that were conducted during the review workshop on the base model, and so we did a retrospective analysis, and so these represent a yearly peel-back from the terminal year of data, and so the base run -- This is the review workshop base run, and it ends in 2017, and then that is a flat line, and it's kind of hard to see for all of them, and the two things to note here, obviously, are the change in values of steepness. With the removal of each year, the steepness does increase, with the exception of 2014, and then, if we look at the retrospective pattern for the F total, that corresponds to that poorly estimated recreational landings, and so that's why you see that big spike, as the model doesn't have a lot of information to go on for that year.

Looking at the Mohn's Rho, this is a diagnostic to see if retrospective pattern exists, and there didn't appear to be, looking at it visually, but the Mohn's Rho value for SSB is negative 0.044, and there was a rule-of-thumb proposed by Hurtado-Ferro et al. in 2014 that suggests that this value does fall within an acceptable range for SSB. Then this is the Mohn's Rho for fishing mortality, and there isn't really a rule-of-thumb for fishing mortality, but this does appear to be acceptable and not exhibiting retrospective pattern.

These are some of the sensitivity runs that were done on the assessment webinar base run, and so we did -- These were requested throughout the assessment webinar process, and so did an analysis using a high and low natural mortality, and so we changed the maximum age to thirty-four on the base to a low natural mortality, which corresponded to a maximum age of thirty-six, which yielded

a point estimate of 0.147. The high natural mortality corresponded to a maximum age of thirty-two, yielding a point estimate of 0.164.

These influenced the overall time series, as expected, in terms of overall patterns, and it does change the steepness, and so a lower natural mortality has a higher steepness, and the higher natural mortality has a lower steepness. We also repeated these sensitivities using a beta prior on the estimate of steepness, and there wasn't a large influence on the overall trends or on -- There was no large shift between the steepness and between the low M without a beta prior and then the high M with the beta prior.

There was a lot of discussion of the possibility of sperm limitation in the life history group in the data workshop, and so they proposed some sensitivity runs to examine this. This was done using a male contribution, and we shifted the proportion male for the vector that was put into the data file. What was in the base run is the dashed line in the middle figure, and then the sensitivity runs -- Then the various sensitivity runs had a changing proportion of males, beginning at age-three. We considered that ages-one and two were 100 percent female. There was very little impact on estimated steepness or on the overall time series.

We also included the aging error matrix, and this has a slight effect on some of the observed trends for spawning stock biomass and fishing mortality, as well as recruits, but no large impact on the steepness.

Then, finally, for this section, I am going to discuss the MCBE. This is the Monte Carlo Ensemble model. The indices, landings, and age-at-length comps were bootstrapped, and then the Monte Carlo was run on natural mortality, using a uniform draw from low to high maximum age. The initial assessment webinar had discards bootstrapped, and then discard mortality rate had a Monte Carlo on it, but that was not included in the review workshop one. Runs were culled from the ensemble modeling when  $R_0$ , FMSY, steepness, and  $R$ -sigma hit upper bounds, and so the initial run had 4,000 runs, but then only about 3,900 were retained for the review workshop, and then slightly more were retained for the assessment webinar.

This is the uncertainty surrounding the indices. The ones to the right are the commercial, and then the ones to the left are the recreational index. Then these are the chevron trap index, and there appears to be a little less uncertainty in the review workshop one. This is the uncertainty surrounding the commercial catches, and these CVs are set 0.05, and so the uncertainty is a little bit less. This is the recreational MCBE catches, or landings, if you use the assessment webinar, and, again, you see that 2014 year is highly uncertain.

This is the natural mortality, and so the thick run is the base run, and then all the gray area is the uncertainty surrounding it. These are the probability densities for each of the parameters, and so you have FMSY, landings, and SSB for both the review workshop and the assessment webinar, and they do appear to be well estimated, and the probability density is quite smooth. The vertical line in them is what the parameter is for the base model run, and then these are the  $R_0$  values, steepness, unfisher spawners per recruit, and then the sigma-R. The steepness appears to be a little bit better in the review workshop model run than the assessment webinar. Then these are the SSB in terms of MSST and MSY and then the fishing mortality.

Then, looking at the overall uncertainty surrounding fishing mortality, the review workshop, and then the assessment webinar, and then, finally, the spawning stock biomass, and that is my final slide for the fits to the base model and the uncertainty, and this is probably a good spot to stop and pause for any questions on that.

DR. NESSLAGE: Sounds good. Thank you. All right. Do we have any hands raised? Do SSC members have questions on what she has presented so far? Jie, go ahead.

DR. CAO: Thank you. I have a question regarding the CV for the commercial landings. I think 0.05 is specified for the commercial landings, but I think you mentioned that, in the early years of the time series, there is an underreporting issue, as well as, before the 1980s, all groupers were not classified, suggesting uncertainty there, and so I noticed that the CVs for the commercial landings recommended by the data workshop have higher values in the early years, and so I am just wondering why those values were not used in the assessment.

DR. FORRESTAL: Thank you very much. The values provided by the commercial were not actually supposed to be CVs, and they were just -- They were bounded uncertainty, and so there was quite a bit of discussion about how to include that. I am not -- I think the CV of 0.05 for commercial are more of a computational issue rather than -- I think the understanding is that commercial landings are more certain than the recreational ones, and so that is why the 0.05.

DR. CAO: Thank you.

DR. NESSLAGE: Okay. Thank you. Amy, go ahead.

DR. SCHUELLER: Hi, Francesca. I have a few questions, and I wasn't sure if I should hold them or if this was a good spot to ask them, and so I will just ask. I guess I'm going to go kind of far back. For the recreational fishery, can you just remind me what composition data were available for which years?

DR. FORRESTAL: Yes, definitely, and I can go back to that.

DR. SCHUELLER: So recreational fleet is showing length compositions only for 1972 to 2018, but you're not using 1993 to 2018? Is that correct? The reason I'm asking is because you showed the selectivity curves for the recreational fleet, and there was a 1990, or whatever the start year was, through 1991, and then 1992 on, and you showed a bubble plot figure that basically had length compositions for 1992, but nothing after that, and did I mis-see something?

DR. FORRESTAL: No, and that's correct. Initially, we did include those length comps, but, because the model is not fitting those particularly well, we removed all the length comps for years that had age comps available.

DR. SCHUELLER: Yes, but this says there are no age comps for the recreational fleet.

DR. FORRESTAL: There are age comps for the recreational fleet from 1979 until 2018, and then they're sporadic, also, for the MRIP data.

DR. SCHUELLER: So where this says -- Okay. I guess I'm just a bit confused as to what composition data are informing the selectivity curves for the recreational fleet, and so can we go to the recreational selectivity curve?

DR. FORRESTAL: Yes. There is a bit of a gap in the recreational age comps. There is one year of data in 1996, and then the data is available from 2004 to 2010, and then there is only four years of age comp data from 2012 onwards, and so there is data available for those years, but they were not a sufficient sample size to be included in the final model.

DR. SCHUELLER: That's fine. I guess I will just get to my question, which is really the poor length comp fit for recreational for 1992 is basically one year, and, if you have age compositions for that time period, why not just not use 1992 for the length comps? Did you guys try that?

DR. FORRESTAL: We didn't remove 1992, and that is a good point, and I don't see why that would be in there, but, as BAM does use age comps to fit the model, that wasn't a large reason for concern, and there was no -- There were no age comps for 1992 for recreational.

DR. SCHUELLER: Yes, I completely understand that, and so I guess my point is really just that clearly the length compositions for the recreational fleet in 1992 provide information that is not being used in the assessment model, because it's using the age composition data that are available, and it just seems like you just didn't even need them, and they are extraneous, kind of, at this point, and so I just -- Yes. I mean, it doesn't matter, I'm sure, and it's not going to impact the results, but I guess, if I was trying to make this as clean as possible, I probably just wouldn't even bother including them in the future.

DR. FORRESTAL: Definitely that's a very good point. I also think that those help -- There is that mismatch between the age and length comps, and, also, there just was not a lot of data, and so I think we were hesitant to remove data, when we did have it.

DR. SCHUELLER: Sure. I understand all of those points. That was just one question, but, if others have their hands raised, Genny, we can go on to other people and come back to me.

DR. NESSLAGE: No, and you're the only one at the moment, and so keep going, please.

DR. SCHUELLER: Okay. My next question is regarding the chevron trap video index and the fit to that, and did you guys run any sensitivity analyses where you looked at having a break in the catchability time series for that index?

DR. FORRESTAL: We did consider that. We considered truncating or splitting it into two, and I think there was a hesitancy in the ADT to do that, just because it was a survey, and so we didn't actually do any of the sensitivities, but it was discussed by the ADT.

DR. SCHUELLER: Sure, and so I guess my viewpoint is I understand that it's a survey, and I have an assessment that has an index that's a Conn index, basically, of a bunch of surveys, and so I have broken catchability in the past, based on -- This is a prime example, potentially, for there being two different catchabilities occurring on that particular index, right, and so the assumption in Conn is that the selectivities for the two gears should be the same, and I assume that was discussed, but then I do think that sometimes the catchability isn't necessarily the same, especially

when you're talking about things related to spatial scope of the sampling frame, and so it's just something to think about in the future.

DR. FORRESTAL: Definitely, and that's a good point. When this was raised with the SERFS group, who conducted the sampling, they argued that the catchability should not change, because I don't think there were actual sampling design changes, but that might be something for a larger discussion.

DR. SCHUELLER: Yes, and, I mean, catchability is a tough one, to me, because I think that it can change for reasons other than there are actual sampling design changes, and I think there is other things to think about related to scope of the space, and so, I mean, we've already had discussions about how, when they added the video survey, there were areas sampled that weren't sampled before, and that might have an impact on the number of fish that you are catching per unit effort, especially if you've like moved into a space where there is just more fish or there is something fundamentally different about that area than what was sampled before, which a lot of people talk about how Florida does have different bathymetry, et cetera, and so, anyway, that was just something I think that would be interesting to explore for a sensitivity analysis in the future.

DR. FORRESTAL: That's a good point. Thank you.

DR. SCHUELLER: I have one more question, but, again, Genny, if there is somebody else with their hand raised, let me know.

DR. NESSLAGE: No, and it's the Amy Schueller show. Go right ahead.

DR. SCHUELLER: Okay. Fred already asked about the stock-recruitment curve, and so I guess I'm going to go back to that. We already have seen that the steepness value changes with a retrospective, and so that's a bit concerning. It suggests, to me, that steepness isn't well defined, and, when you look at this, I sort of feel like it's not well defined, even though the likelihood profiles might show that, and I just wondered about the likelihood profile on sigma-R, and I wondered -- I don't know, and I am constantly scratching my head lately about these stock-recruitment curves, because we're going to hear, later in this SSC meeting, about how to project recruitment, or the workgroup that's working on that, or having discussions about that, and so, right now, we're reading some papers about how well steepness and different parts of the recruitment curve can be estimated.

I am just wondering if -- I know that there's a likelihood profile done here, and it seems to suggest that we're able to estimate steepness, but I question that, given that one of the papers that I just read said that, even with really good data, they were having difficulties estimating steepness, and, now, they didn't necessarily run a likelihood profile, and so I don't know what that would look like. Anyway, I guess my questions are did you try any other stock-recruitment curves besides Beverton-Holt? I will start with that, I guess.

DR. FORRESTAL: We did not, but it was discussed of perhaps doing a Ricker, but that was not implemented in this assessment, and the Gulf of Mexico did attempt to estimate steepness, but it was not estimable, and some discussion by the CIE was that the reason why perhaps steepness was able to be estimated in the South Atlantic was that it did have that reduction in recruitment in the most recent years, and so that's why it was estimable, just because it got so low, but I would be

curious to see what would happen with the addition of more data in the operational, if that is still the case.

DR. SCHUELLER: So what data do you think are best informing those, quote, unquote, estimated low recruitment values? Is it just the age compositions that you showed for the index?

DR. FORRESTAL: I do think that the chevron trap data is the most informative, and that was also discussed in the Bacheler and Ballenger paper in 2018, that there might have been a recruitment failure, and so there aren't actually more older fish, but it's just that, in proportion to the younger fish, they just appear to be getting larger, but I do think the chevron trap has the most interesting data for that, and we're also seeing some of the youngest fish in the later year comps, and so I'm hoping, for the operational, when there is more data available, we'll get some more information for that.

DR. SCHUELLER: You know, it seems to me, based on this discussion, that the entire stock-recruitment curve hinges on those age compositions from the survey, and then the question comes up -- You know, you sort of said there's two alternative things here. We're either catching the adults, the larger adults, better, or there is less young, and I don't know how we parse out which one of those it is, but I would be very curious to see this assessment run excluding the age compositions from that survey, because I suspect that it driving that, and I don't really know how we figure out which one is which, I guess.

DR. FORRESTAL: We did a sensitivity run where we excluded the length comps from the chevron trap, and we did not include the age comps, because that was the most confident source of data.

DR. NESSLAGE: It looks like Katie might have -- Katie, is this to that point, or did you want to -- Did you have a different point or question?

DR. SIEGFRIED: Thank you, and it's to this point. I just wanted to let the SSC know about some of the discussions that we had with the CIE reviewers, because we were comparing the -- Or getting the Gulf model and the South Atlantic model reviewed simultaneously, and one of the things that happened was, because we could estimate steepness, at least with this configuration of data, the CIE, and then also the panel members that were joining us during the review, recommended that this value for steepness be used to inform the value of steepness for the Gulf, which is something, in retrospect, and upon reflection, I just am not sure that's a great idea anymore, because it is so dependent on these comp data.

We don't have comp data out to the terminal year that we would use to provide management advice, and so, as we all work together to put the terms of reference together for the operational, and then the SSC writes the report, it would be really helpful for you all to reflect on that, knowing that it is going to affect the Gulf model. Potentially lay out what you would maybe take a look at for the operational, so that maybe we're not limited to this 0.57 value for the Gulf in the future, and does that make sense, Amy and others that have spoken up about this?

DR. SCHUELLER: Totally, and I didn't know that the value was used for the Gulf based on this, and I feel very uncomfortable about that.

DR. SIEGFRIED: Yes, and so we could use some language about, okay, it's appropriate to take a look at likelihood profiles, and we saw this likelihood profile, but it's contingent on the composition data we have, and I know that you all aren't doing a full review, because the CIE did the review, but those kind of comments would be really helpful when we move to the operational phase for both regions. Thanks.

DR. NESSLAGE: Thank you. Amy, did you have other questions?

DR. SCHUELLER: No, and I think I'm done. I really do think that this is a problem, because there is two alternative avenues that this could go down. One is we think recruitment is poor, and then the question is why, or, two, something has fundamentally happened, or the sampling is different, and we're just sampling larger fish, or older and larger fish, maybe more efficiently or something, which I think wraps into maybe some of this discussion on even the catchability, and so I don't know, and I'm a bit -- Right now, I feel it's a 50/50 flip on which one of those it could be, and this just needs some more exploration, in my opinion.

DR. NESSLAGE: Thanks, Amy, and if I can -- Maybe this is a dumb question, because I don't know that much about the biology of these animals, but is there any chance that, given this is a complex, that there might be interspecies shifts going on that are driving some of this?

DR. FORRESTAL: That was definitely discussed as a possibility for the stock-recruitment curve, that it is a complex. However, the scamp data is so much more than the yellowmouth, in terms of the life history in particular and what is used for the population growth model, and I think there was about 16,000 samples of scamp and probably about 400 of yellowmouth, and so, unless those proportions have changed, I think it would be hard to really tease those apart.

DR. NESSLAGE: Got it, and so this is largely a scamp model. Thanks That's super helpful. I believe that Fred Serchuk has his hand raised. Go for it, Fred.

DR. SERCHUK: I am just trying to follow-up on my previous comment. I guess, if you were going to estimate recruitment for the stock, future recruitment from the stock-recruitment curve, you would be fine if you were actually at a thousand tons of spawning stock, but anything larger than that, going up to nearly 3,000, if you use that curve, you're going to overestimate recruitment, based on what we have seen in the past, and that's why I'm concerned about it.

The points are very close below a thousand, but, once you get above that, there is a wide disparity, and, of course, part of that is that, when you get to 3,000, most of the empirical points are far above the curve, and so I think we need to keep that in mind in any case where we would use this particular S-R curve in forecasting recruitment in the future, given that it's almost bipolar here, that low stock sizes, except the very lowest -- The curve would overestimate recruitment, based on what we've seen, and then, at higher stock sizes, it would underestimate recruitment, and I think we need to keep that in mind. Thank you, Chair.

DR. NESSLAGE: Thank you. Okay. Are there any other clarifying questions for Francesca at the moment, or shall we let her continue? I am taking notes on the comments that you all have made so far. Fred Scharf, go ahead.



DR. SCHARF: Francesca, I had a question on page 94, on the sensitivity for the male contributions, and I am just trying to understand how, if you shift to all males at age-three, how you cannot impact SSB, given that, earlier, you said that the female maturity curve -- There is really no females mature before age-three, and so how does -- How can stock productivity not be affected if you shift to all males at age-three?

DR. FORRESTAL: Yes, and that is a very good point, and I -- This was more to see if sperm limitation was a factor, and it does not appear to be with scamp, but I don't really know enough about the interworking of BAM and how that would shift it with the SSB.

DR. SCHARF: So is SSB both males and females, and so it's not female-only?

DR. FORRESTAL: It's not female-only, no. It's combined.

DR. SCHARF: Okay. I guess just maybe a follow-up, and just a broader question, in that, when you were talking earlier about the reproductive biology and that, during the data workshop, the recommendation was just to use total SSB, but there was some data on spawning frequency and batch fecundity, potentially, as a function of female size or age, but it wasn't used to estimate egg production, and can you maybe talk a little bit about why it wasn't used?

DR. FORRESTAL: That's a very good question, and I think the reason was that, of the mating behavior of scamp, that they appear to exhibit pair-wise courtship, and so it's not seen with other grouper species, with the big mass spawning events, and I think that was the reason behind it, but I would have to go back and look at the working paper.

DR. SCHARF: Okay. Thank you.

DR. NESSLAGE: All right. Thanks. Jeff Buckel.

DR. BUCKEL: Thanks, Genny. I had a question on Slide 62, if we could go to Slide 62, and so, on the left two graphs, the landings for the commercial and recreational, those are both in thousands of pounds, and so there is this dramatic reduction around 2007 or so, and you see a reduction in both, but it's really steep for recreational, a much steeper decline, compared to the commercial, and I wondered if there was any discussion about that in the review or the assessment workshop, or maybe the data workshop, about what was driving that.

I wonder if that might tell us something about the large fish versus small fish controversy with the chevron trap, and I guess I'm thinking if the recreational -- I think they caught smaller fish, and, if those are less abundant, because of low recruitment, then you might see the drop in the recreational landings of those smaller fish, and, if the commercial are catching larger fish, then you don't see as fast of a drop, because those are still available, and was there any discussion related to those landings data streams and the difference in the decline rate?

DR. FORRESTAL: Thank you. That's a good question, and there wasn't specifically any discussion about why there was a reduction in catches. There was some discussion about how this is in a multispecies fishery and that it's not -- Scamp is not particularly targeted, and it's kind of more like, when you catch it, it's great, but it's hard to go out and specifically target scamp, but

there wasn't any specific thoughts about why recreational landings have decreased so much recently.

DR. BUCKEL: Thank you.

DR. NESSLAGE: Thank you. Chris Dumas, you're up next.

DR. DUMAS: Thanks. I wanted to just reply briefly to Jeff Buckel's question, and so, in 2007 through 2010, we had that big recession, the real estate recession, and so that could have affected the recreational effort there, and affected the catch, and so you might just want to check that. I'm not sure, but that could have had an effect. My question was, on some of these simulations, you're comparing a beta prior with no prior. When you say no prior, what do you mean by that? I apologize for asking this question, but I just don't know. Do you mean it's like a uniform prior, or what do you mean by no prior? Thanks.

DR. FORRESTAL: Thank you. That's a really good point about the landings, and I hadn't considered outside forces like that, but, in terms of the priors, you can put a prior on a parameter that will sometimes inform what the value is, but, if you have no prior, it's kind of just like if you're doing Bayesian, and it's uninformed prior, it's just you let it go where it wants to go, so you don't try to constrain it. Does that make sense?

DR. DUMAS: Yes. Thanks.

DR. NESSLAGE: All right. Thank you. Amy Schueller.

DR. SCHUELLER: I guess I wanted to say a couple of things. One is I appreciate Chris's comment about the reduction in fishing effort during the economic decline in the late 2000s, and I think that that's a possible external force, but I guess what I was thinking, Jeff, when you were talking about is there is difference in the size of the recreational versus the commercial, and, Francesca, you put this up here, and it shows there really isn't a difference in the age compositions, and I was thinking that I don't feel like there is a big difference between all of the different compositions related to size, and so I'm not sure it's a size-based thing, as far as a reduction in landings.

Then I was just -- Chris, to your question about no prior, it really means no prior, meaning there is no information. It's not even a uniform prior included in the likelihood. It's just no push one way another towards any value, and so, the way BAM is set up, it's either not included in the loglikelihood, or it is included with a specific distribution, and so no prior means no additions to the likelihood, given that you're not getting to a certain spot. Does that make sense?

DR. DUMAS: Yes. Thanks.

DR. NESSLAGE: All right. I don't see any other hands at the moment. We are at 10:30, and we've been at it for a couple of hours now. Francesca, do you mind taking a quick bathroom break, and we'll reconvene maybe in ten minutes? Does that sound good to everyone?

DR. FORRESTAL: That sounds great.

DR. NESSLAGE: Okay. Thank you. We'll be back then at 10:40.

(Whereupon, a recess was taken.)

DR. NESSLAGE: Francesca, go ahead when you're ready, please.

DR. FORRESTAL: The next thing to cover is the review workshop, and so this was conducted over five days in the last week of August and the first week of September, and there were representatives from the Gulf and South Atlantic SSCs and the CIE, three CIE, reviewers.

There were several analyses requested in the review workshop, mostly centered around the selectivity mismatch between the time blocks, and so they requested six different analyses. The first was the combined dead discards with landings, and this is the accepted review workshop base model. We also explored the dome-shaped selectivity for recreational and commercial, removing time blocks from the run with the dome-shaped selectivity and then removing time blocks from the assessment webinar base run and then including an aging error matrix. This didn't have any changes to the results, and so I won't be presenting it here, and then, finally, using six time blocks on the assessment webinar base run.

This is a figure that we developed during the review workshop, and it shows the shift in length distributions for the commercial and recreational fleets, beginning in 1978 for recreational and then about the mid-1980s for commercial, and so there is a clear shift in the distribution of lengths with the implementation of the size limit in 1992, and so the red-dashed line is the size limit, in fork length, in centimeters, for scamp.

It does appear that, while the younger fish are being selected, in the length comps at least, the larger fish are being selected in the recreational and commercial fleet, and so there was a lot of discussion about how BAM uses the length and age compositions, and so both length and age compositions are used to inform the age-based selectivity function. The catch-at-age is calculated in numbers, and then it is converted to length using the age-length key for the landings, and so the fits to the comps are evaluated using converted ages and the likelihood.

Ages are the native unit in BAM, and then the length and age compositions have shown some conflicts when you convert ages to lengths when there are broad distributions of sizes at different ages, and so Katie pulled the landings age-length key from BAM, and this shows the distribution of lengths for each class, and you can see there is a lot of overlap between the different age classes, and the size limit that is in millimeters is 470 millimeters, and that began in 1992, and so that encompasses four or five different age classes.

When you compare that to the age-length curve and the different selectivity curves and the ages at 50 percent selectivity, a single age can encompass a wide range of length, and so that's why you see that potential counterintuitive mismatch within the selectivity, and so the -- When you look at the A50 for the commercial fleets, in the first time block, it's 7.5 age, years of age, and then the second time block is 4.95, and it's a little closer to the recreational, which is the figure on top, and it goes from 5.6 to 4.7.

That's what we had, and that's what we presented to the reviewers on the selectivity issue, and then the dome-shaped selectivity on fleets was not recommended for use by the review panel, as

it did not fit the data very well, and then this is using a dome-shaped selectivity on both fleets without any time blocks. It did not fit the -- It had no problems with the parameter values, and they did not bound, as was the case with Run 2. However, the age comps did not fit very well, and then the estimated steepness went down to 0.268, and so this dome-shaped selectivity and no time blocks were not recommended.

Then, looking at the assessment webinar base run without any time blocks, again, this did not fit the age comp data particularly well, and then the indices, particularly with the recreational one, had a very poor fit at the start of the time series, and so the final recommendation, or the final analyses, by the review panel -- Initially, they requested a random walk on the age 50 percent selectivity parameter for both commercial and recreational.

This was not possible to test out within the timeframe of the review workshop, and so, as a proxy, they suggested increasing the number of time blocks, and the thick teal lines are when these time blocks were implemented. There wasn't any rationale behind these, in terms of management decisions where these time blocks were placed, and so there will be a likelihood analysis that will need to be conducted to determine when perhaps the best years would be to place the blocks, as there could be other management decisions on different species that are having an impact on the selectivity.

Looking at the fits to the landings for these two different models, the fits to the six-block model is on the left, and then the fits using the two-block model are on the right. Six blocks did improve the fit to the recreational landings in the earliest part of the time series, and it still did not fit 2014, and there was no large change on the commercial landings.

The selectivity curves for the six-block model were interesting, and the 1969 had the youngest fish in the age of selectivity. However, the next time block, reading 1978, caught the oldest fish, and then the next youngest fish selectivity curve was in 2010, and so you still see that counterintuitive shift to younger fish when there is a size limit in place, and so this is definitely looking at when to place time blocks would help here.

Because there are more time blocks, you have -- You can parse out the age comps, and that's seen with the commercial age comps, and they do fit quite well in the beginning part of the time series, and that is just a single year, and the fits are relatively good for the 2010 time block. These are the age comps for recreational, and the fits are not as good, but the age comp data for the recreational is a lot sparser, and then these are the parameter values for the two different values. The recruitment curve is slightly better with the six blocks, but, looking at the steepness value, using two time blocks, it's estimated at 0.57, and then, with six time blocks, it goes down to just about 0.35.

From the review workshop, these were the recommendations for the operational assessment. They accepted the review workshop base model with the combined landings and discards into a single removal stream for commercial and then one for recreational. They accepted the retaining two time blocks and then a logistic selectivity for all fleets. In the operational assessment, they suggested either doing the annual random walk on the A50 selectivity parameter or doing a likelihood analysis looking at different appropriate years for putting in additional time blocks, to see if that would account for some of the changes seen.

I also wanted to mention that, when there was the question about the uncertainty around the commercial landings, that should be included as well for the MCBE analysis and not just in the fit for the model. With that, that is all that I have to present to you. Are there any questions?

DR. NESSLAGE: Thank you very much, Francesca. Let me look here at the hands-raised sheet. If folks from the SSC have clarifying questions at this point, please raise your hand. Amy, go right ahead.

DR. SCHUELLER: Sure. So it seems like the review workshop spent a bit of time on selectivity for the fleets, and I am starting to think that maybe selectivity is part of the issue, but maybe it needs to be approached from a bit different direction. My question is, first, and I have a whole bunch, but I will start with this. For the fishery selectivity parameters, what likelihood components inform the parameter estimation for those most, or did you run likelihood profiles on the selectivity parameters for the fishery?

DR. FORRESTAL: Yes, we did, and let me see if I have those. I have those in a different presentation, but I will be able to pull that up for you. So you're interested in the commercial or the --

DR. SCHUELLER: I am interested in both. What data are most informing the parameters for those fishery selectivities? I mean, my big question is, is it the index age compositions?

DR. FORRESTAL: It is the landings and -- For some reason, these are not all showing up.

DR. COLLIER: Francesca, I think you will have to end your presentation. It might be showing just that view, and so you have the option, if you want me to take control back for a second, to change what the view is. There it is.

DR. FORRESTAL: There it is. Unfortunately, I think I just have the totals, and so just the negative loglikelihood total for all the data, and I don't have it broken down for each component.

DR. SCHUELLER: So here is why I am asking this. I am very, very curious as to exactly which components are informing the selectivity for the recreational and commercial fleets. My hope is that the age and length composition information from the respective recreational and commercial fleets are what is informing it. I am a bit concerned that the information, potentially, from the index is informing it, and I'm really having a hard time, because we're having this discussion about the selectivity, and so the selectivities change through time, but not in the way that we expect them to. There is a mismatch between the age and the length composition data, and I'm just trying to give everybody my train of thought.

I guess I am wondering where are those mismatches most prevalent, and why choose the age data over the length data? It starts me wondering how well defined are the -- How well estimated are the age data, and I am circling around this because I feel like this is the fundamental issue in the assessment, and it's not the time blocking on the fleet selectivities, but it's the mismatch in age and length compositions that you're discussing and the fact that those selectivity blocks don't even match what you would expect them to look like, given how the composition data are changing over time, and I am just wondering how much influence those composition data from the chevron

trap video index have on that, and it brought me to the question of, also, was there a sensitivity run looking at two different selectivities, two selectivity blocks, for that chevron trap video index.

DR. FORRESTAL: These are the likelihood profiles. This is the chevron trap second parameter, and so I think this is the A50 chevron trap parameter, and so your second question is, since we did not do a run with splitting the chevron trap, we didn't do likelihood on that one either, but, in terms of the chevron trap, the selectivity parameters mostly look like they're informed by the commercial index, and perhaps the length.

DR. SCHUELLER: So this figure right now is the likelihood profile components for the chevron trap selectivity A50 parameter and not the --

DR. FORRESTAL: The previous one was the slope, and this is the A50.

DR. SCHUELLER: So this is lengths and ages are all combined into one component.

DR. FORRESTAL: The two left -- I don't know if you can see it.

DR. SCHUELLER: I can see it, and so it says negative loglikelihood of lengths and negative loglikelihood of ages, and those particular panels are across all lengths and all ages and not just -- Do you see what I am asking?

DR. FORRESTAL: Correct. Yes, it's across all data.

DR. SCHUELLER: So I guess what I am trying to say is that I think it is worthwhile to look at the selectivity parameters and break those negative loglikelihood lengths and negative loglikelihood ages into the different components, and so the commercial rec index, because I think that -- I am bit concerned that the wrong lengths and ages are contributing to each of the selectivities, if that makes sense, and so, to me, this all links back, potentially, to the recruitment issue, and so we said recruitment issue could be that there is decreased recruitments or that we're sampling -- So that was one option, decreased recruitments.

The second option is we're sampling bigger and older fish, and there's actually a third option that we didn't include, and that would be model misspecification, which is why I am bringing this up, and so the selectivity thing really concerns me, and clearly the reviewers zoomed in on this, but I just think it needs much more work. Sorry. I am your chair a lot, and I'm not trying to be a pain, but I just -- It makes me want to like just dig into this for fun, if that makes sense.

DR. FORRESTAL: It does make sense. Definitely the selectivity was a concern throughout the process. I think that this is an issue that comes up a bit in the South Atlantic, just due to the breakdown of what data is available, and I don't know how -- I mean, I'm sure it's possible to break it down in terms of likelihood profiles, and that would be something perhaps to explore further. I don't know if Katie wants to say anything further on that.

DR. SCHUELLER: I don't expect you to have all the answers, because I understand there is always rocks left unturned here, but it's just, for me, since we're going to be providing guidance on the operational assessment, it seems like some of these things are things that we need to include in that guidance.

DR. FORRESTAL: I think that's a great point. There's a lot of potential for refinements and doing other explorations.

DR. NESSLAGE: Thanks. Katie, do you want to jump in there?

DR. SIEGFRIED: Thank you. I agree with Amy that this needs more work, and that's what the CIE reviewers said. They were a little bit -- I don't know, and maybe it was more topical, but that mismatch between when the regulations went into effect and the direction of the selectivity change is more what they were concerned with, and we did discuss that with them, in terms of what Francesca showed, in that you can't really -- One age for the recreational selectivities isn't really differentiable with the length comps that we have in that first time block, and so there is that.

There is that sort of landscape plot that Francesca showed of the length comps through time, which we took as incredibly variable, probably due to the fact that this an opportunistically-caught fish, and so we have the multispecies regulations and the multispecies nature of the fishery, to consider.

This issue of which components are contributing to the selectivity is like the finest scale detail, I think, of what the CIEs were getting at, but their recommendation was to explore both the time blocks and how those selectivities are specified, and so I think that's all covered. As to the way the SSC wants to put in detail that guidance, of course, is up to you, but I would really like to know what you think about the multispecies nature of the fishery and how the regulations on other species can affect which size and age classes are captured by the fishery and whether we should chase these data year-by-year or if we should try some overall method to put in a time block, if that makes sense.

I mean, one of the recommendations, which, like Francesca said, we couldn't really accommodate without some testing, is sort of a random walk on the A50 parameter of the selectivity, which, in our minds, was chasing every little peak and valley in the comp data, with very little data, and this is a pretty data-poor species, and so we would like a lot more time to -- I think we want the flexibility in the TORs in order to explore these phenomena that you're taking a look at without the prescription of exactly how many time blocks, potentially, because we just don't know, and we don't know which other fishery regulations are really impacting scamp at this point. I hope that makes sense. Thanks.

DR. NESSLAGE: That does, and we appreciate that, and we'll keep that in mind as we write up our response here and with the statement of work that's coming up in the next agenda item. Amy, did you have a response to that or another question?

DR. SCHUELLER: Just a response. I don't really -- Personally, I don't know that it's worth the random walk on that A50. I don't think you should chase every little nuance up and down, and I think that sort of missed the point of the bigger picture, which is the selectivities -- The expectation of them was to move from younger ages into older ages with changes in the regulations, and the length compositions sort of show that. I guess I am fine with the two time blocks.

I am more interested in looking at the chevron trap, the survey stuff. I think the survey stuff needs a lot more attention here, and I don't know if it's selectivity or catchability or choosing length comps over age comps or what, because I was really looking at those slides on page 42, versus 63

to 65, and trying to figure out, in this circumstance, which one of those things should take precedence, sort of length or age compositions. Anyway, that's where I am coming from, and I'm a bit less concerned about the fishery selectivities at this point, and I definitely don't think we should chase a time-varying A50 across this assessment. I just don't think that there's enough data, probably, for that to be really informative. I do think it's just chasing noise.

DR. NESSLAGE: To that point, Amy, if I can ask you a question, and maybe Francesca could comment on it, but, when you do a random walk, you can determine the degree of variability that that walk can take, how smooth it ends up being, and you don't have to chase every interannual leap or bound in the data, but it would be a more -- I see where they're going, and it can be, depending on how it's implemented, a more objective way to determine when the blocks should be, especially given it doesn't sound like there is really clear understanding of how the regulations from these multispecies fisheries are impacting this particular complex.

I am not sure the characterization of how the random walk would be implemented is necessarily how it needs to be implemented, and I wasn't at the review workshop, and so maybe that's how they described it. I don't know, and, Francesca, can you comment on that? Did they really want a highly tuned -- "Tuned" isn't the right word, but a really highly-tracking random walk, or did they just want a parameter that varied over time gradually?

DR. FORRESTAL: I think they definitely were concerned about parsimony, and so I don't think they wanted one that would chase every single data point. I think they just wanted to, perhaps, allow it to maybe vary more than it was currently, but, no, I don't think they wanted great specificity.

DR. NESSLAGE: Okay, and so what I heard from Katie is that, if you guys have the flexibility, that you recommend exploring these changes over time, maybe with some suggestions, but not prescriptions, and that would be helpful for you?

DR. FORRESTAL: I think so, yes.

DR. NESSLAGE: Okay. At this point -- Amy, did I cut you off? I apologize. I realized that I might have jumped in on your point.

DR. SCHUELLER: No, and I thought that you made a good point. If they're trying to use a random walk to help delineate time blocks, I understand that. I wasn't at the review workshop, and so it's hard to understand intentions through writing sometimes, and so --

DR. NESSLAGE: Absolutely. Okay. I don't see any other hands raised from SSC members at this moment. What I would like to do, if we could, is break for a moment and take public comment on what we've heard so far. Folks from the public, if you have any comment, please raise your hand. Rusty, go right ahead.

MR. HUDSON: Thank you, Genny. A couple of things. My history with fishing for scamp grouper goes back to the 1960s, and, at the same time, it's not an animal off of the Daytona area that you just go out and target, like we did with gag grouper. We generally caught them as we were targeting gags, and, generally, most of the animals that are scamp groupers that we saw were adults.



However, a couple of weeks ago, I was in Pensacola, and a fellow came off of his deep-sea trip, and he had vermillion, and he had one scamp grouper, and it was about that minimum twenty-inch size, and I thought it was too small, and that was just my feeling, and I didn't say that to him, because he was going to eat it, and I don't blame him there, because it was always a very wonderful, highly-prized grouper flesh that normally, actually, we would get a little bit more price, historically, but I would catch them on out to 240 foot, stuff like that, and the bigger ones would be there with the bigger black bellies and the other big groupers that are found, currently, in a lot of the Oculina regions, from Fort Pierce up to St. Augustine.

You can't just go out there and fish, because of the no anchoring clauses and the Gulf Stream being so strong, and most of the recreational people, in particular, since the late 1970s, are using smaller hooks, at least on the headboats and for-hire boats, because of some of the damage to the fish stocks between the foreigners in the late 1970s and then into the 1980s, and we had a variety of things that -- Lots of big headboats and all this stuff, but they're mostly found in that sixty to 120 foot of water, unless we have cold-water effects.

Now, I have heard, from some of the commercial guys, that, by the time we get to the May 1 opening of shallow-water grouper, some of those scamp groupers have already moved further to the north, and so it's just happenstance when we just happen to get one, and they're usually spoken for in the fish market, and so, all that being said, I just wanted to share that.

One other thing is I heard the Conn hierarchical model discussed, and the first time I encountered that was when had to use it for dusky shark, and it actually came out with a result that we embraced as being a positive, but they did not use that reflection of the status of that stock, and one of the good things is that, in hindsight, I believe that his modeling was more correct than the models that is being used for dusky, that is in a hundred-year rebuilding plan, but the population is blowing up, just like sandbar, and so I'm not sure where you're going to go with the hierarchical, but it does seem to have some usefulness, and so thank you for the opportunity to comment.

DR. NESSLAGE: Excellent. Thank you, Rusty. Any other public comment? No hands raised. Thank you. Thank you very much, Francesca, for a very thorough and excellent presentation and for entertaining our questions. Hopefully -- I don't know if you'll be sticking around, but, as we go through our discussions, we might have a few more questions for you, and so hopefully you and Katie can help us out when we get stuck, but thank you for your presentation.

DR. FORRESTAL: Thank you very much for letting me present, and, yes, we will be sticking around.

DR. NESSLAGE: Excellent. Thank you. All right. With that, I would like to at least begin our general discussions, and then maybe what we can do is break for an early lunch and come back with our breakout groups and then reconvene, and that's kind of my thought, but I would like to start getting some of our general ideas and comments discussed as a group.

Let's go down to the action items, if we could. Just to kind of review for everyone, we're being asked to provide a general review -- This has been reviewed through the CIE, as you heard, but our own review of this research track assessment, and we're also, as usual, to summarize assessment uncertainties, and, of course, we're not using this to set catch levels at this time, and

so more general statements would be useful of things that might be impacting uncertainty, and then we'll address research recommendations.

The one thing that we haven't really looked at was the research recommendations from the assessment, and so we might want to, if you have the opportunity, pull those up, just in case anyone has any questions for Francesca about those, but, otherwise, I will open the floor to any general discussion.

So far, folks have raised questions and talked quite a bit about the stock-recruitment curve and whether we're underestimating. There has been talk about the information in the length comps and both time-varying catchability and influence of the survey age comps, and so we've talked quite a bit about that. Are there other things that popped out to folks that we would like to discuss or any elaborations on the previous points that have been made, just so the breakout groups folks can capture that appropriately? Amy, go ahead.

DR. SCHUELLER: In my rambling, perhaps I missed being able to ask this question, and maybe Katie and Francesca will not really be able to answer it, but I was just wondering -- How reliable do we feel like the ages are for scamp, or what is the quality of the age data, I guess?

DR. FORRESTAL: The majority of the age data came from the younger fish and from ages-one to ten, and so they had to be weighted, but I can dig more into that, into the working paper.

DR. SCHUELLER: I mean, I'm specifically asking is this like an easy-to-age fish, or a difficult fish, or is it -- Some of the South Atlantic species are easier in North Carolina than Florida, or vice versa, and I have heard lots of comments, over time, about that kind of stuff, but I really don't know how scamp is viewed, I guess, and this is clearly a question for the ageing folks.

DR. NESSLAGE: Go ahead, Katie. I expect that you're going to be addressing that question.

DR. SIEGFRIED: While I might be able to address it more, what I have heard is that, of course, it gets -- I mean, with no new information, it gets harder the older it is, of course, but we do have the ageing-error matrix to describe that uncertainty, and we carried out the sensitivity with that. I didn't see the ageing error matrix to show that it was an incredibly difficult species to age, but, as Amy said, I am not the best person, although it does seem to be a subjective thing that she's asking, like how hard is it, and the only quantitative measure we have is the ageing error matrix.

DR. NESSLAGE: Great. Thanks. Wally, is it to this point?

DR. BUBLEY: Yes, and, I mean, I was basically just going to add on to what Katie was saying. I would say it's probably moderate, in terms of difficulty. We've had plenty more that are more difficult to age, and others that are easier. Looking at the CVs, and, as Katie had said, the ageing error matrix, I don't think it's anything that's too unusual for this area.

DR. NESSLAGE: All right. Thank you very much. Amy, does that address your question?

DR. SCHUELLER: Yes, and I was just looking for a qualitative statement of, yes, we think we do a pretty good job, or I don't know, and so, yes. Thanks. That's useful for me.

DR. NESSLAGE: Great. Any other topics or comments that folks would like to bring up? All right. Well, maybe you have raised all your major points along the way here, and this is good. Well, maybe I will change my mind. Is there any objection to us going to breakout groups and then try to get that done before lunch, and then maybe we can reconvene like at 1:00, and does that seem unreasonable? Are there screams of protest, or are you all just muted? I am going to consider quiet to be -- Fred Serchuk, go ahead.

DR. SERCHUK: I just have a general question, Chair. This is the first sort of research track process that we've been engaged with, and I know a lot of questions have come up about several items in here, but is that a reflection on the process, or is that just -- Particularly when we've had some members of this SSC involved at various stages with the process, and I know it's in our remit to take a fresh look at these things, from the reports as they come in, but it seems to me that there's been an extraordinary amount of time spent in developing both the assessment and then the follow-up workshop on it.

I'm actually a little bit surprised that we've had so many comments on it, although many of the issues that were brought up seem to be ones that you would have to have either very intricate knowledge of either the modeling approaches that were taken or have been familiar with a lot of assessments in the past that have used similar techniques, and I think the presentation that was given and the materials that we have are very extensive, and so I am just wondering -- Should we be concerned about the process, or should we be concerned that the process didn't work as effectively, or are our comments such that they just seem to be overlooked during the process?

I know that's probably more than you wanted to hear, but, typically, in my experience, when you have a research track assessment, and you have independent eyes that are brought in to look at it, and you also have some participation of people that are familiar with either the fishery or the methods that are being used, you typically don't generate as many issues as it seems to me that we have generated here, and so that's why I'm a little bit concerned about the entire process. Forgive me if I'm stepping away from more than just our immediate terms of reference here. Thank you.

DR. NESSLAGE: No, that's fine, and I think it's appropriate to raise that question, or concern, and this is the first time we're going through a research track assessment, and so I'm sure there are some bugs that need to be ironed out, and I'm sure that the assessment team has feedback for those in charge of the process as well.

Some of this, I'm sure, is, if you ask ten different biologists, they will give you ten different answers, and I think, having the SSC being involved in the review, there might be things that we think of that the review panel might not, and it often depends on the composition of the review panel and who from the SSC ends up on that assessment, I guess, SEDAR team.

All of that put aside, the big question you're raising is, is this a concern about the research track process being thorough enough, I think is what I hear you saying. In other words, should the -- I guess what would the alternative be, Fred, and I will put it back in your court. Would the whole SSC get involved earlier? Is that what you were --

DR. SERCHUK: Well, we did have some members, and former members, of the SSC that were involved, people like Alexei and Marcel, and there were others that have been familiar with the process, and I am just a little bit concerned, because I have been involved in other arenas, where,

generally, when we have the research track assessment, typically, many of the issues that we have raised are not raised, but, again, we're dealing with -- Maybe we're dealing with a species, or a couple of species, here that have very different problems, and we have problems with the fishery-independent surveys being used in way, perhaps, from what I have heard, that may be problematic, and so on and so forth, and so there may be more nuances here, and so I accept that, but, again, I am just wondering.

Typically, what happens is we wouldn't get as many issues bubbling up that seem to me have bubbled up during our discussion so far, but that doesn't mean that the interventions haven't been useful or helpful, but there just seems to be a lot more than I would have expected from a research track endeavor. Thank you.

DR. NESSLAGE: Duly noted, and I think it's good though that we've had a chance to take a look at this and provide our feedback before the operational assessment begins, and hopefully some of these issues that have bubbled up can be addressed before we're asked to set an ABC off of a scamp assessment. Amy.

DR. SCHUELLER: I was just sort of thinking about what Fred just said, and so I guess my view of this situation is we're in a research track situation. I think the point of doing a research track assessment is to do the heavy lift of basically going from nothing to what I consider BSIA, and it's going from no assessment, we haven't looked at the data, to we've looked at all these data components, and we've done a ton of work, to at least have something in your hands that you could use.

I think the point of having it not used for management directly, and maybe I am overinterpreting the intent of this, but I would hope that we're going to use this to say, okay, for an operational assessment, here's some things that we would like to see, or like to look at, because there is definitely things with every single assessment, even when we did benchmarks, that I would like to look at, but we basically didn't have the opportunity, and I feel like this is an opportunity to say, hey, let's look at this, and it may solve the issue and it may not, and that's just sort of the way it goes. It's still BSIA, in my opinion, and is that the way we're approaching this? Am I misguided in that thought process?

DR. NESSLAGE: If you're asking me, I don't think so. I guess my take on it is that the research track assessment set out to address the TORs, right, and these are pretty, as you said, hefty. It's a hefty lift for this assessment, and they have done a large amount of work. I guess we have to decide is it ready, as-is, to go primetime for an operational assessment, or are these issues we've raised things that should be explored, or are they critical issues that we would not -- That, if you ran this with just the updated data, and nothing else really popped up, would we be willing to set a catch level recommendation off of it? I think, in my mind, giving the BSIA stamp of approval to this, unqualified, is different than -- We could give a qualified BSIA, and I don't know. Amy, is that addressing your --

DR. SCHUELLER: Sure. I mean, it seems like we need to have a larger discussion about that.

DR. NESSLAGE: I hear you. Fred Serchuk, your thoughts on that, or something else?

DR. SERCHUK: Well, my thoughts are that I would hope that we could spend a few minutes, Chair, looking at the comments on the assessment that have been provided in the document, because some of the issues that I think we raised are issues that have come up by the -- In the review itself, and so it's not as if some of these issues haven't been thought out by the research track participants themselves. Not all of them, but some of them.

DR. NESSLAGE: I agree, and I don't really want to do a review of the review. I think, if we reiterate some of the same comments, that will make it a stronger recommendation even, but, if there's anything that we feel we need to add to what they have already said, that's important as well. Go ahead, Anne.

MS. LANGE: I was on the review panel, and, to Fred's question, or sort of to his question, there were a couple of issues that were raised, and one of the things for the research track, for the CIEs, were to provide input on issues with the process, and there were a couple of things that came up, just very generally, and, again, Francesca did an excellent job of the entire assessment and presentations, but one of the things that came up was, relative to selectivity, was the fact that it's not a directed fishery.

One of the comments that came out of the CIE reviewers was that would have been really good to know from the start, and their approach, or their questions, relative to selectivity might have been different, and so I think that didn't come out until the last day of the review, and I think that may have -- It would have given Francesca more opportunity to address those types of questions, and, again, that's just part of this being the first research track, and so I don't know if that helps anything, but I think, again, it was related to the selectivity and sort of coming into the picture late.

DR. NESSLAGE: Thank you. That helps us understand the framework for the discussion. I appreciate that, and for your time on the review panel. Kathleen, do you want to shed some light on -- We're stuck a little maybe in process here.

MS. HOWINGTON: I was kind of hoping that I could. I was hearing that there might be a little bit of confusion as to exactly what's supposed to come out of a research track and what's supposed to come out with the follow-up operational. Ultimately, the goal of the research track is to build a robust assessment tool, and it's not necessarily for a species that hasn't been assessed prior, but it's to build a tool that we can then apply to multiple follow-up assessments afterwards.

The follow-up operational -- The goal of the follow-up operational is any departures from the approved research track should be rare and include only the most compelling recommendations made during the CIE or SSC reviews, and the follow-up operational should be completed within six months, or it may take a little bit longer to fine-tune the assessments, but it should be a relatively quick turnaround.

When you all are thinking about this assessment and the review workshop report, please keep that in mind, in that, this afternoon, we're going to be discussing the terms of reference for the follow-up operational, and those changes, if it's a large change, should be very compelling, and you should have really good reasoning for why it would deviate from the assessment report that has been released by SEDAR 68. Otherwise, it should be minor tweaks and just a data update, and that is the separation between the two. Does that clarify things for everyone a little?

DR. NESSLAGE: My follow-up question though, Kathleen, then is -- I'm not sure where we stand in the spectrum of small to large tweaks and BSIA, but, if the SSC didn't feel it was ready to use as an operational tool, as it currently stands, does that mean those changes would actually be made before the operational starts and we would see it again, or are we not -- This is the first time we're doing this, and so I recognize that you may not have a great answer, but, ultimately, we're the ones who would use the operational assessment, and so, if we're not completely comfortable with its performance at the moment, what would happen? What's the next step?

MS. HOWINGTON: I think the next step is that, during the terms of reference conversation that happens this afternoon, we need to discuss -- If you all are willing to use this base model -- Well, okay. When we go on to the terms of reference, it's going to be here's the base model that came out of the SEDAR 68 research track and what changes does the SSC want to see. Julie Neer is here. Okay. Thank you, Julie. The goal of the research track is ultimately to not have large base model changes. They should be minor, but, Julie, please tell me if I am saying this incorrectly.

DR. NESSLAGE: Julie, help us.

DR. NEER: Of course as soon as you get to something that I want to comment on, my internet went out. Sorry about that. The instruction that we were provided, and the steering committee actually just sort of chatted about this, as, again, this is the first time we're doing a research track, and the guidance we received was that, for the most part, research tracks are supposed to develop this big model, right, the tool, with all of these discussions, and Kathleen is correct that, if you guys are happy with the base model that's put forward before you, then the assumption is that the operational that follows will mainly be updating the data, perhaps a few questions that you guys might have, like we would like to see a sensitivity on this, or we would take a tweak and look at that, that sort of thing. If that is not the case, if you are not comfortable with this base model, the guidance we were provided with is then, instead of --

DR. NESSLAGE: Did we lose Julie again?

DR. COLLIER: Right in the sweet spot of things.

DR. NESSLAGE: Just when she was going to tell us what to do and save the day.

DR. NEER: -- directly to an operational with the terms of reference you guys put in today, which starts in January for this.

DR. NESSLAGE: Julie, you cut out.

DR. NEER: By doing so, it also sort of delays the overall process.

DR. COLLIER: Hold on, Julie. We lost you for about a minute there. You had just started talking about the --

MS. HOWINGTON: If you are unhappy with the base model run, then --

DR. NEER: Okay. If you're unhappy with the base model run, and you think it needs additional analysis, then what you guys are going to do, instead of going straight to terms of reference with

asking for a sensitivity here, or maybe a tweak there, plus additional data, you're going to turn it into more of a full-blown operational, which will be statement of work, with things you would like to have investigated, and then that becomes a negotiation, and we have to fit it into the schedule, because it's going to take more time than simply adding more data and putting it into the simple sort of update format, old update format, of just updating the data and asking for a sensitivity or two.

If you guys are not happy with the base model, you should say so. You should be very clear about what you would like to see, and then the Science Center and the council will have to figure out when we can make this happen with additional changes. That was the guidance that we were provided.

DR. NESSLAGE: Okay. That is super helpful. Thank you, Kathleen and Julie. Let's see what Katie has to say here.

DR. SIEGFRIED: I may not be needed, now that Julie chimed in. I guess I will just add one other thing, that it seems to me like a topical working group or two is warranted, based on what the SSC has commented so far. Like Amy commented, and Fred have commented, if we could get in and get our hands dirty in a few of those sections, it seems like progress can be made, and so I'm hearing a lot of consternation, like, oh, this isn't good enough to deem BSIA, but I didn't think that that's the place we were.

I thought we were at, okay, what else do we want to see, and then it's going to be re-reviewed by the SSC when the operational is complete, and so I wasn't as pessimistic about it, because I could identify a few topical working groups before we came into this presentation, and maybe creating a list of those would make it a little less daunting for everybody to know what we can cover.

DR. NESSLAGE: Right. I think where people are balking is that our very first question, or our second question, is does this represent BSIA, and there's the concern that, if you went with the model as it currently stands, there might be concerns later on, when the operational comes to us, but, if you're saying that, with some topical working groups, and a little massaging of the TORs, we can make this work, then that would, I think, be ideal for everyone, and so I'm not super pessimistic either, but let's see where the committee stands, given all that information. Let's go to Anne.

MS. LANGE: Back to the review workshop. As part of the report, there were some things that they suggested, or we suggested, be addressed, and I'm just going to read part of the paragraph. Prior to conducting the operational assessments, uncertainties in length and age composition over time need to be further investigated. It may also be useful to evaluate the effects of including yellowtail grouper and the larger, possibly unidentified, outlier fish on model fits to age and length comps. Longer-term, greater integration of -- Well, that's all that's important for here, and so I think that was something that was identified, and, again, possibly a topical workgroup would be appropriate.

DR. NESSLAGE: Excellent. Okay. I think we're coming together on some recommendations here, and perhaps the breakout group that is assigned to the first action item -- I am going to look to you guys to massage the wording a bit there, on how we address those. It's not going to be as straightforward as usual, but, if there are -- Maybe we can synchronize the recommended topical

working groups between those sections of the report, when we come back together, and so let's -- I think we're all circling around the same core issues, the review panel and the SSC, with possibly the addition of time-varying catchability in the survey and influence of the survey, but I think all of that can probably be addressed between now and the operational.

Does anyone have any major -- I don't know. I feel like it would be good to get some draft wording down, and then we can see if we're all converging around the same thought. I have a feeling we are, but maybe we're all a little concerned about how this will play out, and so maybe getting some draft wording down from the breakout groups, and then we can hash it out, would be good. Jeff, what are your thoughts?

DR. BUCKEL: Thanks, Genny. I just want to check with Katie on -- She mentioned, and I agree, that, because this isn't targeted, that some investigation into the changes in the fishery, and so what folks are targeting in recreational and commercial and how that might impact the size selectivity or catch of scamp, and, Katie, is there any group that is already tackling that, or that an additional thing that you feel is a tweak that should be added here?

DR. SIEGFRIED: The way that the CIE reviewers brought that up is in terms of that time block, and so I don't think that there was any investigation into maybe the way it affected anything but the selectivity time block, and so what I heard you just say could affect sort of going all the way back to the data phase and keeping that in mind when we do even our index standardization, but they weren't unhappy with any of that. It was just which years would we have maybe seen a change in targeting due to regulations in other fisheries.

We did have a comparison for the Gulf, and I know that Francesca looked a little bit into the management history. It would just take the analysts to maybe put together a matrix, so that we could show the SSC when those management changes happened in the snapper grouper fisheries as a whole. I don't think it's a lot more than what Francesca has already looked at with the management history.

DR. BUCKEL: Okay. That sound great, and so you see that as being rolled in with the selectivity workgroup?

DR. SIEGFRIED: Absolutely. It needs to be something that's done in order to figure out which years, if we have any information about years, and that would be -- The first principle would be, okay, we would just use those years, if we can see a direct effect. With the comp data, we weren't able to see the effect that we thought, and so we would need to look at those years again.

DR. BUCKEL: Thank you.

DR. NESSLAGE: All right. Well, this is an awkward time to be wrapping up this portion of the discussion. We can either go early to lunch and come back to breakout groups, or be hungry during our breakout groups, and possibly some people having more rushed lunches than others, and I'm not excited about the latter, and so, unless there is objection from staff for some reason, I'm actually thinking that we should break a little early for lunch and maybe consider reconvening with our breakout groups at -- Is 12:30 too early?



That would give us forty minutes for lunch, and then maybe reconvene as a group -- When we do a half-hour, it's too short. I am thinking 1:15 for the whole SSC reconvening after breakout groups. Does anyone object or have concerns about that? No hands. Okay. So the plan is everyone go have a nice break, and thank you to everyone for your comments and contributions so far, and meet in your breakout group at 12:30. Then we will reconvene as a group at 1:15. Sound good?

DR. SIEGFRIED: Madam Chair, I have a question. How would you like Francesca and I to participate? Should we wait until the group comes back as a whole, or do you want us to help in any group? What would you like?

DR. NESSLAGE: Well, everyone is welcome to join whatever group they would like. Unfortunately, there aren't three of you, and there is only two of you, but if you would like to pick each maybe one of the groups, in case there is questions, that would be great.

DR, SIEGFRIED: Okay. Sounds good.

DR. NESSLAGE: Feel free to join us.

DR. SCHMIDTKE: Katie and Francesca, I will send you the spreadsheet, so that you can access whichever working group, or breakout group, you would like to go to.

DR. NESSLAGE: The public is welcome to join us on any working group you would like to listen in on as well. We will not be taking public comment on those, but you'll have an opportunity to see the results of each of those breakout group discussions when we reconvene at 1:15, and so you won't miss a thing. All right, folks. Have a great lunch. Thank you.

(Whereupon, a recess was taken.)

DR. NESSLAGE: Let's start off with the first group, who was assigned review assessment, and I believe, Jared, you were the team leader there. Do you mind walking us through it?

DR. FLOWERS: I will just go through question-by-question, and so does the assessment address the TORs to the SSC's satisfaction, and our answer is -- There is a little bit nuance to what we wrote, but we generally thought the research track assessment addressed the majority of the TORs in-depth, but that some TORs cannot be fully addressed, due to lack of available information, and should be considered for future research recommendations.

The one we kind of looked at was TOR 7 of the data workshop, but that TOR involved ecosystem and climate effects that weren't addressed extensively, and so, just to kind of summarize in general, we thought most of the TORs were addressed, but there might have been a little bit of unevenness, depending on the TOR, and some of those are just due to lack of information about a particular aspect, but, even though like ecosystem and climate change effects weren't necessarily addressed, they may not be an issue too that's at the forefront, or relationships might not have been looked at, and so that information probably just isn't available, if that makes sense, with my rambling.

Then, as far as the BSIA, the assessment does represent the best scientific information available for the species. However, more work should be undertaken to address some of the areas of uncertainty within the assessment, and these are things that came up in discussion, including

selectivity of the video and trap surveys, some of the ageing and age and size structure questions, maturity, and the stock-recruit relationships.

Then, finally, are there any issues with the assessment configuration that would prevent it from providing stock status and supporting fishing level recommendations? We didn't think there are any issues that would prevent the assessment from providing status of fishing level recommendations, and so we were kind of concerned about some of the things that I mentioned in the BSIA, and we weren't sure exactly whether talking about some of these issues, some of these uncertainty or additional work, if that would be better in the BSIA section or here, or maybe further for research recommendations.

DR. NESSLAGE: Great. Thank you. I think, in our research recommendations group, we struggled with that a little bit as well, and some of what -- I wonder if maybe we should -- Maybe some of our wording could be borrowed up here too, and would you mind scrolling down? Sorry to go out of order, but it might give more on this topic.

We had come up with some language that basically said, in general, the SSC agreed with many of the review panel recommendations, and so that was -- Although this was kind of it -- It's kind of addressing a similar thing. Although the general outcomes may not change substantially, we suggest the following, and this was for research recommendations, but the idea was to reduce uncertainty, and so I guess what I'm saying is I wonder if, in your wording -- What I hear you saying is that, the group saying is that, in general, you thought the TORs were addressed and the tool, if you will, that has been developed, was BSIA, but perhaps there are additional refinements that would reduce uncertainty, and is that possible? Can we combine these two thoughts, or is that going astray from what you guys were thinking?

DR. FLOWERS: No, I think that was the general thought. I mean, we were overall happy with the effort. There are some loose ends that might help kind of tie it together and make it a stronger assessment.

DR. NESSLAGE: Good catch on the TORs there. That was a good observation, and you do say to address some areas of uncertainty within the assessment, and so we're hitting on that uncertainty topic again, right?

DR. FLOWERS: Yes. I mean, some of the specifics, we would probably kind of tweak, but, in general, that's the idea, that we generally think everything is -- We think it's a usable, good assessment, but just, like I said, there were some things that could make it better if there was a little bit more work.

DR. NESSLAGE: So the question is under Bullet 3, and maybe we can rehash this in a minute, but it's something that I would like to ask the group. I mean, if they do work on stock recruitment, and, perhaps, as they do some of these changes, they identify problems with estimating recruitment, and the stock-recruitment curve, our group discussed how that might cascade into the reference points, selection of reference points, and then, of course, all of the stock status and fishing level recommendations that fall out of that, and so I wonder if we want to massage that last bullet point there a little bit. I am looking folks for some wording, perhaps, or am I stepping outside the bounds of what -- Am I mishearing what the group was saying?

DR. FLOWERS: No. I think that's kind of what we were going for. Probably just some better wording would probably help.

DR. NESSLAGE: Maybe a caveat of, however -- Someone come to my rescue here. Fred Serchuk, come to my rescue, please.

DR. SERCHUK: Well, I will try my best. Actually, I think there's nothing wrong with the sentence, if you understand that, generally, any of the assessments that will be coming out in the operational assessment will provide information on stock status and fishing level recommendations. We don't expect, I think, or I don't expect, that they will be any different from the ones that came out of the assessment that we have in front of us, and that would be a surprise to me, but my feeling is that we don't believe that there would be any assessments that we would endorse that would not be able to provide stock status and fishing level recommendations.

DR. NESSLAGE: That's a good point. Okay. Thanks for that. Amy.

DR. SCHUELLER: I mean, I agree with what Fred just said. I think we need to work on some of the things that have been brought up throughout the notes in this document, but I think, regardless of the outcomes -- So, I mean, the outcomes can be that there is no change, or the outcome could be that there is some change to the base run, but I still think that this tool will be used for providing stock status and fishing level recommendations, and so maybe --

I don't know, and the wording on this is a little bit -- It says are there any issues with the assessment configuration, and the whole point of this, at least as what the SEDAR Steering Committee said, is, is this assessment tool capable of providing stock status and supporting fishing level recommendations, and so I guess I would say, yes, the tool, and there might be further refinement of the configuration, but it may or may not be further refinement of the configuration, which will be used to provide stock status and fishing level recommendations.

DR. NESSLAGE: Yes, and maybe add "tool" after "assessment" and then another statement that the exact configuration may or may not change during the operational assessment, noting the exact configuration may or may not change.

DR. SCHUELLER: I think we should say, but, it will still be used to provide stock status and fishing level recommendations. I want it to be very, very clear that that's where we're going, I guess.

DR. NESSLAGE: Did you hear that, Judd?

DR. CURTIS: Can you repeat that again, Amy?

DR. SCHUELLER: Just add -- So, it says the exact configuration may or may not change during the operational assessment, and I think we should say, but, or nonetheless, the final configuration will be used to provide stock status and fishing level recommendations. Just because we're not -- I look at all these assessments, and I will use my metaphor, I guess, that assessments are like gifts, right, pretty packages, but they all need their bow straightened, and this is like bow straightening work we're doing on this tool, if that makes sense.

DR. NESSLAGE: That does.

DR. CURTIS: Do you want to retain the first sentence in that bullet point there, because it does get a little redundant, or do you think that's acceptable?

DR. SCHUELLER: Sorry to jump in, but I feel like we should keep it, because it's two different things. It's talking about the tool versus the configuration.

MS. LANGE: I agree.

DR. NESSLAGE: All right. Good. Thank you, everyone. This is excellent. Any other -- I mean, we can come back to this at the very end, but, if there's anything else that is striking folks, that is popping out to you that, boy, something is missing, or you really disagree with what's up here, let me know, but, if I don't hear anything, we can move to the second group. Thank you, Jared and the first breakout group, for your hard work, as well as Fred and Amy and folks, for helping to refine the wording here. All right. I believe, Jie, you are our second group leader.

DR. CAO: Yes.

DR. NESSLAGE: Take it away.

DR. CAO: Sure. The first thing we talked about in our group meeting was selectivity, and so it's kind of a broad issue here. It's selectivity for the fishery and the trap index, and we basically discussed the potential mismatch and tradeoff between the age composition fits and the length composition fits, and so I think the current model basically chose age over length, but that might not be the best option, and so we think that needs to be acknowledged and that further exploration on that should be done, and so basically look at the tradeoff, given those two composition fits. I think that the wording here might need to be polished a bit more.

The second thing is with the retrospective pattern and potentially that it might indicate model misspecification, and then we talked about the impact of including yellowmouth in the complex. The next one is the use of the trap index in its present form, and so, basically, that the video and trap index be combined into one index, and that's a question that I think maybe perhaps needs to be looked into more.

Then further explore the possibility of time-varying catchability and selectivity, which could be in blocks, and we feel like a sensitivity run with selectivity using length data, instead of age data, should be explored. We also talked about the uncertainty in commercial landings and recreational landings, and I think I raised that issue that earlier, because I think the workshop -- The data workshop addressed the level of uncertainty associated with the commercial landings in the early years are higher than those in the recent years, but I don't think that's reflected in the current assessment. The last big uncertainty is the stock-recruitment relationship, basically the functional form, the choice of the stock-recruitment relationship, as well as the estimation of the steepness parameter.

DR. NESSLAGE: Excellent. Thank you. Now, do you think these are ordered in any -- Does the order reflect the group's concerns, or it was just throwing out ideas?

DR. CAO: It's not in order at all.

DR. NESSLAGE: Okay. I think it would help the council, and folks reading the report, if we at least -- It doesn't have to be a perfect order, but -- Well, hold on. You have more to report on, don't you?

DR. CAO: Yes, and I have two more bullet points.

DR. NESSLAGE: The next one changes a little bit. Do you mind holding off, and let's talk about this one first, before we change -- Unless you think it's important to hear the next section.

DR. CAO: No, and I think I can hold here.

DR. NESSLAGE: Okay. Amy, go ahead.

DR. SCHUELLER: I was just going to say that one of those things was changed into two bullets, and now it makes it less clear that those things were connected, and so there's a question, but then this further explore the possibility of time-varying catchability and/or selectivity, which could be in blocks, that's referring to the chevron trap and video index, and so we either need to combine those again or clarify that bullet, because it's not -- It says further explore, but it doesn't say what.

DR. CURTIS: That's my mistake, Amy. Jie, is that supposed to be all one bullet?

DR. CAO: Yes.

DR. SCHUELLER: Because it's all linked to sort of one holistic question about the treatment of those data to provide an index and how it's being used in the assessment and configured in the assessment. Thanks.

DR. CURTIS: Good catch. Thank you. That's been added as one point now.

DR. NESSLAGE: Excellent. Alexei, go ahead.

DR. SHAROV: These recommendations are all for the exploration prior to or during the operational assessment?

DR. NESSLAGE: Is that a question or a statement?

