GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

MEETING OF THE STANDING & SPECIAL REEF FISH, SOCIOECONOMIC, & ECOSYSTEM SCIENTIFIC AND STATISTICAL COMMITTEES

GMFMC Office Tampa, Florida

JULY 19-20, 2023

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Kevin Anson.....GMFMC

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The Meeting of the Gulf of Mexico Fishery Management Council Standing and Special Reef Fish, Special Socioeconomic, and Special Ecosystem Scientific and Statistical Committees convened on Wednesday, July 19, 2023, and was called to order by Chairman Jim Nance.

INTRODUCTIONS
ADOPTION OF AGENDA
APPROVAL OF VERBATIM MINUTES AND MEETING SUMMARY: MAY 2-4, 2023 MEETING
SCOPE OF WORK
SELECTION OF SSC REPRESENTATIVE FOR THE AUGUST 14-17, 2023 GULF COUNCIL MEETING IN AUSTIN, TEXAS

CHAIRMAN JIM NANCE: Welcome, everybody. We'll go ahead and get started. Good morning. My name is Jim Nance, and I am the chair of the Scientific and Statistical Committee for the Gulf of Mexico Fishery Management Council. We appreciate your attendance on this webinar and input in this meeting. Representing the council is Kevin Anson. We appreciate him being here.

Council Staff in attendance include Carrie Simmons, John Froeschke, Ryan Rindone, Jessica Matos, and Charlotte Schiaffo. Notice of this meeting was provided to the Federal Register, sent via email to subscribers of the council's press release email list, and was posted on the council's website.

The topics at this meeting will include Review of SEDAR 81, Gulf Group Spanish Mackerel Operational Assessment; Update and Discussion of MRIP Cumulative Estimate Reporting; Technical Guidance on National Standard 1 Reference Points and Status Determination; Review of Gulf Group King Mackerel Interim Analysis; and Public Comment.

This webinar is open to the public and is being streamed live and recorded. A summary of the meeting and minutes will be produced and made available to the public on the council's website. For the purpose of voice identification, and to ensure that you are able to mute and unmute your line, please identify yourself by stating your full name when your name is called for attendance.

We'll do that in a moment, but just a reminder for those SSC members that are not here, but are on the webinar, we'll be using the raised-hand function, so we can be able to recognize you to speak, and Jess will type the names in, so we can keep track of those, and you will be called in order. Jessica, let's go ahead and call for attendance.

MS. JESSICA MATOS: Luiz Barbieri.

DR. LUIZ BARBIERI: Luiz Barbieri.

MS. MATOS: Harry Blanchet. Dave Chagaris. Roy Crabtree. Doug Gregory.

MR. DOUG GREGORY: Good morning. Doug Gregory.

MS. MATOS: David Griffith.

DR. DAVID GRIFFITH: Hello. David Griffith.

MS. MATOS: Paul Mickle.

DR. PAUL MICKLE: Paul Mickle.

MS. MATOS: Trevor Moncrief.

MR. TREVOR MONCRIEF: Trevor Moncrief.

MS. MATOS: Jim Nance.

CHAIRMAN NANCE: Jim Nance.

MS. MATOS: Will Patterson.

DR. WILL PATTERSON: Will Patterson.

MS. MATOS: Daniel Petrolia.

DR. DANIEL PETROLIA: Daniel Petrolia.

MS. MATOS: Sean Powers. Steven Scyphers. Jim Tolan.

DR. JIM TOLAN: Jim Tolan.

MS. MATOS: Rich Woodward.

DR. RICH WOODWARD: Rich Woodward.

MS. MATOS: Jason Adriance.

MR. JASON ADRIANCE: Jason Adriance.

MS. MATOS: Mike Allen.

DR. MICHAEL ALLEN: Mike Allen.

MS. MATOS: John Mareska.

MR. JOHN MARESKA: John Mareska.

MS. MATOS: Luke Fairbanks.

DR. LUKE FAIRBANKS: Luke Fairbanks.

MS. MATOS: Cindy Grace-McCaskey. Jack Isaacs.

DR. JACK ISAACS: Jack Isaacs.

MS. MATOS: Mandy Karnauskas.

DR. MANDY KARNAUSKAS: Mandy Karnauskas.

MS. MATOS: Josh Kilborn.

DR. JOSH KILBORN: Josh Kilborn.

MS. MATOS: Steven Saul. Kevin Anson.

MR. KEVIN ANSON: Kevin Anson.

CHAIRMAN NANCE: Thank you. Our first item of business is Adoption of the Agenda. Are there any changes or modifications that we need to make to the agenda? Seeing none, is there any opposition to the adoption of the agenda?

MR. RYAN RINDONE: Dr. Nance, do we have, at the end, the bit about yellowedge? Okay. Good. Sorry. We're good to go.

CHAIRMAN NANCE: Seeing no opposition, the agenda is adopted. The next item is Approval of the Verbatim Minutes and the Meeting Summary. Any changes to those two items? Hearing and seeing none, is there any opposition to approval of the minutes and the meeting summary from the last time? So those are approved.

The Selection of the SSC Representative for the Gulf Council Meeting in Austin, I will be happy to go to that, and I will participate at the council meeting for the SSC, and so our first item of business is we'll have -- Ryan, would you please read the scope of work for Action Item Number V, which is going to be the Review of SEDAR 81? Dr. Ailloud is here, and we appreciate her in attendance, and, as soon as Ryan gets ready with the scope, then we'll turn the time over to you for that presentation.

REVIEW SEDAR 81: GULF OF MEXICO MIGRATORY GROUP SPANISH MACKEREL OPERATIONAL ASSESSMENT

MR. RINDONE: Thank you, Dr. Nance, and just one more quick thing for you guys to have on the horizon, and so, because of the timing of when we expect to receive the research track from red snapper, and when we're going to receive the SEDAR 85 operational assessment for yellowedge, for 2024, we're looking at cancelling the January and March SSC meetings and having a longer meeting at the end of February, and this will allow the Center the appropriate amount of time, after the review from the SEDAR 74, to make any recommended changes from the CIE and the SSC during that review and have that prepared for a meeting that will be the last week of February, and so, if you have the ability to block that off, and that's when we're looking at for that.

CHAIRMAN NANCE: The last week in February, but how long?

MR. RINDONE: I mean, it will probably a three or four-day meeting, but we'll talk to the Center about the kinds of time requirements that they might expect and what other things might be on the agenda, but, right now, those are the only two things that I planned on putting on that agenda at this time.

CHAIRMAN NANCE: That's the week of the 25th?

MR. RINDONE: Yes, and it's like the 25th to March 1, and so go ahead and scribble it out on those dates. Okay, and thank you, Dr. Ailloud, for being here today. Dr. Lisa Ailloud from the Center will present the findings on Spanish mackerel, and this SEDAR 81 resolved several concerns from the previous model, and it incorporates the updated recreational data used in the MRIP-FES, and Dr. Ailloud will review the model's construction and development, indices of relative abundance, estimations, results, diagnostics, and, ultimately, yield projections, based on the council's current status determination criteria. Another note for Spanish mackerel is that it does not have sector allocations.

The SSC should consider this information and make any recommendations, as appropriate, about the setup and the data included, weightings, et cetera, and, ultimately, make a recommendation about whether you guys think it's consistent with the best scientific information available.

We have time now for talking about the model setup and everything that I mentioned, and then we'll have some additional time tomorrow to talk about any -- You know, the results of any adjustments that you guys would like to see made, you know, that can be accomplished

by tomorrow, and you guys should also evaluate the projections and consider whether to recommend modifications to the catch limits to the council, and so, Lisa, it's at your pleasure.

DR. LISA AILLOUD: Good morning, everyone. It's good to be here in-person, and so today I'm going to present the stock assessment for SEDAR 81, Gulf of Mexico Spanish mackerel. It is an operational assessment.

I am going to start with an overview, go over the description of the data that -- I will give you details on the data that were used for the modeling process, go over the results, share with you the diagnostics of the model, look at some sensitivity runs on the more important axes of uncertainty, and then go over some conclusions and recommendations showing some of the contrast with the last -- With the previous assessment, which was about eleven years prior, and then finish with the projections, benchmarks, and stock status.

For this assessment, there were no topical working groups, and the terms of reference are detailed in the report. One of the notable requests was the change to MRIP-FES, and so I'll be going over that, but it is all detailed here.

In terms of the stock boundaries, those are unchanged from SEDAR 28, which was the last assessment, which had a terminal year of 2011, and so any fish landed north of U.S. Highway 1 in Monroe County are assigned to the Gulf of Mexico stock, and the stock extends all the way to Texas.

In terms of management that governs this stock, there is a twelve-inch minimum size limit in place since 1983, and there are bag limits that have varied through time, and there have been catch limits since 1983 as well, and the commercial and recreational catches are combined, like Ryan mentioned, and there is no sector allocation, and there some spatial closures and prohibited gears, notably a ban on gillnets in Florida waters starting in 1995, and, on the right-hand side, this is just a recent graph of landings from -- Just showing the actual estimated landings against the ACL, just to show you how they contrast in recent years, where the catches are well below the ACL, and there is a lot more detail on the management actions in the Working Paper 1.

These are all the working papers that were submitted for the assessment, ff you need any more detail on any specifics, but, essentially, there is one on management actions, one describing the recreational data, and the third one is focused on age data, and then there's two papers on -- Commercial landings are

described, and any changes from the last assessment, and there's a paper explaining how discards were calculated for the commercial sector, and there's two papers on composition data, both age and length composition for the recreational and commercial landings, and there is one paper on describing how the vertical line index was derived, and, finally, a paper on the SEAMAP index.

Just to give you a quick overview of the main changes compared to SEDAR 28, one major change is that we change the start year of the model from 1886 to 1986, and I will go over all these points in a lot more detail in the subsequent slides, that the recreational landings and discards time series was changed from being in CHTS units to FES, that, in SEDAR 28, there was a single recreational fleet that combined charter, headboat, private, and shore, and it was fitted almost exactly, with very small annual CVs, and this was changed. We split up all -- Well, we split it up into three different components, a charter/headboat, a private mode, and a shore mode, and then we assigned more realistic CVs around those values, based on the CVs provided by MRIP and the headboat survey.

In this assessment, we actually do have access to some recreational discard length data, and so we were able to include those into the model to inform retention for the recreational fleet. The commercial handline fleet -- There are two commercial fleets, gillnet and handline, and the handline was modeled as total catch for this assessment, mostly just to simplify the modeling from data that were highly uncertain, highly-uncertain discard data.

The index, the MRFSS index, the recreational index, was dropped from this assessment, which was used in SEDAR 28, and the SEAMAP trawl index was broken up into two separate indices, to reflect the change in the survey design in 2008 and 2009. With the newest version of Stock Synthesis, we were able to define an actual settlement month, and so it's like a recruitment month for the fish, which allows internal adjustments of the natural mortality for age-zero fish, with the Lorenzen scaling, and, finally, the Dirichlet multinominal reweighting was used for composition data.

In the updating the assessment, we did find two mistakes in the previous assessment, and one was on the input for the slope of the maturity function, and so that was corrected, and the other, which became less relevant once we changed the start year, but, essentially, the minimum size limit -- There was a time block on selectivity for the minimum size limit in the old assessment, and it was erroneously placed in 1993 instead of 1983, and so that was corrected. In conclusion, the base model indicates that Spanish mackerel, Gulf of Mexico Spanish mackerel, is not currently undergoing overfishing, nor is it overfished.

In terms of the model structure, on the right-hand side, it gives you a visual, including the amount, the relative amount, of data available for each data stream, and, essentially, the years covered are 1986 to 2021, and we have two commercial fleets, the gillnet fleet and the handline fleet, with some other gears that were divided between those two fleets. There are three recreational fleets, and headboat and charter were aggregated, and then we have private mode and shore mode.

We have a discard-only fleet, which is the shrimp bycatch fleet, and this one -- I will go into more detail as to how it's modeled, but it includes a discard, a median discard, estimate, which is scaled by an effort time series, and so, in terms of indices, we have a commercial vertical line index and then the SEAMAP fishery-independent trawl index, which, like I mentioned, is split into two time series. I did list the shrimp effort, but it's not an index, per se, and it's for scaling the discards, and so it's not -- It has nothing to do with relative abundance, and it's just to define the relative magnitude of discards from year to year.

Then, finally, we do have age and length composition for every one of those fleets, and, if you look at the graph, you can see there are some gaps in data, and recreational shore, in the recent years, is the primary source of landings, and yet not the primary source of composition data, and so there is a bit of a mismatch there, and the same with age composition. There is not much age composition coming from the shore mode, and it's mostly coming from headboat and charter, which is actually the more minor source of landings for Spanish mackerel. I should mention that, if anything is unclear, I am happy for anyone to raise their hand and interrupt me and get clarification.

Moving on to life history, this is a single-sex model, with a sex ratio assumed one-to-one between males and females. The weight-length relationship was unchanged from SEDAR 28, and it's shown on the upper-right-hand side. The age and growth data -- We did have a fair amount of additional age data come in since 2011, and, in fact, it about doubled the sample sizes available, but, as you can see in the estimated growth curve on the right-hand side, it didn't have a major impact, and we went from having 10,000 samples to 20,000 samples, but it is indicating a very similar trajectory in growth.

The growth curve was estimated internally in the assessment, and we did have an ageing error matrix available, which I will detail in the next slide.

In terms of settlement timing, like I mentioned, with the newest version of Stock Synthesis, we are able to define what month the fish settle, or recruit, and we set it as May 1, based on research from Finucane and Collins in 1986, and, in terms of natural mortality, we did use the internal Lorenzen scaling to the Hoenig point estimate of 0.38, and this is an estimate of mortality based on a maximum age of eleven, which is what was used in the last assessment, and we did not see any older fish recovered since then.

If you look on the right-hand side, it's a little bit confusing to look at the age-zero mortality, because, in the last assessment, there was no ability to define the settlement month, and so the age-zero mortality was manually adjusted downward, to account for the fact that the fish don't suffer the natural mortality throughout the entire year, and that's no longer necessary, and so that's why you see the disconnect, but mainly what is to retain here is that, with the internal scaling, there is only minor differences between the last assessment and the new one, and it's mostly because of the slight differences in the growth curve that is used, that is estimated internally and used to scale those M-at-age.

Now, I do have a sensitivity run, which I will show later on, for an alternative M estimate using -- Actually, that should say "Hamel and Cope", more accurately, from 2023, of 0.49, and I did provide the paper as a background document.

This is the ageing error matrix that was made available for the assessment, and it is a matrix that was derived from a single reader, actually, and so this says Reader 1 and Reader 2, but this is the same reader doing two blind reads on the same otolith from Spanish mackerel. He had a set of 200 otoliths, and, essentially, if his readings were perfectly precise and replicable, all the points would fall on the one-to-one line, and so you can see that there is -- Those readings are fairly confident, and there is not any obvious bias between the two reads, and, in terms of precision, it looks like Spanish mackerel are fairly easy to read and, even at the larger ages, the margin of error is fairly low, and so this is the ageing error matrix, and on the right-hand side is what Stock Synthesis -- How it is defined in Stock Synthesis.

The only adjustment that I had to make for inputting this matrix into Stock Synthesis is that I had to define the CVs for ages-nine, ten, and eleven as being the same magnitude as for age-eight, because, if you look on the left, there was no age-nine, ten, eleven in the actual dataset, and so those are extrapolations, and the extrapolation was poor, and so we're assuming that the ageing error observed at age-eight is similar in the older ages,

which was confirmed by the age reading experts in Panama City.

Continuing with life history, we have the maturity function shown on the bottom-right, and I mentioned that there was an error for the input slope in the last assessment, and so you can see that maturity curve as the dotted-blue line, and the correct one is in red, and so what we did here is just go by what was recommended last time, and so, in SEDAR 28, it was recommended to use data from the Atlantic, because the data were more complete, and they were also based on histological analyses, versus the data from the Gulf were less complete and also based on microscopic assessments.

The black on the top-right graph is the raw data used, or the raw proportions used, to fit the maturity curve, and the black line is the one used, and it's sexes combined South Atlantic samples.

For the fecundity, the fecundity is assumed equivalent to female spawning stock biomass, and this is unchanged compared to the last assessment, and, for the stock-recruitment curve, a Beverton-Holt is assumed, with recruitment variability fixed at 0.7, as was done in SEDAR 28, and steepness fixed at 0.8, as was also done in SEDAR 28. Now, I did explore some sensitivity runs regarding steepness, which was one of the terms of reference, and so I will go over those later.

In terms of the start year, as we were modifying the model, which was starting at 1886 for SEDAR 28, with some historical reconstruction, essentially with the catches ramping up through the time, all the way up to 1986, and there was a lot of model instability, and so we did test a couple of alternative start dates, based on the quality of the data, and so we tried 1986, and we also tried 1950, because there was a lull in the catches after World War II, but there was quite a bit of instability in the model, and the model was much better behaved if we started it in 1986, and so that is what we decided to go with for the base model, and I will show you some more detail on how we defined the initial conditions in that base model, because, rather than starting in virgin conditions in 1886, we now are started in fished condition, and so we do have to define what the equivalent catches were in the start year of the model.

In terms of commercial landings, keep in mind that the model does start in 1986, but I wanted you to have a broader picture of what the estimated catches looked like back in time, so you can have that in the back of your mind, in terms of how the more recent time series compares, and so, on the top-right-hand side, you can see the gillnet plus other fleet, and on the right is the handline fleet. The other fleet were just a portion, and there were

miscellaneous gears that were apportioned to either gillnet or handline, based on the proportion of that gear contribution to the total gillnet plus handline catches for each year, and so it's just a proportional assignment.

You can see that the gillnet -- For example, the gillnet landings were estimated to be quite high in the 1960s, with a big drop in the late 1970s, and then we start the model in 1986, and then there's another major drop in 1995, following the Florida gillnet ban.

For handline, there's a lot of variability. There's a very big peak in the 1970s, but, overall, landings have been fairly low in recent years. The CVs were set to 0.01 for this assessment model, which was used also last time, and, on the bottom-right panel, you can see the comparison between the SEDAR 28 time series and the SEDAR 81, noting some minor differences in each year, and the report, the assessment report, does have a lot more detailed information on the differences from year to year, and there's also a working paper describing why there are differences observed.

In terms of commercial discards, normally -- You're aware that we have a kind of best-practice approach for estimating commercial discards that have been used for many of our species in recent assessments, which relies on the reef fish observer program. Unfortunately, for Spanish mackerel, the number of fish recorded from the reef fish observer data were really low, and there were thirty-nine fish from 2007 to 2021, which is not sufficient for applying the newer best-practice method, and so, instead, the discard rates were contributed from the discard logbook data and applied to the gear-specific total effort from the coastal logbook program.

In order to -- The results of these analyses showed negligible discards from the gillnet fishery. Therefore, no discards were modeled for gillnet, and that's also what was found in SEDAR 28. For the handline, there were some non-negligible discards estimated. However, they were highly uncertain, and it was therefore decided to add -- To convert those discard rates into discards in weight for the handline and then add them into the landings to model total catch, instead of landings only, and so how we did this -- If you look on the top-right-hand side, you have the length-weight relationship, and we assumed that the discarded fish were around the size limit.

We had a little bit of size data for the discard fit from handline, and it's very few, but it essentially showed most fish around the size limit, some falling under, and some falling above, and so we

assigned this mean weight of twelve inches, and then we applied a 10 percent mortality rate, which is what was assumed in SEDAR 28 for the commercial sector. On the bottom-right-hand side, you can see the plot of the percent, how those discards compare to the landings in percent, and it's that blue line, and you can see that it's about 9 percent, on average, and it's much lower, closer to 2 or 3 percent, in recent years, and, once you look at those discards in the context of the handline plus other fleet, which is what is modeled in SS, it's only about 1 percent per year of the total catches, and so quite small.

Recreational landings, like I mentioned, the biggest change here is splitting the fleet into three components to better defined the differences in selectivity between those modes. On the top-right, you can see the difference between the CHTS time series of landings and the FES, and FES is in green, and so, again, it's a much higher magnitude with FES.

Now, we did have -- We did use the CVs that were provided by MRIP to characterize uncertainty, and those CVs could be quite large, and, following MRIP guidance, if there was a year where the CV was greater than 0.5, the estimate for that year, for those landings, was replaced by the average of the two neighboring years, and so, on the bottom-right-hand side, it just shows you which data points had to be replaced, following that methodology, and it's actually not that many data points, but there is a year in the charter/headboat, and I think that is it for landings.

CHAIRMAN NANCE: Katie, please.

DR. KATIE SIEGFRIED: I just wanted to add to what Lisa was saying, and so, when we started this assessment, there was some guidance from S&T about this, but there has since been a working group that's been formed, with S&T folks and Science Center folks, to come up with a suite of options when there are high CVs, and this was an ad hoc approach, and so we wanted to present it here, but it is not the sort of final recommendation from S&T that will be forthcoming.

CHAIRMAN NANCE: Luiz.

DR. BARBIERI: Since you stopped for a second, Lisa and Katie, do you have an idea how many -- I didn't go and look into the document to find out, but like the proportion of years that actually had to be replaced, and you said it was a small number.

DR. AILLOUD: Yes, and it was very small for the landings, and so this graph on the bottom-right -- It's a little bit hard to see on

this screen, but the blue dots are the dots that were replaced, and so, for landings, it was just 1990 for charter/headboat, and so was 1985, but that's not in the model, because we started in 1986, and I will show you -- We did the same -- We went by the same method for the discards, and I think there were a few more years in the discards, but the CVs were higher, but, yes, most CVs were under 0.5.

DR. BARBIERI: Thank you.

DR. AILLOUD: The headboat data was obtained from the headboat survey, and, in terms of CVs -- Actually, yes, I put the range there, and so most CVs for MRIP were ranging between 0.1 and 0.5, which is much higher than the assumed 0.01 in the previous assessment, and, for the headboat, the headboat survey did provide proxy CVs, based on the number of -- The ratio of reported trips versus estimated trips.

Then this is -- On the left-hand side, just to give you an idea of where the model starts and how the historical reconstruction looked back in time, which was a bit of ramping-up from the 1950s all the way up to the 1980s, and you can see, also, how that uncertainty looks around those data points, and so quite a lot of uncertainty, and, on the right-hand side, I did put a note that, you know, to be careful, and we're looking at different units here, but, just so you have an idea of the difference in magnitude between the last assessment and this assessment, I combined all the recreational data modes into a single time series, to plot it against SEDAR 28, and so those are all the recreational data combined in FES units in red.

Here are the recreational discards, and so, again, the same kind of imputation and averaging and smoothing out is used here, and so, on the bottom-right, you can see that a few more years had to be smoothed out. In the charter/headboat, I believe it was seven years, mostly in the early 1990s and mid-1990s and then late 1990s, and so those are the blue-teal dots on the bottom-right-hand side, and none in the private, at least not in the time series used in the assessment, and then the recreational shore had an adjustment for 1991, which is, again, shown in teal.

On the top-right-hand side, you can see the contrast between the discard estimates in CHTS versus FES units, and you see that the shore mode has quite a lot of variability from year to year.

For the headboat, the best-practice super ratio approach was used from 1986 to 2003, which is where the MRIP charter discard ratio is applied to the headboat landings and scaled by the mean ratio

of CHTS to MRIP charter discard rate, and, where data are available from the headboat survey, which is 2004 to 2021, those are used directly as the discard estimates.

In terms of CVs, again, we did have CVs provided by MRIP, most of which were under 0.5, but, again, much larger than previously assumed at 0.01, and, for headboat, the charter boat CVs, discard CVs, from MRIP were actually used for 1986 to 2003, and then, for 2004 to 2021, there was no estimates of CV for discards from the headboat survey, but they did have estimates of CVs for the landings, and so those were used to characterize uncertainty in the discards.

In terms of post-release mortality from the recreational sector, a mortality of 20 percent was applied to those discards, which is unchanged from SEDAR 28. In terms of recreational discards --

MR. RINDONE: Lisa, can I jump in, real quick? I talked about this a little bit with Katie on the phone, about the discards between the recreational and the commercial side, and, I mean, there hasn't really been much difference in practice on the commercial side for what they do with how they're catching Spanish, and so I don't know how much I think there would be a change there, but, for applying 20 percent across-the-board for the recreational sector, I kind of wonder about that, now that the fleets are split, and thinking about some of the fishing practices that we have in the Gulf -- You know, like when we're talking about the for-hire fleet and how that's combined now for like the charter and the headboats, you know, a lot of the headboats don't stop when they're trolling.

I'm sure that there are plenty of Spanish that are caught when they're drifting or something like that, but, when they're trolling, you have to be able to reel whatever you're trolling for in while the vessel is underway at ten knots, and I can't imagine that bodes well for small scombrids like Spanish, and, in my observation, it hasn't, and there's usually a lot of torn throats, and gills are flared, and the fish is not -- It's not going to survive if released, if it's even still alive anymore by the time that it comes up.

Usually those fish are legal-sized, and so they don't have to be discarded, but, on the rare event that there was one that was smaller, I don't think it would bode well for that fish.

You know, also, and I talked with a couple of the other SSC members about this, related to something else, but, you know, kingfish and Spanish, and, you know, these highly migratory fish, they're

marathoners, right, and they have to keep swimming all the time, and so they don't survive quite as long when they're on the deck, compared to some of our reef fish species that, you know, you might be able to -- A fish might be able to make it, even if it was on the deck for ten minutes or so, like if it's a snapper or a grouper, but, if you leave a kingfish or a Spanish on the deck for the same amount of time, oftentimes, you know, they've stopped moving, and their odds of survival upon release -- I don't know what that would be, but it doesn't seem like it would be very good.

I kind of wonder if, you know, maybe we should consider some alternatives for recreational discards for the different fleets, now that the recreational fleet is not combined, and it's broken up into the subcomponents, and so that was all that I was going to say.

DR. AILLOUD: Thank you, Ryan, for that insight. The headboat/charter is a fairly small portion of landings and discards for Spanish, and so, if that's where the highest mortality is, it probably won't make a big difference. I also did do a sensitivity run, because, in the past assessment, when they decided on 20 percent for post-release, they didn't have much to go off of, and there was a lot of expert knowledge, and so we did test 40 and 60 percent in a sensitivity run, which is in the report, and I'm not sure if it's in the presentation, but it actually did not change the results, and most of it is because there is flexibility in fitting to the discards, and there is flexibility in the retention curves, and it kind of moves around with it, because it has a better idea of the depletion than it does of this mortality source, and so it's not very influential, mostly because of the uncertainty, and so we did look into this. We did look, and there is no new information, also, to go off of to improve our estimate of post-release mortality, unfortunately.

Actually, on the top-right-hand side, these are the length composition data that were made available for this assessment to characterize the length composition of the discards, and they mostly come from headboat and charter boat, and, as you can see, this is not a lot of data, but that's what we have, and it's better than nothing, because it does allow the model to refine this estimated retention curve, but you can see that, in a lot of years, most of the discarded fish are right around the size limit, and probably age-zero fish.

When we see those high peaks, it does seem to be a recruitment group that's being picked up, but then there are other years where you do have some fish that are being discarded above the size limit, and so this was informative for the retention curve, to

show that some fish were being discarded above the size limit, and so it was not just regulatory discards related to the size limit, but also other things, probably, including bag limits.

On the bottom-right-hand side, again, I added together all the discard modes, estimated in FES units, just to give you a contrast with how it differs from the time series used in the last assessment, and you can see that the magnitude is quite different, and the interannual variability is also magnified, when using FES.

Shrimp bycatch, this one is -- The time series is also one that is highly uncertain for Spanish mackerel, and we do have estimates of shrimp bycatch, annual estimates, from 1972 to 2011, and we did not have any update for the most recent time period, because the analysis was not updated, and so the way these data are input into the assessment, and interpreted, is that we provide Stock Synthesis with a median value of discards over a certain time period, in this case 1986 to 2011, and then we also provide a time series of the shrimp effort, and so you can see on the bottom-right is the index of the shrimp effort for every year, and I did overlay the SEDAR 28 series, so that you can see some of the differences.

What SS does is that, using the effort time series, it's able to scale up and down the discards for every year, but it has to -- They have to average out to that median input value that we provide and for which we put a CV of 0.01, and so it's trying to match exactly, pretty much, an average of about 6,000 fish, on average, over those years, and the years that were used were 1986 to 2011, but the effort time series provided was 1986 all the way up to 2021.

In 2021, we did not have a point estimate from the shrimp effort series that matched the methodology that was used in SEDAR 28, and so we used a 2021 point estimate obtained from the new estimation method that is currently being developed and that you all have been informed of in previous webinars, or meetings, and so that is the procedure for shrimp bycatch. The reason why it's included, using this super period approach, is that the annual estimates are highly uncertain.

In terms of composition, this slide shows the composition data available for the commercial sector, and so, in terms of lengths, we did not have very good coverage of length sampling for gillnet or handline. There is a detailed analysis of the data in Working Paper 7, but one improvement that we were able to bring about, compared to SEDAR 28, was to post-stratify the length data, and so, in SEDAR 28, the nominal length data were added for a year, and used as such, and that was criticized in the review process,

because they weren't necessarily representative, in space and time, of the landings, and so, for this assessment, we spatially stratified the landings into east, west, and central and weighted the composition data relative to the landings in each of those areas. The idea is that we're trying to better represent the length composition overall for the fleet.

On the right, the very right-hand side, you see the aggregated length composition available for gillnet and handline, and the sample sizes were quite small for handline, which is why it's a little bit less smooth looking, but one thing that I do want to point out for gillnet is that I wanted to show you why we put a time block on the selectivity for that fleet in 1995, and that was to reflect the Florida gillnet ban, which, if you look at the landings time series, you see that, in 1995, not only did the ban cause a big decrease in landings in the gillnet fishery, but it also shifted a lot of the catches to Alabama and opened up a new expansion of that fishery in Alabama, and so the idea was to check if the selectivity might have changed through time, because those fish are now being caught at a different time of the year, and presumably different sizes, and so, on the very top-right, you see the contrast between the sizes before 1995 and after.

In terms of discarded lengths, there was very little data available from the reef fish observer program, only thirty-two fish between 2006 and 2020, and, because we were modeling the handline fleet as total catch, where we added those discards in, we didn't need to characterize a retention curve for that fleet, and so we did not use the length, discarded length, data, as such.

Then, in terms of age composition, on the right-hand side is a bubble plot showing the age data available from the commercial sector, on the very top is a histogram of the sample sizes that year, and so you see that you have some variability in the availability of samples, but a few hundred fish, usually, a year, and a little bit less in recent years.

If you look for diagonal patterns in those bubble plots, you can kind of pick up some strong or weak year classes, and we were able to detect some good contrast, with strong cohorts in 1991, 1995, 2001, 2010, 2013, 2015, and 2019. The Dirichlet multinomial reweighting was used for both the age and length data.

For the recreational sector, we had retained length available for all of the modes, and, after doing the same approach of reweighting the length composition by the landings for the recreational sector, we determined that the sample sizes for headboat and charter were quite small, and doing them separately would have meant dropping

a lot of data, because the strata had too few samples to do the extrapolations and the weighting, and so looking at the overall length distribution of charter and headboat, and realizing that they were really similar, we decided to combine those two modes into a single fleet and not model them separately, and that's why we ended up with a single fleet for charter and headboat.

For private and shore, we have sufficient data to do the spatially-stratified annual reweighting of length composition, and so they would be kept separate, and you see that mainly shore is slightly shifted to the left, catching -- Centered more around smaller fish, compared to private and charter/headboat.

In terms of the discarded length composition, we did have 282 samples, which we decided was sufficient to bring into the model, and, now, it is noisy. It's not a huge amount of data, but it is informative data that was useful for providing information for estimating the curve, and most of the data were coming from the headboat, 95 percent of those, and you can see, on the bottom graph, what these lengths look like, centered around, again, that twelve-inch, or thirty-four centimeter, size limit, which is where the peak lies, but you do still have some fish falling above and below.