DR. SHAROV: No, this is a question, and I just want to understand whether --

DR. NESSLAGE: Yes, because we would need to really actually move these suggestions -- Reword this to probably move the suggestions down, if they aren't already covered under the -- They kind of are, and I think I would probably just massage them together with the actual research recommendations, because the concern is the treatment of the chevron trap video index data, right, and is it treated in the most ideal way, given the nature of the data, and then the suggestions would be moved onto the research recommendations, right, but I guess the group -- Alexei is asking the group if you're thinking about this for short-term, for the operational assessment, or long-term.

DR. SHAROV: I don't see the top of the document, and so I am -- I don't know whether this is just a list of research recommendations, or these are specific recommendations for the operational one.

DR. NESSLAGE: No, this isn't the research recommendations section, and so that's what I am saying, that we would have to move this down when we draft the final text.

DR. SHAROV: Depending on the function of when and how they're supposed to be addressed, sort of the order -- Like you mentioned, the order of these recommendations certainly should be changed, and some might even end up being addressed within a reasonable time. Like, for example, I agree that there was some retrospective pattern in the model, but the retrospective was -- Relative to most of the assessments that I have seen, it was very moderate, and I doubt that the actual reasons for that pattern will be identified, and so I would certainly consider this as a low priority, et cetera.

DR. NESSLAGE: Yes, and let me ask the group. Treatment of the chevron trap data, survey data, the SERFS data, and let's just call it that, was that -- There is a number of suggestions there. Did you think those needed to be done for the operational assessment or for long-term? Then we'll get back to the retro question.

DR. CAO: Genny, we haven't discussed that, in terms of short-term and long-term. I think, actually, Amy raised this point, if she wants to chime in.

DR. NESSLAGE: Amy, do you mind addressing that?

DR. SCHUELLER: Sure, and so, I mean, I will say a couple of things. One, this says list the uncertainties, and maybe we did go beyond listing and providing suggestions, but I think some of those could probably be rephrased to say that there is uncertainty related to catchability, or something like that. For myself, personally, addressing the fishery-independent index here is a -- I think it's a must-do before -- As one of those topical workgroups during the operational assessment, I guess, if that's how it's done, and I would see that being something that we should tackle.

DR. NESSLAGE: So my question back to you is the idea of combining the video and the trap is different than the time-varying catchability question and the -- You guys have three ideas there. Combining them is probably a longer-term thing.

DR. SCHUELLER: Sure. That's fine. I understand that. To me, it's like one holistic idea about uncertainty in that topic in general, and, like, how have they combined, and is it the most appropriate? Should we be fitting age or length or both comps, in order to estimate selectivity, and there is clearly some sort of break in the data that is occurring there, and I think that break, in particular, is what needs to be explored, and what should be done about it, if anything, for the operational assessment.

DR. NESSLAGE: Okay. Then why don't we -- This is all good stuff, and could we possibly just, as a placeholder, and we don't need to wordsmith it at this point, but just to get everyone's ideas down. If folks agree with Amy, then maybe, right at this bullet, you can just say something like, instead of use of uncertainty in the chevron trap and video index indices in their present form, and

then we can grab that other wording and bring it down and put them in with the research recommendations. Julie Neer.

DR. NEER: I just wanted to provide a bit of context and clarification on how the operational is going to work, because there seems to be some confusion, and, again, it's the first time we're doing this, but this operational, if you guys recommend a topical working group to look at combining the video and chevron trap index, as an example, that topical working group will focus only on that topic and make recommendations back to the analytic team.

There is no larger panel that is going to review all of these selections and changes and recommendations. There will just one or two topical working groups, however many you guys recommend and the Science Center agrees to handle, who will listen to your feedback, and they will make the decision to incorporate it or not, and then you will ultimately see the end product, and so I don't want you to think that we can explore this, and we can explore this, and we can explore this, and make decisions along the process before it finally comes to you. It is essentially an update with feedback from topical working groups on very specific, dedicated topics, and so I just wanted to make sure that everyone understands that, with regard to how you're making your recommendation of what needs to be looked at under this operational approach.

DR. NESSLAGE: So we need to really select the ones we think are the hottest topics.

DR. NEER: That is my point.

DR. NESSLAGE: All right, and so the other ones are going to have to get put in the long-term pool, is what you're saying to me.

DR. NEER: Or, if they're all terribly important, then, essentially, you're saying what is put in front of you is not currently ready to go, and we need to look at a bigger picture and a different long-term approach of how to address all of these things. I just wanted to make sure you understood how it's going to function.

DR. NESSLAGE: Right. That will help us focus as we do our report, which is long-term below, and so thank you. Amy, given that, do you -- If you can't have it all, then what do you think is the most important there?

DR. SCHUELLER: I don't know that you helped clarify things for me, Julie. Some of those things that I would consider would be important in a topical working group would be like -- Well, I have two that I think are the most important, and they are the chevron trap stuff, but then also the selectivity for the fisheries and the trap index.

I view those as being interrelated, and I also view the selectivity part of it as needing like feedback from the lead analyst, who would be working on the assessment, but, the way you just described it, it made it seem like that would not be how it worked, and I guess I am -- The way it was described was sort of you will look at data, or a topic, sort of in a vacuum, and then provide advice to the lead analyst, but I don't see how that's going to be very functional. Am I misunderstanding this?

DR. NESSLAGE: Julie, can you help us out?

DR. NEER: Sure. The way the topical working groups are designed, currently, is that we have a topic, and the topical working group, depending on what the topic is, may get together and have sort of a scoping call, we're calling it, where you would talk about what issues you want to look at, and you request analysis from whoever might need to do analysis, index providers, analytic team, whatever. They go and they do the work, and then they come back and they present at another second webinar for the topical working group that here's what we did, this is what you asked us to look at, here's what we've got, and what do you guys think.

You may get one additional webinar to talk about stuff, but, hopefully, it's no more than two or three webinars, and topical working groups are supposed to be focused on one specific thing. The topical working groups can also meet, sort of in an IPT approach, offline between the public webinars to talk about things, run things back and forth, have those communications, and brainstorm ideas between the working group and the analytic team, but it's not a full-blown panel that's looking at all the topics. It's not a whole bunch of people. It's a relatively small group of people, and it is focused on a very specific thing.

The bigger this gets, the more complicated it gets involved, and the farther away it gets from the intent of how topical working groups are supposed to function, and so, again, this is the first time we're doing this, and so, if these are not functioning in the way the group feels they need, that is a perfectly valid thing for you to provide feedback after the assessment as well, in terms of how this process is working. The topical working groups are expanding rapidly, and becoming quite cumbersome, and that was not the intent of the Science Center when it was put in place, and so feedback on that is welcome as well. I am merely telling you how I am being directed that these are supposed to operate.

DR. NESSLAGE: Understood, and thank you. Did that answer your question, Amy? Let's start with that.

DR. SCHUELLER: Yes, it does. I mean, it sounds like there can be some requests to the analytical team, and then some feedback, and then I think that the topical working groups for this are going to need that.

DR. NESSLAGE: Okay. Alexei, your thoughts?

DR. SHAROV: I lowered my hand. Thank you.

DR. NESSLAGE: Okay. Thanks. Well, what I would like to do is get all of our thoughts down on paper here, that we all agree on the major issues, and then we can hash out whether we think these absolutely need to be done, which ones absolutely need to be done to this tool, before we would use it to set catch level recommendations, and, if we think there's too many, then we might have to make the hard decision, but let's see what all ends up on the table.

Judd, do you mind, just for my edification, so I don't forget later, the use of the chevron trap index -- Just, at the very beginning, say something like uncertainty in treatment of the chevron trap index, or SERFS index, and then let's grab everything from "should" down to the end of that section, paragraph, there, and let's bring that down, if we could, to the research recommendations, and we can hash it out down there. Some of them are duplicate with what the Group 3 had come up with,



and some of them aren't, and so this is good stuff, but it's just that we may have to hash it out later. As a placeholder, if you just stick in there somewhere, and we can figure out where to put it when we get to that section. Thank you.

Okay. If we could go back up to the uncertainties list, then let's just focus not on what needs to be done short versus long-term, but what are the major factors influencing assessment uncertainty, and is there anything that this group missed? Let's start with that. That you don't see on the list that you think that should be up there that's a big deal.

I am not seeing any hands. Then it would be helpful if we could order these. I feel like some of the really important ones are at the bottom, which implies, even if it wasn't meant to imply that, that they're less important, and so I would entertain some suggestions for what -- Even though we weren't asked to prioritize, I think it would be important if we did. We talked a lot about recruitment and estimation of steepness, and I feel like that one should be higher up. Would anyone disagree with that?

Then there is the selectivity issue is high up, as well as the uncertainty in the treatment of the chevron index, or the SERFS index, SERFS survey data. I would think, out of what you guys described, those came in as being the most frequently-discussed issues, but if you disagree -- If you could grab the selection of recruitment functional form, the last one, and make it -- Let's just say the first for now, unless people disagree with me. Grab that one and bring it up under either under or above selectivity.

The retrospective patterns one, we didn't really talk about it much, and Alexei raised the question of whether there was really significant, unusually significant, retro. Does anyone on that working group want to elaborate on what you guys were thinking? Dustin.

MR. ADDIS: I was the one that brought that up. I read it in the review panel report. I also looked at the -- I guess it was the biomass ratios and the F ratios, and they look to be more apparent in the F ratios, but, yes, when you see a retrospective pattern, that is significant. I believe the Mohn's Rho was significant. It can indicate model misspecification.

DR. NESSLAGE: Okay. Let's get those thoughts down, unless others disagree. Francesca, would you like to address that too, while we're thinking about that?

DR. FORRESTAL: Yes, definitely. I need to re-read the review report, but I don't think the Mohn's Rho showed a concerning retrospective pattern for either the SSB or the fishing mortality. There isn't really an accepted rule-of-thumb for the fishing mortality Mohn's Rho value from there Hurtado-Ferro paper, and it's more focused on SSB, but both values fell within the range that has been seen of not having retrospective pattern.

DR. NESSLAGE: But you're talking about the actual estimates of SSB and F, and he's talking about, I assume, the F to FMSY and B to BMSY ratios, and is that right, Dustin?

MR. ADDIS: Yes, and there was just a visual evident pattern, and that's all. If it's not -- If everybody agrees that it's not a big deal, then --

DR. NESSLAGE: No, no. I just want to -- Maybe we could pull it up. I am trying to frantically look for what you're talking about, so that folks can see, because the two plots that Francesca showed were the straight up F and SSB.

DR. CURTIS: Francesca, do you have that handy, or do you want me to pull that up here on my end?

DR. FORRESTAL: I have it handy, if you want me to --

DR. CURTIS: It's probably easier for me to pull it up on my end, Francesca, if you just direct me to what page it was on.

DR. SHAROV: It's 88 in the PowerPoint.

DR. NESSLAGE: But that's the totals, Alexei, right, and not the ratios. I am looking for the ratios.

DR. SHAROV: Not the ratios, no.

DR. NESSLAGE: Where did you see that, Dustin?

MR. ADDIS: It looks like it's Figure 44 in the assessment report. Really, I brought this up because it was in the review panel report, and I just thought that it needed to be reiterated, I guess.

DR. NESSLAGE: I see it in the F ratio, and the SSB doesn't look as bad.

DR. COLLIER: Judd, it's page 308 of the PDF of the assessment report.

DR. NESSLAGE: What you're saying then, Dustin, is that might impact stock status, right, uncertainty in stock status in particular?

MR. ADDIS: It may or may not. It looks like it might be a random pattern. I guess, when you see a non-random pattern, that's more concerning, but this one does have a random pattern to it, which is better, and so maybe it's not a big thing to put in our report. I don't know.

DR. NESSLAGE: Don't apologize. I appreciate you bringing this up.

DR. COLLIER: Judd, I'm going to take control of the screen for just a second, so you can get some of that stuff adjusted. Is that all right?

DR. CURTIS: Please do. I'm having some memory issues.

DR. NESSLAGE: Sorry to put you guys on the spot, pulling up the -- There we go. Great. If you can just scroll down a little, not to be picky, but there we go. Now we can see it all. Thanks. Alexei, go ahead.

DR. SHAROV: I was not suggesting to remove it. I only spoke of sort of the order of importance and the potential influences on the assessment results, and so it's just that my suggestion was for it to be in the second-half of the recommendations, rather than on the top.

DR. NESSLAGE: That's good. Thank you for clarifying. Dustin, how would you feel about that? Would you mind if it's there, but maybe at the bottom of the list?

MR. ADDIS: That's perfectly okay. Thanks.

DR. NESSLAGE: How do others feel? Does anyone disagree with that suggestion? All right. Sorry, staff. I guess we have to pull up the list again. I don't know if Judd's computer can handle our craziness.

DR. COLLIER: I think it can. Judd, are you ready for it to come back to you?

DR. CURTIS: I am ready, if you want to relinquish command.

DR. NESSLAGE: Let's just add -- If you don't mind, Dustin, I think it's important that we highlight that it's primarily in the F ratios there, which could impact -- Could impact stock status, and we don't know what's going to happen with the final operational, right, but that's important for folks to know. Okay. How do folks feel about where that sits relative to the yellowmouth being in the complex and the uncertainty in commercial and recreational landings? I feel like some of those concerns might -- Do I recall -- I just want to make sure that we're getting the rationale down.

For the uncertainty in the landings, that has to do with the fact that this isn't a targeted species, right, and, because of that, in addition to the economic situation that could have impacted the lower landings, and am I capturing that correctly, and do we need to make that distinction? I will look to whoever suggested this.

DR. BUCKEL: Genny, I brought up the -- I was curious if there had been discussion, in the data workshop or others, about the larger decrease in recreational landings relative to commercial landings and if there was an explanation for that. Chris brought up that the first initial drop was around the time of the economic downturn, but effort has continued to go up in recreational fishing in general, and so the fact that the landings had such a sharp decrease -- I was just curious as to why that was.

It may be that, as Amy mentioned, or it was Katie that mentioned the targeting the difference species led to the scamp weren't available when they're targeting, or making a change in the species that were targeted, and so that was something that would be looked into with this selectivity group.

DR. NESSLAGE: Okay. Thank you for clarifying. Anne, go ahead.

MS. LANGE: Also, the review workshop indicated there were concerns relative to the commercial and recreational landings having assigned CVs, as opposed to calculated ones, and, also, in the converting of the recreational landings from numbers to weight, and so it wasn't just the economic

issue from before. It was relative to the actual data and not to why there was a spike in one year. It was more than that.

DR. NESSLAGE: Okay, and so can we maybe add incorporation of CVs, converting number to weight, et cetera?

DR. BUCKEL: Change in target species.

DR. NESSLAGE: Yes. Just add to that parenthetical phrase there, if you would, under uncertainty. The incorporation of provided CVs, change in targeting, and we can massage the wording later in the report, but I just want to get the ideas down. Changes in targeting, or potential changes in targeting.

DR. CURTIS: Does that capture it, Genny, for now? We can wordsmith it later.

DR. NESSLAGE: Yes, that's good. We're just getting the ideas down. Thank you. Okay. We may have beaten this section to death. Is there anything else that you want to see up here that isn't up here, or you're upset that you see something up here that you don't think should be? Then raise your hand now. Fred Serchuk, go ahead.

DR. SERCHUK: Just an observation, Chair. I mean, I think we've done a good job on this section, but it looks like, to me, we're not certain about very many things, and I think it could be read that way. We're uncertain in the indices, and we're uncertain in the commercial landings, and we're uncertain in the recreational landings.

We have retrospective patterns and selectivity problems, and all I'm suggesting is that we don't want to be in the position where, in characterizing uncertainty and highlighting so much of the uncertainty, that it looks like we know nothing. I am just afraid that that could be construed here, and so, while I appreciate everyone's interventions here and pointing out the areas that we don't know for certain, it looks like it could be interpreted that we know very little, and I don't think that's the case, and so food for thought, and that's all. Thank you.

DR. NESSLAGE: Yes, and we never get asked what do you really think is great about this assessment. All right. Duly noted. We'll see what we can do, and I look to you, Fred, to provide some language in the draft report to help massage this section, but we should probably move on. Let's go to the next section. Jie, do you mind working us through this? Chip, did you have something?

DR. COLLIER: I was just going to say, in that section, it does say to qualitatively describe these pieces of uncertainty, and there is not much indication on whether these are high -- They could have a high influence on the assessment uncertainty, moderate, or low. I think we have asked those questions in the past, or ask you to rank these, in terms of relative importance, and I think, if you give that idea of high, moderate, low, that could be addressing some of Fred's points, where you guys might think these are of low influence, but it might be good to put in there at some point.

DR. NESSLAGE: All of these could have a huge impact on assessment uncertainty, and I don't think we know. Fred, what do you think?

DR. SERCHUK: I am just trying to be a little bit of a gadfly here, Chair, because what happens is Andy Rosenberg, who used to be the regional director many years back in the Northeast, published an article, and I believe it was in *Bioscience*, called “Fishing for Uncertainty”, and the gist of that article was that scientists tend to try to parameterize their uncertainties, because every estimation procedure has an uncertainty, but, to the people that are not familiar with the scientific process, it looks like we can give the impression that we’re never certain about anything, and I was just trying to put this into perspective, in terms of are these uncertainties very problematic, so they will affect the assessment configuration, or not.

After all, we just went through an external peer review of a research track assessment, and this is what was provided, and that should be a very rigorous process, and so, while I agree that there are still uncertainties, and there are still problems in retrospective patterns, I think the idea of maybe qualifying these a bit more, in terms of do we really feel that the modeling effort is way off because of these things.

DR. NESSLAGE: But don’t our previous statements that we think it’s pretty much ready to be used be a glowing support of that?

DR. SERCHUK: Maybe they do, and maybe you have to read this section in terms of the section that went before, and that’s all, Chair.

DR. NESSLAGE: Yes, and some of this is in my nuance, and I can try to be more nuanced in my presentation at the council too, and it helps that way. Okay. Let’s see what Amy has to say to that, or some other idea.

DR. SCHUELLER: I was just going to say that I know this says qualitatively characterize the influence on assessment uncertainty that Chip brought up, but, in the next one, it says to list the potential consequences, and the group basically took care to say that these impacts won’t be known until they have been addressed in the analyses.

Some of these are hard to deduce, and like I could guess, but that doesn’t necessarily mean that’s going to be how it works out, and so, I mean, I think we’re acknowledging that we’re not sure, in that next section, about how important or how much this will even have an impact. For example, the selectivity questions, in general, clearly the review workshop keyed in on that topic, and we have keyed in on it too, and we’re not sure whether we can change things to address some of those issues or not. Therefore, we’re not sure if we even know what the impact is, because it could be nothing, and it could be giant, and so I don’t know. Sometimes these questions are hard, because there isn’t a straightforward yes/no type of statement.

DR. NESSLAGE: Well said. Okay. I would like to -- I don’t know, and I’m -- I think this breakout group said it well, in that you won’t know how big of an impact until you actually start to look at this and kick the tires on that particular issue. Unless the rest of the SSC disagrees with this breakout group and that next recommendation, or statement, I should say, I think we should keep moving. I am not hearing screams of protest, and so let’s keep going, if we could. Jie, do you want to wrap up this section here for us, please?

DR. CAO: Sure. I think, for the last bullet point, I think the group thinks that, yes, the methods are consistent with SSC expectations and given that the assessment team provided sensitivity analyses, retrospective analyses, and jitter analyses and MCBE.

DR. NESSLAGE: Great. Does anyone disagree with that statement? Does that represent the SSC's opinion? Okay. I will leave it open, and we kind of sort of talked about the one above it, but, if anyone disagrees, this is the time, and then we can go into research recommendations. I am not seeing any hands, and so let's keep moving here.

I was the rapporteur for this, and so the first thing we were asked to look at were the research recommendations included in the report, and, basically, the ones that were in the assessment report, the breakout group thought that all of those were fine, but they were all long-term, which is good, and there is definitely a need for those as well, and we thought -- Although the SSC didn't talk about it, our read on it was that these all seemed like good recommendations.

Then we talked about the review panel recommendations, and, after scanning those, we thought they seemed reasonable as well, with the possible exception that there was a suggestion to consider borrowing length and age comps from the Gulf of Mexico to address poorly-sampled strata in the South Atlantic, and that one rubbed us a little wrong, and we weren't sure why you would do that, and that might not be the best approach to our South Atlantic assessment, and so we just wanted to put that on the record, but, if there's anyone on the SSC who disagrees with our breakout group on any of these points, feel free to speak up, because we didn't really talk about the suggested research recommendations all that much during Francesca's talk. Okay. Not too controversial.

Then let's move to the controversial section. Let's go down a little bit, if we could. This is the section where we're to provide any additional research recommendations that the SSC thinks will improve the operational assessment and then future stock assessments, and so we broke this into short-term and long-term, and we kind of, after some discussion, added this general statement, to kind of help the council understand what to expect, and we were basically saying that, while we don't expect the overall outcomes to change substantially, we thought that the following short-term recommendations for finalizing the assessment tool might help reduce uncertainty in the operational assessment.

These, just so you all know, will probably, if you agree with this list, will end up informing the next agenda item, which is the statement of work for the operational assessment, and so pay particular attention to these, and, if we need to merge or add the ones that the second breakout group suggested, that we pasted below into this, we can, but the first one we had for short-term research recommendations was to examine change over time in the length and age comps, determine what is influencing likelihood the most, assess impacts of chevron age comps, and break the negative loglikelihood length and ages into different components, to see what's going on there.

We mentioned that they needed to address mismatch in the length and age comps, and that could probably be combined with above, and then we also noted the stock-recruitment curve overestimates recruitment at low stock sizes, and vice versa, and so steepness may not be appropriately defined, and we suggested that they examine alternative ways to estimate recruitment without a stock-recruitment curve, which we discussed had implications on what reference points might be selected or used.

Then we talked about the random walk on the A50 selectivity parameter and examining multispecies targeting impacts on selectivity, and then we had some more specific suggestions for what sensitivities they might want to consider, like dropping length comps from the model, excluding the chevron trap age comps, and determining its influence on the model and exploring time-varying catchability or catchability blocks in the chevron trap index.

It looks like -- Well, I guess I will just finish up then with the long-term ones, and, basically, we looked through most of the long-term suggestions that folks talked about were really enhanced data collection for this species, and it could benefit from that, in general, as well as the generation of length data from the video component of the SERFS survey. Recognizing that we need to massage in Group 2's bits there, let's see what comments the SSC has on what we came up with. Does anyone disagree with anything that's on the screen or want to see something added? Wow. Great. Okay. No hands.

Let's see if we can massage in Group 2's here. The idea of whether the video and chevron trap index should be combined is something that could go up -- Then, Amy, where does that go, short or long-term, and, if you have other comments, please --

DR. SCHUELLER: I think the bulk of Group 2's suggestions regarding time-varying catchability, or selectivity, and blocks and a sensitivity run using length data for the chevron trap are included in the sensitivity list that is above, and so that can probably be dropped, and so the first part, should the video and chevron trap index be combined into one index, is probably a long-term thing for the assessment to think about, if those other things are up in the top of the -- I mean, they're already included above.

DR. NESSLAGE: Yes.

DR. SCHUELLER: So my question was Number 2, determine what is influencing likelihood the most, assess the impact of the chevron trap age comps, break negative loglikelihood length and ages into different components, we were all present for that discussion, but I think it's a little ambiguous what that means, and so I think it's determine what is influencing the likelihood with respect to the estimation of the selectivity for the fisheries, was what I was getting at and interested in, because I hope it's the fishery age and length compositions and not the chevron trap age and length compositions. Anyway, I just think that Number 2 needs to be a more specific.

DR. NESSLAGE: Okay. Help Judd with the wording then, please.

DR. SCHUELLER: Determine what is influencing likelihood the most for the likelihood profiles for the fishery selectivity parameters, and then I think the rest of it is fine. We basically want to see if the chevron trap age and length compositions are providing information for that or not.

DR. NESSLAGE: Great. Then, Judd, do you mind, at the very bottom, bring that -- Take that one and make it a bullet under the long-term, and then so maybe should the video -- Let's just say explore a combination of or alternatives treatments of, something along those lines. Are folks okay with that? You can get rid of the bullet below it then. I think that's what Amy was saying. Wilson, go for it.

DR. LANEY: Thank you, Madam Chairman. It strikes me that, given that the first group identified TOR Number 7 as not having sufficient information, that we might want to prepare a complementary research recommendation here to address that shortfall.

DR. NESSLAGE: Good catch. I would assume that would be long-term that you're suggesting and not the --

DR. LANEY: Yes, ma'am. I think long term would be appropriate, and we'll hear from Lauren tomorrow, unless she wants to weigh-in now, about whether -- I can't remember, and I think scamp is already in the model, but it seems to me that we didn't have a tremendous amount of scamp data., and so I think long-term would certainly be the appropriate place to include a research recommendation to delve into the species interactions, climate vulnerability, et cetera, et cetera.

DR. NESSLAGE: All right. That would complement our first part of this report. Thank you. Amy.

DR. SCHUELLER: Where we have A, B, C, I think a D needs to be added that says to explore time-varying selectivity, or blocks in selectivity, in the chevron trap index, and so one piece of it was catchability and one is selectivity.

DR. NESSLAGE: Thank you. Other folks? Are things missing? Are things not clear? Do you disagree with anything that's up here? While you're thinking, let's hear from Chip.

DR. COLLIER: Lauren said that scamp is in the model, although it could certainly use more data, just to follow-up on Wilson's comment, but, to follow back up on what Julie Neer had talked about earlier, in order to do the operational assessment in 2022, it really needs to come pretty streamlined. A list of five topical working groups is going to be a bit of a challenge, with four additional sensitivities, and so I would say begin considering your top one or two, and maybe those sensitivities could all be done as well, but, looking at this list, this is longer than most normal assessments that we get, as far as things that need to be done, in order for the next assessment.

DR. NESSLAGE: I think, if I were to summarize what I'm hearing the SSC say, it's that we don't want to hold things up, but some of these things really should be looked at before it's used to set catch level recommendations. Am I mischaracterizing folks' opinion on this? Now we're into the discussion of, if we can't cover all of this in one or two small topical working groups, do we need to change our ultimate recommendation on whether this is ready as a tool? This is a hard thing to say, given how much work has gone into this, and we recognize it, and it's been excellent work. While you're thinking on that, Kathleen, go ahead.

MS. HOWINGTON: Don't forgot that these don't necessarily need to all have topical working groups. If you think that this is something that the Science Center can just do in the background and that you trust them to then bring you a report, then that doesn't necessarily require a topical working group.

For example, we're not going to have a topical working group for adding in the additional years of data. We're trusting that the Science Center can go and add the additional 2017 through 2020 years of data, and so there is no topical working group scheduled for that, but that's a term of reference that I have put on the draft, and so keep that in mind, of which ones do you think



absolutely need a group of people, a small group of people, to look at this subject and which ones of these do we think that the Science Center can actually examine on their own, and I assume that Erik is going to say something akin to that, but keep that in mind, that those are going to be two things that I bring up when we get to the operational part as well.

DR. NESSLAGE: So what you're saying -- Let me reiterate, to make sure I understand, and it's that we could skip the topical working groups and just say, Center, please address these issues before you --

MS. HOWINGTON: If you do not think that a topical working group needs to be convened to address some of these topics, then, yes, you can just make it a term of reference, like you would back in the day when we had updates. You gave terms of reference to the Science Center and said please address these and just submit it in the assessment report, and it's the same idea.

DR. NESSLAGE: Okay. That helps. All right. Let's see what Erik has to add. Erik.

DR. WILLIAMS: Well, Kathleen was right, and she covered a lot of what I was going to say, but I would say one thing that hasn't been figured out is who decided whether we need a topical working group or not, and that sort of can be a -- I mean, part of it we might need them, because the SSC desires the sort of review and transparency that comes with that, and part of it is also going to probably depend on, as Kathleen alluded to, workload and negotiation with the Southeast Science Center on what we can do and what we can't do.

What I would say to you guys is don't take anything off of your list. I would say, rather, be inclusive, and let's try to work through, and I say -- That's where I get back to who decided whether we have topical working groups specifically for specific topics, and I don't know. That's sort of a process that just sort of happens somehow, but, yes, I would say lean on the side of making sure that you include everything, and we'll try to fit it in, I guess is the best answer.

DR. NESSLAGE: Don't we -- As I recall, we make suggestions about what the topical working groups should be, and you can always ignore them, if you think they can be handled internally, right, and is that kind of how it was working in the past, the recent past?

DR. WILLIAMS: Yes, and, I mean, I don't want to push things either, and I think the original idea was that the operational assessments were primarily a Center-driven process, and so, really - - I don't want to take over, because I can recognize the need for topical working groups, but, on one end of that spectrum, you could just totally leave it to the Center, and we'll definitely work it out. We'll figure out what we need and what we don't need and what we can get done and what we can't, but I know that that's not, ideally, the way we want this process to necessarily work.

MS. HOWINGTON: I might be able to elucidate a little bit on kind of what the procedure is going to be, if you're okay with that, Genny, or do you want to talk about this later?

DR. NESSLAGE: No, I think, because if we're going to -- If we have to come up with key things, we need to know now, and so, yes, go for it.

MS. HOWINGTON: Okay. So, after this, after we come up with this list, I am going to pull up my draft terms of reference, and you all are going to be giving me feedback on those, and we're

going to be adding these suggestions into that, and I'm going to ask what terms of reference do you think need to just be sent to the Science Center, what terms of reference do you think need a topical working group.

That draft is then going to be sent to the Science Center, saying, hey guys, what do you think, and negotiations are going to occur. I'm assuming, and this is going to be, and I am going to reference Julie Neer and double-check that I am correct, between the Science Center and council staff to make certain that the output of the operational assessment is okay by both, and then that will then go to the council for final approval, and so, Julie, did I get any of that wrong?

DR. NEER: No, Kathleen, and you're correct. The normal process is a little bit more drawn out, but the process, in general, does usually do a statement of work, and you suggest what topical working groups you think you would like to need, what topics you want included in the operational assessment, and there's negotiation and discussion with the Science Center on what can be accomplished.

That goes -- It works its way through the chain, and it goes to the council staff, and it goes to the council for approval, and then you may or may not see it again, depending on how the timing works out, and this is a little bit more of a compressed schedule, but we still need to have those communications between what you guys would like to see, what the Science Center thinks is doable in the timeframe they have, and I agree with Erik.

I would prioritize, but not necessarily take things off your list, because we do want your understanding of these are the things that we think need to be done, and then those communications and discussions and negotiations between the Science Center and the council will be how much can get done, and it will determine whether it can still be done in the timeframe of getting it finished in 2022, if it's going to take longer, if some of those things perhaps don't need a topical working group,

I agree that you should definitely put forward all of your concerns and requests, but just make sure that they're in a list that you guys agree to, because some things might not happen this time, and they might happen later, that sort of thing, so that you're clearly communicating the importance - - What you feel is more important of this list of information, and, like Erik said, they will do the best they can in the time that we have available to get this work done.

MS. HOWINGTON: Don't forget that, the next operational assessment with scamp, I'm going to be sending to Judd, or whoever is in charge of the SSC, these terms of reference and the old statements of work, and so making certain that we have on the record exactly what you all are thinking at this time will help, in the future, in informing us then.

DR. NESSLAGE: All right. Okay. Thank you. Judd, do me a favor, if you could, and I have my own personal note in there to include in the statement of work in the next -- Can you take the bits with the asterisk out above, under -- You've got it. That was just a note to myself, and I don't want to confuse people, and that's not saying that these will definitely be in a statement of work.

What I would like to do is make sure that the SSC gives some feedback on the ordering of these short-term recommendations, prioritizing them, because we can make whatever suggestions we want in the next agenda item, but, really, what we suggest as top priority will help with the whole

process and be more likely to be addressed than ones at the bottom of the list, if they can't get to it all. I heard a -- I'm going to go out on a limb, and I feel like the two big issues were currently Number 2 and Number 4. Am I wrong? I will throw that out to get the juices flowing here. If folks disagree, this is the -- I am wide open, but this is what I thought I heard you talking the most about. Then let's -- If no one disagrees with that, would you mind pulling 2 and 4 up to be the top candidates there? Thank you, Judd. Change over time in the length and age comps, I feel like maybe that -- Do you guys think that should be at the bottom of the list? Amy, help me out.

DR. SCHUELLER: I agree with 2 and 4 being moved up, as they are. I think like 3, unless I am thinking about this in the wrong way, is sort of a sub-part of what is now 1, and so is 4. I mean, those are both statements that were made with respect to figuring out what to do with the length and age compositions to address sort of this mismatch issue, time block issue, with selectivity, if that makes sense, and 5 really is too, right? That was a reviewer recommendation from the review workshop, and those are all sort of couched under two broad topics, or, really, the one broad topic.

DR. NESSLAGE: I like where you're going, is changing like -- At the beginning of Number 1, say something along the lines of like examine impact of model and data configuration on selectivity and then have -- Yes, exactly, sub-bullets.

DR. SCHUELLER: Yes.

DR. NESSLAGE: There we go. We're getting there.

DR. SCHUELLER: Some of those sensitivities that we've suggested below are trying to get at that question, the selectivity, the catchability, the compositions, and all of those are just sensitivities where we're trying to basically get at what's going in for Number 1.

DR. NESSLAGE: Maybe we can move those up too, to elaborate. I like that. Wally.

DR. BUBLEY: With Number 1, we're basically just discussing the chevron trap, right, and that's correct, for the most part?

DR. SCHUELLER: I think it's all the selectivities. Sorry to cut in.

DR. BUBLEY: No, that's fine, and I was looking for anybody to answer, and that's fine, because, I mean, I was thinking of moving, potentially, that second sentence to the top, but, if you're looking at all the different selectivities, then that doesn't make as much sense.

DR. SCHUELLER: I mean, that break, the negative loglikelihood length and ages, into different components was specifically to look at which ones of those, fishery versus index, are informing which of the selectivity parameters, and so, to me, it's all of it, all of the selectivities.

DR. BUBLEY: Okay. I mean, I know we kept coming back to age comps for the chevron trap, because that was -- The concern was that was having kind of an outsized effect on everything else, and so that was the only thought process that I had of moving that one up, but that's fine.

DR. NESSLAGE: Maybe, to clarify -- See if this works, Wally and Amy, but, Judd, can we change it from the -- Once you're done moving stuff there.

DR. CURTIS: I'm not sure where you all want me to move this sentence to. Is this what you envision here, having these all as seven bullet points underneath the new Number 1?

DR. NESSLAGE: I think, with some wordsmithing, yes, but I think it will be -- I can do this offline, and you can edit, when you get the draft report, but it will be a general statement about examining what is influencing selectivity, both fishery and index selectivity, in the model, and then there will be various sub-components to that. Are folks comfortable with that? All right. I am not hearing any arguments. Okay. Amy, go ahead.

DR. SCHUELLER: I was just going to say that I am comfortable with it. I think this solidifies this into the like the two main points that the discussions all day today have been about.

DR. NESSLAGE: We did it. Thank you, crew.

DR. SCHUELLER: I would also like to say that I think the second one is important, given that this topic is an important topic within the SSC and that we have a workgroup working on recruitment projections, and so I hope that, when this goes to the Center, and not that I can speak for them, but they would recognize that both of these pieces are pretty darned important.

DR. NESSLAGE: Well said. All right. I feel like, even though the wording is not perfect, we will get it there with the report, and we've got the ideas down. Does anyone disagree? No hands. All right. Thank you. That was hard, but good and productive, or at least I believe, and I hope that Francesca and Katie and the rest of the crew, all the folks from the SSC who served on this, aren't horrified, because I think you all did a fabulous job.

I think this SSC, even though we have provided a lot of feedback, really appreciated all the work that you put into this. This species is getting a lot of attention here, and you all have done a lot of great work, and we thank you for that. I think that wraps up this agenda item. Is there anything that I am forgetting, staff? No? Okay. Then I don't know about all of you, but I could use a short biological break, and then perhaps, Kathleen, when we get back, we could hit Agenda Item Number 4 and keep rolling on scamp, while we have that momentum and before we forget all of these things that we just discussed. If it's possible, could we take a ten-minute break and come back around 2:52? We will pick up with Agenda Item Number 4. Thank you, all.

(Whereupon, a recess was taken.)

DR. NESSLAGE: Let's keep rolling. We're on to Agenda Item 4, more scamp. This is planning for the operational assessment now, and so this is going to be a smooth transition. Check out Attachments 4a and 4b, and Kathleen is going to work her magic and walk us through this.

### **SEDAR 68: ATLANTIC SCAMP OPERATIONAL ASSESSMENT**

MS. HOWINGTON: Exactly. I do want to say that we're going to go over 4b first and then 4a. Sorry that's opposite, but that's going to be the order that we do these things, and then, while we are going through this process, I am going to be asking you for input of the content of these documents, but, additionally, I want you all to be thinking about the procedure that I went through

to make them, and so I'm going to give you a little bit a spiel. The good thing is the spiel got really, really short, because you all have asked a lot of questions about operational and research tracks, and so good job.

Right now, it's just going to be the spiel about how I created these terms of reference, and so, when I first started kind of trying to tackle this, I was going through what you all would need to be able to quickly create a terms of reference for an operational that was going to be happening really quickly and needed to go to the council pretty fast.

I didn't want to give you guys a draft terms of reference that would be generic and wouldn't be updated with the times, but simultaneously, you all always come up with something else to talk about and something new that I can't guess about, and so I wanted to be able to have like basically a living document that is going to be the generic draft terms of reference, and so this is what I came up with.

I went through the last three operational assessment terms of reference that you all have created, and I combined them into this one document, and, if you all like how this looks, then that will be what I will do every single time. Whenever a research track is ending, I look at the past three operational assessments, and I create a term of reference for you all to build off of, with the understanding that like, for example, here, TOR Number 6 was specifically in the red grouper and the blueline tilefish terms of reference, and it was not in vermilion snapper.

It might be that you all look at that and say that has nothing to do with scamp and delete it, and that is perfectly acceptable. You can tell me to do that no matter what. If it doesn't have a specific species after it, then that means that that term of reference was in one, two, and three, vermilion snapper, red grouper, and blueline tilefish, and so that's how this was built, and that's why you see these here, and it says specific to red grouper and blueline tile, specific to red grouper, and then, at the very end, after going through, and so keep this in mind while we're deleting terms of reference and wordsmithing and adding stuff in, TOR Number 10, right now, is the convene the topical working group term of reference, and the first question is, is this necessary?

The second is what would the subject would be for that group, and third is who would need to complete the task and then the procedure, in-person or a webinar? Do we need more than one meeting? Do we need a lot? This right here is where you feel like, if you need a topical working group to meet and discuss something that you all want to be seen done, this is where you add it in. Everything else right now is Science Center driven, and so the update the model parameters, the consider new updated information, and all of that is Science Center driven right now. If you all want to move that to a topical working group, you can tell me, and so keep all of that in mind while we go through, but I would suggest that we just start at 1 and then work our way down. Is that okay with you, Genny?

DR. NESSLAGE: It seems logical.

MS. HOWINGTON: Do I need to zoom-in while we're doing this?

DR. NESSLAGE: It looks okay to me, but maybe a little.

DR. COLLIER: If people are having a little bit of struggle, they can zoom-in on their own screens as well, through the webinar.

MS. HOWINGTON: Okay. Let's start with Number 1. Does anyone have anything that they want to discuss with 1? Any wordsmithing or edits or additions or deletions? Seeing no hands, we'll go to Number 2.

DR. COLLIER: Let me just check with Genny, to make sure she has the hands-raised document up.

DR. NESSLAGE: I don't see any, but I do guess that -- Hold on just two seconds. Okay. No hands, and I think I am following along. Please continue.

MS. HOWINGTON: Term of Reference Number 1, does anyone have anything to say about it? Amy.

DR. SCHUELLER: I am just wondering -- I don't know, and I can't remember what the schedule is, but the terminal year of 2020, should it be 2021?

MS. HOWINGTON: Right now, the schedule is that we are going to begin with data scoping in January. This is the current schedule, if you all do not recommend any topical working groups, and we'll get to this later, and so beginning in January of 2022 and ending in November of 2022.

DR. SCHUELLER: So maybe we can just come back to that terminal year, depending on how the rest of this plays out and the schedule plays out.

DR. NESSLAGE: To that point, I thought we had discussed, at previous SSC meetings, that maybe a terminal year of 2020 wasn't a good idea, given how little -- How much fishing was impacted in that year, and has there been any work on that since? Have we had any other assessments with a terminal year of 2020?

MS. HOWINGTON: Not yet.

DR. NESSLAGE: Maybe we could add something that -- Is it possible to add a caveat, to give them the flexibility that, if 2020 turns out to be a difficult year to include in the assessment, that the terminal year would be 2019? Does that give them the flexibility though? I would have to have it bomb over, with 2020 being a highly unusual year.

MS. HOWINGTON: For that, I would want to double-check with either Erik Williams or Rob Cheshire and see how they feel about this wording, or if we need to open it up to something more.

DR. NESSLAGE: I will let them think on that and raise their hands when they are ready, but maybe put a pin in that. Fred Serchuk.

DR. SERCHUK: Just a question, Chair. In terms of the fishery-independent indices, were they -  
- Was the sampling done in 2020?

DR. NESSLAGE: That's the kind of thing I think they need to take a close look at. Does anyone know off the top of their head? Wally maybe?

DR. BUBLEY: They were not done in 2020, but we do have -- Obviously, they're saying the terminal year previous was through 2017, and we've got 2018 and 2019 available.

DR. NESSLAGE: So there's enough to do an update, but it's just a matter of whether the terminal year -- If there's enough information in 2020 or not. Erik, go ahead.

DR. WILLIAMS: This is a tough one, and I realize that the scoping call is in January, but the final data deadline isn't until I think June or July, and, with 2020 being an oddball year, I wonder if the better thing to do is push this just a few months down the road, to get 2021 as the terminal year, and I don't think we would want to fall all the way back to 2019. That will make this a pretty old assessment.

DR. NESSLAGE: How about -- Can we say 2021, if possible, and leave that open? How would folks -- Does anyone disagree with that? Do you have alternate suggestions? Julie.

DR. NEER: Well, I think it's fine to write "if possible". I am just going to note that it was incredibly difficult to get these operationals on the schedule for 2022, in general, because we had already scheduled everything else, and so I think you should express your intent and your wishes, but it may not be able to slide, the assessment, time-wise, given everything else on the schedule for 2022 and 2023 already, and so I'm just trying to set expectations.

DR. NESSLAGE: Agreed, and I would hate to lock them in, and I would hate for the whole TOR to fail if they don't include 2020 data, for some reason, and had to default back, and so, Erik, does this seem like a reasonable compromise?

DR. WILLIAMS: Yes, and, I mean, I think we get stuck in this mode of thinking that we have to have a complete year's worth of data, and I think we need to recognize that there are certain datasets that we might more easily be able to update with 2021 than others, and just doing that might be better than cutting the model off at 2020, and so -- For instance, the index information. That's one that would be highly valuable, if we could get an extra point, especially since we'll have a sort of skip year in 2020.

DR. NESSLAGE: Well said. Rob.

DR. CHESHIRE: I was going to -- Erik just addressed it. I lowered my hand. Thanks though.

DR. NESSLAGE: Okay. Great. So I think we're all on the same page, unless the SSC disagrees with any of what has been said here. Alexei, go ahead.

DR. SHAROV: Thank you. I think it's well worth spending extra time in favor of the quality of the assessment, rather than fitting the current schedule. I understand the challenges, the scheduling challenges, but, in the end, we need as much reliable product as we can, and it was said pretty well that it would be much better to end up with a terminal year of 2020, and so I suggest that we recommend that, to have the -- I'm sorry. 2021 to have as the end, the terminal year, of the assessment. If this doesn't happen, so be it, but it's our recommendation.

DR. NESSLAGE: Right. Well said. All right. Anything else on TOR 1, or can we let Kathleen move on? Fred Serchuk, go ahead.

DR. SERCHUK: I don't mean to beat a dead horse, but I actually think it's imperative that we have the 2021 indices in there from the chevron traps, especially if the outcome of the assessment is that the fishery is overfished and overfishing is going on, because then the next question will be, well, what did the latest independent survey show us, and there was no improvement, or a mass improvement, or things have gone the other way, and I think, because we have those data, or will have those data, it's imperative that they be used in the assessment. Thank you.

DR. NESSLAGE: Thank you. Good point. Wally.

DR. BUBLEY: To that point, we'll partially have that data. The trap data, the catches, we will be able to provide in that time period, but the videos needing to be read is probably not going to happen by the time that those data are due, I would assume, and so it would basically get some of it, but we wouldn't get all of it.

DR. NESSLAGE: I think the SSC is saying do what you can to get as much updated data as possible. All right. I am not seeing any other hands. Go ahead, Kathleen.

MS. HOWINGTON: Okay, and so no other hands for Term of Reference Number 1, and let's go to Number 2. Does anyone have any edits, comments, additions, or deletions?

DR. NESSLAGE: I am not seeing any hands.

MS. HOWINGTON: Fantastic. All right. We're moving on to Term of Reference Number 3.

DR. NESSLAGE: Wilson raised his hand.

DR. LANEY: Thank you, Madam Chair. I would just ask if the list under Number 2 there -- If we wanted to include -- I think life history probably captures any sort of additional ecosystem information that we might run across during the course of things, and so maybe I will just make that comment for the record, and I don't know that we need a separate TOR to try and address that one, and I guess we have one later in the list, Kathleen, that addresses any additional research recommendations that we might have, and so I think it's probably -- The ecosystem stuff is probably captured in life history, maybe, or not, and I don't know. What does everybody else think?

DR. NESSLAGE: Is there one below, Kathleen?

MS. HOWINGTON: Give me a sec. I've got to scroll. I don't believe so, and so that might be a good place for you to put the ecosystem information, and we could put it right here.

DR. NESSLAGE: Although how would it -- Where I get worried is then how would that get used? This is where the difference between an operational -- It's the same thing with if you suddenly had a new stream of discard data or brand-new information on steepness, and would you use it in an operational? We're trusting the Center then to make those bigger decisions, right, because, right



now, there is really no environmental influence or ecological -- Not ecological, but ecosystem configuration in the model that would incorporate that information, and would that be a -- I don't mean to argue with Wilson, but I wonder if this was the right place. If it wasn't done in the research track, would it really be incorporated in the operational?

DR. LANEY: You're not arguing with me, Madam Chair. I was asking what everybody else thought, and so I was not certain that we even needed to add it at all, but, if we do add it, maybe this would not be a bad place, but your point is a good one.

DR. NESSLAGE: Okay. Let's see what others think. Amy.

DR. SCHUELLER: The only place that I would see it being sort of already included in the assessment is where they have basically included multiple species in the complex, meaning it's possible that some information could come forward about those decisions that could influence things. Other than that, I don't know how it would be included.

DR. NESSLAGE: Okay. Thank you. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. I have another comment about the date. We have a research track assessment that actually goes to 2017, and is that correct?

MS. HOWINGTON: Yes.

DR. SERCHUK: So I think anything that says update the model with data through the present, and then talk about any problem with data collected since, through the present, rather than collected in 2020, because we're talking about data collected in 2018, 2019, 2020, and 2021, and so I would like to change the language to any problems in data collected since the last research track assessment, or since the research track assessment, and that would be more encompassing, I think. Thank you.

DR. NESSLAGE: Is that something we can do, Kathleen?

MS. HOWINGTON: Of course. If you're thinking any particular concerns with data collected say in the present, is what you would like me to change it to, or with updated data?

DR. NESSLAGE: Just any new data collected, right?

DR. NEER: Data collected since the research track was completed.

DR. SERCHUK: Yes.

DR. NESSLAGE: There you go. All right. Thank you. Anne.

MS. LANGE: I think, based on the review workshop and comments there, environmental information, I think, is for a future assessment, and I think this operational assessment should be based on what's been done up through the research track, and additional information -- I don't know that we have the time, or the analysts will have time, to go back through and try to do some

additional environmental analyses to incorporate into this assessment, and I think that would be for a future one.

DR. NESSLAGE: I think that's where we seem to be settling, but, Wilson, I'm going to look to you, when the draft report circulates, and we talk, in the previous agenda item, about long-term recommendations, and perhaps we could flesh that out a little bit, and that would be --

DR. LANEY: I'm fine with that, Madam Chair. We captured it there, and Anne is correct, in that I don't anticipate any tremendous amount of additional scamp diet data, for example, or data on scamp interactions with other species, coming in during the assessment period that could possibly have any influence on the assessment itself, and, as Amy pointed out, where that would be relevant would be on the combination of scamp with yellowmouth, and so, yes, I'm good with that, and we can go back and take a look at the language in the report, if we feel like we need to say something further.

DR. NESSLAGE: I think adding that bit about yellowmouth would be really helpful, and so I am making a note here in my copy. All right. That's good. Julie, is that a vestigial hand or an active hand?

DR. NEER: It is an active hand. I just wanted to address a procedure thing with regard to new data. Any new datasets that come in in an operational require a topical working group to review and vet that data and determine whether it should be included in an assessment.

DR. NESSLAGE: Excellent. Okay.

MS. HOWINGTON: So then, Julie, from the SEDAR side, should it get rid of the "new and" and just say "consider updated information"?

DR. NEER: That's fine. It's not new data. It's additional data. It's updated data, but it's not a new dataset. It's more data and not new data. I am bringing this point up because we're having a bit of a discussion in the Gulf Council right now with regard to why a new data stream should not be incorporated now, when it was not available when the assessment was being developed initially. Then the provided guidance on it needs to come as a topical working group to be vetted to be included.

DR. NESSLAGE: All right. Duly noted. We're learning as we go along. All right. Anything else on TORs up through 3? If not, we'll let Kathleen keep rolling. I don't see any hands. Go for it.

MS. HOWINGTON: All right, and so let's go to TOR Number 4. Any questions, comments, edits, or deletions?

DR. NESSLAGE: I guess my question is where do we fit in some of our short-term recommendations here?

MS. HOWINGTON: That would then be -- If it's something that you would want just the Science Center to take the lead on, then that would be down here with all of these that we can get rid of an

replace, or whatever you want to do here. If it's something you want with a topical working group, that requires it to be down here.

DR. NESSLAGE: Okay, and so we're not there yet, but we're close.

MS. HOWINGTON: We're not there yet.

DR. NESSLAGE: All right. Anything on 4, folks? No hands. All right. They like it.

MS. HOWINGTON: All right. Number 5.

DR. NESSLAGE: Didn't they kind of do that in the research track, and it didn't quite pan out, or they fixed that one issue and then they ended up using -- In later runs, they were able to include measures of precision, right? Is that correct?

DR. NEER: Yes.

DR. NESSLAGE: So is this a standard one, or is this one that someone had suggested for scamp?

MS. HOWINGTON: This is a standard one.

DR. NESSLAGE: Do we need it?

MS. HOWINGTON: If you believe that the research track has addressed it, and it's fine and has been addressed and we're all good, then no. Then we can get rid of it.

DR. NESSLAGE: Let's see what Amy thinks.

DR. SCHUELLER: I say we get rid of it.

DR. NESSLAGE: They're going to have enough to do.

DR. NEER: I think that's one of the ones that is often put in when you have switched from MRIP to FES, which, for the scamp assessment, there is no different recreational stream that we're using.

DR. NESSLAGE: That makes sense.

MS. HOWINGTON: Which is the other reason why I'm arguing that the terms of reference, the next time I bring it in, I want this to be a living document that changes every single time, because then that's going to be gone the next time we get to have a research track term of reference like this, but now we're at the specific species terms of reference.

Like I said, I pulled -- I just combined the last three of anything that you all have been thinking, hey, this is something we need to explore for the last three terms of reference for operational assessments, and that's where these came from, and that's why they're species specific. We can just get rid of them, if they don't apply to scamp, and this is also where then, specifically to scamp, if you all want to add in terms of reference, and you want to let it be Science Center driven, then that's where this goes, and so that's where we're at, and so then the current Term of Reference 5.

DR. NESSLAGE: Does anyone feel that we need to keep 5? I am not hearing any great love for 5.

MS. HOWINGTON: All right. Current Term of Reference 5.

DR. NESSLAGE: Are we concerned about shifts in the age of apical F?

MS. HOWINGTON: I will say that this is one that you all had added in for a few terms of reference, and then you started removing them for different ones, and so I kept it in just in case, but, as you can see, it's not in your blueline tilefish, and it was not in your vermilion snapper term of reference, and it was just for red grouper. I believe that the Science Center has actually started kind of doing this as their normal procedure, and we might not need it anymore.

DR. NESSLAGE: That was my vague memory as well, but let's see what Alexei remembers.

DR. SHAROV: I don't remember, but I suggest that we remove it.

DR. NESSLAGE: Even better. We don't have to remember. I do remember some of these discussions, but I don't know that it's particularly a concern here, unless folks feel otherwise. Let's go ahead and get rid of it.

MS. HOWINGTON: Okay. Then this right here, the selectivity workshop, this was specific for vermilion snapper, and you also had this included in the red snapper terms of reference, for the most recent operational there.

DR. NESSLAGE: They didn't address scamp, right?

MS. HOWINGTON: I don't believe they did.

DR. NESSLAGE: Then kill it.

DR. COLLIER: They did not.

MS. HOWINGTON: The final species-specific one, and, again, this was specific just to blueline tilefish, and so it might be that this doesn't apply to scamp at all.

DR. NESSLAGE: They did some of those things anyway, but let's see. Alexei.

DR. SHAROV: It's pretty much the same as Number 4, estimates of stock status, management benchmarks, and I am reading Number 4, and provide probability of overfishing.

MS. HOWINGTON: Yes, it is. I'm so sorry. All right. Well, then I will just get rid of it. I believe I might have included it because of this specific sentence right here, but -- So it seems, to me, just going to procedural input that I am getting, is that these species-specific ones wouldn't necessarily be something that you all would want included in the future, since we're getting rid of them, and you all are okay with just keeping these normal, standard terms of reference.

DR. NESSLAGE: I think that's what I am hearing.

MS. HOWINGTON: Okay. Love that. All right. So then let's add in some species-specific ones for scamp.

DR. NESSLAGE: Before we do that, I think we need to decide -- We have, really, those two big issues, right, of do we -- Are we comfortable with allowing the Center to -- Not allowing, like we're their bosses or anything, and sorry, and that was bad wording, but do we feel that the Center needs outside participation in the decision-making process about those two issues, or do we suggest that they simply handle them, now that we've given them our feedback, and the two roads diverge here. Either they become topical working groups or just TORs. Let's hear from Alexei.

DR. SHAROV: They certainly can handle them, and, unless there is a great desire, on the side of any SSC member, to be a member of the group, then we could have a topical group. Otherwise, of course, they know the model and the data better than anybody else, and there is no question about whether they should be included.

DR. NESSLAGE: All right. Thank you. Anne, go ahead.

MS. LANGE: I think, if Erik, Rob, or Katie have a recommendation on that, I think we could ask them, because, if they think they have everything they need, then there is no reason for us to get on top of it.

DR. NESSLAGE: I think I agree. Erik, Rob, Katie, whoever will be overseeing or in charge.

DR. WILLIAMS: I will jump in and say that, yes, I agree with everything that you guys said, and I don't want to overpromise, but I feel like we can probably actually address all those things that you have as top priorities, and it shouldn't be a problem.

DR. NESSLAGE: Right, barring other disasters and crises.

DR. WILLIAMS: Yes. Barring a gamma variant, or whatever Greek letter we're on, with variants or any of that kind of stuff.

DR. NESSLAGE: Understood. Okay. Does anyone on the SSC think that we absolutely must have a topical working group, based on our earlier recommendations? If not, we're going to just turn our previous short-term research recommendations into TORs, suggested TORs. All right. I am not seeing any objection to that, and so I don't know if you have a copy of our --

MS. HOWINGTON: I was about to ask, and could you send me the wording in an email, real fast, and I will delete current Term of Reference Number 6 and make those Term of Reference Number 5 and 6.

DR. NESSLAGE: Yes. Judd, do you want to -- I will forward it to you right now.

MS. HOWINGTON: Thank you.

DR. CURTIS: I just forwarded Kathleen that document, the overview that we just worked on.

DR. NESSLAGE: Perfect. Thank you.

MS. HOWINGTON: Judd, I believe you didn't include the attachment. Can you resend, please?

DR. CURTIS: That would definitely help, wouldn't it?

MS. HOWINGTON: We have all done it. It is perfectly fine.

DR. SCHUELLER: Can I ask a question, while we're waiting?

DR. NESSLAGE: Sure. Go for it.

DR. SCHUELLER: I believe that this work can be done by the Center, and that we don't necessarily need a topical working group, but I guess my question is that, if the work is being done by the Center, and they decide that they're going to configure the base run differently, based on that work, is that -- How is that handled? I mean, that's fine with me, and I'm not just - Maybe I am stirring a pot I don't need to, but that's my question. Does it make sense?

DR. NESSLAGE: Julie, help us out.

DR. NEER: That is a fine question. That is -- Changing of a base model configuration is a pretty big change. If that is, however, based on the recommendations from what guys are providing here and what the Science Center's analysis of that work is, they will put it forward, and then you guys will then be tasked with not just coming up with the management specifications, but actually having to review the entire assessment again, since it's not simply just adding new data, and you're going to have this body will then become the review panel for that new model configuration.

I don't think that was what was intended to happen, but we had a bit of miscommunication, or not miscommunication, but it wasn't entirely clear, during the review workshop, what product was supposed to come out of that and the scope of the status of the assessment going to the review workshop and the changes that would be made afterwards. We have since clarified those goals from the Steering Committee, when it met earlier this month, and so I don't think that will be a problem, if that's what actually comes out of this.

I guess it's really, ultimately, up to the Science Center. If they decide that they need to change the base model, and they feel that is outside the scope of what should be done in an operational without a topical working group, I'm sure that Clay will let us know, and we will do whatever we need to make that happen, appropriately, within the process.

MS. HOWINGTON: Julie, correct me if I'm wrong, but I'm remembering something that happened during the Steering Committee, where somebody suggested that, if that happens, the maybe the Science Center provides a bridge study or something that shows the difference between the current base model and the base model that was released during the assessment workshop report.

DR. NEER: Yes, something along the lines of a bridging exercise, where you would show the -- I would assume then that the report would be a little bit more involved, and the presentation as

well, showing changes and how you made -- It wouldn't just be here is the new model output, and there might some more detail about how making that underlying base model change affected all the things and not just here is the new outcome.

A bridging exercise, to get from one thing to the other, was mentioned as something that might have to happen if we in fact change the base model between what came out of the review workshop approved base model from the research track and what comes out of the operational assessment that follows. I trust that the Science Center would provide the appropriate information for the SSC to make their deliberations and give them all the information they need.

DR. NESSLAGE: Excellent. Thank you. Fred.

DR. SERCHUK: I don't disagree with anything that's been said, particularly when we're learning by doing, going from a research track assessment to an operational assessment, but I think we all realize that, in the best of all worlds, we would have a research track assessment that would be outside peer reviewed, and that would be the basis for doing the operational assessment. That should be the cornerstone of the handoff between a research track assessment and an operational assessment.

Again, as I indicated, this is the first time we're doing it, and I think we're going to learn by doing, but I wouldn't want this particular way of doing it the first time to be the paradigm for how it goes in the future, because I don't think any of us think that the way we have envisioned research tracks and operational tracks -- We just realized that a research track would be unencumbered by getting new data, and that they could work on a model, they could work on a new approach, they could work with new data, but, after all that was said and done, the handoff would be having a model configuration that would basically be mostly unchanged, and there might be some small changes, but not major changes, and I just wanted to voice that, so it's well understood. Thank you.

DR. NEER: Genny, to that point?

DR. NESSLAGE: Yes, please.

DR. NEER: Fred, what you said is exactly what was envisioned by Clay and others at the Science Center when they developed the research track, is that it is -- What comes out of that portion should be this is it, this is the tool, and there are minor tweaks and additional sensitivities, and that sort of thing should happen at the operational stage, but we should not be really considering making changes to the base configuration, and I agree with you, and I appreciate you expressing that we're learning by doing, and we're getting through it this time, but this should not set the precedent of how things go. There should be a clean break between the research track and the operational, and that handoff should happen there, and so, yes, Fred, what you said is exactly what Clay has indicated as the vision for, when a research track ends, what we have and then how the operational moves forward. Thank you.

DR. NESSLAGE: Just to that point, if I may, the sticky, weird, gray, interim situation we're in is you don't want to hand a research track assessment to the operational assessment team and then have the SSC not use it to set fishing level recommendations, after all that hard work, and so either we do this sort of tweaking, when we get a chance to see it, to make sure that, when it does come back to our desks for ABC setting, that we're comfortable and we think that it's in tip-top shape.

Otherwise, we might take a look at it and say, no, it's not ready, and then I don't know what your procedure says. I the review panel says it's fine, but the SSC says the research track is not ready for primetime, then where do you go with it? Back to a research track?

DR. NEER: Perhaps so. That was the suggestion. If there are enough outstanding issues, or issues that the SSC raises, then perhaps the research track is a -- We're not going to call it a failure, but it needs additional work, and so, yes, and, again, we're all learning and figuring out these new sort of steps, as we move forward, because the intent is the research track is the tool, is the thing that is built and will be in place for five or ten years, with simply doing the operationals following it and without major shifts and changes. All of that is the point to get to more throughput and get things done more efficiently and more information to the councils in a timely fashion.

I totally understand that you don't want to move it forward if you have issues with it, and I think what you're doing here is absolutely appropriate. We just need to be more clear, perhaps, on what is expected when in the process, and there were some -- I think several of the analysts -- My impression was that they thought, oh, now we're going to have another year to work on these things during the operational, and that really was not the intent, and we're not sure that was clear, and so we're going to work on that from our end, across-the-board, to make sure that the expectations are clear on what is expected at each stage of these processes.

DR. NESSLAGE: Fabulous. We're learning as we go. Okay. Kathleen has copied over our thoughts, recognizing that this isn't the final wording, and we're going to need to wordsmith this a little. I assume then that I can give you the final wordsmithed version that the SSC approves, and you can slap that into this spot, and is that correct, Kathleen?

MS. HOWINGTON: Yes. I can definitely do that.

DR. NESSLAGE: Fabulous. So recognizing that we will make this look a little better, cleaner, but, content-wise, are we good with this? We were good with it an hour ago, but that doesn't mean much in SSC land.

DR. COLLIER: When is the date that this statement of work is due?

MS. HOWINGTON: Terms of reference, and it's due for the December briefing book for the council meeting. Before that, I would like to be able to send it to the Science Center for review, and I was actually about to ask Genny this, and so how quickly do you all wordsmith these? When do you think you could get it to me by?

DR. NESSLAGE: Next two weeks-ish? I mean, I usually will -- I will get the report out to the SSC, cleaned up, early next week, and I usually give them a week or two to review, but, if this portion needs to be reviewed faster, I can ask them to do that.

MS. HOWINGTON: Chip, remind me when the briefing book is due for the December council meeting. It's November, right? Sorry. I thought I wrote it down, but, as I'm scrolling through my planner, I can't find it.

DR. COLLIER: Just give me one second.



DR. NEER: I think the intent is clear, and the Science Center can begin to think about these and see if there is any things they have heartburn about, and I'm hoping they would have brought them up already, and that they can start thinking about this without the perfectly-wordsmithed version. I'm sure that Erik and his team are talking about it right now, actually.

MS. HOWINGTON: Right. I just want to make certain that, even if I do sent it out to both bodies to be edited, that I have enough time to be able to -- If we need negotiations, we can.

DR. COLLIER: It's the 16<sup>th</sup>.

MS. HOWINGTON: All right, and so the 16<sup>th</sup> then gives me roughly three weeks, and so I think, if you get -- You said that normally the SSC has two weeks to edit it?

DR. NESSLAGE: Yes, ish.

MS. HOWINGTON: How quickly do you get it out to them?

DR. NESSLAGE: I will get it out early next week, before I forget everything.

MS. HOWINGTON: Okay. I think that would be perfectly fine. With your permission, I would like to send it to the Science Center at the end of this week or at the beginning of next week, with this wording, with the understanding that you all might be refining it a little bit, but that it's still going to have the same goals in mind, and is that acceptable?

DR. NESSLAGE: Yes, and the content is not going to change.

MS. HOWINGTON: Okay, and so, yes. With that, if you all do the two weeks for editing, and you just get the wording to me by the end of that, that still gives me a week to be able to make certain that everything is kosher and turn it into the briefing book, and so I think that timing is perfectly fine.

DR. NESSLAGE: Fabulous. Is there more down below that we need to review?

MS. HOWINGTON: There is only one more, just for the record, Term of Reference Number 8.

DR. NESSLAGE: Okay. Is there anything outstanding that we haven't covered that you need covered, Kathleen?

MR. HOWINGTON: In regard to the terms of reference, no. I would like to go ahead and just show you guys the schedule, but, in regard to this, as long as you all are good with the two terms of reference that we added in, and you all are good with no topical working groups, and I will wait to get your wording on these two terms of reference, and, otherwise, I think we're fine with this document.

DR. NESSLAGE: Fabulous.

MS. HOWINGTON: Okay, and so then the next step would be the schedule of events, and so I do want to highlight two changes from the document that was in the briefing book. I was

negotiating with Vivian, and she gave me two additional dates, and so she gave me this date right here. She also changed the wording, but she kept the dates for everything else, and these are all data deadlines for the Science Center and for other data providers, and so, right now, this is the draft schedule, based on what the science group believes they need.

This date was also changed for the working paper submission, just to give them a little bit more time, but, otherwise, all the other dates are the exact same as what is in your briefing book. This is more of just a review, an FYI, and the data scoping call will be January of 2022, with the complete assessment report available in November of 2022, and so do we have any comments on this?

DR. NESSLAGE: I am not seeing any hands raised.

MS. HOWINGTON: Okay. Then, just to let everyone know what the procedure would be, if you all have thought about topical working groups, if you had decided that you wanted to have one, I would have requested that you all help me with this schedule of when do you think the topical group needs to meet, in regard to during the data process, after all the final data has been turned in, is it more of a modeling question, is it more of a data question, and then we would have looked at this schedule, and I would have put in a line saying that Topical Working Group 1 meets here, or needs to be met before this date, stuff like that, and so that would have been all questions that I would have asked you guys if you had decided to have a topical working group.

Additionally, if you had decided to have a topical working group, I would have pulled up this pretty little list, and so this right here is what I submit to the council whenever there is a topical working group, or, back in the day, it was panelists, and so this would actually be just topical working group members, and I apologize, and that wording needs to be changed.

This would have been where you would have suggested any SSC members and any additional members that are not Science Center, and that would go here, and then, if you had any Science Center people that you really wanted to be on that topical working group, you could also request those, and so that would have been the normal procedure with a topical working group. In the future, if we have one, then that's how that's going to go, but that's more of an FYI than anything else. With that, I think I'm good, Genny.

DR. NESSLAGE: Fabulous. We have a question from Fred Serchuk.

DR. SERCHUK: Thank you, Chair. For consistency's sake, under assessment information and contacts, on the bottom, where it says, "terminal year for the assessment", could we make that 2021, if possible, to be consistent with the language that we discussed earlier on in the draft terms of reference?

MS. HOWINGTON: Yes. Thank you, Fred.

DR. SERCHUK: Thank you.

MS. HOWINGTON: Then, as you can see, this data point of contact is still TBD, and I -- Now that we know we don't need topical working groups, I am going to be submitting a staffing request

to Larry Massey, who will be filling in that point, and so then, when this is put up on the website, that will be filled in.

DR. NESSLAGE: Thank you, Kathleen, and I just realized that I did not take public comment. If there is any public comment on these TORs this would be the time. Please raise your hand. Rusty, go right ahead.

MR. HUDSON: Thank you for unmuting me. I had to shut down my system earlier today, right as you all took your lunchbreak, but I like what I heard. It's not a directed fishery, at least off of the east coast of Florida, for scamp. Yellowmouth is a much rarer encounter, and, essentially -- Normally, we would be targeting gag and carborita and other type things, like red grouper, when we encounter the less plentiful scamp groupers, but, like I said, we were always fond of them in the market, because they were the best eating. Thank you.

DR. NESSLAGE: Thank you. Are there any other hands? No hands. Okay. Is that all on Agenda Item 4 then, Kathleen?

MS. HOWINGTON: Yes. With that, I am good, and I will start -- I will send this to the Science Center and then hopefully get your updated language. Thank you.

DR. NESSLAGE: Okay. I guess we can try to push through. Erik, if you're going to be here all the day, in the event that gag gets -- If the discussion spills over into the morning, are you okay with that?

DR. WILLIAMS: Yes, absolutely.

DR. NESSLAGE: Okay. That's super helpful. Thank you. Although, Chip, maybe we should just have this discussion here, real quick. Should we frontload gag, while people still have a bit more energy, and then perhaps come back to Kathleen, if there's time?

DR. COLLIER: Yes, I think that would be good.

DR. NESSLAGE: Okay. Just because Kathleen has two more items here, and I am thinking, if you're going to be around all week as well, Kathleen, that would be helpful, if we could move you -- Are you going to be horribly upset with me if we do that?

MS. HOWINGTON: No, and I'm going to be here all week. I actually kind of expected it.

DR. NESSLAGE: Okay. Folks, we're going to skip over, for the moment, Items 5 and 6, the gray triggerfish and tilefish items, and so straight, if Erik is ready, and I will do the switcheroo on you here, to discussing the gag grouper projections, and so are you ready?

DR. COLLIER: I think Judd is going to be presenting for that, and Erik will be doing the talking.

DR. NESSLAGE: Fabulous. While you guys are getting that ready, I will just draw the SSC's attention to Attachments 7a and 7b, the new projections presentation and the report, and Erik Williams is going to be providing us with a review of what was done. Just as some background,

if you recall, at our gigantic spring meeting, we reviewed SEDAR 71, and, given the overfished condition, we kind of needed to hear what the council thought about probability of rebuilding.

We did go through and suggest a  $P^*$  and a probability of rebuilding, as well as requested, or suggested, I should say, that the projections be done with both low recent recruitment and the average stock recruitment conditions, and those projections were done, and the council reviewed those recommendations and made some recommendations to the Center about what to do, moving forward, and Erik is going to update us on what's been done, and so take it away, Erik.

## **SEDAR 71: GAG GROUPE OPERATIONAL ASSESSMENT - REVIEW PROJECTIONS**

DR. WILLIAMS: Thank you, Genny. While Judd pulls this up, I will just say that I did not do this work, and I am just presenting on behalf of Kevin Craig, who did all the work for this, and he was also the lead assessment analyst for gag. This hopefully should be pretty short. It's just a quick review of the assessment results for gag.

Just to reorient everybody on what we're talking about, the last assessment indicated that gag grouper are overfishing and currently experiencing overfishing, that that overfishing has been occurring for a while, since the 1980s. Prior assessments had indicated the stock was near the stock size threshold, but the current assessment indicates well below thresholds.

Fishery-dependent and fishery-independent indices indicate a two to threefold decline in abundance in the last ten years, and it looks like that low abundance, or that decline, is being driven by low estimated recruitment in the last ten years of the assessment. Recent fishing mortality remains high, and primarily driven by commercial handline and general recreational fleets, but the assessment results are pretty robust to a wide range of uncertainty that we considered.

The projections that were requested from us are indicated here, and they're actually the -- There were five projections, and you can see the list of them below, but, just to kind of orient you with these projections, we had the terminal year was 2019 in the assessment, and so we have interim years from 2020 to 2022, and the first year of management is going to be 2023, and so, to fill in those interim years, we used an average of 2017 to 2019 landings, and that's how we carried the fisheries forward in the projections for those interim years. Then we did a ten-year projection, once management is implemented.

Recruitment, in this projection model, follows the stock-recruit curve, in one case, and so recruitment is conditioned on that spawner-recruit curve, and, just to refresh your memory on that, we estimated the Beverton-Holt stock-recruit curve, and steepness was estimated, and it seemed to be fairly well defined, and I believe it was 0.89, somewhere up there, around 0.9, and the other method we used for projecting recruitment was to use a low recruitment, which was computed from the mean recruitment from the last ten years, basically those values, and so, with that understanding, we conducted these five projection scenarios listed below, where we have a combination of probability of rebuilds, as well as whether we used low recruitment for the stock-recruit model for recruitment projections.

This just runs through some of those, or, actually, this is just a quick reminder of time to rebuild under the stock after ten years, with  $F$  equals  $FMSY$  basically indicating that it does not recover. Now we go into the projection scenarios, and each one of these figures -- We have one of these figures for each projection scenario, and so, just to orient you to what you're seeing here, the solid blue line, and the green line, correspond to the median and base run outputs for the benchmarks,  $MSY$  benchmarks.

The solid and dashed black lines refer to the median uncertainty and base run outputs from the projection analysis, and then, of course, the thin black lines are the uncertainty on those, and so what's shown is spawning stock recruits over time, the  $F$  in each year, and then the resulting landings.

That is Projection 1, which is an  $F$  equals  $FMSY$  projection, which basically defines the OFL. 2 is with a 50 percent probability of rebuild in the last year and with low recruitment, and you can see that low recruitment in the top-right panel, what that looks like, and then the bottom-right is, of course, then the resulting landings that would be required to sort of achieve that 50 percent rebuild.

Scenario 3 is a 50 percent rebuild, but using the stock-recruit model recruitments, and, here, you see that, in the top-right panel, the recruitment pattern increases over time, because it follows that -- It rides the stock-recruit curve up to  $MSY$  levels over time, and so we see a different scenario of landings in the bottom-right.

Projection 4 is essentially the same as Projection 2, but just with a 70 percent probability of rebuild, and using the stock-recruit model. Actually, this would be closer to Projection 3, and I'm sorry, but just with a 70 percent rebuild, and then the next slide, Projection 5, this is the 70 percent rebuild, but with the low recruitment, and so that gives you a range of options, and good luck deciding which one to use.

DR. NESSLAGE: Thank you, Erik. We're going to need it. All right. Let's take clarifying questions for Erik. Fred Serchuk.

DR. SERCHUK: Just one question, Erik. Typically, to meet the Magnuson standards, one does a run with  $F$  equals zero, to see whether it's even possible for the stock to rebuild with a ten-year period. Was that run also done, or is that reflected in any of these runs here?

DR. WILLIAMS: Well, we just used the  $F$  equals  $FMSY$  to indicate that it didn't even rebuild under that. I take that back. We did do an  $F$  equals zero, and it did not rebuild under that scenario, I believe.

DR. SERCHUK: That's important, because then Magnuson says you can use a different approach under that, because the stock is incapable, given whatever dynamics you use, of rebuilding in ten years, and then you can go into whether they need to think about subsequent generations or so on and so forth, and I would have thought that that would have been useful to present to the council, because that's really what gives them flexibility then in their rebuilding plan. Thank you.

DR. WILLIAMS: Let me double-check on that, Fred, because I believe that the ten-year rebuilding was decided upon, and it may have been -- I am trying to look that up now.

DR. COLLIER: I will jump in there for you, Erik. We did request the F equals zero, under two different scenarios, the recruitment based on the stock-recruit curve as well as low recruitment, and it could rebuild within ten years under both of those scenarios.

DR. WILLIAMS: I was wrong.

DR. NESSLAGE: Thank you, Chip. Any follow-ups, Fred?

DR. SERCHUK: No, and Chip answered my question. Thank you.

DR. NESSLAGE: Thank you. Are there other questions for Erik? All right. This is pretty -- Well, the projections -- Thank you to Kevin, and thank you, Erik, for presenting. I guess we should turn to the discussion. Well, actually, before we do that, let's take public comment. If you have any comment on the presentation, what you've seen so far, please raise your hand. Rusty, go right ahead.

MR. HUDSON: Two things. One, with all this *Oculina* coral closure stuff for anchoring, there is a lot of what we call blackbellies, big males, as well as big females, that exist in that *Oculina* area offshore of the big ledge, and then sometimes we'll find them moving back inshore of the big ledge, and maybe it's in response to the spawning season in January into April, but the other factor is that these gag grouper, once the larvae then become the new young, they go into the rivers.

We normally catch these little gags, about a couple or three inches long, along with little black sea bass, when we're catching pinfish, and we're using that for offshore grouper fishing and et cetera, and, with the closure, the spawning season closure, in place for twelve years now, there should have been benefits, that we would get those large aggregations of gags, nearshore, anywhere from two to twelve miles off the beach, and these females should be stacked up. Usually, January and February made a prime target at twelve to sixteen pounds in the catch, or eighteen pounds, thereabouts.

Very rarely do you see a blackbelly there at that time, but, as we wound up dealing with this red snapper explosion that actually started before the closure, and 2008 or 2009 were some of the commercial numbers, and I would suspect high recreational numbers, and red snappers love small sea bass, and, as the small sea bass are coming out of the rivers, just like these small gag groupers, you've got a great likelihood that they're being eaten. That is something that might need to be looked at a little closer, just what is going on in the estuaries with the gags. Thank you.

DR. NESSLAGE: Excellent. Thank you, Rusty. Other public comment? All right. I am not seeing any then, and I just wanted to -- Before we start discussions, I wanted to remind the SSC of a couple of things, if you're not remembering everything we said and did at the spring meeting. At that time, we did go through the ABC Control Rule and recommended a P\* of 20 percent, because it would be rebuilding, and then you would add that to 50 percent probability, for a recommended P rebuild of 70, and so that's where we landed last time.

We also suggested that both, as I mentioned before, the low recent ten years of recruitment as well as the stock-recruitment-curve-based recruitment be considered as alternative projections, and we also noted, in our report, that, in the retrospective analysis, that recruitment was likely

overestimated, and so I am trying to pull up everything that I can think of with regard to these decisions that we already hashed out a little bit in the spring.

However, it's time to hash it out again, and so let's see here. Thank you for pulling that up, Judd. If we could bring up the action items, that would be fabulous, just to guide our discussion here. Thank you. Okay.

We have one big decision, as to whether or not we recommend using the average-recruitment scenario or the low-recruitment scenario, and, if this feels like *déjà vu*, it is. We've been doing this a lot recently, and the working group is assigned to determining how -- Generating general guidelines for the SSC on how we would approach recruitment assumptions in future ABC-setting situations, and that work is not done yet, and so, given that we don't have those general recommendations, and the timeline for this will not allow us to wait until the spring, we need to make a decision now, before we come up with our general guidelines from the working group.

Unfortunately, we do have to have this discussion again without the guidance of our working group, and so I would like to tackle that question first, and then we can address some of the questions about probability of rebuilding, and so I will open the floor for questions and comments from the SSC regarding recruitment scenarios for gag. I know you have opinions. No hands is not an option. Jeff.

DR. BUCKEL: I wonder if it would be helpful, as a reminder, to show the retrospective plots from the April meeting, and maybe that would help folks.

DR. NESSLAGE: It's Slide 78 of Kevin's presentation. I don't know if staff can find that quickly or not.

DR. CURTIS: Let me go and dig that up. It will take me just a minute.

DR. NESSLAGE: Okay.

DR. SERCHUK: While he's doing that, Chair, can I ask a question?

DR. NESSLAGE: Absolutely. Please. Go ahead.

DR. SERCHUK: I know we have two different scenarios here, with respect to whether we use the stock-recruitment model or low recruitment, but, if we go back several years and then use the stock-recruitment relationship to predict recruitment, did it predict recruitment that actually ensued, or how well did it do to predict that recruitment?

DR. NESSLAGE: You always ask that for that wonderful analysis, and I think it has yet to be done. It's a clever check on the model performance, right?

DR. SERCHUK: Well, yes. I mean, again, do we go with what we've seen, or do we go with what could have been predicted? If the predictor is a good predictor, I would go with the predictor, but, if it's not been a very good predictor, then, basically, you have to, empirically, go with what's been happening.

DR. NESSLAGE: I think that's where we do at least have the retrospective runs, which give you some indication of how well the model is estimating recruitment, and it's not quite the same, but the --

DR. CURTIS: Jeff, here is the old assessment presentation from the April meeting. Did you find out which slide you're referring to, and I can bring it up?

DR. NESSLAGE: It's 78.

DR. CURTIS: There we are.

DR. NESSLAGE: Thanks, Judd. This middle panel on the right is recruits. It might be helpful as well -- Well, no, and I think this graph shows it. Go ahead, Amy.

DR. SCHUELLER: I think this figure is useful, and I also think looking at the actual stock-recruitment curve is useful, and I don't know what slide that is, but I wish I had a more definitive thing to say about what we should do here, but, just in the discussion that I have been listening to, I have written down two more questions, rather than statements of what we should do, and so I don't know what you do in the absence of evidence, strong evidence, of one versus the other.

DR. NESSLAGE: I am sorry, but I am not following. One what versus the other?

DR. SCHUELLER: So we have a decision here, using the recruitment based on the stock-recruitment curve or the recruitment based on the last ten years, and I don't feel like there is any weight of evidence towards either one of those that is definitive, and so I guess my statement was I don't know what you do in that circumstance.

DR. NESSLAGE: If it helps anyone, Slides 46 and 47 are the recruitment devs and the stock-recruitment curve. I don't know if this helps or just befuddles us further.

DR. SCHUELLER: Can we see what's on 47? There is one figure that maybe isn't in here. Let me think for a minute.

DR. NESSLAGE: I would, just while Amy is thinking, just throw out the comment that we have recently made decisions about using low recruitment for other stocks, and, even for red snapper, where the recruitment was high, we settled on the council's suggestion of the last ten years, which would also give us pretty low recruitment for this stock, and so at least we would -- Until we change our minds, based on our analysis and considerations with the working group, perhaps that would be consistent, and I'm not sure, but let's see. Amy, I believe you're next, and then Wilson.

DR. SCHUELLER: I thought, for red snapper, we went with the stock-recruitment curve.

DR. NESSLAGE: No, we ended up with the -- You weren't at that meeting.

DR. SCHUELLER: That's right.

DR. NESSLAGE: Yes, and it was the last ten years. Did you have something else?



DR. SCHUELLER: Yes, and so I guess what I tend to think about, when I look at this figure, is we're basically talking about these points on the lower-left-hand corner, and we're getting to a point where we're saying the stock is low, and recruitment is low, and I start to think about things about uncertainty surrounding this curve and what is a realistic envelope of uncertainty, and, if we had the envelope of uncertainty from the MCBE runs, would those points be within that envelope or not, and I feel like that's difficult for me to say, although I want to say that maybe it is, but I just -- I guess that's the question at-hand. Is that significantly different enough from that stock-recruitment curve to go on an alternate path?

DR. NESSLAGE: Right, and they're certainly not as far off as many of the other points, like that section right below 2,000, for instance, you're saying, or maybe that 4,000 one?

DR. SCHUELLER: Yes. I mean, how far away from the curve is too far?

DR. NESSLAGE: Right, and this is -- Not to give a preview, but this is kind of where some of the working group -- It's one of the avenues the working group is pursuing, but we don't have quite a recommendation yet, which is making this difficult. Sorry, but did you have something else? That's good food for everyone's thought, and was there something else, or should I go to Wilson, Amy?

DR. SCHUELLER: Go ahead and go to Wilson.

DR. NESSLAGE: All right. Wilson. Thanks for being patient.

DR. LANEY: Thank you, Madam Chair. My question is can we gain any insight by asking ourselves the question as to which of these two options is more protective of the stock?

DR. NESSLAGE: That's the slippery slope that we might go down. We need to select projections that we think are going to represent the conditions under which management will occur in the near future, at least, and that will help achieve the rebuilding plan, right? Any additional management uncertainty would be something the council would need to do by adding a buffer to the ABC, but we did say, in that past, that stocks that are in a rebuilding plan that we probably need to make sure that we're making appropriate recruitment decisions that account for scientific uncertainty and our ability to estimate recruitment.

Given that we're overestimating recruitment in this stock, it appears, from the retrospectives, that would be a scientific uncertainty consideration that would address that concern, I believe, and is that what you're saying, Wilson, as far as are we really sure that we're going to get that kind of recruitment and, if we're overfished, that's a problem?

DR. LANEY: Yes, ma'am.

DR. NESSLAGE: You said it much more succinctly though. Okay. Thank you, Wilson. Chris, what are your thoughts?

DR. DUMAS: I think we discussed this before, but could you briefly remind me about that cluster of points to the far right on the stock-recruitment curve that are all at the same level of recruitment?

Are those all the points from the early years that we're assuming the fishery was in equilibrium or something like that, and so all those recruitments are the same?

That's a lot of data points at the same recruitment level, and I'm assuming that is what pulling the estimated relationship down a lot on that right-hand side of the chart. Do we have enough data to justify all those points being right there together at the same level of recruitment, at that high stock size, or should they all be represented by just one data point there? I mean, I can't remember where all those data points come from. Thanks.

DR. NESSLAGE: Erik, do you want to address that directly?

DR. WILLIAMS: Yes, and I am -- I would have to look at the code exactly, but usually the practice is that we're not actually -- Those points are not going into the likelihood function that is fitting that curve at that point, and there's only one point that actually goes into that. We plot those just to show what our historical estimates of recruitment are meant to do, and so, in other words, the fitting likelihood does not include every single one of those years, and so it is not overly influential, or it shouldn't be.

DR. DUMAS: Got it. Thanks. That makes a lot of sense. Thank you.

DR. NESSLAGE: Good catch, and thank you for answering, Erik. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. I am looking at the projections sheet that we have just been on, and, no matter whether you look at Projection 2 or Projection 3, it's my understanding that, under that -- Projection 2 says that the stock can be rebuilt within a ten-year period, if you assume low recruitment. If you go back to Projection 3 now, it also says that the stock can be rebuilt within a ten-year period with the stock-recruitment model.

The difference that I see is that the landings are going to be very much different under each of the models, and you can see the landings under this 50 percent -- They start to increase in 2024, and they reach almost double during the period, and they still have stock rebuilding in a ten-year period, but, if you go back to the low-recruitment model, you can see that there is a very much different picture, in terms of the landings.

The question that we're going to face, I think, on these runs, is I think, on any of the runs, you get to rebuilding with a ten-year period, and some reach it a year or two earlier with the S-R model, and so I guess it's pretty important whether we can differentiate whether the stock-recruitment curve is a better way to go or whether the low recruitment is a better way to go, because you're going to get there pretty much -- The stock is going to get there pretty much the same, but at different impacts to the landings. That is my reading of it. Thank you.

DR. NESSLAGE: An excellent synopsis. Thank you, Fred. Chris.

DR. DUMAS: Can we go -- Looking at this, the graph we're on now, in order to rebuild the stock, we need to get the spawning stock back up to about 1,600 metric tons, looking at the top-left, and we need to get back up to about 1,600 metric tons, right, to be rebuilt?

DR. NESSLAGE: Yes.

DR. DUMAS: Okay. Now let's go back to the stock-recruitment curve. Looking down at the X-axis, the spawning stock, we need to get to 1,600 metric tons, and so 2,000 metric tons is on the outside, and so it seems to me that we only care about the stock-recruitment curve between zero metric tons and 2,000 metric tons, right, and, in that range, we've got a lot of data points between zero and 2,000 metric tons, and so what if we just fit a curve through those data points? Just take the data points between zero and 2,000 and fit a curve through there and just forget all the data points above 2,000, because we don't care. Once the spawning stock gets above 2,000, we're good to go, right, and so who cares?

Out there, we only have a few data points beyond 2,000 metric tons. We only have a few data points, and there is a lot of uncertainty. Those data points are bouncing all around, and there is a lot of uncertainty in those, whereas our data points to the left of 2,000 -- We've got a lot of data points.

Yes, they're bouncing around, but we could just fit a curve through there and use that, because we only really care about, in the medium run, rebuilding, which is getting to 2,000, and we want to get to 2,000, and so let's use the data points between zero and 2,000, and we've got a lot of them. We can fit the curve through there, and maybe we will have less uncertainty about that part of the curve, which is the part we care about, which is between zero and 2,000. I don't know, and I will just throw that out there and see what you guys think. Thanks.

DR. NESSLAGE: I am not sure that I am completely following you, when you say use that. Do you mean use it to come up with a recruitment that would be projected forward?

DR. DUMAS: Right. Use it to estimate, as the spawning stock recovers, what would the recruitment be.

DR. NESSLAGE: That's going to bring it way up.

DR. DUMAS: It would.

DR. NESSLAGE: Yes.

DR. DUMAS: But I'm saying we might be more certain about that, because we have a lot of data points between zero and 2,000, between zero and 2,000 spawning stock, between -- That's sort of the part of the stock-recruitment curve that we have a lot of information on, which is the part of curve between zero metric tons spawning stock and 2,000 metric tons spawning stock.

DR. NESSLAGE: Fred Serchuk.

DR. SERCHUK: I understand exactly what has been said. What concerns me is that the dynamics of the stock have changed in the most recent years, such that there has been a regime shift or something, and you're trying to get back now using a relationship that would no longer hold.

DR. DUMAS: Fair enough. That's right, and so, if we're saying that the relationship no longer holds, then I guess we shouldn't even be looking at the stock-recruitment relationship, if it doesn't hold anymore.

DR. SERCHUK: That's one reason why you would use recent recruitment.

DR. DUMAS: Right.

DR. NESSLAGE: Okay, and so I'm hearing some suggestion -- It's bold wording to call it a suggestion, but there seems to be perhaps some leaning towards recent recruitment. Remind me again, Erik, and how are we determining the low-recruitment scenario? Forgive me.

DR. WILLIAMS: I believe it's the average of the last ten years, and so basically the average of that cluster that we're seeing in the lower-left-hand corner of this plot.

DR. NESSLAGE: All right.

DR. DUMAS: What's the evidence we have for a regime shift?

DR. NESSLAGE: Can you show the previous slide? I think folks were looking at -- There we go. It's recent recruitment estimates being well below RMSY, or historical values. Go ahead, Chip.

DR. COLLIER: There is SSC members up, and so go ahead.

DR. NESSLAGE: Okay. If you can wait, sure. Alexei, go ahead.

DR. SHAROV: This is a never-ending discussion, or argument, and we've been discussing this for several rounds with other species, and I am okay with selecting a lower recruitment as an explicitly defined risk-averse option, that we're saying we don't know.

Number one, we don't know what level of recruitment we are to expect in forthcoming years, but, given that, in the recent years, there was a reduction in -- Given that it's been low in recent years, it would be risk-averse, by using the lower recruitment in the projections, so that we do not overestimate -- We do not produce greater expectations and then possibly face failure, but -- Well, that concept I could accept, but, otherwise, the concept of using recent recruitment just as the argument that this reflects the current conditions and it's what we are to expect in the future, I cannot accept this, and look at this graph as an argument.

If you were making this decision in 2010, or 2009, you would have used the most recent ten years of recruitment, which probably would be around the dotted line, and the recruitment was variable, but high, and then, in the next ten years, the recruitment would decline significantly, and we would have overpredicted substantially, even though we used an argument of the most recent recruitment and the environmental conditions are likely to be similar to what have seen before.

In principle, either we consider the variability in the recruitment as the evolutionary characteristic of the species, and, therefore, we are basing the stock-recruitment relationship on the full time series of recruitment estimates, or we develop the model, if we are able to, that would account for specific correlates that would allow us to -- Otherwise, I see no sufficient evidence for using the most recent recruitment, and I know we've been through these arguments before, but I still am trying to look for the truth here, and so that's my position. Thank you.

DR. NESSLAGE: Admirably, Alexei. Thank you. Let's hear from Fred Scharf.

DR. SCHARF: Can you guys put the stock-recruit curve back up again? It's probably Slide 46 or something, maybe, or 47? I guess, just looking at this, and I'm sorry that I missed Erik's presentation, because it was in class, but, when you look at stock-recruitment curves as a whole, this one is actually not bad, right, and, I mean, the fit is not actually bad. What is giving us some heartburn is that, at these low stock sizes, the stock-recruit curve overestimates the recruitment estimates, and so it's providing sort of a more favorable outlook in the projections if we use the stock-recruit relationship rather than the most recent ten years.

I guess what concerns me about using just the most recent ten years in the projections is that, as you look at when the stock starts to approach the threshold, over a thousand, and closer to 1,500 metric tons, the stock-recruitment curve actually underestimates recruitment, and so I wonder if there's a way, in the projections, to adjust for the -- In the stock-recruitment relationship, so that we still use the stock-recruit curve as the recruitment projections, but it's adjusted for the fact that we're overestimating in this very low stock size.

I just fear that we're going to -- If we see increases in spawning stock biomass going forward, then we just don't have any way for the model to account for potential increased recruitment as a result of that, which this data would suggest that, if we get towards a thousand or so, the stock-recruit curve could actually be underestimating recruitment.

DR. NESSLAGE: Thanks. Erik, do you want to address whether that's a possibility, because I think there was a question in there from Fred.

DR. WILLIAMS: I guess, if I was understanding, Fred, what you're describing is sort of modeling the time series properties of the residuals and carrying that model forward, along with the mean stock-recruit curve.

DR. SCHARF: Yes, and that's exactly what I was thinking.

DR. WILLIAMS: Yes, and so we could do that. There's all the issues that surround time series analysis itself, and, one, you need pretty lengthy time series, and you have to make sure you have covered the sort of space. In this case, maybe we've covered the space, but I don't know if the time series is long enough, depending on what might be the lag, or autocorrelation, that exists with the residuals, if it does exist. I don't know, and time series is what it is. It's not perfect, and you basically are saying that the patterns that you've seen in the past are the patterns that are going to continue into the future.

DR. NESSLAGE: All right. Thank you. Amy.

DR. SCHUELLER: I think I'm just going to pass and listen to what everyone else has to say.

DR. NESSLAGE: All right. Thank you. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. I am looking at this diagram, and it's important to look at the directionality of changes. It started in 63, and it dropped down to almost where it is now, or at

least the highest level of where it is in the recent period, but it bounced right back up, and then it fluctuated a little bit, and then we had a big, sharp increase, and then it precipitously fell for a couple of years, but it bounced right back up.

Those points where -- Those three lower points above 2,000 metric tons were sort of at the highest level of the recruitment that we've seen in the most recent period. They were low, but they were almost higher than any of the points in the most recent period, but they did bounce back up.

My feeling is that I don't see any bouncing back up of the type and of the magnitude that happened before, and that is one reason why I'm a bit skeptical that we're going to see that same sort of performance that we saw before, because I haven't seen a large increase in recruitment in the past ten years here, and we have ended, I think, in sort of terra incognita. We're entering into a period that we haven't seen before, and I don't think it's appropriate, because of that, in my own mind, to think that the dynamics that happened over the past twenty or twenty-five years are relevant to what might happen in the future, and this is the reason why I think that the stock dynamics, particularly in terms of stock recruitment, are not indicative, for this whole curve, of what might happen in the future. I think we're stuck in a low-productivity period. That's my view.

DR. NESSLAGE: All right. Thank you, Fred. Alexei.

DR. SHAROV: Well, it might be that we're stuck in a low-productivity, but it might be that, next year, or in two years, the recruitment actually will follow the presumed stock-recruitment relationship or will result in significant positive residual data being above the predicted level, and we cannot say. Like I said before, I would accept the idea that we don't know, but, being precautionary, we think that it's better to predict using the low level of recruitment, assuming that we're likely, or we might be, in the low-productivity period. At some point, it's going to change, and we don't know, but we want to be precautionous.

Otherwise, we have to decide what do we trust more, and do we trust the simple stock-recruitment relationship that theoretically is well defined, based on this concept, or do we trust more the data, and do we have enough data points that actually truly represent the stochastic, but still actual existing stock-recruitment relationship, and, in that case, you don't like the fit of the Beverton-Holt, and you change the model.

I bet, if you fit the Ricker model here, you will get a much better fit around those high data points that are around 1,000 metric tons, or, better yet, we may go away from the model altogether and use just the distribution and break the spawning stock size in the intervals that we think are appropriate, say three zones, and, depending on which zone your spawning stock biomass is, then you will estimate the average level of recruitment and the variance around it, and so it would be based on sort of the stage, the category, that the biomass is, and that's another possible solution.

DR. NESSLAGE: All right. Alexei, thank you. Jeff.

DR. BUCKEL: I keep going back and forth, and I don't have a solid answer on which one to go with, and I guess I feel more in line with Fred Serchuk's arguments on the reasons to go with low, but, with either scenario, the low or the stock-recruitment curve, I think it's really important to point out to the council that monitoring recruitment is really important here, and so I always think about these projections, and you think there's not going to be any new information, and you're

locked in, but there is going to be another assessment probably I don't know when, in four years maybe, and so that would give us some guidance on if recruitment is staying low or has increased, and maybe there is some way to look at the index of abundance before then.

If there is some indication that it has increased -- If we go with low recruitment, but then there's some indication that it has increased, then there could be some trigger there to allow an increase in landings, because we know that that's going to have that positive impact that you see with the stock-recruit curve projections here, but, if it stays low, then we want to be cautious and not allow those landings to increase.

I guess I think, either way we go, that there should be some language about a careful monitoring of recruitment, to have some trigger to -- If we go with low, and recruitment does increase, as Alexei has pointed out that is possible, then we wouldn't be stuck with a low-recruitment scenario. We could say, okay, we've got an indication that recruitment has gone up, and so we can allow some increase in landings.

DR. NESSLAGE: Thanks, Jeff. I have not been opposed to that approach in the past, but I'm not sure how that would work with a rebuilding plan.

DR. BUCKEL: I'm not sure either. I guess I just feel that, if we go with the low recruitment, as has been pointed out, it just has this dramatic reduction on landings, and so, prior to the next assessment, if there was some indication that we had some good year classes, then it would be nice to have a mechanism to take that into account.

DR. NESSLAGE: Agreed. Let's hear -- Maybe Chip can clarify.

DR. COLLIER: I just wanted to point out that there is a stock-recruit relationship, which is different than red snapper, which we had to assume an SPR for that population, and so the model was using that in order to estimate the maximum sustainable yield and the MSST, and we would have to adjust several of those parameters, if we're looking at rebuilding to a different level, because that's essentially what we would be trying to do, if we're saying that the productivity is not where it should be, and so that should be considered.

Then Alexei was talking about the precautionary principle, and that's one of the ideas behind the  $P^*$  approach, is the precautionary principle, and so, if you do use the  $P^*$ , that is being precautionary. You're trying to prevent overfishing and rebuilding the stock, and so I just wanted to remind you guys of that.

DR. NESSLAGE: Thank you, Chip. Let's hear from Chris and Anne, and then I am going to look to a strawman recommendation. We're coming up on 5:00, and I would like to have at least something on the table here for addressing this part of the action items. Chris, go ahead.

DR. DUMAS: Quickly, referring back to Fred Scharf's comments, and also to Alexei's comments, in the stock-recruitment relationship, if we throw out the data points to the right of a 2,000-metric-ton spawning stock, then that would pull the relationship down, for a really low spawning stock, and push it up for the spawning stock around 1,700, which is kind of getting at what Fred was talking about, and what Alexei was talking about, in terms of breaking it up into segments. This would be smooth, but it would achieve a similar result.

I guess we wouldn't necessarily even need to fit a Beverton-Holt through there. You could fit a line through there, or a quadratic through there, through the points, all the points to the left of 2,000, and it would pull recruitment down for the low spawning stock data points and push it up some for the higher spawning stock data points, which seems to be what our data are indicating. That would be saying that there was not a regime shift going on.

I hear Fred Serchuk, when he says that he thinks that there is a regime shift going on, and so that's something to take in mind, but it seems that this stock-recruitment relationship is really being held captive by those few data points to the far right on the chart, and there is a lot of variation in those data points in the far-right of the chart, and fitting a Beverton Holt through there -- I mean, those points are pulling it down, and, if we're really concerned about what's going on between zero spawning stock and 2,000 metric tons, then we should really focus on what's going on in there, what we think is happening. Thanks.

DR. NESSLAGE: The one thing that always concerns me is these aren't data. These are model estimates, and that stock-recruitment function is being -- That's all being done at once, and so I get a little concerned when we talk about dropping parts of the time series. I don't know. Maybe I am not following you.

DR. DUMAS: My main point is to focus on the relationship over the range of spawning stock that is important from a management perspective. The range of spawning stock that's important for us now is from zero to 2,000, we think, and, even if we switch some things around and that changes the estimate of the target spawning stock level, it's still going to go from like 1,600, or 1,700, up to 2,000, maybe, and so I'm saying to focus our efforts on trying to understand stock recruitment between zero and 2,000 spawning stock, and, if the Beverton-Holt is fit -- I understand the points to the far-right may not be data points, but those are some kind of points, and those are exerting influence to pull the curve down around 1,700, and so it's underestimating recruitment around 1,700, and it's also pushing the curve up, where the spawning stock is around 300 to 400, and so it's overestimating recruitment for the very low spawning stock levels.

We should be focusing more on what's happening between zero and 2,000 and trying to get the fit better there and not fit a functional form that is being held captive by the few data points that are way out at those really high spawning stock levels that, from a management perspective, we're not concerned about, and we don't care about getting to 4,000 metric tons. We just wanted to get to 2,000 metric tons. Thanks.

DR. NESSLAGE: I guess I am back to Chip's comment, and doesn't that -- Maybe I am not following, and it's too late in the day, but that would mess up all of the -- That wouldn't be consistent with your reference points, and so I will hold off my comments. Anne, go ahead.

MS. LANGE: Can we go back, and I think it was Slide 46, the recruitment plot, or maybe it wasn't that. That one. The base run recruitment. This goes to what Fred was talking about, and I think it's even clearer than on the stock-recruitment modeling. The period since 2008, to me, I think it is a regime shift, because, as Fred had said, it was going up and down and up and down, but it always recovered. It's been going down constantly for twice as long, or more, than any of the other perturbations in the past. I mean, I think we really should be looking at just the recent years, for right now anyway.



DR. NESSLAGE: All right. Thank you, Anne. Amy.

DR. SCHUELLER: I have a very hard time looking at this figure in a vacuum and making any sort of statement, because you can't just look at a time series like this without looking at the spawning stock, and so you can't separate SSB from recruitment. You have to compare them together, which I think is why you have to look at the stock-recruitment curve, because the SSB is lower. If you look at the SSB time series in a vacuum, it's lower, and going down, and so it's not super shocking, to me, that recruitment is lower and going down.

I guess I am worried that we're looking at this and getting more out of it than maybe should be there, and so I wonder how well defined the stock-recruitment curve is. I wonder what data are informing the recruitment time series, what are the quality of the data. Clearly, the quality of the data changes through time, and these aren't necessarily data points. They are estimates from an assessment model, and so they're not observed values. They are predicted values based on fitting to observed data that is of varying quality over time.

I am a bit more concerned that there's maybe a little bit of model misspecification here, rather than that we're -- We're squinting to try to make this fit better, when, in reality, we're just looking for something that maybe we shouldn't really even be looking for to begin with, and I am very, very hesitant to say anything about a regime shift by simply looking at a recruitment time series, because my feeling is that, looking at that in a vacuum, you would say we're in a regime shift, and then you change your benchmarks to match that, and then, in actuality, it could just be your spawning stock biomass is going down, because of whatever, fishing or environment, and so then you go into this like vortex of spiraling down, right, down, down, down, because recruitments are down, and so we're going to predict they're down, and so then we're going to -- I don't know.

I am just concerned that we're making more out of this than we should be, given the quality of the data and the time series. That was like no strawman for you, Genny. I don't know what to do, but I definitely don't want to be reading more into these tea leaves than we should be.

DR. NESSLAGE: Well said. Let's hear from Fred and Alexei, and then I want to kind of take our temperature at that point, and so let's hear from those two gentlemen, and then I have something to remind the SSC about, and so continue. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. I will preface my remarks by saying that I am familiar with a number of stocks in another management region, where we have seen low recruitment and low stock sizes, in recent periods, that are outside of the area that we saw for most of the time series. If you put your finger over those points in the lower-left, and you do a stock-recruitment curve with all of the other points, you would never have imagined that, from such a stock-recruitment curve, that you would ever get recruitment as low as we've seen in the past ten years. Never. Just put your hand over it and draw any kind of recruitment curve you want. It could almost be a straight line, and it actually could be slightly negative between the 1,700 and the ones that are below the line at 6,000 and 3,000.

Because the stock biomass is now the lowest we've ever seen, and we've seen the lowest recruitment that we've seen, I am thinking that we're in a new regime. We may not be, but I don't think that we can expect to see the rebounding that we saw when we had low points in 64 that

bounded right back up and the two low points that rebounded, and I just don't see it. Therefore, I think it's -- I think the dynamics are different now, with the stock as low as it has ever been, and recruitment as low as it's ever been, and I think that is a message there. Thank you.

DR. NESSLAGE: Thank you. Alexei.

DR. SHAROV: Generally, Amy covered what I wanted to say, that you cannot just look at just simply recruitment plots and make inferences, and you have to look at it in combination with the size of the spawning stock biomass, and so she did say that. My question is, all right, and what do we do?

My suggestion would be -- Well, the stock-recruitment relationship that we have -- Yes, it's based on the model-estimated recruitment values and on spawning stock biomass values, which is nearly always the case with any stock, and we should be using the whole stock recruitment relationship as we have estimated it for the projections.

DR. NESSLAGE: Okay.

DR. SHAROV: If anybody has any better suggestions, I certainly would be happy to discuss and support, and, on Fred's sentiment regarding the recruitment being so low that we would never have guessed that it could be that low, well, we are talking about steepness of the stock-recruitment curve for every stock assessment that we look at, and we talked about it for half a day today for scamp.

This is the area where, if we do agree that, in principle, there is a stock-recruitment relationship, despite all the uncertainty, that follows the shape of the Beverton-Holt, this is the area where you have a steep rise of the stock-recruitment relationship, and that, essentially, defines the resilience of the stock, as to how quickly recruitment falls down and SSB declines or how quickly it rises, and so there is nothing surprising to me. It just tells us, likely, that that's -- Unfortunately, that's the area where we are right now, given the size of the spawning stock biomass.

DR. NESSLAGE: Thank you, Alexei. I have a practical question, and I am not sure if this is to staff or to Erik, but, if I am understanding it right, if we choose the lower R options, whether 50 or 70 percent P rebuild is selected by the council, the F is going to be either 0.05, or essentially zero, and is that correct?

DR. WILLIAMS: Yes. It's going to be low in any event.

DR. NESSLAGE: Can you even achieve that with the discards in this?

DR. WILLIAMS: That I don't know, because, I mean, management has a lot of creative options at their disposal.

DR. NESSLAGE: Yes, but, in the next five years, is it actually going to be implemented in time?

DR. WILLIAMS: I dare not -- We are having trouble predicting recruitment, and you're asking me to predict management?

DR. NESSLAGE: That's the funniest thing I have heard all day. Thank you. John Carmichael.

MR. CARMICHAEL: Thanks. I think this has been an outstanding discussion of the realities of stock-recruitment relationships. They are challenging, and, as you see here, when it comes to projections, the outcomes of them become quite critical, but I will point out that, if you believe that the regime has changed, and that future recruitment is going to be on the order of the 200,000 fish that you see here, and as you see in the low-recruitment projection, and you don't believe that the recruitment, under MSY that you see in the other projections, based on the stock-recruitment relationship of 500,000 fish or so, is ever achievable by this stock, then you have to re-estimate all of the parameters that are scaled by recruitment that are relative to status.

For example, if you compare the end goal of SSB on say the projections at low recruitment with the projections at stock-recruitment recruitment, they're both trying to get to the same SSB, but, if the stock is only going to produce 200,000 fish, then you're not going to get to that same SSB with 200,000 fish, with the same MSY and the same dynamics. The recruitment is just a scalar, when it comes to MSY and MSST and SSB MSY.

I think, if you believe that the future of the stock is this low recruitment, and this regime change, then those other parameters have to be updated to be consistent with this new regime, and this was very much the discussion that the SSC had when we reviewed red grouper, and the same similar situation, and the thought was, well, you're not in a regime change, and so the projections of rebuilding were based on the stock-recruitment relationship.

We discussed this with red snapper, as was mentioned earlier, and, there, there was no stock-recruitment relationship, but, even though we were getting higher recruitment, in the longer term, the rebuilding schedule was still using that long-term average recruitment, and that keeps everything within the same currency and makes sure that your MSSTs and your SSB MSYs and your MSYs are all properly scaled.

If you really feel this is a regime change, then you need to reconsider the stock-recruitment relationship, and probably clarify the guidance that you gave when you accepted the stock assessment back in May, and update all the other parameters accordingly, and so that's just sort of my process recommendation, Madam Chair, and I know it throws a monkey-wrench into the works, but I think it's important to keep things apples-and-apples, as we go through this process, and start looking into taking management actions and looking at where this stock is going to go when it is rebuilt.

DR. NESSLAGE: Thank you, John. Those are good points. Let's listen to what Fred Serchuk has to say, and then I'm going to get close to wrapping up here for the day, and so go ahead, Fred.

DR. SERCHUK: When I mentioned a regime shift, maybe I mischaracterized the situation, in terms of we're in a different space than we were before. I don't know, and I can't recall, whether the size composition of the spawning stock now, at these low recruitment levels, is any different than it was when the stock was 1,500 metric tons.

I don't know whether -- I suspect that it's perhaps more -- That we don't have as many age groups in the spawning population, and maybe we don't have as many large female spawners, who may have a greater propensity for egg viability, and so on and so forth. Those dynamics are not

captured, quite frankly, in a stock-recruitment curve. The stock biomass, spawning stock biomass, of a resource that is dominated by maybe first-time spawners, and I can't recall what the age of maturation is for this stock, but it's very much different than that biomass being in age groups that are three or four or five years older than that.

That has a great, in my mind, a great impact on stock productivity, and, when I see low recruitment, it suggests, to me, that the numbers of fish at older ages are much smaller than they would otherwise be at higher stock sizes, and, therefore, that in itself could contribute to reduced recruitment, because the viability of younger animals, younger and mature animals, are generally less viable, in terms of producing progeny, than older animals. Again, I don't know the specifics here, but, if that is the case, that's another reason to think that we're not going to jump out of this phase that we're in now very quickly. Thank you.

DR. NESSLAGE: Thank you. You guys don't make this easy. I will say that, having participated in the catch level recruitment working group that Amy is fearlessly leading, and staff had been kind enough to put together a summary of our recent decisions regarding recruitment, and, granted, they were all very different situations, and some we had fixed steepness, and some we were estimating steepness, and some we're not even estimating recent recruitment, like with tilefish, but, in all of our decisions, in some fashion, we used recent recruitment. Am I mischaracterizing that? I will look to staff or Amy or someone who is on that group.

With regard to, I don't know, my personal perspective, and I have to go before the council, and, until we come up with our general guidelines moving forward, if we're not going to be relatively consistent, I need some solid justification for why we're deviating from what we've done in recent times. Amy.

DR. SCHUELLER: I guess I will just throw this out, and people can like it or not like it, but I am in the sort of same boat as Alexei, with, if we would like to use projections, based on the most recent time series of recruitment, I think that's an okay thing to do, based on being precautionary and making a statement like the most recent time period likely is similar to what we're going to observe in the most recent near future, but I do not want to go down the road of suggesting there is a regime change and that we're going to re-estimate benchmarks and go through that whole scenario. I just don't think that we have enough to do that at this point, and so maybe that's where the slice is. I don't know. There is your strawman.

DR. NESSLAGE: Except I have had the exact opposite strawman put on the table. I need a strawman from you all that I either a compromise, or folks need to start thinking about what they can live with, because we've got a goodly amount of folks on both sides of the table here, and we have to set an ABC, and it is 5:01. I appreciate all of your comments, and this is not easy. This is, as Erik said, not going to be much fun, or maybe you didn't say that, but that's what I was thinking, but it's also incredibly important. There are serious implications for this decision.

I would like everyone to sleep on it and think about two things, are we being consistent and what can you live with? Can you live with the opposite decision, because we have to at least -- I don't want to do a roll call and ask folks and get kind of a majority opinion on things, and I have only heard from a select group here, and so I would also like to hear from a wider group of people in the morning. Here's someone we haven't heard from. Scott.

DR. CROSSON: Actually, I kind of did that by accident. I agree with you, and I think we need to sleep on this, because we've been pushing hard today. I need a break.

DR. NESSLAGE: Yes. Okay. So please think hard on it overnight, or at least take a break, but I assume we can, first thing in the morning, pick this up, and Lauren wouldn't mind being delayed a little bit, and is that correct?

DR. COLLIER: She can get her coffee in the morning.

DR. NESSLAGE: Excellent. Thank you.

DR. CURTIS: I was just going to second what Chip said. She was flexible for when she came on in the morning, and Erik as well is available all day tomorrow as well, or in the morning, at least. Thanks.

DR. NESSLAGE: Fabulous. Thank you, Erik, and thank you, Lauren. Jeff, did you have a parting comment here?

DR. BUCKEL: Genny, you just mentioned consistency as one thing to sleep on, and so could we be reminded of what we've done for -- I know this has come up for multiple species, and, if folks could be reminded of what we've done in the past, that might help with your consistency comment, and so if we could maybe -- If someone could review -- This came up with red grouper and red snapper and black sea bass, I believe, and maybe another.

DR. NESSLAGE: Red pogy. We used -- I am stealing directly from this sheet that Judd, I believe, or Chip pulled together. For red grouper, we used recent recruitment, and steepness was fixed. Black sea bass, we did 1991 to terminal year, and steepness was fixed. For red pogy, recent recruitment from the last three years, 2015 to 2017, estimated steepness. For tilefish, you can't estimate recent R, and so the last seven years. No, and it's unclear -- I forget exactly. It's assumed steepness, and I forget what was used in the projections. Someone will have to remind me. Red snapper, of course, we used the recent mean of 2010 to 2019, with essentially there is no stock-recruitment curve there.

DR. COLLIER: Those are just the stocks that you guys deviated from recent recruitment, and there are many other stocks where you accepted the full time series, whether it was estimated or coming from the stock-recruit curve.

DR. NESSLAGE: Yes. Sorry. So king mackerel we've reviewed recently. What else have we seen in this timeframe?

DR. COLLIER: Greater amberjack just came to you guys recently, and blueline tilefish, and I would have to think of a few more.

DR. NESSLAGE: So, with the exception of blueline, and the tilefishes and king mackerel and amberjack though, these other ones had all -- They were all overfished, correct?

DR. COLLIER: Yes, and yellowtail came to you recently.

DR. NESSLAGE: That was not overfished.

DR. COLLIER: Yes, and hogfish.

DR. NESSLAGE: No.

DR. COLLIER: Snowy grouper. We will put something together and have a presentation for you in the morning.

DR. NESSLAGE: Sorry.

DR. COLLIER: It's no problem.

DR. NESSLAGE: I think that will help. Jeff is right that that will help folks, and it will jog their memories on what we've done.

DR. BUCKEL: Thanks, Chip. I appreciate it.

DR. NESSLAGE: Excellent. Thank you. Okay. Then we'll reconvene at 8:30 tomorrow morning, and is that correct?

DR. COLLIER: Yes.

DR. NESSLAGE: All right. Sorry for the long day. Thank you, all, for hanging in there, and I hope you all have a restful evening.

(Whereupon, the meeting recessed on October 27, 2021.)

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OCTOBER 28, 2021

THURSDAY MORNING SESSION

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The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened via webinar on October 28, 2021 and was called to order by Chairman Genny Nessler.

DR. NESSLAGE: Good morning, everyone. I hope you had a restful evening. We have a long day ahead of us, and a bit of rough discussion ahead of us, but I think I have a proposal for you all, regarding gag projections. Let's see. I am wondering, and would it be helpful if, as I describe it, maybe we put it on the screen, so folks can -- If they miss what I am saying, they can refer back to it.

Here are my thoughts. Given our extensive, difficult discussions, there is obviously a lot of scientific uncertainty around the future of this stock, and we don't know exactly what is going to

happen, and there is different theories, and there is different thoughts on how this stock might progress and how productive it is. However, we did, in the spring, go through our ABC Control Rule, which does account for a lot of scientific uncertainty, and we recommended a P\* of 20 percent, which we added to the 50 percent probability of rebuilding to get the 70 percent probability of rebuilding, which was our recommendation at that time.

That adds a 20 percent buffer to the OFL to account for additional scientific uncertainty, given the stock is undergoing a rebuilding plan, right, and so my proposition is that we set the OFL at the probability of rebuilding of 70 percent option, using the stock-recruitment curve recruitment assumptions. If the council, when they review this in December, and, if they decide to go with our recommendation, that's fine.

If they decide to go with a probability of rebuilding of 50 percent, then I anticipate this will be sent back to us sometime over the winter, and probably we'll have a special webinar for it, and, at that time though, I think we need to make it clear that we simply would not just recommend an ABC with the stock-recruitment curve at the probability of rebuilding at 50 percent, that we would add an additional ad hoc buffer at that time, based on all the uncertainty in recruitment for this species, and so that's the tradeoff.

I guess, if were to jot this, my proposal, down in a few words there, it would be, basically, that I am proposing the ABC -- Excuse me. I guess the OFL be set at the probability of rebuilding of 70 percent, which is what we recommended before, based on our current ABC Control Rule, with the stock-recruitment-curve-based R in the projections, but that, if the probability of rebuilding is set by the council at 50 percent, we would likely add an ad hoc buffer to that, to account for additional scientific uncertainty. I will let people think on that. I don't anticipate that anyone will love it, but the question is can you live with it?

DR. CURTIS: Genny, would you repeat the last bit of that second sentence, please, for me, so that I can jot it down?

DR. NESSLAGE: If the probability of rebuilding is set by the council at 50 percent, then we would set the ABC -- We would add an additional ad hoc buffer to the ABC to account for additional scientific uncertainty at that time, and we won't do that now, because that's not -- We don't know yet which direction they're going to go in, but our recommendation before was 70 percent, and we would stick with it. Clearly, we think there's a lot of scientific uncertainty here, and so I don't think we have any grounds to change our recommendation there, but it looks like we have some folks thinking they have some reactions, and so let's hear from the SSC. Scott, go right ahead.

DR. CROSSON: Good morning. I like this proposal, but I just have a technical question, I guess, for council staff. What we choose here -- We're not setting an ABC today, right, and that's set in stone, and then it's going to come back to us? Is the next process -- Because the council has not yet picked a probability of rebuilding, and they have not yet chosen 50 or 70 percent, we cannot set an ABC today, technically, right, in terms of process?

DR. COLLIER: You guys can recommend the ABC, and I would say go for it, with the one that you think is the recommended level, like Genny has listed here, and I think that's what you recommend to the council as the ABC. We're trying to make sure that anything that is going to

be going in this amendment is clearly laid out, and it's clearly articulated that this is your recommended ABC for this stock to rebuild.

DR. NESSLAGE: So it could change, and we may have to revisit this again, Scott, but they are asking for our recommendation at this time.

DR. CROSSON: They're asking for our recommendation, and so they're not asking for an ABC, because we can't give them an ABC until we have a probability of rebuilding given to us, right?

DR. NESSLAGE: Technically, I guess no, but this is what we anticipate we will decide, is what I am trying to lay out, under the two different probabilities of rebuilding. If they pick something else in between, then, obviously, we'll be back to the drawing board. Ideally, they would have picked the probability of rebuilding in June, and then we could set the ABC today, but that didn't happen.

DR. CROSSON: That's my trouble with this proposal, and this is what I've been kind of confused about since yesterday afternoon, and I don't understand how we can give an ABC recommendation until we have the probability of rebuilding from the council.

DR. NESSLAGE: Well, I guess a second alternative is we say, sorry, we can't do that until you give us the probability of rebuilding, but this is our likely -- Obviously, we made the recommendation of 70 percent before, and it's more that we would be advising them on the recruitment scenario, but, ultimately, we would have to revisit that, and I don't really want to keep revisiting that discussion at another meeting. I mean, we're being asked here to fill out the ABC Control Rule table. Staff? Chip?

DR. COLLIER: I am agreeing with you that we need the ABC table filled out, and, yes, it's a challenge to be setting this ABC prior to the council really talking about their probability of rebuilding, but this is the recommended level that you guys are putting forward as the ABC, and, if the council wants to send it back to you guys, because they're not happy with it, they're going to provide you their reasoning for it, and you guys have already -- You are stating here that, if it comes back to you and the probability is at 50 percent, this is what is going to happen, and so I think you've laid out a scenario that the council can understand.

DR. CROSSON: Chip, I think you've answered my question, and so, if we use the stock-recruitment curve from the stock assessment, and we use 70 percent as the probability of rebuilding, and we set an ABC according that, and it goes to the council, and the council says, no, we would rather have 50 percent, then the ABC -- We have redo the ABC recommendation at our next meeting, or some special meeting, right, and the council can't move forward, because we've set the ABC based off of 70 percent, and it has to come back to us.

DR. NESSLAGE: Correct.

DR. CROSSON: Gotcha. Okay. I'm comfortable with that.

DR. NESSLAGE: All right. Thank you, Scott, and thank you for clarifying. Fred, go ahead, Fred Serchuk that is.



DR. SERCHUK: I have no problem with your proposal, Chair, but it would be important for me to monitor whether recruitment or the stock size is going to increase, no matter which projection scenario we use, and so I am -- It's important for me to see that there's an update or an operational assessment sometime in 2025 or 2026, just to make sure that either the projection based off of the S-R curve or the projection based off of the low-recruitment curve is -- Which one is more appropriate. Is the next assessment even thought about yet?

DR. NESSLAGE: 2025, staff are telling us, but we can add that to the report, Fred, and things get shuffled, as you know, and schedules get --

DR. SERCHUK: Well, I'm thinking that our uncertainty is we're uncertain about what the recruitment dynamics are going to be. We have selected one here, but we need a gut-check, quite frankly, because we're really uncertain, and, therefore, the next assessment is really very important, not only to look at any stock increases, but also any recruitment increases.

DR. NESSLAGE: Absolutely. Do you mind jotting that down, Judd, something about ensuring this assessment stay on schedule for 2025 is important to identify if the stock is showing signs of rebuilding or worse recruitment? Excellent. Thank you. Chris Dumas.

DR. DUMAS: Thanks. Could we make a contingent proposal, so that, if the council chooses a rebuilding probability of 70 percent, then we say this, and, if the council chooses a probability of rebuilding of 50 percent, then we say this, and go ahead and -- That way, it might remove a round of back-and-forth between the council and the SSC. I mean, it could be a little table, a little table with rebuilding probability chosen by the council would be one row of the table, and another row of the table would be ABC method, and that could be S-R curve or whatever we decide to do, and then the third row could be ABC.

DR. NESSLAGE: I hear what you're saying. I like the idea of there not being back and forth. However, I don't really want to waste a lot of time talking about an ad hoc buffer, and that is a whole rabbit hole I would rather not go down if we don't have to. If we have to go there, then so be it, but, if they do adopt or proposed, or recommended, ABC, then we don't have to do any of that.

DR. DUMAS: Okay.

DR. NESSLAGE: I hear you, but I think the discussion of what the ad hoc buffer would be is going to be a long one, and we have a lot on our agenda today.

DR. DUMAS: That said, I like your strawman proposal. Thanks.

DR. NESSLAGE: Thank you. Jeff Buckel.

DR. BUCKEL: I agree, and I like your proposal, Genny. Thanks for putting that together. In addition to the assessment staying on schedule in 2025, if there could be some other -- I think we had some research recommendations from the April meeting, but if maybe some of those could be put as a higher priority by someone, and that is to -- I know one of the research recommendations for the chevron trap video survey is that the videos would have the ability to get length information, and so to provide some earlier indication of if recruitment has stayed low I think would be really

important, and so either from the video trap survey -- I know they don't trap well, and so it would be from the video, but they need to move to getting lengths, and this would be another reason for them to get length information, to give us an indication of gag recruitment.

Then something I looked at in April was the MRIP releases that are in inland waters of gag, and those are age-zero fish that get caught in estuaries before they migrate out, and that -- I just did a cursory analysis of catch divided by effort in inland areas in the South Atlantic, and that showed the decline in recruitment, and so that might be something that could be investigated, to see if it could produce a recruitment index. I just think some earlier indication, before 2025 -- If recruitment has stayed really low, then we may not want to go with these recruitments that are coming from the stock-recruit curve, or we may not want to go with those landings that are coming out of that projection.

DR. NESSLAGE: Right. Great points. Just so that I don't forget, when we're writing up the report, Judd, do you mind putting, like in parentheses or something, specifically, or particularly, the length information and the estuarine recruitment index development? We can grab the language from the last report, as Jeff suggested, but that will give me the reminder to do so, and were those the two, Jeff, in particular, that you highlighted? I am trying to remember.

DR. BUCKEL: Those are the ones that I remember, but others might remember some other potential sources, but those would be two that I remember that were discussed. Thanks.

DR. NESSLAGE: Thank you. Excellent suggestion. Yan, go ahead.

DR. LI: Thank you, Genny. I like your proposal. I mean, that's a good way to put it up there, given our discussion yesterday, and I am thinking, given that, should we also add a sentence to highlight that, because it is difficult for the SSC to have a -- I don't know how to say it, but not finalized, or have like a settled, recommendation for now, given the uncertainty in recruitment, which is not reflected in the current projection, or something like that, just to let the council know that it's difficult, given what information we have received so far, to make that recommendation for the ABC, for the rebuilding probability.

DR. NESSLAGE: Absolutely. Maybe, Judd, after the last bullet to comment on any difficulties, we need to elaborate on her suggestion about just how difficult it is to predict recruitment for this species, and we may not be taking into full account all the uncertainty in how productive the stock is going to be in the next five years or so. Does that capture your thoughts, Yan?

DR. LI: Yes. Perfect. Thank you.

DR. NESSLAGE: All right. Thank you. Fred Scharf.

DR. SCHARF: Genny, I also agree with the proposal, and so thanks for thinking about that and putting that together. I just wonder, in the first bullet under the recommendation, the second sentence about how we would add this buffer to account for scientific uncertainty, do we want to leave it like that, very broad, or do we want to be a little bit more specific about the source of that uncertainty, because the problem that we have is that, at low stock size, the stock-recruit curve overestimates recruitment, and so we have this period of low recruitment, and the stock-recruit

curve is predicting that recruitment is 300,000 fish, and what we're seeing from the model estimates is more like 200,000 fish.

The stock-recruitment curve sort of overestimates sort of the productivity that we're seeing, and so the uncertainty sort of lies in the productivity of the stock at low stock size and how that's going to -- How to predict that, moving forward, and so I'm not saying that we have to do that right now, but I'm just asking if we want to be just a little bit more specific about the source of that uncertainty, rather than just leave it broad.

DR. NESSLAGE: That's a great suggestion. Judd, do you mind, underneath Yan's bullet there, that maybe we say something, as a placeholder for the language, about specifically the stock-recruitment curve appears to be overestimating recruitment at low stock. Maybe, from some of the discussions yesterday, maybe we need to say, theoretically, the stock-recruitment curve, which this is a pretty decent stock-recruitment curve, but, theoretically, it should be the best approach, but it appears to overestimate R at low stock sizes. All right. Fred, is that capturing your thoughts?

DR. SCHARF: Yes. Thank you.

DR. NESSLAGE: Fabulous. Thank you. Amy, go ahead.

DR. SCHUELLER: I was just going to say that I can -- I am happy with everything that's on here, and I really appreciate everybody coming to the table this morning and speaking up about what they think, and I think we have a good list of difficulties here, and that's it. I don't have anything to add.

DR. NESSLAGE: Thank you, Amy. Anne.

MS. LANGE: That's what I was going to say as well. I think the proposal is right on and the best thing we can do at this point, until we hear back from the council.

DR. NESSLAGE: Great. Thank you. Are there others who haven't spoken who -- If you disagree, this is definitely the time to speak up. Wilson, go right ahead.

DR. LANEY: Thank you, Madam Chairman. I don't disagree, but I am still hearing Dr. Serchuk's words from yesterday ringing in my ears, and, also, keeping in mind the several recent papers that have admonished those of us in the fishery management family to consider the fact that we need to have older, larger females in the population, in order to ensure future sustainability, and so, to the extent -- I think that your proposal is definitely a conservative one, and I think it likely would go a ways towards achieving that, particularly if we, as Fred says -- I like Jeff's idea too for looking at those young-of-year gag in the estuarine area, to see if that would constitute a good, reliable index of recruitment, but I agree that we need to monitor -- I am rambling here.

I think that this would do what we want it to do, or at least I hope it would, although it's still appealing, to me, to look at that low-recruitment average, as opposed to the S-R curve, but I'm good with it. I can live with it, but I would appreciate hearing from Fred, if he thinks that this would be equally conservative and result, hopefully, in a broader age structure and older females in the stock in the long run.

DR. NESSLAGE: Well, one thing you're making me -- While Fred is thinking, if he wishes to speak, I would say that we do need to buff up our discussion of how this could -- This approach may not adequately account for low productivity in this stock. It's possible that recruitment could stay very low and/or go lower, and we need to alert the council to that, and I'm sure they're aware, but it's good to remind them, and so they can -- Am I correct that they could set the ACL lower than the ABC, and am I correct on that? I am looking to staff.

DR. COLLIER: That is correct.

DR. NESSLAGE: Okay, and so we've said this before to them, and we can say it again, and I think we probably should, and you may want to set the ACL lower than the ABC, to account for the fact that this stock looks to be highly unproductive at this time. Fred, what do you think about that and what Wilson said?

DR. SERCHUK: The only way we're going to be able to discriminate between what's happening on the S-R curve and what's happening on the current recruitment is to take another check later on. As long as the fishing mortality comes down, and, under all scenarios, it has to come down drastically, I think, if we just look and see, at the next assessment -- We'll probably have better information to see which of the scenarios is correct, but all scenarios require a significant reduction in fishing mortality, and so that has to be good for the stock. Thank you.

DR. NESSLAGE: Thank you. Well said. We have some other folks who would like to comment. Let's start with Erik Williams.

DR. WILLIAMS: Thank you, Genny. I was just going to circle back to -- Actually, several people touched on this, but it was mostly Jeff Buckel's comment about doing an interim check on recruitment, and that's a great idea. Just recognize that that comes with some workload, and it could be refined, and it doesn't need to be focused on just looking at the estuarine catch, as Jeff was proposing, but we could actually -- Probably the better information source is actually going to be the age comps that come out of the trap survey.

I would say -- I just recommend that you maybe generalize that to a type of interim analysis to look at -- To focus on predicting recruitment, or measuring recruitment, in gag in the interim years, and then recognize that that's going to be a workload, and it would have to then be somehow worked out with the Center and worked into the SEDAR schedule, in a sense, but I think that's probably what you want, rather than just declaring this the way it is without -- It's not clear who is going to do it, and I'm also not clear if we have actually established a true link between recruitment and the inshore catch of juvenile gag yet, and I can't recall seeing that relationship, but, anyway, I just offer that, that there's a whole suite of things that we could do to try and estimate recruitment between now and 2025.

DR. NESSLAGE: Good point, and maybe -- Do you mind, Judd, putting a note there, even if it's just to me, when I am giving the presentation, that this -- Recognize to the council that this will require a workload discussion with the Center, but it could be a high priority for the council, if they choose to make it so. Thanks, Erik. Mike, you've been waiting for a while. Go ahead.

DR. SCHMIDTKE: Thanks, Genny. I guess a question popped in my head, kind of similar along the lines to Fred Scharf's comment, but, just looking at the language of this proposal, I can see a

council question, and potentially a public question, that we would have to address in some way, and that is, okay, we have these two different P rebuilds, and kind of a contingent second one, and what is the scientific uncertainty that is being accounted for by the ad hoc buffer that is not being accounted for in the 70 percent rebuild?

Like, if we reduce that 70 percent P rebuild, then there is this additional piece of scientific uncertainty that, theoretically, is not accounted for with the 70 percent, or is accounted for by a higher P rebuild, and we're going to add in -- You all would add in that scientific uncertainty, and I am just curious what that is, so that we could have some explanation, and that may be better addressed through refined language, or additional discussion, but just so that the information is available for the council in their considerations.

DR. NESSLAGE: Sure, and so we've spent many hours now discussing recruitment for a stock that appears to have gone -- Had a severe decline in spawning stock biomass, and I think this group is seriously struggling with that, and we have a working group devoted to how to deal with that, in projections used to set catch levels, and we don't have a good handle on what is going to happen.

As Fred Serchuk mentioned, we have no way of checking for another few years, until that time, until we're more certain about how productive this stock is at such a low stock size, and that's what that 20 percent is -- That's part of what that 20 percent is taking into account. There's a lot of other uncertainties. If we go back to the April report, we have a laundry list there as well, and this is not an easy stock to assess, and so I don't know if that answers your question, Mike.

DR. SCHMIDTKE: Could I follow-up?

DR. NESSLAGE: Yes.

DR. SCHMIDTKE: I guess the question is, in the sense of is -- Like I understand that there is that uncertainty surrounding the recruitment, and is that not being accounted for within the 70 percent level, such that, if it's set at 50 percent, that that's going to be added in by that buffer?

DR. NESSLAGE: That's what we're saying.

DR. SCHMIDTKE: Okay.

DR. NESSLAGE: That is the proposal on the table. Wilson, go right ahead.

DR. LANEY: Thank you, Madam Chairman. Back to Erik's point, and I like what he said about making it a little bit more generic, but, with respect to the estuarine young-of-year captures, there is a historical longer-term dataset that picked up a long of young-of-year gag, and that was the impingement dataset for the Brunswick Steam Electric Plant on the lower part of the Cape Fear River.

Some of us are working to ensure that those data are conserved for future possible use, and this might be one future possible use, if in fact it happened to enable us to look at the Beaufort Bridge Survey, for example, and see if there was a correlation between larval, or post-larval, gag coming in and juveniles that were being picked up in the Cape Fear, and I don't know, and it's probably a long shot, but I thought that I would just mention it. I have those data, and others are available to

us, and I am currently talking to Duke Energy about making sure that those data are free for us to use, and so I just wanted to throw that out there as a comment.

DR. NESSLAGE: That's great. Do you mind jotting a down a note on that, and maybe Wilson can help when we write the report and flesh-out some of that information, just to make sure that folks don't forget when they go back, if this becomes a task, that they can reach out to Wilson. Thank you. Excellent. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. The biggest uncertainty, as I see it, and we've already said it here, is that we're using a stock-recruitment curve, and the stock-recruitment curve tends to overestimate recruitment at low stock sizes, and that's apparent. We could do an exercise to see, if we took off one or two more of the recent points, how would the stock-recruitment curve differ, but the fact is that we're predicting a higher level of recruitment from the stock-recruitment curve than we have observed in the past nine or ten years, and I think that's the biggest source of uncertainty that we have with going with an approach that doesn't align well with our recruitment estimates in the most recent years.

We think the model is fit fine, but the fact is that there is a disparity at these low recruitments that we've seen, that it doesn't fit those very well, and, to me, that is the nub of it, and, if we couch it by saying, okay, if you take a higher probability of being rebuilt, that may be a more conservative approach, until we get the next evaluation of how recruitment is going on. To me, that's where it all lies. Thank you.

DR. NESSLAGE: Thank you, and thank you, Judd, for trying to capture that. John Carmichael, go ahead.