In terms of age data, and I should have mentioned for commercial that both recreational and commercial age data were input as conditional on length, which essentially assumes that we are subsampling our age data in a length-stratified fashion from our length samples, which is the information that was presented in SEDAR 28, and so that modeling framework was kept here for SEDAR 81, and you see that we have a bit more samples for ages in the recreational sector here, with a histogram showing sample sizes on the top-right, and you do detect some of the similar cohort signals that you were detecting in the commercial sector in 1990, 1998, 2004, and then, in recent years, there's a couple of strong cohorts in 2013, 2015, and 2019 that are apparent in the data, and, again, the Dirichlet multinomial reweighting was used for all composition data sources.

Now, for fishery-dependent indices, the MRFSS index, or the recreational CPUE index, that was used in the last assessment, based on MRIP data, was dropped in this assessment, and that's following some guidance from Fitzpatrick and Williams 2022 that showed that, for many species, those indices are probably not really tracking abundance through time, for a variety of reasons, and that's including the fact that management actions, as bag limits, are very influential on the index values, and also that that proportion positives are very low for something like Spanish

mackerel, and so it's unlikely that those indices are actually tracking abundance.

For Spanish mackerel, the proportion of successful trips was less than 5 percent in each year, and so the decision was made to drop that index, but you can see, in SEDAR 28, that it was a rather flat index, with a very, very large uncertainty around it.

Now, the one index that was kept for the commercial sector, for the fishery-dependent sector, was the vertical line index, and the detailed methodology is explained in the Working Paper 8, and it is the exact same, again, methodology used in SEDAR 28, and so this is a strict update on the index, which is a GLM, where pounds of Spanish mackerel per trip are modeled according to year, month, inshore benthic species presence, reef fish species presence, and Florida regulatory area code.

The index is shown on the bottom-right, with the uncertainty around it, and the uncertainty used in the assessment was actually adjusted compared to the uncertainty estimated in the index fitting process, and so the CVs were actually scaled up so that the average CV matched the minimum CV of the fishery-independent survey, which was SEAMAP, which was about 0.2.

Those are the fishery-independent indices, and, again, the SEAMAP survey was split in 2008, following the change in the design, and mostly the expansion, the spatial expansion, of the survey, and so, on the top-right-hand side, it shows the early time series and then, on the bottom, the late one, and then, on the right-hand side, it just gives you the composition data that was available for each of those surveys, and so, in terms of modeling, what that means is that each of the indices have their own catchability parameter being estimated separately and then their own selectivity also being estimated separately.

Now, something to note, because you see, in the late survey, that there's quite a bit of variability, and quite low values, and, in fact, the index stops in 2020, because there were no Spanish mackerel caught at all in SEAMAP in 2021, in the summer and fall surveys, and so we were not able to include that data point.

In terms of the variables considered for the model fit, that was year, depth, time of day, day or night, statistical zone, and season, and what is being modeled is the number of fish per trawl hour.

CHAIRMAN NANCE: Lisa, I have just one question on that one, and so the index value on the Y-axis is the same between early and

late, and so the two on the late is the same as the two on the early?

DR. AILLOUD: They are -- No, because they are each scaled to average to one.

CHAIRMAN NANCE: Okay. Thank you.

DR. AILLOUD: Okay, and so moving on to the results.

DR. PATTERSON: While we're still talking about the data, I wonder if we can go all the way back to page 9. Thank you. At the top, where it has the catches, and you have this recreational shore mode that is, you know, quite cyclical, but, overall, it seems to be the predominant source of estimating landings here, and I am curious if this pattern is consistent with the previous assessment or if this is due to a switch to FES, which is driving this perception that recreational shore is the predominant source of landings.

DR. AILLOUD: Yes, and that's a good question. I would have to look back, and I do know that private and shore were fairly close up until the early 2000s, and then that's when really shore starts to take over, and so the last assessment ended in 2011, and so it would have really affected the years around 2000. I would have to dig back and look for more specific time series in SEDAR 28 and get back to you.

MR. RINDONE: Lisa, I can do that.

DR. AILLOUD: Okay. Thank you.

CHAIRMAN NANCE: Any other questions from the SSC while we're at the end of the data? Are there any questions on the data? Doug, please.

MR. GREGORY: Thank you very much. Real briefly, how are the indices -- Were they weighted, or were they assigned to different age groups, and -- In 2021, the index is zero for the SEAMAP. Thank you.

DR. AILLOUD: Okay, and sorry, and I think that I got most of your question, but I think you dropped out a little bit, and so I will try to answer. The first question is about the weighting, and the only weighting, per se, done is the adjustment of the commercial CV upward to match the minimum CV of the fishery-independent survey, and so essentially increasing uncertainty around the vertical line index, so that it's not seen as more precise than

the fishery-independent index.

We did try the Francis reweighting approach, which is an automated reweighting approach that Stock Synthesis allows, but it did not work well. After each iteration, it would allow more and more uncertainty around the indices and a tighter and tighter fit to the length composition, and so it was just not appropriate for what we were trying to do, and so the only reweighting, the only relative weighting, of the indices is done through that adjustment upward of the CV around the fishery-dependent index, and then I think your second point was about SEAMAP and the 2021 data point.

It's not that the index -- It's not input as a zero for the index, and so it's just not -- It's input as a missing value, and so there is simply no index data point in the model for 2021 for the fishery-independent index. We didn't want to put it in as a true zero, because that has a lot of implications. Did I miss anything in your question?

MR. GREGORY: No, and thank you very much, and I appreciate it. It's a very good presentation, and it's a lot of work. Thank you.

CHAIRMAN NANCE: Any other questions? I think we can continue on with the results then.

DR. AILLOUD: Okay. Moving on to the results, this is a busy slide, but I think you've seen this now a few times in previous assessments, and we're just trying to show you a bit of the model-building process that went through the various stages of adding data and doing adjustments to the model.

Each line is a model iteration, and the assessment report does have a table detailing all of the changes that were done in each of those, and these are kind of the major steps that we've pulled out of the process, but I wanted to -- I guess I can step through, and on the very top is the spawning biomass estimate, and then on the -- I split, because there were sixteen major steps, and I spilt those graphs into two, so that you were able to see things, because it was getting very difficult to squint, and, as you can see on the right-hand side, those are the models where we started truncating the data, starting in 1986, and so the time series of the X-axis is different, and so just keep that in mind when you're comparing left and right.

Then on the bottom is the fraction unfished, and so it's essentially the spawning stock biomass relative to its virgin condition, and this just kind of gives you a better idea of the impact on the estimated depletion level in the terminal year, which

is obviously something we look to for stock status, and so it's a little easier to interpret than just looking at the spawning biomass trajectory, and so you can look at those combined, and essentially what you see is that, when we changed from the SEDAR 28 --

When we only changed the discard and landing recreational data from CHTS to MRIP-FES, it did alter the virgin conditions, the estimate of this SSB zero, and it revised it upward, but it also revised spawning stock biomass upward throughout the entire time series, and one major difference is the trajectory of spawning stock biomass in the last five years of that SEDAR 28 assessment, and so five years prior to 2011, where, in SEDAR 28, it's quite a steep ramp-up of SSB, and then, once you replace with FES data, you have more of a downward trajectory, and so it was sensitive in those final years.

Then the next step was correcting the maturity, and so that slope error, and, again, that raised the virgin conditions and the overall scale of the population upwards, but, in terms of trend, it wasn't that different.

Then we corrected the time block for the selectivity for the minimum size limit from 1993 to 1983, which was the actual year that the size limit was put in place, which had just, again, kind of a minor impact, and then the bigger impact comes in when we start to change a lot of things, and so we changed the fleet structure, and we split up the recreational fleet into three modes, with three selectivities, and you can see that yellow line is -- Then the orange one, where we are playing around with selectivity, and you see that there is a bit of oddities, and that's kind of the model instability that I mentioned when we tried to keep in some of the historical data, and so, at that point, we were starting the model in 1950, and we were getting some instability in the 1970s, right before the recreational data comes in, after the reconstruction, and you can see that in the drop of the orange line, where there's a steep drop in 1980.

That was part of the reasoning for moving to 1986, and it did away with that time period where the model was just too free to move around, and then we re-estimated the initial conditions, which I will also go over, and the red line is this 1986 start year.

Now, if we look on the right-hand side, we now have all the steps after this start year was put in place and the fleet was changed and the data were -- New data were input, and then there's just some minor changes, the adjustment of the settlement timing for natural mortality, the use of super -- The change -- I played

around a little bit with the use of super periods for the discard length composition, and then the initial conditions, but, essentially, as you can see, there is no major differences, at least not as major differences happening in those subsequent steps, and it is a lot of model tuning, a lot of improving the selectivity in the fits to the length and the age composition data, and then the adjustment of the initial condition to match the initial depletion in 1986.

This slide goes over initial condition, and so, when we started the model in 1986, with Stock Synthesis, you do have to define what the equilibrium catches are in the start year, and now what was difficult for Spanish mackerel is that typically what we do is define the average say first five years of landings, and that's our equilibrium catch, but, in the case of Spanish mackerel, something like the gillnet fishery was actually much higher in the historical time period, or at least it's estimated to be much higher, than it was in the model period.

We did want to allow the model to have higher equilibrium catches in the initial conditions than observed in the first five years of the assessment, and we weren't sure exactly how to objectively define that initial catch.

The other complication we had to define initial conditions is that we do have a shrimp effort series in this model, and so the F for the shrimp survey, the shrimp effort, is also being estimated inside the model, and so it's kind of a pre-parameter to define the initial F for the shrimp bycatch, and so we also had to define the magnitude of F at the start of the model, which, again, if you look at the effort time series of shrimp bycatch, there were some years with higher estimated effort in historical times compared to today.

What we did, to have a more objective way of defining initial conditions, is that we defined those initial equilibrium catches as the average of the first five years of the data series, and we have also defined and fixed the initial F for the shrimp time series to 0.05, and that reflected a fishing mortality that was similar to the mid-2000s, which was similar to the 1960s, if we looked at the time series of effort.

Then we iteratively changed a scalar on those initial catches, and so we reran the model several times, changing the scalar on the initial equilibrium catches to be halved, or to be multiplied by 1.2, 1.5, all the way up to five, and so five-times higher equilibrium catches than those first five years, and then we looked at the total likelihood, like a profile, like we do on another

parameter, and looked for the optimal solution, according to that total likelihood profile, which is shown on the right-hand side, and, as you can see, the optimal initial equilibrium catch is essentially the catches that best reflect the level of depletion that the model is seeing in 1985 is a scaler of about three-and-a-half, and so three-and-a-half times higher in the initial catches.

How that translates into the total catch by gear, or by fleet, that's shown in the little square histogram, and, if you look at the first bar of that histogram, 1985, those are the initial equilibrium catches that are optimal, to match the initial depletion level, and so you can see that gillnet is kind of a bigger proportion, and that started in 1986, but you can see that the -- We wanted to make sure that we kept the relative magnitude of landings between the fleets, similar to recent times, for the initial 1986 to 1990.

That's a lot, and so I hope that was clear, but, on the left-hand side, it does show the different spawning biomass trajectories that each of the scalers result in, and you can see that it's not drastically different between, you know, cutting by half and multiplying by five, and the optimal solution is somewhere between three and four, and those are quite similar in the actual trend of SSB.

CHAIRMAN NANCE: Will.

DR. PATTERSON: Thank you, Mr. Chair. Just looking at the inset there of the various fisheries sectors, again, you have this issue with shore being, you know, a big contributor here, but you can really see the variance, and so I'm just trying to figure out, and like is this a real signal, because, if you go back to that figure of the catch estimates on Slide 9, and I'm not asking you to do that, but we looked at it before, and the shore catch estimates are more variable than the other sectors, and you see a little bit of -- In the private rec, you see a similar pattern, but it's not as extreme, and so part of that could be year class effects that are being picked up by those two fisheries.

You know, here, as just an example, with the data kind of blown up here and looking at the relative impacts, you know, it's a pretty drastic swing in those middle years, versus the two years on either end, and so I'm wondering if this is like a sample size issue within the survey or -- You know, what's driving this pattern? IS this actually real?

DR. AILLOUD: Yes, I agree, and it is highly variable. Why, I

don't know, and I would suspect that it has to do with the intercept data and outliers in the intercept data, or low sample sizes, that caused this swing from year to year, and I would have to look at the sample sizes available, but they are detailed in the working paper. We can certainly look into it.

DR. PATTERSON: I would actually feel better if the CVs were higher, because then the model wouldn't be trying to trace that pattern.

DR. BARBIERI: Just to follow-up on that point, since we are talking about this, in this case, right, we still have CVs that, on an annual basis, are less than 0.5, and that's why they were not removed from the analysis and this data were not, these estimates were not, removed. Thanks.

CHAIRMAN NANCE: Any other questions? Trevor, please.

MR. MONCRIEF: Just going off of Will's point, if you go back and you look into them, on the sample size, just make sure you start looking at the state-by-state, and I imagine that the largest magnitude is going to be from Florida, wave-by-wave, but it's important to kind of break that down, to see if there's some small size, some small sample size, issue across the other MRIP states, like Alabama and Mississippi, to see if they're driving, you know, a couple of estimates that might be, you know, pushing hundreds of thousands of pounds at a time, when they shouldn't be there, and so just make sure to break it down to that next level by state, rather than just doing a Gulf-wide sample size. That's all.

CHAIRMAN NANCE: Thank you, Trevor. Katie, please.

DR. SIEGFRIED: So I would like to put Will on the spot just a little bit and ask what we need to see next, in order to answer your question, and so we can look at the CVs from the working paper, and we can display those, and we can go into detail the way that Trevor asked, and show the state-by-state in the working paper.

If we analyze the CVs, you know, in peak years, versus valley years, and I'm trying to get at how we would know if this is real, as opposed to all the CVs are below 0.5, looking at the pattern from 28 versus this assessment, and I understand what you're saying, and I see the issue with it being cyclical, in that shore probably has a more uncertain sampling than other modes, private and shore.

DR. PATTERSON: You have the intercepts, and then you have the

scaling of that up to the total effort, right, and so I think Trevor's comment about it looking at it state-specific, and trying to figure out where the source of the peak landings, the highest landings, and is that -- You know, do certain Gulf states have pretty steady landings, and then you see spikes in certain regions?

I would look at the intercepts there, and, I mean, if the CV overall, the CVs overall, are less than 0.5, then that suggests there's not -- You know, we're not seeing CVs of one, like we see in some cases, or above, where we have really highly variable, and so I don't know.

I think looking at the number of intercepts and trying to geographically figure out like where this signal is coming from would be useful, and I don't know that, at this stage, you know, it's worth going all the way down those various rabbit holes, but, you know, one thing that I would like to look at is the difference, and Lisa, you know, talked about the time periods obviously are different, you know, going from 2012 versus to present, and then the start years are different, and so you have this sort of truncated range in between, where you would have consistent shore versus private rec data for the last assessment versus this one, but I think that's worth looking at as well.

I mean, the data are what they are, but we're then trying to capture what is the uncertainty in the assessment, right, and so it's not like you can go back and change the data input at this stage, but I'm just trying to understand, and like is this a real signal, or is this also then part of the uncertainty that's not just variability in the fishery, but actually, because of a shift in methodology, now we have a measurement error that's being put into the works here.

CHAIRMAN NANCE: Katie.

DR. SIEGFRIED: Okay. That helps a lot, and I think, in general, these coastal pelagics have dynamics that are hard to capture with the types of sampling we do, especially recreational sampling, but we can delve into it more deeply and take a look at that, and I guess the concern, and you noted it, is, even if it's a spatial pattern, I am not sure how we can reflect that in the assessment, besides making sure that we account for uncertainty, and it can be something that the SSC discusses when setting management -- Or, you know, catch advice, and so that's helpful, but we'll put those numbers together, and I think we can do that for later.

CHAIRMAN NANCE: Perfect. Will.

DR. PATTERSON: Like I said, I'm not suggesting to totally revisit how the catch data were put together here, or trying to fully investigate all the various sources of variance, and you asked what that might look like, and so that's how I would probably take a look at it.

I wasn't part of this process, and so I don't really know all the discussions that went into it to this stage, but it does strike me as curious that shore would, one, be the predominant source of landings, that there would be a shift in the past, and we know that FES has been one shift that has affected at least recreational landings, and so I think it bears thinking about, even if it is only at the capturing uncertainty stage when we talk about the control rule.

CHAIRMAN NANCE: Thank you. Trevor, please.

MR. MONCRIEF: I just -- It kind of follows the same logical pattern as mangrove snapper, and we've had that discussion, right, and it's like, any time a species is, you know, somewhat targeted, or harvested, within the shore mode, since the catches are so low, and then during the times of like, you know, the Waves 1 and 2 and 5 and 6, when you have decreased overall effort, the, you know, partitioning of effort to the shore side usually goes --

You know, it goes fairly high if you get positive intercepts with fish, and if they're catching these Spanish off of piers or anything else like that, and there is the chance of that volatility to come through, right, and it's just the nature of trying to just nail down shore catch and, you know, across these modes in general, and it just leads itself -- That shore mode just leads itself to volatility, just because of the nature of it in general.

I think Will's point is valid, right, and we can't go back, and the data is the data, and it's just, you know, it is what it is, but just having a good understanding of, you know, is this truly reflective, and where does it -- You know, where do you see it across the region and in other states, and like, if you have one, and an estimate for Mississippi was over 100,000 pounds, we would be like, all right, that's just not realistic, and so it's just on that side of it, and not to belabor this point anymore, but I just wanted to bring that one up.

CHAIRMAN NANCE: Thank you, Trevor. We'll go ahead and take a fifteen-minute break now. We're at a good point, and we'll come back at 10:45 Eastern Time.

(Whereupon, a brief recess was taken.)

CHAIRMAN NANCE: Okay. We'll go ahead and get started again, if we could gather back at the table, and I guess, Lisa, we're ready to move on. Thank you.

DR. AILLOUD: Okay. Now let's look at the fits to the catches, each panel here, and the solid line is the observed data, and then the dashed-lighter-blue line shows the expected catches, based on the base model results, and you can see -- In these graphs, I actually do have the equilibrium catches shown in 1985, which is why you see this big ramp-up, and so it's a bit misleading, but I just wanted you to have that data point in the graph to see -- To contrast with the time series and the available data.

As you can see, on the top-right-hand side are the commercial indices, and they're fit -- They're matched and fit exactly, because the CV is 0.01, and then, if you look on the bottom panel, with the charter/headboat on the left and the private and shore, and be aware that the Y-axis has different limits, and shore is of much higher magnitude, and charter/headboat is the smallest, but you can see that, for the most part, it follows the data fairly well, and then there's some years where there is pretty major departures, for example in shore in 2016 and 2017, and then in private in the late 2000s and early 2010.

It's a bit difficult to look at these individually, and I like to look at them in contrast with the discard fits, because what the model is doing is trying to fit to both the catches and the discards, and so, in some years, it might be pulled more towards one or the other, depending on the CV for that year and depending on how far also those points fall from the average trend.

CHAIRMAN NANCE: It is interesting that the shore has some of the larger deviations around from observed to expected.

DR. AILLOUD: Yes. Now, if we look at the estimated selectivity, for the most part, when we were doing the model-building process, we allowed as much flexibility as possible for those selectivity curves, and so, at first, I had double normals on almost all the fleets, except for the vertical line fleet, which shows -- Which is the only fleet that is really showing those really big -- It's skewed toward the larger Spanish mackerel, on the larger end of the growth curve, and so that one --

The assumption of a logistic selectivity seemed appropriate, and it's recommended to have at least one fleet with a logistic selectivity, just to anchor the model, but then we did explore double normal for a lot of the fleets, and many of them converge

to a logistic shape, and, in terms of modeling, and just parsimony, it's better to choose the two-parameter logistic form, instead of the six-parameter double normal, if the model converged to a logistic shape, and so that's why the -- That's how we resulted in the logistic selectivity curve for the private and the headboat, as well as the gillnet, and so, actually, the gillnet was left to be double normal, because there is a time block in place for 1995, but the model just converged to a logistic shape in recent years.

Then you can see, on the left-hand side, or, well, on the SEDAR 81 selectivity panel, you can see the SEAMAP selectivity shape double normal selectivity that is estimated to be much tighter in range than was estimated in SEDAR 28. If you look below, that red line is SEDAR 28, and you can match that selectivity curve to SEDAR 81, to see the differences.

Again, the report has more detailed figures to contrast these two, if you're interested, but, essentially, with the addition of data, the selectivity got tighter around smaller fish for SEAMAP, and, because we don't have length data for the shrimp bycatch fleet, but because SEAMAP is thought to operate in a similar fashion as the shrimp bycatch trawl, the selectivity from SEAMAP was mirrored for the shrimp bycatch fleet.

Then, finally, the selectivity curve in green is that for shore, and so you can see that it's, again, centered around the slightly-smaller fish than the other two recreational, or three recreational, modes, the charter, headboat, and private, and it doesn't quite -- It doesn't quite fully select for those really large fish, which is intuitive, if we think of distance to shore and where the largest individuals are found.

That is really the big difference that happened between SEDAR 28 and SEDAR 81, is allowing that recreational fleet to be split into three components. It just allowed it to refine those differences in selectivity a little bit better and not just split the difference, which was what happening when they were combined and it was just averaging out.

CHAIRMAN NANCE: Will, please.

DR. PATTERSON: In looking at the selectivity fits here for the three recreational subsectors, I'm surprised that the shore isn't more similar to the other two recreational subsectors, given the size composition data from the catches that were shown earlier, and, also, the fact that it doesn't -- You don't have a complete trailing off of the selectivity.

I mean, I would think, of the three, this would be more likely to go to zero at larger sizes, given that you have a restricted availability just in that shore mode, right, and this is saying that there are big fish there, but they're not being caught in the shore mode.

DR. AILLOUD: Sorry, but, just to clarify, you're saying that the asymptote -- That you would expect it to go to one?

DR. PATTERSON: No, and I would expect it go back down like the other two recreational sectors.

DR. AILLOUD: The other two recreational sectors are logistic.

DR. PATTERSON: I'm sorry. I'm looking at the SEAMAP.

DR. AILLOUD: You're looking at SEAMAP, yes.

DR. PATTERSON: Okay. Yes. Thank you. Sorry.

DR. AILLOUD: Sorry, and those are the default colors in SS.

DR. PATTERSON: Great. Then it does make perfect sense.

DR. AILLOUD: Okay, and so now we can look at the fits to the length composition data in terms of the residuals, and so, again, more figures are available in the report, but I think this one is a good summary of showing the quality of fit to the different datasets, the different fleets.

On the right-hand side is SEDAR 81, and on the left-hand is SEDAR 28, just for contrast, and let's start with the top of SEDAR 81, and so one thing that I did want to point out is the commercial sectors did have great sampling coverage for length composition, and the commercial gillnet was by far the most difficult fleet to fit a nice selectivity curve to, and there are a lot of patterns in the data, and you can see it through the residuals here, and so I have squared out, in red, just time periods where the residual pattern seems quite consistent, and then it shifts to something completely different.

The problem here -- Now, I could create more time blocks, to allow the selectivity to change for each of those different patterns, but the reality is that we didn't have a basis for defining why those selectivity changes were happening, and the only really basis for time-varying selectivity was the Florida gillnet ban, because we had a reason to believe that that could cause a change in selectivity, or catchability, or availability, sorry, which is

included in the selectivity curve.

However, we didn't have a good basis for defining the other years, and so we did not add additional time blocks. That being said, we did do a selectivity, a sensitivity run on the selectivity, adding more time blocks, just to see if it would change the results, and it improved the fits to the gillnet length data, but it did not change the overall results, in terms of the estimated spawning stock biomass and the trajectories.

Now, if we look at the handline, again, these data sample sizes are very low, and so it's not the best fit, and then, for the recreational fleets, we had pretty good fits, especially in the most recent years, and there is a little more variability in the 1980s, where the data are more sparse, and there's quite good fits to the shore mode, which, again, doesn't have a huge amount of data, but at least it seems to be fairly consistent through time.

Then, on the right-hand side, the very-right-hand side, I wrote "DM", which is the Dirichlet multinomial weighting, and so that is essentially the reweighting approach for these, to weight the length composition of each fleet relative to one another, and what the Dirichlet is doing is downweighting the handline input sample sizes, and so saying that the effective sample size should actually be lower, about 85 percent of the input sample size, and then 94 percent for private, and so, essentially, the multinomial reweighting didn't downweight much, and we think the reason is simply that the sample sizes that we input in the model were number of trips, and so we were already accounting for the fact that, instead of putting number of fish, we were already accounting for the fact that number of trips is a better representation of the effective sample size, and so they both were kind of achieving the same goal.

The fits to the age composition, I couldn't fit all of that in the slide, because you have to look at the bubble plots for every year, and so it's nicely laid out in the report, but I just wanted to point out that, in general, the residuals look fairly good, and there was no obvious bias, no obvious pull, between length and age, at least not overall, but there are certain years where the length data and the age data don't quite agree with each other, and I pulled out some of these years here, to show you that there is years where the conditional age-at-length shows slightly smaller fish for the age, or larger fish for the age, group, compared to the observed.

It's possible that these are signals of variability in growth through time, and it's possible that it's just a result of small

sample sizes or bias in the sampling, and we know that our age data sampling is not perfect, but, overall, I would say there was nothing too pathological about it.

On the right-hand side, I did put the predicted mean age, which gives you an idea of the differences between the different fleets, and so, in gillnet, the mean age falls between three and four years old. In handline, it's about two years old early on, up to four years old in the later time period, and headboat/charter and private both center around two and three, and then shore is closer to the two-year-olds, and so slightly younger fish.

Recreational discards, and I apologize, and I am realizing that I didn't label the right-hand side, and so the top is charter/headboat, the middle is private, and the bottom is shore mode. Then on the left-hand side is the length composition, which was only available for charter/headboat, but applied in a mirrored fashion to all the fleets, to define the retention curve of the recreational fleets.

To guide you a little bit, on the right-hand side, those show -- Those circles are the observed values, with the uncertainty surrounding it that was input in the assessment, and then the blue line is the expected value, and so, in every year, you see the fits are fairly close, with some higher estimates, some higher differences between the estimated value and the observed value.

For example, in the first year of shore mode, there's a mismatch there, but, in general, it was pretty good, and it fell pretty close to the observed values, and, again, there is a tradeoff with those fitting to the landings and fitting to the discards.

In terms of what the retention curve was estimated to be, so, in SS, you can -- You have three parameters essentially defining that retention curve. You have the inflection point, the slope of that logistic curve, and then the height of that asymptote, anywhere between zero and one, and I was able to allow all three of those parameters to be estimated in the model, which was great, and so it's fully being informed by the length composition of discards available, which is on the bottom-left panel there.

I did put the SEDAR 28 retention curve, to show you the differences, but keep in mind that there was an error with the time block in SEDAR 28, where the minimum-size-limit time block was placed in 1993 instead of 1983, and so it's a bit difficult to interpret, but, essentially, the take-home message is that red line, which is SEDAR 81, the retention curve estimated from these discard length data, and it shows that the inflection is right

around the size limit, which is twelve inches, or thirty-four centimeters, and it shows that there is a little bit of discarding of fish above the size limit, with the asymptote not reaching one, but not a massive amount and so most of the discards are related to the minimum size limit.

Moving on to the index fit, I put, on the left-hand side, the residual plots, and, comparatively, I have the SEDAR 28 residual plots, and so this is for the length composition, and so, again, we only have length composition for the SEAMAP survey, and then the vertical line is mirrored. The selectivity of the vertical line index is mirrored to the handline plus other fleet.

On the right-hand side, and so I should say, first, on the left-hand side, that there was more data available for SEAMAP this time around, and the residual patterns were better behaved than in SEDAR 28, and then, on the right-hand side, you can see the actual fits to the different indices, with SEDAR 81 on the left column and SEDAR 28 on the right, and I did put the MRFSS index from SEDAR 28, just so you can see it on the right-hand side, and you can see it's kind of a flat fit anyway, and so it was not a very influential index, with very high CVs, but the biggest differences to note -- Well, for one, if you look at SEDAR 28, there was a big increase in the expected values for the index, of the vertical line index, for the last five years, which is reflected in the trend in SSB as well, and it's constantly overestimating the observed value in those last years.

If you look at the fits in SEDAR 81, that pattern disappears, and it's a little bit more even, with the expected value falling above and below the observed values in a more random fashion, and so improved fits there.

The numbers are very small, and I apologize, but I did put the root mean squared error for each of those indices, and so you do see some slight improvement between SEDAR 28 to SEDAR 81, with the smallest root mean squared error, and so the best fit, to the vertical line CPUE, and then higher for SEAMAP indices, and you can see that the -- It has a hard time fitting to the SEAMAP late index, which has very low proportions of positive trips, and is quite variable from year to year, and so the model just kind of splits the difference and has a very flat, pretty flat, line through these data.

Moving on to shrimp bycatch, on the left-hand side is the selectivity curve that is applied to shrimp bycatch, and so, again, that doesn't come from shrimp bycatch data per se, and it is actually coming from the SEAMAP survey length composition, and

we're just assuming that the selectivity of the SEAMAP survey is similar to the shrimp bycatch fleet, but this gives you an idea of the age classes that the shrimp bycatch discards are centered over, and then, on the right-hand side, you see the predicted discards, in metric tons.

If you remember, in the fitting process, we provided this median amount of shrimp bycatch from 1972 to 2011, and that's what it is fitting closely to, and so, if you were to look at the predicted discards here from 1972 to 2011, and you averaged them out, then you would fall very close to that value, and then, on the bottom plot, I just show those shrimp bycatch in the red and how they are relative in magnitude to total catch from all the other fleets, and it's just to give you an idea of the contribution of that mortality, which is much lower in recent years, compared to historically.

The recruitments, on the right-hand side, you see kind of a shotgun blast, and there is not much information there showing any shape to these recruitments, any insight. At least from looking at the data in the raw form, you don't really get any insight on the steepness. Then on the left-hand side are the recruitment deviations that were estimated in the model, with some variability, and nothing too alarming there.

Then, in terms of exploitation rates, so you can see, on the left-hand side, the history of the exploitation rates estimated in the model, with more variability in recent years, and that also has to do with the higher variability in the shore mode landings, if you look at the time series of landings, but, on the right-hand side, it's broken up by fleet, and so you can see that, early on in the time series, recreational shore, though highly variable, as we discussed, and then Will was pointing out as well, but closer at least in magnitude to say the commercial fleet, or, well, the gillnet fleet and the private fleet, private mode.

Then, as you go through time, in the 2000s, shore and private are fairly similar in magnitude, in terms of exploitation rate, but then, past 2011, shore mode really explodes, and these estimates are much higher than the private mode.

In terms of the other fleets, again, you can see that the shrimp bycatch has more of an influence, and a higher exploitation rate, early in time, and it's much lower in recent years. The handline fleet, overall, is fairly insignificant, in terms of exploitation rate, relative to the other fleets, as is the headboat and charter, and then, on the bottom, you do have that SEDAR 28 contrast, but keep in mind that the recreational fleets are combined, and so

this just shows you in an aggregate form and along the time series.

Finally, if we look at the spawning stock biomass trajectory, both on the left-hand side, as an SSB trend through time, and on the right-hand side, as a relative -- Trend relative to the unfished SSB, and you can see the differences between SEDAR 28 in blue and SEDAR 81 in red, and so some notable differences.

For one, the actual virgin population size in virgin condition is estimated to be higher in SEDAR 81, and, in the trend in the most recent years, we also see the differences in the late 2000s, where there is that sharp increase in the SSB observed in SEDAR 28, which disappears with the addition of additional data in SEDAR 81, and, on the right-hand side, you see how that translates into looking at the fishing levels in the terminal years, with SEDAR 81 showing a somewhat consistent fraction of unfished, starting in 2000 all the way up to 2021, hovering around 20 percent, or 22 percent.

CHAIRMAN NANCE: On the right-hand side --

DR. AILLOUD: Sorry. That is flipped.

CHAIRMAN NANCE: Before we get into diagnostics, any questions on results? Will, please.

DR. PATTERSON: It's kind of curious to me, and I'm looking at the exploitation rate side, in that you don't see -- I guess it wouldn't necessarily show up in an exploitation rate, but I'm trying to line up these like peaks and landings that are occurring in the shore-based model in particular, with a lag in the recruitment spike, and so that's one thing that could be driving -- If you have a recruitment spike, and they're predominantly two-year-old fish that are being fished in the shore-based mode, then, two years later, you should be picking up a spike in landings, even if effort were relatively constant, but it doesn't appear in the recruitment data like that, but, again, it could be regional, and, if we're looking at this comprehensively across the region --

CHAIRMAN NANCE: Ryan, to that point, please.