MR. CARMICHAEL: Thank you, Chair. I appreciate the discussion this morning. Just to follow-up on what Mike was saying, I think, in the second sentence of the first recommendation, rather than saying, just broadly, "scientific uncertainty", if you really address the issue that has been discussed, as you pointed out, Chair, that you're really talking about the recruitment uncertainty, which is the issue that Fred just made. You have a lot of recruitment uncertainty, and you're observing lower than estimated recruitment, and the stock-recruitment curve doesn't seem to be capturing that.

Whether it's because of things going on with the stock environmentally, or whether it's a problem with the model shape fitting to recruitment at low stock sizes, it seems to be something that we really don't know at this time, but I think that's the real issue, and it's recruitment uncertainty, and then the reason that the SSC would feel justified in doing that would be, if the council did set rebuilding at 50 percent, then the chance of not being rebuilt in ten years seems rather high, if the recruitment continues to be low.

With the 70 percent, you are setting a higher chance of success, which seems like you've got a better chance of getting where you want to be, even if recruitment continues to be low, and I think, in the second bullet, it would be helpful to do not just trends in recruitment, but, really, what you want to see is, is the recruitment continuing to be lower than what is estimated by the stock-recruitment model, and that really seems to be the key point, and that should be a couple of years, or maybe two years, depending on what the data is, into the rebuilding period, and maybe we'll see some signs.

It will certainly be more years of looking at recruitment, and more estimates of recruitment, which will give you more insight into whether or not this trend you observe in the recent years is continuing, and I think those are all very important points, and definitely making that bullet there helps the council, when we go to the Steering Committee and deal with the SEDAR process, to make sure that this is a priority. We have several stocks, between here and there, and several on for 2025, and this makes it clear that gag is likely a priority stock. It's a short rebuilding time, and it's definitely going to have some significant reductions, and there is a big question about recruitment.

DR. NESSLAGE: Very well said. Thank you, John, and I wonder if -- Judd, thanks for adding that, and I wonder if we want to add, below, if there's an interim analysis, just ask the question of -- Just to that last bullet there, the prioritized -- I think that third one is going to be more interim analysis, or analyses, recommendation. I think John said we can look -- Well, I guess we won't have estimates of recruitment until we do the assessment, and so never mind. Thank you for that, John. Very well said. Jeff, go ahead.

DR. BUCKEL: Just a follow-up on Erik's comment. Judd, if you could go up two lines, to "particularly the length", and so particularly the length/age of gag from chevron trap, just so we remember, when we're writing the report, and Erik wanted that to be more explicit, that the chevron trap might be an easier source, and maybe better capture recruitment than the fall gag age-zeros in the estuary. Thanks.

DR. NESSLAGE: Thank you. Excellent suggestion. Wilson, go ahead.

DR. LANEY: Jeff, to that point though, my understanding of gag life history is that that that estuarine -- Those estuarine juveniles may give us a better sense than the chevron trap video or the trap captures themselves from offshore, just because, my perception anyway, is that they recruit inshore early on, and then they gradually move back offshore again, and so would it be reasonable to assume that the estuarine captures would be more likely to correlate with recruitment, or I guess maybe either one would work, but it's just that my perception would be that the offshore captures would be older juveniles, and somewhat more removed from whatever larval, or post-larval, recruitment occurred in the first place. I guess either one would probably work, and I see that Wally is jumping in here, and so hopefully he will have some insight.

DR. BUBLEY: I can speak to that, real quick, if that's okay, Genny.

DR. NESSLAGE: Sure. Go ahead.

DR. BUBLEY: Wilson, I think the concern is, the earlier that you look, the early juveniles in the estuary, there is a higher chance that there may be some mortality event, where the numbers that you see of those small juveniles don't end up making it to the age-one recruits out on the shelf, and so that was Erik's point, that we don't know if the catch per unit effort of young-of-the-year in the estuary is going to equate to the equivalent recruitment of age-ones on the shelf, and so, when they show up as B2s in MRIP, they're a larger gag. They're leaving the estuary in the fall.

They're age-zeros, but they're like five to eight inches long, and people catch them on hook-and-line this time of year, and so that's what -- I was thinking that that may be a better indication of

recruitment, right, because they have made it through the gauntlet when they're smaller, but, as Erik pointed out, even maybe an easier thing to look at would be when those fish are out on the shelf. They do leave as age-zeroes in the fall, and so age-ones should be on the shelf the following year, and so that would -- You know that -- You have a better sense that they have recruited to the population, and there is a less likely chance of some mortality event dampening that year class trend. Erik can correct me if I misspoke for him.

DR. WILLIAMS: Just quickly, to that point, Jeff summed it up perfectly. That's exactly what I was going to say. We don't know when is the critical time period for cohort formation for this species.

DR. NESSLAGE: Great. Thank you. Wally, did you have another point?

DR. BUBLEY: It was mainly to what Wilson was saying. In terms of right now, I mean, our recruitment is being informed, essentially, by adults offshore, and so, by just adding additional years, we would just kind of tack on -- Potentially look and see how that changes over time, because, right now, we don't have any good indication of estuarine abundances and recruitment based off of that, and so it really wouldn't change anything, outside of we would get more years, but the offshore information might just be as useful as we have right now.

DR. NESSLAGE: Gotcha. Okay. Thank you, and thank you for waiting, Fred. Go ahead.

DR. SCHARF: I just wanted to sort of make a broader statement related to all of the discussion we've just been having about these independent recruitment indices, and it seems like, in most of these stock assessments, we end up at the same place, and so we end up with a lot of recruitment uncertainty, a lot of uncertainty in the model projections, or model estimates, of recruitment, and we always seem to be lacking, in terms of independent sources of information that can inform recruitment.

I think that, as part of the recruitment projections working group, we'll probably talk about this a little bit, but I think it's -- Trying to think broadly about how we can start to invest in some data collection broadly across the South Atlantic that would provide some independent estimates of recruitment, for many of these species, is something that I think that we need to work towards, and it shouldn't all have to -- Like, in the case of gag, we've got some potential independent sources of data.

There may be some larval input data, and there may be some estuarine emigration data, and then we have the age-length comps from the trap survey, or the video survey, and maybe those are all linked up and they do provide a good index of recruitment that could be used going forward, in the case of gag, but I think, just broadly, it's time to think about whether or not -- How we can look toward the future and then come up with other ways to create some independent data streams that would inform recruitment, because we always seem to be in the same place, when we get back to these assessments, with the recruitment uncertainty.

DR. NESSLAGE: Well said. Recruitment estimation is probably -- If you read Tim Smith's book, it's the reason we started fisheries science in the first place, and we're still working on it. Wally, what would you like to add?



DR. BUBLEY: Just following up with Fred's comment there, Fred, you are in luck. We just got funded for a MARFIN study do some more near-shore recruitment-based sampling, to attempt to see if we can do something with recruitment indices for multiple species, and so, over the next few years -- We haven't started sampling yet, but next year is our first year, and so hopefully we can maybe get a start on having a handle on what's going on with the earlier life stages.

DR. SCHARF: That's great. Thanks, Wally. I'm looking forward to that.

DR. NESSLAGE: Agreed. Great news. It looks like we're fleshing out this part of the report, and I think we have a lot to say. I will look to folks to help me, when we draft this, to refine the language a little, but are there any major points missing here of what we would like to tell the council regarding our thoughts on ABC recommendations for this stock? I am not seeing any hands. Unless there is any last comments from the -- They are starting to roll in. Fred Serchuk, go right ahead.

DR. SERCHUK: Chair, I think it's really very important, also, to talk about the significant reduction in F that is required for rebuilding. When you have Fs that are 1.5 and above, and 1.0, you're quickly going to have a large reduction in your standing stock, no matter what that is, and, typically, it means that you take out the legal size, or you start to have a reduction in the age composition of the stock, and so all of these scenarios indicate that, in order to rebuild the stock, F needs to be significantly reduced, and without that -- If that doesn't occur, everything else is moot, in my mind. I mean, we know that, because we deal with it, but, if you look at those graphs, you have to reduce that F by a tremendous amount.

DR. NESSLAGE: Absolutely. Excellent addition. Thank you. Other thing we're missing, other major points that we need to make? Going once, twice. I am not seeing any hands. All right, folks. This was a very difficult discussion, and I appreciate your attention and your engagement. This is a very important issue, and I think we're giving sound advice to the council. I will do my best to relay it to them in December, and I look to you all to help me to refine the language in the draft report, so that it completely and accurately reflects our discussions, but I believe that now it's time to turn to another agenda item. Is Lauren with us?

DR. COLLIER: She is here.

DR. NESSLAGE: I think we can move on then to Agenda Item 8, which is Ecosystem Impacts of High Red Snapper Recruitment, and so this is -- We're looking at Attachments 8a through 8c, and Lauren Gentry is going to join us here and provide an overview of how they have used the Ecopath with Ecosim model to examine effects of high red snapper recruitment in the South Atlantic ecosystem.

There's been a working group devoted to this as well, and they held a three-day workshop to review these results and comment on the findings, and so their recommendations will be reviewed here as well, and we're being asked to provide comments on these findings, whether we concur with them, and is there any additional modifications to what the workshop recommended that we would like to make, and so keep that in mind as Lauren goes through the presentation.

## **ECOSYSTEM IMPACTS OF HIGH RED SNAPPER RECRUITMENT**

MS. GENTRY: I am Lauren Gentry with the Florida Fish and Wildlife Research Institute, and I am presenting on behalf of your SAFMC modeling team. Also, from FWRI, we have Luke McEachron and Shanae Allen, and, from the University of Florida, we've Dave Chagaris, and they're all on the call, and so you'll be hearing them jump in to help answer questions at the end, and we, your modeling team, along with a workgroup of SSC members, we held a virtual workshop, about a month ago, to discuss and explore this high recruitment by a red snapper high recruitment situation that we've all been talking about recently.

Our plan for today is to give everyone a little refresher and background on like the model platform itself, the model itself, and then what modifications were made specifically to address this red snapper question. Then we'll talk about the results from each part of the model, and the model is made up of multiple pieces, and then we'll talk about what we did during the workshop and what the conclusions were that we were able to sort of draw from all of this work.

Then, after that, we can just all have a nice discussion about what these conclusions mean for the council's original question, and that original question was what is the impact, or what are the impacts, of recent high recruitment of red snapper on the rest of the snapper grouper complex, and so, essentially, we can kind of think of this as what other species are really sensitive to an increase in red snapper biomass, but, first, a review.

Many of you have seen these slides from Luke in the past, when we were reviewing just the model itself with the SSC, but it's been a long year for everyone, and I know we have some new faces in the group, and so a quick refresher is in order. Ecopath with Ecosim and Ecospace, also known as EwE, and that's what we all call it, is an ecosystem model. It's the most common marine ecosystem model in the world, and that map that you see there shows where different models have been developed or applied across the world, and it consists of three components, which we will go into detail for, but, generally, Ecopath is the first part, and, in Ecopath, we are looking at a snapshot of just the trophic impacts at just one place and one time.

Then, in Ecosim, we look at those trophic dynamics over time, and so hence the "sim" part for time, and then, in Ecospace, that lets you look at the trophic dynamics simultaneously over time and space, but it's grayed out here, because it's not applicable to the current model.

Ecopath is the very first component, and, in that component, we're just constructing a mass-balance model to represent one moment in time, usually a year, and, when we say mass-balance, we mean that the prey mortality is the predators' consumption. Therefore, everything, all these trophic links, all these trophic groups I mean, are linked in the model via their diet. It's all about who eats who and in what proportion.

In Ecopath, we're simply defining the groups, and so you have to -- We've got 700 species, or more, in our model, but we refined that down to about 140 groups, and so you have to define the groups and their diets, and then you input things like growth factors and fishery data, and that gives you this snapshot of the trophic structure and function of the ecosystem sort of as a whole, and you can sort of visualize that as your traditional food web. There's a little screenshot of one of these ridiculously large food webs that we put together for this.

If you stop here, and lots of people do. Lots of people just build an Ecopath model and stop here, and you can get a sense of the key groups in the system, and so who is the most important, and you can produce a wide variety of ecosystem indicators that help you describe and explore this system, and two of those that we're going to look at today are called niche overlap and mixed trophic impacts, but we'll get into that soon.

Another really useful part about this is that there are a series of best practices and established acceptable ranges for these quantities and for these indices that help us determine if the model is reasonable, and so this is a good spot where, as the modeler, when you're building the model, you get to stop and go, yes, this is realistic, and I'm on the right path, but, more importantly, Ecopath serves as the foundation for Ecosim and then Ecospace, if you end up going that far.

Now Ecosim is where the model converts the Ecopath master equations, all of that mass-balance, and converts them to differential equations, to model biomass over time for every single trophic group, and so we used Ecopath as the initial starting point, and then it simulates the biomass dynamics over time for each trophic group, and one of the important fits about this though is that we assume -- Sort of conceptually, we have to assume that the predator-prey interactions are not random, and, in fact, they occur in sort of the states, or arenas, where prey are either vulnerable to predation, like while you're swimming and looking for food, and you are vulnerable to be eaten, or, at some points, you're going to be unavailable for predator consumption, like when you're hiding under a rock or schooling with all of your friends or something like that. Any group, at any point in time, can move back and forth between vulnerable and invulnerable.

To reflect this, we use time series observations, or the points on that little graph that you see up there, and you have to tune these vulnerability parameters, and it's just a number that every predator-prey pair has, and you tune that vulnerability parameter, and the vulnerability parameter defines the relationship between the prey's mortality and the predator's density, and, when you fine-tune this vulnerability parameter, it helps you calibrate the model, and that's the line right there, and so the line is what Ecosim is saying will happen to that group's biomass, and then the dots are what you know happened to that group's biomass, because that's your observed data. We use the vulnerability parameters to sort of adjust that line around, to get it as close as possible to the dots.

Now, when vulnerability parameter values are high, it indicates a more linear relationship between prey mortality and prey density, and so that's the graph in the bottom-right, and so, with a high vulnerability, a prey is more vulnerable to its predator, and so it's more likely to get eaten, or eaten at a high value, and so that means that it can have a higher predation mortality at high predator density, and I know that it kind of takes a little while to like wrap your head around it, but this graph is a really good one to keep in mind when we start getting into these vulnerabilities. The higher the vulnerability, the higher the prey's mortality as the predator density increases.

Now, when we tune these parameters, or, in other words, we're going to call it calibrating the model, or fitting the model, for every trophic group, or at least the trophic groups we really, really care about, you can get a baseline understanding of the time dynamics in the system, and so there is your refresher, and, for people who are new, I'm sorry that that's quite the crash course, but let's hop right into the actual model, our model.

During the review process, in 2019 and 2020, we went over the sources for all the basic inputs for all 140 groups in Ecopath. I will not make you guys go through all of that again today, but I wanted to go into detail with just red snapper, so you know where the red snapper stuff came from, and a lot of this was added specifically for answering this question, and so the first thing we did was we needed to split red snapper into three age groups, so we could model very young red snapper, young adults, and then full adults separately, because it's hard to look at recruitment if you only have one age group, right?

Once we looked at where there were ontogenetic shifts in like diet and fecundity and habitat and everything else about these fish, we really settled on age-zero, age-one through three, and age-four-plus as our three groups. Now, in the model, these are all under red snapper, and so it's really stanzas of groups, but they are all separate. They all have separate inputs for each one, and, just for context, if anybody -- If you've never personally met a red snapper who is age-one before, this corresponds to like less than a pound, a one-through-six-pound fish, and then like a six-pound-and-over fish, and you guys can't see me right now, but I'm gesturing with my hands how big those fish are, but that just kind of roughly gives you an idea.

Fortunately for us, the good folks of the fishery world have just wrapped up, or are still wrapping up, I believe, the new red snapper stock assessment, and so we were able to use the greatest and latest estimates for biomass. Then we used the growth and fishing mortality from the assessment to calculate total mortality, and that's just one of the inputs, and then consumption just comes from FishBase, as it does.

Now, one of the most important pieces of any Ecopath model is the diet matrix, and it's this giant matrix of all of your groups on each axis, and it's all about who eats who and in what proportion, and so, to be as detailed as possible, the model team has spent the last three years now collecting 250-plus diets from agency gut labs, publications, videos, and anywhere else we can find this information to compile this model's huge diet matrix.

Just to get everybody back up to speed, I just wanted to show you the process here, and so, in general, we pull the percent wet weight of each prey item, and that's percent wet weight, if it's given, and sometimes it's percent volume, of each prey item from the original study, and so pull that out, and then we assign each of those prey items to one of our 140 functional groups, and our 140 functional groups -- Those can be single species, like red snapper or red grouper or something, or it could be large aggregate groups. Like there is, I think, a hundred gobies that are all grouped together as like the big oceanic invertivores or something like that.

So we assign every prey item from that study, and it's usually species or genus level, and we have to decide which of our functional groups that prey item fits into, and then we sum it all together and get a list of prey groups and what proportion of the diet they each represent, and then we also -- You can see, in the bottom corner, that we also keep this kind of metadata score of like sample size, location, date, and detail level of the study, and that just helps us keep everything organized, and, when we do certain analyses in the model, we can actually tell the model that, hey, this one had a really high metadata score, and it's got a high pedigree, and I really trust it, versus we can tell the model, all right, the diet for this fish is a little on the sketchy side, and we will allow the model a little more flexibility in sort of playing with that diet.

Then, when we used more than one diet for the same group, which we tried to duplicate up as many as possible, to sort of get as much information as possible -- When we do that, and we've got more than one study for a single group, we average the results together weighted by sample size.

For this specific question, for this task, we really wanted to make sure to capture the full breadth of the red snapper diet. It's a generalist predator, and so it's really important to make sure that every possible prey item was represented in the matrix sort of somewhere, and so this table sort of shows you the sources that we used for red snapper, and so we had information from SEAMAP, and we had information from our very own gut lab here at FWRI, and then these two papers right here, and you can see that we only used -- The sample size was only stomachs that actually contained food. Many studies will report back that we caught a thousand fish, but 150 had empty stomachs, and so we're only taking the 850 that did have stomachs.

We separated those out by age groups, where the studies had said what size the fish were that they had taken certain stomachs from and what those prey items were. The only exception you will see there is the one with the asterisks, and they did not report out which size individuals had eaten which prey, and so that one just got the sample sizes for the age-zero and the age-one through three.

Now, after we had pulled in these four different sources, at that point, we had a pretty rich prey, a pretty rich diet, for all three of these age stanzas, and so, at that point, we sort of fell back to the position of cross-referencing, just to make sure that all of the possible prey items were available, and so, every time we found a new red snapper diet paper, we would just check to make sure that all of the prey items were in there, all of the groups that were represented in that paper were already represented in our study, and to make sure that it was roughly in the same proportion and there was nothing that really stood out or anything.

This is sort of still going on, all the way up to the new paper that you guys just saw -- It was put together for a seminar a couple of months ago, I think, by Kevin Spanik, and we looked that one too, and, sure enough, everything was in there.

This is just like sort of where all of that information comes from, and so I wanted to show you -- Sort of compare the different diets across these age groups and across all of these different sources, and so, when you put together the two different sources for the age-zeroes, we got sort of what we expected, mega-invertebrate predators, and that's crabs, and stomatopods and mantis shrimp and squids and little invertebrates and crunchy things, and that totally made sense for an age-zero red snapper.

I will stop here to say that, if anyone is wondering what these names mean, all these aggregated groups, like benthic coastal invertivores and things like that, one of the appendices of the report, and I think it's Appendix B, in the briefing book gives a list of representative species of each of these aggregate groups, and so, if at any point you're confused, just pull that up and sort of keep it in a side window, and you should be able to quickly reference that and be like, okay, that's what that group is. This is your age-zero diet for all of your red snappers.

For the adult age groups, the four diets were pretty similar, and we had small fish, more crunchy invertebrates, crabs and shrimps and things, and sort invertebrates, like squids, and this slide is

only showing you sort of the top I think fifteen items from each diet, but we did notice, and the workgroup noticed, as we were doing that workshop, that the Gulf of Mexico diets, that are seen here on the left, do seem to lean towards invertebrates a little more, while the South Atlantic diets, on the right, contained a higher proportion of fish prey, and we'll address that in a few moments, but, as you can see, just in general, small fish, medium-sized fish, and invertebrates are the main diet source.

At first, as we do for all of the diets, we just weighted the diets by sample size, and these were the final diets, and so this is what most of the model is built off of. The young adults prefer squid, crabs, and herrings, and the four-plus adults prefer herring and crabs and benthic oceanic invertivores, which, by the way, is sea robins. Apparently sea robins are delicious, but I will sort of draw your attention to some of these names down further in the list, like red porgy and black sea bass, and vermilion snapper is there. There were a few items that, while a very, very small proportion, they are in there, and they are of interest, because, at some point, one of them, at least, was found in the stomach of a red snapper.

First, we can actually, before we get into everything else, jump right into some of the workgroup workshop things that we did, and one of the questions from the workgroup, as we were working through this workshop, is what would happen if you weighted the diets more heavily towards the South Atlantic region, because that's where we are, and sort of took a little bit of weight off of the Gulf of Mexico diets, and we sort of went back and forth, and we said, all right, how about 80/20, and 80/20 sounds good, and why not.

We did that. The model team did that, and what we found was nothing really huge, to be honest. These are the only changes that occur to each of the diets that was over a 1 percent change, and so, as you can see, it sort of up-plays some of the fish prey, or it upweights some of the fish prey, and you get more other grunts, and, by the way, other grunts is entirely tomtates.

In the model, there are other grunts in the other grunts group, but tomtates were the only ones that were in the red snapper diet, and so it pushes up, just a little bit, tomtates and herrings and oceanic invertivores and ocean piscivores, and that's sea robins and some weird looking eels, and then it sort of downweights some of those invertebrate groups, like squids and zooplankton, since those were from the Gulf of Mexico, but no real drastic differences, and, as you will see as we go through the rest of the presentation, there were no real drastic differences to the results or anything like that, and so this is good. It means that we're capturing sort of the breadth of the diet by using studies from outside the sample area, but we're not actually sort of messing with the functionality of the model by doing that.

These were, once again, your final diets, but now you can see that other grunts have moved to the top, and squids have moved down a few ranks, and crabs are still in second place. No big changes, but this slide is just here for anybody that wants to go back to it to see the full diet, and this is the full diet all the way down to the 0.0001 percent, and this is in proportion, by the way, and so another thing to be aware of is that even tomtates and crabs were only roughly 15 percent, or 0.15, of the diet, and so we're really looking at a generalist predator here and not something that's really specializing and picking out a lot of one thing.

Another important part of the model, obviously, is who eats who, and so who is eating red snapper, and it turns out that not a lot, to be perfectly honest, or at least not a lot that shows up in stomach

content analyses of those predators. Obviously, things that takes bites of their food, it's very difficult to figure out what that was, if you look at their stomach later, but I think that, for the most part, these predation events sort of represent at least the groups that would normally be feeding on adult or baby, age-zero, red snapper.

We have large coastal sharks, adult king mackerel, lizardfish, and then, feeding on sort of the small ones, we had other snappers, black sea bass, barracuda, and then the one with the best identification was actually the shelf piscivore birds, and that was actually a study where they looked at which fish parent brown pelicans were regurgitating for their young and just leaving it in the nest for the young to eat later, and there were a number of red snapper in there, of baby red snapper in there, and so brown pelicans eat them too, and so not a lot of predators, but there were certainly some.

Other information that goes into Ecopath are things like landings. Now, in the past, when you guys have seen this for the model review, the team had collected these landings independently from the ACCSP for commercial and MRIP and the headboat survey, and we had separated it all out by fleet, but, now that we've got this brand new, shiny SEDAR 73, we used the landings from there, and guess what? They did the same thing we did, and it was really validating to see that their estimates were the tiniest of percentages higher, like 1 percent higher or something like that. We took those landings from SEDAR 73 and then used the proportions that we originally had for those fleets to sort of recalculate the fleet totals, and they were essentially exactly the same.

Now, for the discards, in the past, we've had a long conversation about discard mortality rate for red snapper in the model. In the past, we used the released alive discards from MRIP, and then we had a fleet-specific discard mortality rate, but commercial discards weren't really well characterized, and so that had just been calculated as 20 percent of the landings, which is just one way to do it, obviously, but now, since SEDAR 73 had already estimated the released alive discards, and they only report back the dead discards, and so we got the dead discards in the model and just put in the discard mortality rate of one, or 100 percent, and so that made our lives easier with the discard mortality rate question.

Now, one of the first things that you can really look at, once you get a model in Ecopath, or at least the first tool that we used, that's just in Ecopath, and so remember this is just a snapshot in time, and this does not include spatial or temporal data, is niche overlap, and niche overlap is made up of two different indices, and that prey overlap and predator overlap, and then it sort of combines them together to give you a niche overlap.

Now, the way that this works is that it uses a modified version of the Pianka 1973 method, and they have modified it a little bit, just to make it fit a little bit better, but it basically works the same way as any of the other prey overlap indices that you guys are familiar with. It ranges from zero to one, with one being we have exactly the same diet in exactly the same proportion and zero being we have no prey items, or predators, in common.

The prey overlap uses the fraction that each prey contributes to two different predators' diets, to compare the prey for those two predators, and then predator overlap uses the fraction that a predator contributes to the total predation on those two different groups that you're looking at, and this is calculated using the predator's consumption rate, which is input at the beginning of the model, and then the proportion that each prey contributes to the predator's diet, and this is pretty

standard. If anybody is super curious, and you want to get into the weeds, there are the equations for your perusal, whenever you would like.

The results of these were really interesting, and so the way you read this graph on the left is predator overlap is your X-axis, and then prey overlap is your Y, and we chose to draw those lines at 50 percent, and so for each of those, because, while niche overlap -- Niche overlap, prey overlap and predator overlap, in EwE is not directly comparable to other prey overlap and predator overlap indices that other people use, and that other studies have used in the past, and it's just a general sort of rule-of-thumb that any overlap, at least prey overlap, over 50 percent is sort of considered, air quotes, of interest, and then over 60 percent is considered likely biologically significant, if those two predators were in the same area at the same time, and so you can read this like quadrants.

Your top-right quadrant is the highest prey and predator overlap, but, as we already discussed, not a huge amount of predators in this diet, or in this situation, and so we wanted to list out your prey overlaps over on the side, and you will see some interesting names popping out up there, pretty close to 75 percent, like red grouper and yellowtail snapper, and this graph shows you just everything over 50 percent, but this is only our age-zeroes, and these are our little baby red snapper, and they don't have that much biomass, to speak of.

When we look at age-one through three, we start getting some really interesting results over on this high prey overlap, and, obviously, they've got a high prey overlap with the other red snapper group, and then you've got dogfish, sharks, some other snappers, and red grouper are back on this list again, and you can sort of see that we're losing some of our predators, but we really do have some high prey overlap indices falling out from this.

Then, lastly, our age-four-plus, and we basically have -- There is very, very little predator overlap, and there's very little high predator overlap, because not a lot of fish eat an age-four-plus red snapper, but our prey overlap is still showing red grouper and dogfish sharks, and then you'll see that now we've got black sea bass on this list too, and so they apparently have an over 50 percent prey overlap with these age-four-plus red snapper, and we'll be coming back to some of these results later too, but this is sort just of a first crack at figuring out who is going to be sharing predators and prey with red snapper.

The next thing we looked at, in Ecopath only, is mixed trophic impacts, and this is a tool that's used to explore ecosystem structure, and the important thing about mixed trophic impacts that's so cool is that it allows the elements to interact in feedback loops, and so you get this whole the enemy of my enemy is my friend sort of situation going on, and we've all seen these dots and the plus and minus sign and everything.

The way it does this is it infinitesimally increases the biomass of each group, one-by-one, and then looks at the impact of that biomass increase on all of the other group's biomasses, and then it sums together all of the direct and indirect impacts, and so direct is like predation, and then indirect impacts are like competition, and so that's where you get something new here that is not in niche overlap, because now we have these indirect impacts, like competition, actually being able to be summed.

You can sort of see that teeny-tiny little graph right there is one sort of snapshot of that, and so you see the bigger dots are bigger impacts, and the smaller dots are smaller impacts, and these



values are not concrete. They do not represent a thing. You can't say that this is a 10 percent increase or something like that, and the important part is that they are relative and comparable, and so it helps you look and see who is the most impacted and who is the least impacted, but it reflects the impacts only in a steady state.

This is only in Ecopath, and so it's not taking into account changes in predator-prey availability over time, which, obviously, that's super important, right, and so it's not really a prediction tool. This is not the kind of thing where you say an increase in red snapper would cause these effects, but it's more so a function that just lets us rank the impact of red snapper on other groups, to see if we can kind of suss out what groups kind of warrant a second look, or what groups are popping out as interesting, as either a winner or loser of this teeny-tiny little increase.

Here, you're seeing the top-ten and bottom-ten ranked mixed trophic impact results for just the age-zero red snapper. Now, they have an expected negative in-group impact on themselves and their elders, and that's due to competition. That's totally expected, and we know that that's how the model does it, and we can see that a teeny-tiny increase in their biomass has positive and negative effects on other groups, and, mostly, these are indirect impacts, and they are certainly not feeding offshore dolphins, but offshore dolphins would have a negative impact, but, before you read too much into this graph, I will caution your attention to the scale at the top. That is a lot of zeroes, and so that indicates that the effects are actually very, very tiny, and we can, essentially, ignore this one.

However, the adults have slightly more interesting results. You will notice black sea bass falling out at the bottom, despite only being 1 to 2 percent of the diet. Lionfish and gag and a few other non-prey items also ended up in the red, indicating that this is likely reflecting competition for those like little fish and crunchy invertebrates that everyone likes to eat, and then those that are benefiting -- Those must be something along the lines of released from predation, because one of their predators is being harmed by this increase in the two red snapper age stanzas, and we will revisit these results later.

I do also want to say that, for anybody who is on our workgroup who is looking at this and saying, wait, red lionfish wasn't down there beforehand, and these numbers are slightly off, and this is reflected with the new 80/20 diet weighting that we did, and so, like I said, no huge impacts, but some things have shuffled around in rank, just by 1 or 2 percent.

However, let's be sure not to forget our scale here, and so, just for context, I wanted to show you the age-four-plus red snapper here on the left, those results that you saw a moment ago, next to the top winners and losers of herring biomass increase, and, obviously, herring is a super important diet item, and it has a huge impact on the model, and, as you can see in yellow, the impacts of red snapper are significantly smaller than that of herring, and so we're not looking at huge impacts by red snapper in this mixed trophic impact tool, but the tool itself is a useful method of sorting out some of these groups down there at the bottom for future consideration and for just making sure that we're really capturing what's going in that interaction, especially those groups that appear to be in the red, due to indirect impacts, and so they're not a prey item, and so why would they end up in the red, and that's something that you will see in a few moments.

Now, moving out of into Ecopath and into Ecosim, we can start discussing time series, and so time series are, obviously, what the whole model is calibrated to in Ecosim, and so one of the things

that we want to make sure that we capture is time series of primary productivity, and so, for that, we use a satellite-derived chlorophyll-a that was from NASA's different satellite programs, and so the catch time series, as we discussed earlier, for all of the other groups, we compiled together the commercial from ACCSP, recreational from MRIP and headboat, and then we used those as the forcing time series to drive the biomass estimates for those groups.

For red snapper, we used the catch time series from SEDAR, from the new SEDAR 73, but we used those as reference only, and we'll talk about why in just a moment. The biomass time series that are in Ecosim, we have absolute biomass time series for twelve different groups, and those all came from different SEDAR stock assessments.

We also have weight per unit effort time series, especially for groups that we don't have biomass time series, but you want some sort of indices to help push along the shape of that species, and those all were generously provided by SEAMAP, and then, specifically for red snapper, we decided to input a fishing mortality time series, and so fishing mortality is just catch divided by biomass for each of these age groups, and we used this fishing mortality as the forcing time series to drive the estimates, and what that does is it kind of gives it a little more flexibility to fit the line to the points, whereas a catch time series can be a little constricting, at times, because you're putting in an actual specific number.

The next step is vulnerability fitting, and I just wanted to sort of walk you guys through what that means, and so vulnerability fitting is this very long and complicated systematic process to calculate all of the vulnerabilities of each prey to each predator, and it works on a trying to reduce your sum of squares situation, and what these vulnerability parameters do is, like we said before, they scale the prey mortality to the predator's density.

What we do, as modelers then, is modify the vulnerabilities, or other specific inputs, to try to fit the model predictions to the time series of particular interest, and so we're trying to get it as close as possible to the observed data, and this image here just kind of represents what we were discussing before about being in a vulnerable state, and so that shows the Vs are out there it's easy to be predated, but, if you're in an invulnerable state, you are, as a fish, hiding in a rock, hiding in seagrass, schooling, but every group can move back and forth, and, when you increase the vulnerability, you increase the flux sort of out of invulnerable and into vulnerable, and so that's how that increases the vulnerability of that group to predation.

We went through this process, and here are your fits for your red snapper groups. Obviously, stock assessments do not do age-zero biomasses, and so we do not have a biomass for the age-zero groups, but the age-one-through-three and the age-four-plus groups, and you can see that, while the model isn't capturing all of the variation through time of these biomasses, we were able to capture a lot of the general trend of it, and that four-plus one we were able to fit pretty closely, and we were pretty happy with how this came out.

Now, other species fits ranged from the good, the bad, and the ugly, and so, as you can see, for red porgy and blueline tilefish, and even some aggregate groups, like small coastal sharks, and these are like your little bonnethead and sharpnose and things like that, and the model is doing a very good job of capturing those biomasses, the observed biomasses, through time, but black sea bass -- Not so much there at the end, and we believe that this is the model not capturing some of the recruitment variation. Black sea bass is only a single group, and something else must be driving

what's going on there, and then there is other recruitment spikes, like that red grouper model there, that you're seeing that we're not capturing what's in the middle.

As time goes forward, the model group is going to continue working on these fits, and we're going to continue sort of switching some of the time series around to fishing mortality rather than catch and seeing what we can do to get some of these particular fits just a little closer to the observed data, but, for the most part, we were really happy with how a lot of the fits for a lot of the species of interest played out in this.

Now, how did we modify all of this to answer this red snapper question? That required simulating the future, right, and so everything that you just saw is past data, but we need to go into the future, to figure out what will happen, or at least to model who would be the most sensitive if something did happen, and so the first thing we did was look at the long-term average recruitment, which I believe the SSC decided, in the summer, that the long-term average recruitment was 2010 to 2019 or -- No, that was the high recent, and the long-term was everything before 2010.

The way we did that, the way we were able to model this long-term average recruitment, was to track the Ecosim estimates to -- Layer over the Ecosim estimates to the SEDAR projections for what's going to happen if -- What would be projected if red snapper continued along their long-term recruitment, and so, to do that, we were able to just artificially set the fishing mortality to 0.0188, and it doesn't really matter what that number is, but it was just a very, very low fishing mortality, and we put that in for 2017 all the way through to 2044 for both age-one through three and the four-plus, and what this very low fishing mortality does is it allows red snapper to recover, and that specific number, out to that last decimal point -- When we did that, it allowed the red snapper to recover at approximately the same rate that SEDAR projected they would under long-term average recruitment.

The important part is that you end up in the same place in 2044, and so the 2044 biomass predicted by SEDAR, or rather projected by SEDAR, that's your Scenario 7 from your July presentation, and it was exactly the same as the EwE prediction, and so, with this scenario loaded in the model, we are essentially just putting in that projection, that Scenario 7, from the presentation that you guys saw in July.

Now, high recruitment, you had to do a couple more steps for that, and so we started out with this same very low F, but, obviously, we want to go even higher, right, because, at this high recruitment, they're going to end up at a higher biomass. To do this, we added a forcing function to the vulnerability, and so this number that, when increased, makes the prey more vulnerable to that predator's density, or makes the prey's predation more vulnerable to that predator's density, and we forced those vulnerabilities to go up through time.

Now, we only did this on the age-zero red snapper prey, because we wanted to simulate high recruitment, right, and so that's the babies, the young ones, and so increasing the vulnerability makes the prey mortality more closely relate to the predator's density, and so we used the biomass estimate from SEDAR 73 to direct this shape, and we didn't want to just, you know, go up by 10 percent each year or something like that, and that would just kind of give you a straight line of prey becoming more and more and more vulnerable, but, as a predator eats more prey, its biomass goes up. Actually, all of the biomass comes from eating something, right, and so, when you

increase the vulnerability of the predator's prey, you increase that predator's biomass. This makes sense, yes?

We wanted to see if we could get the age-zero biomass to track those SEDAR high recent recruitment projections, and, as the age-zero biomass increases, they recruit in higher numbers to the higher age groups, and so you get an increase with everybody, and so here is that SEDAR biomass prediction. This was Scenario 13 from the July presentation, and this is just the actual biomass sort of output that they said was the high recent recruitment, and I basically just copied it over into a forcing function and scaled it in such a way that the final top number, which was seven-point-something-or-another, ended up pushing all of the groups to where the biomass would be equal to the 2044 prediction.

This is what we got, and so the blue line is the SEDAR projection for high recent recruitment, and the pink line is EwE's predicted biomass, and, as you can see, they end up in the same point, and track roughly closely, and so now we've got two different scenarios in the model, and we can test it with the low recruitment and with the high recruitment, but, obviously, as fishery people, as scientists, and as modelers, we're overachievers, and so we wanted to look at directional impacts. You can't just say, well, it went up a little bit between these two. Well, what if it went up even higher?

What we wanted to do is find an arbitrary low biomass, to make sure that, if you go from a low biomass to a medium biomass to a high biomass, all of your effects are tracking in the same direction, and, to do this, we just set the F to 0.1, which is a relatively low-ish biomass, but what this allowed us to do was to just cap the biomass at 2016, and so, as you can see here, it didn't really matter what the shape of the EwE was. We just wanted to make sure that, when it reached 2044, it was a very, very low biomass, and it just kept it around the same 2016 biomass, just because that's where we were.

The point of this one is it's not actually simulating any real outcome, and I would assume that red snapper are already above what they were in 2016, but this just gave us a low biomass to use as a testing scenario, and so what you have here are three different scenarios. We've got high recent recruitment on top, long-term average recruitment in the middle, and then this -- We called it status quo, and, really, it's the 2016 biomass, on the very bottom, and this is for all of the red snapper groups summed together.

What this allowed us to do is test all three scenarios, run all three scenarios, and then figure out who are the winners and the losers. Which groups gained or lost biomass under each of these three scenarios? Just for a little bit of context, the difference between these scenarios is 2,700 tons between status quo and long-term average and then 4,200 tons of red snapper increase from long-term average to high recent recruitment.

If you run all of these, you get -- For every single group, you will get biomass estimates, and you can lay them over each other and see what happens, and so I have blacked out the names of each of the three groups that you see there, because these are just examples, and these are old runs too, but you can see that all three of these groups were what we would consider a loser, and so the green line being on top, when you get to the future part of it, indicates that, under the low snapper biomass, each of these groups had a higher biomass, and then the purple line indicates that, as you increase the red snapper biomass, the biomass of each of these groups went down. Then, for

especially that top one up there, once you got to the highest red snapper biomass, you have the lowest biomass of whatever this group is.

When you put these all together, what you can get is a ranked winners and losers list, and so this list right here is just an example only, but this is long-term versus high, and so, if you started with long-term, and you moved to high recruitment, and so, if you increased the biomass of red snapper, in this just little example graph, mutton snapper would be a big winner, and rock and bank sea bass would be a big loser, right, and so this is as a result of higher red snapper biomass, and you have some winners, and you have some losers, and so let's just jump right into the actual results.

The real results, and this is with the actual data that was in the model, if you compare high recent recruitment to long-term average recruitment, here are your winners and losers, and so we end up with mutton snapper and large coastal sharks each gaining just a few percentage points, 1 to 2 percent, and then you have rock bank sea bass and black sea bass, down there at the bottom, as your biggest losers.

Now, it's not a huge percentage decrease, right, but, if you want to sort of look at, is this is a result of direct or indirect impacts, I just kind of mocked up, right here -- This is just showing you sort of what percent each of these prey items is in the red snapper diet, and we will look at something that has even more information on this, but you can see that rock shrimp are winners, even though they are in the red snapper diet, and rock bank sea bass and black sea bass are losers, and they're in the diet, but they're only a very small percent of the diet, and so this raises questions about is this competition or is this direct predation, and so this is sort of the main graph that we'll keep coming back to over and over again.

I wanted to reiterate though that this is the comparison of the long-term average recruitment red snapper scenario versus, or moving into, the high recent recruitment, and so, if you increase the biomass of red snapper from long-term average up to the high recent recruitment, these are the impacts that are shown in the model. These are the winners and losers, but what about that status quo one? What about that lowest biomass?

What happens when you go from that very low biomass just up to the middle one, which is the long-term average, and it's basically nothing. It's the same groups, in roughly the same order, but the percentage difference was so small that, when you compare the two, it's very little impact of going from the lowest red snapper biomass up to the medium red snapper biomass, but larger impacts going from medium up to the highest, and so we kind of forget about the status quo one after this, and leave that behind, but it was good to see that roughly the same groups, just in smaller percentages, ended up, but nobody was a winner that was a loser in the other one or anything like that.

The other thing that I wanted to have on here is just some other important species. It was mentioned, in the past, that there were just other species of interest that maybe they wouldn't come out on your top-ten winners and losers list, but maybe you were wondering sort of where they are, and so things like triggerfish and herring, and I think somebody mentioned gag grouper, yesterday, being prey of red snapper, and, while gag grouper are not in the diet anywhere, which I've got to say, if you're a baby gag grouper, you're probably not going to be identified in a lot of stomach content analyses.

It would probably just come out, in the paper, as genus level, or just a juvenile grouper, and there is a lot of ichthyoplankton, or unidentified small baby fish, in the red snapper diet, but gag grouper, even not being in the diet, does have a teeny-tiny, like 0.5 percent, loss, due to the higher red snapper biomass, but they're definitely not one of the top losers or anything like that, but here's just a list that you can refer back to, if you're just wondering about, well, what about flounder or something like that.

Moving into sort of the results from the workshop, we were asked what would happen if we weighted the diets 80/20, and so you can see that, when we weighted the diets -- On the right-hand side is the new winners and losers graph after the diets were weighted, and there was very, very little change.

The only kind of bigger thing that happened is that black sea bass lost even more, because, when you weight the diets more heavily for the South Atlantic region, that actually increases the amount of black sea bass in the diet, or the proportion that black sea bass contributes to the diet, because the black sea bass records are all from the east coast.

Black sea bass went from I think it was like 2 percent of the diet up to like 3.8 percent of the diet, or, sorry, and it went from 2 percent loss to like an almost 4 percent loss, but barely any changes anywhere else, and so the model is not particularly sensitive to these little minor shifts in the diet, when we were weighting it by South Atlantic versus Gulf of Mexico.

This is just another thing that I wanted to show you guys about some of the particular groups, so you can sort of wrap your mind a little bit more around some of these gains and losses, and all, I guess, what, six of these are all loser groups, and, for each one of these, you can see how the status quo, and that's the lowest biomass of red snapper, is on the top, and so they have the highest biomass, in response to the lowest biomass of red snapper, and then each of them is a loser as the biomass of red snapper gets higher, but you can see that, for black sea bass, that's a much bigger loss down there than it is for say red porgy.

Red porgy has their biggest loss just between status quo and long-term, but barely any difference at all between long-term and high, and so, while they may be sensitive to some change in red snapper biomass, they can only go so low, basically, and this is just another thing that's sort of a tool that we can go into the model and actually look at these one-by-one, as sort of an analysis tool to look at individual groups and see how they're being affected by these different scenarios.

One other question from the workgroup was are there interacting effects of catch level on prey with the impact of high red snapper recruitment on the prey, and so this discussion was kind of around -- I guess we would call it like a synergistic effect, and so, if this group is already -- If your prey group is already being hammered in the fishery, will we see a bigger impact of red snapper on that group, and I thought that was a great question, and so we picked black sea bass as our example for this, because everybody loves black sea bass.

To take the model forward to 2044, for all of the groups that had catch data, and we had normally just extended the 2016 catch straight out to 2044, and we just carried it over from 2016 to 2044 for all of the groups that had catch data, and so, for black sea bass, that was what we called the normal scenario.

Then we added another scenario that we called the large-catch scenario, and, for that one, we used the 2004 catch, just because that was the biggest one in the model, and 2004 was a very good year, I suppose, for black sea bass fishing, and they caught 1,500 tons of black sea bass in 2004, and so, for that one, we extended that 2004 catch from 2017 all the way out to 2044, just as a realistically high, but very high, catch future.

Then, just to be ridiculous, we picked an unrealistically large black sea bass catch, and I think that one was just as high as we could go without driving the species extinct, and that was an extremely high catch, and so these three scenarios are three different catch levels of black sea bass, and then, for each three scenarios, we also had the two scenarios for red snapper, right, because you have the high recent recruitment and long-term average recruitment, and so we basically have six scenarios going on here, and you can see how that played out here.

Each of the long-term average recruitments are in blue, and each of the high recent red snapper recruitments are in pink, and then the three different shades show you whether that was the 2016 catch, which is sort of the normal level of catch, 2004, which is higher, and that pulls the biomass down for that second pair, and then our unrealistically high catch pulls that biomass all the way down to the bottom, nearly to extinction.

You can see that the space between each of these pink and blue pairs is not really that different, and so did black sea bass lose any more when it was being really hammered by this unrealistically high catch, or even just by this sort of normal high catch?

The answer is no, actually. Black sea bass, under the normal catch condition, loses 2.36 percent. Under high red snapper biomass, with the large catch, it loses 2.34 percent, and then, with that huge, unrealistic catch, it still only lost negative 2.13 percent, and so there does not appear to be sort of synergistic effects between catch level on a prey and the impact that red snapper has on that prey, and, for something like a generalist predator, or at least for something in the model, that follows sort of prey availability, if that makes sense, because black sea bass is already going down from catch, and less of them are going to be caught by red snapper, and so the scale of impact is going to be roughly the same, and so that was the answer to that question. Are there synergistic effects? No, not really.

Another question from the workgroup was what about these vulnerabilities that we keep coming back to? We keep saying that, you know, we use the vulnerabilities to fit to the time series, but what sort of magnitude of impacts does that have? If you change the vulnerabilities, obviously, you change the biomass of red snapper, and so how sensitive is the model to these vulnerabilities, because they are just sort of arbitrarily -- Not arbitrarily, but they are just picked by the modeling group, right, to try and fit the line to the observed data.

This conversation was happening around the same time as we were also discussing that, well, a negative two-ish percent loss of black sea bass is not going to keep me up at night, but maybe a cutoff number, maybe something like 10 percent, and that would be worrisome, right, and so what would it take to get to a 10 percent decrease in black sea bass? How much red snapper would you need to make that happen, and we sort of combined these two together and said what would it take to get to a 10 percent decrease in black sea bass, and, at the same time, we look at how sensitive is the model to these vulnerabilities that the model team has used to fit the model.

To do that, we picked four different multipliers on the vulnerabilities, and so the 1X column there shows you what the vulnerabilities already were, and this is the vulnerability of every prey item in each predator's diet, and so every prey item of age-zero red snapper has a vulnerability of five to that red snapper. Every prey of age-one through three red snapper has a vulnerability of ten to that age-one through three red snapper and so forth.

We picked an increase by 50 percent, and that's 1.5-times, and what if we doubled the vulnerability, and that's 2X, and then, just to be ridiculous and see if we could break things, we also ran 10X, and so that's ten-times more vulnerable to predation.

Now, 10X put the red snapper biomass off the charts, and that's that gray line up there on top, and I couldn't get it to fit on the PowerPoint slide, and so you guys are not going to get to see the 10X vulnerability effects on biomass, and suffice it to say it's huge. If the vulnerabilities of a predator are ten-times what they were, then the biomass of that predator is off the charts.

As you can see here, this is just showing you the red snapper biomass under the three different vulnerabilities, and so, under long-term average recruitment, and that's the blue lines, and under the three different vulnerabilities, the biomass just goes up as you increase the vulnerability, and this is just to show you that the vulnerabilities did what we expected them to do, and we had a biomass of red snapper, and, each time we increased the vulnerability, the biomass of the red snapper went up, and it increased for age-zero, and it did the same thing for age-four-plus, and so you got your long-term average is in blue, and your high recent recruitment biomass is in pink, and, as you increase the vulnerabilities, the biomass of the red snapper is going to increase with it.

What we're kind of really testing here then is what are the impacts of an even greater, or all of these different increases in biomass, on the groups and how high can we get that biomass, or how high do we need to get that biomass, before we get a 10 percent loss, or a 10 percent impact, negative 10 percent impact, on black sea bass?

We've got our winners and losers graphs for each of these vulnerabilities, and I made the increased vulnerability ones in green and pink, to sort of separate them out, because I know that you will see a lot of these winners and losers graphs, and they can get all mixed up in your mind, and so the one in the top-left is the normal vulnerability, and so that's the winners and losers graph that we started with a couple of minutes ago.

On the right-hand side, that's the 1.5X, and, as you can see, we've got slightly higher impacts. Definitely rock/bank sea bass, which, by the way, that's like all bank sea bass, I believe, and there were no rock sea bass in the red snapper diet, but the name of the group is rock/bank sea bass, and so bank sea bass are in the diets, and they definitely are harmed a little bit more by this higher impact, but black sea bass still hasn't even reached a 4 percent decrease yet, and so what about double the vulnerabilities? Bank sea bass is a big loser here, and there are basically no effects on everybody else, but what about a ten-times? Once you get up to ten-times, now we start seeing a huge impact on these groups.

Now, it should be noted that the ten-times vulnerability was a highly-chaotic run. It unfit the model, and it unbalanced everything, but, when you change the biomass of one group, especially an apex predator like this, that much, everything just goes out of whack, and so this was a highly unrealistic run, but what it showed us was that, to get to 10 percent increase of black sea bass, you



have to increase the vulnerability of all of red snapper's prey by roughly four to five-times, and so you can kind of think of this as, if red snapper have an impact four, or four-ish, four or five-times, greater than what we think it is, then that could result in a decrease in black sea bass of around 10 percent, but, to get to that level, you've got to do a lot of increasing. We would have to be heavily underestimating the impact of red snapper. As you can see, the model is not super sensitive to changes in these vulnerabilities, and it takes a lot to really get huge, impactful changes to these prey and loser and winner groups.

Now another discussion that came up during the workshop was someone just sort of threw out there, well, what happens if you make black sea bass 25 percent of the red snapper diet, and, I mean, that's huge. That's highly unrealistic, and that would never happen, but how bad would things get, and they actually originally started with what if it was one-third of the diet, and that completely broke the model, and I couldn't even get it to run, and so that was so super unrealistic, but what I could do was change just the diets of the age-four-plus individuals, the full adult red snapper. I could get that to be 25 percent black sea bass without breaking the model, just to see sort of how sensitive black sea bass would be or how bad it would be.

The pink and blue lines are just the normal standard run, with regular catch for black sea bass, but, if they're 25 percent of the diet, you can see it drops down quite a bit there, but that's not huge. They're not being driven to extinction, right, and they're not where they were with that unrealistic catch level that we showed earlier, but what's the proportion of these impacts, and, well, not that much.

On the left, you see, with black sea bass as 2 percent of the diet, and, on the right, you see, with black sea bass, it's 25 percent of the diet, and we go from negative two-and-a-half percent to negative four percent, and so not that huge of a change, right, and so black sea bass is in the diet, but we would need a lot of predation to really get them higher up, and so these percentages that we have, or proportions that we have in the diet, can be sort of modified up and down without having huge impacts on the model, and so it's not super, super sensitive to those changes in the diet.

Now another question, which you guys are going to have to sort of bear with me on this one, and that was, as we're talking about this, we keep talking about direct impacts as prey, and these are prey, and these aren't prey, and indirect impacts, because these are competitors, and these aren't competitors, and we kept seeing the same names come up and over again, and so, finally, the question was asked of can we see all of this together in one place, and I said, sure, and it will be ugly, but why not?

As we promised, it's ugly, and so each of you are on GoToWebinar, which means that you should be able to zoom-in on this, but, even better than that is, in the briefing book, and somebody will have to jump in and tell everybody what attachment it is, there is a high-resolution PDF in there somewhere that has all of this in a much better format, in a zoomable, clickable format, and so, if people want to pull that up and sort of look at that separately, or, if in discussion at the end, we want to pull that up, outside of this terrible slide on this presentation, then that is possible.

The take-away from this one, and the way you read this one, is that, if a group is highlighted in purple, then it's showing up in multiple results for age-one through three, and, if it's in purple font, in purple text, then it's showing up in multiple age-four-plus results, and you can sort of follow

the model from left to right, and so our left-pink columns -- Those are diet items, and so those are our groups that are actually in the diet for each of these age stanzas.

Our blue columns are prey overlap, and so these are our highest prey overlap groups, and I think that's everybody that had at least a 50 percent prey overlap is listed there, and so these are going to be our competitors, right, because they've got high prey overlap with each of these age stanzas of red snapper. Our green columns are those mixed trophic impacts, and so that's direct and indirect impacts added together, and so kind of being in the diet and having prey overlap added together, and so those are the green columns, but all of that is just in Ecopath.

Then, at the very end, in that purple column, those are your Ecosim scenario-testing results, and this is the high versus long-term, and so this is that winners and losers list, just in a table rather than in the teal and orange graph that you were seeing, and this takes a while. This is probably something that we'll come back to, but it sort of takes a while to sort of suss this out in your head and figure out what it's saying, but you will notice that certain groups are repeated across the graph.

You can sort of start on the right-hand side and say, well, I see black sea bass in the scenario testing, and was it also a mixed trophic impact loser, and, oh, yes, it's in mixed trophic impacts too as a loser, and, well, does it have a high prey overlap, and, well, yes, it's actually kind of out towards the top of high prey overlap for age-four-plus. Is it in the diet? Yes, there it is, and it's over in the diets for the age-four-plus individuals, and so you can kind of track across. Is it in the diet, does it have overlapping prey, does it share resources, does it have indirect and direct impacts together? That's mixed trophic impacts, and then what is the overall winning and losing of this group when you increase the biomass of red snapper?

We'll come back to this one at the end, and, like I said, it can take a while to wrap your head around, but it's very useful when we start talking about individual groups, and this is just like sort of zoomed-in a little bit more, with just only some of the groups shown, just as sort of an example of how you would read through it on that high-quality PDF.

Now, moving on from that hard-to-read shenanigans, here we go, and that full table is also page 22 of the EwE workshop, and it's the high-resolution PDF in the briefing book, and so we can come back to that one to discuss, if anybody finds something useful from that. That's the end of the workshop. That was the last of the workshop.

We got to our conclusions at the end, and now the full notes, if you want to sort of follow through what we discussed, are -- It's one of the appendices at the end, and I think it's Appendix D is the full notes, but I just put most of them here in a sort of listed-out format here, and so the workgroup, and the model team together, concluded that the model properly addressed the question and demonstrated which species have positive and negative changes in biomass due to higher red snapper recruitment, and so bank sea bass, black sea bass, and other grunts ended up as losers, and there were those other grunts that are primarily tomtate.

There were smaller to sort of minor negative changes for red grouper, gag grouper, and scamp, and then positive impacts were the greatest for mutton snapper and large coastal sharks, we have to assume through higher prey availability, or something along those lines, or released from predation.

The model provided insight on the impacts of red snapper management and recruitment on other species, and so this is a step forward, in that ecosystem-based fisheries management, and this is the part about the vulnerability. It says that increasing red snapper recruitment could increase the abundance of some species and lead to decreases for others, and high red snapper recruitment could reduce the biomass of black sea bass, but the scale of the impacts is pretty minor there.

The important part about this is that the findings can really be used to direct data collection needs, and so what we want people to sort of take away from this is not necessarily that black sea bass are doomed, or that we don't need to worry about it at all, but it's that these are really species to just keep your eye on.

Now, one of the collection needs that just sort of fell out is that red lionfish came out as a loser, even though we haven't really modeled red lionfish in Ecosim. It's in Ecopath, but Ecopath is before, and its initial year is before red lionfish were here, and so it's a teeny-tiny-tiny little biomass in there, and we haven't actually modeled through the invasion yet, but it does show prey overlap. We do know that they've got prey overlap, all of their prey data and growth data and everything else is in there, but it is showing up as a loser, and so that's something that we need to keep an eye on for red lionfish, which I imagine that we already were.

Also importantly is the results could inform better monitoring of species if they have a high management interest and they show negative impacts, and so black sea bass and red porgy especially, and they're in multiple loser groups across prey overlap and mixed trophic impacts and scenario testing and everything like that, and, even though the numbers are pretty small, and I think, for red porgy, it's less than a 1 percent decrease, and black sea bass, like we said, is around a 2 percent decrease, but we've got to keep an eye on that and make sure that, as red snapper are increasing, we're not seeing sort of reciprocal effects in black sea bass, and it's not expected to have a big impact, but it's just something to be aware of as we move towards this -- As we keep going in ecosystem-based fisheries management.

We also concluded that the exploration in the model of direct versus indirect impacts can help figure out what might be the driving factor of the impacts, sort of competition versus direct predation, or even ways that you can improve a population, like habitat restoration. If it ends up, in Ecospace or something, the resource use that's causing the indirect impact is habitat use, well, maybe we just need to restore the habitat for that animal, and this is where that giant PDF of all of the results all on one table becomes really useful.

We also discussed that these results are on a similar scale to modeling efforts of reef fish on the West Florida Shelf, and so this is the good thing about having lots of modelers on your modeling team, is that people are aware of and have done similar exercises on the West Florida Shelf, and, basically, the same scale of impacts. Just a few percentages here and there, and that's likely due to the generalist nature of the species that we're looking at, when we care about reef fish and fish that we pretty heavily and care about. They tend to be generalist predators, and so they will eat whatever is in front of them, and they're not going to have massive impacts on any one prey.

We also discussed that operationalizing this model could be based on regular data updates, but the thing with huge data updates is, if you modify things in the model, just a little bit here and there, that's not that big of a deal, but, if you have to refit the whole model, and that's that vulnerability-

fitting process, where you're moving the vulnerabilities up and down and trying to reduce your sum of squares to get the estimates to fit the observed data, that can take a couple of months to do, but, if we were to have that scheduled and have regular data updates, especially if we get a whole new batch of stomachs and diet content or something like that, and it's got something drastically different in it, then that's certainly something that can be scheduled and will be a good idea.

Then we also discussed that development of these models is an iterative process. We were learning new things as we went along, and finding gaps and adding bits, and so, the more the model is explored, the more that we do exercises like that and explore these questions, and it can only get better from here.

Thanks to the rest of the model team, all of you guys on the call right now, and this is a small list of contributors. Honestly, this data collection has taken so many years, and so many people have had input in it that it's really nice to see like everything coming together, and so this is my last slide, and if we would like to take it over to discussion or however staff would like to move forward with this.

DR. NESSLAGE: Thank you very much, Lauren. Why don't we start with some clarifying questions from the SSC, and who has questions for Lauren? Fred Serchuk has questions. Go ahead, Fred.

DR. SERCHUK: First of all, thank you for a very extensive and well-documented presentation. I am going to go back to the very beginning of your talk, if I could, to the chart that you put forth on the red snapper diets, and the reason that I am doing this, and it's one of the early ones, is we're always concerned, in fisheries, about getting good data, and, as I look at the -- Am I reading this right, that it suggests that the data collected from the South Atlantic only included about 700 stomachs with food, and that is 219, 244, and 171, and is that a correct interpretation of the graph, of the table?

MS. GENTRY: For the stomachs that went directly into sort of the first iteration of the diet matrix, yes, but all of those cross-referenced papers down at the bottom -- I did a back-of-the-napkin calculation before the workshop, trying to figure out how many stomachs those represented, and I think it was around two to two-and-a-half thousand stomachs that I just sort of double-checked those papers and said, yes, every group that is in their diet is already represented in our final matrix, and roughly in the same percentage, too.

Sometimes like one little diet item got pulled out, and I don't remember which one, but, in one of the Spanik papers, there was red porgy in the diet, and that was not in any of the other diets, and so I just added that one small percentage of red porgy into the diet matrix as a whole, but, other than that one -- I think there's one other one that like some obscure eel was in there, but, otherwise, all of the prey items, or prey groups, from each of those other 2,500 stomachs was represented in the model.

DR. SERCHUK: Okay. I guess what I'm hearing you saying is you feel that, irrespective of when the samples were taken, and I presume you're saying they're taken over a long period of time, and, therefore, even though these sample sizes are relatively small, you have done a -- You're satisfied that the diet information that you have collected is represented over both area and time, and would that be correct?

MS. GENTRY: I would say yes, with caveats that come with all stomach content analyses. Just by nature of you are dealing with stomach acid, and you're fighting time, things that are swallowed whole are easier to identify, and very, very soft things break down really quickly, and some certain species are extremely difficult to identify to species level, just from skeleton or just from body, and so I would say that, with a little over 3,000 stomachs represented in here, and a diet that has, what, forty or fifty items in it, out of a model that only has 140 groups, I would say that, more than likely, most of the diet items that red snapper actually eat are represented in here, but I would say that we're probably losing some detail, just from the fact of how these things work, especially when it comes to babies, little-bitty juvenile fishes.

It's extremely difficult to identify those to species, even when they are alive and in your fish tank, and much less when it's half decomposed in someone's stomach, and so, while gag grouper isn't in the diet anywhere, I can't assure you that there are not tons of -- Or at least some juvenile or little-bitty ichthyoplankton gag grouper in the stomach that would just be represented as ichthyoplankton in the model.

DR. SERCHUK: Okay. Thank you.

MS. GENTRY: But we cross-referenced around 3,000 stomachs, but, obviously, as more data is collected, we can add certainly prey groups. If a new study comes out, and it's got a new prey group that is not represented at all, obviously, we want to add that one, even if it's only a tiny little percentage of it, because the model can actually adjust the diets with prey availability through time, with that biomass through time, and so we want to give the model that flexibility to know that this prey item is being eaten.

Another thing that I want to point out too is that the year that the study was done is taken into that metadata catalog that I have been keeping of all of the diets, and so, when we do a Monte Carlo analyses, looking for sensitivity to diets, older diets do have a lower pedigree than newer ones, and so that is taken into account, and we've done that Monte Carlo analysis a couple of times, and that helped us identify which groups needed better diets, and red snapper was not one of them, since it has so many inputs in it.

DR. SERCHUK: Thank you.

DR. NESSLAGE: All right. Thank you. Yan, go ahead.

DR. LI: Thank you, Genny, and thank you, Lauren, for the wonderful presentation. I do not have questions at this moment, but I just wanted to make a comment, and is that okay, Genny?

DR. NESSLAGE: Sure. Go ahead.

DR. LI: Okay, because I was chairing the workgroup for this workshop, and, also, I chaired the workgroup for the review, SSC review, workgroup, and I just wanted to give a shout-out to the model team. This is a huge model, as we discussed, and, also, this -- I believe this is the third or fourth time the SSC reviews, looks at, this model, at the formal SSC meeting, and so I just want to say, this time, this model right here for red snapper, is a real-life example that demonstrates how

the EwE model can be applied to answer and address the real-life questions of management interest, and this is a good demonstration here.

The workgroup for this workshop, and the workgroup's role, was to work with the model team to refine the model, look at the details, and to try to make the model more realistic, and, also, suggest some sensitivity runs to better understand how the model was doing, and the whole workgroup, SSC workgroup, for this workshop -- We all agreed, and we were all impressed by the performance of the model and how the model addressed the questions and also really appreciated and were impressed with the model team's work here. They put a lot of tremendous effort to make things happen to this point, and so that's all. Thank you.

DR. NESSLAGE: Great. Thank you for that, Yan, and thank you and the rest of the working group for all your hard work, as well as the modeling team. This, as you mentioned, is a huge lift. Let's go to Amy.

DR. SCHUELLER: Hi, Lauren. I have sort of the same questions, or concerns, I guess, as Fred brought up, relating to the diet data, and sort of Fred has pointed out here that there are not -- However many hundred stomachs there are in the South Atlantic region, if we get rid of the Gulf of Mexico, and I understand that EwE models often borrow diet data from other areas, but my question is what is the spatial scope of this EwE model intended to be, meaning, if I was going to get out a map of the South Atlantic, where is this model covering?

Then what is the spatial scope of the diet data that are feeding this information? I am asking that because I am a bit concerned that this is very Florida-centric, which may or may not be an issue for some of the species, but will be for other species, and so I will stop there, and that's my question.

MS. GENTRY: That's some background information on the model, and the model area is the entire South Atlantic Fishery Management Council managed area, and so that's North Carolina all the way down to the Florida Keys and all the way out to the 200-meter isobath, and is that the technical term for how far out in the ocean it goes, but it's 532,000 square kilometers, and so, yes, it's big, but all four of the states, down to the Florida Keys, are represented.

As far as the spatial representation of these groups, I am going to try to remember some of this off the top of my head, because I only just kept SAR versus Gulf of Mexico in the data, but I do know that Kevin Spanik's research, and I think a lot of the SEAMAP stuff, was the Carolinas, and Kevin Spanik is actually on the call, and he can jump in, and there is a lot of Florida data in here.

The gut lab stuff, that's definitely Florida, but SEAMAP, I imagine, represents outside of Florida, and I am actually pulling up the paper they sent us, as I'm speaking right now, and I know that Kevin Spanik's stuff is either North or South Carolina, and I think he's in South Carolina, and I believe that his stuff comes from the Carolinas. Does anybody else want to unmute themselves and --

DR. COLLIER: That's correct, Lauren. Most of his samples came from North Carolina and South Carolina, and that was for red snapper. I am not certain if Amy is talking about the overall diet compositions or red snapper itself.

MS. GENTRY: Yes, and I was only speaking to red snapper, and, actually, I am not sure where all of these fish came from, and the SEAMAP data is -- It's SERFS, and so MARMAP and SEAMAP South Atlantic and SEFIS, and I'm sure there's another acronym in there that I'm forgetting, but, on the data sheet that I have, it doesn't show what states those were pulled from.

DR. COLLIER: During his presentation that he gave during the seminar series, looking at the DNA barcoding for red snapper, looking at their diet, it indicated that most of the samples came from north of Florida, and so I think there were some Georgia samples in there and some South Carolina and some North Carolina.

MS. GENTRY: Yes, and a lot of his samples overlapped with the SEAMAP samples, too. I was looking at that top line there, the SEAMAP 219 one, and those are the ones that -- I think those are north of Florida too, and I remember seeing a map of it, and Marcel might know that, if he's still around these days on these calls, but, yes, you're absolutely right that there is certainly a lot of Florida representation in these studies, and so that's why -- You know, it is always important to put some of those caveats in there and say that, if there were to be additional data collection, that we would be interested in that. I am not remembering -- The Szedlmayer and Lee one, that's Gulf of Mexico.

Another thing that I would say that is good though is that both of those Spanik diets were from North Carolina, and I only found one prey item in them that was not already represented by the other diets, and that was just the single red porgy that was pulled out, and so everything else matched up really well.

DR. SCHUELLER: Can I ask a follow-up question? You talk about cross-referencing, and you make statements like I only found one prey item that wasn't accounted for in the other dataset, but what I would be more concerned about is not necessarily -- Maybe that one prey item was just random, right, and I guess what I am more concerned about is are the proportions the same? Then how different would they have to be for you to raise concern, and how has that been like qualitatively looked at, I guess, because is a 2 percent difference okay? Is a 4 percent? At what point is that going to raise your alarm bell? Do you understand what I'm asking?

MS. GENTRY: Yes, I do, and so there certainly was not a qualitative way to -- A qualitative method to this, since there are so many of these studies out there. For this one, it depended on the group. If it was an invertebrate, a high-abundance invertebrate group, like squids, and it had 5 or 6 percent more in one diet than already in the matrix, I ignored that, because it's squid, and everybody eats squid.