MR. RINDONE: Lisa, I think I remembered you saying, from the age composition data from the commercial fleets, the age-conditional length composition data, that there were strong cohorts detected in 1991, 1995, 2001, 2004, 2009, 2015, and 2019, and so I'm kind of eyeballing here the exploitation data, and it looks like you have a spike in 2019 and 2017 and 2013, and it's not really -- It's not really lining up, combined with the age composition from

the shore mode showing that those fish are about two years old.

DR. AILLOUD: Yes, and there's also the discard data, and so those would be younger fish, and I don't know -- I think I would have to look at all three figures at the same time, with the discard time series, the landings time series, and then the age composition, and then the exploitation rate, and I don't really have a straight answer for now, except that it's something that we could try to look into and see if we see any relationship.

CHAIRMAN NANCE: Will, please.

DR. PATTERSON: Then, looking back to the index fits slide, I'm wondering here, for the SEAMAP trawl survey, the early versus late, and so, in 2008, the survey was expanded onto the West Florida Shelf, the Gulf shelf, and I'm wondering if -- So if this summer SEAMAP trawl surveys, and you're picking up young-of-the-year fish, then I wonder if you looked at just not including the Florida stations, but hitting the time series all way across, just at the northern Gulf stations, where the fish would be spawning, and, therefore, you might have a different recruitment signal.

DR. AILLOUD: This is summer and fall combined, and, no, we did not look at that. The proportion positive was so low that I would imagine that it would be very difficult. There was a review in SEDAR 28, and all three reviewers did point out that SEAMAP, looking into those proportion positives and looking at the data available, was probably not the best predictor of abundance, and I don't think that any of the indices are very good in this assessment, to be honest, at tracking abundance, and part of it is probably because of the spatial and temporal variation in the distribution of Spanish mackerel from year to year, and, if we don't quite hit the migration route exactly, then you might hit a bunch one year and then miss them entirely. There is a mismatch, I think, in space and time, definitely, that is causing a lot of noise in predictability.

CHAIRMAN NANCE: Ryan.

MR. RINDONE: Just one more thing about discards, when we were talking about discards and how some of them are legal sized, and just to kind of note, as it relates to that, because the council has a lot of focus right now on trying to reduce discard mortality, and the bag limit for Spanish, I believe, is fifteen fish, and so it would seem less probably that legal-sized discards are due to the bag limit being met, and so, instead, you know, the alternative to that would be that maybe people aren't -- They just aren't retaining them, which is less usual for the fish that we manage.

CHAIRMAN NANCE: Thank you. Doug, please.

MR. GREGORY: Thank you, Mr. Chair. If we could, I want to revisit, I guess, the shore mode in Slide 18, and the earlier discussions kind of triggered something. In looking at private versus shore, FES conversions, or adjustments, I'm surprised that the adjustments to the shore mode are so much greater in magnitude and variability than the private sector, and I recall, when we were first looking at calibrations, how the FES calibrations back in the 1980s, the early 1980s let's say, were more variable than after 1990.

There was something -- The answer from one of the contractors, who whoever was presenting it, was that there weren't as many samples in the early 1980s, and so the adjustments were more variable, and I recall you said earlier that we didn't have the length composition of a lot of shore mode samples, and so my question is -- The shore modes, in my mind, are going to be piers, for the most part, and maybe the shoreline of some, but piers, which would be easy to sample, and so I'm curious if the piers are not being sampled adequately, and, if they were, why wouldn't we have the length composition data to go with the harvest estimates?

It's just -- I think maybe you all have looked into this, but there's something different about the shore mode data than the private boat data that seemed to affect the FES conversion that is causing a number of us to have heartache, but thank you very much.

CHAIRMAN NANCE: Luiz.

DR. BARBIERI: Just to pile onto that point, Mr. Chairman, and thank you, and, Jess, if you could go back to Slide 38, and, again, none of this is to say anything bad about the assessment or, you know, even the data processing. I mean, all of this seems to be a lot of great work, right, and the ingredients, the basic ingredients that you were given, right, were very faulty, and so, you know, you're trying to cook here, but you're adding a lot of different spices and kind of bending over backwards to make this work, but it's difficult when there's not good signals in the data, right, and you have so many holes to fill.

In this slide, I mean -- I mean, for us, as an SSC, looking at this, I mean, the message that I get out of this is that this fishery fundamentally has changed since about 2010, right, and it used to be a fishery that was more -- It was dominated by the recreational sector, you know, all along the time series, but it was more balanced between shore and private recreational, and,

since 2010, it has been really dominated, sometimes to the point where the exploitation rates of the shore-based can be four to five-times higher than the private recreational, and that is hard to understand.

I mean, unless somebody who is more familiar with this fishery itself, you know, how people fish for it, and changes in how people are choosing sites or whatever, but something has fundamentally changed, you know, for the last over ten years that is kind of hard to understand, and, again, it's the kind of thing that, you know, has got us scratching our heads about data issues that we may or may not be able to resolve, because how can we? You know, some of these things you cannot resolve until you have better information to do, you know, a reanalysis, but I just wanted to point this out, because, to me, this jumps at me as something fundamental in the way that we are looking at this fishery.

CHAIRMAN NANCE: Thank you, Luiz. Will, please.

DR. PATTERSON: To follow-on Luiz's comment about four to five-times greater exploitation that's estimated for shore versus private rec, that's hard to reconcile, but then you also have the four to fivefold difference between years or, you know, neighboring years in the shore-based, and so the spikes in values over the past ten years in the shore-based is also perplexing.

CHAIRMAN NANCE: Mike, please.

DR. ALLEN: Thank you, Mr. Chair, and I had the same puzzlement about the recreational shore landings, and it sounded like the CVs around those estimates were not inflated, which would lead me to believe it's possibly a bias, rather than just uncertainty due to a low number of interviews and that kind of thing, and so I'm not sure of the best way to deal with that, but I did wonder about if the model could be run according to, you know, lower shore catches that we might think would be more plausible, and so that's just a concern.

CHAIRMAN NANCE: Jason, please.

MR. ADRIANCE: Thank you, Mr. Chair, and not to beat this up too much, but I think we're not only going to see it here, but I think we're going to see this in a lot of these assessments moving forward with this FES disparity in shore effort, and we're going to have to deal with it, and I don't know how, but, anyway, I won't beat it much more.

CHAIRMAN NANCE: Jim.

DR. TOLAN: Just one final note about the shore mode, and it makes a lot of sense to me, these up and down spikes, and almost 95 percent of the shore mode for Spanish mackerel in Texas is beach-based, and so all those fish -- It doesn't have anything to do with the data, because they're not part of MRIP, but all those fish are never going to be seen by a creel survey.

They're going to go right from the beach to the car, and somebody is going to drive them home, and so the big spikes, to me, make a lot of sense, because, if we have a strong upwelling year, then those Spanish mackerel never come close to the shore. If it's a really clear-water year, the Spanish mackerel are everywhere, and so that doesn't bother me, but almost all of ours are prosecuted from the beach, and so it's a very different fishery on the western side of the Gulf for this species, but that's just a context.

CHAIRMAN NANCE: Ryan, please.

MR. RINDONE: We got a signal of different perceptions of the stock, related to that, looking at the council's Fishermen Feedback tool, and so there's different perceptions for the eastern versus the western Gulf, and so that's interesting there, too.

CHAIRMAN NANCE: Okay. Let's go ahead and move on to the diagnostics.

DR. AILLOUD: Moving on to the diagnostics, on the left-hand side is the jitter diagnostic, where we changed the starting values for the estimated parameters and jittered them up or down, to see the stability of the model, and so what you want is that -- You want your base model run to show the lowest negative loglikelihood value and be the optimal solution, and you don't want to find a run, or more runs, that fall below that, and so the red line indicates the base model run negative loglikelihood value, and those points show all these alternative solutions, when we jitter the starting values, and you see there is some less optimal solutions, but, overall, it is a well-behaved model, with no other solution found that were more optimal than the base model.

On the right-hand side is the R0 profile, which you all are used to seeing, with the change in loglikelihood on the Y-axis, and I just put a zoomed-in version on the bottom, to make better sense of it, and I drew a line at two, which is the line of significant differences compared to the base model, and, again, those colors are difficult to ferret out on the screen, but, if you can make anything of it, you see that the distribution -- This is in log space, but it's around 11.5, and you see that the different data

sources are generally in agreement as to the most likely value of R0, with the two data sources that move the farthest away from the optimal R0 total likelihood solution being the length data and the age data, where the age data is pulling towards a slightly smaller log of R0 and the length data is pulling towards a slightly larger value, and so it's a little bit of push and pull between the age and length, and that probably will need to be resolved in future iterations, and it might have to do with some issues in the sampling or the assumptions of how the sampling is conducted, but, overall, it's a well-behaved profile.

The same for the retrospective analysis, which, again, is a different diagnostic, where we peel off one year at a time from the base model, and what we're looking for is we don't want to see any kind of pathological directional change in the terminal year, SSB, or fishing mortality or recruitment, and, as you can see, with each subsequent peel, the values fall above and below the baseline 2021 assessment-estimated series for SSB, exploitation rate, and recruitment, and so nothing to be worried about here, and I've also calculated Mohn's Rho, which I put -- It's kind of a statistical guidance on determining if there is a pathological retrospective pattern, and so you want it to be between negative-0.15 and 0.2, and all the numbers fall within that range, and so they're not showing anything pathological about these patterns.

Then the jackknife, and so we have those two indices in the model, the vertical line commercial index and the SEAMAP index, which is two time series, but what I did is a sensitivity to these indices, and so the sensitivity to the SEAMAP is to remove both at the same time, since they are very similar sources of data, and what you can see here is that, when you remove the SEAMAP index, the spawning biomass -- Most of the differences you will notice in the last five years of the model, and the spawning stock biomass trajectory falls higher than the base model, if you remove SEAMAP, and lower if you remove the vertical line index, and so there's a bit of a conflict between the SEAMAP and the vertical line index signals in the last few years, and this is showing that the base model kind of splits the difference between the two.

Now this one is kind of a newer diagnostic, from a newer R package, that is helpful in determining essentially the value of your indices in your model, and it's a cross-validation exercise, and so what it does is it peels off a year of your index and then uses the assessment model to predict where that value should be for the index in the next year, based on all the other data sources that are inside your model, and so what you want to see, in an index that has a high prediction skill for your model, is you want to see your prediction fall close to your index, and so you want those

little --

You see all those little lines, or the little peels, and you want those final points to fall close to your index, in an index that has high predictive power, and so what we're seeing here is neither index is behaving well, and they do not have very good predictive power, based on the information we have in the model, and this MASE that I wrote up there, with a value of 2.26 for the vertical line, and 1.28, those are pretty bad diagnostic values.

Essentially, what the MASE does is it says is my -- Is my prediction, or is my model forecast, more accurate than an naïve forecast using the previous year's index value, and so am I doing better by using this model prediction, and am I doing better than I would if I just grabbed last year's index value, and so you would want MASE to be less than one, but, in our case, it's higher than one, and so we're actually doing less well than just doing a naïve prediction based on the last data point. We can pause here.

CHAIRMAN NANCE: Mike Allen.

DR. ALLEN: Sorry. I didn't have my hand up.

CHAIRMAN NANCE: Okay. Thank you. Josh, please.

DR. KILBORN: Thank you. I have a question about the SEAMAP index, and, well, I guess, one comment and then a question. The comment is that, if I remember correctly, the SEAMAP procedure changed in 2008, but they didn't actually get full coverage on the West Florida Shelf until two years later, and so 2008 and 2009 is predominantly in the northern portion of the West Florida Shelf, but my question is, is the SEAMAP index being used as an index of abundance for all Spanish or just the young-of-the-year?

DR. AILLOUD: The selectivity for the SEAMAP index was estimated from length composition data gathered from the SEAMAP surveys, and it centers around -- I can pull it up, but it's not just young-of-the-year, but, yes, it is centered around age-zero through two, I believe, and, in fact, interestingly -- I thought I would see more of a difference between the previous -- Pre-2008 and post-2008, in terms of the selectivity and the availability of those fish, because we expanded the range, but the selectivity is really close, closely estimated, between the two, and even catchability is very close as well, and so, frankly, the model doesn't see much of a difference between using them as separate indices or a single index, and it's not catching anything very different.

CHAIRMAN NANCE: Steve Saul, please.

DR. SAUL: Thank you, Mr. Chair, and thank you for the presentation. This is a lot of work, and a lot of thoroughness went into it, and it's much appreciated. I have a question about the indices and the MASE analysis, only because it's the first time I'm seeing that particularly diagnostic, and so, when I went through the report, and I looked at the fit to the indices from SS, you know, it's not that bad.

I mean, we typically don't fit the index super well, because SS is also -- Especially if the trend is fairly flat, which both indices seem to be relatively flat, and SS is also trying to fit a bunch of other stuff, of course, simultaneously, the length comp and the age comp, which I thought -- And the length conditional on age, which you have in here, which I thought were fit fairly well. Like those are really -- They can be really hard to fit.

I guess I'm curious to know, because, in past assessments, when we've looked at -- Just an eyeball look, without the MASE analysis, which, by the way, is really helpful, and I will have to read up on that a bit more, but, in past analyses, when we just sort of eyeballed the fit, there hasn't really been much like what we're seeing here, and so I'm curious to know, you know, how powerful that sort of diagnostic is, with respect to -- Like should that be grounds for us to be extremely highly critical of the assessment output, or is it just sort of something, you know, to keep in mind, together with some of these other data considerations that we've been discussing? Thanks.

DR. AILLOUD: Thank you for that comment, and so I think it would be more alarming if the index had a very large influence on the result, for example in the jackknife analysis, and I think -- You're correct that it's -- We're fitting relatively well to these indices, and, actually, the vertical line, if you look at the -- Actually, let me pull up the hindcasting, Slide 44.

The hindcasting, or the MASE, is really large on the vertical line, and, yet, when we look at some of the years' predictions, they're not that bad, and like the 2018 prediction falls fairly close, and the 2019, but I think the MASE is really pulled by the peels from the 2016, for example, and 2018, and I would have to look exactly at why those are being pulled so far away from the vertical line index, but I'm assuming that it's trying to fit closely to -- Maybe there is a signal in the length composition, or the shore mode is pulling something in one direction, and so I think this is what's happening, and that's why it's a little bit erratic.

It's difficult to say, and I think it's not new, and it was pointed

out, in SEDAR 28, that these indices are not very informative, and probably not ideal for tracking abundance, but it's kind of the best we have.

Now, if we go back one slide, now we can look at it, in terms of the influence on the results, and I would say that, because they -- I mean, frankly, they kind of cancel each other out in their trends, and this is the influence that you can glean from how it influences the estimates of the fish in the final year, if you look on the right-hand side, and this should give you a good idea of how those indices are actually influencing the results of the assessment.

DR. SAUL: That you. That's super helpful. I appreciate it.

CHAIRMAN NANCE: Thank you. Dave Chagaris, please.

DR. CHAGARIS: Thank you, Mr. Chair, and so I have a question, and it kind of goes back a few slides, about where you showed the divergence between SEDAR 28 and SEDAR 81, and, you know, with all the diagnostics and the removal of indices, we never saw that behavior reemerge, where the stock is increasing drastically around, I guess, 2005 or something, and so is that potentially caused by the inclusion of the MRIP index in SEDAR 28, but not in SEDAR 81? Is that what was pulling that up, or is it also because of the higher landings holding the stock down? I'm just curious.

DR. AILLOUD: I think it's a bit of both, and so the pattern disappears when we remove -- When we take the SEDAR 28 base model and we replace the landings with MRIP-FES, that pattern goes away, without even touching the MRFSS index, but it also pulls the fit away from -- It fits the MRFSS index less well once you add the FES as well, and so I do think that the MRFSS is responsible for that trajectory, but it would require sensitivity runs on the SEDAR 28 model to really pin down which data source is responsible.

DR. CHAGARIS: Okay. Thank you.

CHAIRMAN NANCE: John, please.

MR. MARESKA: I guess it goes back to the jackknife analysis, and so I'm trying to remember, and so the CVs for the vertical line index -- You increased those, so they would be equally weighted, and so the fact that these are splitting the difference really doesn't surprise me, or should I be surprised by that?

DR. AILLOUD: No, you should not be surprised, especially since it's -- Yes, and the trends in SEAMAP and vertical line, and the

inclines, the relative inclines, of each are fairly similar, but just in the opposite direction, and so it is not surprising.

CHAIRMAN NANCE: Thank you. Trevor, please.

MR. MONCRIEF: I was just going to add that, I mean, it seems fairly logically, all those indices, that they wouldn't really have much predictive power or anything else like that. I mean, if you think about the nature of the fish, the nature of those gears themselves, those just don't interact very well, and it doesn't match up with how that fish, you know, realistically could be targeted, and it would probably be, you know, fairly haphazard, when it comes down to actually truly interacting with them consistently.

I was wondering, you know, if maybe a workshop may be an idea for the future, and was there ever any thought given to maybe looking into some of the state datasets, the inshore datasets, when it comes to gillnets or anything else like that, understanding that Mississippi isn't robust, right, and we've got a shorter time series, and it's probably not a large sample size, but, if you look at the Florida group, and then the magnitude of information out of Louisiana, you might be able to derive, you know, maybe a couple more reliable indices, but was that looked at all, or considered at all, during the workshop, to your knowledge?

DR. AILLOUD: Just to clarify that, because it was an operational assessment, we didn't have a data workshop, per se. However, the group in charge of developing the indices for the commercial sector did attempt a gillnet index, and the performance was really poor, and they suspected it's because there's been so many changes in the actual gear configuration that they were not able to take into account in the standardization process that it just wasn't a good -- It was less well behaved than the vertical line index, and so it wasn't recommended.

That being said, there were some -- There are some limitations to the vertical line index that could be improved in the future that just wasn't -- There was no time for it to be done for this operational assessment, but the two major limitations of the vertical line index is, one, that it's based on positive trips only, which now we know we have better ways of dealing with including zeroes in the analysis, and the other, probably bigger issue, is that the response variable is the number of fish per trip, and so it's not per trip hour, and there is no time involved, and so, if trips increase in length through time, and we have a problem, and so that was pointed out as a limitation of this index and something that needs to be improved in the future, and so I

think there is room for improvement, but just we were restricted in the timeframe for this assessment.

Now, as far as SEAMAP goes, with such low proportion positive, I think it's just a difficult dataset to work with. Perhaps exploring something that includes spatial -- You know, some spatial/temporal correlations that would more adequately take into account the Spanish mackerel behavior through space and time might be helpful, but, again, those are kind of bigger research questions, and would require more work.

MR. MONCRIEF: I appreciate that. With these coastal pelagics, there is no good gear for them, when it comes to the fishery-independent side, and so I appreciate all the work you all did, all the hard work that it took.

CHAIRMAN NANCE: Thank you, Trevor. Let's go ahead and go to the sensitivity runs section.

DR. AILLOUD: Okay, and so sensitivity runs, and so the first one is actually in the terms of reference, to explore the sensitivity to the value of steepness, which was 0.8 in the base model run, and so what I did is I did three alternative runs.

In one of them, I estimated steepness, and it's the green line, and the uncertainty, which is the green space, which you see is enormous and completely flat uncertainty across the range, and so, at first, I was very happy, because it estimated to be 0.84, and I thought that we are really good at this, but we are not, because it just didn't move from the starting value, because there is no information on steepness, and you can see that on the right-hand side, with the likelihood profile plot, which is pretty much a flat line across 0.6 to one.

You see some weird peaks, and that's just -- Again, if you squint, you see it's the age and the length data, and there is some offset years, where it's trying to fit one better than the other, but, in any case, those are less optimal solutions.

CHAIRMAN NANCE: I just thought you changed the background of the slide.

DR. AILLOUD: I did have two other values, just so you can see how it would affect the results to decrease slightly, to 0.7, or increase it slightly, to 0.9, and you can see the red line is 0.9, and so, essentially, the fraction unfished is -- It's a bit higher, and so we're at about 25 percent in the terminal year, versus 22 in a 0.8 scenario, and then, on the opposite, as you would expect

it to do, if you lower steepness, then we're in a slightly more pessimistic situation, with a fraction unfished around 0.15, I believe, but it scales everything up and down across the entire time series.

Now the next sensitivity run was to look at the influence of natural mortality, which we know is usually quite influential for assessments, and, in this case, we are -- The base model uses the Hoenig et al. estimator.

Now, you all are familiar with the Then et al. 2015 improved dataset to re-estimate those regressions, but, since then, there's been a Hamel and Cope paper, from 2022, which has a criticism of the Then et al. approach, and mostly of the way they selected for the base model, and Hamel and Cope reevaluated the dataset from Then et al., with a more appropriate transformation of the data, and found a model, shown here, which is 5.4 over A_{max}, and they show that it's -- It's just more appropriate, statistically speaking, than what was done in the Then et al., and I provided, also, that paper as background, because there's a lot of good information in there.

Essentially, what it does, when you use that alternative estimator, is that it defines an M at 0.49, for a maximum age of eleven, versus 0.38 with the Hoenig et al. regression approach, and, on the graph here, you can see what it does to the assessment, and so, essentially, if you increase M, which it's expected that your entire series for the fraction of the fish is going to be scaled up, and so now we're in a more favorable condition across the time series, ranging from 20 percent unfished in 1986, all the way to about 40 percent in 2021, versus the base model, which starts around 11 percent and ends around 22 percent.

CHAIRMAN NANCE: Luiz, please.

DR. BARBIERI: Thank you, Mr. Chairman. Lisa, you know, looking at this, and this is just a sensitivity, and thank you for, you know, doing this, because I think it helps us think about these things, but would you and the Center perhaps make a recommendation that, the next time that we do a full assessment on Spanish mackerel, that perhaps we go with the Hamel and Cope approach as, you know, the best alternative for developing an estimate for natural mortality? Just because I have not seen this applied before, you know.

DR. AILLOUD: Yes, and, I mean, it is -- So there is two improvements to that method, compared to the Hoenig method, and one is the dataset is larger, right, which was the improvement

brought by Then et al., and the other is that the transformation is more appropriate, and so, if you look at the residual pattern in the fit, in the Hamel and Cope, it's much better behaved than the Then et al., which shows a little bit of -- Yes, in terms of the quality of the estimator, I would argue that Hamel and Cope is preferred.

Where it makes a bigger difference is in the oldest fish, and so, a fish that is of higher age, you're going to see more of a bias with the Then et al. than you would in the younger fish, and the difference is pretty minor, but, here, at eleven, we're starting to see quite a bit of a difference. All in all, they're all estimators, right, and so they all have issues, and I think it's worth digging -- Every time, I think it's worth digging into the dataset and seeing if there are any better estimates of M, from similar species, for example, and I did look into that for Spanish, but there was not enough studies to say, okay, we can go with that one study, and so I think it's worth always checking if there's a species-specific estimate that is more accurate, from tagging data or from something else, but, in our case, yes, I would argue that, moving forward, we probably should take a closer look at that.

DR. BARBIERI: Thank you.

CHAIRMAN NANCE: Thank you. Okay. Let's go ahead and keep moving. I think we've got shrimp bycatch next.

DR. AILLOUD: The last sensitivity -- I have a few more sensitivities, but they were not influential, and I put them in the report for your reference, but I wanted to point out the ones that do matter, and this one is shrimp bycatch.

We know that we don't have a good grasp on the magnitude of shrimp bycatch, and there is a lot of uncertainty around those estimates, and so a simple check on the influence of shrimp bycatch is to simply remove the shrimp bycatch time series altogether, and so you see the results here, and the red line is if you remove the shrimp bycatch, and, essentially, it scales everything up, in terms of the fraction unfished, and so, again, showing a slightly more optimistic trend through time, with the final fraction unfished levels closer to 0.28.

CHAIRMAN NANCE: I'm a little surprised, and, you know, you would think, with the real decrease in effort that we've seen in the recent period, that you would have a tighter base against the sensitivity run at the end, because there would be less influence, but it seems like it's equal the entire length of the data series.

DR. AILLOUD: Yes. Okay, and so, just to wrap it all up and summarize, the conclusion of this assessment, and so, in terms of improvements, compared to SEDAR 28, there are a few improvements, and one was to better characterize the recreational fleet selectivity and retention, given the differences in shore versus the other modes and the fact that shore mode, at least with FES, is a much bigger portion of the catches, and then another major improvement was to post-stratify the length data and weight it by the landings, so it's more representative, and then the fact that we had some discard data to inform retention.

Another improvement was in terms of just looking at the fits, the model fits, and the fit to the vertical line index was improved, and the maturity function correction is, obviously, an improvement, and then some of the diagnostics, especially for the length composition and selectivity fits, show improvement compared to the previous assessment.

Some issues do remain, and we have hit on a few of them, and we have mentioned the poor prediction skill of the indices, the uncertainty that remains in the shrimp bycatch time series, the sensitivity of fixed values, and, you know, M, steepness, and sigma R are all fixed, and we've seen that those are influential in scaling the population and determining the fraction unfished, and there is no information in the model itself, and other data sources that are in the model, to narrow down those values, unfortunately.

Other limitations are there are gaps in sampling for composition data, which were shown during the weighting process, and you can learn more about this in the working paper, and the discard length data is -- Those sample sizes are pretty small, and so it could use some improvement.

There is a bit of a tradeoff that we have observed between fitting to the length and the age data, and so it may be more work to look into the actual sampling activities for ages and make sure that we're not violating any assumptions by making them conditional on length, and then, finally, like I said, it's really difficult to fit a selectivity curve to the gillnet length composition, and so more work needs to happen there to understand if there are true changes in selectivity/availability of the fish or if it's just a sampling issue.

Okay, and so the last section is the benchmark stock status and projections, and so just the first slide here was also part of the terms of reference, which was to show an equivalency table, and that's essentially rerunning the projections that were done in the last assessment, rerunning the SEDAR 28 projections, but switching

out the landings and discards data from CHTS to FES, and it's just to show you how the scale of the advice would have changed.

Just to give you a bit of background, because, looking back at what was done last time, there were a few sets of projections shown, but, essentially, the one used for management advice was a stochastic projection, where the stochasticity was the recruitment variability through time, and it was a pretty involved process, and so, for this purpose, I actually went ahead and redid the deterministic projections, because it was very time consuming to do the stochastic ones again, but you can see here that they're quite -- On the same scale, the stochastic and deterministic, and so I just showed the first two columns, to give you that background.

Then, on the third column there, you have the projection results using FES, and so you see, obviously, that increase, which was expected, but, on the right-hand side, it gives you the magnitude of the increase, and so there's about a 20 percent difference in the OFL between using CHTS or FES, in the first year, all the way up to 40 percent in 2019.

Moving on to the projection settings, it was a 100-year projection, where the relative F between the fleets, projected forward, were the average of the 2019 to 2021 relative F estimated inside the model, and selectivity -- Whatever selectivity was estimated in the final years of the model was projected forward, and the same with retention, and there's no time blocks in the end years, and so those are the same selectivity from year to year.

In terms of recruitment, we used the Beverton-Holt relationship to project recruitment forward in time, and then, in terms of the interim landings, we did have final landings estimates provided to us for 2022. For the purpose of these projections, we set the management year to 2025, and that obviously can be altered, and then, for 2023 and 2024, we didn't have any data, and so what we did is we used a three-year average of landings, from 2020 to 2022, and, if you look at those numbers, and I have some figures, you will see that those are fairly low interim landings, compared to earlier in the 2000s, and so over the COVID years, and so it may be something that you all can inform me as to how the averaging should happen.

In terms of the shrimp, we also wanted to project shrimp bycatch forward in time, and so we used the exact same method that was done in SEDAR 28, which is to take a recent average of F estimated inside the model for the shrimp bycatch fleet, which was -- In this case, we picked 2015 to 2019, just so we weren't over those

COVID times, and we played around with it.

We looked at three-year average, five-year average, ten-year average, and they were really similar, because it's pretty flat-lining at the end, and so it's 0.06, and then there is no allocation.

Then this is a summary of the results, the benchmarks and stock status information, and so, starting from the top, we do have a base M of 0.38, and that comes into play for determining the MSST. The steepness, again, was fixed at 0.8, and we have estimates here of the virgin recruitment, the virgin spawning stock biomass, estimated at 56,000 metric tons, and so, looking at the mortality rate criteria, the current stock status, based on MFMT, which is 30 percent SPR, which is what was used in SEDAR 28, and so that's our FMSY proxy, given that we are fixing steepness, that came out to 0.93, and so we're right below one.

Then, in terms of the biomass criteria, where MSST is one minus M times the SSB when fishing at 30 percent SPR, the stock status falls at 1.34, and so slightly above one, and so we are not overfished, and there is no overfishing.

Graphically, you can see here that timeline for the 100-year projection, and I cut it to 2060, but you see that it levels off, and you can see a pretty high increase in SSB during those interim years, and a lot of it has to do with those really low interim year catches, and so you can see, in the harvest rate on the right-hand side, that those Fs are really low in 2021 and 2022, which, of course, would allow the SSB to grow.

Then you can see, in the time series from 1986 to 2021, where the stock has been, with respect to MSST, with some years SSB falling below MSST, even recently, in the mid -- Around 2015, and then the same in terms of the harvest rate, and you can see the years where F fell above the MFMT.

Here, on the left-hand side, is the Kobe plot, which you all are used to seeing, showing where we fall in the terminal year, 2021, and on the right-hand side is the projected yield, with the uncertainty surrounding those yields, and we did run an alternative -- We had, obviously, our OFL at F 30 percent SPR, but we also ran an optimum yield at 75 percent of F 30 percent SPR, which you see in the blue line, and the solid line marks the first year of the projection, and then the dashed-vertical line marks the first year of management, set to 2025 in these projections.

CHAIRMAN NANCE: Thank you. John, please.

DR. JOHN FROESCHKE: I just have a question, and so, on this plot, the F over FMSY at the terminal year -- It looks like it's around 0.6, or 0.7, but, in the MSRA table, the F over MFMT was 0.93, which is very close to overfishing, and I'm just trying to understand the difference.

CHAIRMAN NANCE: Luiz explained it to me. This is a plot of B over BMSY, as opposed to SSB over SSB MSST, and so the plot -- The data in the table are different than what this is plotted, because I asked that same question, and it's just a different -- This is a different plot than the data that's in the table.

DR. FROESCHKE: But the Y-axis is the F, the fishing mortality, and the MSRA table also has that value, correct?

CHAIRMAN NANCE: Go ahead, Lisa.

DR. AILLOUD: Sorry, and I think the issue is the F current is an average, right, and so, in the table, the F current is actually the geometric mean of the last three years, whereas, in the Kobe plot, you're looking at -- So you would have to average out 2021, 2020, and 2019, and then, if you took that geometric mean, you would fall somewhere around 0.93.

MR. RINDONE: If you trace back from 2021, the next point up is -- I mean, eyeballing it, it looks like it's in the 0.8s, and so the next point up from that is, you know, 1.5, or 1.2, and so that makes sense there, looking at the Y-axis.

CHAIRMAN NANCE: Yes, and thanks. Let's go ahead and -- We're going to stop right here, and we're going to break for lunch, and we're going to come back at 12:45. The reason I'm stopping here is, if we get into the OFLs and ABCs, we're going to spend time on that, and so I want --

When we come back from lunch, we're going to have a discussion on the model itself, whether we bless the model or not, and, once that is done, then we can move on to the OFL and ABC and see if we want to make some changes there, because we did the F 30 percent SPR, because that's what we did last time. If we want to make changes in that, we certainly have the option to do that, and so we'll have that discussion after we talk about the model. We'll go ahead and break for lunch and reconvene at 12:45. It's a little bit shorter lunch today. Roy is not here, and so --

(Whereupon, the meeting recessed for lunch on July 19, 2023.)

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July 19, 2023

WEDNESDAY AFTERNOON SESSION

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The Meeting of the Gulf of Mexico Fishery Management Council Standing and Special Reef Fish, Special Socioeconomic, and Special Ecosystem Scientific and Statistical Committees reconvened on Wednesday, July 19, 2023, and was called to order by Chairman Jim Nance.