If it was a single species of interest, and so a name that would stand out, and it was sort of more than -- I would say probably my cutoff was around 5 or 10 percent, or, if it was in the model at 0.00001 percent, but, when I looked in one of these papers, it was 4 percent, then I would say, yes, that's a big change, and that needs to be reflected in the diet, and so it kind of depended on the scale of it, and so, a decimal point difference, then, yes, I tried to reflect that, and so I would bump it up a little bit in the diet of one of the other groups, I mean in that diet, and I would reflect that in there, make sure that that higher percentage was represented, but that only happened I think one or two times.

I know that rock shrimp were like 20 percent of one of the Spanik studies, and they were in the model as like 6 percent, I think, and so I made sure to reflect that 20 percent. Now, it still averaged out only to probably 8 percent or something, but I wanted that to be increased in there, because of that high level of rock shrimp in the one Spanik study, and so there was no qualitative method for that, but, if it was orders of magnitude different, then, yes, I changed it, but, honestly, all of the species that we sort of care about, the single-species groups, none of those were really ever more than like 1 or 2 percent, and so it was never really a big -- Other than that one rock shrimp one, it was never really a big like, oh, it's 40 percent of this diet, and it's 10 percent of that diet, but it would be more like it's 1 percent of this diet and it's 1.8 percent of this diet.

DR. NESSLAGE: Amy, does that address your question?

DR. SCHUELLER: Sure. I mean, this is a hard topic, right, with lots of facets.

MS. GENTRY: Well, I would also like to point out too that, even when we moved black sea bass up to 25 percent of the diet, the impact did not change drastically, and so the model is not super sensitive to small diet changes here and there, and so that was one of the other reasons that I felt okay just sort of double-checking these other diet studies, and that's only some of the ones that are actually referenced there too, and there was a handful more, just to make sure that it's sort of close enough and that all of the diet items are represented, because changing a group an extra 5 percent here or a negative 3 percent there doesn't really do that much in the model. It's not super, super sensitive to that, because it's a generalist predator, and so everybody -- Once you average it all out, everybody is pretty low in the proportion scale. I hope that answers that a little bit.

DR. NESSLAGE: Thank you. Let's see what Anne has. Questions from Anne?

MS. LANGE: Again, like everyone has said, this is a great effort that everyone is putting into here, but, again, as I have mentioned in the past, but pardon my skepticism on just how much information is really provided by this. I mean, obviously, it shows the interactions, the trophic interactions, the predator-prey interactions, but, when you're trying to expand that to, for instance, the impact of the red snapper increases in population to the overall impact on the other stocks, I mean, things like, for instance, not just the question of what actually is the diet, and is the sample size large enough, but how is that expanded?

How do you go from 219 SEAMAP samples, with those diet contents, to the entire population of red snapper and how that's going to impact the other stocks? Where do the numbers come in relative to how many stomachs were totally empty, or of those that were looked at, and I'm just curious and concerned about the expansions would be done, based on the modeling, and, again, I agree that it's a great tool to look at what interactions might play, but the degree of those, and the scale of those, I'm just not sure how that's done, or if it can be done appropriately.

DR. NESSLAGE: All right. Thanks, Anne. Let's go to Wilson.

DR. LANEY: Thank you, Madam Chair. Kudos to Yan and the SSC model workgroup, and also the model team, for a really great job assembling all of this information. I get the point of the questions that Anne and Amy were asking, and I certainly agree that the model could use refinement, but you've got to start somewhere, and I think this is a wonderful start, as far as composing an ecosystem model for the entire South Atlantic ecosystem, and it's the first step. I



think it will improve as time moves on, and as we get more data and we begin to understand more about recruitment, in particular, and other factors.

The question that I have, and this is directed for Dave in particular, is I know that Dave has done some model validation work in the West Florida -- With his West Florida Shelf model, and so I will ask Lauren and Dave and Luke if they are planning to do some similar sorts of validation work with this model, where you actually take real field data and see if you can get the model to reproduce the observed fishery-independent data from the field, and that's the first question, and I may have a follow-up, Madam Chair.

DR. NESSLAGE: Great. Go ahead, Lauren.

MS. GENTRY: That's certainly something that we talked about doing, and it's something that we found might possibly be sort of hampered by the size of this model. A lot of these validation and sensitivity analyses and things like that would take possibly weeks to run in this model, and so, while that hasn't been done yet, that's certainly something that we want to explore, and that's certainly something that would be another step to do, as we move forward with this, is that kind of validation technique. Dave, do you want to speak more to sort of how that would be done or sort of the feasibility of doing that in this model, and for which group too, because you have to focus on the certain group that you want to validate.

DR. CHAGARIS: Sure. To some extent, we did do validation with this model, through the time series fitting and some other diagnostics, mainly focusing on red snapper, and trying to resolve some of the misfits for some of the other important groups, but, because this model is so large, as Lauren mentioned, it takes a lot more time to do a more thorough diagnostics and validation process with Ecosim.

I mean, even the West Florida Shelf model has half the number of groups, and it's still pretty big, but it has half the number of groups of what this one does, and so we've done some already, but, to thoroughly do that, to go through all 150 groups in this model, it would take a considerable amount of time.

DR. NESSLAGE: All right. Thank you, both. You had a follow-up, didn't you, Wilson? Go ahead.

DR. LANEY: A follow-up, Madam Chair. Thank you, guys. Well, I certainly understand that, and I will look forward to seeing the results, as you all have time to do those sorts of validation studies. Jumping back to Amy's questions for a second, I certainly agree with her that, the more data you have that is truly reflective of what's going on ecologically across the entire spatial extent of the South Atlantic is certainly important.

It's also important, I think, and I think she touched upon this, that you really need to take a look at changes that are occurring temporally as well, as you have fluctuations in prey species, and I think that's important for us to try and take a look at, and so that's why -- It's a no-brainer here, but it is critical to have fishery-independent sampling programs that are funded on a very, very long-term basis, like SEAMAP, and, when I say funded, I think we all realize that SEAMAP is underfunded, and it could always use more funding.

It's really important to have those sorts of survey programs that can continue feeding us the information we need, not only for single-species or multispecies stock assessments, but also for Ecopath models like this, and so I continue to remain extremely optimistic about the possibilities that, at some point in time in the future, the model may be refined enough to start providing us possibly some management advice, maybe, although I will say, and this is, again, to Amy's point, that, if you want to start doing management on a smaller scale, say for a single waterbody, like Pamlico Sound, there are some existing models for those, for such areas, and we could possibly start using some of those, maybe use a suite of Ecopath models at some point in the future, and deal with a more manageable dataset, possibly, than the model for the whole South Atlantic, and so, with that, I will shut up, Madam Chair. Thank you.

DR. NESSLAGE: Thank you, Wilson. Let's go to Fred Serchuk. Lauren, did you want to comment on any of that?

MS. GENTRY: I just wanted to mention, to Wilson's point about validation, Wilson, one of the things that we were all very happy to see, when we were doing this exercise of what can we modify to follow the SEDAR predictions is that, for, especially this one right here, all we did was change the fishing mortality, and it was a flat fishing mortality, and, by only doing that, the biomasses did follow past data, and future data, from SEDAR pretty well, and so at least the trend, this upward trend, was tracking pretty well without significant changes, and so that was one of the things that at least I was just like, oh, all I had to do was one thing, and it was able to sort of take over the rest of it, and so that was certainly one of the sort of pseudo validation things that happened during this process, was to see that -- Our model ends at 2016, and we were able to track the general trend of up through 2021 pretty well, even if it's missing that recruitment spike right there, and then up into the future.

The other thing that I wanted to say about the diets is that I don't want folks to get too, too worried about those sample sizes of stomachs and saying like, well, how are 219 stomachs going to scale up, and, yes, in the ocean, we have many, many, many thousands of species that could possibly be eaten by red snapper. However, the model only has 140 groups, and all of those species in the ocean are all scrunched down into 140 groups, and so, in these diets though, each of these have -- I think red snapper age-one-through-three and four-plus, they have over fifty groups represented in their diets.

The proportions -- Like I said, there is always caveats about the proportions, but, as far as what all could they eat, they are already eating over a third of the model. A third of the groups in the model are represented in their diets, and so don't be too, too worried about like, well, what about if this one species hasn't been seen, and that species is, more than likely, in one of these aggregate groups, and so it is being represented already, even if that specific species has never actually been seen in a stomach before.

Like I said, with the exceptions being the very large grouper and snapper whose juveniles are difficult to identify in that stomach, but I would say that they're eating over a third of the model, and so don't be too, too worried about the scaling up think and saying, well, only a few thousand stomachs are represented out of the entire stock. It's still a large portion of the possible prey items are already in there, and so I just wanted to say that. Sorry, Fred.

DR. NESSLAGE: Thank you very much. Sorry for the confusion there, and thanks for your patience, Fred. Go ahead.

DR. SERCHUK: I still want to stay on this thing about the samples. If we could go back to -- Do you have a slide there that compares the FWRI sampling with the SEAMAP sampling? I just want to reinforce Wilson's point, I think, that he made. If I look at the Florida FWRI gut lab and the SEAMAP below, I am seeing herrings are predominant in one, and I am seeing that other grunts are predominant in the other.

Even though there's a few items that have come up in both, there are lot of things that are unique, both through the Florida samples, the FWRI samples, and the SEAMAP samples, and so I just want to be convinced that this is not a function of either spatial aspects of the collections or the temporal aspects of the collections, because I certainly agree that it's really important to sample throughout the range, for example of red snapper, in this case, and also have the samples go throughout time. That's just an observation.

Now I have a question. Could we use these data to try to estimate changes in natural mortality for a number of different species, which, in many cases, we indirectly estimate, through either modeling effort or age groups in the population? Would the predation information give us some insights on whether our estimates of natural mortality might be changed or could be estimated from this exercise? Thank you.

MS. GENTRY: I would say that that would take statistical minds beyond mine to answer, but I know that Kevin Spanik has related to me, in email, that that was something that he was interested in looking at, changes in red snapper diet over time. As far as using red snapper stomach contents to -- Like I said, that will take a -- I don't know if you would ever get a big enough sample size, and I don't know what your error rate would be if you were going to try and use stomach samples to look at changes in natural mortality of the prey over time, and I also think that red snapper is a generalist predator. When you catch it, it's whatever it was just eating a moment ago, unless you get little crab bits that have been sitting in the stomach for a few days or something like that, but I think that that -- I mean, that's certainly a very valid point.

DR. SERCHUK: Could you just comment on the differences between the gut lab and the SEAMAP results that you presented here on the right-hand side of this graph?

MS. GENTRY: Sure, and so the first thing to know though is that you are only seeing the top-ranked like ten items, I think, for each of these studies, and herring are in the gut lab. Sorry. Grunts are right there in the gut lab, just towards the bottom a little bit, and herring are in the SEAMAP results, but just lower than you can see right there, but, yes, it's a generalist predator, whether it's a tomtate or a medium-sized fish or a goby or a sea robin, and sort of my impression is that, if you are a hungry red snapper, sort of regardless of where you are and how big you are, you eat what fits in your mouth, and that's going to be reflected in the size and the sampling -- The time of year and the prey availability is going to be reflected in the predators' stomachs for a generalist predator like this.

If perhaps herring were just more available in the areas when the gut lab was sampling, versus when SEAMAP was sampling, and that could even be just a day-to-day thing, and that just happened to be where the red snapper were, and, with a generalist predator like this, that's why we

were trying to add a many studies as possible, just to get the full breadth of the diet, because they do just eat whatever is in front of them, but it tends to be these groups that represent these small to medium-sized, bite-sized, prey and invertebrates.

I do believe that every single one of our forage fish groups is represented in the diet somewhere, halfbeaks and shad and -- A lot of those bite-sized fish are all aggregated together too, and so almost all of the groups that you would consider big enough to fit in their mouth is represented somewhere, but, yes, I can't speak to exactly why the gut lab -- Why the fish that we got from their data and the fish that we got from the SEAMAP data, why there were more herring that one day and more grunts that other day, or in that other study, but, to the mind of someone who is looking at this ecosystem as a whole, I am not seeing flounder in there, and I am not seeing marine mammals or sea turtles or something like that in there, and I'm seeing sort of the same general communities of fish and invertebrates.

DR. SERCHUK: Thank you for that. Thank you.

DR. NESSLAGE: Thank you. Amy.

DR. SCHUELLER: I just want to say, well, two things. One, I agree with both Fred and Wilson's comments on the diet stuff. We clearly could talk about that all day, and the second thing that I wanted to ask about was can you go to Slide 29? Some of these species we're fitting pretty well, and others we're not, and like we're kind of totally missing the boat, especially at the end of the time period.

I guess what are your thoughts on this? Have you looked into like if there's any ability to improve that, and why do you think -- You may not know this, because clearly this could take like some extensive model exploration, but I guess I wonder -- In some EwE models, when you're not fitting certain species, you're not concerned about it, but, when you're not fitting other species that you may have a big interest in, then that becomes an issue, and so I guess I was wondering what your take on this is.

MS. GENTRY: Absolutely. Great question. During the workgroup, Chip, in his admirable multitasking abilities, was able to pull up recruitment information for both black sea bass and red grouper, and I think we either concluded, or at least sort of preliminarily threw out there, that it appears to be that what we're not capturing here is likely some either environmental forcing function, environmental driver, or recruitment changes, because black sea bass and red grouper both only have one age stanza, and so we must not be capturing --

They both experienced recruitment increases around the time where it starts diverging from the model, and so I think that was one of the things that we mentioned that would be useful for, in the future, adding age stanzas to these groups that aren't fitting well and moving to using a fishing mortality time series, rather than catch time series, to force those lines that you're seeing there, and that gives the model a little more flexibility.

Right now, we might be hampered by using hard-and-fast catch time series, and certainly looking at different either primary productivity or environmental forcing factors, but, yes, absolutely, getting these fits closer for these more important species is absolutely top of the list for next steps,

moving forward, making sure that we figure out what's going on and trying to capture that as best as possible.

DR. NESSLAGE: All right. Thanks. Let's take one more question from Wilson, and then we're going to go to public comment.

DR. LANEY: Thank you, Madam Chair. Listening to the conversation, and realizing that we're dealing with a bunch of generalist species here, in terms of their prey, I'm wondering if it would be interesting to select a species, which is hopefully in the model, that we know has a very specific prey and just tinker with it and see how it responds to changes in vulnerability of its prey. I don't know, off the top of my head, a fish that might fit that criterion, and I am much more familiar with reptilian diets, and so, if we were talking about snakes, we could pick a rainbow snake, which we know has a very specific diet that is heavily influenced by American eel and aquatic amphibians.

I guess maybe one does come to mind, and that is based on Steve Poland's masters work looking at wahoo and dolphin prey and his documentation for how much of a percentage of the wahoo diet is comprised of the bullet and frigate mackerel, and so that might be one that it would be interesting to do some tinkering with, just to look at a species which we know, at least based on Steve's work from the Carolinas, is heavily dependent on a very small number of prey, and so that was one thought that I had. Then the second thought has completely evaporated, Madam Chair, and so, if I think of it, I will articulate it later.

DR. NESSLAGE: All right. Thank you. Lauren, did you have anything to that point?

MS. GENTRY: Absolutely, yes. I think that's a great idea. I would love to look at that, especially because Steve Poland's data, in particular, looks even more specialized than it is in this model, because a lot of those pelagic sort of surface medium-sized mackerel sort of things, or many of them combine together and aggregate together in the group, as like pelagic oceanic piscivores or something like that, and so dolphinfish, and wahoo in particular, do look like they have a very narrow diet in the model, and so I think that would be a cool exercise to do at some point, to look at how especially dolphinfish, because it's got the Auxis mackerels and the wahoo and the pelagics, and not much more, some crabs here and there, and, yes, see if we can contrast that with this generalist predator like red snapper, that sort of just eats whatever is in front of it. That's a great idea.

DR. NESSLAGE: All right. Thank you. I think we're going to transition to public comment. We've got some folks lined up. If you have a question, and you are visiting us from the public, please raise your hand, using the little green turkey button on -- Well, I can't tell you where it is on your screen, but on the webinar controller, and, if it turns red, your hand is raised, and so let's start with Rusty Hudson.

MR. HUDSON: Yesterday, at the close of that presentation on gag, we didn't have a public comment, but this presentation by Lauren is just awesome, and I will be able to segue the comment from yesterday into today. The little gags that I was talking about, along with the little sea bass, in the estuaries up and down the river, if you want to call it that, -- from Ponce Inlet, and, as a general rule, we would be catching pinfish for live bait to take offshore, and that's when we would see the little gag and the little black sea bass.

With the little bags, we would let them go, but the black sea bass -- Of course, that's going to be age-zero female, and so we've got 100 percent of those gag being female that are having to run a gauntlet, especially as they get a little bit bigger and get outside the inlet, but, getting back to black sea bass, we would save that and keep it alive with the pinfish and take it offshore, and that was generally returned as probably a ten or twenty or thirty-pound red snapper would eat that, because they just have a way of just being attracted to that particular fish.

I have said this in science workshops several times, and, until the gag -- I heard the stuff with the scamp grouper being one and two-year-olds that are females, and then maybe, with three-plus, we started getting into a male transition, but I really -- With gag, that's a different animal. It's a little later in life that the female makes that transition, and the black sea bass, of course, has its transition, and there was an effort, up north, to do some work on black sea bass, what they call dominant males and submissive males, but that's a whole other story, and it's just the type of stuff that needs to keep coming.

You mentioned SEAMAP, and the unfortunate thing is that that's outside the beach, and they get to Ponce Inlet, and just a little south of there a little bit, but I don't believe they go down to Fort Pierce, and so you have a lot of area that the shrimp-boat-type rigs, like the mongoose that I used to drag back in the 1980s, and it's the type of thing that there's some places that you just can't get very well without tearing up your equipment. In general, this is an awesome, again, effort, and I love this. Hats off, and kudos, to FWRI, and we need to see more of this work. Thank you.

DR. NESSLAGE: All right. Thank you. Is there other public comment? Thank you. All right. Then we are at 11:30. I think, before lunch, we should be able to get our thoughts on paper regarding our comments on this model application, and so we haven't actually taken a -- I haven't let you take a biological break, have I, and, Lauren, you've been at it for a while. I'm assuming, given it's a webinar, people have been just taking the opportunity to bounce out. Can we just push through to lunch, or is anyone -- Staff, are you okay with that, or do you need a break?

DR. CURTIS: Staff is okay. They will push on.

DR. NESSLAGE: All right. If anyone is freaking out, raise your hand. I am not seeing any hands, and so let's just push through to lunch and wrap-up this agenda item, and so, if you don't mind, Judd, could you pull up our infamous consensus statement document? We are being asked to provide comment on the implications of these findings for red snapper and other South Atlantic assessments. We are asked does the model describe a potential range of impacts from high red snapper recruitment, and are there any immediate changes, basically, that need to happen to the presentation, or the report, before it goes to the council in December?

I think we can -- I am looking to the SSC to provide me with any major comments that you have about the implications of this study and provide any review comments, and, if there is any concern or caveats to whether we think this study describes the potential range of impacts of high red snapper recruitment, I would like to hear that from you, and, obviously, if you think there is any major changes that need to happen before the council sees this -- I am not soliciting ideas for major changes, but this would be anything that you think could be modified or any additional information that would help the council to understand this study, and I would entertain that as well, and so, folks, what do you think? Wilson, go right ahead.

DR. LANEY: Thank you, Madam Chair, and so we had a lot of conversation about the diet data and spatiotemporal coverage, and I'm not sure where this goes. I guess under the second bullet there, and we did express concern that the data are Florida influenced, and we would be more comfortable, maybe, as we can expand the scope, the spatiotemporal scope, of the data in the model, at some future point, and so that may be a recommendation, a research recommendation, or a refinement recommendation, that we put in here somewhere, and I know Amy and Anne both share a similar thought, and so they may want to jump in here.

As far as the work that was done to assess the influence of red snapper on other species, I think that was good work, and we might want to just note that it is somewhat difficult, when species are generalist predators, to assess the extent to which things may change, and I think that's exemplified by the fact that Lauren and the team had to bump those percentages up to, what, 10X for one of their sensitivity analyses and 25 percent. They increased black sea bass by 25 percent in another exercise that they did, and so those are just my initial off-the-top-of-my head thoughts, and I will be quiet and let other people chime in.

DR. NESSLAGE: Okay. As we're going along, in the interest of time, I want to make sure that your thoughts are captured, and it looks like Judd was taking notes as you went along here. Can you highlight where you think his comment is being captured?

DR. CURTIS: He was referring to the second bullet here, just the expansion of the spatiotemporal scope of the data would be useful, and, Wilson, it's captured here in this bullet, but we could also move it down into the SSC recommendations section down here, if you're comfortable with making that recommendation.

DR. NESSLAGE: I don't know that we're recommending anything at this -- Well, we'll see if we make any recommended changes, but I am just looking to fill out this part of our report. Wilson, does this statement capture roughly what you were trying to say?

DR. LANEY: Yes, I think so.

DR. NESSLAGE: I think the previous sentence to what is highlighted is what Amy was referring to earlier, and so maybe let's go to Amy and see what she has to add.

DR. SCHUELLER: I am not necessarily going to add to this. I actually have a different question, and so, I guess, are you ready for me to ask a different question?

DR. NESSLAGE: I guess, first, tell me if you think it's okay, what's being written, other than -- If we take the question out on this bullet, because I believe this captures some of what you were getting at, maybe, or maybe we just need to start fresh.

DR. SCHUELLER: No, I think it's -- I mean, the main point is that there is temporal and spatial variability, and, given this model represents apparently the EEZ of the entire South Atlantic, there should probably be a little bit more thorough investigation into sort of what the diet coverage is with respect to that.

DR. NESSLAGE: All right. Thanks. What's your new thought?

DR. SCHUELLER: Well, my question is -- So I'm looking at this, and it says are there changes to the presentation and report needed before presentation to the council, and I guess, typically, when we have workgroups, we have like a statement of work, and we know what their product is going to be, and I guess -- Maybe I missed it, but are we following sort of that same structure, and what exactly is the council planning to do with this?

Is this just a presentation for general informational purposes and like basically showing them that these are the types of questions that could be explored, or is it going beyond that? It's hard for me to answer that question when I'm not really sure what the intent of all of this is. Are they intending to make a management change based on any of this? If that's the case, then I think that's a whole other discussion.

DR. NESSLAGE: Perhaps Chip wants to elaborate, but my understanding is that they're not considering any major management changes based on this, and it's more informational and contextual for understanding what's going on in the ecosystem right now, but correct me I'm wrong, someone.

DR. COLLIER: That's correct, Genny. It was the first investigation, and we did not know -- We had no idea what was going to happen with this, and so the council -- They were presented this model, and the previous working group for the EwE said it's going to work better if there are specific questions of the model.

Working with the council and the SSC, we developed a list of five questions to potentially ask, and then two questions came up in the forefront, and one was looking at the impact of high recruitment, as we were hearing many public comments that the high abundance of red snapper currently was causing a reduction in a couple of fish populations, and so this was the first attempt to look at that, and so, given that we're not seeing huge impacts of high red snapper recruitment, it might not be considered in stock assessments or other pieces of information.

I don't know if that helps, Amy, but we're really just trying to understand what the potential impacts of high red snapper recruitment could be, and so this was the first attempt. It's a struggle to write the right questions for you guys, and, many times, we have to write these questions before we see the presentation and the paper, and so we're just trying to make sure that it covers everything.

DR. SCHUELLER: Sure, and I understand that. I guess my thought process on this is what happens when we get to a point where, long-term, down the road, what's the plan for this, and, if the council ever does say, oh, we want to use this for management, we need to think about that, because, if we're using an assessment for management, it's going through the SEDAR process, and it's being reviewed, and then it's coming to the SSC, and so this is great exploration and beginning work, but I don't know, and I guess I am concerned that what if there was some big repercussion from red snapper.

Are they going to move forward and do something, or are they going to step back and say, okay, there's the potential for this, and, if we want to explore it further, we need to actually follow a proper process here, and so that's my concern, and I just wanted to get it on the record.



DR. NESSLAGE: We have stated that concern in previous reviews of the EwE, and, if you want, we can recycle that language, to basically say here's our thoughts on this work. If you want to use it for management, it needs to go through the SEDAR process. If you want, I can recycle that and stick it in here, unless folks disagree.

DR. SCHUELLER: I personally think it would be good to keep saying it, because I forget things, personally, and so --

DR. COLLIER: I have a question on that. When you're saying used for management, are you saying used for management to provide catch level advice or use for management in other situations?

DR. SCHUELLER: I think that it's probably any situation, because, I mean, it really -- There is management that can be done beyond catch level advice, especially if you're talking about multispecies considerations, and so I just feel like it does need to get the proper kicking of the tires before it would be useful as a fully approved tool, which is basically what we talked about with scamp. You are creating a tool, and the tool needs to be -- The tires really need to be kicked first, before we're going to move forward with whatever we're going to do in management, or the council would be interested in.

Now, that's the other issue, is sometimes these models are built for just sort of putting together what the ecosystem looks like, and there's like general interest, and sometimes they're built to ask very direct questions, and I feel like we're sort of in this realm of putting this together for general interest, and I would assume, at some point -- Clearly there was a direct question here, right, related to red snapper, and there is some list of questions that we could be interested in, and I think, when we go down that path, we have to be cognizant of how we treat other models, as we use them for management.

DR. NESSLAGE: Okay. We're highlighting some of the caveats for the model. In general though, the outcome that a generalist, like red snapper, is not having a huge impact, and we're putting in a very unidirectional way to the ecosystem, and is that -- It wasn't surprising, it appears, to the working group, and does anyone have any thoughts on whether this is surprising, or do you not believe, and do you feel that this is probably reasonably describing the impact of high red snapper recruitment, or are these just things that would need to be looked at to really make this useful for management, I guess is where I'm kicking this back to Amy, maybe, and some of the other folks.

As general guidance, a first stab at the problem, do you think this is unreasonable? If you're going to use it in a quantitative way in fisheries management, I hear that we would want some of these other issues addressed, but are there thoughts on the overall results? Everybody is hungry. Fred Serchuk.

DR. SERCHUK: I don't have the -- My intervention here may not be helpful to you, Chairman, but one of the questions that -- One of the issues that I suppose was modeled is using the 2044 rebuilding schedule, and I don't know whether that's just coincidental or they took it out to 2044 for a different reason, but I understood, when we discussed red snapper a while back, that that was the current rebuilding data for red snapper.

The question might come of, if red snapper are rebuilt before then, and they may be, if the recruitment schedule that we put in using the last ten years, or was accepted for the last ten years, and the stock certainly has the ability to be rebuilt I think it was sometime in the mid-2020s, maybe 2025 or 2026. Would the implications of the model change at all if the rebuilding time was much more abbreviated? That's a question that I think might come up in the management discussion, if the 2044 period that was modeled was based on the rebuilding schedule, and so I just raise that as an issue. Thank you.

DR. NESSLAGE: Right, and so, if the fishery were to open up again in the next ten years, that might change the ecosystem dynamics, and is that what you're saying?

DR. SERCHUK: More or less. I mean, we weren't told why it was 2044, and I just presumed that that was the end of the rebuilding date, but, as you know from our discussions when we last discussed red snapper, and then going with the recent ten years, it could be rebuilt sometime in the middle 2020s, and would the implications be the same for black sea bass, for example, as it would have been in 2044?

DR. NESSLAGE: Right. Good question. I guess, just quick to Lauren, was 2044 magically chosen from the rebuilding plan or magically chosen for another reason?

MS. GENTRY: It was specifically chosen to match the SEDAR projections.

DR. NESSLAGE: Fabulous. Okay.

MS. GENTRY: But I would like to point out too that the 2044 was picked as the biggest difference between the red snapper biomasses, but we're not looking, necessarily, at this as what we think will happen by 2044. This is more so ranking -- This is like an ecosystem sensitivity analysis of saying that black sea bass could be sensitive, or may be sensitive, to an increase in red snapper biomass of that scale, and not necessarily that it would take twenty years to see that impact or something like that, because there is multiple ways of doing that, but, basically, more red snapper equals some small percent less black sea bass, and that's sort of the way to interpret this, more than we're actually trying to predict the future or anything like that, and it's just a sensitivity analysis.

DR. NESSLAGE: Right. Okay. Thank you. Maybe we can change that from a question to a statement, Judd. An acceleration of the rebuilding schedule might have applications for applicability of Ewe model outputs to management, or something like that, and would that capture your thoughts, Fred?

DR. SERCHUK: I think it would, Chairman. Thank you.

DR. NESSLAGE: You're welcome. Thank you. I assume it's to this point, Chip?

DR. COLLIER: Yes, and that high recruitment level and then the very high recruitment level -- Both of those, I believe, would have the population rebuilding fairly quickly, and so I think that was already addressed within what Lauren had provided in the sensitivity runs, where she looked at the very high recruitment and what kind of impact it would have.

DR. NESSLAGE: Okay, and so we can direct the council to the sensitivity runs, as opposed to the first -- I don't know if you want to call it the base run, or alternative states of reality, or future reality. Thank you. All right. Yan, go ahead.

DR. LI: Thank you, Genny. I just want to add to that. Genny, you mentioned earlier that this model -- As we discussed earlier, this model, for now, it runs the model to inform some more quantitative information, or guidance, and the model may not be ready yet, and may need to be further refined and vetted and validated, based on observation data, to be able to give that quantitative advice, but I feel like, for now, as Lauren demonstrated this morning, some qualitative information is there.

Like you said, we know there is connection with high recruitment of red snapper, and then the black sea bass may have -- There may be connective impacts, and so we just don't know how much, but the qualitative information is there, and, also, I feel it is helpful, at least when you try to make management decisions that boost up red snapper recruitment, and then you also care about black sea bass, and then we may be more do it more conservatively, instead of aggressively boosting it up, because we may consider the connected impacts for the black sea bass, and so I am just thinking how we word it, the bullet point above, the last one.

Like what kind of advice are we looking at, are we looking for? If it's quantitative, then I agree that there's other things that we need to refine and validate, but, if it's qualitative, there is information there.

DR. NESSLAGE: I like what you're thinking. Sorry. I cut you off. Go ahead.

DR. LI: No, and I'm done, and I am just saying this is my personal opinion, my two-cents, based on my observation from the past workgroup discussions and workshops.

DR. NESSLAGE: Perhaps we could say something -- We can wordsmith later, but maybe say something along the lines of, before incorporation into management advice to provide quantitative -- Into management to provide quantitative advice, and how about something like that? We can wordsmith later, and then, under the bullet about does the model describe a potential range of impacts from high red snapper recruitment, we could say something along the lines of the overall -- If you go down to the bullet, the question bullet, although does the model describe -- There.

We could say something like along the lines of the overall model qualitative model results appear reasonable, or I don't know how you guys want to phrase that, given the caveats above, or something like that. I am not hearing any changes, and so I'm going to say "N/A" to the bottom, unless someone has anything they want to bring up, and I think we're getting close here. Does that capture some of your thoughts, Yan, or am I taking it too far?

DR. LI: It looks good.

DR. NESSLAGE: Maybe listed above and in the workshop report, to make sure that folks take a look at that. Does this negate anything that anyone said earlier? I don't want to put words in the SSC's mouths, a whole, if folks disagree. I am just trying to move us along here. All right. Any last comments, questions, or concerns or major points you want included in the report on this

agenda item? We'll have a chance to look at all of this as the very end of the meeting, but this is the time, while it's fresh in your brain. All right then.

It looks like we have completed that agenda item. Thank you very much, once again, Lauren, for presenting very thoroughly to us, and thank you to Yan and all the rest of the working group and all the folks involved in the workshop and the modeling team. We really appreciate all your gargantuan efforts to get this model up and running and to apply it to a question in the South Atlantic. Thank you very much for your time.

We are at noon. I think it's lunchtime. We have, if you recall -- This afternoon, we're going to be tackling the ABC Control Rule agenda item, and we will then move the Standard Bycatch Reporting Methods to first thing tomorrow morning, and Frank will join us then. We may fit in some of Kathleen's outstanding items for SEDAR as well as the catch level working group's agenda item and the National SSC agenda item, if we have time this afternoon. If not, we'll try to squeeze those in tomorrow as well.

That is the plan, and so we have a lot to do this afternoon, but I don't want to burn people out either. It might be good then if we came back at 1:00. Do folks think they can be fully refreshed and ready to really attack this question by 1:00? I am not hearing any shouts of protest, and so let's reconvene at 1:00 with lots of energy to take the final look at ABC Control Rule issues. Thank you, all. Talk to you soon.

(Whereupon, a recess was taken.)

DR. NESSLAGE: Let's keep plugging. We are going to tackle Agenda Item 12 next, and so the is our final look at the Comprehensive ABC Control Rule Amendment. We have looked at this several times before. As you may recall, at our spring meeting, in particular, we had some questions about what had changed, exactly how the risk tolerance analysis was going to work that we would be providing feedback on, and how that might pan out, with a couple of examples of setting P\* with the alternative ABC Control Rule for an example set of stocks.

We had asked to look at that, and that agenda item kind of kept getting tabled, as other big issues came rolling across our plate, and so what I have asked Mike Schmidtke to do is to update us on the ABC Control Rule amendment, as it stands, anything that we need to be made aware of that has changed since we last saw it that's big, and then he is going to walk us through the risk tolerance analysis spreadsheet and then a few examples on how the P\* might be applied under I believe at least Alternative 2, and so I will draw your attention to Attachments 12a through 12d, and, I think, at the moment, I am going to hand this over to Mike, and hopefully he will entertain questions as we go along. I will keep an eye on the hands-raised sheet.

It's really important, SSC members, that we have a complete understanding of what it is that we're recommending here. This is the last time that we'll be seeing this, very likely, before it goes to final decision for the council, and so, if we have any last recommendations -- If we approve our previous recommendations, that's fine. If we have anything new, or anything we would like to add, this is the time, and so, if you're not sure about anything we have recommended in the past, or how this is all working, this is the time to settle all of that and try to get a good idea of what's being proposed moving forward. With that, I will hand it over to Mike. Thank you.

## **COMPREHENSIVE ABC CONTROL RULE AMENDMENT**

DR. SCHMIDTKE: Thank you, Genny. I have a little introductory spiel updating on the Comprehensive ABC Control Rule Amendment. Just kind of reminding everybody, first, about the process that this amendment has gone through thus far, you can see that it goes all the way back to 2018, and we've gone through several steps, and there's been several phases of SSC review along the way.

The SSC has most recently looked at the phase-in and carryover actions, as well as giving at least a preliminary review of control rule alternatives that we'll go into a little bit more in-depth today, and so, today, we're going to be focusing on Action 1 of the amendment.

There are three general actions that are being proposed through this amendment. The first one is modifying the ABC Control Rule, and the second is allowing criteria and setting criteria and scenarios when phasing in changes to the ABC would be allowed, and then, finally, addressing carryover of unharvested catch.

For this one, just kind of a note since you last saw it, and this is more an administrative thing than anything, but we had to separate that out into two different actions, and one of them is addressing eligibility and the other is addressing the process of implementation. That doesn't affect the criteria that you all have already commented on, and your recommendations are still fully relevant for the options that are considered there, and the council has taken those into account. It's just more of a process thing, that it's cleaner for us to separate out the eligibility from the implementation, for the purposes of that specific action.

As a reminder, the amendment affects the Snapper Grouper, Dolphin Wahoo, and Golden Crab FMPs. Coastal Migratory Pelagics is not included in this. The adjustments to account for phase-ins and carryovers regarding that FMP are being dealt with in a separate amendment that is jointly done with the Gulf.

Our goals for today are to look at Action 1 addressing the control rule, looking at the alternatives and your previous recommendations, and one thing that we really want to get, at this stage of development, is to make sure that we have clear explanation, and there is clear understanding, of these alternatives. The ABC Control Rule is a hairy beast, and we want to make sure that the SSC is clear on what you all are providing recommendations on, as well as we want to make sure that the council is clear, and the public are clear, as we move on to these later stages, and they have to start making decisions and providing their feedback as well, and so clarity of the alternatives is one of the most important things that we have for today.

We also would like your feedback on the risk tolerance analysis spreadsheet. This is something that you saw last October. Mike Errigo presented this to you last October, but you all requested seeing it again, and having some input on it before it moves on to further stages and is included as an appendix to the amendment, and so we're going to take another look at that, and then reviewing some example P\* values, using the different control rule alternatives, and so I have included, in your materials, a spreadsheet that has those P\* values, and they address each of the alternatives as they currently stand, with some example species. Finally, we'll pull up the recommendations that

you all have provided previously, so that you can revise them as you see fit, or add to them, or do whatever you need to do concerning them.

After this review, the IPT will meet before the council sees this again, and so one thing to keep in mind is that we don't need to have specific perfect wording. We need ideas, concepts, that type of thing, and the IPT will refine the wording as it comes to the actual alternatives.

The draft amendment will probably go to the council once more before it then is considered for public hearings in June of 2022, and, kind of in line with what Genny said, just a little bit of additional detail, and this is the last time that we would have enough time for any changes that you all recommend to be incorporated before it gets considered for public hearings.

Some of these items can come back to you all in April, if you would like to see them in a different way, but April would really be focusing more on items that are like appendices to the amendment and not affecting the actual alternative language. In April, you could also state any preferences that you have for the drafted alternatives, but anything that would affect the actual drafting of alternatives is something that we want to capture today, because, between the April SSC meeting and the June meeting, we wouldn't really have time to incorporate major changes to the alternatives.

As we've been going through this process, we've been showing this slide, and we want to continue to place emphasis on it, because that's kind of the crux of what's being changed within the control rule here. It's clarifying the differences between risk and uncertainty. Risk is referenced in this document, and in the control rule, as management risk and being the purview of the council. Uncertainty is used to denote scientific uncertainty. This would be assessment results, projections, aspects of the assessment. Like, in the case of gag that we were talking about earlier, recruitment uncertainty would be something that would fall in here. This would be the purview of the SSC.

There are two really long tables in the document showing the current ABC Control Rule. I'm not going to show those, and I'm going to kind of provide a brief overview of what the ABC Control Rule is doing, but I would encourage you to kind of reference those as you go through your discussion today.

The current control rule is organized into assessment levels. Level 1 is for stocks that are assessed, and these will be using age-length or biomass-based models, and we have several different levels of unassessed categories, and, within these unassessed levels, we have DBSRA, DCAC, ORCS, and decision tree as the methods that would be used to set an ABC. One of the aspects that kind of motivated a change to the control rule is that, particularly for these unassessed species, this is inflexible, and we couldn't consider new data-limited methods, and there was a group that kind of addressed this, and the SSC provided their recommendations, their recommended way of handling these unassessed species, and so that's something that has been addressed in some of these alternatives.

One other aspect, and this is really an example of kind of the clarity thing that we're trying to get across, and a comment that Genny sent me in an email really reminded me of this, is that, with the current control rule, the SSC doesn't have the ability to adjust the assessment uncertainty for setting the ABC when they feel that it isn't adequately captured by the assessment.

There are times when the SSC can kind of come up with some type of ad hoc approach, possibly, but there isn't anything hardwired into the control rule that says, if the SSC thinks that the uncertainty isn't adequately captured, that they can make changes to it before applying the control rule, and so that's something to keep in mind as we get into some of these other alternatives that consider changes to that aspect.

In looking at how assessments are handled for these assessed species, this would be Level 1 of the current control rule, and ABC is dependent on the OFL, as determined through the stock assessment, and P\*, or the accepted probability of overfishing, this is determined by -- The ABC is determined by applying P\* to a distribution of the overfishing limit, and that's estimated by the assessment. P\* is determined by the SSC, by going through the Level 1 tiers, which include an evaluation of the assessment, estimation of biomass, exploitation and reference points. The second tier is a characterization of the uncertainty, the third tier is stock status, and the fourth tier is the productivity and susceptibility analysis results.

After the SSC goes through these different tiers, they determine the corresponding adjustments to the initial P\*. The initial P\* is at 50 percent, and, at each tier, there is a reduction by up to 10 percent, depending on the SSC's evaluation, and then the adjusted P\* is applied to the assessment projections to determine the ABC. Kind of pointing back to the discussions of risk and uncertainty and the responsibilities of those roles, right now, there is some overlap between risk and uncertainty both being incorporated at the SSC level for the current control rule, and so that's one of the motivations for this amendment.

Alternative 1 is our status quo, our current control rule, and Action 1 is addressing potentially changing this control rule, consideration of that. In presenting each alternative, as I go through this, there is some summary action language, followed by information on how risk tolerance, depicted through P\*, would be determined, and, finally, application of the control rule to overfished stocks. The overfished stocks portion is included here, because, while it's common practice for ABC to be determined by a rebuilding plan, this is not overtly specified in the current control rule, as set through the Comprehensive ACL Amendment.

One of the goals of this action is to more directly state how these situations are handled, and so that's not really proposing any drastic change, but it's more setting in writing what is kind of already done as common practice. I won't be spending much time talking about that overfished situation, because of that aspect, but I just wanted to let you know that that's what it is pointing to.

Our first alternative from the status quo, Alternative 2, this would remove the tiers language and structure of the current control rule and replace them with kind of a completely new structure that categorizes assessments based on the uncertainty characterization from the SSC. These categories are shown in Table 3, and I will talk through them in the next slide. P\* would be specified by the council using the biomass information from the assessment and the stock risk rating, which we'll talk about a little bit later as well. There are additional options that I will bring up when we kind of wrap up this alternative that may be considered as kind of add-ons, or tweaks, to this alternative.

Looking at the categories under Alternative 2, and you can see these in your briefing materials, in the document, in Table 3, and the assessments will be categorized based on how well uncertainty is evaluated and incorporated. Category 1 would be the stock is assessed, and uncertainty has been

adequately incorporated using the assessment, and so  $P^*$  would be applied directly to the assessment information to derive the ABC.

Category 2 would have an assessed stock where the uncertainty is not adequately evaluated, but could be improved through an adjustment by the SSC, and so, in this case, the SSC would take the uncertainty measures from the assessment and would apply some form of adjustment to those measures and then apply the  $P^*$  approach.

Category 3 would have an assessed stock, but the uncertainty is not adequately evaluated and cannot be addressed by adjusting the measures that are available through the assessment. In this case, the SSC would develop uncertainty measures before applying  $P^*$  or come up with a direct buffer to the OFL to derive the ABC.

Finally, Category 4 is the case where a stock is unassessed, and we already kind of had that hashed out through the SSC's working group. The council has approved that as the recommended method for handling unassessed stocks, and so that's incorporated both into Alternative 2, and, when we get to Alternative 3, it's incorporated there, the SSC's recommended method for addressing those.

Part of this, part of kind of the next step of this, would be deriving the  $P^*$ , and this would be determined by the stock risk rating, which we'll delve into a bit deeper when we get to that spreadsheet, and also biomass relative to a reference point from the stock assessment. Table 4 shows what the default  $P^*$  values would be under each biomass and stock risk rating combination, and there was also -- One of the sub-alternatives that is considered in this action would adjust the boundary between the high and the moderate and the low biomass levels. This sub-alternative would make it a little bit more conservative, raising it to 110 percent of what the default boundaries are, shown here, and so that's something that is considered as well.

At the last meeting, there was considerable discussion about the way that the SSC would impact the ABC in this type of scenario, where  $P^*$  is essentially being approved through that tabular process by the council, and the SSC is evaluating the uncertainty more.

I just have a brief example to talk through, and this is not intended to be applied to anything directly, but it's just more highlighting the effects of uncertainty and the effect of changing the  $P^*$  on an ABC coming out of an OFL, and so we have an initial distribution here that is just straight up normal distribution, and I understand that other types of distributions can be applied in assessments, but we're doing this for simplicity here.

At a  $P^*$  of 0.5, that's where you find your OFL, and, when you reduce your  $P^*$ , you reduce the removals that you would allow from the fishery, and so we're going to have an overlapping distribution here, so we can see the contrast between these two, and so, right now, they're both set equal. When we apply additional uncertainty, and this would be something that the SSC would be able to do for say a Category 2 stock, and, when you apply additional uncertainty, you can see that the red-dotted line that's denoting the ABC is lower than what you would see in the case where you don't apply additional uncertainty, and so that's a place where the SSC would have an impact on what the ABC would be.

The assessment would determine the OFL distribution's location, and the SSC would have influence on either using the assessment and adjusting it or, potentially, in a Category 3 case,



developing a different measure of uncertainty, but determining the shape of the OFL distribution, and, with the additional uncertainty at a given  $P^*$ , that would reduce the ABC that would then go to the council.

From the aspect of this where the council would be kind of having more influence,  $P^*$  would be coming from the table, and the council would approve the  $P^*$ , and that is something that you all are kind of familiar with, in the sense of, when you decrease  $P^*$ , the ABC decreases.

The SSC's role in that step would be helping to -- Helping the council to develop a rationale supporting that  $P^*$  at that level, as well as a method for objective decision-making, and that's where the stock risk table comes into effect. That's something that has been reviewed by the SSC and kind of moved through the SSC's process, thus far.

Kind of rounding out Alternative 2, we have the additional sub-alternatives that were talked about, and I already addressed 2a, which would make the boundaries between the biomass categories a little bit more conservative. Sub-Alternative 2b would give the council flexibility to deviate from the default value that comes out of the table by up to 10 percent, as long as  $P^*$  does not exceed 50 percent. Sub-Alternative 2c addresses Category 4 stock and the biomass level that they would be assigned if they go through a control rule process. They would be assigned a moderate biomass level, unless there is an SSC recommendation for something else.

Sub-Alternative 2d does not address kind of the risk uncertainty aspects as much, but there has been more council interest in constant values for ABC and ACL for the projection time period, and this is a sub-alternative that could be added that would have that included as part of the control rule that the council could request the SSC to specify ABC as a constant value over the projection time period.

That is what I have for Alternative 2, and I know that that is a lot to digest, and so I am going to pause here for questions. If they're about the interworking of the stock risk rating, we will hit that a little bit later, and so I'm more looking for if anyone has questions about the overall process of how Alternative 2 would work.

DR. NESSLAGE: Actually, I thought that I understood, and the distribution example confused me, and it makes me wonder if I understood properly, and now I'm worried. Sorry, Mike. I know you're trying to clarify things. Can you go back, please?

DR. SCHMIDTKE: Sure. Just tell me --

DR. NESSLAGE: This whole multiple -- Can you just, in a nutshell, explain what you were trying to demonstrate here again, what scenario?

DR. SCHMIDTKE: I was trying to address the concern that the SSC had that, under Alternative 2, that there wouldn't be, I guess, an ability for the SSC to affect the ABC through that uncertainty evaluation, and I was trying to highlight the way that the SSC, under Alternative 2, would affect ABC would be in determining what the uncertainty is that is applied to OFL when  $P^*$  is applied to it.

DR. NESSLAGE: Right, and so the council -- Okay. This is just a different way of saying -- Okay.

DR. SCHMIDTKE: For example, the black distribution, the solid-black line, would be what came out of the assessment, as far as the OFL distribution, and, if the SSC looks at that and they say this isn't quite up to snuff, and we need more uncertainty incorporated, the SSC, under Alternative 2, if they categorize it as a Category 2, could then change the shape of the distribution by adding more uncertainty, and then it would look like the red distribution, and that would lower the ABC, but it still wouldn't have an influence on the  $P^*$ , and the council would still have the responsibility of the  $P^*$ .

DR. NESSLAGE: Okay. That makes sense. Sorry that I got lost in the middle of that one. My apologies.

DR. SCHMIDTKE: This is my first time explaining this aspect of it, and so, I mean, if you have questions, I imagine that others will have questions too, and so I can take that feedback, moving forward.

DR. NESSLAGE: One follow-up, if I may then. Am I correct in saying that there's a number of different ways that the SSC could adjust the CV of the OFL, either in an ad hoc fashion, saying it's too small, that it needs to be bigger, or either, for instance, if this was a Beaufort Lab assessment, maybe adding more, wider, distribution of values that are run through the MCB, et cetera, and there's multiple ways we could do this, or are we locked into one way?

DR. SCHMIDTKE: It is not defined how you adjust in the amendment, and I think that's pretty intentional, to not lock you into a specific way that you would be doing it, and you would just categorize it where it belongs. If you're adjusting, it's Category 2. If you have to do something completely new, separate from what was presented in the assessment, it's a Category 3. If you like the distribution as-is, it's a Category 1.

DR. NESSLAGE: That makes perfect sense. Thank you for clarifying. Let's see. Fred Scharf has a question for you.

DR. SCHARF: Mike, just so I can follow, the council, when they go to actually select the  $P^*$ , would still have that. They would have this table that would be -- They would have three levels of  $P^*$  for high, moderate, and low risk, and then three levels of potential stock biomass, and they would have that.

DR. SCHMIDTKE: Yes.

DR. SCHARF: But then they could go -- They could raise the  $P^*$ , or lower the  $P^*$ , by up to 10 percent outside of this table structure, as long as they don't go over a  $P^*$  of 0.5, which is OFL.

DR. SCHMIDTKE: If they approve I forget which sub-alternative, but, yes. If they approve that sub-alternative, then, yes, that would be an aspect that they would have. As it is, without that sub-alternative added, then they would be kind of locked into the  $P^*$  from the table.

DR. SCHARF: Right. Okay. Thank you.

DR. SCHMIDTKE: One note regarding those sub-alternatives, and those are -- Like they can be taken as all, some, or none, and the council could approve all of them, only one or two, or they could say we don't want any of them, and so they're not exclusionary.

DR. NESSLAGE: Great. Are there other questions for Mike at the moment? There will be plenty of opportunity this afternoon. I don't see any hands. Do you want to keep rolling, Mike?

DR. SCHMIDTKE: Sure. I will get back to where we were, and we'll go into Alternative 3. Alternative 3 is somewhat of a hybrid between the current control rule and that Alternative 2 approach, where we bring in a whole new structure. It retains some of the structure, and it retains kind of the terminology of the current control rule, but it does have some modifications.

The first modification would be that Tiers 3 and 4, which evaluate stock status and PSA in the current control rule, these would be removed, and these would be replaced by the council's ability to affect the initial P\*. The council would specify an initial P\* between 30 and 50 percent, and then the SSC would go through the similar process that you all do right now for Tiers 1 and 2, concerning the assessment information and the uncertainty adjustments. This alternative also includes kind of that sub-alternative for a constant value, similar to Alternative 2.

Just kind of going into the tier information, this is a breakdown of the ABC setting process under this alternative. As I said, the council would set the initial P\* between 30 and 50 percent, and this could be something -- Right now, it's not specified what the council's method for doing this would be, and so it could be a council discretion type of thing, or they could come up with some type of method to set this initial value, something like the Alternative 2 biomass and stock risk rating method, and that could be something considered here. That is something that, if the council wants to delve into Alternative 3 and consider it more heavily, that they would have the choice of defining how they set the P\*.

Tiers 1 and 2, as I said, they would function similar to the way that they currently do, decrementing that initial P\* value by up to 10 percent, based on the SSC's evaluations. The adjusted P\* would then be applied to assessment projections to determine ABC. Unassessed stocks would be categorized as Level 2, and we would delete the current Levels 2 through 5 that address unassessed stocks, and there would just be one big Level 2, and that Level 2 would have the same method for addressing ABCs for unassessed stocks as what the SSC has recommended for Category 4 in Alternative 2. That's a lot of numbers jumping around, but Alternative 2 and Alternative 3 address unassessed stocks in the same way, and that's the way that the SSC has recommended that the council handle those types of stocks.

A note on kind of a difference between Alternative 2 and 3, and it was a little bit missed on me, initially, until, like I said, Genny had made the comment in the email. Similar to the current control rule, there isn't a mechanism specified within this where the SSC would be adjusting the uncertainty of an assessment's results before applying the P\* to those projections. The SSC's impact would come through the Tier 1 and 2 adjustments to P\*.

We'll be going into -- I mishandled my showing of bullets there, but I have hit those points already verbally, and so we'll be going into the stock risk rating spreadsheet next, but, before doing that, any questions on Alternative 3?

DR. NESSLAGE: Yes, and it looks like Fred Serchuk has a question for you.

DR. SERCHUK: Thank you. Actually, I had a question on the previous alternative and the rationale for the council wanting both the ABCs on an annual basis as well as a constant basis, and what was the rationale behind that?

DR. SCHMIDTKE: Fred, you kind of cut in and out, but I think I got the gist of what you were asking, is why the council wants kind of annually-changing ABC as well as the constant ABC, and this is something that has come up, I know, recently for greater amberjack, and it's come up for a couple others that have recently been assessed.

When the stock is in the case of being -- Especially those stocks that are above BMSY, and the initial ABC recommendation is very high compared to the current catch, and it's been expressed by the fishermen that they don't want a giant swing in catch, because of the ABC, and they would be more interested in having a more constant value that is a bit more sustainable and stable over the course of the long-term.

Right now, what we've seen in some of these is -- In the case of greater amberjack, their ABC recommendation in the first year of new management would be double what they have been catching in recent years, and that would have a huge impact economically and on the market and things of that nature, and so they are interested in -- If they can increase, great, but they don't need to double their harvest, and they were more interested in having kind of a more stable level that they could harvest at.

DR. NESSLAGE: Thank you. Amy, go ahead.

DR. SERCHUK: Can I have a follow-up, Chair?

DR. NESSLAGE: Sure, if you don't mind waiting, Amy.

DR. SCHUELLER: No problem.

DR. SERCHUK: In other SSCs that I am familiar with, the decision to go to constant ABCs is usually for a different reason, and the reason is they may be uncertain, particularly when they don't have a good reason or they're not convinced that either the recruitment will be coming in or they are really unsure about the projections, and it may be because of things like the projections have been overestimates in the past and a number of other things that might involve the projections.

My experience in those forums has been that they take that uncertainty by making a constant ABC, particularly if they are concerned that increases in the out years may be overestimates in terms of the ABCs because of retrospective patterns, and I wonder whether that's something that we should discuss as an SSC. Thank you.

DR. NESSLAGE: I will make a note of that, but I just want to stick with questions, at the moment, for Mike, but we can chat about the value of constant ABCs, or non-annual ABCs. I know -- I am not sure, and there are other -- Well, I'm only familiar, really, with tilefish in the Mid, where they

don't really want big jumps either, but I think that's a management question, and so we'll come back to that. Thanks for raising that question, Fred. Amy, a question for Mike?

DR. SCHUELLER: Yes, and so, Mike, Alternative 3 is specifically referring to Table 5 in the document, correct?

DR. SCHMIDTKE: I believe so, yes.

DR. SCHUELLER: Table 5 has -- I know they haven't maybe fully developed this alternative, but I feel like it I feel like it probably will be developed before it goes to public comment, I would assume, but the -- I guess I mostly have a comment, and so a Level 1 is assessed stocks, and then there is this P\* based on the assessment information and uncertainty characterization.

In those two categories right now, there is, for example, assessment information, and there is five -- I guess they're called tier classifications, and the fifth one under there is scarce or unreliable catch records. I think a little bit of care needs to be taken, in this table, to get rid of things that aren't applicable, and so, if it's an assessed stock, it has at least, at a minimum, a reliable catch history, and so I would assume that Number 4 and Number 5 from that section should be eliminated and then the percentages redistributed appropriately, and that is something that we talked about in some of these other alternatives, and it's mostly just making sure that it aligns with what they're expecting or what we've discussed already. Do you understand what I'm getting at?

DR. SCHMIDTKE: I understand what you're saying, and that's a conversation, I guess, that would be informed by you all, as the SSC, how you would want these tier classifications to be set up, because these two tiers, under this alternative, are kind of in your wheelhouse, and so, if you have recommendations concerning how that should be handled, then great.

I am wondering -- I don't know, certainly, all of the assessments and how catch histories have been evaluated in this process, but I guess the one that's coming to mind is blueline tilefish that is an assessed stock, but I had, I know in some of its assessments, some questions about its catch history, and I don't know how you all evaluated that within the tier classification method, but that might be at least one that has fallen in those in fairly recent history.

DR. SCHUELLER: I would suggest, if you had a stock that has an assessment and isn't in the data-limited section, that, even if there is uncertainty in the catch, that it still has a reliable enough catch history, but maybe this isn't a discussion for right now, since it's questions, and maybe we need to come back to this, but I think Alternative 3 needs a little bit of -- Just a look at that particular Table 5, to make sure that everybody is onboard with what those criteria area.

DR. NESSLAGE: All right. I don't see any other hands. Do folks have other questions for Mike at the moment? I think the next step is you were going to delve into the spreadsheet, the risk tolerance spreadsheet, right?

DR. SCHMIDTKE: Yes.

DR. NESSLAGE: Why don't we go there, and I'm sure that will -- Fred Serchuk, go ahead.

DR. SERCHUK: Thank you, Chair. This is a generic question. Should the time between scheduled assessments come into any of these discussions about the length at which we set the ABCs? I raise that because, quite often, the length could be five years, and, again, trying to look at projections, they tend to be -- They tend to degrade the further out you have to project, and I am just wondering if this is a consideration that has been discussed, and I don't know whether it has been discussed in the SSC, and I can't recall, but it seems like that would be something that might be considered uncertainty, because that long time period then would have to endure until the next assessment, or the ABC that had been set for three or four or five years out. Thank you.

DR. NESSLAGE: All right. That's another consideration, and I don't remember if it's the spreadsheet or not.

DR. SCHMIDTKE: I don't believe it's currently in the risk tolerance spreadsheet, but it's something that has come up in the discussion surrounding it, and so I will go ahead and kind of transition there, and, as you all have more discussion on that topic, we can try to capture it in notes.

DR. NESSLAGE: Sounds great. Thank you, and thank you, Fred.

DR. SCHMIDTKE: I am pulling up Attachment 2b, and this is the risk tolerance spreadsheet, and I will zoom-in a bit more when we get over to the other page, but it's just highlighting that this is kind of the instructional informational page concerning all these different categories, and one of the points brought up at the last SSC meeting had to do with the PSA categories being kind of a part of this, and that's what these attributes were initially based on, and they were kind of added on top of the PSA categories, information about economics and the social aspects of the fisheries, as well as environmental attributes, and so pieces of the PSA are included here, as well as additional things.

The attributes that we have two biological attributes considered, and that would be the natural mortality and the age-at-maturity, and those are kind of straight out of whatever the most recent assessment is for that stock, and then we have the human dimension attributes, and that would be the ability to regulate the fishery, in the sense of whether the regulations have constrained the harvest to the ACL or not in the recent timeframe.

The potential for discard losses, how many of the removals are as dead discards, and then the commercial value, the recreational desirability, those two getting at how much the fisheries would be going after this species, and then social concerns for that particular species. Then, finally, we have our environmental attributes, the ecosystem importance, climate change, and any other environmental variables.

The environmental attributes are kind of scored as either it has an impact, and it's a high impact, or it doesn't have an impact, and so that's something that is a little bit different here, and, as we move over to the species scores, one thing that you will notice is we don't have scores in every category for every species, and that's something that was, I believe, addressed by the SSC the last time you all took a look at this, but we do have blank categories here, and so, if we don't have the information, then it's not included there in the table.

We have this kind of large, grand spreadsheet, and I am really zoomed-out at this point, and I will zoom-in for different aspects, but we have all of our -- We have all these species that are included

here, and the scores that are shown here. The lower the score included in this table, the higher the risk, and so a low-risk species is going to be scored as a three, whereas a high-risk species is going to be scored as a one for that attribute.

Just kind of zooming-in, from the biological aspect on some threes and ones, so that you all can see how that plays out, and so we have -- From the biological attributes, age-at-maturity, we have species like wreckfish, snowy grouper, hogfish, and these are high-risk species, for having a later age-at-maturity, and then species like black sea bass and greater amberjack and triggerfish, these that mature a bit earlier, those would be lower-risk species.

We have these various attributes, and they have been scored. These scores are the same as the ones that were presented last October, and so they have not been kind of further delved into. I know we've had some assessments that have finished up since then, but I don't know that any of the biological attributes have changed heavily for those species.

I think many of them kind of cited previous assessments for some of those biological attributes and information, and I don't know that any changes, like say in natural mortality estimation, would have moved them out of the category that they are currently in, but that's something that as, we go through this table of looking at these scores and evaluating these, one thing that can, and probably, from an administrative standpoint, probably should be done is that current ABCs kind of be retained until they are changed, and any new evaluation of the risk rating would come with an assessment, and so that would be done as part of kind of that assessment process, and so these don't even necessarily need to be finalized, if that's the case, because they wouldn't go into effect until a new assessment occurs.

From an administrative point, I would highly encourage that, because we have several amendments changing ABCs and ACLs right now, and to change that for golden tilefish and greater amberjack, like we are doing right now, and then follow that up with an immediate other change would give the fishery whiplash.

We have those aspects, and then we have -- One of the things that I am looking to the SSC for some feedback on has to do with the scoring system, and so, in October of last year, you all chose that, if a category is unknown, then it would not have a penalty associated with it, and those categories that are missing would have a default value of moderate, and then there was also a request for a scoring system that was based on the average score and the standard deviation, and so we have added that since then.

We have four kind of scoring methodologies that are shown here in this spreadsheet, and we're hoping to narrow that down to one by the end of this meeting, but we have the standard scoring is just dividing between one and three, into more or less equal thirds, and so anything -- I will zoom-in here, just so we can kind of highlight this. Any scores that are above 2.4 would be considered low. Any scores between 1.7 and 2.4 would be medium, and anything less than 1.7 would be high.

The alternate scoring, I actually went back and listened to an SSC meeting from last October, to try to capture what exactly was talked about, related to this alternate scoring, and so it seemed to come from a NMFS PSA, and the way that it seemed to be evaluated, and this was the case for -- When I looked at the NMFS PSA, this is the case for specific attributes and evaluated over a much wider range of species than what we have considered here, but they looked at this wide range of

species and kind of cut that into equal thirds, and so that's what this method is doing, is it's essentially dividing these species into equal thirds, and so, if you're greater than 2.4, then you would be low.

This is kind of how the boundaries played out, and this was a place where decimal rounding kind of became a factor, because there are species that have that second decimal place coming into play affecting their low versus medium, or medium versus high, status, and we'll see distributions of these in the next tab, but that's how this alternate scoring kind of came about.

Next, we have kind of the request from you all concerning the standard deviation. We took the average overall risk score, and that came out to 2.2, and we took the standard deviation from these, and that ends up at 2.6 on the high end and 1.9 on the low end, of applying that, plus and minus the mean, and so we have that scoring system, and then, finally, just for good measure, we had a two-standard-deviation system put in, which you will see in the next tab that it really doesn't leave much room for the lows and the highs, and almost everything is going to be grouped as medium, which you would kind of expect for two standard deviations.

Looking at the next tab that kind of evaluates where our numbers of species fall within each of these categories, for our standard scoring, where we chop up one and three into equal thirds, the difference between one and three into equal thirds, we have about 60 percent of species ending up in the medium-risk category, almost 30 percent in the low-risk, and about 10 percent in the high-risk.

For the category where we cut it up into equal thirds, it deviates from equal thirds essentially because of rounding, and that's really the only thing affecting it, but that's where that distribution kind of falls. Looking at the one standard deviation from the mean, we have about 65 percent of our species in the medium category, a little bit over 20 percent in the high-risk category, and about just a little bit over 10 percent in the low-risk category, and then, finally, that two-standard deviation, and almost everything ends up medium.

These are our initial risk scores, and kind of the place where we're at right now is, if you all would like to evaluate any of these scores, and change any of them before they get considered further, and you're prepared to do so, I think probably the most effective way would be to state specific places where you think changes are needed, or another thing, and this is kind of like where we have the wiggle room for this, because this is not affecting the actual alternative language, and this is going to be added to the amendment as an appendix, and we can plug it in, right before it goes to the council for public comment, without an issue.

If you needed a deeper dive into this, then that's something that we could accommodate, but I guess I would look to the SSC on how comfortable you all are with the scores going in as-is, particularly if you all had any recommendation that the council kind of carry current ABCs forward, in which case these will be evaluated before they're applied anyway, and so that's all I have, Genny, and I can take questions.

DR. NESSLAGE: All right. Thank you. I guess I am digesting this. I am sure that others are as well, and so it was a lot, again. Help me to understand the -- As each ABC comes -- You said the ABCs would stand until the next assessment, and then it would go through this process of having the --



DR. SCHMIDTKE: Right now, that's not written into the amendment, but that is something that probably could, or should, be written into it and considered by the council, added to it. I put that forward from the standpoint that we don't want to -- I mean, we're changing enough ABCs as it is. To do it for forty species, or however many of these are assessed, whenever this amendment finishes, would probably be a huge undertaking that may not be necessary and would probably be more digestible if we just kept things as they are, and, when the new control rule amendment is approved, then, from that point forward, it gets applied.

DR. NESSLAGE: So that would imply that -- Are you saying that, once the new control rule amendment kicks in, that all these stocks would get re-ABC?

DR. SCHMIDTKE: I am saying that I recommend against that.

DR. NESSLAGE: Against it. Okay. Phew. I am like, oh my goodness, I didn't even realize that was on the table. It would come to the -- Wouldn't the -- Depending on what option, alternative, is chosen, the ABC could change at the SSC level, wouldn't it, too?

DR. SCHMIDTKE: Yes.

DR. NESSLAGE: Right, and so, oh my goodness, what a mess. I don't know how others feel, but I would not recommend doing this all at once. Okay. Are there other comments or questions for Mike at this point? Are you looking for our guidance then on whether to go with the alternative scoring again? Is that essentially what you're asking?

DR. SCHMIDTKE: That is a part of it. I guess, if anyone has any heartburn on any of these scores that you see being included in the amendment, as they are shown in this spreadsheet, then that would be something that I would look for guidance on, and so maybe we could address that first, and then we can have the discussion about what the appropriate scoring method is.

DR. NESSLAGE: I think we're all staring at the table. Give it a moment, please.

DR. SCHMIDTKE: Yes, and, even if there isn't kind of that change that gets made on the fly today, if folks are not prepared for that, then we would at least -- If there's a desire to change any aspect, we would need a path forward to do that before April, or by the April meeting.

DR. NESSLAGE: Gotcha. I vaguely remember our discussions, and didn't we come in supporting the top option there, or we're not on the same page. Can you go to the -- I think it's the All Results tab. Hadn't we supported the top option before?

DR. SCHMIDTKE: It wasn't completely clear. The commentary from last October was to dig a bit more into what exactly is going on here, and that's the kind of even thirds option, and then there was a request to look at the mean and one standard deviation up and down.

DR. NESSLAGE: Gotcha. I guess I'm wondering if we should -- If folks don't have questions, we could wait and discuss our recommendations after you're done, but let's see if Fred Scharf has something.

DR. SCHARF: Mike and Genny, I just want to make sure that I'm understanding. The Alternative 3 that you just talked about, ten or fifteen minutes ago, where the council sets the P\*, initially, somewhere between 30 and 50 percent, based on their risk assessment, and then the SSC uses the information from Tier 1 and 2, which is basically the assessment information, sort of, I guess, the data quality and the data quantity in the assessment, as well as uncertainty, those two tiers, to adjust P\*, right, and then what happens to this that we're looking at now? Does this become moot, if we sort of voted on Alternative 3, or is this always what -- These spreadsheets, in terms of these risk quantifications, is always going to be part of it?

DR. SCHMIDTKE: As of right now, this is not part of Alternative 3. This is only part of Alternative 2.

DR. SCHARF: Okay. That was all I wanted to know, just broadly, talking about whether this was needed for all of the alternatives or it's really just for Alternative 2. Okay. Thank you.

DR. SCHMIDTKE: It is something that the council, in deciding how they want to set the P\*, that they could very well use this in doing that, but that's not specified in the alternative, as it's written currently.

DR. SCHARF: Right, and the SSC wouldn't be charged with using this, because we would be using Tier 1 and Tier 2 to adjust P\*, to initially set it, if we went with Alternative 3.

DR. SCHMIDTKE: The SSC would be consulted on -- They would be requested to update like these species scores, these attribute scores, when it comes to like the assessments. Say, when a species is assessed, the SSC would kind of look at each of these attributes, look at the current score, and say do we think this has changed, and we would have to -- Probably, on the staff end, we would provide information, and the assessment would provide information, concerning some of these categories, because some of them, like mortality age-at-maturity, some of these human dimension attributes, are more cut-and-dried and data-based, whereas something more of the social concerns, or the environmental, would be a bit more subjective and helped by expert opinion.

DR. SCHARF: Okay. Great. Thanks, Mike.

DR. NESSLAGE: Mike, the council has the final say in the score though, correct, in all of these alternatives, or Alternative 2?

DR. SCHMIDTKE: Correct. The council has the final say. I guess, depending on how it's set up, which sub-alternatives are selected, the council would essentially be approving like this is the method that they want to use to set the P\* moving forward, and, if they have kind of that sub-alternative of flexibility built in there, then that sets bounds on how much they can deviate from this score, and, I mean, something -- An aspect that might need to be fleshed out a bit more is, if they don't choose that sub-alternative, how much they can deviate from the default scores, and that could probably be addressed a bit more.

DR. NESSLAGE: I guess that's a leading question. Where I'm going is that a number of these, in particular the human dimension attributes, are outside our -- I mean, I'm sure we can comment, or, in particular, our SEP can comment, but, ultimately, these are exactly the sort of things that the council wants to take into consideration when setting their risk tolerance, and so, when I look at

these different categories and alternate ways of scoring it, it really lays out, in these histograms, like how aggressive, in essence, and I don't want to use that word. Sorry, but how risk tolerant the council is.

There is the base biological scoring, and maybe environmental scoring, which is pretty straightforward, and some of these, like you said, are just numbers that are taken out of statistics of the literature, but, ultimately, some of those scores are going to affect where the animal ends up, in the high, medium, or low category, and that really has to do with management risk, and so I don't know, and I am feeling very non-committal about which scoring method we should actually even be recommending, if any, and I feel like this is a council decision, but maybe I am misunderstanding what we're being asked to do here, and so I will look to you.

Like, if the council really wanted to make sure that they had very few high-risk stocks, then they would go with the top option, and, if they wanted to make sure -- I mean the middle option. No, the top option. If they wanted to be a bit more risky, they could go with the second scoring option, and do you know what I am saying, or am I misinterpreting what is going on here?

DR. SCHMIDTKE: I understand what you're saying. It does kind of delve into -- It delves a little bit into the risk, in a sense, and the council will need to probably have the final say, but it's also -- The council decides the level of risk to be taken, but the council also relies on the SSC to help quantify the risk and help them be aware of, if you're making this level of risk in a decision, this is the level that you are taking by doing so, and I think that's the aspect where it's being brought to the SSC, in the sense of what is an objective, a fairly objective, way to set up this scoring system that the council would then use.

DR. NESSLAGE: I guess I am saying I don't think there's an objective way to do this completely and incorporate management risk, but that's just my personal opinion. Let's hear from Fred Serchuk.

DR. SERCHUK: Perhaps, like some of you others, I am confused a bit. I thought the setting of the ABC by the SSC was to account for the uncertainty that we had in the assessment relative to -- The difference between the ABC and the OFL was to account for the uncertainties in the assessment, and that's what my understanding was.

Now, if the basis for that has changed, then you can ignore everything I am going to say, but, to bring in human dimensions on this, it seems to me that that is a management risk that you should take after you have the ABC. I think it's outside the ABC, because the ABC represents the decrement from the OFL, in my view, to the ABC to account for scientific uncertainties within the assessment, and, if I'm wrong about this, then I apologize. Thank you.

DR. SCHMIDTKE: I guess my understanding is that there are both attributes that affect the ABC, because, while there is the uncertainty from the assessment, there is also the aspect of the potential for overfishing, which is kind of the basis of P\* being applied to derive the ABC, and that is something where these two things do kind of intersect, where this risk and uncertainty kind of both come into play in setting that, because the --

DR. SERCHUK: But isn't that where the council could set their ACLs, the annual catch limits?

DR. NESSLAGE: That's a whole other step, Fred. No, they have the authority, if you will, to set the probability of overfishing.

DR. SCHMIDTKE: The step between the ABC and the ACL, as I recall from some figure that I have seen, is the management uncertainty, in the sense of how effective are they able to enforce the level that they're putting in, and John Carmichael can probably say this much better than I can.

DR. NESSLAGE: Yes. Please, John.

MR. CARMICHAEL: The reason that's in there is because the ABC Control Rule is supposed to account for uncertainty, as well as the council's risk policy, and, when those scores were developed, and Genny pointing out the issues with the SSC scoring some of them is totally appropriate, and that was done in consultation with representatives with the council's advisory panel, and the idea was for them to identify some characteristics about stocks that may affect their risk.

If something were highly desirable, the idea is overfishing risk could be a little higher, because people may be more apt to go after that, even if say the abundance gets lower, and so that's the kind of things that they were trying to capture in that and come up with some way of having, to some degree, a bit of quantification, or at least a way of guiding the discussion, in terms of trying to figure out whether a stock should be low, medium, or high risk, and that's really what the gist of the exercise is supposed to be.

I don't think the council has ever discussed having any sense of how they expect these ratings to work out, in terms of the balance or a distribution or what have you, but they just really want to try to get some way of quantifying this risk, so that they can then set the appropriate P\*, based on whatever biomass level, et cetera, comes into it in this option that the SSC feels like, okay, that seems like a reasonable level of risk for that stock.

That is really what it is. You give the recommendation, and they do set the actual risk tolerance, high, medium, or low, how they're going to approach that, because that's their role, to set the risk policy, and then they do that with advice from you as well as their advisors, which is how this is sort of structured and how it's developed. One of the challenges is it's been developed over such a long period time that some of those early details happened before quite a few people were even on the SSC.

DR. SERCHUK: Thank you for that, John.

DR. NESSLAGE: Thank you both. Let's go to Scott.

DR. CROSSON: I just want to make sure that I'm understanding this correctly then. In regard to what John Carmichael just said, I understand what the council is trying to do. It's trying to give itself more technical guidance that is less qualitative, or at least semi-qualitative, for what kind of risk tolerance they're going to have, and this is intended to replace that in the ABC number, and so it's not going to be that the council takes these different variables about desirability or economic value and then uses that in the ABC and then again, on top of that, can then put on an extra 50 percent probability of rebuilding or something like that, or are they binding themselves by putting this into the document? I hope that I made myself clear.

DR. SCHMIDTKE: I think what I'm hearing is like you're addressing what level of flexibility the council has regarding -- Like how tied are they to what comes out of these risk scores? Is that what you're getting at?

DR. CROSSON: What I'm asking about is whether there is any double-counting, and so they put this in, and this is applied for coming up with a number for the ABC, and then, on top of that, they can put then whatever number they want to put up for the probability of say rebuilding on a species, or the risk tolerance, or extra risk tolerance on top of that, and there's no double-counting here, and that's what I am concerned about.

DR. SCHMIDTKE: I don't believe there is any double-counting. I'm trying to think through, on the fly, if that's a scenario that could happen, but I don't believe so, because this would be -- So this -- I guess this would be used in coming up with the  $P^*$ , which would then be applied to the OFL distribution approved from the SSC for getting the ABC.

DR. CROSSON: That answers my question. It is to develop the  $P^*$ , in a semi-quantitative fashion, and it's not to be there in addition to the  $P^*$  that the council decides.

DR. SCHMIDTKE: Yes, correct, and I can actually -- This may clarify a little bit, and so, Genny, I am going to pull over kind of the next spreadsheet, before going through it, but I just want to pull up kind of that table that we had in the presentation about where this risk rating would come into play. Low risk, say for Atlantic spadefish, would set this row for Atlantic spadefish, and then it would be evaluated, based on its biomass level, within this row, and this would be the  $P^*$  value. In parentheses is the adjustment that would -- Like the adjustment from 0.5.

DR. NESSLAGE: Okay. I'm not sure that there's a whole lot of feedback, at the moment, on the ratings. Do you want to keep rolling with the  $P^*$ , or was there more on this that you wanted?

DR. SCHMIDTKE: I guess I just want to -- If there is no feedback on the specific like species ratings, then that's fine. As long as you all are okay with them, then we can keep moving forward with that. Did you all have any feedback on kind of the scoring methodology?

DR. NESSLAGE: Other than what I already had kind of said?

DR. SCHMIDTKE: Yes, other than that.

DR. NESSLAGE: I think this is largely a council decision, but I don't know, and maybe the rest of the SSC feels differently. We can recommend one of -- These would be very different portfolios of stocks here, depending on how the risk tolerance ratings pan out amongst these three categories. Folks, and so, if we have an opinion, this is the time to -- A scientific opinion, this is the time to state it and justify it, right?

DR. SCHMIDTKE: Yes, and I guess an alternative way to phrase this question is does one of these distributions of scores -- Does it look fairly representative of what you all would perceive of the risk and how prone to overfishing stocks are in the South Atlantic?

DR. NESSLAGE: Jeff, go ahead.

DR. BUCKEL: Two comments. While we're on the distributions, I'll give that comment first, and then I saw one species value that I think looked questionable. The alternate scoring, to your question, Mike, about what matches your opinion, or thoughts, about the risk of overfishing, I think the alternate scoring -- When I look at the individual species, I see there are several groupers in the standard scoring that fall into medium, but they move into the high for the alternate scoring, and I agree with them moving to the high, like gag and several other groupers, and so I guess, for me, the alternate scoring seems to match my thoughts on the risk to overfishing, and so that's my opinion on what scoring to use.

Then I think it's one of the groupers that had a score for natural mortality, a yellowfin grouper, that was a low score, and I think it's yellowfin that has a three, and maybe there's a biologist that knows more than me, but I think they're fairly similar in life history to the other groupers, and so I would guess that would be a one, but, again, I'm not an expert on yellowfin grouper, but I think they get fairly large and old, but if someone could comment, and maybe Wally knows why that's a three instead of a one.

DR. SCHMIDTKE: I don't quite have a response, as far as the natural mortality for that, because I don't believe that yellowfin grouper -- I am not sure that yellowfin grouper is assessed on a species level, and so I don't know that we could reference anything necessarily for that, and it may be a literature study that did that.

DR. BUCKEL: Those are the comments that I had, Genny.

DR. NESSLAGE: Great. Thanks, Jeff. Does anyone else have any individual species comments, as they're looking things over? I guess I have one, looking at the tilefishes, the environmental -- I am confused about why -- Maybe I am not understanding this sheet. They all have -- So the tilefish -- Well, okay. Remind me of the climate vulnerability assessment for the South Atlantic, and the council just got an update on that, and has that report actually come out now, officially?

DR. COLLIER: It is not out, officially.

DR. NESSLAGE: Because I took a screenshot and looked at it, and, I mean, like golden tilefish was in the high range, and several other species on this list were in the high range, and I wonder if -- After that comes out, will you be revising the environmental attributes scores?

DR. SCHMIDTKE: That's something that can be -- That could be revised. I'm not sure if, timing-wise, if that would wait until kind of the next assessment, since we just started up an amendment, and we'll probably finish the tilefish amendment before this one finishes up. I'm not sure, but that's something that can be included.

DR. NESSLAGE: Church and Erik and I just had a paper come out on environmental impacts on tilefish, and so that might be something to consider in that, in the other environmental variables, a well.

DR. SCHMIDTKE: Would that be golden and blueline?

DR. NESSLAGE: No, and that was just golden in the South Atlantic. Any other comments, folks? All right.

DR. SCHMIDTKE: Jeff, for yellowfin grouper, quick Googling says 0.14 for natural mortality rate, and so, yes, that would have it in the high category.

DR. BUCKEL: Thanks for checking.

DR. SCHMIDTKE: No problem. Genny, at this point, do you want me to move to the P\* examples?

DR. NESSLAGE: Yes, please do. I think, if folks have anything else they think of between now and when we do our breakouts, please bring it up.

DR. SCHMIDTKE: All right. I will pull up, and so this is just a spreadsheet that goes through kind of the current control rule and the adjustments that are associated with that, and then those that would come out, if we applied the alternative control rules to these same stocks, and I tried to -- I kind of started most recent and went back to stocks that are already in rebuilding plans, and those did not have the ABC Control Rule applied, because they were going for P rebuild rather than P\*, but everything else that did not come into the assessment already with a rebuilding plan had the control rule applied, and so I went back the last seven or so and pulled that information and updated it as appropriate, and what we see going through, kind of the end result are these P\* values, and this is for Alternative 2.

The blue values are those that the new -- I guess this alternative's P\* is lower than the one that is currently in place. The orange values had the same P\* as the one currently in place, and the yellow values have a higher P\* than the one that is currently in place, and, looking here, you see that the two that ended up with lower P\*s were black sea bass and snowy grouper. There were two that the same P\*, which would have been gag and greater amberjack, and then tilefish, vermilion snapper, and yellowtail snapper all would have had a higher P\* with the Alternative 2 method.

Looking at kind of how the risk rating ends up, most stocks -- This is using the standard risk scoring, and so most stocks fall into the medium risk category, and, of these assessed stocks, that's the case. The only one that's a high risk of these assessed stocks overall is snowy grouper, but, because of that, there is not really that much impact coming out of the risk score, as much as there is impact from the biomass level that's affecting this P\*.

Mike E. had pulled up, from the last black sea bass assessment, one of the reasons why the P\* went down coming out of that assessment, and it had to do with biomass towards the end of that assessment, and I'm not sure that that's the right figure, because it has it going down, but it's above the MSST. I will have to double-check that value. I will have to double-check that that figure is the correct one, because I remember him noting kind of an increase in black sea bass towards the end of that time series, but the value is correct. The figure may not be correct, but the value is pulled straight from the assessment, and that means that it is closer -- Sorry. I am confusing myself.

I am confusing myself, because a lower P\* means that there is a lower tolerance of overfishing, and so that figure is correct. Because of the declining biomass for black sea bass coming into the terminal year of the assessment, that's why the P\* would be adjusted down, because the biomass

is at a low level, whereas something like tilefish -- Tilefish is not overfished coming out of the last assessment, and it falls in the moderate biomass category, because it is closer to BMSY than it is to MSST, and so that's why it's a bit higher than what the current control rule places it at. I'm sorry for not having that explanation down before this.

Looking at Alternative 3, because we kind of have that variable of the council setting the initial  $P^*$ , they can set it at a high of 50 percent, at a low of 30 percent, and then we have the adjustment coming in from Tier 1 and Tier 2 from the SSC, and so I kind of ranged the  $P^*$ s that you see here, and I will pull this over, so you can see them closer to the species they belong to.

Here, you can see the species lined up with their adjustments and what the range of  $P^*$  would be, and so, for something like greater amberjack, on the high end, that stock was not overfished, and overfishing was not occurring, and biomass was relatively high, and so, on the high end,  $P^*$  would remain the same, but, on the low end, if the council wanted to be risk-averse and set a low initial  $P^*$  of 30 percent, then, with that adjustment, it would be -- The  $P^*$  would be down to 25 percent, and, with this range, it kind of falls out the way you might expect, in the sense that all the  $P^*$ s on the low end are lower than the current  $P^*$ , and those on the high end, outside of greater amberjack, are higher than the current  $P^*$ .

That's an example of how these have fallen out. Now, the thought of any potential, I guess, intermingling of that risk rating table in Alternative 3 -- You would essentially be taking this  $P^*$  value and further adjusting it by the assessment info and uncertainty characterizations, and so that would reduce these further, if that were something that the council wanted to do, if they went with Alternative 3. Any questions from my very butchered explanation of that?

DR. NESSLAGE: How do you keep all this straight? That's my question. I am always impressed when you talk about this. Don't worry. This is so complicated. Are there questions, real questions, for Mike? Fred Scharf, go ahead.

DR. SCHARF: Mike, just another sort of clarifying question, and at a high level. With the Alternative 3 option, the council sets the  $P^*$ , and then we come behind the council with an opportunity then to adjust the  $P^*$ , based on Tier 1 and Tier 2 information.

DR. SCHMIDTKE: Correct.

DR. SCHARF: So the order of events is that the council sets and then we adjust. In Alternative 2, it's the other way around, right, that we sort of set an initial and then the council would adjust based on risk tolerance?

DR. SCHMIDTKE: It's a bit more -- I guess it's a bit more in line, because they're kind of two separate pieces that each of you are addressing, and so the council would be -- The council would, probably before the assessment -- I think that's how we had it timed, is that, before or during the early phases of the assessment, once we get kind of that mortality rate information, we would have the information that we need to fill out the risk uncertainty, or the risk score table, and that is something that can be done independent of the assessment, really, outside of that mortality rate.

I mean, we get all the economics and the landings information, and that's all available, and so it may be tweaked once we get assessment results, but that's kind of data -- It's mostly data driven.



The SSC would take the assessment results and set that uncertainty for what the P\* would be applied to, coming out of that assessment, and so it wouldn't necessarily be in that like ordered format. We would need both of those pieces. We would need the SSC uncertainty evaluation piece for Alternative 2, and we would need the council's P\* piece, and then we put those together. Does that make sense?

DR. SCHARF: Yes, and I'm just trying to think of how that process would work and the possibility that that gets cloudy, in terms of the timing of when certain adjustments are made and whether one adjustment is potentially a reaction to the other adjustment.

DR. NESSLAGE: Am I hearing you say, Fred, that like, if we knew, before the assessment started, that the council set the risk tolerance very high, maybe we would put a higher CV on the OFL, and is that what you're saying?

DR. SCHARF: Not explicitly, but that captures the spirit of what I'm thinking. I understand, conceptually, and I certainly appreciate the notion of, okay, the council setting -- Evaluating risk, and then separating that from the SSC evaluating uncertainty, right, scientific uncertainty, but, you know, it's a very slippery slope that we're going down, in terms of how involved the council is, in terms of setting the OFL.

I think that what has helped to make -- What has helped many of the fish stocks in the U.S. recover has been a pretty clear separation between SSCs setting OFLs and councils then allocating that OFL accordingly, based on the way the fishery operates and socioeconomic concerns, et cetera, and so it's just a -- I am just trying to imagine how this is going to work when you have two groups that may have different objectives that are trying to both make adjustments to the OFL, and it seems like timing, and the order of these things, in the end, may end up being really important.

DR. SCHMIDTKE: I think just a terminology clarification. The council doesn't set the OFL. The OFL comes out of the assessment, and the SSC would still be setting -- They would be reviewing the assessment, and they would use the assessment to pass the OFL on to the council. That's not where they would have a hand in it.

The ABC is something that has both these risk and uncertainty aspects in it, because the council has a risk policy associated with that, and so that's why we have these two different components, and, right now, they're kind of all tied up in the same format, and we're putting them into two different things for getting the ABC, but the council wouldn't have the influence on the OFL, and, I mean, if it were the scenario where the council sets the risk score at a medium, the assessment comes out, and it has a biomass at a certain level, and like the council has their P\*, and I think any change that the SSC would make to the uncertainty would be based on the assessment information, and any -- I mean, that would be documented. If the SSC has difficulty with the uncertainty coming from an assessment, the SSC would state that within their review. It wouldn't necessarily be tied to -- It wouldn't be tied to the risk rating.

DR. SCHARF: I will just say that I appreciate your optimism.

DR. SCHMIDTKE: I have faith in you all.

DR. NESSLAGE: Thank you. All right. Are there other questions for Mike at this point? All right. I would like to -- If we could take a moment to -- Unless, Mike, did you have more to present?

DR. SCHMIDTKE: No. That's all to present, and then we've got discussions and feedback. I guess, if you all want to see your previous recommendations, we can do that, but it might be cleaner to set that apart, after you all have had any breakout groups that you want to have to discuss.

DR. NESSLAGE: Well, we have the breakout rooms broken up into two categories, and one is kind of do we have any recommendations regarding the risk rating process and then the ABC Control Rule alternatives, and do we have any changes to our final recommendations, and so maybe we do want to see what we've said before, the summary, and then we'll take public comment, and then we'll go to breakout, and does that sound like a plan?

DR. SCHMIDTKE: Yes, that sounds great. I can pull that over right now. This is in the discussion document included in your materials, and it's just the list of the recommendations, and this is kind of a conglomerate of everything that you all have put forward in previous SSC reports concerning this control rule amendment.

I highlighted a couple portions of it, and these are things that you all had recommended that may have been addressed by now, and like this one here recommends exploring the option to scale scoring by standard deviations from the mean risk score, and that's included in your information here, and so, if that's kind of been checked off the list, then to try to kind of streamline this, we might be able to reduce it, but, if you want to leave it, great. The other portions that are highlighted here -- We're just seeing if any of these things have been addressed by the presentation today and the document as it stands, but I would more so refer you to this list of recommendations and ask if there are any changes than try to read you all what you have already put forward.

DR. NESSLAGE: This is -- We have this in Attachment -- If folks are following along home, this is in the ABC Control Rule one, which is --

DR. SCHMIDTKE: 12a, page 15.

DR. NESSLAGE: Thank you. That way, when we do go to breakout, if folks need to stare at this, that will be helpful. Thanks. I guess -- Well, I will wait. Are there any questions regarding our previous recommendations? We can discuss if we want to change them, but any questions? Not at the moment. Okay. If that's the case, then, Mike, do you mind entertaining some public comment here, and then I will open the floor, and maybe we'll go to breakout groups. Does that sound?

DR. SCHMIDTKE: Yes.

DR. NESSLAGE: All right. Folks from the public, if you would like to make comment on this agenda item, please raise your hand, and I will call on you. Go ahead, Rusty.

MR. HUDSON: Thank you. This kind of reminds me of some of the work that I did for a couple of years with Mike Errigo with the ACCSP stuff, trying to figure out these different animals and

different species information, and it's important. I really have no comment on this, but I did have a question. Have we skipped past the golden tile, or did I miss that yesterday? Thank you.

DR. NESSLAGE: We skipped it, and we'll come back to it, possibly later today, but, if not, probably third on the agenda tomorrow.

MR. HUDSON: Fantastic. Thank you, Genny.

DR. NESSLAGE: Thank you. All right. Any other public comment? All right. Excellent. Then, before we go to breakout, I just want to open the floor up to the SSC, to see if there's any general discussion, other points that folks haven't already made that they want to bring up, so that folks in breakout groups can capture that.

Again, if there's anything in this recommendation list that we want to change, that would definitely be something that I would like to hear folks comment on, and, if you have anything, in addition, about the risk tolerance spreadsheet, this would be the time. I am not looking to generate problems, but I also think -- We want to make sure the breakout groups have enough fodder here to draft up some comments, and so let's go to Jeff.

DR. BUCKEL: I just want to have a more -- A better idea of what our charge is. I'm the rapporteur for ABC Control Rule alternatives final recommendations, and so is the charge of our group, our breakout group, to go through the list that is the SSC recommendation list that we put together over the last couple of meetings and throw out the ones we don't want and keep the ones we do and add new ones?

DR. NESSLAGE: Yes, I think this list that Mike is showing is -- This is going to be -- Well, if the group agrees that we're still leaning towards Alternative 2, then we need to provide any additional or remove any of these recommendations relating to that from this list, and so, yes, that is your charge. Do you feel you have enough information?

DR. BUCKEL: I know the charge now, and so that's good. I can't say for sure, unless we dig into the recommendations, and we may need to come back with questions, and, if others on this breakout group have specific questions on this recommendations before we go to breakout, now is a good time to ask Mike.

DR. NESSLAGE: Okay. Let's see. Maybe Fred has one. Fred Scharf.

DR. SCHARF: It's related to that, and I don't have an answer, and it was a question. Just because most of these recommendations are focused on Alternative 2, and that the SSC supported that alternative -- In the notes, there is really nothing that talks about why there wasn't really support for Alternative 3, and I just wonder if anyone else has some -- It may be something that Jeff's group can talk about a little bit, but I just wonder if anyone else has some memory of what the potential drawbacks were for Alternative 3, as to why the SSC didn't feel that that was a favorable option, and I just don't remember.

DR. NESSLAGE: It's been so long. Mike, do you remember, or is this a different point?

DR. SCHMIDTKE: It's more towards Jeff's question and point before. Towards Fred's, I don't know that I was present. I don't know that I was with the council when the SSC made that initial recommendation for Alternative 2, and it may have been my first SSC meeting last year, but it might have come before that, but, towards Jeff's question about like the charge for the alternatives group, I would also add to that that, if the group has any suggestions for the current alternatives, that -- If there are concerns that need to be addressed, if there's something missing from Alternative 2, or something missing or that should change in Alternative 3, then recommendations concerning that would be very helpful at this stage.

DR. NESSLAGE: Great. Thanks.

DR. BUCKEL: Thank you.

DR. NESSLAGE: I don't recall, other than there is -- I vaguely remember discussions about how much people really liked the spreadsheet, the risk tolerance spreadsheet, how it kind of lays out the justification for the risk tolerance, and I think that's why we -- That's what I remember being one of the reasons why we gravitated towards Alternative 2, Fred, to answer your question, but my memory may not serve, and it probably doesn't. It's been quite clouded since then, and so we might have to go back and look at old notes, but I don't know that we will get to that today. Are you seeing value in Alternative 3 that you -- Is there some aspect that you think is better than Alternative 2?

DR. SCHARF: Well, I mean, it just seemed a little bit -- It seemed a little more straightforward, but I wasn't sure that I was comfortable with removing the other tiers, and so we have the -- Normally, we apply the four tiers to establish the P\*, and so it's the assessment info, uncertainty, the stock status, and then information about productivity and susceptibility of the stock, and so its productivity and then susceptibility to overharvest, but it did seem that it just was a little bit more clear cut, in terms of the timing of whether the council would set their risk tolerance and we would basically set our sort of risk tolerance, but it's based on uncertainty, because it's all based on the current status of the stock and the quality and confidence we have in the data and the assessment and whether the uncertainty has been really carefully evaluated in the assessment, which, in most cases, it is, and then the productivity and what we understand about the life history and how comfortable we are with the dynamics of the stock and how that stock is most likely to respond to different patterns of removals

I don't know, and maybe it was just the spreadsheets seemed kind of overwhelming, but it just seemed a little more straightforward, to me, and that was all, with a little clearer separation between what the council assesses, in terms of risk, and what we assess, in terms of sort of uncertainty and vulnerability of the stock, biological vulnerability, I guess.

DR. NESSLAGE: Does that actually factor in in Alternative 3?

DR. SCHARF: It doesn't. It doesn't now. We would just use the assessment info and the uncertainty, the way it's written now. We would just use the first two tiers to assess uncertainty, scientific uncertainty.

DR. NESSLAGE: I am not thrilled with that, but you're right that this would separate the council's business from our business, but the other thing that -- This is coming back to me, and someone

correct me if I'm wrong, but one of the reasons that we were moving away from this, which is like a portion of our current ABC Control Rule, is that we ended up deviating a lot from this in the end, or feeling like this tree didn't -- It was too prescriptive.

DR. SCHARF: Right.

DR. NESSLAGE: You're saying there's value in seeing it all laid out, and there certainly -- That's kind of two sides of the same point, right. In certain circumstances, that's a good thing, and, in others, it was becoming cumbersome, and so I don't know. Maybe I am not remembering everything. Mike, do you recall?

DR. SCHMIDTKE: I can't say that I definitely recall the reasonings between the alternatives, but, just trying to clarify -- To Fred's point concerning the timing of everything, in my mess of a presentation, I didn't really dive into this, but included in the discussion document, if you scroll up to page 12, there is kind of like a bulleted step-by-step, before, during, and following an assessment, of when these different parts would occur or when the risk rating would be set, when the SSC would then recommend the ABC, using that information, and so forth.

DR. NESSLAGE: Great. Thank you. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. You asked about our recommendations, and I just want to go back to the recommendation on the SSC and the multiyear ABCs, and I understand the logic that says that we don't want interannual variability to be very large, because that could be very disruptive to social or economic issues, but, apart from that, what was the basis for endorsing that by the SSC?

DR. NESSLAGE: Wow. Everyone is asking history questions, and I am terrible at history. Does anyone remember?

DR. SERCHUK: I mean, you asked us to look at our recommendations, and that's the only reason that I am bringing it up, Chair.

DR. NESSLAGE: Oh, no, I appreciate that, and it's a good -- We should be able to justify our decisions. It's just been spread out over so many years now that I am not exactly remembering, but I liked your justification earlier of the uncertainty in our projections, for sure. Was that your point? Am I characterizing that properly?

DR. SERCHUK: Well, I think it depends on the situation. Even the rebuilding plans that we have would allow for increased catches, because, if you have a low F, and the stock is rebuilding, you will see the benefit of increasing catches, and so would that be mitigated by saying, well, we have to go to constant catches, or will we have something like we wouldn't want interannual variability to be greater than 10 or 15 percent, because that would be very disruptive, from an economic point of view? I don't know, but I am just putting these things out there, Chair.

DR. NESSLAGE: I think, as it's written, we support allowing it, but they could still ask for annual, could they not? Is that allowed, Mike?

DR. SCHMIDTKE: You're correct. It's something that's allowed that the council can request, and, I mean, they have shown more interest in it, specifically for stocks that are not overfished, and, just kind of giving a little bit of additional context, with the ABC recommendations that have been given on an annual basis for some of these recent not overfished stocks, they have a declining catch stream, and, because the council cannot go above the ABC recommendation, the ABC that is set, the council, in order to put in a constant catch level, has been setting it at the lowest value that's put forward by the SSC, which it's lower --

Theoretically, it's lower, because there is such a high ABC in the early years, and it's lower than what it would be if there was a constant level projected and set throughout that timeframe for those stocks, but the council is constrained to the lowest of the five years, and the furthest projected of the five years that is put forward, because they are restricted to the ABC.

DR. SERCHUK: Okay. Thank you for that context. That's helpful. Thank you.

DR. NESSLAGE: All right. Other questions? Amy, earlier, you had talked about catch history characterization in Alternative 3, and I don't know if you want to revisit that as a discussion point. I forgot I had that note about Fred's and your comments earlier.

DR. SCHUELLER: If we showed, I think it's just Table 5, and the question I have is does the Level 1 assessed stocks look the way we would want it to look? I would suggest no, because it's directly picking up the ABC Control Rule components, some of which we said we wanted to get rid of to begin with, in particular that assessment information Number 5 is -- I mean, unreliable catch, or reliable catch history, that was going to go to ORCS, remember, and we had discussions like why was that in there, and, well, I think it was in there just because this was put together before ORCS came to the table. To me, those are some of the things that we were trying to edit out with this whole readjustment of the control rule to begin with. Does that make sense?

DR. NESSLAGE: Yes. I hear you, and I'm just looking to see -- Did we provide comment on that table or only on our preferred alternatives?

DR. SCHUELLER: I didn't see comment on it. I feel like we commented a lot on Alternative 2.

DR. NESSLAGE: Then I think, hopefully, the breakout group can capture that, and I don't know, Fred Scharf, if some of your comments on the strengths and weaknesses of Alternative 3 might be a good thing to include there as well, in case the council does go in that direction, and is that kind of what you guys are thinking?

DR. SCHARF: Yes, I think so. I'm in a different working group, and I'm not in that one. I'm in the risk scoring one.

DR. NESSLAGE: Then I will switch with you, but you're the rapporteur.

DR. SCHARF: Yes.

DR. NESSLAGE: Maybe we can get another volunteer and I can switch with you. Maybe someone else would be willing to step up and rapporteur for that one. We can deal with that in one second though, because I think we're getting close. Is there anything else that folks want to

bring up as major discussion points before we go to breakout? All right. Then maybe I will -- Is there someone from the Breakout Group 1, maybe Dustin, Wally, Scott, Eric, Wilson, Anne, or Jennifer, who might be willing to rapporteur for that group? It shouldn't be too big of a lift. It's just characterizing the comments that people had made on the risk rating scores. I can do if I have to, but I really don't want to. This is very challenging. You guys are killing me. Eric, are you volunteering?

DR. JOHNSON: Yes, I will do it.

DR. NESSLAGE: Thank you so much. I appreciate it. All right. Then, staff, are we ready to go to breakouts? Does that sound good? Yes. Outstanding. Given how much the second group has to go through, I'm thinking if we could reconvene at maybe 3:45, and is that going to give us enough time? Jeff, what's your take on that? You're leading that crew.

DR. BUCKEL: It's hard to know, Genny, what rabbit holes we'll go down, and so sure.

DR. NESSLAGE: If you feel like you're super stuck, maybe highlight some big issues that people are having major discussions on, and we can have them as the complete group, but try to get as many shorter comments down as we can, and does that sound good?

DR. BUCKEL: Sounds good. Do you want to do a half-hour then, or did you want to do forty minutes?

DR. NESSLAGE: The reason I'm saying come back at 3:45 is, if we try to end by 3:35 or 3:40, that gives Judd a little bit of time to combine the notes.

DR. BUCKEL: Okay.

DR. NESSLAGE: So try to wrap up in a half-hour-ish. Does that sound good, folks? All right. Thank you very much, and thank you, Eric and Jeff.

(Whereupon, the group went into breakout sessions.)

DR. NESSLAGE: Thank you to everyone. All right. Our first group, Eric, do you want to try and summarize the group's discussion?

DR. JOHNSON: Sure. Most of the discussion in the group revolved around a couple of different issues, one of which is we're still sort of involved in this double-counting and whether adding P\* to the probability for rebuilding stocks or not, which is an issue with the original method that we were trying to avoid.

The second one was sort of who is in charge of either creating or updating the various measurement ratings there and whether or not those would be -- As new information becomes available, at what point in time would those be sort of updated, and who is in charge of the sort of final table, which goes into those ratings, and is that under the purview of the council, or is that the SSC, or what group would be deciding those sorts of things?

The last, or another thing, was looking at some of the socioeconomic scores and just sort of maybe reviewing some of those and looking them over, to make sure that those are the most applicable in that particular section, and that, in general, this is probably an improvement, just due to its transparency, and that, obviously, looking at some of the logistics and how we're going to use it need to be sort of further fleshed out in this process.

DR. NESSLAGE: Great. Thank you. Did you mention -- Did I tune out? Did you mention the second bullet about the risk tolerance, P\*, added to the -- Did you talk about that?

DR. JOHNSON: I think I did that one first. Basically, the idea of having the P\* added to the probability of rebuilding overfished stocks and whether or not we were sort of getting into the double-counting realm.

DR. NESSLAGE: That's right. Okay. Thank you very much. I think maybe, Mike, if you have answers to any of these questions, then maybe we don't need to put this into the report and turn them into comments or recommendations, but, if these are still outstanding issues that we need to raise, we can wordsmith this later, and/or, if the SSC has anything that they disagree with, or are concerned about, with what's been shown here, this is the time to speak up.

DR. JOHNSON: Genny, one thing that I don't think we went over, that we probably could have, was which of the sort of methods for scoring we were going to use, the unknown penalty standard or scoring, and was that ever agreed upon?

DR. NESSLAGE: No. We started to talk about it and then stopped. I think the only person who had really proposed a preferred alternative was Jeff, I thought, right?

DR. JOHNSON: Yes, I think that's correct.

DR. NESSLAGE: I thought it was the alternate. Is that correct? Oh boy. I am starting to fade, as the day rolls on here.

DR. BUCKEL: Yes, that's correct, Genny.

DR. JOHNSON: That one was reasonable to me.

DR. NESSLAGE: So perhaps, unless the SSC disagrees, we would recommend the alternate. I still think there's a lot of room in there for the council to -- It will end up, in many ways, reflecting the council's risk tolerance, but it also reflects the overfishing potential for the suite of stocks, right, which is what Mike had asked us. Mike, do you want to address some of these questions?

DR. SCHMIDTKE: As far as whether the council would change the scores, the scores would be evaluated kind of -- I think it would work out well to have it evaluated at the same time that we do the fishery performance report, ahead of an assessment, because a lot of those aspects will be informed from commentary from the AP as well, and so those would be changed with each assessment process, potentially, or at least reviewed, and, yes, on the question of the SEP reviewing socioeconomic scores, yes, we can make that more explicit, but the SEP would be consulted for that information.



On the probability of rebuilding for overfished stocks, that's something that I guess is not addressed, and so we would still operate probably in the same way that is being considered now, in the sense of  $P^*$  is added to 0.5 for  $P$  rebuild.

DR. NESSLAGE: Right, but the -- Right, but would the council want to do that? Right now, they have the choice of setting  $P$  rebuild equal to 50 percent, or anything higher, and what we do is we usually recommend  $P^*$  plus 50 percent, and that is either accepted or not. That detail seems to be lost in the document.

DR. SCHMIDTKE: Yes, and I guess that is something that we can add that detail in, and I don't know that that's something that the council is trying to change, necessarily. I guess what would be the alternative method for the SSC recommending  $P$  rebuild, other than what is already done?

DR. NESSLAGE: I guess, if it was  $P$  rebuild, and there is no -- Would they add the  $P^*$  to it, the  $P^*$  that comes out of this process? The risk tolerance, would it be added to the 50 percent or not? There is nothing in there about that. If it's not overfished, then we just follow whatever the  $P^*$  is that falls out from the risk tolerance, and we set the -- We either use the assessment or a specified CV for the OFL, and we're golden, but, if it's overfished, the council sets the probability of rebuilding, but then are they going to add the  $P^*$  to it?

DR. SCHMIDTKE: I don't know. That is something that we can bring to them, to see if they can flesh that out a bit more. My interpretation, right now, is that  $P^*$  from this process, from like the Alternative 2 risk rating biomass process, that  $P^*$  would be handled the same way that  $P^*$  is handled now, in the sense of  $P$  rebuild would be 0.5 plus the  $P^*$ , but that's something that can be spelled out more clearly.

DR. NESSLAGE: Right now, that's just a recommendation, right?

DR. SCHMIDTKE: I think so. I would need help from other staff.

DR. NESSLAGE: While you're thinking on that, this was one of Scott's catches, and so, Scott, do you want to go?

DR. CROSSON: I don't know what's happening, and so, again, it sounded like Mike said that it's the council that is also responsible for coming up and deciding, or finalizing, the socioeconomic elements that are in the proposal right now and that are sort of replacing the PSA scores that we used to use, or partially replacing them, and is it's something the council would do at the beginning of the process for this, and is that what you said, Mike?

DR. SCHMIDTKE: Yes, and they would evaluate the scores at the beginning of the process for an assessment.

DR. CROSSON: Okay. I'm sorry, Genny, but what were you asking me?

DR. NESSLAGE: I think that was good. All right. Was that it, Scott?

DR. CROSSON: For now.

DR. NESSLAGE: All right. Then let's go to Jeff.

DR. BUCKEL: I guess, on the first bullet, some of this work on the risk -- I could be wrong, but I know that, a long time ago, SSC members worked with council staff and advisory group members to come up with some of the risk scores, and I assume these are still from that, and so I think that, in that spirit, that these -- If that is the case, which I think it is, that these risk scores were developed between SSC and council members and other advisory members, and we would like to -- If changes are made in the future, we would like that to be the process, or at least that's my opinion, that that worked out really well, and I think that everybody brought something different to the table, and it was helpful.

I guess, just to be more -- Maybe to capture some of the history of where some of the scores came from, at least my recollection, is that, instead of letting the council override, we could ask that, if there's changes, that the SSC would like to be involved with council members, or advisory group members, to be part of that process of making changes, something that's more a recommendation than the questions.

DR. NESSLAGE: We were deep in discussion, and we didn't get to wordsmithing, and so you can probably replace the two questions in the middle with -- Even the three, probably, questions with Jeff's suggestion of something along the lines of the SSC recommends that we be part of the -- What did you say, Jeff? Maybe work in consultation with, or in collaboration with?

DR. BUCKEL: With council members and advisors, or AP members, to make any changes to the risk score criteria, or maybe just risk scores, I guess, would be the better --

DR. NESSLAGE: Great. Thank you. I think the concern was -- It was obvious, from the document, that we would be consulted, but then could those scores change before the final risk tolerance was settled, because, in the past, we had been -- Part of our ABC Control Rule, the part that we were responsible for, including setting the probability and susceptibility, and whatever the third one was, scores, and so it's good that we're getting more feedback from a broader group of experts.

The concern is what if a new publication on natural mortality comes out, after the SSC reviewed it, and the council wanted to use that for the M score, and would that replace it and change the risk tolerance? Could that be done in this process, and it sounded like the answer was -- That wasn't the plan, but that could still happen in this, but maybe Chip can elaborate.

DR. COLLIER: I wasn't going to elaborate on that point, but, yes, I mean, there could be -- If you guys find new information that comes out that it needs to be adjusted, we could definitely work on that, in order to get adjusted. I think, when we're talking about it, in beginning the process and doing it in the beginning, with the fishery performance reports, although it's not going to have the final let's say natural mortality value, and the age-at-maturity might change, we will have some of that information available and try to incorporate it.

It's going to be a struggle to keep up with all the science, because it takes us a while to get things through management, but we'll do the best we can, and, if you guys have recommendations on changing it, you know, it is a collaborative process, and so you could make it.

What I was going to comment on is the third bullet there, or the third arrow, and the SEP was consulted on this, in April of 2019, and I know it's a while ago, and people might not remember, but it did go to the SEP for their consideration.

DR. NESSLAGE: Fabulous. Thank you for catching that and the impromptu commenting, which I put you on the spot. Thanks. Amy, go ahead.

DR. SCHUELLER: That second bullet, would you add the risk tolerance -- I guess I'm confused, and so probability of rebuild would be one minus  $P^*$ , and so, if  $P^*$  is 50, then it would be probability of rebuild 50 percent, or, as we made a suggestion earlier in the day today, with the gag stuff, and the probability of rebuild was 70 percent, right, which indicates a  $P^*$  of 0.3, and so do we need to -- I guess I'm just not sure if that really needs to be in here or not, and is it confusing the point?

Like we're still doing a  $P^*$  for rebuilding stocks, but it's just giving a different indication of what it's doing, rather than, in one case, the probability of going over the sustainable  $F$ , or whatever it is, that we're specifying, and then, in the rebuilding scenario, it's we're projecting out and we're saying what is the probability of rebuilding to some SSB level. I just -- I don't know, and I'm worried that muddies the water a little bit.

DR. NESSLAGE: I am not sure that I understand your concern.

DR. SCHUELLER: I mean, isn't the answer to that yes, that we're using the  $P^*$  to define the probability of rebuilding?

DR. NESSLAGE: No. We don't, currently, for many stocks, and that is the point, is that we -- Let's talk about who "we" is. The SSC often recommends that  $P^*$  be added to the 50 percent to get the probability of rebuilding, but if that's not going to be part of the process anymore, and there is no discussion of that in the document. Mike, help.

DR. SCHMIDTKE: I guess my mindset, I guess, coming into this, and I agree that it could be stated more outright, for clarity, but my understanding, coming into this, is that the SSC still has the ability to use its method, its typical method of recommending the  $P$  rebuild level, and there is nothing in there that necessarily ties the council to accepting it, and so it would be of similar format to what it is now. I mean, we can add language to clarify that that is how it works right now, and that that would be the way that it works moving forward, and is that what is being sought here, or are you looking to change how it's done?

DR. NESSLAGE: I think that -- No, and I think that we're looking for you to add that in, because, like, if you look at -- I forget which document, but the one that I always use, and it has a little thing at the bottom that says, and, if it's overfished, then you add  $P^*$  to 0.5, and you get your recommended probability of rebuilding, and is that in the document anywhere?

DR. SCHMIDTKE: It's not right now, but my interpretation, from various IPT meetings and interactions, is that was the mindset, but that's something that we can add language to spell out more clearly.

DR. NESSLAGE: Yes, and that's what -- Sorry that this is so difficult, but, yes, please. That's what we're suggesting, because that kind of stuff can get lost in the shuffle, and people -- It's hard enough to understand these control rules and then to have -- Then you have that special case when it's overfished, and then people forget what we do. I know, when I took on the chairmanship, I didn't understand exactly how that worked, and so it's really helpful to have it all spelled out. Just a sentence would be fabulous. Thank you. Scott.

DR. CROSSON: Not that Mike doesn't have enough to do, but, at some point, John Carmichael put together a flow chart about how our old control rule worked, and it was -- It wasn't a pretty thing, but it said, is this stock overfished, yes or no? Is it overfishing, yes or no? Then it went in different directions, and so, at some point, you're going to have to build that, and it would probably make things much easier to explain to everybody. That's all. I don't know who gets stuck with that.

DR. NESSLAGE: Probably poor Mike. All right. Good suggestion. Erik Williams.

DR. WILLIAMS: Genny, thanks. I think you guys are getting your math a little mixed up for probability of rebuild. It's not 50 percent plus  $P^*$ . It would be one minus  $P^*$ . In other words, if  $P^*$  were actually 50 percent, you wouldn't add that to 50 percent to make the probability of rebuilding 100 percent. You make the probability of rebuilding 50 percent, one minus  $P^*$ .

DR. NESSLAGE: Yes, I know. I've been saying it wrong. My apologies.

DR. WILLIAMS: Okay. I just wanted to clarify that, because I was worried you guys -- That's where you were headed with it. All right. Thanks.

DR. NESSLAGE: I was using a shortcut, but, yes, there we go. That's perfect. Thank you. See, this is why we need to get it all down exactly right. Excellent. I wonder if the third bullet could go up under the first bullet, because that's kind of where it all -- Do you agree, Breakout Group 1, that that's kind of where that came from? We like the idea, but the logistics need to kind of be a little clearer. Are there other comments on the first breakout group's feedback? Is there anything we're missing that you want to see in there that we didn't talk about? All right. Breakout Group 2, Jeff Buckel.

DR. BUCKEL: Okay, and so our charge had to do with the recommendations that Mike had listed before we went to the breakout groups, and so our group felt that all the recommendations that we provided over previous meetings are still fine, but we did talk about some of those, and so those are hit on in the next several sentences.

In this bullet, there was discussion about the recommendation to explore the option to scale scoring, and that was addressed by council staff, and so thanks, council staff, for looking into that, and then we didn't go any farther, and we didn't know what you guys would choose, and so I guess this recommendation -- This last -- After the semi-colon, it could be the recommendation, that the SSC recommends going with the alternate scaling, or you could just put "see above". We wanted to leave the recommendation there, to provide the history, but we also wanted to acknowledge that the council staff did address that recommendation.

The next recommendation, we had asked for examples, and the council staff provided those, and so thanks again. Those examples provided a clearer understanding of the separation of scientific uncertainty and management risk and how they would be used in setting a P\*. There was another previous recommendation about the SSC wanted to still have a say in the biological understanding, and so Fred made a good point that we wanted to reemphasize that, and so that's this third bullet. The SSC maintains that scientific uncertainty is both assessment uncertainty and the biological understanding of the stock, but that is still something that we would -- Instead of just assessment uncertainty, there may be some biological uncertainty that is part of that scientific uncertainty that we would want to be still unable to incorporate.

Then we had comments on Alternative 3, and so these were the comments that Amy Schueller had made earlier. If the council did decide to go with Alternative 3, that Table 5 needs to be fixed, to remove 4 and 5, because those fall under unassessed stock categories. Then, once those are removed, then the percentages would have to be redistributed among the remaining three tiers, but the group -- The breakout group, the members of the SSC in our breakout group, still continued to support Alternative 2, because biomass and stock risk rating are included in the council's setting of P\*, whereas Alternative 3 provides less clear guidelines to justify selection of P\*, and that's what we had.

DR. NESSLAGE: Fabulous. Thank you, Breakout Group 2 and Jeff. Comments or questions or suggested alterations or additions to this section? Fred Scharf.

DR. SCHARF: Genny, just one of the reasons I think that -- These are sort of linked to the last bullet, where we say we support Alternative 2, and I just wanted to make the -- Thank Mike for sharing the language, again, about the timeline and the steps for that process, and it's related to that third bullet about the scientific uncertainty, including both assessment and biological, and that linkage gets maintained because the SSC is the one that recommends the stock risk rating at the outset, right, and the SSC is incorporating -- Some of that biological uncertainty is incorporated in that initial recommendation of the stock risk rating, and then the council would select their risk rating, but we get to have some input right in the beginning, and the spreadsheets include some of that biological uncertainty, in terms of stock dynamics, and so I think that sort of reflects what the group was thinking.

DR. NESSLAGE: Excellent. Thank you for summarizing. That's great. Mike, is this helpful? Is this clear?

DR. SCHMIDTKE: Yes, it is. It's helpful.

DR. NESSLAGE: Any other comments on our consensus rough-worded statements so far, although this group did a really good job making it very nicely worded? No hands. Wow. Okay. Mike, I have one more item of business under here, but is there anything else that you need from us?

DR. SCHMIDTKE: No, and I think we're all set, from that aspect. Thanks, everyone.

DR. NESSLAGE: No, thank you. You have done the lion's share of work, and this is an absolutely -- It is a true omnibus amendment, and it is a bear, and so great job. Thank you, and thank you for holding our hands through this whole process and trying to understand it and comment on it. The

last bit here we have to do is, as Mike mentioned, is solicit membership for the data-limited stocks ABC setting workgroup. Mike mentioned that the council had approved our inclusion of our plan for unassessed stocks in the ABC Control Rule Amendment and the approach that we suggested to setting -- Basically, going through our unassessed stocks slowly and trying to see if we can come up with OFLs, or ABCs, for those stocks.

The discussion with the council, when I presented this to them, was that, basically, they would like to start with a small subgroup of two or three, which sounded great to me, I think, maybe of different types, different amounts and/or types of data that they have available to them, and then run with that short subset and see how the process works, and so we might want to tweak the suggested process as we go along and find that it works or does not work.

That means we have approval to form an ABC setting workgroup for these unassessed stocks, which means we have work to do, but the good news is those unassessed stocks are going to get some love, and so I am looking for some volunteers and a chair. This work will probably occur over the next year, I would anticipate, and folks who are particularly interested in and/or knowledgeable in data-limited approaches, and/or the biology and fisheries of these animals, would be very welcome. Amy.

DR. SCHUELLER: I assume that not everybody is raising their hands all at once. I would like to volunteer for this group, although I do not want to be chair, if at all possible, and I also wondered, in that discussion of the formation of this workgroup, are we going to request maybe one member from the Southeast Fisheries Science Center, or is this going to be completely in-house? I say that just because there might be some data-limited experience in that group, and also they may know some of the species biology stuff, and that might be helpful.

DR. NESSLAGE: For sure, yes, and it wasn't clear whether that was part of the Center's agreement, and we would have to work on workplans, et cetera, and talk to folks. I don't know, and Erik, maybe you want to chime in, and I didn't get the feeling that we had worked that out that clearly, but it would be a nice addition, and I certainly would not -- I don't think anyone would turn that down.

DR. WILLIAMS: Genny, I don't recall that actually being specifically discussed, but I do think it probably would be a good idea to have somebody from the Center involved, if the SSC is okay with that and the council is okay with that.

DR. NESSLAGE: Great. Let's hear from Wally, but, if anyone has any objections to that, please speak up. Wally, go ahead.

DR. BUBLEY: I am kind of with Amy as well. I would be more than happy to help out, and more on the biological side, and I'm not exactly wanting to chair it, but I think I could provide some information for this group, and so I am volunteering at this point.

DR. NESSLAGE: Great. I will be transitioning off as chair in the next six months or so, and so I would very much like to be involved in this group, but I don't think I should be chairing it, at the moment, and there's a lot of chairing going on, and so if you could add my name to the list. This is something that I really care about.

There are a few folks who aren't on the call today, and maybe I will bring this up again during Other Business and see if maybe folks will think more about it as time goes on, and we can reach out to maybe even some outside experts too, and we'll see. All right. I appreciate the volunteers that we have so far, and we will try to flesh that group out and get that group working. Any other thoughts, comments, questions, about this agenda item?

If not, then we have a little bit of time left in the day here, and we skipped over a few agenda items, earlier, to move this ABC Control Rule discussion up. I am thinking, if Kathleen is up for it, perhaps we could do some of the SEDAR items, but, Amy, are you available tomorrow morning to do the workgroup report, or do you prefer to go now?

DR. SCHUELLER: I am here the whole time. Whenever you want me to talk about it, I'm happy to.

DR. NESSLAGE: That's fantastic. Let's see if we can get -- Go ahead.

DR. CURTIS: Genny, I spoke with Kathleen earlier, and she was going to be leaving about 4:30, and she kind of requested if we could cover the SEDAR tomorrow morning, and so, with that information, if Amy is prepared, I think now would be a good time for her to go.

DR. NESSLAGE: Brilliant. Okay. Then, Amy, do you think you could --

DR. SCHUELLER: Yes.

DR. NESSLAGE: I am losing where we are. What agenda number are we on? Number 10. It's Attachment 10, Catch Level Projections Workgroup, and Amy is our fabulous chair, and she's going to walk us through what the group has been doing. Take it away, Amy.

### **CATCH LEVEL PROJECTIONS WORKGROUP**

DR. SCHUELLER: Sure, and so there's no action items on this, and this is more of an informational, I guess, discussion for the SSC, and so the -- I think the document is just a quick little two-pager that was included in the briefing book, and it's Attachment 10, and, basically, it starts off with what the scope of work was, because I'm not sure that everybody on the SSC was able to see the final scope of work, and so the catch level projections working group had basically four tasks, which were meant to make recommendations on what to do with recruitment when we're doing projections.

You guys have been involved in these discussions, over and over again, in the last years, I guess, and so the justification was that we had asked for, basically, can we make this group so that we can try to look at this more holistically across species and provide better, more consistent recommendations, and the council agreed that that would be a good thing, and so our goal is to develop a set of recommendations for the SSC's consideration when making projection requests used to set catch levels.

The group members are Jie, Scott, Fred, Chris, technically not Genny, but she's been sitting in, Erik from the Center, and then Judd and Chip as staff members, and so all of these folks have

contributed to the meetings thus far and have seen this document before it went out to you guys, and so I just wanted to acknowledge everybody's work on this so far.

The tasks for this group include reviewing the literature on recruitment assumptions and summarizing the key findings for the SSC. Task 2 is summarizing the recent SSC decisions regarding recruitment assumptions and projections that have been used to set catch level recommendations, and we listed some species that we wanted to be included in this consideration, which included red grouper, red snapper, red porgy, golden tilefish, and black sea bass.

We have added a couple to that, and clearly we talked about gag during this meeting, and that is one of the ones that's been added, and then the other two tasks are -- The third one is to explore the performance of alternative recruitment assumptions and summarize the impact on catch level advice for some key example stocks, and Number 4 was to draft recommendations for the SSC's consideration. That's basically the statement of work.

The plan is to meet from -- Basically, we started meeting in I think September, right when September began, and we'll be meeting from September through probably March or April, and the point of this is to have a document to the SSC for review in their briefing book for the April 2022 meeting.

The second part of this two-page document is just a progress report on that scope of work. We've had two meetings thus far, and one was September 1, and one was October 5. We have both the meetings for November and December scheduled. The first meeting, we basically just broadly discuss tasks and created action items and had some discussions about whether or not we were providing a guide for best practices or more of a decision-making framework, and that seems maybe kind of like a nuanced discussion, but the group discussion centered on what is the state of the science related to this topic and would we be able to provide a guide for best practices, and the general consensus was that we needed more science in order to get to that point, but that we could probably still provide some sort of decision-making framework for the SSC to move forward when we're encountering these types of questions.

That first meeting, we also added gag to the list, which clearly we've talked about during this SSC meeting, and then there is just some statements of things that we've discussed during that meeting, and so I'll just kind of read that.

We discussed considering correlations between different species across multiple data streams within given species and across geographic locations for given species. Also, correlations between species and environmental variables, and we talked about looking at time lags and autocorrelation across time, and so there's a number of different things that we're interested in looking at, to see if we can provide ourselves with some better information about how to project recruitment.

For the second meeting, we had a presentation by Dr. Brendan Runde, who is looking into this recruitment time series question, basically that there's a number of species that have similar looking time series and what is that related to, and so he gave some preview of that, and this work is still ongoing, and we said that we appreciated the presentation, and we would like to be kept up-to-date on the project.



After that, the group went through basically the species that are on this list in the statement of work, and we also included gag, and we also included yellowtail snapper, and we basically looked at what does recruitment look like and what do a bunch of these other figures in the assessment reports look like, and what will we need, in order to make any statements, and so there are a few possible draft recommendations that we have already started putting together, with respect to what we would like to be added to stock assessment reports, in order to help us better delineate what we might want to do with these projections, choices and so there's a numbered list here in this document that includes basically looking at the uncertainty, or the MCBE recruitment time series, with the base recruitment time series overlaid, so that we could look at the base run with respect to what we're specifying for our uncertainty.

The second one is looking at recruitment deviations time series with the base run overlaid on the sensitivity, and so there is the deviations and the time series itself in those two, and maybe doing a sensitivity run and removing the stock-recruitment curve and comparing the results to the base run, to look at the impact on those recruitment estimates.

Number 4 is fully describing the recruitment variance assumptions within the model, and so sometimes those variance assumptions are fixed, and sometimes the parameters for that are estimated, and so it would be good to be very explicit about that, and so we're starting to come up with some draft options.

We, in our next meeting, will be looking at reviewing -- We'll be starting the review of the literature that we've compiled already, and I don't know. We're making progress. We have a game plan, and I'm happy to hear any suggestions or questions. We're kind of just starting out, but I do think that we have already done quite a bit of work, as far as compiling what we have done across the different species, and we've already even started collecting some recommendations for some assessment report figures that would be useful in the future. I will stop there, and I wanted to keep this brief.

DR. NESSLAGE: That's fabulous, Amy. Thank you for that summary. Questions for Amy? All right. Are there any questions or comments from the public? No hands. All right.

DR. SCHUELLER: Everybody is on the edge of their seat or totally sleeping.

DR. NESSLAGE: I think everyone is just burned out on recruitment assumptions and projections today, but this is super important work, and I am so glad that this working group has been formed to do this and address this. It's going to be a good outcome, and we appreciate your leadership, Amy. Thank you.

DR. SCHUELLER: Sure.

### **CASE STUDIES FOR SCS7**

DR. NESSLAGE: All right. Anything else on this agenda item? Okay. Then maybe we can move on to Agenda Item 11, and so this is the case study -- Discussion of the case studies that will be recommended from our region to be presented at the National SSC this upcoming August, and so look at Attachment 11, and I don't know if we can bring that up on the screen, too.

Basically, the folks leading the national SSC are requesting some feedback from each of the regions and asking for presenters for up to one or two case studies from their region that address one of the three main themes at national SSC. The themes are, first, how to incorporate ecosystem indicators into the stock assessment process, and the second theme is developing information to support management of interacting species and consideration of EBFM, ecosystem-based fisheries management, and then the third is how to assess and developing fishing level recommendations for species exhibiting distributional changes.

In the past, we had discussed possibly asking Scott Crosson to address that Theme 3 with the blueline tilefish example as a case study of interregional changes and/or movement and how that impacts our management. Scott, I believe -- Are you still interested in presenting that, if the group is supportive?

DR. CROSSON: Yes, that's fine. There's a more recent version of this too that Nikolai from the Beaufort Lab presented at an internal NOAA workshop earlier this year, and so I could talk with Nikolai as well, and so there's more updated information, but, yes, the whole deal with our negotiation for the ABC with the Mid-Atlantic Council's SSC I think was definitely applicable to this particular meeting, and I'm willing to present that.

DR. NESSLAGE: Fabulous, and so that's one option. Do folks have ideas, other ideas, for case studies from our region? We could have up to two to recommend. We haven't really done much of Number 1. We have developed an EwE and have started to apply that to management questions with Number 2, and we heard from Lauren today, but there might be other things that you all would like to present as case studies. Amy, go ahead.

DR. SCHUELLER: I don't know that I have a super-awesome suggestion, but do we know what the Northeast or the Mid-Atlantic are interested in presenting, because the other one that comes to mind with this Number 3, the species exhibiting distributional changes, is black sea bass, and I just wondered if that would be a possible option.

DR. NESSLAGE: From our region?

DR. SCHUELLER: I mean, I don't know. I mean, it's kind of an odd thing, right, because probably we should be talking to them about what's going on with black sea bass, but we're not necessarily doing anything at this point, if that makes sense.

DR. NESSLAGE: I think they're looking for examples, so that folks can learn from other people's successes and mistakes. If we haven't started -- Or am I misinterpreting what you're saying?

DR. SCHUELLER: No, and I just -- Sometimes it's okay to present, in my opinion, something that maybe we should be considering, but we're not, because I feel like that's probably going to be the case for all three of these topics in most of the areas.

DR. NESSLAGE: Right?

DR. SCHUELLER: Yes.

DR. NESSLAGE: Has anybody at the Center, or council staff, done any kind of summary of the species that we anticipate will have interjurisdictional concerns in the near future? Scott.

DR. CROSSON: I don't think that Chris Dumas is on right now, but Chris and I are part of a group that's funded by Lenfest that's looking at potential reallocation formulas for species migrating up the east coast, and so we're looking at black sea bass and summer flounder, and so that's something that -- I would have to talk to Chris and to other members of that group, because we're the only people that are -- Everybody else is coming from different universities and EDF and other things, but that's a potential research topic. The Mid-Atlantic Council is definitely very aware of that.

DR. NESSLAGE: Is that including black sea bass in the South Atlantic?

DR. CROSSON: Actually, that's more black sea bass moving up into New England.

DR. NESSLAGE: I hate to keep questioning you guys, and these are good thoughts, but we just need examples that are representative for our region. Chip, go ahead.

DR. COLLIER: I was just going to say, along those lines of Scott, this isn't necessarily just a South Atlantic thing, but Olaf Jensen is working on a similar project looking at the impacts to stock assessments and some of these environmental factors that are included in it, but he's looking national and not just South Atlantic, and so I don't think it would be all that appropriate.

DR. CROSSON: I think Olaf is part of the team that's dealing with the one that I just mentioned, too. I think he's got two different grants going with Pew.

DR. NESSLAGE: I guess does anyone disagree that we should put forward bluefin tilefish as one case study? I feel like that's solid. Okay. No one disagrees. We don't have to have a second one, but, if we do want to recommend something along the lines of black sea bass, I would need to tap someone and flesh out the idea a little bit, because -- I don't know, and, Chip, are you going to submit this, or am I? The descriptions of those case studies need to go into the national SSC coordinator.

DR. COLLIER: I mean we can talk about it offline. It doesn't matter who does it. I can do it for you, if you prefer.

DR. NESSLAGE: Probably.

DR. COLLIER: One question that I do have for black sea bass, and is that talking about the Mid-Atlantic stock of black sea bass or the South Atlantic stock? They are two genetically-different stocks.

DR. NESSLAGE: Amy, go ahead.

DR. SCHUELLER: Well, when I got to this thing, and I was thinking about case studies, I was really scratching my head, and so bluefin tilefish was the only one that seems like it fits nicely. I threw black sea bass out as an option, and I'm not married to it. We can check it off, if we want to, and not use it, but it's just, when you're talking about the topic of distributional changes, I don't

know, and I guess I could view this as something that multiple SSCs could like co-present, but they may have their own other ideas anyway, and so, for ease of simplicity, that's fine. Just I couldn't think of any other species that I thought would fit all nicely into the boxes they have outlined for the case studies.

DR. NESSLAGE: A question for Jie, if he's still on. You're doing some work -- Isn't it with dolphin and/or wahoo, and are there any environmental variables being included in that that might address the Question Number 1, and not to put you on the spot, but go ahead.

DR. CAO: Genny, I think, regarding black sea bass, I think, actually, Kevin Craig and myself, we actually got some money from the climate change initiative to do a species distribution model, and we're looking at the coastwide distribution for black sea bass, but, currently, we are looking at the possibly to do that, because I think we've got some issues with the overlap, in terms of survey coverage, but we've in contact with the scientists at the Northeast Fisheries Science Center, and so we are just starting out this project. For the dolphinfish, yes, we also looked at the distribution change as well, yes.

DR. NESSLAGE: I wonder if there's some value in presenting something along those lines, and has it impacted management in any way yet?

DR. CAO: We are in the process of developing the model, and we are also doing a management strategy evaluation for dolphinfish as well, and so my student is working on that, and so we haven't got any results yet, besides the distribution map from the model, but, other than that, we haven't got any results yet.

DR. NESSLAGE: So some preliminary work. Okay. Thanks.

DR. CAO: But we do have a plan for the black sea bass, in terms of the species distribution modeling.

DR. NESSLAGE: So you do have results, or preliminary results, that you could present, possibly?

DR. CAO: For which one?

DR. NESSLAGE: You said black sea bass, and is that --

DR. CAO: We do have a plan for doing black sea bass distributions, yes, but we are in the discussion of the possibility of doing a coastwide model, and so we've been in touch with the scientists at the Northeast Fisheries Science Center, and we are trying to look at the spatial coverage of all the surveys that targets black sea bass.

DR. NESSLAGE: Okay. Let's see. Jeff, ideas or comments?

DR. BUCKEL: To the first topic, even though it had ecosystem indicators, when you read further down the paragraph, it talked about changing environmental conditions that might impact recruitment, and that made me think of the work that Brendan is doing, and maybe he'll have something by August that is more solid, because, obviously, that's a big issue, right, and we have

multiple species with declining recruitment, and he's trying to find a -- He's going to be testing some environmental factors that might be impacting that, and so that might fit Number 1.

DR. NESSLAGE: Good suggestion. Excellent. Wilson, what are your thoughts?

DR. LANEY: Well, you had asked if dolphin distribution shifts were affecting management yet, and I don't know that the answer to that is yes, but, if you talk to the fishermen in the Florida Keys, they would certainly maintain that they are seeing the impact of distribution shifts, in terms of the numbers of dolphin they're catching. Now, that's anecdotal, but there is some very interesting information out there, and Chip can remind us.

We had a presentation on a dolphin tagging study that was done over the last decade or so, and that's showing some very interesting patterns, and so I don't know whether there is enough critical mass of information there to throw that one out as a possibility, but Jie could say, maybe, if he's got plans to do some work on it anyway. That might be a possibility.

DR. NESSLAGE: Jie, do you want to comment?

DR. CAO: I think, for dolphin, we're sort of more focused on the management strategy evaluation side and sort of the byproducts to the distribution change over time, and that's our plan.

DR. NESSLAGE: Okay. Thank you. Chip, go ahead.

DR. COLLIER: I wanted to talk about two projects in the South Atlantic region, and one was the one that Wilson had mentioned, or maybe it's not the exact one that he had mentioned, but there was the participatory workshops that Mandy Karnauskas did, and then, towards the end of that, she was looking at some potential factors for changing distribution of dolphinfish, and there seemed to be some relationship between temperature and low abundance down there around the Keys, and so that could be an option, to reach out to Mandy. I feel like she is being reached out to another project that she worked on, and so it might not be the best of options. Another potential option, and maybe this is a plug for our seminar series coming up in November, but Tracey is going to be presenting on distribution shifts of red pogy, Tracey Smart from South Carolina DNR.

DR. NESSLAGE: Fabulous. Okay. We're getting some more ideas here. I will just take a quick moment to ask if anyone from the public has comment on this. Please raise your hand, and I don't know that if you really care, but Rusty.

MR. HUDSON: Imagine that. I participated in SEDAR 11, with regard to black sea bass, and I remember two things in particular. It was when you go from New England, right on down to Florida, there were, I believe, like four different genetic stocks in an overlap in the Mid-Atlantic region, where a lot of the activity goes on for catching a lot of black sea bass in that area, and I also remember, back in the late 1960s, when all of our black sea bass disappeared, for whatever reason, and then they caught pretty good up to the north, and so I believe that there is different climatic effects that affect these animals.