CHAIRMAN NANCE: Okay. We'll go ahead and reconvene, and, before we get back into the model, we're going to have Emily give a presentation of the Fishermen Feedback. Okay.

MS. EMILY MUEHLSTEIN: Okay. Are you guys ready for me?

CHAIRMAN NANCE: We're ready. We're always ready for you.

MS. MUEHLSTEIN: Awesome. All right. The after-lunchtime slot, and I hope everybody, you know, got their willies out and got to eat some cookies and things, and now you're back and ready to listen to this captivating presentation that I have for you.

Many of you are already familiar with our tool, the Fishermen Feedback tool, and we deployed this for Spanish mackerel. We deployed it from April 14 through May 19, and so we tried to give about a month to get respondents, and this is tool is used to gather information on fish stocks prior to an assessment, and we're really just hoping to find active trends or unusual things that might be happening that we can then share to both the scientists and the managers.

Through this tool, we got 117 responses, and we just submitted this to the stock assessment folks yesterday, and so I'm sorry for that delay, and then we are now presenting it today, and so this is the first time. This is the unveiling today.

CHAIRMAN NANCE: Emily, a quick question. How many do you usually get?

MS. MUEHLSTEIN: So it's really dependent on the fishery, and sometimes we're surprised. I would say that this is pretty normal. You know, this is not one of our more exciting things, but it's also not the worst we've done. I think we've gone as low as thirty

answers and as high as 900, but this is about average.

We'll start with who responded to the tool, and so folks were able to self-identify with the sector, and so, even though we only had 117 respondents, they were able to identify in more than one sector, if they identified as more than one type of fisherman, and so we had 127 responses here, and what you will see is a major of the respondents were private recreational anglers, with sort of the commercial and charter sector following pretty close together there, and it occurred to me, as I was looking at these results, and I would almost, and I don't know this for sure, but I would almost think that this actually mirrors the composition of the fishery, that this is a pretty close estimation of the composition of the fishery. There's lots of private anglers and then a smaller subset of the commercial and charter fishermen.

Most of our responses were concentrated sort of in that area by Pensacola and off the coast of Alabama, and we also had sort of a bump in the Tampa Bay area.

Moving on, we do two types of analysis on our comments, and we do the overall sentiment of the response, and then you'll see, later, that we also classify the responses that have something to say about the abundance, or the condition, of the stock, and we pull those out and do a separate analysis on those, to see what they indicate about the abundance.

I will start just with the overall sentiment of the response, and I want this -- I want it to be clear that this could be, you know, saying something good or bad about the stock, or, you know, sometimes it could be saying good things or bad things about management, or, you know, any other thing, right, and so this isn't necessarily focused just on the condition of the Spanish mackerel stock.

What you will see is over 50 percent of the comments that we got were negative in nature, and there was a large proportion of neutral comments, and that reflects sort of comments that were observational in nature, or the way that we do the analysis is, if somebody says the Spanish mackerel stock is awesome, and management is terrible, those two things kind of even each other out, and then that comment overall would come out to be neutral, right, and so that's why you see sort of a large proportion of neutral comments.

Now, one of the things that, based on seeing all the other tools, that stood out to me here is, if you look at the sentiment by sector, and so we classified the sentiment by the self-identified

sector, and what you will notice is that, in all cases, commercial and recreational and, to a lesser degree, for-hire, the negative sentiment was dominant for all of the sectors, and this doesn't happen all the time. They usually don't agree with each other as much as they do here.

Then this is sentiment teased out by location, and there is also sort of a trend that I see here that's pretty clear to me, and what you will notice is the greatest proportion of negative sentiment is sort of down in the southern Florida, but, as you curve up towards the Big Bend and the northern Gulf, and you head out to the western Gulf, it becomes increasingly more neutral in what we're seeing here, and so I think that's also something that might be worth pointing out.

Then we move on to the stock-condition-related responses, and so, through our analysis, the other thing that we did is, every comment that we looked through, we answered the question of does this relate to stock condition, and, if the answer was yes, then we would do a second analysis on that comment, and we would take that comment and decide whether or not it indicated something positive, negative, or neutral about the condition of the stock itself, and so 95 of 117 comments were related to stock condition.

What you will notice is we still have almost half of those comments that are negative in nature, but the big shift here is there's far more positive comments than neutral comments, whereas, in the overall sentiment, there was much more neutral comments, and then you will see that that trend that we noticed, when we separated the sentiment by sector, it doesn't hold true anymore, and what I find interesting about this graph, of the sentiment by sector, and this rarely happens, is that the private sector actually had more negative things to say about stock condition than the commercial and for-hire sectors, and, usually, that's not what we see.

In most of our -- In most of these efforts before, what we see is the recreational sector is more optimistic, whereas the commercial and for-hire sectors will be less optimistic in those cases, and so this one kind of stood out to me, just because we don't typically see that.

DR. PATTERSON: Is it possible, within your recreational data, to pull out shore versus folks that are fishing in a boat?

MS. MUEHLSTEIN: So we can't do that, and we didn't ask that. What I would say is that, generally speaking, our audience that we target, and that we get to, are offshore fishermen, and so my presumption is that a vast majority of our private anglers that

are responding to the tool are going to be offshore instead of shore-mode fishermen. That composition might change a little bit when the states share this opportunity, and a bunch of the state-licensed anglers come in and do that, and the states did not share this opportunity, and so that didn't happen there, and so I'm going to presume that a majority of these respondents were boat -- Offshore boat anglers.

Then this breaks up the stock-condition-related responses by region, again, and what I will point is that trend that we saw with the negative, trending towards neutral, is not as obvious here, and we did have pockets of more positive indications in stock abundance that were located off the Panhandle, but, interestingly, you will see that the Panhandle gets like positive, but, when you get to Alabama, it sorts of shifts to negative, right, and so there's kind of something interesting going on in that northern area of the Gulf that I can't quite figure out, and then there's also that negative perception in south Florida, again, where we saw that negative perception in the overall comments as well.

We also do an automated analysis, and this uses a lexicon library, through the Bing, and it -- What it does is it will pull out words that are most associated with positive and negative sentiment here, and one of the things that I want to point out that stood out to me here is the use of the word "shark", which we classify as negative, and so that comes to the top of almost all of the species that we've done this on.

However, the magnitude of how large, how many times that word "shark" was used in a negative connotation here is much greater than we've seen in the past, and so I don't know what that means, but, overall, sharks are becoming more and more of a problem, and this tool was just deployed most recently, or if sharks interaction with Spanish mackerel is a greater issue, but that's something that I did want to point out.

The other words that were most frequently contributing to that negative sentiment were "fewer", "less", "decline", and so those are pretty obvious in what people are talking about when they're saying negative things about the stock.

The positive words are "like", "plentiful", "increase", "large", and, "good", and so, again, not terribly out of turn, and those things are positive, and they're good, and they're indicating good things about the stock and the stock condition.

We also did some -- You know, we did our manual reading, and there was a couple of themes that popped out when we did our manual

reading. Of those comments that were classified as positive, we did hear that the population is healthy, and we also heard that Spanish mackerel are both large and abundant.

Of the comments that were classified as neutral, these tended to be something that was indicating a change in migration patterns, and so they were observational in nature, and they also were indicating that current management measures are appropriate for the stock.

Now, of the things that we heard that were negative, we heard that the population is indeed in decline, and then we heard a lot about shark depredation, and also commercial netting, porgy fishermen, and overharvest by both commercial and recreational anglers is causing problems, and so, in other words, the negative comments tended to say, hey, there's an issue, and then this is why there's an issue, and so I just wanted to point out some of those themes that bubbled up to the top.

CHAIRMAN NANCE: For the menhaden fishery, what -- I guess I'm trying to perceive what would be a negative, and how would those two fisheries even interact, I guess?

MS. MUEHLSTEIN: So it's because people believe that, if you take the bait, then the fish will die, and so I think that there's generally a perception that the menhaden fishery, the pogy fishery, they take away our forage fish, and that's causing an issue for the Spanish mackerel species.

CHAIRMAN NANCE: So it's not an interaction for the fisheries, but it's just forage versus --

MS. MUEHLSTEIN: Yes.

CHAIRMAN NANCE: Okay.

MS. MUEHLSTEIN: That's it for me, unless anybody has any questions.

CHAIRMAN NANCE: You know, I think this is an excellent tool.

MS. MUEHLSTEIN: It's fun.

CHAIRMAN NANCE: The name change is good, and so that's good.

MS. MUEHLSTEIN: Good.

CHAIRMAN NANCE: Anyway, any questions from this presentation?

SSC MEMBER: Well, I enjoyed going through this, and I think it's just kind of a neat tool, and every tool has its limitations and whatnot, but I think you're aware of them, and you're using it responsibly. I really like that word cloud thing that you had there with "shark", and that can bring up all sorts of issues that we're not aware of, or at least not fully aware of, and we had that issue with bowfishing in Louisiana, and it was a known comment, but we did a recent survey on red drum, and we had all these comments on bowfishing, and it kind of raised awareness of the issue, and the commission has acted on it, but I could imagine that something like this could help the council, and others, do the same in other circumstances.

MS. MUEHLSTEIN: 100 percent.

CHAIRMAN NANCE: Katie, please.

DR. SIEGFRIED: I'm just curious, and did they say what kind of sharks?

MS. MUEHLSTEIN: No, and there is -- You know, we, at the council level, we have engaged with HMS, and we have asked them if they wanted us to deploy some sort of tool that is similar to this, or help them do it on their own, to help identify what the species are, how often depredation is happening, but without, you know, incredible support from HMS yet, we haven't deployed anything, because we don't want to confuse people that the council has anything to do with sharks, and so I'm trying to find a way that we can do it together, but we just haven't gotten there yet.

CHAIRMAN NANCE: Dan, please.

DR. PETROLIA: Thank you, Mr. Chair. Thank you, and this is really informative, and I'm curious if it would be feasible, or if you thought about the fact that they self-selecting in take the survey, and if you could get a small sample of those that aren't selecting in and just test for consistency, to make sure, because sometimes when you -- The people that self-select in are the ones that want to -- They have to say, and, a lot of times, it's going to be on the negative side, and so I'm just curious if there would be a way to see if this is consistent with, you know, a random sample.

MS. MUEHLSTEIN: I think that that's something that we could endeavor to do. The council is bound by the Paperwork Reduction Act, and so I think that would run us up against that, if we started trying to -- Because once you start sort of going out and doing this -- You know, so far, this is what we call sort of a

citizen-science-crowdsourced effort, and so we've been able to -- We're seeking clearance, through PRA, to be able to do this legitimately.

It's certainly something that I can consider, because I think that might be a useful thing to do, is to figure out if what we're getting is actually a representative sample or if it's that -- You know, if it's self-selection bias that happens.

SSC MEMBER: You know, kind of that issue, with this red drum survey that I mentioned, a concern that I had, when I was reading through all these comments, is the susceptibility of this sort of thing to, what do you call it, like public media, the radio and the Facebook or the TikTok, or whatever those things are, and if we had -- I had to go through and very informally categorize these comments, and we may have had 160 pages of comments, where somebody said something about some topic, and forty pages, roughly, were about bowfishing.

MS. MUEHLSTEIN: Wow. If it was a campaign.

SSC MEMBER: If there was a campaign, or somebody on a radio channel or something like that that directed people towards the survey on this issue, but that's -- What are you going to do?

MS. MUEHLSTEIN: Well, and that's -- We are certainly -- We are susceptible to that, right, and my hope is that, the more respondents we have, the less the responses are going to be tailored in that way, but I think there are certainly fishermen out there that say, tell them that everything is fine, so that they give us fish, or tell them that everything is terrible, and so I think there's like -- There's different perceptions of what you -- I think that happens even like in the MRIP surveys, right, and that this is pretty normal, and so you hope that, with the greater number of responses you get, the less those types of campaigns will impact your efforts, but without the lie-detector test, I don't know what --

CHAIRMAN NANCE: Okay. Luke, please.

DR. FAIRBANKS: Sorry if you answered this during the presentation, and I have missed it, and so people could respond that they, you know, fished in multiple areas, and so do you have more -- The numbers on a lot of these maps are more than the number of comments, and could people write different -- Could one person write multiple comments, like different comments for different areas, or would one set of comments apply to all of the areas that they ticked off as participating in?

MS. MUEHLSTEIN: So great question, and so, yes, you're right that people were able to self-select the area, and they were able to select more than one area, and so what we would do is with each individual response -- They weren't allowed to say more than one -- You know, they weren't -- I guess people would be able to submit multiple submissions, with different comments for each area, but what they do is submit a comment about what's going on with the fishery, and then they select the areas that are relevant to what they have said, and so the reason that we have a greater sample size in these maps is because some singular comments are counted towards multiple regions, when the respondent identified multiple regions.

DR. FAIRBANKS: Okay. Thanks. That makes sense, and so it's not like people were saying, well, I fish in, you know, Alabama, and here is what I think about the fishery there, but I also fish in, you know, the west, towards Louisiana, and this is how I think of the fishery there, and it was more like here are my responses on the fishery generally, and then, at the end, here are the two or three places that I fish.

MS. MUEHLSTEIN: Exactly, and nothing precludes them from doing it the way that you suggested, but that's not a behavior that we've seen before.

DR. FAIRBANKS: Okay. Thanks for the clarification. That makes sense.

MS. MUEHLSTEIN: Thanks for the question.

CHAIRMAN NANCE: Emily, thank you very much. We appreciate that presentation. We'll now go back to SEDAR 81, and, just to give you a timeframe, around 12:45, we need to go on to another presentation, and so there's two things we want to do. One is very important, and we need to talk about the model and whether it meets BSIA. We want to talk about that, and have a motion on that, and we also -- If there is anything that we want to see run tonight, we need to let the Center know now, so that there's time to do something overnight.

We have time tomorrow to look at it, but we certainly need to be able to ask them to do things, if we want to, and I'm not saying we have to, but, if that is part of what we need to do, then we need to say that before that time, and so let's go ahead and talk about -- I think this is the last slide we had, and I think we want to end here, and we'll do that, with projections.

I want to talk about the model first, whether it meets BSIA, or are there things that need to be changed, those types of discussions. Luiz, please.

DR. BARBIERI: Thank you, Mr. Chairman. I have a motion to that effect.

CHAIRMAN NANCE: Okay.

DR. BARBIERI: You know, in case other folks don't have another one moving, and I can provide one. Before that, Lisa, I am just trying to get a clarification here, just for my own brain, right, regarding the 30 percent SPR reference point, right, just because, you know, consistent with the decision for SEDAR 28, right, we decided to fix steepness at 0.8, but, since we are using a -- Instead of a direct MSY estimate from, right, that steepness value, can you give us an idea, or do you have an output there, that shows the relationship, and, I mean, what would be the corresponding SPR value associated with that 0.8, just because of that internal consistency, right, because --

DR. AILLOUD: I don't have that. It can be pulled out, because do get an MSY, and so I will make a note of that.

CHAIRMAN NANCE: Because we did do SPR -- Let's see. 30 percent SPR as a run, because that's what we did last time, and so we certainly could ask for and have that to look at, whatever the SPR percentage is with the new steepness, and we could look at the projections from that. I mean, that's an option too, and it's something that probably wouldn't be done right now, but we can have that tomorrow. Is there discussion? Luiz.

DR. BARBIERI: I think it's more of a question for Lisa and Katie, to see -- Well, first of all, are you two staying the night? Will you be here tomorrow?

CHAIRMAN NANCE: They are here, and we have three hours tomorrow.

DR. BARBIERI: Just for this?

CHAIRMAN NANCE: Just for this, and so Ryan has done an excellent job in seeing how we do things, and so we're able to talk about it now, and, if there are things that we want to have done overnight, like I said, then we can come and talk about this tomorrow too, and so we're not precluded to try to get something done in a short period of time, and we have tomorrow for discussion, but, if there are runs and things that need to be made, obviously, we need to talk about those now, so that they can be done.

DR. BARBIERI: Because -- I mean, I don't think this is a deal-breaker, right, and, I mean, I actually do think that they've done a terrific job here, you know, with the data issues that you had to deal with, including high uncertainties, lack of data, and poor composition, and, you know, you had to pull information from indices, and you really have got something out of here that I think is useful and valuable, right, and it has limitations, but that is the nature of the beast, given the data limitation that we are dealing with here.

I'm not sure that this is likely to change, even, realistically speaking, when we reassess it again ten years from now, because, ten years ago, we already knew, right, some of these issues, and here we are again, and we have to cross the same bridge, and we still don't have good reproduction information for the Gulf, I mean, things like this, right, that could come out as research recommendations for the future, but also make a stink about we cannot have everything, you know, that we do as the first priority, and I have mentioned this before, several times, and we're going to end up breaking our Science Center, and that's not the goal, right, and so we're going to have to start thinking about some process, or a triage, so to speak, right, where a few things can be done more often, and perhaps with more detail and that, and, other things, we're going to have to accept some of the realities of data collection, cost, and infrastructure that we have in place, to maintain this machine running, you know, efficiently and effectively. I mean, I can offer --

CHAIRMAN NANCE: Let's go ahead and hear Steve first. Steve, please.

DR. SAUL: Thank you, Mr. Chair. I was going to make a similar comment along the lines that Luiz just made, that I think, you know, these -- That you all have done a great job with kind of the ingredients that you've been handed, so to speak, as Luiz alluded to earlier, or did an analogy to earlier, and I agree.

I don't think that any of these things are really going to change, and I think that, even despite all of that, there's something here that we can use to set policy, in terms of the science being sufficiently sound and, you know, addressing those kinds of questions.

The only thing that I was wondering, and I hate to give people more work, because I've been in those shoes, having to rerun stuff overnight, and it's not so much a sticking point for me, but it might be for others, the shore landings, and if we want to do any

sensitivity runs that look at lowering those numbers, or smoothing out that sort of jagged trend, and, to me, that's the only sort of thing that I would maybe reconsider looking at, but, again, those numbers are the numbers, whether we like it or not, or agree with them or not, and so I think -- You know, for me, it's not an issue, and it might be for others, and so that's kind of my two-cents.

Then the other question I had, and this might be for council staff, or the Center, and I'm not sure who, but I was curious about -- So I guess kingfish, king mackerel, is often assessed jointly with the South Atlantic Council, since these things kind of move around, and I know the line here was drawn at U.S. 1, of course, which makes political sense, but I was wondering -- I was curious to understand why Spanish mackerel was split and assessed Gulf separate from Atlantic, rather than considering the whole population as one stock.

CHAIRMAN NANCE: Ryan, please.

MR. RINDONE: Hi, Steve. The SEDAR 28 data workshop -- They had talked a little bit about this, and there just -- There wasn't -- There seemed to be some evidence for different migratory patterns for the fish, based on some of the commercial trip ticket data, but it didn't seem to justify another stock boundary outside of the council jurisdictional boundary, and so, you know, there is some movement in the Keys, and going up the east coast of Florida, and then up further north of there, but there didn't seem to be evidence that there were seasonal shifts of fish that were moving say from the Keys up into the Gulf, from the Gulf down into the Keys, and then around to east Florida, and so, again, there is very limited information available, and so there wasn't -- There wasn't a good reason to change the boundary from the council jurisdictional boundary to something else.

Now, for kingfish, the same data, the same commercial trip ticket data, there was a lot more information in there, and it actually resulted in the finding of the winter mixing zone from being something that was very large, and spatially shifted from up the east coast of Florida, and then back down around and contracted every year, to being just south of the Florida Keys, south of U.S. 1, from November to April.

Those data were an improvement from the previous kingfish assessment, but, again, a lot more kingfish landings, and a lot more data available, to try to tease that decision apart, and so, because we have the separate migratory groups though, we can't assess those -- Or the different migratory groups at different times, and so, you know, Gulf Spanish now, and Atlantic Spanish

was -- That stock assessment was recently completed, earlier this year, and so they don't have to necessarily run concurrently.

CHAIRMAN NANCE: Thank you.

DR. SAUL: Okay. Thank you.

CHAIRMAN NANCE: Jim, please.

DR. TOLAN: Thank you, Mr. Chairman. I would just offer up a comment. When I first read the report, I was a little dismayed at the differences in the trajectories from the first assessment to this one, and, while it's still positive, it's not nearly as positive as it was before, and, given all of the data limitations that we've already discussed, and I think you guys have done a really good job with it, and the Kobe plot still is -- It's pointing in the right direction still, and I think that summarizes, quite well, the sentiment that we're getting back from the fishing public, that we just got the presentation on. I think you guys did a really good job, and I am more than happy with the assessment at this point.

CHAIRMAN NANCE: Ryan, to that point, please.

MR. RINDONE: Just to that, and just to note to you guys that landings of Spanish, for the last couple of years, have declined considerably, and so that's something else to think about, you know, when you guys are looking at this, and they've also declined considerably for kingfish. I mean, we often see these species, these two species, you know, being caught at the same time, you know, feeding on bait balls in similar areas, at similar times of year, and so I would just encourage you to think a little bit about that as you're moving through this process.

DR. TOLAN: To that point, Mr. Chairman?

CHAIRMAN NANCE: Yes, please.

DR. TOLAN: I had a conversation with our science director before I came out, just for that very issue, both kingfish and Spanish mackerel, and, at least off of Texas, it is definitely an effort issue. There's just not as much targeted effort for these two species, and so, while they're still there, especially for the shore mode, where the Spanish mackerel are really subject to environmental conditions -- If we have an upwelling, I mean, the surface is nothing but hardheads, and you're not going to catch any mackerel, and so it really is tied directly to effort, and that's not just the private, but also the headboats, and so I've

got some data that I can share, because that comes up.

CHAIRMAN NANCE: Good. Thank you, Jim. Paul.

DR. MICKLE: I guess this question is directed to Ryan, because he probably has the answer off his fingertips, but what is the stock status from the South Atlantic? It came out last year, you said.

MR. RINDONE: It was earlier this year, and I don't know that.

DR. BARBIERI: Not overfished and not undergoing overfishing.

MR. RINDONE: There we go. Not overfished and not undergoing overfishing.

CHAIRMAN NANCE: So the same.

MR. RINDONE: Yes, and so Luiz was part of that review, and so he'll be the hot potato.

DR. MICKLE: One more question, and so, Ryan, you said that you've seen a recent decline in recent years, and the last couple of years I think we were exact, and do you mean to 2021, the last two years of -- Because that's the terminal year of this assessment. Are you saying there was a decline in landings prior to 2021?

MR. RINDONE: I am going to -- I will pull it up right now. I guess if you want to call on Julie.

CHAIRMAN NANCE: Julie, go ahead, please.

DR. JULIE NEER: Hi, and I was just going to comment on the South Atlantic report that was just completed, the OA for Spanish, and there was a lot of issues with that assessment, when it got to the SSC, and there were several back-and-forth with the Center and the SSC, trying to revise and look into possibly making improvements to that report, and so it has -- Even though it was finished a while ago now, they are still going back and forth on how to move forward with it, and, actually, they're going to be talking about it again at the SSC meeting on the 27th of this month, and so I'm just putting that out there.

CHAIRMAN NANCE: Paul, to that point, please.

DR. MICKLE: Julie, the -- Are the concerns of a substantial level to change the current designation? I guess that's a --

DR. NEER: I am not sure, unfortunately, and I am -- I was not in

the meat of all of those discussions from the beginning and so I would hesitate to speak up on that matter, and I can look at the report and provide it to you guys.

CHAIRMAN NANCE: Katie is here, and so she'll speak to that, Julie.

DR. NEER: Oh good. She probably knows way more than me.

DR. SIEGFRIED: So, no, it will not change the status. The two points that I wanted to make clear, because Lisa and I were following that, as it came out, and one of the main issues was there was a huge MRIP peak at the end of the time series, and the terminal year I believe was 2020, which, of course, came into question, right, because it was the first COVID year. It was a very large peak, and it actually continued into 2021, and so they've done a lot of work to look at sort of the veracity of that MRIP data in the terminal couple of years. That's one of the explorations.

The other one that was key was the assumption about natural mortality, which, again, is why we've shown you the sensitivity around natural mortality, which was called for in our terms of reference, and so we are trying to learn from the problems that happened there and provide you with what you needed ahead of time. It's really important to us that we don't have to go back and forth and back and forth, and we think that we can learn from that scenario.

CHAIRMAN NANCE: Thank you. That was a very good discussion. Thank you. Doug Gregory, please.

MR. GREGORY: Thank you, Mr. Chair. I just want to make an observation, if we could go back to Slide 5, and I know what others have said about similarities between king and Spanish mackerel, and that's important.

If you look at this slide, you have the ACL, and you have the historical landings. Other than the two years when the ACL, for some reason, was low, landings have never even been half of what the ACLs have been, and I suspect that the bump-up in 2014 is a result of the stock assessment, which showed a similar pattern of what we're looking at with the projections, and I was going to wait and bring this up in projections, but this point seems pertinent.

In this stock assessment, the projections are also pushing up ACL, to eleven million pounds, and I guess that's in FES units, when the fishery is only catching seven million pounds, and so the

fishery is not going to start catching more fish, and this historical trend indicates that, and what is surprising, and similar to king mackerel, which also has not been catching its ACL, for many, many years, and the status of the stock comes out to be not overfished, but we're not quite a spawning stock biomass MSY.

At this point, we should be well beyond MSY biomass and OY biomass, but either these populations just aren't reacting to changes, or, if you look at Slide 5, there doesn't seem to be a whole lot of changes here, even with the net ban and stuff, and so I just wonder what we're missing in this altogether, and it doesn't make sense to have ACLs almost twice as high as what historical and current landings are.

I don't think it seems appropriate, and I don't have a -- Other than status quo, or something, in between, which would be arbitrary, to some extent, but this just bothers me, that we have these trends, and now we've got people saying king mackerel and Spanish mackerel are going to hell, but the stock assessments don't show that. The stock assessments show that both populations are healthy, and they're not at SSB MSY, but they're healthy, and so things aren't going to hell in a handbasket, in that sense, and so I appreciate you listening to me, and I welcome any comments, or insights, on this.

CHAIRMAN NANCE: Thank you, Doug. Those were good comments. Any other discussion? Paul.

DR. MICKLE: I guess I just wanted to -- I just didn't get that sentiment from Emily's presentation about the sentiment of the fisheries, and are there a lot of comments, at the council level, from the public and the charter captains and the different sectors saying that this fishery is in a lot of danger, because I haven't heard that, but Doug's comments kind of caught me off guard, and is that happening or not?

CHAIRMAN NANCE: Ryan, please.

MR. GREGORY: Ryan just alluded to it, and some of the fishermen, over the last few years, have complained about the lack of fish, and, in talking with me, I've always assumed that it's, you know, we've got warmer temperatures, and the fish aren't moving in the same areas that they used to move, and no big deal, but this interim assessment that we're looking at with king mackerel, you know, really raises a red flag, a hurricane warning, of, holy hell, something is about to go bad.

I understand what you said about the sentiment, but I think the sentiment is mixed, depending on who you talk to, and I even talked to some charter captain in Texas yesterday, and he said that they don't have the kingfish or the Spanish mackerel they used to have, but then I heard what Jim Tolan just said, and so it is a big confusing.

CHAIRMAN NANCE: Emily, please.

MS. MUEHLSTEIN: Well, so we do have to take into account the idea that maybe there is some bias in our respondents, but, generally speaking, about half of the people that responded had a negative perception of the stock, and the condition of the stock. I would say that, generally, just in the comments that I hear at the council table, and through our public comment tools -- I think, in the last couple of years, people have expressed some concern. What I will say is, upon looking at the results of the assessment, it didn't match with the perception that I had built in the last couple of years from what the fishermen are telling me.

CHAIRMAN NANCE: Thank you, Emily. Will.

DR. PATTERSON: Thanks, Jim. Doug raises some really important points here, I think, and I was thinking about something similar, but from a slightly different perspective, in that, if you look at the Kobe plot, and you compare it to the SSB0 trajectories on page 39, they just -- They seem to be inconsistent, because you have -- Well, at least from the shore fish, we have these spikes in exploitation rate, yet the Fs in the Kobe plot don't suggest that overfishing has been occurring in the recent time period, but, at the same time, you've got biomass, as a ratio to B0, just being flat over the past almost twenty years.

Those things just don't seem consistent, right, and how could you have Fs that are well below the threshold, yet the stock is hovering at this level and not increasing? We don't see spikes in recruitment that could drive that situation, and so it just seems, to me, like we're missing something.

CHAIRMAN NANCE: Is this the plot that you wanted up there, Will?

DR. PATTERSON: Yes. Thank you.

CHAIRMAN NANCE: Okay. Josh.

DR. KILBORN: I kind of agree with what Doug was saying, as far as these ACL values and not meeting them, and, if you look at Slide 5, the total landings trajectory is downward, and it's not, you

know, drastically downward, but it does appear to be a downward trend over time, and so I guess I'm wondering what -- You know, what would the practical implications be if -- Is the assumption basically that the fishermen are just not as good at catching these fish anymore as they used to be, or do we need to seriously consider that there is some sort of environmental change, or a stock shift, that we're not paying attention to, because I don't -- I agree.

I mean, if we've been not meeting the ACLs for this long, we should be way -- You know, we should have a much higher ratio on the stock determination, and we're pretty damned close to being overfished as it is. Thank you.

CHAIRMAN NANCE: I think what we heard from Jim too is that some areas are not targeting them, or don't have the ability to target them, and so there's many different dynamics that are out there, for sure. Ryan.

MR. RINDONE: To that point, I think it's probably a safer assumption to assume that fishermen's skill is going to continue to improve with time, as opposed to the opposite, just by the availability of information, the portability of that information, improvements in technology, and our expectation, I think, should just be that angler skill continues to improve and become more precise, you know, as far as like targeting even specific species.

As far as the landings are concerned, as you guys have all pointed out, the fraction of the ACL that's been landed for the last five fishing years has gone from about 26 percent up to 37 percent and then down to 21 percent, and then 17 percent, and then 18 percent, and so, you know, from that peak at about 37 percent, you know, there are only about half as many fish now.

CHAIRMAN NANCE: What year was that?

MR. RINDONE: 37 percent was the 2019-2020 fishing year, which would have included the beginning of COVID, and so they're landing about half as many fish now as they were just a few years ago, and they're not really -- At a fifteen-fish bag limit, I wouldn't say they're limited by bag limit. At a twelve-inch minimum size limit, and these fish grow fast, I wouldn't say that the minimum size limit is really much of a limiting factor here, except for maybe in the shore mode at times, but then, you know, like Lisa said, there are legal-sized discards, and so there's not really a reason to throw that fish back, with a fifteen-fish bag limit, or at least, you know, I would think, in most circumstances, and so, if people are, you know, maybe there's a desirability component.

That gets to what Jim said about people just aren't going out and directly targeting them, but then, you know, to get to some of Will's concerns about -- Especially with the shore mode, and the shore mode effort, and, you know, we had a little bit of a conversation with some others at lunch about pier fishing.

You know, when you think about what you do on a pier, you know, if you're casting out and you're trying to catch pelagics, you're just trying to catch pelagics, and you might be rigged for kingfish, or you might want to make sure that whatever terminal tackle you're using is appropriate to be able to catch a kingfish, but you're fishing for kingfish, Spanish, cobia, whatever might be swimming by, because you're stationary, and so you're limited to, you know, the movement whims of the fish and, you know, what might be present.

Everybody on the pier is fishing for, you know, whatever is going to bite, which would include kingfish and Spanish, and maybe sheepshead or whatever else might be on the pier, and so we would expect the directed effort from pier sampling to be high, I would think, and, in terms of, you know, like, you know, what are you target species, and, well, they're all going to come back as Spanish and kingfish and things like that.

Are they landing them? I mean, that's, obviously, a different aspect of it, but I don't think that we saw these similar trends for the shore mode from the last kingfish update, and I would have to look and check, but I don't recall there being that very strong shore component.

CHAIRMAN NANCE: Thank you. Luiz.

DR. BARBIERI: Thank you, Mr. Chairman, and so a couple of comments there. One is Spanish mackerel do have a tendency, right, and, I mean, this is known to expand and contract, right, as the population changes and the environmental conditions change over time, and, you know, if this is what is happening here, I don't know, but this pattern of episodic, you know, pulses in abundance have been recorded for Spanish mackerel, and they do respond to environmental conditions.

Whether this assessment can pick that up and tease that apart, right, from the impacts of exploitation, I'm not so sure, and so, you know, something that -- It's going to be difficult for us to really identify it for sure, because it's kind of a moving target.

Second is, you know, despite all the effort, the data limitations associated with this assessment, right, are large, and we've got

to manage our own expectations about what is possible, right, in terms of informational content, and I think it's giving us a ballpark idea, based on the information that we fed into the model, right, but it's going to be limited, in a way, and so, you know, the issue is we have fixed steepness, fixed natural mortality, right, and we have poor composition and poor indices, right, and so it's like, okay, how can we handle this in a way -- So I think, all things considered, it produced credible results that, you know, in a way I think we have to interpret in general, right, and it's basically saying that, right now, we don't see any reason to see a major red flag being raised here.

It may not be growing by leaps and bounds, but it doesn't seem to be, you know, going into the toilet, right, and so the sky doesn't seem to be falling, but what is causing this long-term trends in population abundance and distributional changes that are impacting that slide, I guess Slide 6, right, that is impacting the landings in general, and I don't know, but I didn't see any indications here that there is a major crisis, from the data that we see. It's Slide 5.

How we explain what's happening here, I don't know, and, you know, maybe it's something that needs to be looked at from a broader perspective than just, you know, a regular single-species stock assessment, that it can be more inclusive of some of these other parameters, the ecological connections and environmental components, whatever that might inform us more about the situation here, but, in general, I think that what this produced is giving us a good finger on the pulse of where we are right now.

CHAIRMAN NANCE: Thank you. John.

MR. MARESKA: Circling back to an issue that I think Doug brought up earlier related to the SEAMAP fishery-independent index, that 2021 at least indicated that no fish were caught, and, looking at the history, that has never occurred before, and so I don't know if there's some replacement value that we could put in there that indicates it's a decreasing indices, but, looking at the prior years, it's been really, really low, and then, if we don't do something with this assessment, ignoring potentially a real zero, how are we going to address that, if this is an index that we use for an interim analysis or something moving forward, and what are we going to put in there in the future, and so maybe we need to circle back and look at this issue.

CHAIRMAN NANCE: Thank you, John. Will.

DR. PATTERSON: That's a good point, John, and, if you look at

early time series, on average, they caught about a hundred fish per year between the two, the fall and the spring. In the more recent time series, even though the areal coverage has doubled, they're catching forty fish per year, over the last twelve years, and so it's not an issue of just the higher proportion of zeroes being inflated because of the eastern survey, and it's overall. Even though the area is doubled, they're catching less than half as many fish per year as they did historically. That's a substantial drop.

CHAIRMAN NANCE: Thank you, and I guess the vertical line is showing the exact opposite.

DR. AILLOUD: It is, with one big limitation from the vertical line index that time fished is not taken into account, and so the possibility of a positive bias is there.

CHAIRMAN NANCE: Thank you. Ryan.

MR. RINDONE: I think, to the comment about the interim analysis, I think the expectation should be that this is likely not a candidate species, given the indices, for an interim analysis, and so we need some solid indices, and we'll see more about that later. In a few minutes, we do need to move to the next item.

CHAIRMAN NANCE: Let me hear from -- What do we want to do, gang? We can bring up a motion, or we can wait until tomorrow for the motion. If we want to have any runs though, we need to kind of let the Center know now or -- I've got two presentations that need to happen during their time slots. Once those presentations are done, we'll have a few minutes after that, and we can bring it up then, or we have a few minutes now that we can bring them up.

I think some of the items that have been brought up probably are not doable for this assessment, and I think Luiz gave an excellent comment on the fact that, you know, the assessment, as we see it, has given us general information, and we're not seeing any drastic turns down and things like that, and there are some indices that have shown a decrease, and some indices show an increase, those types of things.

We have fishermen products there, that they're just not fishing for it, and those types of things, and so there seems to be mixed signals throughout the Gulf on what's happening, and I really don't see though, as Luiz pointed out, a true downward trend, and I think the assessment is giving us a rough idea that the stock seems to be in a healthy regime. It's not upwards of where we would want it, I mean, but it's not in a dire situation, like we've seen.

Jim, please.

DR. TOLAN: Thank you, Mr. Chairman, and, if we delay the motion until tomorrow, did I miss any specific piece of information that's going to come? To be compiled tonight and brought back tomorrow to us?

CHAIRMAN NANCE: No, because we have not asked for any.

DR. TOLAN: Okay. That's what I thought. Okay.

CHAIRMAN NANCE: The key is that we have, in our book right now, an OFL projection with F equals 30 percent SPR. If we don't ask for another one, that's what we're going to see tomorrow, and that's what we're going to recommend. If there is another run, another -- 40 percent SPR or whatever, or a run like Luiz was talking about with a -- We look at a different steepness.

DR. BARBIERI: No, no, no.

CHAIRMAN NANCE: Okay. I am sorry. I misunderstood.

DR. BARBIERI: No, and I don't think that running another steepness -- I mean, they already ran the sensitivity, and we see that the model is highly sensitive to steepness changes. I just wanted to, in my own brain, right, understand the consistency between the outputs that we are getting, using a steepness of 0.8, right, relative to the results of the reference points of 30 percent SPR, and so that's all, and it's just to understand where that, you know, would fall, but I don't think it requires a new run, right?

DR. SIEGFRIED: We were just thinking of where it was coming from, and it's not the same as running like an adjusted set of landings, and it's not the same as, you know, reevaluating natural mortality, and it's not like that, and it's just working it out of the code, and we were just debating where it was at, but we've done it before, like for scamp, and we've told you what the SPR equivalent was, and so she and I can argue about the different table about where it is.

CHAIRMAN NANCE: So it would be available tomorrow to look at, if we so desired? Okay.

DR. BARBIERI: On that point, you know, because we're probably not going to change, right, the reference point anyway at this point, I would go ahead with a motion. We would put a motion to potentially accept this assessment.

The SSC moves to accept the SEDAR 81 Gulf of Mexico Spanish mackerel operational assessment as consistent with the best scientific information available. Under the current MSY proxy of 30 percent SPR, the assessment indicates the stock is not overfished and is not undergoing overfishing.

CHAIRMAN NANCE: Thank you. Do we have a second for that motion? Will seconds it. Discussion?

MR. RINDONE: Change "moves to accept" to "accepts".

DR. BARBIERI: Thank you.

CHAIRMAN NANCE: Thank you, Ryan. Will, please.

DR. PATTERSON: I mean, just looking at this, there are certain things that seem odd, and there is certainly some uncertainty with the data, but, in looking at the things that we could change, and the rationale that would have to accompany that, I just don't see much that can be done that the assessment team hasn't already done, and so, you know -- There's not going to be a fishery-independent index that we create going back twenty-five years that can help the model some other way. You know, that's not going to happen, and so I think we can capture that in our comments, urge the council, whenever we go to set OFL and ABC, to be precautious, but there's just some issues here that we can't really get around.

CHAIRMAN NANCE: Thank you, Will. Steve.

DR. SAUL: I was just going to send the motion, but Will beat me to it.

CHAIRMAN NANCE: Thank you, Steve. Jim, please.

DR. TOLAN: Thank you, Mr. Chairman, and I just wanted to, again, thank the analyst team, and I think they provided a really good justification of why they truncated the data the way they did, and it's a much shorter dataset now, but I think, given the problems that we've run into with this species, it makes the most sense, and I am ready to accept this motion. Thank you.

CHAIRMAN NANCE: Thank you. Paul.

DR. MICKLE: Similarly, and so we make this motion a lot, and this is our biggest job, I guess, as a group, to be consistent with BSIA and identify that, but I look at it as is it better than SEDAR 28, and, of course, I think we agreed that -- Jim just made the point of the different start year, and I wish we would look into

this more for some of the other species and SEDARs, because I think the justification is there to shorten them. These really initial years are very dangerous, and the data -- We all -- I don't think anybody can argue that those data are fairly questionable, but the corrections they made, with the maturity function, the minimum size, time blocks, this is very easy for me to support. Thank you.

CHAIRMAN NANCE: Thank you. We have one edit from Ryan.

MR. RINDONE: After "overfishing", put "as of 2021".

CHAIRMAN NANCE: Thank you. You always help out a great deal. We appreciate that. I am going to read the motion. **The SSC accepts the SEDAR 81 Gulf of Mexico Spanish mackerel operational assessment as consistent with the best scientific information available. Under the current MSY proxy of 30 percent SPR, the assessment indicates the stock is not overfished and is not undergoing overfishing as of 2021. Is there any opposition to this motion? Hearing none, the motion is accepted without opposition.**

We're now going to go ahead and move on to our next topic. Tomorrow, we will talk about OFL and ABC, and that's where we can talk -- We have certainly some numbers here, and we can talk about whether we want to -- You know, what we need to do with those numbers, and so we'll do that tomorrow. Okay. Ryan, I think we'll move on to Item Number VI for right now, Update Discussion on MRIP Cumulative Estimate Reporting, with Dr. Cody.

UPDATE AND DISCUSSION ON MRIP CUMULATIVE ESTIMATE REPORTING

MR. RINDONE: Dr. Cody is on the line to present MRIP's transition to cumulative and fishing year reporting, which is currently implemented and queryable on NOAA S&T's website. This approach is intended to aggregate recreational landings for all waves in a twelve-month period, thereby increasing sample size for that twelve-month time period presented.

Further, Dr. Cody is going to describe the proportional standard error approach for each of these twelve-month periods, which is now notating whether or not MRIP recommends the use of those data for that species, area, and year based on its PSE. Wave-specific recreational landings data are still queryable, but they have to be requested from S&T, and they are no longer going to be immediately publicly available like they were in the past. Dr. Cody, are you ready?

DR. RICHARD CODY: This is sort of a brief overview of our survey

and data standards that we began rolling out some time ago, and we've come to the culmination of that at this point, and so I will give you some of the reasons for the rationale behind it and then some of the changes that we can expect to see.

This is an overview of the standards, and, basically, they were put in place to guide design and improvement of our surveys and then also to improve data quality for surveys that provide estimates for use in management and other arenas, and so it involves a shared use of a single set of survey requirements and guidelines, and that's meant to promote consistency on a national and regional level, and the idea is that it reduces ambiguity and potential misinterpretation in the data, so that we can better inform fisheries management.

Why were the standards developed? As I mentioned, it's been on our list of things to get done for several years, but the full implementation of the data standards would align us with the Office of Management and Budget requirements and also put us in line with best practices for other federal agencies that have large-scale surveys.

Also, they were put in place to promote transparency, and then, as I mentioned, data quality is a concern, as well as sound science, and, if the idea of transparency sounds a little bit cross-purposed here, I will try to explain that as we go on, because I think the concern that we have heard, at least within our program, is that it's less transparent, because you have less data being presented publicly, and another concern, also, was meeting the recommendations of the National Academies of Science and Engineering and Medicine to establish performance standards for surveys, and, ultimately, that's the goal behind the survey standards.

Overall, there are seven different categories, or standards, basic standards, and the first five really have to do with survey design certification and transition, and, you know, most of you are familiar with the transition process that's ongoing in the Gulf of Mexico for the state surveys, and this has now been formalized into a policy directive, and the standard implementation has been integrated into those directives as well.

The first five, as I mentioned, have to do with survey design and implementation, but also the review procedures, and the last two relate to how we continue to make improvements and how we make information available publicly, and Standard 6 there, process improvement, we're relying on the regional implementation planning process, which is a collaborative process involving the states, in

the form of the FIN committees, to identify regional data needs and survey needs.

Then, lastly, where we are right now is access and information management, and you will recall that part of the transition planning process involved a data management component, which is front and center, really, for the accessibility of state and federal survey estimates and providing some standards for the accessibility of those data, and I think that speaks to transparency.

As I mentioned, this has been an ongoing process, and we started to phase implementation of the standards back in late 2020, and the reason for doing a phased implementation was really because experience, based on the FES rollout, and, even though we had what we thought was a fairly robust communications strategy, it was inadequate for what we experienced with the survey rollout.

In 2021 and 2022, we spent a lot of time delivering presentations and trying to address some of the questions that we had heard from our data users, and so we did a series of presentations, through the regional FINs, and we published the MRIP Data User Handbook, which outlined all of the methodologies that we use for our surveys, and we added a preview query to the query tool that Ryan referenced earlier on, and that allowed users to see what the new MRIP query tool would look like once we adopted the standards.

Then we hosted a series of data user seminars and provided some tools to data users, to allow them to do custom domain-level estimation, and so, in 2023, we focused on the final stage, which was access and information management, and we -- The idea was to complete a shift from producing estimates of the two-month wave level to cumulative estimates, and I will get into the rationale behind that.

Estimates would still be produced on a two-month wave basis, but they would be cumulative, and, in addition to that, and in listening to our data users, basically we adopted a new presentation format that allowed users to customize fishing years, and so they didn’t -- They weren't limited a calendar year, per se, and relying on a data request to change that format.

Then, as I mentioned, we delivered presentations to different entities, and these included the fishery management councils, the Northeast Regional Coordinating Council, among others as well, and we have been incorporating feedback from those meetings as we’ve been going along, and so I would say what you see on our website right now is where we are, and that’s not to say that it’s static

and that it's not subject to change.

Then, as far as the planned work for 2023 is concerned, and beyond, we are continuing to work with data users, and then also implementing the precision standard as well, or completing that, and I will talk a little bit about the work with data users in a minute.

So the precision standard itself -- The intent of the standard is to mask highly-imprecise estimates, which, on the face of it means that we are censoring some data, and those data that we are looking at have percent standard errors above 50 percent, which are highly imprecise. This doesn't affect public access to survey respondent data, and so the microdata are still available for use, and, as I mentioned earlier, we have tools available that would allow custom estimation at different domains, and that would not preclude the development of estimates with PSEs above 50. Really, the precision standard affects what we publish on our website and not what are used for analysis.

Estimates with a standard error exceeding 50 are typically not statistically different from zero, and, of course, there are some assumptions associated with that, depending on the distribution that we use to model that. Implementation, as I mentioned, right now is limited to flagging data, and so we haven't gone the full -- To the full implementation of the precision standard, and we are continuing to flag data while we work with our data users on some methods that will allow them some other options to work with highly-imprecise estimates.

What does the precision standard do? I mentioned the White House OMB's requirement for statistical programs to establish criteria for publication, and that's one of the main things that we're trying to comply with, and it's something that the other large-scale surveys have already done, and so we're a little bit behind the ball on that, but the idea is that, when an estimate is too unreliable to publicly release, or publish on the website, then those should not be presented.

What this does is it highlights gaps in the availability of sufficiently precise estimates, and, you know, I have been working with the MRIP program now for several years, and there is always a target on our back, in terms of the data that we present, and the whole idea of the precision standard is to acknowledge the limitations of the data and to present what we feel are our supportable estimates, in terms of publication.

We think this provides analysts with a little bit more flexibility

to determine appropriate methods for filling in data gaps, rather than relying on the straight estimates that we provide on our website, when they have precision levels that are above 50 percent, and it reduces the risk of using highly-imprecise estimates to inform fisheries management decisions, or at least it highlights that those estimates -- There are more than just questions associated with it, and they are highly imprecise, and then it aligns us with standards and best practices for other federal statistical agencies that produce statistics for decision-making purposes.

The precision standard was developed, and I would say there's been collaborative work ongoing with this since 2017, and that's when we first really presented it to the regional FINs, and, around that time too, there were some MRIP-funded pilot studies that looked at the impacts of highly-imprecise data on the assessment process.

The disclaimer here is that those studies are pretty limited, and the study that I am referencing here, with the 40 percent PSE, is a study that's been done by ACCSP, and so, you know, caution should be exercised there in the interpretation of that, but the outcome of that was that estimates above 40 percent PSE should be used with caution in an assessment setting, and, obviously, there are different flavors of assessments, different types of variables that may affect the results of the assessment, and so this has to be taken with a grain of salt, but it does point to a general, I would say, take-home that assessment -- That precision levels above 30, and certainly above 50, are highly imprecise and somewhat unreliable, in terms of the estimates that they produce.

One thing I will point out is that Census Bureau doesn't publish estimates, or provide estimates, with PSEs above 30 percent, and they also provide guidance on disclaimers that have be included with any kind of annual analysis for the use of estimates that are generated with PSEs above 30 percent for external users.

The Atlantic Coastal Cooperative Statistics Program, ACCSP, has continued to set a goal of achieving PSEs below 30, and this is largely consistent with the Modern Fish Act funding that has been received, or has been distributed, to the different FINs to come up with metrics to evaluate the addition of samples, based on those funds. Then the last bullet here talks about, prior to implementation, we got some feedback from partners on standards, and I wanted to acknowledge, and thank, the FINs and the fisheries commissions, and the Gulf States Commission, obviously, for their help.

If you go to the website, and, if you go to it right now, you won't see anything, because it's down because of a security update, but it should be up later today, and what we had in the past was wave-level estimates, and so Wave 1, Wave 2, Wave 3, and we produced separate estimates by wave, and these appeared at different -- On different schedules, but basically at the same time, and we will still be producing estimates by wave, but they will be cumulative, and so, in other words, instead of producing a separate Wave 1, Wave 2, Wave 3, and so on estimates, once you get by Wave 1, then you have Wave 2 added to Wave 1, and so on, until you get the complete annual estimate.

Obviously, there are ways of getting at the wave-level estimate, through subtraction, but, you know, that process is probably fairly cumbersome to a casual user.

Why are we producing estimates cumulatively at this point? The main goal is to better use the existing data that we have, and it doesn't address problems of sample size that we currently have with the survey, and it basically uses the estimation process to take advantage of increased sample size temporally, or maybe at other types of aggregations, whether it's spatially as well, to produce estimates that are more precise.

CHAIRMAN NANCE: Richard?

DR. CODY: Yes? Go ahead.

CHAIRMAN NANCE: Keep going.

DR. CODY: Then it also -- I lost my train of thought here a little bit. Well, you get the point anyway, and, basically, it allows us to feed more data into the estimation process, and so, therefore, you get more precise estimates as the year goes on.

As I mentioned, we did listen to some of our users, and some of the input that we received, and one of those was for cumulative estimates produced on a -- So to have a rolling start to a fishing year, and so, instead of being limited to a January start date, other options are now available, March and May and so on, based on the waves, and so this allows a little bit more flexibility there, in terms of what is viewable on the website, once available.

The key takeaways here is that estimates are now provided cumulatively, and we still welcome input from any of the data users. Imprecise estimates are currently flagged, and so estimates greater than or equal to 30 percent, and those above 50 percent, haven't been censored at this point, other than we are not

producing the wave-level estimates. We are still flagging those on a cumulative basis, each wave, and so, if there's an estimate where a PSE is above 50 percent, it still shows up in a table format.

Then microdata and tools available for custom domain-level estimates, as necessary, and, as I mentioned earlier, interpretation of custom-domain estimates will continue to rely on analytical justifications and assumptions outside of the survey design constraints, and so that's something that's been ongoing anyway.

The next steps, and this is -- I think I just have one or two more slides, but we are working currently with the Science Centers to develop a decision framework for handling highly-imprecise estimates, and we had our initial meeting on July 10, and this involved the Office of Science and Technology and then the Southeast Fisheries Science Center, and we basically set up a menu of items that we would like to address over the coming months, and this is the first in a series of workshops that we plan to do that in.

We looked at Southeast assessment scenarios that are impacted by highly-imprecise estimates, and the different scenarios included situations where variance increased over time, or variance was high at the end of the time series, versus the start of the time series, and those are what we're looking at for alternative estimation options, as well as aggregation protocols to address that, and then we also looked at some of our options for custom domain estimation and other types of alternative estimation options, such as small area estimation and then aggregation protocols and things like weight trimming as well for the data, and so those are the different things that we've looked at for the data.

For the next workshop, we plan to look at some of the prioritized analysis and try to, you know, start on developing a decision framework, and, you know, one of the concerns is that, with a suite of different estimation methods available, or different options available, for the treatment of data, it becomes, you know, pick your own poison, in terms of the types of methods that you use, and so that's why we put some focus, at least in our work with the Southeast Science Center, on developing a decision framework which would at least put some constraints on the types and amount of analysis that you would need to do, based on the scenarios that are available, and so that's basically what I had.

CHAIRMAN NANCE: Thank you very much. Will, please.

DR. PATTERSON: Thanks, Jim, and thanks for the presentation, Richard. I am trying to figure out -- I mean, early on, Richard, you indicated that the purpose of this was to mask highly-imprecise estimates, and I think that's exactly what it does, is it masks highly-imprecise estimates, but it doesn't actually fix anything with the data or the estimates, and we just had a long discussion this morning about spatial and temporal data issues with respect to the Gulf Spanish mackerel assessment and how we could go into the data and try to figure out where signals were coming from.

I can see why the agency might want to mask precision estimates to meet the criteria for surveys, or estimates, to get under the threshold values that have been stated, but, for our purposes, it actually is harmful to mask imprecision, and, instead, you know, we should be focused on the survey methodology itself and how to eliminate imprecision in the waves.

Lastly, I think that you're in fact no longer going to be estimating the catch and effort by wave, and you're going to be estimating -- It's going to be a rolling estimate, but it's not going to be by wave, because you lose the wave data in this approach. Anyway, not really a question, but just more of a comment.

DR. CODY: Thanks for clarifying, and, I mean, what I meant by producing the estimates by wave is that, you know, they're updated each wave with the additional data from the previous wave, but I didn't mean that it wouldn't be available at the wave level each wave.

CHAIRMAN NANCE: Richard, each wave is still available, but you also have the cumulative value also?

DR. CODY: Well, not currently. What you have is the cumulative estimate, and so, with each wave, there's another wave of data added to that, and so, eventually, at the end of the year, you end with an annual estimate, and the idea behind that is to improve precision over time, by adding sample size, and so it's basically just a temporal aggregation to get improved precision. It doesn't, as Will pointed out, address, you know, the things that might affect precision beyond, you know, the estimation process, things like sample size, things like sample distribution, weighting of estimates, or weighting of data, and that behavior of data under conditions.

I mean, those are things that we are interested in developing some guidance on as well, and it is hard to do that with the current

setup. I mean, we have a situation, with our survey, where we're trying to address two different, we'll say, scales of need, and one is for, you know, an assessment-level need across the stock, and then one is for much more precise estimates at different levels of geographic resolution, and that's the reason we have the state surveys is place, is because those surveys were specifically designed to provide more precise estimates, and they do a better job of that, obviously, for the species that they are working with.

The issue is that, you know, different methods are used across states, and so the consistency component of it is a tradeoff for the precision, in this case, but we are working -- One of the things that we are working on with the Science Center are small-area estimation techniques, and the challenge there is finding datasets that are informative that would allow us to use those methods to get a balance between precision tradeoffs and bias, and so, you know, that's some of the challenges that we have, but the kind of challenge that we have, beyond that, is that we have a survey that's based on a certain design, and so, when you put an estimate up on the website, it should reflect that design.

There are options beyond that, outside of the survey production side, that analysts have, in terms of how they treat those data, and, often, they have the benefit of additional sources of information that would help inform that a lot better than what we have.

For us, it is, you know, a sort of balancing at, in that we want to stick to our survey design, because that's what we presented, and it how we estimate catch and effort, and so, when we have that, at least there's a chance that whatever information the assessment folks bring in, or the managers bring in, they will be able to evaluate it with that in mind, that it was produced a certain way, and that those methods are consistent over time.

CHAIRMAN NANCE: Thank you, Richard. Trevor, please.

MR. MONCRIEF: That was a good presentation, Richard, and I know you always feel like you've got a target on your back every time you present and we talk about it, and, I mean, I've got a couple of comments. You know, the first one, the data seminars you all put on and everything else, I thought were very helpful. I had my staff listen in on it, and I listened in on, and I've even got one tab out where I can reference it, you know, if I ever get to a point where I've got, you know, a little bit of confusion or if I misremember something, and so I think those were wonderful, and I applaud your staff for going through that effort and dealing with all of it.

The questions I've got are the same questions that, you know, I've kind of asked over the last three or four years, and, you know, there's two scenarios here that are obvious that pop up that have to be reconciled, and one is more of a specific issue for us in Mississippi, but it kind of plays out a little bit, right, and so, if we're getting cumulative estimates over the span of a year, and we have to wait until it meets the precision threshold, I may get a harvest estimate for red drum, or you pick it, right, of a species that is 1.2 million pounds, and I know that's not --

You know, that's not realistic for our state, but I don't have the ability to go back and figure out, you know, was that a true, you know, 400,000 pounds for three months straight, or was that 1.1 million pounds in Wave 1 that then just, you know, got overestimated, and so there's one concern, right, and it sounds like I can resolve that by just requesting it directly, which I appreciate, and I think that would be a good way to at least get the information.

The next one is I will call it the amberjack problem, I guess, and so let's just use 2022 as the example. If you go in and look at the estimates, there is some that are problematic, right, and you've still got them up, and so we can still see where it is, but the Mississippi estimate for 2022 was like five-times higher than that of Florida's, I think, because we had a single wave where it, you know, just kind of happened at the wrong time, with a small sample size, and it blew up the estimate, but then, when you look Gulf-wide, and you combine everything together, it meets the precision threshold, and that estimate is added in, and so that's kind of --

You know, me and you have kind of talked through this kind of scenario a little bit, and I'm wondering, and is that the kind of stuff that you all are having those meetings and discussing, or is it more large-scale, because I think that's a -- It's a pretty good scenario to think about, right, and, if you've got an estimate that meets the precision threshold, but the majority of it is made up by a single estimate that, you know, reaches the 50 percent threshold, how is that supposed to be, you know, one, taken into account, or, two, should it warrant, you know, adjustment, or do you just not take management action based on it, or anything else, if there's like a payback or anything else, and so that's kind of it, but, you know, I wanted to express my appreciation for you all's efforts at this point and then touch on those two.

DR. CODY: I can address that a little bit. One of the things that we've been looking at, and it relates to the review process,

and, obviously, everybody has their day job, and, you know, for us, the review process is fairly time-consuming, and, internally, it doesn't always get the attention that it should.

We did get some offers from Gregg, at Gulf States, and from the states, when we were doing the strategic planning process for GulfFIN, where the states expressed an interest in helping with the review of those estimates, and, in some cases, what we're talking about is, you know, a high estimate that's associated with maybe a low sample size for a particular wave, or it might represent the majority of the fishing -- The catch information for a given time period or state.

I think there are options that we are looking into for weight trimming that would bring down the weights of those samples. At this point, I mean, our preference would be that we identify those problematic point estimates and that, you know, we have a decision process in place, or a framework in place, where, okay, if it meets these criteria, then we would apply a weight trimming process to it, a protocol to it.

The danger with weight trimming is that, you know, that weight goes somewhere, and it might come off of one species, but it goes -- You know, you still add up to a sum of one, and so it goes somewhere else, and so that's an issue there, but there are some things that we're looking at there, in terms of how to better do that, or maybe flag those estimates, so that, you know, we don't just hear about them two years later. I don't know if that helps.

MR. MONCRIEF: It does. I mean, it's just kind of like the, you know, after we move forward, and as you progress through, you know, your requirements and everything else, and it's just trying to think through, you know, some of the things that we have to worry about on the state side, and then moving them back to this group as well. You know, if we see a time series of landings, and, you know, it may seem consistent, or there may be a jump, or, you know, maybe we changed regulations, and it's just not reflected, but there's something lingering in the background that, you know, at some point, someone has either got to say, hey, this is a problem, or there's got to be some standard way to be able to, you know, kind of identify and address it, and so I think -- I mean, you all are moving toward it, and I just wanted to bring that one up, because that's the discussion that we've kind of had over the last couple of years.

DR. CODY: Thanks, Trevor.

CHAIRMAN NANCE: Jim Tolan, please.

DR. TOLAN: Thank you, Mr. Chairman, and thank you, Dr. Cody, for the presentation, and I'm glad that I got to follow Trevor, because I had a pretty good idea what he was going to say, and I think, at the individual wave level, from the state data, that's where some of the most glaring differences pop up, especially for the low-use period, Wave 5 and Wave 6.

I have seen some estimates for some species that are just off the charts, and, to me, and I am going to try to restate what I thought I heard Will say, but this comes across looking an awful lot like a spline smoother, and just to get the data to pass some arbitrary PSE level, and it loses a lot of the background variability that is cooked into the cake, to bring up the Barbieri -- It's cooked into it.

I think the discussion this morning on Spanish mackerel shows it completely, and so, while I appreciate the standards, and how they're moving in this direction, it just comes across like this cumulative smoother that really, really dampens down the variability, and so that's all I have to say. Thank you.

DR. CODY: I mean, Jim, I agree with you, and it does, and it doesn't get us by the issues associated with sample size and sample distribution, and maybe some survey-design-related biases. I mean, we have a number of pilot studies that we've done, and there are changes that we could make, that we would be willing to make, but those are highly -- What would you call it?

They are disruptive, once you make them, because you're talking about additional calibration, and that's still no excuse for not making changes when they're needed, but I think, you know, resources are an issue, and we do the best we can with the survey sample sizes and distributions that we have to try to account for as much as the variability as we can, given the survey design that we have, and it is, you know, relative to a lot of other large-scale surveys, a very complex survey, and so, you know, it's not surprising, in some respects, that we do have these issues.

The issue is though is that, you know, for other scenarios, you might be able to get away with that. For fisheries, the time sensitivity is a crucial kind of factor that plays into, you know, dissatisfaction with estimates that are highly imprecise, and we're not happy with them. We've done what we can with the survey design to address it as best we can, given that, you know, we have guidance from, you know, the White House OMB and then best practices to try to adhere to. I think it draws attention to the limitations of the data, and maybe, you know, maybe that's a good

thing.

CHAIRMAN NANCE: Thank you. I've got -- We're going to have Doug and then Luiz and then Dave Chagaris, and then we'll have to cut it off after that, so we can move on to Presentation Number VII. Doug, please.

MR. GREGORY: Thank you, Mr. Chair, and I will be quick. Thank you for the presentation. I asked for this at a previous meeting, because I hadn't heard about this before, since I'm not involved in the commission FIN meetings, and it took me by surprise, and I fully agree with your last comment that, you know, this highlights a weakness we have, that we all knew, but kind of brushed over, and I think, going forward, people are going to be more contentious and try to do things to lower the CVs, and I appreciate the Spanish mackerel assessment and doing this in advance and highlighting it for us, how they dealt with the high CVs.

It raises a question, and this is more for the Center and not for GC, but what do we do going forward, because, at a previous meeting, I heard somebody make comments like, well, we can't use that data, because the CV is too high, but you're saying, in your respect, with MRIP, you're going to use the data, and the raw data is the raw data, and it's not going to go away, but I think, you know, going forward, we need to have an understanding of what's going to happen, and will data that have high CVs just be discounted completely and ignored, like a dramatic outlier, and so I appreciate everything, and I appreciate the presentation. Thank you very much.

DR. CODY: Sure.

CHAIRMAN NANCE: Thank you, Doug.

DR. CODY: Could I --

CHAIRMAN NANCE: Go ahead, Richard.

DR. CODY: Doug, I agree, and there are some concerns there, going forward, but I would say, you know, you have to look at this as a publication standard for estimates on the website that are available publicly. That doesn't basically -- It doesn't preclude different analytical methods that could be applied to the data beyond that, and we talked a little bit about small-area estimation to, you know, come up with estimates for domains that we currently can't support with the precision standard.

There are methods out there that I think we would be a little bit

more focused on, as we go forward, to try to address those issues. It's not going to address everything, but it will provide us with sort of a toolbox that we can pull from and have justification for using.

CHAIRMAN NANCE: Thank you. Luiz.

DR. BARBIERI: Thank you, Mr. Chairman, and, Richard, thank you for the overview presentation. It's super helpful. You know, understanding a lot of this is critical, right, for us, and so I'm so glad that you were able to come and give this presentation and answer some of our questions.