In the last part of the stuff from SEDAR 25 in 2011, they had that question about the dominant male and the submissive males and the way that the black sea bass operates in that fashion, and so

it would be nice to be able to see if any of that gets carried forward in the future, and so thank you very much.

DR. NESSLAGE: Thank you. Any other public comment? Let's go back to SSC members then. Thank you. Go ahead, Jie.

DR. CAO: Thanks, Genny. I just want to make a correction. For black sea bass, we're actually doing a coastwide species distribution model instead of a survey with Northeast Fisheries Science Center scientists, but we're still looking at the possibility of doing this, because the survey -- We're looking at the overlap among different surveys. I hope that's clear.

DR. NESSLAGE: Yes, and that's a good catch. Thank you. Okay. Unless there is other ideas -  
- Jeff.

DR. BUCKEL: I just thought of one other thing that I guess would match up with Topic Number 1 probably the best, and that's we have a -- I'm pretty sure it might be out in the next week or so, the ecosystem status report for the South Atlantic, and that might be something that would be of interest, is a presentation on that ecosystem status report that Kevin Craig has been leading the charge on. Then one correction to the bullet above, and that's Brendan, and that's not me. I am not involved with that. It's Brendan and Kyle Shertzer and others at NOAA.

DR. NESSLAGE: Excellent. Thank you. Jie.

DR. CAO: Sorry. I just forgot to lower my hand.

DR. NESSLAGE: Excellent. Are there other ideas? Okay. We have a number of ideas on the table here, and some of these are at different levels of completion and different topics. There is some value in having a case study for each topic section, and there is also a value in putting the most completed work forward that has had the biggest impact, and I am just throwing out potential ways that we could try to narrow this down, but I would love to hear some nominations for the two that we would like to suggest. George isn't on, but, Chip, how have you guys done this in the past?

DR. COLLIER: Actually, I am not sure how we've done it in the past. It might be good to reach out to John Carmichael on how they did that. I don't think we had a lot of examples in the past on some of these. Tracey Smart is on, and we could ask her if she feels like it would be appropriate for her to give that presentation. She would probably want to shoot me, but I would not want to volunteer her without asking her.

DR. NESSLAGE: Absolutely. Tracey, are you on?

MS. SMART: I have to apologize. I was just talking to somebody in the hallway, and so I missed part of the discussion beforehand, and what am I being volunteered for?

DR. COLLIER: Everything. Congratulations. No, but we wanted to see if your red porgy work -- If you felt like it would be appropriate for this and if you wanted to do it, and I didn't want to volunteer you without talking to you first.

MS. SMART: Yes, we can probably look at the schedule, and Wally is a co-author too, and so I'm sure we could figure something out.

DR. NESSLAGE: Okay. That's good to know, that you're not being volun-told to do something. Fred Serchuk, go ahead.

DR. SERCHUK: I just wanted to inform everybody, because it's not stated here, but this meeting, I think, is going to be taking place in August of 2022 in Alaska.

DR. NESSLAGE: Yes. I meant to mention that.

DR. SERCHUK: That may wet some people's appetite, or it may deter some people, but that's where I believe the meeting is scheduled.

DR. NESSLAGE: It's Sitka, Alaska. That is correct. Thank you for -- I didn't mention that. John Carmichael, come to our rescue. How have you done this in the past?

MR. CARMICHAEL: I don't know if I can rescue you, but I can tell you what we've done in the past, and, normally, the various information like this, the case studies and such, or whatever the council's experiences are, they are presented by the council's contingent that goes. It's usually that we have sent the Chair, the Vice Chair, and the SEP Chair, typically, to past meetings. There is limited space available, because you are talking about representatives of all the councils, as well as NMFS and the Science Centers and such, and so there is a desire to hold the group to somewhat of a manageable level, and so that would need to be factored in.

There may be opportunities for remote presentations, but that is not something that has happened in the past, but we're in kind of a different world now, and so that may be something that the organizing group is more amenable to in this round, but, normally, I would say you would expect those from our council's contingent to plan on making the overview presentations at this kind of stuff.

They're often not that detailed, when they're looking at individual council stuff, and, many times, they will have -- You could consider them like keynote-level speakers that may be experts in a particular field, or with a particular topic, who would give kind of kick-off presentations and such, to get everybody started.

DR. NESSLAGE: They have already identified those folks, and so these would be the shorter case study presentations, but you're right that they did mention that it's Sitka, and they only have a very small hotel, and so they don't have a lot of room for extra folks, even budgets put aside, and so maybe the SSC can -- We have provided some feedback to the council staff folks, and maybe we can work out, based on what the budget is and who is going, who would we approach, or, if any of these topics are off the table, and I can't imagine anyone would be opposed to these, but speak now, and then we just kind of give you guys the fun task of seeing how this all works out, once you decide who is going, in approaching potential speakers, and is that what you're thinking? Sorry that we hadn't thought this out ahead of time. Judd.

DR. CURTIS: Genny, just to clarify some of the timing on this, the case study summaries, which only need to be just a short description, with that information and then who is going to be presenting, but that is coming up quickly, and it's due no later than November 15.

DR. NESSLAGE: I guess -- I feel like I'm stuck in a place here where the council decides who gets to go, but we're just making recommendations on who we might like to see give those presentations, and you all can figure out, and is that -- I hate to waffle, but is that okay? We have provided our feedback on who we would think would provide good example case studies.

DR. COLLIER: Just to narrow it down, Jie, do you think you would have a coastwide species distribution model by August of next year?

DR. CAO: I am not sure about that, because we are in the very early stages of that work, and I'm not sure if it's possible to do that.

DR. COLLIER: Okay. Then I will reach out to Brendan, to see if he would have information available, and then, with the dolphin information, would that be ready by August of next year as well for you, Jie?

DR. CAO: I think so, if we're talking about looking at a distribution of dolphin over time.

DR. COLLIER: Okay.

DR. CAO: I'm not sure if we can make any like implications for management sort of --

DR. NESSLAGE: I almost wonder if it would be possible to do a summary of research that's being done in the region that would certainly impact management eventually, between the dolphin study and the porgy study and some of Brendan's stuff, and is it possible to combine things into one presentation, like to highlight research being done in the region?

DR. COLLIER: I think they're really trying to figure out how to deal with this at the SSC level, and so maybe not just a hodgepodge of information that's being collected in the region, and I think what -- At least the direction that I'm leaning now is to get with Brendan, given that his topic -- He's really focused on that topic, and he's working on it, and he might have something available for next year, and it's also a different topic number than the blue-line tilefish that Scott is going to present.

DR. NESSLAGE: Yes, and it would be nice to have our region represented in multiple days. All right. Does anyone disagree with that plan? Then we can keep this list when this comes up again, and I don't know that there will be another national SSC, but hopefully there will be future sharing among SSCs in some fashion, and we will likely reach out to these folks in the future. Any objections? All right.

Then I think we're going to pause here for the day. We will start up again first thing in the morning, at 8:30, with the bycatch agenda item, Item 9, the standard bycatch reporting methodology, and then we'll catch up with Kathleen on the outstanding two SEDAR items we have. We will go through our Other Business, the final public comment, and the consensus statements finalization, and so a lot to cover tomorrow, but hopefully not as big of a drain as some of the big issues that



you guys have tackled in the last two days, and I appreciate your time and your effort, and I hope you have a restful evening. Thank you.

(Whereupon, the meeting recessed on October 28, 2021.)

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OCTOBER 29, 2021

FRIDAY MORNING SESSION

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The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened via webinar on October 29, 2021 and was called to order by Chairman Genny Nessler.

DR. NESSLAGE: Welcome, everyone, to our last day of our fall meeting. Thank you for hanging in there. Just as a reminder, because we have changed around the agenda a bit, this morning, we will start with Agenda Item 9, the Standard Bycatch Reporting Methodology, and then we'll move to our outstanding two SEDAR items, and we'll go to Other Business, Public Comment, and then review our consensus statements and adjourn. Are there any questions about the order of operations today? Seeing none, then we can get started.

Agenda Item 9, Standard Bycatch Reporting Methodology, there are two attachments, the document and the presentation. We will be hearing from Frank Helies from SERO. Basically, the SSC is asked to review and comment on the overall review of the standard bycatch reporting methodology, with, obviously, an emphasis on the South Atlantic region. We're looking for feedback on the current methodologies used to describe bycatch reporting and any of the data gaps present. Frank will talk to us a little bit about what they're looking for regarding feedback, but there is three main areas of feasibility, data use, and data uncertainty, and so keep that in mind as he is going through this presentation. Frank, are you ready?

MR. HELIES: Good morning.

DR. NESSLAGE: Good morning.

### **STANDARD BYCATCH REPORTING METHODOLOGY (SBRM)**

MR. HELIES: I am going to keep this very brief. You guys have had a full two days of discussion, and I appreciate the opportunity to present to you this morning. I am with the SERO South Atlantic Branch, and I'm going to give you a brief presentation on the standardized bycatch reporting methodology review.

Real quick, the purpose of this presentation is to introduce the SSC to the review. There are four main review criteria, and I will briefly describe the document that you guys had a chance to look at prior to the meeting. I will briefly talk about the progress and timing of the review, and then I

will be able to answer any questions that you may have, hopefully, and then we're going to shift over to the workplan, so we can spend the majority of the time discussing the target questions that are provided in the workplan.

What are standardized bycatch reporting methodologies, or SBRMs? It's defined in the final rule as an established, consistent procedure, or procedures, used to collect, record, and report bycatch data in a fishery. It's important to note that the council has SBRMs in each of the FMPs currently, and so the purpose of the SBRM would be to collect, record, and report bycatch data that, in conjunction with other information, are used to assess the amount and type of bycatch. Those are the main points that I want you guys to think about when you're going through this.

The SBRM final rule was effective on February 21, 2017, and the review gave us -- Excuse me. The final rule gave us five years to complete the initial review, and this has kind of been backburned for a while, and we waited until the last minute here, but we're going to get it done by the deadline, and we're required to review SBRMs at least every five years.

In the next slide, I am going to talk about the format, but, for this slide, we'll talk about the four review criteria. The first criteria is the characteristics of bycatch that occur in the fishery, and there are a couple of different points of that. There's the amount and type, the importance of bycatch in estimating fishing mortality, and the effect of bycatch on ecosystems.

The next criterion is feasibility of the methodology from cost, technical, and operational perspectives, basically capable of being implemented. We want to talk about the uncertainty of the data resulting from the methodology, and, finally, how are the data used to assess the amount and type of bycatch occurring in the fishery?

The review is separated into two sections. The initial chapter provides the background information on the SBRM final rule, and it explains the four criteria that I just mentioned, and it gives an overview of the various reporting programs that are currently in use in the region, and these are broken out by sector.

Then the following chapters, Chapters 2 to 9, dive into each FMP, including the ones that are jointly managed with the Gulf. These chapters are broken into five or six sections, depending on the complexity of the FMP. Basically, it's outlining what is the SBRM that is currently on the books, what are the current methods used to collect bycatch data, and then we go into characteristics of the bycatch, feasibility of the SBRM, and the data uncertainty and use, and so that's the format of the review.

Some of the SBRMs have been modified over time, for example the Snapper Grouper FMP. Many of the SBRMs were implemented through the Comprehensive Sustainable Fisheries Act Amendment back in 1999, and so that one referenced the ACCSP, and we can talk about that a little more during our discussion.

It's important to note that the SBRMs, in general, provide for a wide range of standardized options for collecting the data, including logbooks, observer coverage, state programs, and electronic technologies. The data used in the review is from 2015 to 2019, and the sections are similar to

what you will see in the amendments, which you guys have reviewed in the past, and so that's basically the review format.

The next steps, generally, we presented to the council in June of 2021, and they requested the SSC to take a look at it, and so that is where we're at, and so we hope to finalize the review in December, and I will give an update to the council in December, and then region will make a final determination on the SBRMs in the FMP, and then, if the council decides that they want to adjust the SBRMs, we can do that through FMP action in the future, and then the main goal of the format was to provide kind of a plug-and-play format, where we can continue to use this document and just update it with subsequent years, since we have to do these reviews every five years.

That is my very brief presentation for the introduction to SBRMs, and feel free to ask any questions on the review or the format, and I would like to direct you all to Chapter 10, which has the list of folks that have helped me with the review.

DR. NESSLAGE: All right. Thank you. Let's start with questions from SSC members. Are there questions for Frank? While folks are thinking, I have a few, if you don't mind entertaining those. There was -- In the snapper grouper fishery, there was a paragraph that described the percentage of reports in the logbook program that say no discards, and it sounded like, historically, the reporting rate, if you will, for those who reported no discards was about 30 to 40 percent, and now it is increased to somewhere of 60 to 70 percent. Do you think that's realistic? If not, what's the plan for addressing this?

MR. HELIES: Thanks for that question. That is in Section 2.5, the data uncertainty, and that data was provided to us from the Science Center. It surprised me, actually, when that was included in the review, and I can't speak directly to what we're going to do with that information. I don't know if Chip wants to chime-in on this, and that's something that we can potentially request the council examine in the future.

DR. NESSLAGE: This review, are we -- So I understand, as the Chair, but are we providing the comments essentially to you, or we're advising the council and they provide the comment, like the group feedback, to you guys? At least, I think we would want to alert the council to this issue, given the importance of discard information in our assessments used for setting catch levels. Chip, go ahead.

DR. COLLIER: My thought is you guys are acting as the science advisors to the council, and so, if you think of it along those lines, where you're going to be advising the council on things that potentially need to change and how they need to change the SBRMs in the fishery management plans that they have.

DR. NESSLAGE: Okay. All right, and so this is something that we would definitely want to highlight, given the impact that it could have on our assessments and management.

DR. COLLIER: Yes, and, along the questions that you had suggested there, or just to inform you on the previous question, the low discard rate, if you remember back to the review in the scamp, SEDAR 68, they were taking corrective -- They were using information, in order to correct that,

based on some of the observer studies based on the logbook reports, and so they were trying to do some bias correction with that.

DR. NESSLAGE: But there is no enforcement exchanges expected? Do we think it's a reporting compliance issue or the folks who are submitting logbooks just happen to be different than the average fishermen?

DR. COLLIER: We have not looked into that.

DR. NESSLAGE: Because that's a big difference. You don't want to bias correcting for something that might be real, or the sampling needs to be adjusted, if that's the case, right?

DR. COLLIER: Right.

DR. NESSLAGE: Gotcha.

MR. HELIES: The captains are still in compliance, even if they return a no discards, and so that's something that we should probably explore.

DR. NESSLAGE: Yes. All right. Thank you. Other questions? Wilson, go right ahead.

DR. LANEY: Thank you, Madam Chair. Frank, and Chip, I guess, when I was still the Fish and Wildlife Service rep on the council, we had a good bit of discussion about the question that Genny just asked about enforcement, and also about the challenges inherent in trying to validate logbook data. I know that there have been some studies, or at least I have this vague recollection that there have been some studies, where there were some observed trips, and then that provided information that could be used to check the logbook entries for a given date, and has anything like that still occurring, Frank, to your knowledge?

MR. HELIES: I am not sure, Wilson.

DR. NESSLAGE: Is there anyone on the call, Center folks, who might be able to answer Wilson's question? All right. Thanks, Wilson. Jennifer, go right ahead.

DR. SWEENEY-TOOKES: Thank you. You all know I am new to this, and so bear with me if this is not on target, but, if we're seeing a consistent return of the same people sending back no discards, is there a way to prioritize them for observers? I know it's probably supposed to be a random selection for observers, but, if that sort of information is communicated through to captains, I would suspect we might see a higher rate of more accurate information.

DR. NESSLAGE: Excellent suggestion. I am taking notes, by the way, and I'm sure that Judd is, too, but, Frank, do you know if there is any way to adjust that, the sampling scheme, to see if that is actually -- To get at the issue of whether it's misreporting versus accurate reporting?

MR. HELIES: A lot of these questions that you guys are going to have should be directed at the Science Center folks that are responsible for collecting this data, but we will definitely follow-up. Unfortunately, in the snapper grouper fishery, there is no -- There is currently no observing, and

so, if that was a possibility, we could probably do it, but there is currently no observing occurring in the snapper grouper fishery, outside of the headboat observer program.

DR. NESSLAGE: Which is probably something that we want to highlight as well. All right. Thank you. Jeff, go ahead.

DR. BUCKEL: A couple of points. Genny, to your point about is it a different set of captains that have no discards, and to Wilson's question about the observers, there is citation and a statement about side-by-side comparisons of self-reported data versus observer data in the Gulf of Mexico reef fish observer program where they found the self-reported data are lower than those estimated from the observer-reported data, and so that would support that there is a bias.

The second point, or question, I guess, is I know there was some research projects looking at the use of video to get the bycatch on the commercial boats, and I understand these are small vessels, and so they don't have room for observers, and that's one of the reasons, I think, that we don't have observers in our commercial fishery, or at least in the snapper grouper fishery, and so I don't know -- Does anyone know where that research is and if that's still being discussed at the council level, the use of cameras to get at this bycatch issue? Thanks.

DR. NESSLAGE: Thanks for pointing out the difference in no discard reporting rates with and without observers in the Gulf of Mexico. Do we know, Frank, or anyone else from the Center on the call, maybe, or Chip? Was it to this point?

DR. COLLIER: It was to the electronic observers, and Scott Baker did a project in the South Atlantic region on that, but there has been no follow-up work, or no amendment developed, in order to incorporate that.

MR. HELIES: Thanks, Chip. I believe there is a project in the Gulf to look at electronic technologies and comparing it to observer data. I don't know if that was funded just last year, and so I don't think we've received the data on that yet. To the point about putting observers on these small boats, it's possible. I did it for six years, and so we could do it, and I think it's more of a -- I do know that running observer programs is very expensive.

DR. NESSLAGE: Thank you. Maybe Erik has something to that point as well, before we move on? Is that correct?

DR. WILLIAMS: Yes, and so thanks. I was just going to say that, on the point of observers, they have tried many times in the past, and the problem is many of the boats just can't handle an observer, either from a safety standpoint or just the boat itself can't even physically handle an observer onboard. As a result, you end up with a biased sample, if you were to just go with boats that can handle an observer, because you're looking at a different class of vessel, and so you would have to deal with that potential bias.

That's why it's kind of -- It's been looked at, and it's a really tough thing to design and set up. I don't want to quote an exact number, but I know that they sort of tried to survey how many vessels they could actually put an observer on, and it's a pretty small fraction. It's less than 50 percent, if I recall, and so that's a problem right there.

As far as the video techniques, I know that was discussed a lot, and I don't know of any projects that are underway for that. The only thing that I would say is that, admittedly, discards is one of our biggest weak points overall for data collection. I mean, if you think about it, we're relying on MRIP discards that are self-reported, and we're relying on commercial discards that are self-reported, and so, yes, across-the-board, it's all self-reported, and there is no validation. It's, honestly, something that probably needs to be looked at.

One thing that I don't think has even been done very well is even just looking at the bycatch rates that we are getting from the limited data we get and comparing that to say the Gulf, where they do have observer data, or comparing it to other programs, where they have validation methods, just to see if we're even in the ballpark, but I don't know that that analysis has even been done.

DR. NESSLAGE: Thank you. Excellent points. Let's go to Fred Serchuk.

DR. SERCHUK: Thank you, Chair. I agree with almost all the comments that have been made about potential biases between self-reported data and observer data, but I bring up another aspect that's been detected in the Northeast on some occasions, and that is that the observer data can also be biased, to the extent that trips are taken and modify their behavior from the norm, such that they tend to result in less discards when they have an observer onboard, and that is they change their fishing areas or fishing practices.

That's been documented in the Northeast on a number of occasions, and so the observer data, n and of themselves, are not -- They cannot often be completely unbiased, because it depends on how the operation of the vessel on which the observer is taken operates, and does that vessel operate normally, or is that vessel, because they know there's an observer onboard, fished differently, so as to perhaps reduce the discards that they normally would have on a trip that they didn't have an observer onboard, and I just wanted to raise that point. Thank you.

DR. NESSLAGE: That's an excellent point. I am not sure that we can get much lower than no discards though, and it just doesn't seem to make much sense, given what we're hearing about people tripping over red snapper discards, that 60 to 70 percent would say no discards, and there's a big disconnect here, but, yes, I hear your point, Fred, that observer coverage may not be the panacea that we would hope that it would be, given changes in behavior. Thank you. Let's go to Chris.

DR. DUMAS: Thanks, Genny. Have you guys tried using a randomized response in getting the data from the fishermen? That would be a way that fishermen could keep their identifies concealed, but yet you still might get a better estimate of what type of discard activity was occurring. Maybe increase the response and get better estimates. I'm not sure if you guys have tried that, randomized response. Thanks.

DR. NESSLAGE: Frank, do you know?

MR. HELIES: The discard logbook is sent to a 20 percent stratified random sample of active permit holders, and I guess the goal is to capture the entire fishery every five years. The council - - Maybe we don't think that's enough. Maybe we should -- Maybe the council wants to explore 100 percent, but I am not sure if Kevin McCarthy is on the line here, and he would be able to answer that directly. I'm sorry, Chair.

DR. DUMAS: Right. Thanks. I'm talking about, of the sample that you collect -- You collect whatever sample size you collect, but, of that sample size, some of the fishermen report what they're really doing, the truth, and some are told not to. Basically, essentially, each fisherman flips a coin, and you either report what you're actually doing or you report something else, sort of some other answer, and so, by doing that, you can hide the identity of the fishermen, but yet you can analyze the data and get an estimate of what the true response is, on average, which I guess would be what we're looking for in this case. It's a part of survey research methodology, and it's called randomized response, and so, if you like Google "survey methods randomized response", it will probably pop up, and that might be something to look at at some point. Thanks.

DR. NESSLAGE: Great. Thank you. Is this to that point, Dave Gloeckner?

DR. GLOECKNER: I guess it could be. That would probably work, as long as not everybody is reporting a lie, right?

DR. DUMAS: Right, but you could --

DR. GLOECKNER: Given what we've seen in the logbook, basically everything is trending towards zero, and so it doesn't matter who you select. They're all starting to trend towards zero. I mean, this is something that we'll review when -- We're in the middle of hiring survey statisticians to go back and take a look at everything we're doing, and this will be part of that, but that's also going to be part of looking at the observer programs and looking at the discard reporting and looking at the logbooks and looking at what other methods we can use to try to improve that data, whether that's electronic monitoring or using cameras or whatever, and so there's going to be a lot of research that we're going to have to do over the next few years to even understand what might be possible, but the randomized results might be something we look at.

DR. NESSLAGE: Great. Thanks. Did you have another point?

DR. GLOECKNER: Only that I have to leave this at 9:00, and so, if somebody wants to ask me a question, you better make it now.

DR. NESSLAGE: Well, we'll see if someone has a directed question. Erik, is it to that point?

DR. WILLIAMS: No, and Dave covered it, and so thanks, Dave.

DR. NESSLAGE: Okay. Great. Thanks. Let's go to Jennifer.

DR. SWEENEY-TOOKES: Thanks, Genny. A couple of thoughts. First, I wanted to respond to this discussion and the idea that Chris brought up of the random sampling, and, I think, on one hand, it makes a lot of sense, and we tend to think that will give us more accurate data, but I wanted to echo what we were just hearing, that we will likely see an increase in that reporting of no discards if it's already increasing now, because they're talking.

Fishermen talk, and, at least looking at fishers that we worked with in the Virgin Islands, once social networks start to emphasize that data equals more regulations will be coming, then there was an increase in people who started to report very similar data, to try to head off what they

thought would be increasing regulations, and so, when we brought up, earlier, the idea of video monitoring, that might be the direction to get the most accurate data in the future.

I also wanted to mention my original thought, when I raised my hand originally, was that, if we already know that it's not feasible to get people on these boats, with the small size of the boats, which makes perfect sense, and the video monitoring isn't happening now, is there a way to bring in other sets of data, beyond just bycatch?

Is there a way to think about maybe bycatch reduction devices and compliance rates, and this is something that I've been thinking about this last year with Tracy Yandle, but, if we know that compliance rates are really high, and that there's no discards, then perhaps that's slightly more valid data than knowing the compliance rates are very low and there is no discards, and so it's still imperfect, but I wonder if we could use data that's outside of what we're looking at right now to help us better understand the entire issue. I am just going to brain-dump that on you all. Thank you.

DR. NESSLAGE: Excellent point. Frank, do you have any direct response, or we'll just include that in our comments, or Dave, if he's still here?

DR. GLOECKNER: I don't think I have any direct response, other than we're going to be doing some hard looks at all of our data collections and trying to use whatever data we have available to us to make sense of the reporting. In general, logbook reporting compliance is not that great, and so there's that to consider, and we need to figure out how to make the compliance a little bit better before we can actually say the data is any good.

DR. SWEENEY-TOOKES: You have your work cut out for you, don't you? It's tough.

DR. GLOECKNER: It is.

DR. NESSLAGE: Indeed. Thank you. Wilson, go ahead.

DR. LANEY: Real quickly, Madam Chair, while Dave is still hopefully on the line, it seems to me that one area into which we could look is trying to come up with some incentive for the fishermen to accurately report their data. I mean, I don't have any brilliant ideas about how to do that, and clearly I think the perception that Jenny mentioned is true for a lot of areas, in that the fishermen have the perception that, the more data they provide, the more highly regulated they will get, and maybe some outreach, along the lines of trying to convince them that, the more data they provide, the better the likelihood that their fisheries will remain sustainable would be one approach, but, if we could come up with some sort of an incentive, like a financial incentive for taking on video camera monitoring on your vessel, maybe that's something that would work, and I don't know, and I just throw that out there for discussion.

DR. NESSLAGE: Absolutely. Erik, is it to that point?

DR. WILLIAMS: Yes, I guess it is. It's just a research suggestion, and you guys can discuss this as well, but, on the west coast, and not the North Pacific, but the west coast, they don't have steady observer programs either for some of their fisheries, and what they rely on was like a once every



five years in-depth study, and that might be the way we can go, because you can get discard rates that way, and then you can apply the discard rates to catch rates.

The way that that could be enforced is through video, and you just basically allow an exempted fishing permit of some sort, where they have to bring everything they catch back to the dock, and, that way, we get measurements and everything, and all of that sort of good stuff, and so that's just one idea.

DR. NESSLAGE: That is good. All right. Thank you. Dave, go ahead.

DR. GLOECKNER: I mean, that's all I was going to say, is full-retention trips on some of these vessels might be the way to go to get better indications of what they're actually catching. Then we are also looking at other ways to look at the compliance rates, comparing trip tickets to logbooks, comparing the observer records to the logbooks, and those are things that are in progress right now, making those links, but a lot of it is going to take some changes to reporting, including electronic reporting, to make sure that we can accurately link all of these records together, so we get a better idea of who is not telling the truth.

DR. NESSLAGE: Fabulous. Thank you. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. This sounds like a topic that would be, if it hasn't already been done, worthy of sort of a national stock assessment workshop, and perhaps the experiences among the centers and regions is already well known, and so that doesn't make it necessary, but it seems that everybody has been having growing pains on this, and it would be worthwhile, I think, to share that, if that hasn't already happened, so that each of the respective regions and centers might be able to take advantage of others experiences, and I am just wondering whether that has been addressed at a national level, bringing in all the regions and centers, and, if not, might we suggest that it be done? Thank you.

DR. NESSLAGE: Good suggestion. Does anyone know if there has already been such a meeting of the minds? All right. Well, we can make a note of that. Thank you, Fred. Go ahead, Chris.

DR. DUMAS: Thanks, Genny. In the world of economics and policy analysis, there is a strand of literature called incentive mechanism design, and the whole purpose of that strand of literature is designing regulations systems that get regulated individuals to reveal information that is secret, that they have secret to them or that they would want to keep secret, and that they're not required to reveal, but, through choices they make within the regulatory system, the choices that they make reveal the hidden information.

We might want to look at the literature from incentive mechanism design in the economics and policy literature to get some guidance as to how, for example, we could look at combinations of regulations, or look at combinations of data that come from the different data streams that we have, to think about how to set up a program that, to Wilson's point, would provide incentives to the fishermen to truthfully report, or, through decisions they make within the regulatory program, it reveals the information that is hidden, for example how much they are discarding. That's incentive mechanism design. Thanks.

DR. NESSLAGE: Excellent. Thank you. I have a question, but, Chip, go ahead, especially if it's to that point.

DR. COLLIER: It was to the previous point and looking at what the topics have been at the national SSC, and it did not appear that there was information on standard bycatch reporting, or bycatch reporting, listed as a topic. It could have been one of the sub-topics, and I was just looking at the major topics for the group.

DR. NESSLAGE: Gotcha. Thank you. This is a nitpicky question, but, throughout the report, there's a sentence that is repeated that just kind of made me scratch my head, and it goes: The ecological effects of bycatch mortality are the same as fishing mortality from directed fishing efforts.

The next sentence goes on to basically say they can both lead to a reduction in stock biomass to an unsustainable level, which I agree with, but I am not sure that that's a true statement, especially if it's, for instance, regulatory discards, where you are impacting let's say smaller or older, larger, fish disproportionately. I am wondering what was the thought behind that statement, and it's repeated several times.

MR. HELIES: Thanks for that question. I would have to go back and think about that a little bit. That might be some canned language that I pulled from a previous BPA, and I think maybe we were thinking that, regardless of how the fish dies, the impacts on the ecosystem are going to be the same, and maybe it's not stated so well.

DR. NESSLAGE: I think you want to be careful about how you say that, just because, depending on what proportion of the population is impacted -- If a certain portion of the population is impacted more strongly by bycatch, the impacts could be different on the population, and I'm a stock assessment person, and so that just kind of got me thinking that that's not exactly how it works, and so perhaps massaging that wording a little. I see where you're going, and you're trying to highlight that discard bycatch mortality can be just as impactful, but I don't think it's impactful, necessarily, in the same way. That's a bold statement, and so you might want to reconsider that. That's just a -- Sorry to be nitpicky. Thanks. Let's go to Wilson.

DR. LANEY: I 100 percent agree with you, Madam Chair, on that point. I mean, I think you're absolutely correct that that wording definitely needs to be tweaked, because the bycatch impacts, while, yes, there are ecological impacts from bycatch, they can be totally different than the impact of the fishery itself, and I would only point to the South Atlantic shrimp fishery as a good example of that, where the current best available science indicates that the ratio of bycatch to retained shrimp is about four or five to one, and the bycatch consists largely of finfish and other crustaceans, and so you're impacting populations that are not necessarily related to the one that you are targeting for your catch, and so I totally agree with you, 100 percent.

DR. NESSLAGE: Thank you, Wilson. Are there other questions for -- If there is a pause here, perhaps I will take a moment, if we could, to solicit public comment, while SSC folks are thinking, and we can maybe transition into our discussions. Is there anyone from the public who has comment on bycatch reporting? Just raise your hand, and the little turkey turns red, and we will see you. No hands. Okay. SSC members, any other direct questions at the moment, or should we transition to discussing our consensus statements? I am not seeing any hands. Thank you, Frank,

for your presentation. I think, Judd, if we could maybe get the consensus statements file up on the board, that would be great. You have frantically notes, I see.

DR. CURTIS: Yes, I have, and I hopefully captured most of the discussion and the points that were talked about, but, if there's anything that I missed, please feel free to comment, and I will add it in.

DR. NESSLAGE: All right. Let's go quickly down the list here. You've got there's been substantial challenges in trying to enforce logbook data, and zero discards are frequently reported, and that's not likely reflective. How might we be able to adjust the sampling protocols, or address enforcement, and Chris mentioned randomized response, maybe an incentive mechanism. Then look in the policy literature, and discard reporting, which currently at 20 percent.

Let's see. Observer coverage is extremely limited for commercial vessels, due to vessel size, et cetera, and that could create potential bias. Discard bycatch is primarily self-reported, and observer presence can also bias the data. Indeed. There was a research program, and we need to follow-up. Alternative ancillary data, perhaps, that could be used to inform compliance rates, and fishermen perception could be leveraged to increase compliance. I am going to go through my list. If folks see that their comment isn't up here, or suggestion isn't up here, raise your hand. Jeff, go right ahead.

DR. BUCKEL: This wasn't one of my comments, but I thought that Erik Williams' comment about the bycatch reporting in our region, that both MRIP and the commercial is all self-reporting, and that's a problem, right, and it would be nice to -- I didn't see that language in this SBRM review document. If I am reading through it, I would think, wow, the South Atlantic has got it all together, and it's got all these different programs, and things look really good, in terms of capturing the bycatch data, when in fact we do have these issues, and not only capture it in our report, but that we recommend that it be documented in the SBRM review for our region. Thanks.

DR. NESSLAGE: Thank you. I think we definitely need to start off with a general statement, and we can wordsmith it later, but something along the lines of, given the importance, the high percentage and growing importance, of stocks and stock assessments that are primarily discards in the South Atlantic, these bycatch reporting characterization issues should be a major priority for the council, unless you all disagree. Fred, go ahead.

DR. SERCHUK: I was just going to respond to another item here on the list, Chair, and that's the one that I brought up, which presently says that observer presence can also bias reporting, and I would change the second part of that to lower discards may be reported on trips when an observer is present, if the presence of the observer results in a change in fishing practices by a vessel. That seems to clarify it in my own mind, and I hope it's clear to everyone else as well.

DR. NESSLAGE: Yes. Thank you. Great. If you could, at the very beginning, I think we need a -- I don't know, and maybe you all disagree, and I'm being pushy here, but I think we need to make a bold statement about the importance of quantifying bycatch in the South Atlantic region is high and growing. We can wordsmith, but -- There are a number of concerns that this review has raised, and perhaps that we would encourage -- Given the importance of -- My brain is starting to go at the end of this meeting. Given the importance of accurately characterizing discard -- The magnitude of discards for many of our stocks, this should be a council high priority. I know it's -

- I am sure that John is going to get on and say it is, but it can't hurt to reiterate. John, go right ahead.

DR. WALTER: Unfortunately, Chair, I am going to say that it might not be the priority and that it might be elevated, and need to be, and I am looking through the adopted research plan for 2021 to 2025, which actually is something that is used to draft MARFIN RFPs, and the Center uses it to guide our research, and it's not elevated.

There is one-sentence on bycatch and discards, and then there is one sentence on improve estimates of commercial discards, and so I think, if there's a place to elevate it, perhaps it's in there, and maybe elevated above some of the other research needs, if indeed that is a priority, and I would agree that, given many of our assessments, that discard mortality is the number one source of fishing mortality right now, either recreational and sometimes commercial, and it seems like that might be one of the more influential things driving our assessment, and is a clear and present data need, and so --

DR. NESSLAGE: Could you repeat the name of the priorities document?

DR. WALTER: This is the South Atlantic research and monitoring prioritization plan, and it's the council's plan.

DR. NESSLAGE: Research and monitoring --

DR. WALTER: It was adopted by the council, and it has a lot of really good, excellent, research priorities, but not all are going to be -- They do have to be ranked.

DR. NESSLAGE: Yes, and so I don't know how the SSC feels, but, given the number of assessments we have seen come across our plate recently that are relying heavily on bycatch and discard characterization, I would suggest that we move that bullet up to the first one and bold that statement and say we recommend elevating bycatch, improvements in bycatch reporting, in the South Atlantic research and monitoring plan, but this is me being pushy. SSC members, do you agree? There's a lot of research that can be done, and a lot of improvements, and this seems, to me, like a very high priority, but I would love to hear -- If you disagree, please, this is the time to speak up. Wilson, go ahead.

DR. LANEY: I totally agree with you, Madam Chair, and we might want to point out what John -- At least what I thought I heard John just say, which is that discard mortality, for many of our fisheries, is the number-one source of mortality, and I think, again, mostly based on my ASMFC experience, and less so on the council FMPs, but, in some cases, I think discards probably exceed the legally-landed removals, and is that not correct, John? Would you agree with that statement?

DR. NESSLAGE: Go ahead, John, if you're still on.

DR. WALTER: I am. Wilson, I can't speak definitively across-the-board, but, from what I looked at, at least the fishing mortality rates are often higher for the discard component, but I think you're probably -- In general, for some of the species, the discards is certainly quite high. It's higher than we would want, as well, and so I think that's probably a good statement, because discards are not achieving yield.

DR. NESSLAGE: Great. Judd, do you mind just a little wordsmithing here? I'm not sure -- That's kind of where we're waffling here, is it's the number-one source of mortality across the South Atlantic, but perhaps we could say simply the SSC recommends that bycatch -- Improvements in bycatch reporting, because that's what this report is about, right, be elevated in the South Atlantic research and monitoring plan to a high priority. We can wordsmith, but I just want to see if everyone agrees with that. Frank, is it to this point?

MR. HELIES: Yes. Thank you. The question that Wilson had about the discard-to-landings ratios, we have a little bit of that information in the review, Wilson, particularly for the recreational sector. You can say what you will about the estimates there, but it's pretty fisheries-specific. For instance, the dolphin wahoo fishery, the discard-to-landings ratio is pretty low, but then, if you look at snapper grouper, it's going to be probably higher, because it's a multispecies fishery, but there is some information within the review that you can peruse. Thanks.

DR. NESSLAGE: Great. Thank you. Anne, thanks for your patience. Go ahead.

MS. LANGE: I just wanted to say that I agree that this should be included as a priority from the SSC.

DR. NESSLAGE: Thank you. Does anyone disagree? I would love to hear, and that's okay. Feel free to disagree with me. Chris, go right ahead.

DR. DUMAS: I was just going to say that I agree. Thanks.

DR. NESSLAGE: All right. Thanks. Dustin.

MR. ADDIS: This is just a wording thing, but it's the South Atlantic Research and Monitoring Priorization Plan.

DR. NESSLAGE: Thank you. That makes sense. That's where they are prioritizing the research and monitoring. Well named. Thank you for catching that. Anything else?

MR. ADDIS: Just that I agree. I agree with making this the priority.

DR. NESSLAGE: Excellent. Thank you. I have this general feeling that, given that we go through this every five years, in the future, it might be really helpful, and I don't know if this is possible, but maybe if council staff -- As we go along with each of our assessments, if we could compile our list of bycatch recommendations that would improve the assessment and reduce uncertainty and that we keep -- I know we've had several in the last few years, and it would be really nice if we had those compiled, and then we could compare with any improvements or changes in the SBRMs that have occurred in that five-year period, and that would help the council to understand the linkage between any improvements you all are making, or the Center, whoever is making, in the SBRMs with improvements that might show up in our stock assessments and where the data gaps, approach gaps, problems, are still outstanding, and so that's just a long-term recommendation for the next five-year review.

MR. HELIES: Thanks for that. I like that idea, and I think, since this is the initial go at it, and this is the first review, we can use this first iteration as the baseline, and then we could potentially add in additional sections within the review that show any changes we may or may not have made to the FMP. Thanks.

DR. NESSLAGE: While you're still -- I did have a question that is kind of detailed from the report, and so I forgot about this, and this is probably a naïve question, but, in Table 1.3.2, they talk about current observer coverage in the Southeast region fisheries, and there's a breakdown for CMP recreational, and they say that observers are placed on 9.5 percent of headboats out of North Carolina, 1.4 out of South Carolina, 3.5 out of Georgia, 1.5 out of Florida, and 2 percent out of west Florida. I read that all wrong. It's 1.4 out of South Carolina, 3.5 out of Georgia, 1.5 out of east Florida and 2 percent out of west Florida. I'm just wondering, is that in proportion to the size of the headboat fleets in each of those states? It seems like an odd breakdown, just given -- I don't know, and I guess my question is how do they come up with those percentages?

MR. HELIES: That's a very good question, and, during the review, we had some questions about those percentages as well, and so, before this gets finalized, I am going to try to track down some more information on the headboat observer coverage for you.

DR. NESSLAGE: Thank you. I feel like it's worth -- If you don't know off the top of your head, it's worthwhile mentioning in our report that -- Unless someone on the SSC, or on the call, knows why those proportions are the way they are, it would be good to describe how those are determined and justified. I don't know, Judd, if you would mind making a note on our -- Sorry to make you run back and forth between documents.

MR. HELIES: I will make sure that we better explain that in the final version of the review.

DR. NESSLAGE: It might be in relation to the size of the fleets, but my perception of the relative size of the fleets among the states may be off.

DR. CURTIS: Does that cover it, Genny, or did you want to dictate some other language there?

DR. NESSLAGE: In the CMP -- Well, I guess it's in multiple places, but observer coverage for headboats, in particular, was the one that struck me as odd, but maybe Jennifer has something to this point, or a new point, but go ahead.

DR. SWEENEY-TOOKES: It was adding on a question. Thanks, Genny. Since we're looking at this chart right now, and this could just be that I don't know how to read this, but some of these say that, yes, there are observer coverage, and then, when it's current or recent levels of coverage, there is nothing, and I don't understand what's going on, or have we decided not to have coverage, and I didn't know if someone could explain that. Like, under recreational charter, it says observer coverage, yes or no, and then current or recent, none, and that seems like a particular model of fishing that is very ripe for lots of discards and people deciding not to talk about it.

MR. HELIES: Thanks. We have this column here of observer coverage, if that is a potential option within the fishery, and then our current, or recent, would be whether or not it's actually being utilized, and so, currently, we are not putting observers on recreational charter vessels, but that is an option for the agency, if it was viable.

DR. SWEENEY-TOOKES: Thank you for explaining that. Then why is it not an option for longline snapper grouper or golden crab?

MR. HELIES: That's something that the council can explore, and so it wasn't put in place during the -- Golden crab is a very small fishery, and, if I can remember correctly, there is very low bycatch, mostly isopods, and so I am thinking the agency decided the bang for the buck probably wasn't appropriate to put observers on golden crab vessels at the time, but these are -- The snapper grouper longline would be golden tilefish vessels, and so that's something the council can discuss, if they feel that we should be putting observers on. That's one of the things that we need to consider in the review, is whether or not some of these reporting methods are feasible, and putting observers, for instance, on golden crab vessels may not be feasible at this time.

DR. SWEENEY-TOOKES: Got it. Thank you. Thank you for that clarifying that.

DR. NESSLAGE: All right. Thank you. Let's see. Could we maybe go back to the consensus statements one more time? I think the only thing missing was my nitpicky thing about they may want to reconsider how the impacts on the ecosystem of discards is described in the report.

MR. HELIES: That's not nitpicky at all. That's actually the kind of feedback that I was looking for, and so you don't need to apologize for that.

DR. NESSLAGE: You're being so good. Thank you. Sometimes people take offense, and it's not meant to be offered that way, and so thank you. While Judd is working on the wording, let's hear from Chris.

DR. DUMAS: Is there a review article somewhere about all the instances in which more information from fishermen has resulted in less regulation, or allowed greater catch, or more flexibility, something like that? There must be instances where that occurred, and has someone done a review article on that? Maybe folks more familiar with the fisheries literature would know. If not, then that's something that should be on the list. Thanks. Then we could share that with fishermen, and we would have some examples, lots of examples, to give them. Thanks.

DR. NESSLAGE: I am not an expert in discards or reporting. Does someone more familiar with that literature have any feedback?

DR. DUMAS: I was thinking not just specifically to discards, but just in general and how more reporting of data by fishermen has led to a reduction in regulations or has led to more catch being allowed, something like that, and so it's a question. Does anyone know of such a review article? If so, I would like to read it. I would like to be aware. If not, then maybe we should put that on our list of things to do. Thanks.

DR. NESSLAGE: Maybe John can address that. Is that why you're raising your hand?

DR. WALTER: I think it's a brilliant idea, Chris, and I really like it. I don't, off the top of my head, know of that one, but, presumably, the way that scientific uncertainty plays into it, when we have uncertainty in what the discard mortality rate is, and that's quantified well enough, once we can nail that down, then that tightens the uncertainty and allows you to fish closer to the OFL, and

so, presumably, the reward system is in place in the ABC Control Rule for that. Whether we could demonstrate it is a pretty neat research project, but you have piqued my interest, because I like the way you're going on the incentivization of these, which I think is really key to trying to manage really the human element of fisheries.

DR. DUMAS: John, exactly what -- I had that same thought in my mind. If you reduce the uncertainty envelope, then you can, in theory, fish closer to the limit, and that could allow more catch, and so I think, in theory, a lot of us have that in our minds, wondering are there are any concrete examples that we could point to and show fishermen where something like that has actually happened in U.S. fisheries or overseas fisheries.

DR. NESSLAGE: Great. Thanks. Wilson, go right ahead.

DR. LANEY: I don't know of any such study, Madam Chair, but just a minor -- Well, in addition to what Chris had said, and I think the way he posed it was can we document a case where additional provision of data has resulted in less regulation on a fishery, and I would also ask if we could document a case where better data has resulted in a more sustainable fishery, which is a slightly different take on it than less regulated, and I'm not sure that, the more data that fishermen provide, the less regulated they get, but I think the management entities can better regulate the fishery, the more and more accurate data they have, and so maybe the way to couch it is in terms of fisheries sustainability, although I agree with both John and Chris that, if you are able to reduce the uncertainty, by having better data, then that certainly should enable fishing closer to the line, so to speak.

DR. NESSLAGE: Well put. Thank you, Wilson. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. I think, as everyone knows, there is a tremendous amount of literature on stakeholder involvement in the fisheries management process, and I think most of them would point out that increased stakeholder involvement, and bringing in stakeholders' views and stakeholders' experiences has benefited the fishery management process. Whether it is taken to the level of discards, I don't know, but the fact is that I think, by and large, the literature that I am familiar with welcomes that input, welcomes that knowledge, on-the-water knowledge, and, to the extent that that knowledge can be incorporated into management, it has improved the management process.

I think we're looking at a very fine issue here, but, if you zoom out a bit, you would certainly welcome the steps that have been taken to move away from a pure science approach, or include stakeholders in science, and that, quite frankly, is what the Citizen Science Program is about, to a large degree, to get a better understanding from the resource users about issues or problems or views, so that those can be considered in either the design of the research programs or can improve assessments or improve the management process.

I think we have lots of examples of that across-the-board, and maybe not on discards, but I'm not that familiar with it, but I certainly think that it's an issue that can be explored, because I think we could learn from it. Thank you.

DR. NESSLAGE: That's a good point, and maybe we could add, to that sentence, something about increased stakeholder involvement, through citizen science, possibly, may help -- I don't



know how you want to phrase it, Fred, but may improve data collection and management, something along those lines. We'll get the thought down, and we can massage it later.

DR. SERCHUK: I would say not only “may”, Chair, but I would say “should”.

DR. NESSLAGE: Should. Nice. All right. While Judd is working on that, let's go to Jennifer.

DR. SWEENEY-TOOKES: I just had a really quick tag response to Wilson, that I agree with you about the reason that we want to improve our science, but we did find that “sustainability” was a real trigger word for a lot of fishers in Georgia, and not necessarily one that's going to incentivize their involvement. It was something that they had a lot to say about, and so we might want to think about that wording carefully, but I'm sure we would before we did anything like that.

DR. NESSLAGE: Excellent. That's good to know.

DR. SWEENEY-TOOKES: Yes, and we don't want to say “sustainable”.

DR. NESSLAGE: Okay. Are there other comments or feedback on the consensus statements for our report to the council regarding standard bycatch reporting? Wilson.

DR. LANEY: Jennifer, is “viable” a more acceptable term? I have a recollection of having read that paper with all the words that we shouldn't be using in conservation circles, and I'm guessing that may be where that came from, but what are some acceptable substitutes?

DR. SWEENEY-TOOKES: That's a great question, Wilson, and this didn't actually come from a paper, and I think I know what you're talking about, but this was from doing interviews, and Tracy Yandle and I have done a lot of work in Georgia with fishers, but what we found was that, when we would talk to them about even marketing their seafood as being sustainable, there was always a knee-jerk reaction that sustainable is bad, and so we would have to explain that, well, but you are fishing sustainably, if you're fishing for shrimp in Georgia, and so that's a great question.

I think the way that they were phrasing it, down in that bottom section, is more information and more involvement leads to better science that also incorporates your perspectives, and it helps all of us make catch limits that will support your economic viability, and so you might be right. “Viability” might be a good way to phrase that. It's just something that we should know that we need to be careful with that language, because it does hit people oddly. Thank you. Did that answer your question, Wilson?

DR. LANEY: Yes, it did. Thank you.

DR. SWEENEY-TOOKES: Thank you.

DR. LANEY: Maybe that's a project that could be sort of tangential to our discussion of how to address the whole bycatch and discard issue, is to ask you all on the SEP side of the SSC to come up with a good lexicon of terminology that we could use that would be -- That would have positive outcomes, as opposed to negative outcomes.

DR. SWEENEY-TOOKES: I love that idea. I'm not sure we'll be able to make a vocabulary list, but I think, for myself, I'm always happy to look over any phrasing and just point out anything that I know of that might be a potential landmine.

DR. NESSLAGE: Excellent. All right. Chris, go ahead.

DR. DUMAS: Two points. On the last exchange between Wilson and Jennifer, we also might want to consider "fighting" for our terminology, and "fighting" for our lexicon. If we think sustainability is a good thing, then we need to fight to make that a positive trigger word, rather than a negative trigger word, through our education and outreach efforts, so that we sort of take control over our own rhetoric and our own terminology. That's just my thoughts on that, and you all might want to try that, and I know that's hard, but you might want to try.

My second point is, getting back to examples where additional information from fishermen has resulted in situations where greater catch was allowed, or regulations were reduced, something like that, what I was thinking was fisheries that have shown some evidence of recovering, like lobsters, sea scallops, maybe striped bass on the Roanoke River in North Carolina, and so maybe some fisheries where fisheries management maybe has shown some success, and some populations are coming back, in some instances.

In those cases, was there information from fishermen that helped those populations recover, and what ways did information from fishermen help those species, or populations, recover, so that there could be larger catches, and so examples like that, and trying to think of examples like that, might be useful. Thanks.

DR. NESSLAGE: Thank you. I wonder if these are sub-bullets under the incentivization bullet, Judd, if that section can be kind of --

DR. CURTIS: Yes, and I can adjust that here, so it's more reflective of that. I am just trying to jot everything down, all the ideas.

DR. NESSLAGE: Yes. It's appreciated. Okay. SBRMs, any last thoughts? I think we highlighted some concerns and caught a few things, and hopefully, Frank, you will find this useful and helpful. Anything else from SSC members? Wilson, go ahead.

DR. LANEY: Madam Chair, just to ask -- If we have, well, further thoughts on this, I guess we'll have a chance to suggest those as we are reviewing the draft report.

DR. NESSLAGE: I'm sorry. Could you repeat that?

DR. LANEY: The question was whether or not, if we have further thoughts on this -- For example, if we were to find, for example, a study, like the one that Chris is asking about, whether we could go ahead and provide that information for insertion into our report as we are reviewing the draft.

DR. NESSLAGE: Yes. Absolutely. Sure. To support any of the consensus statements, you're always welcome to provide additional information, and it helps the council, the council staff, whoever is reading our report. Please do. All right. Thank you, all, for -- Fred Serchuk, go ahead.

DR. SERCHUK: Thank you, Chair. I don't know whether we took public comment on this issue, but I think it might be appropriate, given some of our recommendations, if there is any public comment, that perhaps you could seek that out. Thank you.

DR. NESSLAGE: I did, but I can open the floor again. If there's any public comment, raise your hand. People keep missing it. Rusty. You're going to be very surprised, Rusty, when you read the minutes and you find that you actually did provide public comment on gag, but go ahead. Any comment on SBRMs? Rusty.

MR. HUDSON: This is interesting, that non-compliance, and is this just charter boats, just for my clarity?

DR. NESSLAGE: No, and it's all, charter, headboat, recreational/private.

MR. HUDSON: If they're reporting goose eggs, that's pretty said, because everybody knows that we've got minimum sizes, and we have closed seasons, and on and on, and I've been trying to get at both the charter boat and the private recreational, and some kind of census, something that can be substantiated, just on the catch, as well as discards, would be great. This just seems like a box canyon until you get to that point, and is golden tile still in the queue for later on also, Genny?

DR. NESSLAGE: You bet. It's two items from now, and so we'll go gray triggerfish next and then tilefish.

MR. HUDSON: Fantastic. Thank you.

DR. NESSLAGE: Thank you. Any other members of the public? All right. Any other last comments from the SSC? Chip, go ahead.

DR. COLLIER: I did want to clarify a bit, and, Frank, you can correct me if I'm wrong, but I think the logbook reports that was being referred to going down to zero was commercial logbooks. Is that correct, Frank?

MR. HELIES: Yes.

DR. NESSLAGE: Thank you.

MR. HUDSON: So that is commercial also has that problem?

DR. COLLIER: That is correct.

MR. HUDSON: We're just not having fun at all today. Thanks.

DR. NESSLAGE: Well said. All right, folks. I think we're going to wrap up this agenda item, and then I would like to take a ten-minute break, if we could, and come back at 10:00. If Kathleen is ready, we will start with gray triggerfish. Does that sound good?

MS. HOWINGTON: I'm all good.

DR. NESSLAGE: All right. Good. We'll see you back at 10:00. Thanks.

(Whereupon, a recess was taken.)

DR. NESSLAGE: Our next item of business is Agenda Item 5, SEDAR 82, Gray Triggerfish Research Track Planning. We are looking at Attachments 5a and 5b, and Kathleen is going to walk us through this. Go right ahead, Kathleen.

### **SEDAR: UPCOMING ASSESSMENTS - SEDAR 82 GRAY TRIGGERFISH**

MS. HOWINGTON: All right, everyone. Like Genny just said, this is a research track assessment, and so, to give you a little bit of background on how these documents were developed, starting in March of this year, the planning team has been meeting, and the planning team consists of Nikolai Klibansky, Kyle Shertzer, Genny Nessler, Chip Collier, and Judd Curtis. They have gotten together, and they have developed the terms of reference for this research track assessment. They have also developed a draft schedule, and then we have also developed a list of potential participants for the council to appoint.

The next few things we're going to go through are, of course, the terms of reference, and we'll be doing the same thing that we did when we went through the 68 terms of reference of just one-by-one, making certain that everyone can read it and everything is good with the wording, and, if you have any additions, or any deletions, please just mention it now.

Then, afterwards, we'll go through the schedule. If you have any concerns about number of webinars, please let us know, and then the final thing will be that I will be requesting SSC members to participate as ADT members as well as chairs, and so please keep that in the back of your mind. At the very end, I will be asking for volunteers. Please, please, please raise your hand if you would be willing.

For right now -- The last thing that I do want to mention, before we start the terms of reference, is that there will be no stock ID portion of this assessment, and the council requested that we just look at the South Atlantic region for gray triggerfish, and the planning team actually did get together and do a literature search for stock ID, to see if maybe we needed to go back and request it, and we ultimately decided that we did not, and so this will just be your normal data assessment and review portions.

Now, to the terms of reference, like I said, I'll just start with Number 1, and we'll move down. Genny, please just let me know if I need to stop. Let's just do Number 1 and Number 2. Does anybody have any questions, edits, or deletions?

DR. NESSLAGE: Just as a little bit of background, does everyone remember what some of the major issues were with gray triggerfish in the past? Is it worthwhile to --

DR. BUBLEY: I've got something to add to this as well. In 2b, where you're talking about -- I'm not sure this covers everything, and it says to evaluate the age data and methodology across ageing facilities and discuss validation techniques. I think there's a serious concern whether the ageing techniques are even appropriate.

I haven't seen the results of the validation, to see what's going on, but I know where are a lot of concerns, here and in the Gulf, about consistent ages utilizing the spines, and I don't see much mention. It makes the assumption that the age data are appropriate, moving forward, yet, we haven't seen the results for the validation study, and we don't know that yet, and so that could bring up some other issues late on the assessment, if there are problems with the ages.

DR. NESSLAGE: Can you provide some alternative wording for Kathleen? Help her out here.

DR. BUBLEY: I mean, I don't know if it goes into -- Well, I would say evaluate the ageing structure and its ability to provide reliable ages, and I don't know, and the rest of it goes along. As long as that is examined and felt to be appropriate, then the rest of that is there. I guess it goes into some of maybe the assessment terms of reference too, because, if the ageing structure is not deemed to be reliable, then that will drastically change the structure of the assessment model as well.

DR. NESSLAGE: So please mention that when we get to the assessment portion, so we can add some wording to address your concerns.

DR. BUBLEY: Thank you.

DR. NESSLAGE: Thank you, Wally. Let's go to Scott.

DR. CROSSON: Thank you. In answer to your earlier question, I remember that gray triggerfish failed when it came before us a few years ago, and I do think it was something to do with ageing, but I would appreciate having my memory refreshed, because it's extremely important that this particular species, I think, gets reviewed and that we get a number that we can then rely on to develop an ABC, because, as other species have been in decline, I think there's probably a lot of pressure on gray triggerfish.

DR. NESSLAGE: Is there some specific wording that you think, or you just think this is a --

DR. CROSSON: I'm sorry, and I don't recollect why it was that it failed last time. Is there anybody that could give a quick summary of the big issues?

DR. NESSLAGE: My apologies. Chip, go ahead.

DR. COLLIER: Kathleen and Erik can correct or add anything that they want to to this, but there are a couple of issues that were identified for gray triggerfish, from what I remember. One of them was the ageing issue, potential issues with using spines versus otoliths and whether or not it's a valid technique to estimate age.

There was also some concern with the first data point used in the fishery-independent index. It was pretty influential in the results of the assessment, and another issue that was coming up for the assessment was that it was being done at the same time as red snapper. They were being done together. If you remember back a few years ago, SEDARs used to have multiple stocks done at the same time, and red snapper got a lot more of the attention than gray triggerfish, and that was part of the reviewers' comments as well.

DR. CROSSON: Thanks, Chip.

DR. NESSLAGE: Thank you, both. Wilson, go ahead.

DR. LANEY: Thank you, Madam Chair. Erik may want to comment on this, but I seem to recall that Beaufort -- That the Beaufort Lab did a study to validate triggerfish ageing structures, but I can't remember whether it was the otoliths or the spines or both, but I am pretty sure that the lab held fish and tried to validate the growth increments, at least in the laboratory.

DR. NESSLAGE: Let's hear from Erik.

DR. WILLIAMS: Wilson is correct, and a validation study was -- It's not quite complete. The fish have been reared, and the ageing structures have been removed. What is still being done is analyzing those ageing structures, and so we looked at otoliths, spines, and vertebrae, and so across-the-board. I can say I think that the preliminary results are favorable, suggesting that our ages might not be too far off with the spines, since the spines are reflecting growth appropriately, but it's not finalized yet, and so that's just sort of a preliminary comment, and we're still waiting for Jennifer and her crew to sort of wrap it all up and analyze all the samples.

DR. NESSLAGE: Great. Does that answer your question?

DR. LANEY: Yes, and I just wanted Erik to verify that my memory was correct, and not faulty, and it seems like it was correct, in this case, and so I will definitely look forward to -- I think we all will look forward to the results of that study, for sure.

DR. NESSLAGE: Absolutely. All right. Let's go to Wally.

DR. BUBLEY: I was -- I mean, Erik covered that. I just wanted to let Wilson know that, yes, we're aware that that's ongoing on the moment, but, as Erik mentioned, we haven't seen any results from it yet.

DR. NESSLAGE: Great. Thanks. All right. Anything else on 1 and 2? Go ahead, Kathleen.

MS. HOWINGTON: All right. With nothing else for 1 and 2, let's go to 3. Any edits, comments, or deletions? Any hands raised, Genny?

DR. NESSLAGE: No, I am not seeing anything.

MS. HOWINGTON: All right. That's good. Let's go to 4. I can mostly fit all of it on there, and this says to document all methods., for anyone who is wondering.

DR. NESSLAGE: I am not seeing any hands.

MS. HOWINGTON: All right. This is good. Number 5. Okay. Moving right along, Number 6. Number 7.

DR. COLLIER: Kathleen, you might want to slow down a bit and give them a chance to read.

MS. HOWINGTON: Any comments for 6 or 7?

DR. NESSLAGE: I am not seeing any hands raised.

MS. HOWINGTON: All right. Any comments for 8 and 9?

DR. NESSLAGE: Chris.

DR. DUMAS: Thank you. I've got a question about seasons for gray triggerfish. Have there been instances where you're in the season and the season had to be shut down earlier, because you thought you were approaching the ACL? I seem to remember that that was happening for gray triggerfish, and, if that's the case, and I'm not sure where it would fit in these nine bullet points, but could there be information collected on like when and how many times that happened?

I was involved with a project looking at in-season management of fisheries under ACLs, and I think gray triggerfish was one of the species that was an example for that study, and that was something, information, that would be useful, and so just in which years did the fishery have to be shut down before it reached the end of the originally-announced season and sort of what was the season closure date and then what was the date that the fishery was closed, before the original closure date? Thanks.

DR. NESSLAGE: Thanks. To that point, Erik?

DR. WILLIAMS: No, actually, and it was not to that point.

DR. NESSLAGE: Maybe Chip -- I will come back to you. Chip.

DR. COLLIER: In the beginning of each assessment, you will see a document in there that describes the management history, and it includes all the information on when a fishery closed, if the size limit changed, if there were several management regulations that went in place, and so they do have the full list. It's a pretty detailed table, and it might not be all that legible in the PDF format, but you could probably zoom-in and look at it in a little bit more detail, but it is provided in the beginning of each assessment.

DR. NESSLAGE: Great. Thanks, Chip. Is there anything that you think needs adding then, or given that is a standard thing, Chris?

DR. DUMAS: That sounds too. If the information is in there about when a fishery was closed, the date of closure, it was closed early, it was closed before the official end of the season. If those dates are in there, that would be great, and they may be. Thanks.

DR. NESSLAGE: Thank you. All right. Erik, go ahead.

DR. WILLIAMS: Maybe this doesn't need to be changed, but, going back to 4c, it says to evaluate and discuss the adequacy of available data for accurately-characterizing landings and discards by fishery, sector, or gear. Involved in that, after given our most recent discussion about discard estimates and how they seem to be, sort of, unfortunately, eroding a little bit, I wonder if that needs

to be boosted to include specific guidance, perhaps, about looking at other fisheries, maybe even in the Gulf or Mexico or something, to compare discard rates.

I mean, this is getting into the weeds, but I just want to make sure that this is not being evaluated in isolation with just the South Atlantic data, because, really, to look at discarding, you might need to look outside of the region and look at other sort of discard rates.

DR. NESSLAGE: Good suggestion. If they're dramatically different, that might be something to explore in the assessment, alternative rates. Good catch. Anything else, Erik, at the moment?

DR. WILLIAMS: No, that's it. Otherwise, it looks good.

DR. NESSLAGE: All right. Let's hear from Jeff.

DR. BUCKEL: Just to Erik's point, Erik, would it be helpful -- I guess, before we left the region, I was curious on your thoughts about looking at other -- For example, if we're talking about commercial logbooks in the South Atlantic, would it be useful to look other -- Maybe the headboat data in the South Atlantic, to try to find trips that, using the Stephens and McCall approach to find trips that match some commercial trips, in terms of the species composition, and then look at the observer discard rates from those headboat trips, and would that be more fruitful than going to another adjoining region?

DR. WILLIAMS: It could be, and I would say we might even be able to look at -- I can't think, off the top of my head, how well the discard estimates are going back like pre-1992, and looking at times when there was no regulations in place and looking at catch rates, and then, if catch rates now are not higher than they were when there was no regulations in place, I mean, that's a troubling sign there, and so things like that, yes, and, I mean, I think you would want to try and scour all available data on this, to sort of just look at a broad picture of catch rates.

You know when I have just sort of off-the-cuff looked at that, there are some troubling issues. I mean, not to point things out too much, but all one needs to do is look at the catch statistics from red snapper, and you can see -- For instance, if you just do the ratio of discarded to kept fish, in the private boat, it's twenty-three-times. In the commercial, it's 0.05, and so something is amiss.

DR. NESSLAGE: Indeed.

MS. HOWINGTON: Okay, and so do you have a location, or specific wording, that you would want me to add that in?

DR. WILLIAMS: I don't, at this time. I don't know whether it should be a separate d or whether it's part of c, because c just says evaluate discards, landings and discards, and it's just -- I don't know. On one hand, you can assume that the research track is going to thoroughly investigate this, but I don't know if that's guaranteed by the wording of this. That's, I guess, what I'm getting at.

DR. NESSLAGE: Jeff or Erik, do you want to provide a little bit more? It can't hurt to give the folks who are doing this data analysis a little guidance on what we were thinking.



DR. BUCKEL: It could be within that same sentence, and so compare discard rates from other sectors within the South Atlantic.

DR. NESSLAGE: And with analogous fisheries, and is that what you're thinking?

DR. BUCKEL: Yes. Thanks.

DR. NESSLAGE: Thank you.

MS. HOWINGTON: Is everyone comfortable with the analogous fisheries in adjoining regions wording? I just put that together from what I was getting from Erik, and so I want to hear that everyone is okay with that.

DR. NESSLAGE: I am. Does anyone disagree? I am not seeing any waving hands, and so I think you're good.

MS. HOWINGTON: Okay, and so I'm going to scroll back down to the -- I guess we were on 8 and 9. Does anyone have any comments on these or any of the other data workshop terms of reference, before we move on to the assessment process?

DR. NESSLAGE: Jeff.

DR. BUCKEL: I guess this goes back to 1, with the unit stock, and it sounds like you talked about -- You looked at things in terms of Gulf of Mexico versus South Atlantic, but I'm curious about if there was discussion about how far north the landings data -- I feel like this is one that has got the northward shift and distribution, where they're having higher catches of gray triggerfish to the north, and I guess where is the northward boundary of the stock? Thanks.

DR. NESSLAGE: So are you looking to examine shifts in distributional changes? Is that more what you're talking about than stock structure, per se?

DR. BUCKEL: I guess was there discussion when the stock area was decided upon, if that does include that northward expansion?

DR. NESSLAGE: I am not remembering, Kathleen, if we talked about that.

MS. HOWINGTON: I am going to pull up my notes. This is why I take notes all the time. I don't believe -- If I remember correctly from the conversation, and, unfortunately, I can't find my Planning Team 2 meeting notes, and I might send a quick email to Nikolai and Kyle, because I think they would be the best options for being able to answer that question, because I am wracking my brain, and I can't remember it. The only notes I'm finding are that we did a literature review, and we discussed that the South Atlantic Council did not have an interest in changing the management boundaries and that there wasn't enough reason to open the -- To request that the council open up the stock ID process part, and that's all I have, and so I'm going to shoot Nikolai and Kyle an email, real fast, and see if they remember anything else.

DR. BUCKEL: Thanks, Kathleen.

DR. NESSLAGE: All right. While she's working on that, Fred Serchuk.

DR. SERCHUK: Just one small issue, Chair, on Number 4. There is no date given in 4, in terms of when the terminal year data is, and would it be 2021?

DR. NESSLAGE: Hold on a second here. You're under 4?

DR. SERCHUK: It says provide commercial catch statistics, including both landings and discards, in both pounds and numbers, and would it be appropriate to say through 2021? I am not really quite sure when the data --

DR. NESSLAGE: Finish your thought. Sorry.

DR. SERCHUK: I am not sure whether the terminal year of data is in the assessment that is going to be done here.

MS. HOWINGTON: The terminal year is going to be 2020, because we're going to be starting with data scoping, but don't forget that this is the research track, and so we're going to be having an operational directly afterwards.

DR. SERCHUK: Okay. Thank you.

DR. NESSLAGE: Great. Thanks. Anne, go ahead.

MS. LANGE: That's what I was just going to mention, is that this is a research track, and so we don't use the most recent data, but Kathleen covered it.

DR. NESSLAGE: Great. Thank you. Chip, go ahead.

DR. COLLIER: In reviewing SEDAR 41, just a quick glance of it, it appears that at least the commercial landings, when I was looking at that, it was only provided from the South Atlantic region. In looking at some of the MRIP data, as Jeff had mentioned, there does seem to be a slight increasing trend in gray triggerfish landings, at least over the past ten years.

DR. NESSLAGE: So it might be worthwhile adding to the -- Is that TOR 1? Characterize shifts in distribution of catches and/or survey information? Is that kind of where you're going, Jeff?

DR. BUCKEL: Yes, that would be -- That's great. It may just be miniscule, but I think just getting it on folks' radar, so we can keep track of that increase, likely increase.

DR. NESSLAGE: Yes.

MS. HOWINGTON: Is this wording okay?

DR. NESSLAGE: Characterize changes in catch and survey distribution.

DR. BUCKEL: Characterize changes in spatial distribution of catch.

DR. NESSLAGE: But we need to say something about beyond our region then, right, because, if you're concerned about bleed-over into the Mid -- Or in adjoining regions, something like that, or we can be specific, and we're worried about the north, right, and you're not worried about the Gulf of Mexico, and let's just put in the Mid.

DR. BUCKEL: Perfect. Thanks.

DR. NESSLAGE: Excellent. Thanks.

MS. HOWINGTON: All right. Any other edits for the data workshop terms of reference, before we move on?

DR. NESSLAGE: I am not seeing any hands.

MS. HOWINGTON: I will clean this up before I send it to you, because, obviously, that's meant to be an a, and it's not formatting the way it should.

DR. NESSLAGE: No worries.

MS. HOWINGTON: Okay. Moving on to assessment process terms of reference, and it's the same process as before, and we'll go through step-by-step, and so Term of Reference Number 1, any edits, comments, or deletions?

DR. NESSLAGE: I am not seeing any hands.

MS. HOWINGTON: Okay. Term of Reference Number 2.

DR. NESSLAGE: This is where, Wally, is this going to adequately -- Go ahead, Wally.

DR. BUBLEY: Looking at the text here, I think this will adequately handle it, because it talks about the assessment models that are appropriate for the available data, and so, if there are some changes in terms of age estimates, then that would be covered under this language, and so I'm okay with how it is.

DR. NESSLAGE: Fabulous. Any other comments or suggested edits? I am not seeing anything, Kathleen.

MS. HOWINGTON: All right, and so then let's do 3 and 4.

DR. NESSLAGE: No hands.

MS. HOWINGTON: Okay. 5, 6, and 7. Let's just do all three at once.

DR. NESSLAGE: Amy.

DR. SCHUELLER: I was just looking at Number 5, and it says comment on the data component weighting used in this assessment, and I don't know, and I was just thinking that maybe, at the end of the sentence, have a comma and say "if necessary", and I don't know that there is -- Not

necessarily every assessment is -- Well, I guess data component weighting could be interpreted in many different ways. Is this intended to like have a description of like an iterative reweighting data component weighting, or is it meant to just say like how the uncertainty or the CVs are treated in the likelihoods or -- I don't know. It just seems specific, to me, iterative reweighting, and I'm not sure if that's the intent.

DR. NESSLAGE: It could be modified to include things like relative contribution of -- Characterize relative contribution of data components to the likelihood, and I don't know. Is that where you're going, Amy? Is this too -- Do you want to be more specific or take it out? What's your recommendation?

DR. SCHUELLER: I just feel like it's potentially very specific, which I guess is why I was asking about the intent. I mean, I hope that there would be a general characterization of how the likelihood components were derived, right, which would include weighting. I mean, typically, these assessments say indices used this distribution, and comps used this distribution, and maybe there was some weighting, and I don't know.

DR. NESSLAGE: I don't remember why this is specifically in there, but, while folks are thinking, Alexei, is it to this point or a different one?

DR. SHAROV: To this point.

DR. NESSLAGE: Go for it.

DR. SHAROV: I agree with Amy, and it's sticking out unnecessarily, and it belongs to, I guess, Number 2, and I don't see it on my screen.

DR. NESSLAGE: Yes, and it could just be moved up as a subcomponent.

DR. SHAROV: Yes, and it's in the wrong place right now.

DR. NESSLAGE: Amy, would you be okay with that?

DR. SCHUELLER: Yes, that's fine. I think that's more appropriate. I mean, it's basically just part of the model description.

DR. SHAROV: Right. I agree.

DR. NESSLAGE: Okay. Anything else, Amy or Alexei?

DR. SCHUELLER: Not from me.

DR. SHAROV: Honestly, I guess I almost am close to recommending removing it, but, if somebody put it in there for a reason -- Like Amy said, normally, it just should be part of the model description, the model fits, and the steps, arriving to the final run, and, if it's important -- If it was important, it would be reported. If it was not that important, or maybe not even used, then it wouldn't be reported. I guess somebody anticipated there would be an issue with this, and it

doesn't hurt to keep it, but there are lots of things that are not specifically mentioned here, and that's why I said it was sticking out, but it's not a big deal.

DR. NESSLAGE: Okay. All right. Well, we're giving them an out. If it's not a huge deal, they can just address it in a normal fashion. Any other comments on the assessment workshop? Did we get all the way to the bottom?

MS. HOWINGTON: We did.

DR. NESSLAGE: Okay. Anything else on the assessment workshop? No hands. All right.

MS. HOWINGTON: I did get an email back from Nikolai, and he doesn't recall talking about any northern expansion, but, if that exists, then it will show up -- It will probably show up in the NMFS bottom trawl survey, run out of Woods Hole, and so I think that the additional term of reference that we added should cover that and should be good, and I just wanted to pass along the information.

DR. NESSLAGE: Great. Thank you.

MS. HOWINGTON: Of course.

DR. NESSLAGE: Now we have a placeholder for them to look at that.

MS. HOWINGTON: All right. Now we have review workshop terms of reference, starting with Number 1. Do you see any hands raised, Genny?

DR. NESSLAGE: No.

MS. HOWINGTON: All right. Then Number 2.

DR. NESSLAGE: No hands.

MS. HOWINGTON: Okey-dokey. Number 3. If we're going too fast for anyone, just tell me, and I will scroll back up.

DR. NESSLAGE: I am not seeing any hands.

MS. HOWINGTON: All right. Number 4.

DR. NESSLAGE: No hands.

MS. HOWINGTON: All right. 5 and 6.

DR. NESSLAGE: Those are pretty straightforward.

DR. SHAROV: We are going to too fast. I am not catching up with you.

DR. NESSLAGE: All right. We'll give it a minute. Amy, go ahead.

DR. SCHUELLER: I just have a general question for SEDAR staff, I guess. We just went through, on this call, the results from the scamp research track, and there were some statements that said that the coordinating staff and the SEDAR Steering Committee all learned some valuable lessons from going through that first research track, and I guess my question back to them is were there modifications made to these terms of reference to address those lessons learned, or do we need to make any modifications? I wasn't involved in that, and so I don't feel privy to that information, but if we should --

MS. HOWINGTON: To answer your question, there were no edits to these terms of reference based on those lessons learned. We did look at the recommendations that the review panel made towards the research track, but, ultimately, these terms of reference have been built since March, and so that was later on in the game, after we had already kind of looked at all these, but the biggest lesson learned that we had from SEDAR 68 was to make certain that the expectation of what the output of the research track and what the input going into the operational assessment is and ensure that we are very clear that, at the end of the research track, we need to have the final base run that is complete and good to go, except for minor tweaks.

I did put, in the schedule -- There is a part where, when the ADT makes the decision of, are we good to go for this model structure, and I'm just going to make certain to emphasize, when we hit that point, and I ask the ADT, okay, are we good to move on with the review process, or do we need to keep meeting, I am going to try and emphasize that is this base model, the one that we have, good to go, and hopefully that should mitigate a lot of those then outstanding problems that ended up happening, and so that's the biggest thing, I think, is making certain that it's very clear what the expectations are and everyone knows and that the ADT is very aware that, if they don't feel like we're ready to go, they can extend the assessment process, and we just reschedule the review workshop.

DR. NESSLAGE: Does that address your question, Amy?

DR. SCHUELLER: Sure.

DR. NESSLAGE: Okay. Let's go to Anne.

MS. LANGE: Thank you, Genny. I was on the review panel, and one of the things that was brought up by a couple of the CIE people was to be sure that what comes to the review panel up front sort of provides the summary of things that need to be looked at, or specific instances, and the one thing that came up, in particular, was the fact that it was more of a non-targeted species, and that wasn't portrayed early on enough, and so they were a little -- A couple of the people, and I think Rob in particular, was taken aback that, gee, if I would have known that, I would have looked at it a little bit differently, and so I think, when the document comes to the review panel, upfront just sort of listing some of the peculiarities or issues that might be of importance for the reviewers to take into account, rather than having to read the whole document and maybe missing some of the things, if the assessment team has some key components that they think are important.

DR. NESSLAGE: Good suggestion. We shouldn't assume that folks are super familiar with the species and the fishery.

MS. HOWINGTON: Do you think that maybe we could add that in here, of --

DR. NESSLAGE: I see what you're saying, to maybe highlight unique aspects of fish and/or fishery.

MS. LANGE: I think that would be a good place for it, in my opinion.

DR. NESSLAGE: Thank you. While she's working on that, let's hear from Julie.

DR. NEER: I was going to agree with that, and I think that's great. I don't know that it necessarily -- We're going to have to figure out how to put it in the terms of reference, but one of the other components that came up is not just that it's not a targeted fishery, but that it operates in a multispecies fishery and how that is impacting other -- At least, especially in the case of scamp, how other regulations may have been impacting how people fish for scamp and other closures and that sort of thing, and we did bring that to the attention of the council, and the council has been discussing this as well.

You know, we do produce those management histories by species, but it doesn't get at that issue, with regard to how closures in other species may impact this one, and so I know that council staff has been discussing this, and the council in general has been discussing this as well, and so we will strive to try and find a way to incorporate some of that information, either as part of the report or as a separate working paper, perhaps, a background document for the reviewers, because you are correct that they don't always know all the big overview of how this fishery operates in the greater region, and so, yes, I think we're going to have to produce something.

I am hesitant to actually put this here as a part of the term of reference, because it's not necessarily that the analysts may be the best people to do that. I think it might be something that will fall -- Like the management histories are produced by council staff and not by the analysts themselves, and we provide that to them, and so I think the point is well taken, but I'm not sure putting it in the terms of reference -- The way you had it before, where you said highlight specific aspects of the fishery, might be useful as part of the research recommendations, but that reference document should not be assigned to the analytical team to produce.

DR. NESSLAGE: I think -- I don't know, and maybe -- I wasn't there, but I feel like developing another working paper -- There is already so many working papers with these things that they're already -- The point is they were so swamped with material that they missed some major important issues, and I'm guessing this is more of a heads-up to the analysts, when they're giving their presentation, to have a few introductory slides making sure that everyone is on the same page, and so maybe we don't include this in the TORs, but perhaps the Center folks who are on the call can make sure that this happens when you go to present at the review workshop.

DR. NEER: Yes, and the coordinators can work on this. This is something that we're going to be doing across-the-board, I think for all the assessments.

DR. NESSLAGE: Fabulous. Okay. Would that address the concern, Anne?

MS. LANGE: I think Julie's suggestion that, as is done with the management history, just including a summary upfront in the package that reviewers get, and staff is probably the appropriate generator of that summary, as they do their management history, as well.

DR. NESSLAGE: Great. Thanks. Chip.

DR. COLLIER: We try to develop a fishery performance report before a stock assessment has started, so that we can provide that information and make sure that, as we're developing the fishery performance report, we include some description of the overall fishery in general.

DR. NESSLAGE: Good point.

DR. COLLIER: That's council staff, as opposed to the analytical staff.

MS. HOWINGTON: Mike Schmidtke, that happened during the Snapper Grouper AP that met last week, right? My brain is so befuddled that I can't remember exactly what species you did that for.

DR. COLLIER: Unfortunately -- I actually put the data together for it, but I can't remember what species we did either.

DR. SCHMIDTKE: We did do gray triggerfish last week for the AP, and so that has been done.

MS. HOWINGTON: Do you believe that that fishery performance report would meet the requirements of what the SSC is requesting, because, if that's the case, then what I can do is just make certain that that report, when I send the review panel the management history and the assessment report, I can highlight that fishery performance report and say, if you would like a brief summary of what's going on currently with gray triggerfish as a species.

DR. SCHMIDTKE: Yes, I think so. I think our fishery performance reports kind of reflect that and reflect the current conditions that they're seeing.

DR. NESSLAGE: Maybe we can leave it up to you guys to work together, perhaps, offline to make this happen, but I think you get the message of we want to make sure that's not missed, that big points are missed, in the future, and do you all think that you have enough to go on and you can work out the details offline? We're running a little bit out of time, and I want to make sure that we get to everything.

MS. HOWINGTON: Yes, and I think, with the fishery performance report and the suggestion to ask Nikolai to add a few additional slides, just giving a brief summary, and we're not adding a working paper, and we're not adding anything to the SAR, and so I think that that keeps it light, responsibility-wise, but it still gives the information to the panel that ultimately they need, I think. Hopefully it works out.

DR. NESSLAGE: Yes.



MS. HOWINGTON: All right, and so we were all the way down here for 5 and 6, and so I'm going to open it back up. Are there any comments, edits, and deletions for any of the terms of reference?

DR. NESSLAGE: While SSC members are thinking, this might be a good time to ask if there is any public comment. Please raise your hand. Rusty, go ahead.

MR. HUDSON: Thank you, Genny. I was a participant in SEDAR 32, the gray triggerfish and blue line tile, and gray trigger didn't work out., and in SEDAR 41, Atlantic red snapper and gray trigger, and gray trigger didn't work out. Then one of the things that I just looked at -- Two things. NOAA Fisheries has a list, and they claim that the gray triggerfish on the west side of the Atlantic is found from Nova Scotia out to Bermuda and down to Argentina, as well as the Gulf of Mexico.

Then the Gulf of Maine Research Institute has a Facebook page, and they had pictures of gray triggerfish in lobster traps and other stuff. In the last five years, they're reporting a bigger increase, and they mature at two years, and they float around in that sargassum seaweed, and we have had huge mats of that occurring in the last couple of years, and we don't have a fishery for the sargassum anymore, but they also are found on the east side of the Atlantic, all the way down to Africa.

All of that being said, the biggest one is thirteen pounds, twenty-eight inches, sixteen years, and so they have the ageing, but two years to maturity, and the males are bigger, and ciguatera, and that would be down in the warmer waters, is a bigger problem, just like amberjack and stuff, and I had always heard all the way up to Maine, just like the gray snapper, or mango snapper, as we called them, and that was showing up ten or fifteen years ago.

I believe just the little ones that are floating around in the sargassum, up until they're seven months plus, and then they descend, and it seems to me that there is some information here that needs to be worked through, because we failed twice, but somehow the Gulf of Mexico did their thing, and the Caribbean did their stuff with the queen triggerfish, and we get a few queens, but not very many, and so the last thing, and it came up at both of the stock assessments, is apparently there were people that didn't have a market for gray triggerfish and would throw the triggerfish like a frisbee.

We had markets for our triggerfish off of Florida since the 1950s, and so I just -- I know that, over in the east Gulf, when I was fishing there, they didn't care for the big triggerfish, and I think it had to do with like an iodine taste or something that they claimed, but then I see all this stuff with sushi and sashimi with triggerfish, the smaller ones particularly, and they're awesome, and so I just hope that we drill down and get a stock assessment that is reflective of reality, even though there may more being caught with the vermilion, and, like I say, that's all a mixed thing, and that was the normalcy that we would see in the headboat fishing, and so I would say that we need to, you know, work this one to the final.

I know it's a research track, and then we do the operational after that, and so we're still down the road a couple of years before we succeed, but those spines were being worked up, and I never heard a final disposition on that, except for what Erik had to say just a short while ago, and the otoliths and the vertebrae, and I think I heard there was some issues with that, but it would be nice

to figure out how NOAA has a sixteen-year-old and how the Gulf of Mexico and the two years to maturity and how they got all that figured out on the ageing, and so thank you.

DR. NESSLAGE: Thank you. All right. Anything else from SSC members on this gray triggerfish research track?

MS. HOWINGTON: Just the terms of reference. We still have two more documents.

DR. NESSLAGE: The TORs, yes, but this is the meat of it.

MS. HOWINGTON: Yes.

MR. HUDSON: Can I say one more thing, real quick?

DR. NESSLAGE: Keep it short, but yes.

MR. HUDSON: Okay. I will. We never -- The triggerfish gets barotrauma, and it gets in its mouth, the stomach, and that's a dead fish, no matter what size it is, and the other part is when they have the protrusion from the anus, and the other fish chew on that, and that's going to become a dead fish, and they know they went to fourteen inches in the Gulf of Mexico, and I'm not sure what we're at over here, but it's just something to think about.

DR. NESSLAGE: Good. Thank you. Okay. All right, Kathleen. I think it's time we move to the --

MS. HOWINGTON: All right. The project schedule, and so, again, what I am -- We are just going to be reviewing this piecemeal, and the data deadlines are not something that can be moved, and so keep that in mind while you are giving any suggestions, and so this is more of a do you believe that this process is going to be helpful and is going to get at what we need to.

We're going to start with data scoping in May of 2022. We'll have one data webinar before the unprocessed data deadline in July of 2022, and then we are going to have a data workshop, one more pre-workshop webinar in September of 2022 with the data workshop, also in September of 2022, and two post-data workshop data webinars, just in case, in October of 2022, with the final workshop report distributed in January of 2023.

After that, then all of these dates past that point are tentative, depending on data analysis and how that process goes, but, for right now, we're going to be having a series of webinars in March of 2023 through August of 2023, with the ADT actually determining if the assessment is ready to go at the Webinar 4, and so this final Webinar 5 will be to tie any loose ends that we can think of, and we will have already determined that this base model is good to go, and so that's the plan, and then the assessment report is sent out September 22, with the review workshop being held in October of 2023 and the final report ready to go and submitted to everyone in December of 2023. That is the plan right now. Do we have any comments?

DR. NESSLAGE: I don't see any hands raised.

MS. HOWINGTON: Okay. No hands raised, and so, keeping that schedule in mind of the data scoping starting in May of 2022, and the assessment starting in March of 2023, and this data workshop in September of 2022, and this is when I need to request participants. I am going to be requesting five people, and so I would love to be able to have two additional SSC members for the ADT.

The assessment development team will be appointed and be a part of the data and assessment process, and so that's going to be a long -- You're going to start next May, and you're not going to be completed -- The assessment process will be completed in August of 2023, and so that's a little over a full year, and then I am also requesting a technical chair for the data process, a technical chair for the assessment process, and a review workshop chair, as well as, if you would like an additional SSC member -- Typically, you all have an SSC reviewer as part of the review process, and so let's just go up to the top here. The assessment development team first, and would there be anyone willing to do that that doesn't want to be a chair?

DR. NESSLAGE: I see that Alexei's hand is raised. Are you volunteering, Alexei?

DR. SHAROV: No, I'm sorry, and I had a question on the schedule, which I didn't have a chance to ask before we moved, but, quickly, if I could, I noticed, for example, for the final data workshop, there is a -- The alternatives are noted of either meeting in-person or virtual, obviously, depending on the epidemiological situation, but, for the assessment data workshop, it doesn't seem to be that there is a plan for in-person for the analysts, and I think that's unfortunate, because the personal interaction is critical and important for just the generation of a better quality of work. Certainly a combination of the workshops online is good, and there is some efficiencies there as well, but I think it's important if there is a possibility to allow for the analysts to have an in-person discussion as well that provides a lot of additional elements that are missing at the webinars. Thank you.

MS. HOWINGTON: The in-person is the goal, but we just have that as a caveat, just in case right now, but we have -- As SEDAR staff, we have gotten a lot of feedback that, for data workshops, an in-person would be preferred, and that's from a lot of different panelists and different data providers, but it's just there just in case.

DR. NESSLAGE: Does that answer your question, Alexei? Are you good?

DR. SHAROV: I guess so, and so, as I understood it, it's also considered as an in-person meeting, unless the health conditions will not allow it, and is that correct?

MS. HOWINGTON: Unless there is substantial travel restrictions, yes.

DR. SHAROV: Right. Okay. Thank you.

DR. NESSLAGE: Julie, is it to that point?

DR. NEER: Yes, and I was just going to say that, with regard to in-person assessment workshops, SEDAR has not done that for almost, I don't know, eight years at this point. We have found that, unfortunately, meeting in-person at the assessment stage is not terribly efficient. We bring a bunch of people in, and now that the models are so complex, and they sometimes take over a day or so to run, and we don't get a lot done in those three or four days in-person, and so SEDAR has been

doing the assessment process via webinar exclusively for way before COVID, and that's not a COVID thing, and so I just wanted to address Alexei.

We have found that most people do not get any value out of meeting at the assessment stage in-person, due to the iterative nature of let's go try this, and then it takes four days to get results. That is why that is not listed as an option. We do in-person for data, and we do in-person for review, but that's the rationale behind it, and we used to meet in-person for the assessment stage and found out that there was a lot of down time, where people were basically sitting around doing nothing for large portions of that assessment, and so this is not a COVID casualty, and that is the way that SEDAR has been running it for eight or so years at this point, and I just wanted to address that second-half of Alexei's question. Thank you.

MS. HOWINGTON: Sorry, Alexei. I thought you were just talking about the data workshop and not the assessment process.

DR. SHAROV: I totally disagree, but I am used to being in the minority, and so I guess I provided my feedback, and maybe there is valid reason, but I, obviously, respect the view of the majority. Thank you.

DR. NESSLAGE: All right. Thanks, Alexei. Unless there is more comments on the schedule, we are looking for volunteers.

MS. HOWINGTON: Yes. We are looking for three chairs and two ADT members and hopefully one additional SSC member for the review process.

DR. NESSLAGE: All right. Jie, are you volunteering?

DR. CAO: I was going to say that I am happy to be part of the ADT team.

MS. HOWINGTON: Would you be willing to be a chair, or do you want to be ADT?

DR. CAO: It's in the spring, and I'm going to be teaching in the spring, and so I doubt that I will have time to be the chair, and so just a member of the ADT.

MS. HOWINGTON: Okay.

DR. NESSLAGE: All right. Let's hear from Wally.

DR. BUBLEY: I would be willing to throw my hat in the ring for an ADT position as well.

DR. NESSLAGE: Fabulous. Thank you.

MS. HOWINGTON: Okay. Now I need some chairs and a review workshop participant. Now, the chair for the data process and the assessment process can be one person or it can be split up, and so, if somebody is willing to stick through the whole time, that would be amazing. Basically, as a chair, your responsibilities are going to be helping maintain the conversation, moving everything along, taking notes and writing a short summary at the very end, and you're going to be chairing the conversations. I will still be doing the logistical and technical aspects of that, or

not technical, sorry, but the logical and administrative aspects of being a chair, and so I will be there to help you out in any way. Please, please, please, somebody be willing to help me here.

DR. NESSLAGE: You said the assessment and the data could be the same, but it can't be the same as the review person, correct?

MS. HOWINGTON: Julie, I am going to call on you right now, because this has been something that I've been confused about.

DR. NEER: The review panel chair is not a reviewer, and so they can serve at other stages of the process and still chair the review workshop if they wish. The only person that can't be a part of the other stages of the process is the actual SSC member serving as a review panel member.

DR. NESSLAGE: Gotcha. Thank you. Alexei, question-mark? Is that a half-raised hand?

DR. SHAROV: Sorry. That was a mistake.

MS. HOWINGTON: I know that being a chair might be a heavy lift, but, please, if you all could -- I mean, for the review process, that's a pretty short part of the schedule, and that's just from September of 2023 to December of 2023, and so, if anyone from the SSC would be willing to do that, I would really appreciate it. The assessment process is just March of 2023 to September of 2023, and that's all webinars, and it's not in-person, and data is just May of 2022 to January of 2023, and so, please, guys. We really need these positions, and we're having a hard time filling them.

DR. NESSLAGE: Kathleen, I would be willing to do the latter one or two, but not the first. Not while I am trying to chair this committee.

MS. HOWINGTON: All right, and so you would be willing to do --

DR. NESSLAGE: I don't know if that provides some weird continuity though, and so, if that doesn't help you at all, let me know. Scott, go ahead.

DR. CROSSON: I'm sorry, but did you say that the review is in-person?

MS. HOWINGTON: Right now, yes. The review is in person. That's the current schedule, and that will be in Beaufort, North Carolina.

DR. CROSSON: I chaired the blueline review, and so you can ask Julie what she thought of adding me to it instead of a biologist, but, if it's similar to that, I could be -- It's been a few years, and so the bruises have healed, and so I could do that again.

MS. HOWINGTON: Would you be willing to be the SSC reviewer for the review workshop?

DR. CROSSON: I can't review a stock assessment. I can chair something, but I'm an economist, and so I can chair it, if that's -- Like you said, the chair is not a reviewer, right, and the chair is -- You're responsible for writing up the executive summary and chairing the review process, and that I can handle, but I cannot write an assessment review.

MS. HOWINGTON: Genny, would you be willing to be the SSC member for the review process? That means you can't be the chair here.

DR. NESSLAGE: If I'm with Scott, sure. If Scott is leading the charge, I would be happy to.

MS. HOWINGTON: All right, and so I'm still looking for a technical chair for the data and/or assessment process, and is anyone willing to take over those two responsibilities, or one?

DR. NESSLAGE: Think of the power.

MS. HOWINGTON: Think of my smile when you volunteer, please. I will beg. I am not --

DR. NESSLAGE: It can't be Jeff. This is really important, folks. As Rusty mentioned, we've had a rough go with gray trigger, and we really need to make sure that this sails through and we get some good science produced to inform management. Let's hear from Alexei.

DR. SHAROV: Well, Genny, if you are willing to -- I just reported my sentiments about the assessment process being done only online, and that I disagreed with that, and I don't feel that I would be happy to volunteer to guide the assessment process totally online, but I would be willing to step in for the review if you are willing to take over the assessment process, but only because you are looking for somebody to fill in, and, if somebody else wants to step in, I will be totally happy to step aside.

DR. NESSLAGE: Okay. Wilson, how might you be willing to contribute?

DR. LANEY: Well, Madam Chair, I have never done it before, but I am somewhat swayed by Kathleen's persuasive request, and so if she thinks that I would be a good fit for this one -- I don't know a whole of a lot about gray triggerfish, but I gathered that I don't need to necessarily know a whole lot about the species in order to conduct the duties of the chair, and is that correct?

MS. HOWINGTON: That is correct, and I will walk you through everything you need to do as a chair, and I will be right by your side helping you out, step-by-step.

DR. LANEY: Okay. I will give it a shot.

DR. NESSLAGE: I have seen you chair meetings, Wilson, and you're fabulous. I think you are going to be a perfect fit.

MS. HOWINGTON: All right. Thank you all very much. Look how happy you made me. Thank you so much, guys. I really appreciate it, and I appreciate the help, and I appreciate the willingness to work with us on this.

DR. NEER: Kathleen, are you not requesting SSC members to participate in the data or assessment processes at this point?

MS. HOWINGTON: Right here.

DR. NEER: Those are just your two ADT members.

MS. HOWINGTON: I can ask if anyone would want to additionally be a part of either the data or the assessment process, if anyone just wants to be a part of one, and they just want to be a panelist, and I can open the floor to that.

DR. NEER: I just know there's some SSC members who have done work on this species who may want to be part of data or assessment.

DR. NESSLAGE: Is there anyone interested and/or available? I guess and available is important.

DR. NEER: Don't list them under ADT. List them under --

MS. HOWINGTON: Yes. I'm working on it.

DR. NEER: Maybe I am wrong. Maybe nobody wants to do it, but --

DR. NESSLAGE: I am not seeing any hands, but, if you change your mind, there is time before the -- Does the council approve this list?

MS. HOWINGTON: Yes. Ultimately, this list of SSC members is going to be merged with the panelists list that the planning team has created, and that is going to be sent to the council and have final appointments and approval in the December 2021 council meeting.

DR. NESSLAGE: Very good. Jeff, go ahead.

DR. BUCKEL: Our lab has done some work on triggerfish, and so I can participate in the data process, and that would be before I would take over -- I think a lot of that is before I take over the chair duties, and so -- Thanks.

DR. NESSLAGE: Thank you. It's greatly appreciated. Anyone else? I am not seeing any hands, and I think this might be it. Will this help, Kathleen?

MS. HOWINGTON: Yes. This is extremely helpful. Thank you all, and thank you all who were willing to participate as chairs and as panelists. Of course, I recognize that some of you all are going to be data providers, and, if you all just want to sign-on and listen in, let me know, and I will send you the registration. Additionally, if you just want to be a part of the interested parties list, and so this has no responsibilities on your part, and it just means that you get all of my emails reminding people about webinars and doodle polls, and please just let me know, and I will add you to the mailing list. That way, you can keep informed, but you don't have to attend anything.

DR. NESSLAGE: Are we all -- The names on the screen are automatic on your list though?

MS. HOWINGTON: Yes. All the names on the screen are going to be a part of the mailing list. They're going to be getting those emails no matter what.

DR. NESSLAGE: Lucky us. All right. Fred Scharf has something.

DR. SCHARF: Genny, I just had a clarifying question. As we go forward, are we -- Is there going to be an expectation that the data process and assessment process and review process are going to need SSC members to serve as chairs, or is this one unique? It just seems like we're going to start running out of bodies soon.

DR. NESSLAGE: I think this is for research track assessments, and the idea is that operationals will be done largely with direction of the Center and SEDAR staff, and is that correct, Kathleen?

MS. HOWINGTON: Yes, and so the operationals are going to be the topical working groups, and so, each time -- If a topical working group requires an SSC member, then you may be called upon, but those are going to be focused on whatever the subject is, and so, with an operational, if they have a topical working group, and if you are a subject matter expert for whatever that subject is, then you may be pulled for that, but, otherwise, it will be mostly Science Center led, and so this is just for the research tracks, and we've gotten feedback from Clay that we should be just doing one research track at a time, and so hopefully we don't run out of bodies and we just rotate through them.

DR. SCHARF: Thanks.

DR. NESSLAGE: All right. That's all the hands that I see. Any last outstanding issues for gray trigger?

MS. HOWINGTON: That's all I have for gray trigger.

DR. NESSLAGE: Then let's move on to Agenda Item 6, Tilefish, Attachment 6. Go for it, Kathleen.

### **SEDAR: UPCOMING ASSESSMENTS - TILEFISH**

MS. HOWINGTON: For that, I'm actually going to hand that over to Judd. You're the South Atlantic Council organizer, correct? There you go. My little spiel about this, this is the statement of work for the upcoming 2024 tilefish operational assessment, and so this is an operational. Please keep in mind, while you're going through this, if you request a topical working group, we would love to know when in the schedule that would occur, do you need webinars only, do you need in-person, and this is just the statement of work, and so, after you all format this, this is actually going to go to the Science Center for negotiations, and then it will go to the SEDAR Steering Committee.

It's going to be turned into terms of reference, and you will have one more chance to review it, and then it will go to the council and have its final approval. Currently, the schedule, for right now, is that this is going to happen in 2024. If I were a betting man, I would say that it would be starting later on in the year and ending in November and December, but we will not know exactly the dates until August of next year, of 2022, and that's when the scheduling call for 2024 is set to occur, and so I will be able to tell you guys, in your October 2022 meeting, exact details, if you wish. That's my little spiel, and, Judd, I will hand it off to you.

DR. CURTIS: Okay. As Kathleen stated, we're just looking for some feedback here on this upcoming operational assessment for tilefish, reviewing the schedule and the scope of work, and



so we'll just kind of scroll through, like we did before, for the terms of reference, and, if you have any questions, concerns, or edits to the text in front of you, just raise your hand, and we'll go through them. Let's start here with any of the requested data updates.

DR. NESSLAGE: Wilson.

DR. LANEY: Yes, ma'am. Thank you. Which species of tilefish are we talking about here?

DR. NESSLAGE: Golden.

MS. HOWINGTON: Anytime, for SEDAR, if you just see tilefish, that means it's golden. If we mean blueline tilefish, we specify that.

DR. LANEY: Okay. Thank you.

DR. NESSLAGE: Thank you. Wally.

DR. BUBLEY: With the requested data updates, in regard to the SC DNR vertical longline survey and the SADLS, in SEDAR 66, they were wanting to explore everything, the potential use for an index and that type of thing. Because this is an operational, is that the only reason that the life history is the only thing that's being explored in this aspect?

DR. CURTIS: Wally, that's a good question. I am not sure how to answer that.

DR. COLLIER: I will answer that. This is -- If you're looking at the terminal year of this, this is going to be ending in 2022, and I believe it was based on your comments from before. We incorporated the language that you had provided in order to incorporate this, but it was the feeling that there would be very limited information, in order to generate an index of abundance or anything along those lines.

DR. BUBLEY: Yes, and that's fine. I just wanted to clarify, because it would be about three years' worth of data for either of those, and so that's fine. I just wanted some clarification. Thank you.

DR. NESSLAGE: Excellent. Thank you both. Any other comments or questions or suggested edits? We appreciate the chance to see this. While we're letting folks think, let's go to public comment. I know Rusty has been anxious to provide some public comment on this one, and so, if you're here, and hopefully you're here, Rusty, and go for it.

MR. HUDSON: Yes, I'm here. Golden tilefish I have fished from down there off the bumps southeast of Key West and all the way up to the North Carolina line. The consistent situation is it has to be mud bottom, certainly 450 foot, possibly up to 1,000 foot. Like, if you're at Port Canaveral, you can go straight out to 450 or 650 or 700, and you've got mud, and you've got golden tile.

When you get a little further to the north, you get into hard bottom, and you get scorpionfish, and you're not going to find golden tile in that region, and so it would be very useful for the team to be able to see as much identified golden tile bottom as you know exists up and down the coast,

because you know it goes all the way up to New York, because they've got that ITQ system up there, and just try to be able to break out that mud bottom. I think that would be helpful to understand that hard bottom sometimes causes you to have to run an extra ten, twenty, forty miles, whatever, just to achieve the depth and the mud.

If I could just finalize my whole day and comment, back to the previous item, with the triggerfish, the shrimp boats over in the Gulf get these age-zeroes, and I don't recall, in my decade running a shrimp boat on the east coast, of seeing triggerfish in my catch, and maybe SEAMAP might see that, and maybe there is some information out there on the shrimp boats on the east coast, but, honestly, I've never seen it. Thank you.

DR. NESSLAGE: Excellent. Thank you, Rusty. Is there any other public comment on tilefish? All right. Any other comments or edits or suggestions or questions from SSC members? Wally, go ahead.

DR. BUBLEY: I just have a question regarding the requested model modification. What exactly is the alternate max age used in SAW/SARC 58?

DR. NESSLAGE: I think they're down to ten now.

DR. BUBLEY: How did they come across that?

DR. NESSLAGE: I think they had concerns that they weren't seeing -- They don't really have hardly any observations of larger fish either, and they have very -- They see a lot fewer older fish than we do, but they, I think, were having issues with model fit, as I recall, and so they truncated the maximum age, but that would require some careful exploration on our part. Did that answer your question?

DR. BUBLEY: Yes, and so more like the pooled age data. Okay. I was thinking more along the lines of use for things like natural mortality.

DR. NESSLAGE: No, and this was my suggestion, just because of seeing how truncated the northern stock is, relative to we go out to, what, twenty or twenty-five, and I think we brought it down to twenty this time, and how sensitive this stock assessment at least used to be, before they moved to the Dirichlet, to a lot of zeroes at the end of the larger age classes, if you remember the whole robust multinomial thing with the update, and so that really sparked me to think that we should take a more careful look at how many age classes we're trying to model with this stock, given there is not that much data.

DR. BUBLEY: Great. Yes, that clarifies things. Thank you.

DR. NESSLAGE: Cool. Thank you. Julie Neer.

DR. NEER: Just along those lines, you might want to clarify that text just a bit, that you're talking about lumping that max age for modeling and not opposed to the life history, as Wally was saying, just so that, when this goes to the Science Center, they understand your intent of that bullet.

DR. NESSLAGE: So maybe explore alternate max age in the stock assessment model?

DR. NEER: Yes, something like that, just so it's clear, because we're going to email -- We're going to send this to them, and they're just going to read it and not get your explanation.

DR. NESSLAGE: Yes, and you can put that in parentheses, the similar to SAW/SARC -- In parentheses, "similar to the northern stock". Thanks. I know we did a little bit of that with the update assessment, but it's definitely worth looking at again. Anything else? Last call. All right. I am not seeing any hands. Judd, do we need to review the schedule, or is this it for this?

DR. CURTIS: We've got the schedule coming up right below.

DR. NESSLAGE: Fabulous.

MS. HOWINGTON: Please keep in mind that this schedule that is proposed is going to be determined by the data deadlines that the Southeast Fisheries Science Center requires, and so that topical working group may shift from March to June, to January to June, but the note that you have for topical working groups is I have the webinars at the beginning of the process, is when the working groups will meet, and so just keep that in mind while you're looking at these.

DR. NESSLAGE: All right. Any comments? All right. Thank you. Did that wrap up this agenda item then? Does staff, SEDAR staff, have everything they need?

MS. HOWINGTON: SEDAR staff is all good. This is just going to stay with council staff for now, and we will start the negotiations with the Southeast Fisheries Science Center, and so they will be submitting it by November 1 to them.

DR. NESSLAGE: Fabulous.

DR. COLLIER: Just to let the SSC know that we're going to take exactly what was displayed on the screen and provide it to the Southeast Fisheries Science Center prior to the completion of your report, just so everybody is aware, and so, if you are wanting to change any language, this was the last opportunity, given the deadline that we have to get this to the Science Center by.

DR. NESSLAGE: I am fine with it. Are there any screams of protest from the SSC? Otherwise, I think we're ready for council staff to run with this. Amy, go ahead.

DR. SCHUELLER: Can you go back up to the max age thing? Does this explore max age or explore plus-group alternatives?

DR. NESSLAGE: That's fine, if you want to change that.

DR. SCHUELLER: No, and, I mean, I'm just asking what the intent is, if that makes sense.

DR. NESSLAGE: Yes.

DR. SCHUELLER: Okay. It's fine either way with me, and I just -- If the max age part of it is what's confusing for linking to life history, then maybe "plus-group" is a bit more assessment-model-specific terminology that would be less confusing, if that makes sense.

DR. NESSLAGE: Sure, and so you can just say “explore alternative plus-groups in the assessment model”. Something like that, Amy?

DR. SCHUELLER: Yes. I mean if I was -- I had the same thought that Wally did when I read that, like, oh, for natural mortality, and then, when it was explained, I understood it, but it really is, I think, plus-group delineations.

DR. NESSLAGE: That would impact how you get all of your vectors, life history vectors, but not if they don't deem it necessary.

DR. SCHUELLER: Sure.

DR. NESSLAGE: Like I said, I do remember Nikolai doing a little bit of this, but it was an update, and so he couldn't go crazy, and so there's a little bit more leeway in this assessment, as I recall. Did I cut you off, Amy?

DR. SCHUELLER: No. That was it.

DR. NESSLAGE: Good edit. Thank you. All right. Now last call. Anything else you see that could be modified or clarified? All right. I think we're good. Thank you. Thank you, Judd, and thank you, Kathleen.

MS. HOWINGTON: Thank you, Genny, and thank you, SSC, for all your feedback.

DR. NESSLAGE: Then I believe we are back to our original scheduled program, and we have reached the Other Business, Agenda Item 13. I believe council staff are going to walk us through some of these items of Other Business.

### **OTHER BUSINESS**

DR. CURTIS: I am going to walk you through a couple of things that came up recently, and so the first is actually update on the fishery management plan amendments, and, actually, I was going to look to either Chip or John Hadley, who is on the call, to go through that agenda item.

DR. COLLIER: If you give me just a minute to pull that up, and, if you just go through the other items on there, I will pull that up.

DR. CURTIS: That sounds good. Just an update on SEDAR 78, South Atlantic Spanish mackerel, and this assessment has been -- We've been told by the Science Center that it won't be ready by our April 2022 SSC meeting for review, and so we're looking at potentially a special session in either July or August, just conducting a webinar just to review that assessment, and so I will send out kind of a doodle poll for scheduling, so that we can tackle that, once we kind of get a little bit more of a final scheduling from the Science Center on when that might be ready.

Similarly, a special session may need to occur for SEDAR 68, the South Atlantic scamp operational assessment, and we're kind of on a tight timeline in order to get that to the council in

time for their review later in 2022, and so just stayed tuned for a potential special session webinar to review that operational assessment, and so we will follow-up with any additional information as it becomes available, but, if you have any questions on those two items right now, fire away.

DR. NESSLAGE: Any questions for Judd? All right. Thank you.

DR. COLLIER: Just a brief update on amendments that are going on right now, we have Amendment 48, which is the wreckfish ITQ program, and it's looking to modernize the program that was originally set up as one of the first ITQ programs in the U.S., and so now it might be time to update it a little bit, and so the council is going to be working through that, and it will be coming to you as more information is available.

Amendment 50, I think Myra had talked about that one, maybe, or maybe that was another meeting, but this is looking at the red porgy rebuilding plan and allocations, and that's coming to -- It's going to public hearings in September, and I think we had it just last month, and then it's going to the council for consideration in December and potentially coming for final action in December, or shortly thereafter.

Amendment 49 is looking at adjusting greater amberjack catch levels and allocation as well as some of the snapper grouper recreational annual catch targets and considering removing those annual catch targets, because they are not frequently used in management.

Amendment 44 in the snapper grouper fishery is looking at yellowtail catch level allocations, and that is based on the results of SEDAR 64, and we're still working that through the system. Amendment 51 is looking at adjusting snowy grouper catch level recommendations, as well as allocations, and that's based on recommendations from you guys from the SEDAR 36 update. Amendment 52, golden tilefish, that's looking at adjusting catch level recommendations, based on the SEDAR 66, and adjusting allocations, based on the changes from FES as well, and then, finally, we're continuing to work on Amendment 53, the gag rebuilding, and you guys had a lot of discussions about that, and that's going to feed directly into this, and so they're using the results of SEDAR 71 in order to address it.

Jumping over to dolphin wahoo, as you know, there was an ecosystem -- That one is already completed, and so never mind. Dolphin Wahoo 10 was recently completed, and that has been sent to the Secretary for final review. There were several actions listed within there, and I think there were twelve or so actions in that amendment, and so it was a lot going on there. There is some indication that they might be talking about dolphin wahoo adjustments as well coming up in the future, but there is not an amendment currently on the schedule.

Coral Amendment 10, that is in the process of being submitted to the Secretary of Commerce. The council took final action in September and recommending a slight modification to the eastern edge of the Oculina Bank, allowing -- Bringing it westward some and allowing a fishing access area in there. There is no current amendments addressing shrimp.

For mackerel, Amendment 34, this is a joint amendment with the Gulf of Mexico, and it's looking at adjusting the assessment and allocations based on the results of SEDAR 38. Amendment 32 is adjusting cobia, and it's adjusting the catch level recommendations for Gulf cobia and allocations, and, if you guys remember Gulf cobia, it actually goes up into the eastern side of Florida, whereas,

north of Florida, and so Georgia through Maine, that stock was given to the Atlantic States Marine Fisheries Commission to manage.

Amendment 33 is Gulf king mackerel assessment and allocations, and that's going to be looking at some of the allocations, and Christina is our expert on this one, and it's just looking at adjusting catch level recommendations based on the results of the SEDAR 38 update. I think that's about it, unless other staff have items that I am overlooking. That was just a quick overview of all the amendments we have going on, and so you can see that the SSC is providing the council a lot of work these days.

DR. NESSLAGE: Keeping staff very, very, very busy. Thank you for that. Any questions for Chip?

DR. COLLIER: Myra did ask that I make a suggestion, or at least notify the SSC, that the Gulf is considering a constant catch approach for yellowtail snapper, and, in the discussion of that, and I think we discussed during the ABC Control Rule a bit, that, with the constant catch recommendation, what we're doing right now is recommending the lowest portion of the recommended ABC that was provided by the SSC as the option, in order to prevent overfishing in a single year.

DR. NESSLAGE: So out of the five years or whatever we gave them for annually-changing ABCs, they would just pick the lowest one?

DR. COLLIER: Yes, and it's the last year.

DR. NESSLAGE: That's coming from the council recommended that or --

DR. COLLIER: That is what staff recommended, in order to not have to go back and get an alternative catch level recommendation, or a projection, and Mike Schmidtke has his hand raised.

DR. NESSLAGE: Go, Mike.

DR. SCHMIDTKE: I just wanted to point out there is one exception that has been used in that regard, and so, for greater amberjack, the council is considering an option that would take the middle year, and so the third year of the projections, and apply it for the first three years and then take the ABC as-is for the last two, and so that's just kind of another way that they have interpreted it, but that was one of the motivations to having the sub-alternative of having it be a more regular type of request, to have that five-year constant catch request coming to the SSC.

DR. COLLIER: Myra might want to clarify what I was saying for yellowtail snapper.

DR. NESSLAGE: Go ahead, Myra.

MS. BROUWER: Thanks, Genny. Thanks, Chip. My understanding is that the Gulf Council discussed wanting a constant catch projection to consider for one ABC, and our council was okay considering the lowest ABC of the -- I guess it was five years, or however many were the recommended ABCs from the assessment, and the concern there, of course, as you know, that

assessment -- The terminal year was 2017. I just wanted to make sure that you all were aware that those conversations took place at the Gulf Council meeting last week. Thank you.

DR. NESSLAGE: Thank you. All right. Definitely something to keep in mind when we have our next joint meeting over yellowtail. All right. Anything else, Chip or Judd?

DR. CURTIS: I believe that covers all of the other business that we have, and so we can strike-out Agenda Item 13, Genny.

DR. NESSLAGE: All right, unless the SSC members have any outstanding other business. I am not seeing any frantically waving hands, and so let's move on then to Agenda Item 14, Final Public Comment. If anyone from the public has any general comments on anything we've covered this week, feel free to speak up now, or raise your hand, please. Rusty.

### **PUBLIC COMMENT**

MR. HUDSON: Maybe it will take Wally to clarify it for me, but I noticed that -- I guess it's the short deepwater longline, and I believe he's been doing some work down our way, or up that way, looking for different sized golden tiles, and I'm wondering, and like Ben Hartig had referenced the peewees that he found inshore, and if he's seen that, and if that's going to be part of this tilefish assessment coming up. Thank you.

DR. NESSLAGE: Wally, do you feel qualified to answer that?

DR. BUBLEY: I can answer as much as I've seen, and we haven't gotten the actual data yet, but I have picked up fish from some of the fishermen, and, Rusty, I saw the smallest golden tilefish that I've ever seen in my entire life, and it was about hand-sized, and so they're coming across the full range of sizes in that survey, because it is going from relatively shallow to normal golden tilefish depths, and so anything that is caught in that survey it sounds like is going to be included, at least in terms of life history aspects.

MR. HUDSON: Well, that sounds great, because I believe you all had to do a little hook size modification, maybe, to get the smaller ones and had to go to smaller baits, I heard, but that's good, and I'm glad you're doing the work. Thank you.

### **CONSENSUS STATEMENTS AND RECOMMENDATIONS REVIEW**

DR. NESSLAGE: That is exciting, to hear about someone catching smaller goldens. Fabulous. Any other public comment? No hands raised. All right. We appreciate your participation. That means we are moving on to our penultimate agenda item, reviewing our consensus statements.

I know that everyone is tired, but it's a good opportunity for everyone to take a quick breeze through our consensus statements, even if they're a little bit poorly worded at the moment, but we need to make sure that any major points are currently covered. We don't want to be adding non-consensus statements afterwards, and so we'll start with -- What agenda item is that? I am starting to lose my mind. Are we at the very top here? Scamp.

DR. CURTIS: Yes, the scamp research track assessment. Before we begin, Fred Serchuk, go ahead.

DR. SERCHUK: Would it be possible to take a five-minute biological break, Chairman?

DR. NESSLAGE: Sure. This is pretty important, and so, if folks think they need a break, we can do that, but make it brief, please. Five minutes. We're coming up on noon.

DR. SERCHUK: Thank you.

(Whereupon, a recess was taken.)

DR. CURTIS: SSC members, I just emailed you a copy of the latest roadmap document, so you can review that as we go through our consensus statements.

DR. NESSLAGE: All right, and so we'll start with the scamp research track consensus statements. I will let everyone take a look. Jennifer, go ahead.

DR. SWEENEY-TOOKES: That was a residual hand from checking in.

DR. NESSLAGE: All right. Anything on the review assessment bullet? Okay. Maybe we could go to the next bullet, identifying, summarizing, and discussing assessment uncertainties? Thank you. Any comments on this section? Seeing none, risks and consequences and methods for addressing uncertainty. No hands. All right. Let's keep rolling.

Research recommendations, this is, first, the review of the ones that are in the assessment. We have the two dots there, and those are additions, I think. Then moving down to our -- We have a comment on the review panel's recommendations and then the top part of our recommendations here. Remember that these need to be grouped into short versus long-term for the operational versus future assessments. Judd, go ahead.

DR. CURTIS: Thanks, Genny. Just as a general comment, and I was thinking about this as we were formulating these bullet points, and, with this being the first research track assessment that the SSC has reviewed and made these recommendations on, framing the questions and things is something that was a bit of a tug-of-war leading up to the SSC meeting, and so, in addition to just the recommendations on -- If you have any -- The recommendations listed, excuse me, and, if you have any recommendations or feedback on kind of the priming questions and what types of feedback we should be soliciting from the SSC, both from a long-term standpoint, for future research track assessments, and then on the short-term approach from the operational assessments, and so any of that feedback would be greatly appreciated by staff. Thank you.

DR. NESSLAGE: Do you mean in our report or right now?

DR. CURTIS: It doesn't have to be captured in the report. I think just, in general, we could think about some of those things and just either email myself, or this might be a good opportunity to have a small meeting or something to discuss these types of -- This approach moving forward.

DR. NESSLAGE: Sure. Sure. Go ahead, Chip.



DR. COLLIER: I was thinking that maybe we could even discuss it maybe at the next SSC meeting, when we're maybe not in a bit of a time crunch, and we might be able to put it on the agenda and sit down and really think about it and have a good discussion with the SSC, to make sure we're asking the best questions and asking them the best way to get input.

DR. NESSLAGE: That sounds great. Is it just related to research or in general in the overviews? I feel like there might be some more generic questions, or suggestions.

DR. COLLIER: I think overall.

DR. NESSLAGE: Okay. That would be a good suggestion. I like that. Thank you. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. I want to get back to the one that we just had previously, because I don't believe it's expressed as clearly as it could be, and that's that, in general, the SSC agreed with many of the review panel recommendations. However, it took exception to the recommendation that we should consider borrowing, and I want to make it clear that that's something that we disagreed with, because it looks like we -- Do you understand my concern here?

DR. NESSLAGE: Yes.

DR. SERCHUK: But disagreed with the recommendation to consider borrowing length and age composition samples, and I think that makes it really clear about our discussion and how we looked at that particular recommendation. Thank you.

DR. NESSLAGE: Good catch. Thank you, Fred. All right. Anything else on this section, or should we scroll down to short-term research recommendations for the operational assessment? We spent a lot of time on this, but, if you don't think this is clear, this is the time. I am not seeing any hands. Maybe we should keep moving on to long-term then. All right. I'm not seeing any hands. Are we good with the scamp research track? Okay. Let's keep rolling. Recommendations for the operational assessment, that's all in the document itself, and so I am not sure -- Will just say to see our revised document, and we can keep rolling here.

DR. CURTIS: That's correct, Genny. Kathleen captured all the comments that the SSC had in the documents themselves, and so we'll get together, and those will definitely be available for the SSC to review in the upcoming draft.

DR. NESSLAGE: All right. Thank you. That will be an attachment. We just went over gray triggerfish research track and reviewed the terms of reference. Kathleen has all of that, and we've got some members and chairs. Anything else? We just did this, but, if you have any last-minute heartburn on anything we said for gray triggerfish, now is the time. If not, and I'm not seeing any hands, but let's keep rolling to tilefish, and we just did tilefish as well, the scope of work and the draft schedule. Any last-minute comments or changes? Okay.

Then let's go to the gag projections review, and we had a lot of discussion here. Let's make sure we're capturing our discussions well. All right. I am not seeing any hands. That means that we're roughly okay with the wording, and I will look to you all to give me additional wording suggestions when you see the draft report. Let's keep rolling then.

The EwE model on high red snapper recruitment impacts, we made recommendations and comments, I guess, on the model itself. Anything on this page? If not, we can keep scrolling. Thank you. I am not seeing any hands, and so I think we're good on this section. SBRMs, we just heard from Frank this morning and had an excellent discussion. Let's review our recommendations. Fred Serchuk.

DR. SERCHUK: Thank you, Chair. I wondered whether we could go back to the EwE thing that we just went through and maybe be a little bit more specific, in terms of the EwE model results, and it's near the end of it, but it was my understanding that the results indicated that the increased red snapper recruitment would have an effect on black sea bass, but it was of a minor consequence. Did I interpret that correctly?

DR. NESSLAGE: Yes.

DR. SERCHUK: I think it's important to say that here. We always say the results are reasonable, but wasn't the major impetus to look at what impact the increase in red snapper would have on the system and, in particular, on other species in it? I thought that, one, it was the principal impact would be on the abundance of black sea bass, but it was really of a minor nature.

DR. NESSLAGE: So you're suggesting let's start with a general statement of what their findings were and then say they --

DR. SERCHUK: I'm just saying, if you think it's important to give that, to acknowledge that statement, in our review, that the qualitative model results, and then are reasonable, particularly the result that impacts of increased red snapper would have only a minor impact on other species, i.e., black sea bass, something of that nature, just to give a little bit more context to the findings. That's just a suggestion. Thank you.

DR. NESSLAGE: No, that's a good point. Let's see what Judd gets down here. Maybe we can put that --

DR. CURTIS: Does something like that capture your intent, Fred?

DR. NESSLAGE: Maybe "minimal impact", instead of "little effect"? It does have an effect, but it's just -- Or "a minor impact", something like that.

DR. SERCHUK: "A minor impact" would be fine, Chair. Thank you.

DR. NESSLAGE: All right. That's a good catch. Anything else on EwE? Okay. Then I think we're back at SBRMs. Under Compile Discard and Bycatch, the third bullet, could you add to compile SSC recommendations and compare them with progress made in improving SBRMs? Thanks. Maybe after the current observer coverage for headboats in the Southeast region, the next bullet, we could express concern that those percentages may or may not reflect the distribution of the headboat fleet in the region. Let's go to Yan.

DR. LI: Thank you, Genny, and sorry, Genny, and I am thinking about the last thing, the EwE model that we just wrote down there, if you don't mind.

DR. NESSLAGE: No, and go ahead.

DR. LI: I feel that statement we put there is a general statement, but the conclusion in the EwE model and the full detail should be in the report, and there is a lot of caveats and assumptions of the model itself to make that conclusion that the high increase in the recruitment of red snapper had a minor impact on other species, and it's given the model assumptions as a condition there, and, also, the minor impacts -- Based on the EwE model, it's minor impacts on the biomass of other species, but we don't know like other aspects of -- Like ecological function of other species, we don't know.

Also, I just wanted to add something like the full details and assumptions associated with these findings can be -- We can refer to the full report or something like that, because, if you just say this statement, it feels like, oh, the red snapper has minor impacts, and we don't need to worry about it at all, based on the statement we just wrote down a minute earlier, and that's my feeling.

DR. NESSLAGE: No, that's a good addition. I like those. Unless there is any objection, I think this is great. Thank you. Okay. Does that look good, Yan?

DR. LI: Yes. Perfect. Thank you.

DR. NESSLAGE: All right. Back to SBRMs, and we can go to the bottom of the list this time. No discards are, and you can put that in parentheses, are frequently and increasingly reported, and that was what really caught my attention. It's gone up over time. Thanks. All right. Can we scroll to the very bottom of this section here? Any comments or edits? Fred Serchuk.

DR. SERCHUK: Thank you, Chair. If we could just go up a little bit on the screen, to a previous comment about -- Here it is. Potential bias in sampling design if observers are placed on only vessels that can -- Rather than "handle them", and that sounds like they're handling material, and can "accommodate" an observer. We can certainly handle all kinds of people, but we may not be able to accommodate them. Thank you.

DR. CURTIS: I like that point of clarification, Fred.

DR. NESSLAGE: Excellent. Anything else on SBRMs? All right. We had no action on catch level, and we had many good suggestions for national SSC case studies, and staff are going to pursue blue line and recruitment variability, but we've got a good list for the future. ABC Control Rule Amendment, this is our last biggie here on the list. Fred Serchuk.

DR. SERCHUK: Sorry, Chair. I'm in the slow group, but can we go back to the observer one? I thought we thought it would be a useful idea, or could be a useful idea, to have the issue of how people handle observer coverage and --

DR. NESSLAGE: Is it just me, or is he cutting in and out?

DR. COLLIER: We lost his audio, unfortunately.

DR. NESSLAGE: Okay.

DR. COLLIER: Fred, if you can still hear us, I guess click from computer audio to phone audio and then back to computer, and maybe that will instigate it. Otherwise, we might have to come back to his comment.

DR. NESSLAGE: Okay. Let's give it one second here. If not, we can --

DR. COLLIER: It's showing that he's offline now.

DR. NESSLAGE: Okay. Well, please let me know when you see him pop back on and will return. Let's go back down to ABC Control Rule, and we can come back to SBRMs. Thanks, Judd. Risk tolerance. Seeing no hands, then let's go down to general ABC Control Rule recommendations. No hands. Then we can keep scrolling. All right. Do we have Fred back on the line?

DR. COLLIER: Not yet.

DR. NESSLAGE: Okay. Are there any -- We'll come back to Fred's comment, but, in the meantime, are there any other final comments, edits, or suggestions for our consensus statements? While you're thinking, I will let you know that I will provide a draft to you probably the middle of next week of the draft report. You all will -- It's going to be a quick turnaround this season, and so the briefing book deadline is the 16<sup>th</sup>, and so I will probably ask you to get me edits back by the 12<sup>th</sup>, and so you'll have about a week, or maybe a little bit more than that, but it will be a quick turnaround, and I apologize for that, but we need to get that into the briefing book. Still no Fred?

DR. CURTIS: Still no Fred. He's still offline.

DR. NESSLAGE: Oh dear. Then let's -- If folks are okay with the consensus statements, and I am not seeing any hands raised, let's just talk briefly about next meetings, Agenda Item 16. Chip, do you want to walk through potential meeting dates, or Judd. Sorry, but whoever is -- Or I can.

### **NEXT MEETINGS**

DR. COLLIER: Either one of us can do it. We were thinking of potential meeting dates for the SSC meeting coming up in April, and so what we typically do is try to do the latter half of April, if that would work. What we'll do is send out a doodle poll, just focusing on those time periods, trying to avoid other conflicting meetings, such as Gulf Council meetings, which we, unfortunately, had to overlap with during this meeting, but hopefully we can avoid future overlaps. Then, as we get more information on the Spanish mackerel assessment, we might be able to -- We might have to have an additional SSC meeting over the summer, in July and August.

DR. NESSLAGE: Great. Thank you. Be aware there is a December council meeting coming up, and then there will be a -- In Beaufort, and then a March meeting, beginning of March, in Jekyll Island. Julie, do you have something to add?

DR. NEER: Just a quick note, and I wanted to remind everyone that the indices procedural workshop got moved to April 19, 2021 from -- It was supposed to be September, and then we

moved it to January, and now we've had to move it to April, in hopes of having an in-person workshop, and so just one thing to put on your schedule when you're trying to pick other meeting dates for your SSC meeting.

DR. NESSLAGE: Great. Thank you. Anything else on next meetings? If not, we will return, and it looks like Fred is back.

DR. SERCHUK: Sorry, Chair. My computer went down, and now I'm back on my phone now. Sorry about that.

DR. NESSLAGE: All right. Let's scroll back up here, and let's catch up to where you were. Was there a specific bullet that you were looking at?

DR. SERCHUK: No, and I will -- If I have any comments, I will get it on the re-write, or when we look at the final report, Chair.

DR. NESSLAGE: Okay, and so you weren't adding anything new?

DR. SERCHUK: I was going to revise something, but, no, I wasn't going to add anything new. Sorry about that, but my computer went down.

DR. NESSLAGE: No worries. I have been worried that mine was going to go down all day, because of the weather, and so thanks for rejoining us.

DR. SERCHUK: Thank you.

DR. NESSLAGE: All right. Is there any other business to come before the SSC today? I am not seeing any hands. In that case, I would like to thank everyone for their participation. This has been a very productive meeting. Thanks to council staff and SEDAR staff and Center staff, everyone who contributed. I really appreciate your time and your energy, and I look forward to working with the SSC members and council staff on the draft report. Thank you, all, for your time.

(Whereupon, the meeting adjourned on October 29, 2021.)

- - -

Certified By: \_\_\_\_\_ Date: \_\_\_\_\_

Transcribed By  
Amanda Thomas  
December 13, 2021

# Attendee Report: Scientific & Statistical Committee Meeting

Report Generated:

10/27/2021 09:54 PM EDT

**Webinar ID**  
350-493-811

**Actual Start Date/Time**  
10/27/2021 07:54 AM EDT

**Duration**  
9 hours 13 minutes

## Attendee Details

<b>Attended</b>	<b>Last Name</b>	<b>First Name</b>
Yes	Addis	Dustin
Yes	Allen	Shanae
Yes	BROUWER	MYRA
Yes	BYRD	01JULIA
Yes	Bell	00-Mel
Yes	Bianchi	Alan
Yes	Bublely	Walter
Yes	Buckel	Jeff
Yes	Cao	Jie
Yes	Carmichael	John
Yes	Cheshire	Rob
Yes	Collier	01Chip
Yes	Crosson	Scott
Yes	DeVictor	Rick
Yes	Dumas	Christopher
Yes	Finch	Margaret
Yes	Fitzpatrick	Eric
Yes	Flowers	Jared
Yes	Forrestal	Francesca
Yes	Foss	Kristin
Yes	Gentry	Lauren
Yes	Hadley	01John
Yes	Helies	Frank
Yes	Hoke	David
Yes	Howington	Kathleen
Yes	Hudson	Rusty
Yes	Iberle	01Allie
Yes	Iverson	01Kim
Yes	Johnson	Eric
Yes	Laney	Wilson
Yes	Lange	Anne
Yes	Li	Yan

Yes	Marhefka	00Kerry
Yes	Mehta	Nikhil
Yes	Murphey	Trish
Yes	Neer	Julie
Yes	Nesslage	01 Genny
Yes	Patten	Willow
Yes	Rhodes	01Cameron
Yes	Slegfried	Kate
Yes	Sagarese	Skyler
Yes	Sanchez	Joseph
Yes	Scharf	Fred
Yes	Schmidtke	01Michael
Yes	Schueller	Amy
Yes	Serchuk	Fred
Yes	Sharov	Alexei
Yes	Smillie	Nicholas
Yes	Spanik	Kevin
Yes	Sweeney Tookes	Jennifer
Yes	Vincent	Matthew
Yes	Walter	John
Yes	Wiegand	Christina
Yes	Williams	Erik
Yes	Wyanski	David
Yes	adeimy	daniel
Yes	vara	mary

## Scientific & Statistical

### Attendee Report: Committee Meeting

Report Generated:

10/29/2021 06:32 AM EDT

**Webinar ID**

350-493-811

**Actual Start Date/Time**

10/28/2021 07:53 AM EDT

**Duration**

9 hours 10 minutes

### Attendee Details

<b>Attended</b>	<b>Last Name</b>	<b>First Name</b>
Yes	Addis	Dustin
Yes	Allen	Shanae
Yes	BROUWER	MYRA
Yes	BYRD	01JULIA
Yes	Bell	00-Mel
Yes	Bianchi	Alan
Yes	Bubley	Walter
Yes	Buckel	Jeff
Yes	Cao	Jie
Yes	Carmichael	John
Yes	Chagaris	David
Yes	Chaya	01Cindy
Yes	Cheshire	Rob
Yes	Crosson	Scott
Yes	DeVictor	Rick
Yes	Dumas	Christopher
Yes	Finch	Margaret
Yes	Fitzpatrick	Eric
Yes	Flowers	Jared
Yes	Foss	Kristin
Yes	Gentry	Lauren
Yes	Grimes	Shepherd
Yes	Hadley	01John
Yes	Helies	Frank
Yes	Howington	Kathleen
Yes	Hudson	Rusty
Yes	Iberle	01Allie
Yes	Iverson	01Kim
Yes	Johnson	Eric
Yes	Karnauskas	Mandy
Yes	Laks	Ira
Yes	Laney	Wilson
Yes	Lange	Anne
Yes	Li	Yan
Yes	Marhefka	00Kerry



Yes	McEachron	Luke
Yes	Mehta	Nikhil
Yes	Murphey	Trish
Yes	Neer	Julie
Yes	Nesslage	01 Genny
Yes	Patten	Willow
Yes	Rhodes	01Cameron
Yes	Scharf	Fred
Yes	Schmidtke	01Michael
Yes	Schueller	Amy
Yes	Serchuk	Fred
Yes	Smart	Tracey
Yes	Smillie	Nicholas
Yes	Stemle	Adam
Yes	Sweeney Tookes	Jennifer
Yes	Travis	Michael
Yes	Vincent	Matthew
Yes	Walter	John
Yes	Wiegand	Christina
Yes	Williams	Erik
Yes	Wyanski	David
Yes	vara	mary

## Scientific & Statistical

### Attendee Report: Committee Meeting

Report Generated:

11/01/2021 02:06 PM EDT

**Webinar ID**

350-493-811

**Actual Start Date/Time**

10/29/2021 07:57 AM EDT

**Duration**

4 hours 23 minutes

### Attendee Details

<b>Attended</b>	<b>Last Name</b>	<b>First Name</b>
Yes	Addis	Dustin
Yes	BROUWER	MYRA
Yes	BYRD	01JULIA
Yes	Belcher	Carolyn
Yes	Bell	00-Mel
Yes	Bianchi	Alan
Yes	Bublely	Walter
Yes	Buckel	Jeff
Yes	Cao	Jie
Yes	Cheshire	Rob
Yes	Collier	01Chip
Yes	Crosson	Scott
Yes	DeVictor	Rick
Yes	Dumas	Christopher
Yes	Finch	Margaret
Yes	Fitzpatrick	Eric
Yes	Flowers	Jared
Yes	Foss	Kristin
Yes	Gentry	Lauren
Yes	Gloeckner	David
Yes	Grimes	Shepherd
Yes	Hadley	01John
Yes	Helies	Frank
Yes	Hoke	David
Yes	Howington	Kathleen
Yes	Hudson	Rusty
Yes	Iberle	01Allie
Yes	Iverson	01Kim
Yes	Johnson	Eric
Yes	Laks	Ira
Yes	Laney	Wilson
Yes	Lange	Anne
Yes	Li	Yan
Yes	Mehta	Nikhil

Yes	Murphey	Trish
Yes	Neer	Julie
Yes	Nesslage	01 Genny
Yes	Patten	Willow
Yes	Reichert	Marcel
Yes	Rhodes	01Cameron
Yes	Scharf	Fred
Yes	Schmidtke	01Michael
Yes	Schueller	Amy
Yes	Serchuk	Fred
Yes	Sharov	Alexei
Yes	Smillie	Nicholas
Yes	Sweeney Tookes	Jennifer
Yes	Vincent	Matthew
Yes	Walter	John
Yes	Wiegand	Christina
Yes	Williams	Erik
Yes	Wyanski	David
Yes	adeimy	daniel
Yes	vara	mary