I mainly just want to, you know, say that I am happy to see, in your next steps, I guess Slide 13, that last slide in your presentation, right, that you identified direction here for working with the Science Centers and the Regional Offices to develop a decision framework for the use of the estimates. You know, Doug pointed out, and Jim Tolan pointed out, right, that -- I mean, for us, it's a matter of really understanding the degree, you know, of uncertainty associated with some of these data inputs into the assessment and how it is impacting the assessment and outcomes, outputs, of assessments, so we can actually integrate all of that uncertainty in our thinking as we work through our ABC Control Rule, right, to go from OFL to ABC and to, you know, basically either accept or not the stock status determination that comes out of the assessment as being credible, or perhaps not, because the data may not be there, you know, to provide an analysis that is reliable.

DR. CODY: Yes.

DR. BARBIERI: Right, and so, I mean, having you guys work -- You know, right now, the Science Centers, especially ours, are really under a very large, you know, workload, serving three councils and a number of analysis and more assessments, and we have a number of species here, as you know, and we have a very large recreational component in our fisheries in the region, and so all of this creates all sorts of curveballs for the assessment that have to go to our center, and they're really time-consuming, and resource allocation becomes an issue.

Have you guys stepped in and worked with the regional partners, right, to see how we can develop a process for helping the assessment teams, or perhaps the data teams and the Science Centers, better handle some of the situations, or even having a better understanding, as these data are used and input into the assessment, and so I just want to say that I was glad to see this

last slide, and I think this is a good sense of direction, you know, until something better, right, in terms of the data collection, can be achieved.

DR. CODY: I agree, Luiz, and, you know, more important to that is identifying different sources of data that can help inform management, along with the estimates, and the estimates have a certain amount of data that go along with them, but we don't know, you know, what has changed with angler behavior, or we don't know how social media has affected how anglers target species, or how they fish for species, and Spanish mackerel might be a good example of that, where, over the past few years --

It used to be sort of a pulse species, where word-of-mouth was how, you know, a run was made known to other anglers, and then they all showed up at a shore site on a certain day, and now information like that is a lot more accessible, and so there are things like that that we don't have a good handle on, and I think, you know, we are trying to work with the other larger agencies, and bureaus, on what might be useful in their datasets as well to inform ours, that can help us reweight the data, or more accurately weight data, so it's more representative, and so those are the kinds of options that we're trying to look at.

I think this work that we're doing with the Southeast Science Center, and it does add to their workload, and I think we'll at least get the framework in place, where there's a process, and it's not going to be sort of an a-la-carte pick the menu, pick the item, or the analysis based on the outcome you want kind of a situation, and we want to make it as transparent as we can.

CHAIRMAN NANCE: Thank you. Dave Chagaris, please.

DR. CHAGARIS: Thank you. I agree with what Will and Trevor and Jim had said, and I think they had most of my comments already. I will just add that, you know, I think we all would like to achieve this precision standard and have lower CVs in the data, but I don't think that, you know, some masking process is necessarily how we would like to get there, and I understand the details of that are all still being worked out, but, you know, I think what we want, or what we need, is not necessarily to have these imprecise estimates masked over, but to have some explanation behind them of, you know, why are we seeing them.

If that requires, you know, drilling down into the data and identifying, you know, outlier intercepts and so forth, I think that would be really useful information for us to reconcile some of the estimates that we see in the assessment stage, and so that

was all that I had to add. Thank you.

DR. CODY: Thanks, Dave.

CHAIRMAN NANCE: Thanks, Dave. Richard, thank you for that presentation. It was much appreciated.

DR. CODY: Sure. Thank you.

CHAIRMAN NANCE: We won't be able to take a break, but, if you need to take one, you're certainly welcome to. I will turn the time over to -- Dr. Methot, are you on? Ryan, would you go ahead and do the scope of work for this item, and then we'll turn the time over to Rick.

DISCUSSION: TECHNICAL GUIDANCE FOR NATIONAL STANDARD 1 REFERENCE POINTS AND STATUS DETERMINATIONS

MR. RINDONE: Dr. Methot is going to present updated technical guidance for National Standard 1, the reference points and stock status determinations under the Magnuson Act. There has been substantial research, over the last couple of decades, on the scientific basis for reference points and their expected performance and management of sustainable fisheries and substantial experience gained for stock monitoring and stock assessment implementation.

Some of this research includes methods regarding management strategy evaluation, evolution of integrated analysis assessment methods, development of methods to provide advice for data-limited stocks, for additional ecosystem-based fishery management tools, and investigation of changes in productivity due to regime shifts and climate change, and so Dr. Methot is going to summarize this research and development, with specific attention paid to calculating and evaluating reference points for stock status determination.

Of note is that the science is still not settled on some topics, and there is some spatiotemporal variability that needs to be accounted for in the research that's been conducted and the results and advice, and so Dr. Methot is going to describe recommended approaches, where it's feasible to do so, and pros and cons of alternatives where definitive advice is not feasible, and you guys should consider the information presented and make any recommendations, as appropriate.

CHAIRMAN NANCE: Thank you, Ryan. Rick, it's great to have you presenting to us.

DR. RICK METHOT: Thank you, Ryan. That was a great introduction to what I have. Again, we've been working on this update to the technical guidance for several years now. The last time this part of the technical guidance was addressed was quite a long time ago, 1998, and the Restrepo et al. document was the last time we really tried to pull together information on reference points.

There have been some other aspects of National Standard 1 technical guidance that have already been updated, but this particular aspect is here on status determinations and the reference points that they are based upon.

Again, we've been working on this for a while, and we now believe that we are ready for comments from all the councils, and we presented to the CCC a few times, and, you know, we agreed with them that we would have it out to all the councils and their SSCs for comment over the summer, and we're looking to get those comments back by the end of August, if at all possible, so that we can have it ready for the CCC meeting in the fall.

The main topics that we have covered in this guidance is the ways in which we go about deriving from our stock assessment models estimates of the technical calculations of the reference points, and we go through this from the perspective of the Tier 1 assessments, those that are using an age, or in some cases length, structured model in order to provide a tracking of the dynamics of the population, and, from these, we are, in some cases, able to get direct estimates of FMSY and the associated MSY and BMSY.

Especially we cover the proxies for this, and we touch upon biomass dynamics models, and we spend a fair bit of time with data-limited approaches, particularly the biological composition methods, and there's a number of additional special considerations that we touch upon as well. We'll deal with the multiyear approach, talking about the overfished conditions, as well as approaching an overfished condition, making an overfished determination from a percent SPR approach, which is a topic which I feel would be of particular relevance related to the Gulf fishery management plans, and the updating of reference points and SDCs for changing environmental conditions. Finally, we touch upon multispecies considerations.

The basic concepts have been around for a long time now, and, you know, they basically are cooked into the Magnuson Act from the perspective of essentially a simple view of the world that has an inherent stability of the population that is attainable through fishing at a rate that would provide the FMSY.

The acronyms here are things that are pretty common throughout all of this dialogue on the relationship between stock assessment calculations and reference points, with the fishing mortality rate basically being the slope of the line relating catch to biomass, with a higher F causing lower average stock biomass and some intermediate F giving a maximum sustainable yield.

Overfishing occurs when the F is greater than the level we call the maximum fishing mortality threshold, which typically is set to FMSY or a proxy for FMSY. In a number of cases, this is translated into an equivalent catch that would come from fishing at that rate on the current biomass and translating that into an overfishing limit.

From the biomass perspective, a stock is considered overfished when the biomass declines below a minimum stock size threshold, or MSST, minimum stock size threshold, and we also note, in particular for this document, that there is an F that corresponds to MSST. Just as FMSY corresponds to MSY, there is an F that corresponds to MSST.

In those top-tier assessments, the age and length-structured assessments, we spent a lot of time, and it took us a while to work through this, because there are regional differences in how we have evolved methods to do these, and, basically, it boils down into whether or not the spawner-recruit curve estimation is an inherent part of the stock assessment and whether or not we use priors for helping to stabilize the estimation of that spawner-recruit curve, versus going for simply estimating a time series of recruitments and using that as a basis for calculating reference points and proxies, and so this difference between freely-estimated recruitments and using proxies, versus using priors to stabilize the spawner-recruit relationship, is something that has evolved differently in different parts of the country, and working through how we relate these to each other, and use both approaches as essentially equivalent, and being careful about, you know, that they are able to provide equivalent advice.

We talk about the use of proxies for the situations where we cannot estimate that spawner-recruit curve or we choose to go only with the direct estimation of the recruitment and then, you know, intentionally use on the proxy approaches, and these proxies for FMSY tend to range from a percent SPR between say 30 and 60 percent, and, typically, the new scientific advice, some of which has been done in the Gulf, recommends that good estimates for FMSY tend to follow the range of F 40 percent to F 45 percent.

We do not, however, recommend that there needs to be any revision of, you know, current proxies that are FMPs, but we do provide advice for if there is a reason to revisit the proxies in an FMP and what kinds of considerations to bring to the table when you do that.

We touch upon biomass dynamics models, but we do not spend as much time discussing them, because they are inherently a much simpler approach than the age-structured models. They can be employed when there is only a time series of catch, and at least one time series of relative abundance data, and so these minimal data requirements make them simple to implement and to communicate, and they're really straightforward to calculate the MSY quantities.

The challenge is that that simplicity is essentially a trap in not being able to understand where it's going wrong, where it's being biased, because it doesn't have the ability to look at things like age-specific effects, some fisheries catching young fish and other fisheries catching old fish, and it can't take into account the lag effect of recruitments not showing up for several years into the spawning biomass, and it cannot really project the effect of recent recruitments into the OFLs and the ABCs, and so there's a lot of reason for us not to advocate using these routinely, but they are needed in some cases, and we do recognize their value in those cases, and, indeed, looking at even the age-structured models, with an age-structured production model approach, helps us understand and bridge between biomass dynamics and fully age-structured models.

The data-limited methods that we touch upon include the catch-only methods. Absolute abundance approaches are essentially data-limited, from some perspectives, and some cases have only a trend in abundance, but no catch, and some are able to measure the biological composition, basically the age or the recent length composition from which we can calculate the percent SPR.

I didn't define percent SPR exactly earlier on, and let me do it now, and this is the percentage of spawning biomass per recruit that is in existence under fishing conditions relative to the spawning biomass per recruit that occurs under unfished conditions.

All of the data-limited approaches rely upon some structural assumptions in order to infer some aspect of status determinations, and none of them can do it all. You know, the less data you have, the less kinds of data you have, the more you need to rely upon assumptions about how the populations generally work, borrowing that kind of logic and information from other species, or other

regions, in order to provide a basis that the limited data that you have is able to provide enough extra information to make some kinds of status determinations, but, again, none of them are able to do it all, and all do have, you know, a higher degree of reliance on structural assumptions that happens in cases where you can measure more things.

In particular, for the biological composition methods, where we're able to take recent age composition and recent length composition and, from it, calculate what level of fishing mortality rate, or F, would have resulted in that composition that we see today, and so we've measured something that is essentially an observation of the status of the stock as a result of past fishing, and that's our fundamental observation that we have at hand.

From that, we can translate that calculation of F into what that means, in terms of the percent SPR, and, previously, NMFS has disallowed using that kind of a calculation to make an overfished determination, because, at face value, it doesn't look like biomass. It doesn't look like a spawning biomass, and so it doesn't look spawning biomass is falling below some specified level, but, in fact, the logic is really the same in what we're doing here versus other modeling approaches.

You know, it's rare that we would ever directly measure spawning biomass, and our measure of spawning biomass is always a product of a model that is calibrated with a variety of kinds of data, and so that same logic is occurring here in this data-limited method. In this case, if we can comfortably assert that conditions have been relatively stable, then, when we make this percent SPR calculation from the recent biological composition, we are making an observation of what is the current F as well as the recent average F, because we are making a quasi-stable assertion in doing that.

We may be able to build in some degree of fluctuations over the history, if we have a little bit more information, but, basically, we're measuring both the current F and the recent average F from this observation, and so, if we have both, we can compare it from the perspective of an overfishing determination to FMSY to SPR, as well as comparing it to the equivalent SPR that would occur with the MSST.

We believe it is feasible, from a technical perspective, and the agency is not -- We looked at this from, you know, from all aspects, but, from a technical calculation perspective, we believe it's feasible to look at things from the perspective of making an overfished determination from a biological composition

observation.

After going through those three tiers of approaches to doing the calculations of reference points, we also touch upon a number of additional considerations, and we talked some about the effect of the complexity of fleet dynamics that make the calculations way more complicated than F is one number, right, and F is not one number, when we get into a situation with eight different fisheries, with various kinds of dome-shaped selectivity, and even more complicated if we have spatial complexity in play there, and so coming up with a number that represents F is challenging, and doing something that is consistent. We didn't cover that in great detail, but we do acknowledge that that is something that needs to be attended to carefully in doing the calculations.

We discussed the impact of size-selective fishing, and this is something that I've been doing some personal work on recently, trying to understand better how we can incorporate this.

When fisheries are size selective, and they typically are, that means that the fish that survive the fishery are showing the effects of having passed through a size-selective gauntlet, and so the survivors of the fishery tend to be the slower-growing fish, and this is a factor that has not been explicitly taken into account, but indeed it is feasible to do so.

You know, we believe it's important for us to move in the direction of doing more work that would actually directly incorporate this effect, because it, you know, potentially is a reversible effect. If you fish harder with a size-selective method, you would be reducing the mean size of fish in the population to a greater degree, but, if they retain the genetic capacity to still grow at the higher rates, then it's a reversible effect.

We also call out the fact that we've really been focused on density dependence as happening in the spawner-recruit relationship, but indeed there are studies that show that density dependence can happen in other life history factors, and, you know, maturation, growth rates, natural mortality rate of older fish, all of which are potentially density-dependent, and it is, again, feasible, but harder, and it's more complicated, and it's more work to investigate this and bring it into it, but that's not a reason to ignore it and its potential impact on what we're able to provide as advice.

We recognize, and I wish we hadn't used the word in this slide, but age truncation, and it's not truncation, but it's just diminution of the contribution of older fish to the population and

the fact that the residual spawning biomass is more and more concentrated into younger ages, and, hence, that spawning biomass is going to be fluctuating more, because it's going to be more responsive to fluctuations in recruitment, and so this is not an easily-quantified effect, but, nevertheless, recognizing that this is happening is something that is, again, more information that could be provided beyond just doing the reference points as they are defined.

Lastly, we touch upon the units of reproductive potential. Over the last ten or fifteen years or so, we have increasingly moved from measuring spawning biomass as simply the total body weight of the mature females, or even of all mature fish, towards trying to use something that is closer to the actual reproductive potential, things that are based upon the fecundity of the fish, and so you're taking into account both maturity and body size and eggs per gram, which tends to go up as the fish get older and larger.

As this change has happened, we have not looked back at the consequence of our proxies and how they were originally calibrated, and so, when we say that a fishing rate that reduces spawning biomass per recruit to 40 percent is an okay level of fishing, well, it's 40 percent in terms of mature female spawning biomass, but the equivalent is more like 37 percent, in terms of egg production, and so this difference is relatively small, but, nevertheless, as we have changed our units in which we are measuring the degree of stock depletion, it would be right for us to take a look at our calibration of the proxies that are used.

It's not an issue if we are directly estimating FMSY, because it plays through on both the reference point as well as the stock calculation, but, if a reference point is calibrated in terms of mature female biomass, and a stock assessment is measuring in terms of total fecundity, then it would be more precise, and we would remove a small bias if we were able to go through and do this, and there have been a few papers on this topic.

A big issue that we're all facing is that conditions are changing, and I see -- I sit in Seattle, where we have our own challenges with climate happening. When I look at what I'm seeing now in the water temperatures around Florida, I'm going, oh my god, this is really extreme changes that we are seeing in the environment that the fish are living in, and we see them responding, and we see it as something that tends to go in regimes, and it's not -- Or even now long-term trends happening in climate that are driving things.

The logic that we had thirty years ago, when we were setting up systems, it basically didn't have enough knowledge, at the time,

to assume anything other than recruitment was random fluctuations around some mean, but we see that the truth is more complicated than that, and, you know, we need to improve our ability to track things and to let the reference points evolve with the changing conditions, but do it with our eyes open and not simply blindly follow the changes, because we indeed could go into a situation that is more challenging.

We advocate for using trailing average approaches, in order to track things over time, and we overlay that with explicit regime shifts, where those are identified, but to only invoke a regime shift if we have good evidence that there is something going on, because it's too easy to get into a situation where we see that the animals have changed, and we call it a regime shift without really having a good rationale for why that connects to an actual change in the environment, and it's not some second-order effect of past fishing and how it has affected the stock.

A particular concern is for stocks that are declining because of some change. We could easily end up in a situation, and this has happened, and we're seeing this, in some cases, where the stock is declining because of some change, and the factor that we see changing in the population is one that would cause us to increase the fishing mortality rate on the stock, and, typically, our fishery mortality rates scale with the natural mortality rate, and so, if we see an increase in natural mortality rate, that's going to cause the stock to go down, and it's also going to cause us to calculate that the sustainable FMSY is a larger number.

The consequences of that for the stock could exacerbate that decline, and so we need to go into these things with our eyes open, and another one is where we have a control rule that has an inflection point in it which is designed to reduce the target F. Now, the reference points now, and looking at the target Fs for the ABC, and, when we have such an inflection point in the control rule, that inflection point -- It potentially is something that would change as we updated the calculations for prevailing conditions.

This also could lead to a situation where a stock has declined, and it's now below that kink in the control curve, but, with the updating of the values to reflect current conditions, that kink in the control curve has now shifted to a lower level, and now the stock is above it, and so we maintain the full F on the stock, rather than letting the F scale back because the stock is at a lower level.

We encourage further investigation of systems that could take that

into account, and we believe it's feasible to look into maintaining a long-term perspective on the shape of the control rule, so that we update the calculations for targets, as well as we can with prevailing conditions, but maintain a long-term perspective on, you know, where that shift in the control rule occurs, so that, if, for whatever reason, the stock has declined below that long-term perspective on the kink of the curve, then this F, the target F, would be scaled back.

We don't have a complete answer here in this document, but we do call it out as something that we believe is worth developing an investigation.

We also recognize that we have very much adopted a single-species approach to nearly all of our reference point advice. This single-species approach is not mandated, but it certainly is convenient, especially in situations where, you know, predators and prey are in different FMPs, or in different federal versus state jurisdictions, and it's challenging to figure out how we can approach such cases, and that doesn't mean that we shouldn't be striving to do it, and there is a good recent example with menhaden, trying to look at that kind of a predator-prey situation.

It takes a broader analysis to do so, but, you know, the tools are there, and it's going to be challenging to do so, but that doesn't mean that we should not be, you know, open and seeking to take these interactions into account, where we believe it is feasible to do so.

To wrap it up, you know, we strive to update the technical guidance for implementing reference points and status determinations under NS 1. We took several years of deliberating on this, and we needed to work out some regional differences and approaches in order to get to the document we have today, and so we have addressed some old issues as well as raised some new ones here, but, overall, you know, we highlight that, despite all the challenges and differences, this system that we have developed over the last few decades has really been highly effective in providing a science approach to implementing Magnuson's mandate to prevent overfishing and to rebuild the overfished fisheries. I will stop there, and I'm open to any questions. I know we have a good bit of time set aside, and so I will go ahead.

CHAIRMAN NANCE: Thank you, Rick. Questions from the SSC? John.

DR. FROESCHKE: Just a couple of questions, and you kind of touched on this a little bit, with respect to the regime shift and the recruitment, but I'm just wondering about your feedback on the

situations where we have model-derived recruitment from a stock assessment that may suggest that a period of typically lower recruitment in the recent past has occurred, and we contemplate that a lot, on how that goes into catch advice, but it seemed like your recommendations here tended to stay away from that, unless we had very concrete evidence or a more mechanistic understanding of how that situation might have arose, and is that correct?

DR. METHOT: It would be the changing of the reference point to track that recent change, and so, definitely for catch advice, we strongly advocate making adjustments to reflect what's been happening in the stock, which in some cases means moving away from simply projecting forward with the spawner-recruit curve and looking at the fact that, you know, as in your case, the one you raised, that the last few recruitments have been below that curve, and so we should be projecting based upon recruitments below the curve and not just revert to the curve, because that's the estimated curve, and so that's for the short-term advice.

The harder point is maybe the decision that we now need to recalibrate the whole curve, the whole set of reference points, because of these recent recruitments, and when do we make that shift, and that's the hard one to do, because, once you make that shift, you're now basically saying that this is the new normal, and it could mean that the new normal is now a smaller stock that can't possibly support as much, but we're going to now, you know, keep maintaining the full fishing mortality rate on this stock, even though we recognize that it is lower, and that's the one that we think we need to pay more attention to those kinds of situations, where we have a reduced stock, but we have a situation where we might end up maintaining the F at a full level on that reduced stock. Hopefully that answered it, and please follow-up.

DR. FROESCHKE: Yes, I think so. I mean, one of the questions that we did -- The recruitment, for example, we would account for that in the recent recruitment, as far as catch levels, but there was uncertainty, for example, if you do take that into account, and say we're in a new regime, and so you lower, for example, your MSY proxy, or your biomass at MSY, and so you actually are closer -- The stock condition is actually better, and so that actually would probably lead to more favorable catch levels in the short term, even though that might not be best practice.

DR. METHOT: Exactly, and that's the situation that we're concerned about. The same thing happens with snow crab in Alaska, right, and, you know, they've seen that kind of decline, and it's been raised there as an issue, that maintaining that -- Shifting the target down, and now saying that this stock is okay, relative to

its reduced recruitment level, is something that I think we need to be more attentive to that situation and not simply follow too simple of a set of advice and to, you know, have the flexibility to make adjustments, to be certain that we're protecting the stock well, so that it can rebound in the future, potentially.

You know, in that situation -- I understand that that's something that you've seen, in some of the South Atlantic reef fish, and the fact that you're seeing it across several species is, you know, a line of evidence that this is a pervasive thing, and it's not just something that's just showing up because of how we did the assessment for one species, and that kind of pervasive effect is there, and seeing coincident changes in the regional environment is another line of evidence that would support making a shift, but keep the bar relatively high for making a shift in the reference point and maintain the long-term perspective on protecting the stock. Those are the two major things that we would advise.

DR. FROESCHKE: Thank you.

CHAIRMAN NANCE: I think that's important, Rick, and, in fact, as we see shifting start to occur, is where do you know when to make that shift, and things like that, and I think that's always the question, and to have the assessments that we can be able to do that in a timely fashion. Any other comments from the SSC? Is this -- Rick, is this report out now?

DR. METHOT: No, it's not. We're pausing development on it through the summer, while we get comments from all the councils, and I've had meetings like this with several other SSCs, and we're looking forward to getting your feedback on the report, and then we intend to drive towards producing a final, published report as soon as we can after that. I am not going to promise it by the end of the year, but it sure would be helpful.

CHAIRMAN NANCE: Okay. Will, please.

DR. PATTERSON: Hi, Rick. I was really interested in hearing your presentation, and one of the things that, besides, you know, sort of the climate effects and things that could be driving productivity besides fishing, and one thing that we struggle with here are with the proxies, and I was curious about your statements on data-moderate MSY-based proxies and having a default between 40 and 45 percent of SPR.

How much guidance is going to be in the document with respect to that, and what kind of information are you going to provide? It's something that we've talked about here in recent years, looking at

a couple of meta-analyses that are out with respect to this, but this is a topic that comes up here frequently with this council.

DR. METHOT: Yes, fair enough, and those are the same kind of things that we've been looking at, and like the Hargrove study that was done in your region was one of the things that we looked at, and it was a very relevant kind of investigation. Was it complete enough? It was pretty good, and it was quite good, and that's the kind of thing that you need to go through if you're going to consider updating it.

You know, there is -- One of the challenges we have is, while we advocate for using an MSE-type approach to understand how fishing is potentially affecting a stock, MSEs tend to be pretty broad and not focus just on reference points, and I think, as you do an MSE to investigate that, it's challenging to separate the effect on reference points versus targets, because we have a strong system of setting targets below the limits, and I think we need to be careful about building that concept into the MSE, so we can understand where to set the limit conditioned upon how we set targets, and we don't have that for the past studies.

They tended to treat them as equivalent, and, you know, I think that's an aspect of that kind of MSE work that could be improved in the future, and not that we have the horsepower right now to condition those studies ourselves, and we're simply going to have to wrap-up this report with these ideas on how to do it, and, if you read back to the 1998 report, it reads pretty much the same way. They had a whole lot of ideas on what things should be done in the future, and we've done some of them, while others are still waiting.

DR. PATTERSON: Just as a follow-up there, Rick, you know, in the 1998 report, there was the simulation work that showed, you know, targets and thresholds and how, you know, fishes with very different life histories -- You know, you get pretty much the same result with MSY versus 75 percent, F of 75 percent MSY, and is there going to be any of that type of analysis done in this report?

DR. METHOT: No, there's not, and, I mean, we recognize that, and we considered not having a discussion about that flat-top of the yield curve, right, and it's the flat-top yield curve, and that gets into the whole topic of pretty good yield and, you know, what range of Fs do you fish hard on a small stock, or like on a big stock, and get about the same yield.

The challenge is that this is a reference point that is defined from the perspective of the effect on the biological yield of the

stock, and that's MSY. Optimum yield is where we bring into account ecosystem and economic factors, and so, you know, OY, optimum yield, is below MSY for those other factors, and, again, an MSE tends to get more into the OY factors and not just the MSY factors, and so, once you get into that flat-top yield curve, and should we, you know, set our proxy at F 35 percent or F 45 percent, you're basically making a choice on where you are on that flat-top yield curve.

You know, the challenge in that is that it's hard to make a definitive decision on that, from strictly the knowledge of the spawner-recruit curve, and it really has to get into those other factors in order to understand where you're at in that relative flat-top.

DR. BARBIERI: Thank you for that, Rick, and Jim had to step out for a second, and so I'm going to take over here for a little bit and move on to Dave Chagaris.

DR. CHAGARIS: Hi, Rick. Thanks for giving this talk and coming to speak with us today. My question is about the density-dependent life history effects, and we came across this issue recently with the Gulf of Mexico research track assessment for red snapper, where the life history working group had determined that red snapper had a lower age-at-maturity during the period when the stock size was lower, during the overfished period, and then a higher age-at-maturity as the stock was recovering.

I think they proved that to be statistically-significant difference in those time periods, and so we basically were assuming that this was a compensatory response in maturation, and so, when the analysts went to incorporate that into the stock assessment model, and, of course, this is Gulf of Mexico red snapper, and so it's a complex model, but they were able to successfully include it as blocks, sort of three time blocks on the maturity relationship, but the assessment development team recommended that they -- Well, they also attempted to incorporate it through the density-dependent relationship with spawning stock biomass, but that proved to be -- Well, it didn't quite work so well, and so we chose not to go forward with the block approach, because we wouldn't have that relationship to carry forward into the projection scenarios.

We were sort of stuck at a point where we felt like there was maybe this compensatory response, but we were hesitant to include it in the model, unless it could be configured as truly a density-dependent response, and so I'm just curious if had any more thoughts on how we might approach a situation like that, from, you

know, what evidence is needed, first of all, to determine whether this is truly a density-dependent compensatory response, and then how should it appropriately be configured, so that we don't create this disconnect between the model and then the projections and the equilibrium-based reference points.

DR. METHOT: Very good, and that's great to hear, Dave, and I appreciate you bringing this up. How much evidence do you need? Well, it sounds like you've gone through a process, and you basically have demonstrated, to your SSC's perspective, that, you know, you do have good science evidence that there is a change, and I wouldn't try to second-guess that here.

You know, you've done due diligence, from inside your assessment process, of showing that this is a factor that, you know, is operating in this situation, and what it would take, what more would it take, to demonstrate that this was truly density dependence, and not essentially a coincidence of time, and, basically, you have just two states of a system, and it's, you know, potentially just a correlation that is happening, and not simply a causality, but it is plausible that it causal, and that's important, and, you know, you've demonstrated the ability that you could do it, and so that's one point.

I mean, I think you've done reasonably well at showing that it does seem to be happening, and it would be great to see that prototyped into, you know, a full assessment, and so, you know, let me take off my NS 1 hat, a little bit, and put my SS3 hat on, and, you know, it is technically feasible to have a density-dependent parameter inside of SS3.

Now, I have not looked at that particular trial model, and whether or not -- How it was set up, but it is technically feasible to do that, and so I would not, you know, write off that possibility, and it may be that, you know, in another go-round on this, you might be able to find a way to make that happen, and it's similar to size-selective fishing, and it also is something that can be built in, and, hence, once it's built in, it's like building in a spawner-recruit relationship.

You build in something that is a reversible effect on the demographics of the population, and, hence, any calculation of MSY-related quantities will reflect that effect, and so, right now, we tend to only build in the spawner-recruit, but building in size-selective fishing, and building in density-dependence on age-at-maturity, are all -- You know, a grander model, a grander approach, would indeed take those things into account, as well as, you know, any multispecies effects that we could bring to the

table, but those two are certainly more in reach than they were several years ago.

DR. PATTERSON: Thank you, and, you know, the analysts were able to configure it within the model, but, you know, maybe it just needs some more testing, and it appeared to capture the trend, at least the maturity, the change in maturity did, but I believe they were having issues with convergence, and the run time increased considerably, and so maybe we're closer to be able to do that than we think.

DR. METHOT: Yes, and a model that's as complex as that one is already, and, once you build in any aspect of time-varying biology, there's just too many things, or very many things, that need to be recalculated constantly within the model.

DR. PATTERSON: Thank you.

CHAIRMAN NANCE: Thank you. Any other questions or comments? Rick, we sure appreciate you being on, and we look forward to seeing the report.

DR. METHOT: Okay, and I believe you have the report, and so I look forward to seeing your comments on it.

CHAIRMAN NANCE: Okay. I will have to take a look, but thank you, Rick, for being on the call today.

DR. METHOT: Excellent. I'm signing-off.

CHAIRMAN NANCE: Okay. Thanks. We'll go ahead and take a ten-minute break, and we will reconvene here at it looks like 3:40. Come back at 3:40.

(Whereupon, a brief recess was taken.)

REVIEW SEDAR 81: GULF OF MEXICO MIGRATORY GROUP SPANISH MACKEREL OPERATIONAL ASSESSMENT (CONTINUED)

CHAIRMAN NANCE: Okay. We're getting ready to reconvene, and so everybody please come back to the table. We had a discussion on SEDAR 81, and we had a motion, which was accepted, for the model itself. If you will all go to the presentation, the SEDAR 81 presentation, and I think it's Slide 57, which has the -- Using the F equals F 30 percent SPR criteria, it gives us the OFL projections, and page 58 gives us the ABC, using a 75 percent F 30 percent SPR.

That is kind of where I would like to begin our deliberations, and I know, Doug, when we talked about Slide 5, where we looked at these, and this takes us with a 2025 OFL of fourteen-point -- Really, it's fifteen million pounds as our OFL, and yet we have not been anywhere near that over the entire timeframe. Jessica, can you bring up Slide Number 5 again? There it is.

You can see the -- Let's see. I guess the ACL there has been around twelve million, that type of thing, but our catches have been -- One year, they were above six million, those types of things, and so we've been low. Lisa.

DR. AILLOUD: Sorry, but just to clarify that the rec is in CHTS units in this figure, versus --

CHAIRMAN NANCE: What?

DR. AILLOUD: This one is in CHTS, and so the other one would be in FES units.

CHAIRMAN NANCE: Thank you. Thanks for bringing that up. Do we have one like this in FES? Okay, we don't. Okay. Let's go ahead and I guess go to Slide 57 and begin our discussion. I will open it up. Will, please.

DR. PATTERSON: I thought the last column, OFL, when I was looking at this -- The first three lines were CHTS and the last were FES, and what causes the difference, if these are all FES?

DR. AILLOUD: I'm sorry, but could you repeat that?

DR. PATTERSON: The OFL column to the far-right, for 2022, 2023, and 2024, you're around seven million pounds wet weight, and then it jumps up to fifteen for 2025, the first year of the -- So what -- Is that because those are leftover values from the previous?

DR. AILLOUD: Sorry. Okay, and so everything is in FES units in this table. The interim years are based on -- 2022 is an actual final estimate, and 2023 and 2024 is an average of 2020, 2021, and 2022, and they are lower than if you were to push that back, and there is tables in the report, but, if you were to look at catches from say 2015 to 2019, they are higher, and I believe because we're averaging out over those COVID years, and the interim catches are actually lower than the rest of the 2000 years.

CHAIRMAN NANCE: I think it's -- Isn't that where 2025 is the first year that we go into this setting?

MR. RINDONE: It's the first likely year of management.

CHAIRMAN NANCE: Yes, and so you know how, in Stock Synthesis, there's an initial year that it bumps up, and then we start at that point, and then it comes back down, and so that's kind of what it's doing here, and we see where it's been with the sevens, the seven million pounds, and from then on, the initial year, it bumps up. Yes, Lisa.

DR. AILLOUD: I think a helpful figure might be Slide 56, because you will see a little more of the yield from 2017, 2018, and 2019, and so all I wanted to point out is that the averaging used for those interim years is over 2020, and you can see those values are around 7,000, but, if you're looking at 2017, we're at -- Thirteen million. Sorry.

MR. RINDONE: Just in those interim years, we're assuming that nothing different is going to be happening, and so the projections aren't starting until 2025, and, unfortunately, all of that is predicated on whatever is caught in the previous year being caught, so that what is listed as being available to be caught in the next year and so forth, as we move through time, and that's not to say that more harvest might or might not be possible, but it's just that's what we're assuming is going to be likely, because there is nothing about management that is expected to change in those interim years.

CHAIRMAN NANCE: Doug Gregory, please.

MR. GREGORY: Thank you, Mr. Chair. It would be nice to see a table with FES equivalency, similar to what's in Slide Number 5, and I see Slide 56, and it's showing the three years prior to 2022, that say sixth, fifth, and fourth year, are around ten million pounds, and so my perceptions may have been wrong, but then that begs the question of what we do assume going forward for the next three years?

Is the last three years the most realistic scenario, or something in between, and I am tending to think that we would assume -- It might be reasonable to assume the average of the last six years, rather than just the last three, because we don't know what part of this is affected by COVID and other stuff, and, again, COVID shouldn't be a factor in 2021 or 2022, but I don't know, and it's not a straightforward picture. Thank you.

CHAIRMAN NANCE: Ryan, please.

MR. RINDONE: Thank you. I mean, to Doug's point, especially about

2020, and I guess being a resident of Florida, and Luiz can speak to this some too, from the data that the state collected, but there was a lot of additional fishing pressure in Florida in 2020, and so I definitely wouldn't think that the overall desire to get on the water, for whatever reason, was lower than 2020, and I would say it was probably much higher than normal, because there really wasn't much else to do.

You couldn't buy a kayak, and boats and motor prices went through the roof, and everything was backordered, and so -- But, as far as like looking at the 2022 and 2023 fishing year, you know, that's -- Like I mentioned to you guys earlier, that's sitting at about 18.6 percent of the ACL, and that's preliminary landings information, and we're in the 2023 fishing year right now, but it has basically just started, and so there's nothing to talk about yet for that, and so the fishing year here is April 1 to March 31.

CHAIRMAN NANCE: Any other comments? Josh, please.

DR. KILBORN: Thank you. I guess I have more of a question than a comment, and there was a spreadsheet that was on the meeting materials that has the Spanish mackerel landings by state, and I'm assuming that's accurate, right, and so, if you look at that, if you go all the way back to 1986, there is only two years with more than ten million pounds caught in the landings, and so I just -- I don't know why we haven't -- We haven't looked at this at all yet, and so I just wanted to kind of point it out to people and show you that the values are here, and we can get some kind of estimate for what we think the recreational landings actually look like, and so, yes, I have lots of other questions about this table, but I just wanted to point that out. Thank you.

CHAIRMAN NANCE: Those are, yes, the totals for each of the different states and the total for the Gulf, and so that gives us a good picture of the recreational landings, certainly. Josh, your point on this one was --

DR. KILBORN: Well, I guess my point was just that they never get close to that ACL that we have, and there's a couple of times that it's been, you know, ten or eleven million pounds, but, for the most part, it looks like it's -- You know, if you average over the past three years, you know, six million, 6.3 million, and, if you go it over the last ten, and that includes two years with over ten million pounds, and so it jumps it up to about seven million, 7.3 million, for the average in any given year, but, you know, and that's across-the-board for the whole region, but what you really see is that Florida is driving the show here.

Florida has many millions of pounds of landings every year, and a little bit from Alabama as well, and then the others don't really seem to really have much of an effect on that. It was on the website for the meeting materials, and it just went up like last night or something. I guess I did have a question about this table.

CHAIRMAN NANCE: Go ahead.

DR. KILBORN: It's going to highlight my ignorance about this FES stuff, and, first of all, I noticed that, when you convert Texas numbers, they don't change, and so Texas doesn't change, and I'm sure everybody already knows that, but I didn't know that, and my real question though is the proportion of difference from any year, from each region, is not the same, and so, when you convert from CHTS to FES, in Florida, in 1986, it's like a relatively low proportional change, but then, over time, it gets bigger. Can somebody explain that to me?

CHAIRMAN NANCE: Go ahead.

DR. NATASHA MENDEZ-FERRER: Before we go down the rabbit hole, I just wanted to mention that this came up -- Yes, we uploaded this data last night, and there is a caveat that, due to the time constraints, these are in calendar years, and they're not in fishing years, and so that's one thing to note, which the fishing year begins in April, and so these are January to December, but just before we start mapping.

CHAIRMAN NANCE: That's good, and I think the key is it gives us an idea of the catches on a calendar year and not the fishing year.

DR. KILBORN: One of the things that I really noticed, that kind of threw me off, was that the total conversion in 1986, from CHTS to FES, was a change of about -- It was like 1.1 percent difference, and it was like, you know, a little bit higher. At the end of the time series, it's like four-times higher, and that has got me confused, and maybe somebody can help me with that.

CHAIRMAN NANCE: John, please.

DR. FROESCHKE: I will try, and Richard Cody might be better, if he's still on, but my understanding is it's a model-based conversion, and it's not a static ratio, and one of the variables in the model is this cellphone attenuation function, which, essentially, the landlines become rarer over time, and so then the expansion factor gets larger, and it's driving the difference. I don't know, practically, if there is going to be something done

about that, because we've seen it in other things, and it's an interesting --

DR. KILBORN: Thank you. I appreciate it.

CHAIRMAN NANCE: Jim.

DR. TOLAN: Thank you, Mr. Chairman. Just a quick note on the point that Josh brought up about the Texas data, and, again, it doesn't change, and it's just our landings, and it's just public boat ramp intercepts. Like I was saying earlier, you're not going to get any from the beach, but, if you look at the Texas data as you go through time, there's some really dramatic differences year-to-year, and I think that really points out what I was talking about earlier, that it's a summer fishery, and so, if we have a big upwelling year, you just don't see Spanish mackerel, and so that's where a lot of that comes from. Thank you.

CHAIRMAN NANCE: I guess the key, as you're seeing, is that it's not a constant ratio, and it's the same, and it varies by year, and it varies by intercept and those types of things. I know we talked about, a few meetings ago, when we were talking about each state with their conversion factor that we brought up, and those types of things, and so that is a changeable entity. Trevor. I'm not sure if you'll muddy the water or make it clearer.

MR. MONCRIEF: I don't know, and what do I normally do? I wanted to point out that we had a lot of questions about the shore component, and I don't -- Maybe I missed the earlier conversation, but I was just told that it's being split amongst the different areas fished, which might show a little bit of more volatility, and it might explain, you know, the doubling in west Florida over time and year-to-year, right, and then you've got, you know, large-scale differences that occur across years in Alabama, and really all of them.

The question that I always kind of root myself back to, is when it comes to thinking about these, it's just thinking about fisheries operations in general, recreational fisheries, and how they operate, and, in general, what you would expect is, you know, a fairly, you know, consistent harvest, a fairly consistent participation, over time, and, when you get to places where you see threefold differences year-to-year, you know, the question starts to be, all right, well, you know, if you break it down into waves, where do you start seeing that breakdown at.

When you get down to, you know, the areas fished, is there extra allocation that -- Or extra effort that's being allocated to

different areas, and try to just start really getting down into the weeds to explain, or figure out, why you might have a threefold difference, and, at the end of the day, typically, what I have seen, once we get down to it, is there isn't really an explanation.

You would expect that, all right, if it doubles, that's recognizable, right, and the fishermen would be talking about it, and you would be seeing it, and so I think there's just more to kind of drill down in on this one, just to see exactly where these differences are occurring and whether they're logical or not, and so I hope that didn't muddy the water.

CHAIRMAN NANCE: It's crystal clear, Trevor. Thank you. Luiz, please.

DR. BARBIERI: Trevor, just to add a little bit to your point there, I think, you know, the issue is that, and Rich Cody pointed this out during his presentation, is that MRIP is a general survey, right, that covers a whole suite of species, you know, inshore and offshore, right, different modes, and it cannot be specific enough for any particular species. It's better for some, but it's good for others, because it's a general survey, and it's not a dedicated survey for a specific stock that you can design, you know, a sampling strategy, right, that's focused on that stock.

It so happens that, in my opinion, Spanish mackerel is not one of those species that can generate -- That it's well covered by MRIP, right, that we generate more stable and reliable estimates, and we saw, with the volatility of the landings, the lack of composition data, you know, biological data, and so there's just not going to be, like for some other species that are very well sampled, and, I mean, just the proportion positive, and I think Lisa pointed that out, that the proportion positive observed is relatively low, compared to some other species.

Like, if you look at spotted seatrout, it's going to be very different, in terms of proportion positive, because the probability of you encountering an angler that actually caught a seatrout is much higher than the probability of, you know, catching a Spanish mackerel, and so that, by itself, is going to generate some uncertainties that are inherent in this data that, you know, I don't know if we're going to be able to change.

Another point that I wanted to make, and I guess to check with the analytical team too, is what we are seeing here on the screen are recreational landings data in FES units that were converted from CHTS units, and that conversion is correct. However, what the new assessment has done is, by integrating the new FES data into the

assessment, it actually has re-estimated the productivity of the stock.

If landings are this much higher than we thought they were, then, obviously, the stock has to be much more productive, and so it's going to be putting out -- I mean, we saw the same thing happen with gag, right, between assessments, and perhaps even red grouper, and, you know, the landings are going to be used as a way to scale, right, the output of the assessment there, in a way, and so I think that the yield streams that are in Slides 57 and 58 are representative of the results of the new assessment, and, in that way, it will be reflective, right, of higher capacity of the stock to produce.

CHAIRMAN NANCE: Will, please.

DR. PATTERSON: So the FES estimates were higher. Therefore, the stock is estimated to be more productive, but, if you go back to the table that Josh asked to be put up, and you add the commercial landings estimates to the recreational, across the time series, you know, there is some noise in the data, but it's pretty consistent, and the mean is 7.8 million pounds. This goes all the way back to 1986.

If you take a more recent time period, it's still around eight million pounds, and so, even though we've scaled up the productivity, haven't scaled it up to fifteen million pounds, and that's the real kind of stickler, for me.

CHAIRMAN NANCE: It's basically saying there is stock out there that's available. Trevor.

MR. MONCRIEF: Sorry, and I was just going to respond to Luiz, real quick, but I think you're correct, in the sense that, yes, I mean, it's not geared toward -- It's a general survey and everything else, and I think the -- You know, some of the conundrum I have sometimes, and, you know, the difficulty I have, going through some of this stuff, is that, oftentimes, we're taking it as the gospel, because it's -- You know, it's the information we have at-hand, I get it.

It's the information that we have available, and it's there, and there's just sometimes where you start to see these kind of patterns, and I just don't -- I don't know if we really drill into them far enough to truly grasp what that fishery is doing and if what we're doing, and what we're measuring, is representative of the fishery itself, and so, yes, I mean, it's done to scale, right, because the removals are going up, and so, obviously, the

productivity is going to go up, and we're going to scale it up, but to what degree are we going to, you know, start thinking about, you know, drawing a line on -- We've got all this volatility that we're seeing across time.

I was just looking at the last five years, and it goes from, you know, five million pounds to ten million pounds, and then six million and back to five million, and, I mean, at some point, you know, just like we talked about earlier, and we're getting there, with the discussions that we're having, but, at some point, we just have to figure out how and why this happens, and if it's truly reflective, because we're just keeping on going down the line of rolling this stuff forward and doing the same-old-same-old, and I think that's just not going to work for us, continuing in the future, and so I'm off my soapbox.

CHAIRMAN NANCE: Thank you, Trevor. Luiz.

DR. BARBIERI: Just one thing to the discussion. I mean, the thing is that we get ourselves in this pickle often, right, that, for some species that are more data-rich, or data-moderate, and we have much better inputs, and we have a lot of life history work done, and we have information on movement and all of the ecology, and, you know, the assessment can draw on that and produce a fairly reliable estimate, because it has all of these pillars that it's anchored on, right, to inform it.

Then we get something like Spanish mackerel that, in my view -- I mean, this assessment already, you know, used the ingredients to the best extent possible, to cook something that's fairly reasonable, and I don't know what else we could do, objectively, and so we fixed steepness at a certain point, and natural mortality, and so, right there, we are prescribing what the productivity of the stock is, right, but, at this point, unless somebody has a better alternative to the values that were included here, or how we could run this differently, I don't see how we're going to come out of this situation, other than go to a landings-based average, right, that doesn't take composition or life history or productivity into account.

It's weird, right, to see this output, and I don't see how we could do any better, and I don't have any, you know, suggestions, beyond what I have seen already, and so this is why I'm going with this, is it's the best that we can do for a species that we have a lot of limitations, in terms of the data availability, and, also, you know, I think we have to think about where do we think, or the council sees, the priority of Spanish mackerel compared to some of these other species, right, for investing in a large-scale data

collection program and prioritizing, you know, how often we produce assessments. You know, I think that what we have on the table, to me, is reasonable, and I just wanted to make that point.

CHAIRMAN NANCE: Thank you. Katie or Ryan.

MR. RINDONE: To Luiz's last point about priorities, the last assessment was over a decade old, and so --

CHAIRMAN NANCE: Katie, please.

DR. SIEGFRIED: I just have some questions, technical questions, about a few things that have been said, and I apologize if I go back several respondents, and so looking at -- I think Doug mentioned one thing, and Luiz and Will, that I just wanted to ask questions about.

The first one that I have up on my screen is Slide 57, and it has the OFL projections, and it has the fifteen-million-pound OFL for 2025, which I think that's what you're referring to, and I apologize that I was out of the room for the first few minutes of the conversation, but it looks to me like, and I don't have any concerns about this technically, but if the interim years were a different level of catch, that would change drastically.

CHAIRMAN NANCE: Yes.

DR. SIEGFRIED: Right, and so that was the original part of the conversation, but this is, you know, applying, very blindly, this F 30 percent SPR, and based on the fact that the stock actually had low catches in those first few years, and so I don't -- Then it drops dramatically after 2025, and so I understand the maybe not wanting to go straight to fifteen million pounds, but I don't see how that's technically flawed.

CHAIRMAN NANCE: I think the graph -- There's a graph, and I can't remember where it is. Right there, and I think that shows it even clearer, Katie.

DR. SIEGFRIED: Right. Okay. Sorry if this was already discussed, and I will go to the thing that I actually heard in-person then, and it was the FES, wishing there was an FES conversion, and, on Slide 52, Lisa produced this sort of -- It's the catch equivalency that, to me, is the most direct way to compare those two in the assessment context, as opposed to the spreadsheet, and this actually shows the most recent years, in the context of the assessment, of the conversion between CHTS and FES.

If you convert the ABC recommendation, especially the five-year average, or the three-year average, that's on Slide 58, to CHTS units, using the conversions on that slide that we were just on, it's around eight million pounds, and so it's pretty consistent, to me, and so I wanted to see if I misheard Will, or misheard Doug, but I don't see the technical issues.

CHAIRMAN NANCE: Will, please.

MR. GREGORY: Mr. Chair, may I?

CHAIRMAN NANCE: Go ahead, Doug, and then Will.

MR. GREGORY: Okay, and, yes, Katie. What was it, the equivalency slide? Those CHTS OFL are projections, right, and they're not landings, and so the observation that I thought I was making was the landings historically never really met, or came close, to the projections, and so I don't know what's in this catch equivalency table, but, if they're actual landings, then I agree with you 100 percent, and the thing that made me question myself in this effort was Slide 56, and that showed the landings, the FES landings, in that graph, prior to 2020, were not that much different than the projected ABC, or OY, that is in this graph.

That gave me some comfort, but I don't know what numbers those are, and, I mean, I just saw them here last, and so I'm -- If those are the actual landings, in FES, for the fishery, then, like I said earlier, the only concern is what do we use going forward, and we just don't know, right, those three years, and that's why you always take the average of the last three years that we have data for, and I understand, and I have a hard time moving off of that, but that was my concern, and my concern was misplaced, because I didn't recognize these three points on this graph on Slide 56.

DR. SIEGFRIED: Okay. That clears that up, Doug, and I appreciate that, and I think the reason that -- I mean, that makes sense, that it would provide you comfort, or understanding, once you looked at the magnitude of the previous, you know, the 2017, 2018, and 2019, because the stock is close to the overfishing limit, and it's between MSST and MSY, and so, I mean -- Okay. Good. I'm glad that I didn't misunderstand the technical side of it.

DR. PATTERSON: So I also wasn't making a technical statement, and I was -- Along the same lines as Doug, the catch estimates, with FES recreational, have been around eight million pounds, and, yet, we're estimating the OFL to be fifteen million pounds, basically, in 2025, and so that's a big disconnect, and so where is this

surplus production, and that's not showing up in the fishery, and the second thing is, if this is the level, given -- Like we don't know what the equilibrium value is, but it's going to be higher than fifteen million pounds, and so how come the fishery has been operating at a level of about half of that, and we don't see this rapid increase in stock biomass, and, if you look at the fishery-dependent, the one fishery-dependent index on page 25, for twenty years, it's been flat.

How can you land half of the MSY, even if it's on an annual basis and not the equilibrium value, yet you're not seeing the stock take off, and like what -- There seems to be a disconnect there. The surplus production should be accumulating then, in stock biomass, if we're leaving it in the water.

CHAIRMAN NANCE: Katie, please.

DR. SIEGFRIED: I better understand your point now, and I think that that discussion of which level of interim catch to use will address some of the concerns of what the initial OFL would come out as.

As far as the disconnect you're talking about, you know, we've discussed that a lot in our Gulf group, as far as there's a disconnect between the overfishing limit and then when it's determined to be overfished, and sort of the delay in the designation of being overfished, even after many, many years of potential overfishing, and so, in one of Lisa's plots, it shows, and it's Slide 55, where there has been a number of years where it's been over the overfishing limit, over the MFMT, but it hasn't yet -- You know, it didn't always go under the MSST, each of those years, and regulations weren't enacted at any time between the last assessment and this one. If that's allowed to occur, then you wouldn't expect it to shoot up.

I think the discussion about what interim landings seems quite appropriate, especially given, if you look at the working paper for the recreational landings, 2020 does borrow data from 2018 and 2019.

CHAIRMAN NANCE: Good point. Steve Saul, please.

DR. SAUL: Thanks, Mr. Chair. I think sometimes -- I agree to all the points, and including the sort of scientific integrity of what's going on here with the work, and one thing, from looking at the table on Slide 57, that I found -- That I had a question about, and then a comment, and the SSB over SSB at virgin ratio column.

It seems like we -- So if we're trying to manage this at SPR 30, it seems like we get -- You know, we implement management in 2025, and this gets us there, and it seems like we're headed in that direction anyway, since the stock is being underfished, and then, you know, the model obviously, you know, suggests that -- It wants us to fish -- The projections want us to fish the stock at SPR 30, presumably, but, interestingly, then the ratio declines in future years, going ahead of that, and so my question is, is that just sort of some oscillatory behavior, before reaching equilibrium some years later?

Then I guess my second question, or comment, would be, if we, we meaning as an SSC body, the members of the SSC, are not comfortable with some aspects of the assessment, which have been discussed, and we're concerned about, you know, a higher -- About sort of jumping up too quickly to this higher catch limit, which it doesn't seem like it will be -- It probably won't be caught anyway, given what the landings historically have been in recent history, but we could, as a body, consider the sort of 75 percent of SPR 30, on the next slide, which also provides, you know, OFL, or catch advice, that we could base our recommendations on and that also seems to maintain the stock at or above the sort of SPR 30 ratio. In other words, keeping it out of the overfished zone, so to speak, whereas it looks like, if we start managing it in 2025, at SPR 30, that quickly it will start to decline below that. Let me know -- If that's a misinterpretation, please let me know.

CHAIRMAN NANCE: Lisa, to that point, please.

DR. AILLOUD: Just to clarify, that SSB over SSB0 is the depletion level, and so that's not the SPR. I didn't actually show the SPR, but it would quickly converge to 0.3. A better way, maybe, to look at it is if you look at the SSB over SSB FMSY, and that needs to converge to one, and so you start to see a logical kind of decrease, and so it doesn't do any bouncing, and it's more of a ramping down until it reaches the equilibrium, which is also something you see graphically on Slide 55, and so it's just -- Depletion is actually a different metric from the SPR.

DR. SAUL: Gotcha. Sorry. I misunderstood the units in the column. Thank you.

CHAIRMAN NANCE: Thank you. Will, please.

DR. PATTERSON: Thanks, Jim, and so it appears like the peak year, in the figure on the right, was the harvest rate of 0.7, and is that an exploitation rate, or is that the F?

DR. AILLOUD: That one is the exploitation rate.

DR. PATTERSON: So the exploitation rate is 70 percent, but the landings, the total landings, again the FES recreational, in that year was about thirteen million pounds, and the stock biomass wasn't a whole lower than it is today.

I appreciate Katie's comment that the reason why you don't see the increase in SSB, or the SSB ratio, in the recent time period very rapidly, is because, from the recent catch estimates, the exploitation rates have been unsustainably high, and we've been over the MFMT, but, again, going back to 2013, that was the highest catch in the recent -- It's actually in the whole time series that I can see, going back to 1986, and it was only thirteen million pounds.

CHAIRMAN NANCE: Luiz, to that point?

DR. BARBIERI: A quick question, and so I guess the general concern, just for me to understand and conceptualize here in my brain, the general concern is that catch advice that's coming out of this assessment during the projection period seems to be too high, right, and it's probably overestimating the true productivity of the stock. If that's the case, can you explain to me why you think that's the case? And the you is like anybody.

CHAIRMAN NANCE: While we're thinking on that, and I've got Doug too.

DR. PATTERSON: So that's an important question, Luiz, and it's one that I've been trying to think in my head, like how could these things all be true, and one thing that I am thinking about is the discard mortality rate, especially in the recreational fishery, because of the number of discards, but, still, it's not a huge number of discards relative to something like the reef fishes that we see, and so, I mean, just as a mental exercise, it doesn't seem like we quite get there from that, that that could drive this potential disconnect in productivity.

DR. BARBIERI: Right, and I am sorry for jumping the line here.

CHAIRMAN NANCE: Go ahead, Luiz.

DR. BARBIERI: I am looking at my notes here, and recreational landings, and recreational discards, are highly uncertain and were very poorly informed. I mean, we were told this explicitly, and so we had to borrow from nearby years, and we have very little information on the actual magnitude and fate of the discards, and

so I don't disagree that we have all these uncertainties, and perhaps we should say, okay, we're going to have to create a larger buffer to account for these things, but all of these things are explained in the report, that they had to be handled, and I don't know how we could have handled them better than what's there, and, I mean, that's the point.

Where do we go from here, you know, because discards and recreational landings, we know are just, by nature, highly uncertain, and, in this case, they're even more so.

CHAIRMAN NANCE: Doug, did you have your hand up still?

MR. GREGORY: Yes, but it was by mistake, and I apologize.

CHAIRMAN NANCE: Okay. Thank you. Josh.

DR. KILBORN: Thank you. The comment on the discards, I also noticed, when we were talking about them, you know, earlier today, that the recreational shore discards are really, really high, compared to everything, especially in the later part of the time series, and the magnitude is higher than even the shrimp fishery, and so that might be something to think about, because it sounds like this recreational shore group is really doing a number on this model, right?

Now, I agree with Luiz that this is much better than the previous model, and it's probably the best available science that we have currently, and so I don't have any problems with, you know, the motion that you put forward and all that kind of thing, but I am concerned that this is one of those stocks that we're not paying close enough attention to, and the fact that we're coming in so far underneath the ACLs, regularly, that's a red flag, in my opinion, and, you know, given what we've seen this year, just this year, in the water temperature offshore of Florida, I think we need to really re-evaluate our comfort level with projecting static conditions moving forward.

I know we don't have a lot better options, but I think it's getting more dangerous, and I think we're going to eventually get into a position where like what Rick Methot was talking about, where we're letting things go too long, and then, all of a sudden, the stock is gone, and we can't get it back, and so that's what I am really concerned about with this stock, and with king mackerel, when we talk about them tomorrow, but I do agree that this is a good model, given what we have, but that doesn't make it right.

CHAIRMAN NANCE: Ryan, please.

MR. RINDONE: To Dr. Kilborn's point, we have another species that we manage, and that we've assessed not so long ago, vermilion snapper, that has a catch limit that is higher than what the landings typically have been, and the fishery-independent indices for that have always come back with the assessment scientists saying, wow, these things are like weeds, and they just mature young and small and grow fast, and there appears to be quite a few of them, based on the data.

The last time the SSC looked at those catch limits, for vermilion anyway, you guys -- Again, you took a more conservative approach, but, even still, like the landings would be under a much more conservative ABC, but the fishery-independent indices are all indicating that the stock is healthy, and they're much more robust, from a data standpoint, than anything that we'll see during this meeting.

I feel like that is exacerbated more so in Spanish here, with the caveat that the degree of robustness of these indices is not comparable at all, and, you know, this is -- Spanish is kind of like kingfish, in that you've got a whole bunch of subpar ingredients that, when you mix it all together, you have something you can eat, but, you know, it's just a fact of what the data are, and I'm certainly applauding the Center's efforts on this, and it's -- You know, this is the best of what's available, and so just to give you guys perspective of another species that's not so dissimilar.

CHAIRMAN NANCE: Luiz.

DR. BARBIERI: Well, but to the I think valid points that have been brought up, concerns about this, you know, perhaps we can explicitly put in our report something that brings up all these concerns to the council and say that, based on the analytical products that we have in front of us, an age-structured stock assessment model, right, and what we have is that the productivity of the stock is X, and that this is able to produce this level of OFL and ABC, but there are all these other indicators that there might be issues here, and so you might just, you know, be careful and generate now a buffer between ABC and ACL, to account for this additional uncertainty, as a precautionary, a management precautionary, approach.

I don't know, after we get -- You know, for us here as an SSC, after we get an assessment like this, how can we step outside of this framework and take care of all those concerns that we have of things that could be happening, and it's just difficult.

CHAIRMAN NANCE: Will.

DR. PATTERSON: Thanks, Jim. Sort of around this issue, all the sectors here are prosecuted on small, young fish, and, even the commercial fishery, the selectivity is ages-three and four, but, for the recreational fishery, it's two to three, or, in the shore, it's two-year-olds.

I think that's the reason why you see, you know, these seven million pounds, basically, for 2022 through 2024, being input, and then projections into 2025, where you see this big spike get to fifteen million pounds, and so I think one way to possibly move us forward is not to use the assumption of those COVID years, or recent years, but instead either go back six years as the mean, take that mean and use that information, or take the three years before 2019, which had landings -- The mean for those three years is 8.9 million pounds, and that's what the fishery was operating at before the COVID years.

You know, there is some uncertainty about how much COVID should still be playing a part in 2022, but, you know, I think that's a plausible, or reasonable, approach to try to account for what we think the fishery could be doing in these couple of years, before you actually get into the projection year of 2025, and it would serve to scale down what the model then projects as possible to be caught, and so it would serve to sort of dampen that a little bit.

Then, you know, we would live with our OFL projections, and then we could have a discussion about ABC, based either strictly on, you know, using the control rule, which we haven't really used recently, or the OY scenario of F 75 percent of FMSY, but, anyway, that's kind of what I'm thinking.

CHAIRMAN NANCE: Lisa, is that projection -- Okay. I think, Will, that's good to be able to see that and see what that does. Kevin, please.

MR. KEVIN ANSON: I've been biting my tongue a little bit about the discussion related to the recreational data, and, you know, I certainly understand there is some issues with that, and it does confound the issue with this stock, apparently.

You know, just going back to Dr. Barbieri's point about, you know, having the council then try to account for this, I just would like to underscore that, you know, to the extent that the issues are more of the science side of things, that those are settled, and then it's -- If it's up to the management side, that the council

will address it, you know, as far as dealing with ACL or whatever comes of it, but just to make sure that you all flesh out and, you know, to the extent that you all are comfortable with the science side of the issue, that you, you know, include that in your comments and such, and that's all. Thank you.

CHAIRMAN NANCE: Kevin, thank you. John.

DR. FROESCHKE: Jess, can you pull up the Slide 56 with the Kobe plot? I just have some observations, and I like looking at these plots, and I find them really interesting, but what I try to look at in these is you look at the points, year-after-year, and, based on what quadrant, you should be able to predict where the next point is, at least in direction, if not magnitude, but, if you start in the top-left, where it was overfishing in the first year, you would expect that the next year, at least on the X-axis, would be moving towards a smaller biomass, because you're overfishing.

If you look at like the first seven or eight points, in fact that's not true. Every year, those are overfishing, and every year the biomass seems to grow, which is odd, and then, at the bottom, you would expect, when F is well below, or below, MSY, you should expect it to be growing the biomass, which is kind of iffy. I mean, I guess there's sort of a long-term slope, but, I mean, thinking about the projections, we essentially would be moving F upward and expecting the points to go towards the right, which doesn't seem consistent with how I would expect it to behave.

CHAIRMAN NANCE: Well, I think it's a great discussion. I always like to hear from you, Katie, but I do think we have a way forward, and tonight we'll run those, or Lisa will -- Will.

DR. PATTERSON: I threw out two possible scenarios, and so we would have to decide like which scenario, but, as far as John's comment, I think this actually warrants some discussion, and I would love to hear what Katie has to say, because my thoughts -- I wasn't looking at the early time period earlier, but I was looking at the more recent and trying to backtrack it, like John just said, and so I was confused about this too, but if you could enlighten us.

DR. SIEGFRIED: I am just speculating, and I actually don't find these plots to be as soothing as John said, because I want a year next to each dot, number one, but I think there's ways to explain some of the things that John was mentioning, but you can't get it from just this plot, and that's sort of why I hesitated.

You would have to look at the comps, and you would have to look at the exploitation rate and all of that, but, if you have an

overfishing status, and then it moves to where it's less overfished, the direction you were saying, that could be because it's fishing heavily on the less-present size classes, but the older fish, that contribute more to SSB, may not be as subject, and it just depends on which fleet it was getting the overfishing, the highest harvest rate from, but I would have to check like three other plots and tables to convince myself of that, but I am glad that you like these plots.

If we could get the R for SS people to put years on them, it would be a lot easier, because, when I went from 2021 back, I lost it, where it started to go to, and so --

CHAIRMAN NANCE: Will, for tonight, what scenario would you like to see?

DR. PATTERSON: There are two possible ones, and one is to take the mean of the recent six years, and the other would be to throw out the most recent three years and take the mean of the three years before that, and those were the two scenarios that I presented, and I would prefer to see you throw out the three recent years and do the three before that, but, you know, that's up for discussion.

CHAIRMAN NANCE: I would like to see just the six. I don't like throwing things out. Ryan.

MR. RINDONE: Just to contribute to that, I mean, again, we saw more fishing effort in general in 2020 than we -- You know, so any effect from COVID would have actually been akin to there being more effort, and not less, and, you know, all of those boats and whatnot exist now, and so, you know, presumably some fraction of that increase is still on the water, which would denote some sort of continuance of that increased effort, or at least the possibility of it.

Insofar as all of that is concerned, we still saw this decrease though from the 2020-2021, 2021-2022, and 2022-2023 fishing years, compared to the previous three, which, you know, that's also very obvious, and so maybe, if you approached it from the six-year standpoint, then you capture the drop in the most recent three years, understanding that it's not an effort limitation, and it's just either anglers decided they didn't want to keep them, or they weren't interacting with them, or whatever the situation was, but it's banking on that effort increased from 2020 and forward, in general, and it just might not have been directly targeting Spanish.

CHAIRMAN NANCE: Will, you're saying use 2019, 2020, and 2021, the average of those three? No?

MR. RINDONE: 2017 to 2019.

CHAIRMAN NANCE: Okay. 2017, 2018, and 2019. Okay. From a -- I guess what would people like to see? There is an advantage of -- Because 2017, 2018, 2019, 2020, 2021, and 2022 are all actual data, and those last three years is just an average of those, you know, the last three years that produced that average, and so, if we -- If we keep 2017, 2018, and 2019, that's going to be a higher number. Will.

DR. PATTERSON: It's quite a bit higher, by about 1.2 million pounds, but, you know, to your comment, Jim, about not wanting to throw out data, in general, that's a good rule, but here -- But here we're talking -- There's actually something that went on in those years that is an extra factor that we can't fully account for, and so that's the only reason why I would suggest putting those aside for this.

CHAIRMAN NANCE: Jim and then Josh.

DR. TOLAN: Thank you, Mr. Chairman, and I'm of the opinion that we should use Will's range, the early part, and, again, drop -- It's not the best thing in the world to drop data, but I know for -- If you look at the table that was up there before, the spreadsheet, for 2021, for the Texas data, it's the lowest number out there, because we stopped sending creel surveys during the height of COVID, and so it's not a matter of effort, and it's just we didn't capture data. Thank you.

CHAIRMAN NANCE: Doug.

MR. GREGORY: Thank you. I have two points. One I was going to bring up with king mackerel, and, in 2022, we had Hurricane Ian that hit southwest Florida, and that took out -- That was in September, early fall, as the mackerels are moving south, and so I'm sure that had a big influence on fishing effort on the west coast of Florida, and particularly the southwest coast of Florida.

The second point is my concern over Slide 5 and the historical landings versus the historical ACL, and I did not mean to suggest that there is something wrong with the fishery. I meant to suggest that the historical stock assessments, and maybe even including this one, have been unduly optimistic.

Now, I don't know why the ACL dropped in those two years, when it

came down to where the fishing level was, but my -- I think the thing is for the Center, when they get a chance, if they ever, you know, can do it, but go back and see -- This is the only fishery where I see such a mismatch, and so I don't think this is an intrinsic problem.

It's just odd, but this is clearly a mismatch, and you see that increase in the ACL in 2014, and that's directly from the stock assessment, and so that was my concern, and not that the fishery has been depleted all this time and we just didn't know it. The data is there, and the catches are there, and the stock assessment is a bunch of estimates, and what makes it optimistic?

We had that situation with vermilion, but vermilion, like Ryan said, has had a difficult history with stock assessments, because they're there, and there's no change in biomass over the years, and so it's hard to get a trend out of them, and so that was my concern. Thank you.

CHAIRMAN NANCE: Thank you, Doug. Trevor.

MR. MONCRIEF: In 2020 -- I mean, Ryan made the point that, in 2020, there was a large increase in effort, and it's not really reflected in the data we have here, but, you know, it hasn't really been reflected on any species across-the-board, and I was wondering, and is there a chance that we're going to see the breakdown of these by wave, or anything else like that, so we can at least put an eye on 2019, since that value was a little less than double the previous year, and about a third higher than all the others, because I think that would kind of -- I know it's included in there, for productivity and everything else, but it might, you know, let me think about whether we use the six or three or the three ending or whatever else on those options.

CHAIRMAN NANCE: Is it 56? I am sorry, Jess, for bouncing all over here. There you go. From Will's standpoint, and I don't want to put words in Will's mouth, but, basically, we've got a COVID factor, and sometimes it goes higher, the catch, more effort, and things like that, but, if we use 2017, 2018, and 2019, we know there's no effect in those three years, but I think that was one of the reasons why to use those three years and then project with those, and so I am kind of leaning towards that, in my rationale.

MR. MONCRIEF: So, I mean, we're basically taking it at face value that Alabama's landings, between 2018 and 2019, nearly quadrupled, and you know what I mean, and that's all I'm trying to bring up, and I'm not trying to put a cog in the wheel or anything else like that, or, you know, deflate the tires, but I'm just -- It would be

nice to kind of see that breakdown, to see where it happened, when it happened, and in what area it happened, just so we can get an idea of whether that large of a value should be included within what we're talking about.

CHAIRMAN NANCE: Did we have a table that shows that, Trevor?

MR. MONCRIEF: No, and I would have pulled it up in a query myself, but it's down today, and I haven't been able to look into it at all, to be able to see, and that's just kind of catching my eye, and that's all.

CHAIRMAN NANCE: Okay. Thank you. Josh.

DR. KILBORN: I'm just curious how difficult it would be to do both scenarios, the three-year and the six-year. Is that too much work? Is that something that we can --

CHAIRMAN NANCE: It's probably not too much work. My only -- I hate to have two numbers up there and then we pick the one that we like best.

DR. KILBORN: I just feel like, you know, because this is a data reduction exercise, right, and we're throwing data out the window, and I feel like that's irresponsible without at least looking at what those data's effect might be.

CHAIRMAN NANCE: Well, it's going to be a lower number. Luiz, please.

DR. BARBIERI: Well, and to that point, right, and so this has happened with us, with all the best intentions, repeatedly, right, that a process like this, that takes three or four or five months to put together, and never mind all the data preparation that goes into it, and here we make, at the end of the day, some ad hoc decision that we think supersedes all the eyeballs that have been on this thing throughout the process and that we're going to generate something better.

Again, I think it's worth taking a look, right, but I feel that we've got to start thinking -- You know, have a little philosophical discussion, and I sent Jess a paper to distribute to the -- I know several of you, if not everybody, has already read it, right, but Marc Mangel and colleagues paper that came out in 2013 about a perspective on steepness, reference points, and stock assessment.

If you don't have time to read the whole thing tonight, at least

go to page 7, right, and there he talks about, or they talk about, three options for moving forward when you have these situations where there are data limitations that prevent you from coming up when your estimates, and you have to fix, right, and so one is do not fix, if you have a prior, or you have some other way, but to not fix, right.

The other one replaces the kind of functional form they use for the stock-recruit relationship, and so you don't have to cross that bridge, but then the last one is to be fully honest about the limitations of the data and the stock assessment, right, that there will be a point where we can try to squeeze data as much as we want, but, if the information content is not there, we're not going to be able to get something better, and I think that, at times -- I mean, we forget sort of like that big picture, that collecting data for this whole variety of species, and coming up with something for some of these difficult-to-assess stocks may not be a realistic expectation and that we're going to have to regionally handle this in a way that is more practical.

There is no other option, and we only have so much, in terms of money and resources, and we cannot have everything as priority-number-one, right, and I don't know how many stocks we have over here, right, but it's sixty-five in the South Atlantic, and I don't know how many in the Caribbean, and we have to provide annual catch limits for all managed stocks, right, and so, if you just read that section, right, it brings some realities, right, from a group of people that spend their careers, you know, either developing stock assessment models, and have had to cross this bridge several times, and I think that we're going to have to change, a little bit, the perspective that we have on how to handle some of these issues, and, by the way, Trevor, that was my soapbox.

CHAIRMAN NANCE: Will.

DR. PATTERSON: I think those are important points, Luiz, but this discussion, a lot of this discussion, are folks on the SSC trying to understand the stock dynamics, and how this model captures them, and I think that's actually our charge, to do that, and so I think we're just doing our job here, in that respect.

The motion that passed earlier, without opposition, was that we accept this assessment as the best scientific information available, and so we did that 100 percent. The point where we are now is trying to utilize that information, in a projection scenario, to estimate OFL and set ABC.

That's not throwing the assessment out, or saying we can do better,

and that's trying to figure out what's realistic for the catch estimates, the landings estimates, for these few years before the projection scenario starting in 2025. That's not throwing out the assessment, and that's trying to come up with a realistic range of values that should go for those years, to substitute for the seven million or so pounds in there now.

CHAIRMAN NANCE: Here's what I am going to propose, because there's three possible -- We can do the three-year average, that projection with three years, and we can do the projection with six years, but I don't want to -- Tomorrow, we're going to -- Because we'll have a discussion tomorrow morning, because we may not use any of it, and we may just go with what's there, and we may decide to use three years, and we may decide to use six years, and then we can see what we come up with. Will.

DR. PATTERSON: Jim, I'm sorry, and I don't like that approach, for a couple of reasons. The first is we're asking the analytical team to produce several different scenarios, and then we pick later, when we should have the discussion now about what's the most plausible, reasonable range of years for the idea of this is what the fishery would likely operate as in these couple of years.

We already have the scenario that they ran with this method, but, as we were talking about this, I saw lots of nods from the assessment team and group saying, yes, we're not necessarily saying this is the best approach, what's currently in the document, and so we're not like going against the analysts here, but we're just saying, okay, we think this is a more reasonable range of estimates, and so we should have the discussion of whether it's the six year or the three years or something different and then, I think, give that to the team to do it.

CHAIRMAN NANCE: Jason.

MR. ADRIANCE: Thank you, Mr. Chair. Are those landings calendar year or fishing year? Calendar year? Okay. Thanks.

CHAIRMAN NANCE: Okay. Kevin.

MR. ANSON: Just one point, and Trevor brought it up, about the wave information, or the recreational data down to the wave level, and there's just a couple of statements in the Working Paper Number 2 for SEDAR 81, where the analysts, or the author, identified certain specific years and waves and then kind of drilled down to where those interviews came from, as far as what mode of fishing, and then the median catches and those types of things. It is in comparison for the other years, but it just kind of identifies --

2019 was one of those that came up for both instances, for Florida and Alabama, where they had exceedingly high, compared to the norm, if you will, and it does provide some information there.

CHAIRMAN NANCE: Because I can remember, several years ago, we were looking at what ratios to use, and it was those years that were popping up that had exceptionally high values. Okay, and so where do we want to go, gang? There are certainly advantages to both scenarios, and I'm not sure that one is better than another.

I mean, there is certainly rationale for both. I mean, the first three years, we certainly don't have any COVID effect, and we may have an FES effect, and FES is -- Those effects are possible every year, and so, by throwing out the last three years, we don't have any COVID, and we may exacerbate an FES scenario in those three years. Keeping six years gives us a broader average to counteract COVID and FES, and so I guess there's certainly advantages to using both.

DR. BARBIERI: Will, can you repeat the sets of years, because I agree with Will that, you know, perhaps going with just one option that we discussed is best, because, otherwise then, what criteria do you use, right, tomorrow to choose between those two that are actually objective, and so what would those years be, Will?

DR. PATTERSON: So I believe, in the slide, they were 2017, 2018, and 2019, and the full six then goes through 2022.

CHAIRMAN NANCE: Basically, it's 2017, 2018, and 2019, which, from what I'm hearing, may have an FES effect, and so higher landings than we've seen in the past, and so there's those three years, and there's also adding 2020, 2021, and 2022, which may have a COVID effect associated with them. Katie.

DR. SIEGFRIED: Just to add to what Kevin mentioned, and I appreciate you bringing that up, because we were waiting to see if that got brought up, and the angler trips are actually quite large though, and so, for instance, and, again, throughout years when it was like one or two angler trips, and this is fifty-one for Wave 4 and ninety-six for Wave 5, and so it's quite a large sample size, but this is for completeness, that Matt puts these types of things in here, but it is -- If Trevor wants to refer to it, it's Working Paper 2, and it is a higher proportion of Alabama, compared to the subsequent years, but we wouldn't normally throw that out because of a small number of angler trips.

CHAIRMAN NANCE: Will, please.

DR. PATTERSON: Since it seems like we're down to a binary choice, maybe we could just vote for the three years, and, if it's less than half of the voting members, then we would go with the six years.

CHAIRMAN NANCE: I think that's a great alternative. You don't like that, Paul?

DR. MICKLE: I am going to put in Will for Vice Chair next year.

CHAIRMAN NANCE: He would be a great one, and, Will, I do appreciate the discussion, for sure. I want to make sure that we get the individuals that are on the line, and so, by a show of hands, online or in this room -- Do a roll call do you think, John? Okay. Let's go ahead and do a roll call vote. Those that would want to have the three years, which is 2017, 2018, and 2019, to be used as our average for the projection. Okay, Jess.

MS. MATOS: Jim Tolan.

DR. TOLAN: Yes.

MS. MATOS: Trevor Moncrief.

MR. MONCRIEF: Abstain.

MS. MATOS: Doug Gregory.

MR. GREGORY: No.

MS. MATOS: John Mareska.

MR. MARESKA: No.

MS. MATOS: Jack Isaacs.

DR. ISAACS: Yes.

MS. MATOS: Steven Saul.

DR. SAUL: Abstain.

MS. MATOS: Dave Chagaris is absent. Rich Woodward. You're unmuted, Rich, but we can't hear you. I will come back. Will Patterson.

DR. PATTERSON: Yes.

MS. MATOS: Paul Mickle.

DR. MICKLE: Yes.

MS. MATOS: Jason Adriance.

MR. ADRIANCE: No.

MS. MATOS: Luke Fairbanks.

DR. FAIRBANKS: Yes.

MS. MATOS: Mandy Karnauskas.

DR. KARNAUSKAS: Yes.

MS. MATOS: Josh Kilborn.

DR. KILBORN: Abstain.

MS. MATOS: Jim Nance.

CHAIRMAN NANCE: (Dr. Nance's comment is not audible on the recording.)

MS. MATOS: David Griffith.

DR. GRIFFITH: Yes.

MS. MATOS: Luiz Barbieri.

DR. BARBIERI: Yes.

MS. MATOS: Mike Allen. That's it.

DR. WOODWARD: Can you hear me now?

MS. MATOS: Sorry, Rich, and what was your vote?

DR. WOODWARD: Abstain, and I notice that you missed my fellow economist in the room there, I think, Dan.

MS. MATOS: I'm sorry, Dan.

DR. PETROLIA: I think I'm a no.

MS. MATOS: Okay.

CHAIRMAN NANCE: The three years we know are valid years. Anyway, so it looks like we'll do those three years and go with that. Okay. I appreciate the discussion, and I think the discussion certainly adds to why we were looking at this and being able to go forward with that. We'll go ahead and -- We're not going to adjourn yet, because we have to have public comment, but tomorrow we will come back to this. We'll come back to this first, Ryan, or -- It's not first on the agenda.

MR. RINDONE: It is.

CHAIRMAN NANCE: It is? Okay. So we'll come back to this tomorrow and be able to then decide the OFLs and ABCs and what we want to do there. We'll go ahead and turn the time over for public comment, and certainly, if there's anybody that would like to speak, please let Jess know, and we'll call on you. Bob Zales. It's good to hear from you, young man.

PUBLIC COMMENT

MR. BOB ZALES, II: Thank you. I've been multitasking while I've been listening to you all, because we've been fishing today, and apparently we've got a shark on, and I've been backing down on him for about a half-an-hour, or forty-five minutes, but, anyway, on Spanish mackerel, and I'm not certain how many people on this panel have really been around for the whole time that we've been managing Spanish, since the middle 1980s, or late 1980s, and it's been an issue that started out -- You know, we had problems with the gillnetters came in there, and, you know, back then, you could catch your commercial limits pretty easy.

Then the net ban came along, and so, once the net ban came along, and you took the nets out of the water, there was no way to catch the fish, and you couldn't put enough hooks in the water to catch the number of Spanish mackerel that back then they said was available in the stock, and so it got so high, and nobody was getting close to the quota, and so then, in their infinite wisdom, the council came back and said, okay, well, let's just reduce the quota, because nobody can catch it, and so, when you reduced the quota, they reduced it to a level that was -- You could then catch your quota, and so then they had quota closures.

This fishery is still in the same state, and you're not going to be able to catch these fish in a hook-and-line fishery. It's impossible, and you can't put that many hooks in the water.

Now, it will vary up and down, up and down, over time, like just about all fisheries do, and so, you know, I would consider the

fishery healthy, and I'm kind of amazed that you all, as a panel, came in there and now you have accepted this stock assessment as the best available science, and, over the past hour or so, while I'm playing with this fish, you all have made the best argument against making that decision of best available science that's out there.

The key problem is FES, which FES has been the problem with fisheries that we've been playing with now ever since FES came out. You're going back in time, and you're changing history, and recreating history for recreational harvest with Spanish, and, now, when you look at it, especially in the shore mode, Spanish mackerel typically caught in the shore mode are caught off of piers and jetties.

Now, you will have a small number of anglers that will fish off the beach, and it won't be very large, and there won't be a lot caught, but the vast majority are caught on piers and jetties. The number of piers that are in the Gulf of Mexico hasn't changed in I don't know how many years, and it's the same number of piers that are there.

The jetties, there are no new jetties, because you can't create new passes anymore, because of the environmental issues, and so you're saying that they're catch all these fish, and, now, when you look at it, and you try to compare it to the for-hire charter and the commercial side of catches, you see these giant few catches with recreated history in the shore mode, thanks to FES, but you don't see a comparable rise in the catch on for-hire boats, and that makes absolutely no commonsense.

If you're going to catch a whole bunch more fish on the beach, that you're catching off a pier and off a jetty, if you've got a boat out there, you're probably going to catch a whole lot more fish on that boat, and, in reference to that, you also today -- You see multiple new outboards that are there in the small-boat private rec fishery that have increased, and so, with that increase in effort, you should see a comparable rise in catch, but it ain't there, and why is that? Because of FES.

Every time we go through this, the issue of FES, and some of you all like it, and some of you don't, but nobody has really been able to jump out there and say, look, let's stop this FES stuff, and let's figure out really where this FES is going and what it's doing and get down to the nuts-and-bolts of it, because it's creating significant problems in just about every fishery, and so that's my two-cents. We broke the shark off, and so we didn't catch it.

CHAIRMAN NANCE: Thanks, Bob. Any questions or comments from the SSC? Bob, thanks. We appreciate your input.

MR. ZALES: Okay. Thank you, all.

CHAIRMAN NANCE: No other hands, and so I guess we're adjourned for today. We'll see you tomorrow at 9:00 a.m.

(Whereupon, the meeting recessed on July 19, 2023.)

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July 20, 2023

THURSDAY MORNING SESSION

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The Meeting of the Gulf of Mexico Fishery Management Council Standing and Special Reef Fish, Special Socioeconomic, and Special Ecosystem Scientific and Statistical Committees reconvened on Thursday, July 20, 2023, and was called to order by Chairman Jim Nance.

CHAIRMAN NANCE: Welcome, everyone, to our second day of the SSC meeting, and we have a good agenda today that we'll be going through. Instead of doing Item Number IX, I am going to skip to X first, which is Discussion of SEDAR 81 Evaluation and Projections, and so we'll do the projections first, and we will go over that from yesterday, and we have some new averages that we're using for our projections, and so we wanted to see the results of that run, and so, Dr. Ailloud, I guess we'll go ahead and look at those.

DISCUSSION: SEDAR 81 EVALUATION AND PROJECTIONS

DR. AILLOUD: Okay. Thank you. Following yesterday's recommendation, we went ahead and updated the projections, and so I just wrote, in red here, what has changed, and so the only thing that has changed is the interim landings for 2023 and 2024, which are now based on an average of 2017 through 2019.

It does not change anything in the MSRA table that we have here for reference, and I also plotted -- So you see here that the harvest rate is a bit higher during the interim years. There's something weird on there, and there's a copy-and-paste -- Well, the one that you have to pay attention to is the one on the right,

and so that's okay, and so the plot on the right is now the new yield projection plot, and I have added a few more years back in time, because I think that was helpful yesterday, to see how it compares to recent years' yield, and so you have the OFL in red, and you see that those two interim years are about in line with 2017 to 2019, and then in blue is the projection for the 75 percent F 30 percent SPR.

I also want to mention, because I know that Dr. Barbieri asked yesterday, what would be the SPR equivalent for an MSY search, and it comes out to be about 29 percent SPR, and so really close, and so about 1 percent more conservative than by using the proxy, and then I have the tables with the constant catch for three and five years written down below, and so I have this slide and then the next one, and it's for the 75 percent F SPR 30.

CHAIRMAN NANCE: Okay, and so this is the OFL projections, and it's certainly more in line with what we've seen over time. Let's look at the ABC real quick and just see. Okay, and so we see these two tables using the different averages for the projections, and let's go ahead and -- Any discussion on these new values? Will, please.

DR. PATTERSON: Thank you for doing those overnight. I think what I would propose is that we use a mean of 2025, 2026, and 2027 for the OFL, since it's going down, and then we haven't really discussed how we plan to estimate ABC, whether we use the control rule or whether we use, like in the past, this F equals 75 percent of the F proxy, which is shown here, right, and we haven't really had that discussion, but, if we did that, then I would propose doing the same with the mean of 2025, 2026, and 2027 for ABC.

CHAIRMAN NANCE: Okay. Thank you. John, please.

DR. FROESCHKE: Just so I understand, and I guess it's a little bit -- I'm struggling to understand why the OFL is a declining yield stream and the ABC is an increasing yield stream, and I guess my understanding, since the OFL is a declining yield stream, is the interim years, where their catches were well below what the OFL would be, is predicting to push the stock biomass above MSY, and that's why it would be fished down, because the terminal year -- Otherwise, we're below the MSY.

DR. AILLOUD: Yes, and so -- I'm trying to think how to show it. All right, and so, in this plot, we can see -- The OFL is in red, and so it is reaching at equilibrium -- Because it's a 100-year projection, it is reaching stability around MSY, which is a bit lower than the first year, in 2025.

DR. SIEGFRIED: So the OFL is going towards the SSB FMSY target, and then, if you go to the ABC, it's going to be less than the SSB MSY target, and so one is coming down towards the target and one is headed up towards the target, because it's 75 percent, and so it's going to be one-plus-something of the SSB FMSY target.

DR. FROESCHKE: So is it correct to assume, at the time that the projections would start in 2025, that the model is assuming that the stock biomass is above the biomass at MSY, because it's not at the terminal year.

DR. AILLOUD: Yes, and so it's above MSST, but it's below the SSB for the F SPR 30.

DR. FROESCHKE: Then I guess I'm struggling to understand why it's a declining yield stream and not an increasing yield stream, because the OFL -- If you're building toward -- If the biomass of the stock is projected to increase through time, you would expect the OFL to increase and not decrease.

DR. SIEGFRIED: It's a little -- Sorry, Mr. Chair, and I'm not following the rules.

CHAIRMAN NANCE: Please, Katie, go ahead.

DR. SIEGFRIED: Okay. It's 1.06, if you go to the table. For the OFL projection, in 2025, it's at 1.06, and so it is slightly above the FMSY target, but it's, you know, in the hundredths place, and so it's dropping slightly, but it's -- So it's dropping OFL slightly. If you go to the next one, that's also similar to 1.06, and it's not rounded quite as much, but that's going to be going to a slightly different target than the one before.

DR. FROESCHKE: Okay, and so that makes sense, because, at the terminal year of the assessment, 2022, it's correct that we're below that, and so it's assuming that, in these gap years, when the projected landings were being put in, and not projections, because they're way below this level, that that's going to allow the stock to grow to a biomass that's above MSY by the time the projections would start. That's why it's a declining yield stream.

DR. SIEGFRIED: I understand why that's confusing, and it is just slightly above the FMSY, he SSB at FMSY target, at that point.

DR. FROESCHKE: Yes, and so, if you put a different assumption -- For example, if you put in the OFL catches for -- The new OFL catches for the gap years, 2023 and 2024 would not be like that,

and it would be more flat.

CHAIRMAN NANCE: Thanks, John. That is a little confusing. Go ahead, Ryan.

MR. RINDONE: The same trend was observed in the original projections also, and it was just more exacerbated, because the landings in the interim years were lower, based on the 2020 to 2022 average, and so, by putting in the larger value that Lisa has input here, we're fishing more of the available biomass in those interim years.

You know, whether or not that will actually happen is debatable, but, the way that this is coming out, we're fishing more of it, and so the slope is decreased for the OFL, but, for the ABC, looking at what was done before, it doesn't look that dissimilar, and it does result in a more narrow buffer though between the OFL and the ABC, compared to using the most recent three years.

CHAIRMAN NANCE: Thank you, Ryan. Jim.

DR. TOLAN: Thank you, Mr. Chairman. Just so I follow this along, and this comment is a little bit outside of the projection range, but, just for completeness, I want to make sure. The first three columns, or the first three rows, every column is exactly the same, and they're formatted differently for the two tables, but all the numbers are exactly the same, and so I just wanted to make sure that wasn't a typo or something.

DR. AILLOUD: Yes, because, for the first three, it's the exact same amount of catch that's removed. Starting in 2025, the F differs, and one is going to be --

CHAIRMAN NANCE: We took the 2017, 2018, and 2019, that average, and then projected over a longer period of time, and so, when we start with the catch in 2025, we caught more during that interim period, and now we're here to start the projection. Okay. Any comments online? Will, would you like to make a motion for OFL?

DR. PATTERSON: Can we flip back to the --

DR. AILLOUD: The constant catch, on the bottom-left, will give you the three-year average. Were you looking for 2025 to 2027?

DR. PATTERSON: Yes.

DR. AILLOUD: So it's going to be 12.074 million pounds.

DR. PATTERSON: So the SSC moves to set OFL for Gulf Spanish mackerel utilizing the constant catch projection of whatever that was, 12.074, I think, million pounds wet weight for 2025 through 2027.

CHAIRMAN NANCE: Do we have a second for that motion? Jason seconds.

DR. PATTERSON: Do we want to do OFL and ABC in the same motion or do them separate?

CHAIRMAN NANCE: I guess we could leave it here now, and then discuss how we want to do ABC, and then we could add that to this motion, and would that be acceptable?

MR. RINDONE: Do you mind if I wordsmith a little?

CHAIRMAN NANCE: Go ahead, Ryan, please.

MR. RINDONE: So the SSC recommends the OFL for Gulf Spanish mackerel use a constant catch projection of --

DR. PATTERSON: So I don't understand the term "recommends". I mean, we --

MR. RINDONE: It's just in keeping with what you guys have -- I mean, it's a motion, and so saying, you know, our motion is to move to is kind of saying the same thing twice, and it's only wordsmithing, and it's not meant to be impactful to the interpretation of what you're saying. You could also say "the SSC sets the OFL", because you do, and so, if you would rather say "sets", you could say that.

DR. PATTERSON: I'm fine with just "sets", and I don't know if we have to have that word "moves" in there though.

CHAIRMAN NANCE: Paul.

MR. RINDONE: But, if you say "sets", then the "use" should be changed to "using".

CHAIRMAN NANCE: Will and Jason, are you okay with that? Okay. Thank you. Paul, please.

DR. MICKLE: In the past, I think we mentioned the SEDAR that we based our setting on, and should we include 81 in there somewhere, and based on outputs or projections from, something like that, Will?

CHAIRMAN NANCE: So that would be --

MR. RINDONE: Sets the OFL for Gulf Spanish mackerel based on SEDAR 81 and -- Well, you guys made a revision to the projections that were initially provided, and so SEDAR 81 and the revised projections.

CHAIRMAN NANCE: Perfect.

MR. RINDONE: Then the rest of it could be as it is, if you like.

DR. MICKLE: Thank you. Is that all right, Will?

CHAIRMAN NANCE: Jason? Okay. Discussion on that motion? We'll go ahead and do this motion, and then we can do ABC second. Okay. I don't see any discussion, and I think it's very straightforward. Jim.

DR. TOLAND: One more wordsmith, and that second "projection" really could go away, because we've already talked about the updated projections, and so I just don't think it's necessary to be there. Thank you.

CHAIRMAN NANCE: Okay. Let me read it, and then we'll go ahead. **The motion is the SSC sets the OFL for Gulf Spanish mackerel based on SEDAR 81 and the revised projections using a constant catch of 12.074 million pounds wet weight for 2025 through 2027. Any opposition to this motion? Anyone online? You can certainly raise your hands or voice opposition.**

MR. MONCRIEF: I would like to abstain.

CHAIRMAN NANCE: Trevor. Okay. **So the motion carries without opposition and one abstention.** David.

DR. GRIFFITH: I was just going to say do we set it, or do we just recommend that we set it?

CHAIRMAN NANCE: We set it.

DR. GRIFFITH: Okay. All right. Fine. Thank you.

MR. RINDONE: Per Magnuson, the SSC's recommendations for the OFL and the ABC are binding, and the council cannot exceed the SSC's recommendation for an ABC, and then the ABC, obviously, cannot exceed the OFL.

DR. GRIFFITH: Okay. Thank you for that clarification.

CHAIRMAN NANCE: Thank you for asking. Will, please.

DR. PATTERSON: So the next motion would be the same thing, except "ABC" instead of "OFL", and then the mean of those three years.

DR. AILLOUD: If you want three significant figures, it's going to be 9.630.

CHAIRMAN NANCE: Okay. Thank you. This has two -- Do we have a second for this motion? Jason. Thank you. This has -- We have an ABC set at -- It's using 75 percent, and so it's using the 75 percent F 30 percent SPR, and so there is any question about that? Do we want to use a different, or we've used this historically. I mean, we've used it in the past, and so I don't see an issue with it. Will.

DR. PATTERSON: We should put that in the motion, right, and so, where it says "and the revised projections", "with an F ABC equal to F 75 percent FMSY", and so it should be "F ABC equal to F 75 percent FMSY". It should just be "ABC as the yield at F 75 percent".

MR. RINDONE: Will, could you saying "using the yield at 75 percent of FMSY", and so "revise projections, using the yield at 75 percent of FMSY. The constant catch for 2025 to 2027 is" that value, since you're adding additional specificity in here. So using the yield at 75 percent of F at MSY.

CHAIRMAN NANCE: Jess, you need an "of 75 percent".

MR. RINDONE: Of F at MSY. Don't worry about like the capitalizing and subscripting, and I will deal with all of that in the report. **Then, for the last sentence, "the constant catch for 2025 to 2027 is 9.63", blah, blah, blah.**

CHAIRMAN NANCE: Lisa.

DR. AILLOUD: I am just wondering if we should have "proxy" after "FMSY".

MR. RINDONE: Or we could just specify it as it is and say "F 30 percent SPR". **I mean, that's what it is, and so, Jess, could you change it to "F 30 percent SPR"? The "FMSY" that the cursor is next to, just change that to "F 30 percent SPR".** Then, Will and Jason, your pleasure.

DR. PATTERSON: I would say go back to "based on", and just say "based on the" -- Then, past "SEDAR 81", delete "and the" -- Based on the yield at 75 percent of F 30 percent SPR -- It just sounds kind of like word salad to me, and there's a better way to say this.

CHAIRMAN NANCE: Are you happy with this one, Will?

DR. PATTERSON: Yes, it's fine. Whatever. It says what we need to say.

CHAIRMAN NANCE: Okay. Jason?

MR. ADRIANCE: Yes, I'm good. It probably could be phrased better, but I'm fine.

CHAIRMAN NANCE: Okay. Any discussion on this motion? Basically, it's just setting the ABC at 75 percent of F 30 percent SPR, and so it's that same table. **Any opposition for this motion, either here or online, by raise of hand?**

MR. MONCRIEF: I will abstain again.

CHAIRMAN NANCE: Thank you, Trevor. Okay. **The motion carries without opposition and with one abstention.** Thank you. Lisa, thank you very much for running those last night. I appreciate that, and I appreciate the discussion. We had a long discussion yesterday, and I think it was fruitful, and I think it gave us numbers that seemed a little more realistic in what we want to accomplish for this stock. Luiz, please.

DR. BARBIERI: I just wanted to thank Lisa also for checking into the equivalency between the SPR quantity, base quantity, obtained from the steepness estimate, right, because that helps, you know, and I think about the fact that like explaining this to the council, right, and other people later, if they don't see that correspondence, right, and they might be wondering what it would, and so it's good to know that it's just that 1 percent difference.

Another thing that I wanted to say is I think, Ryan, it would be good for this motion, for OFL and ABC, to be very explicit about the reasoning behind, again trying to think about you, Mr. Chairman, explaining this and addressing council questions, right, of the choices that were made here for the interim years, so that we have a clear, objective rationale for why we're making those choices, relative to what the Science Center had originally proposed.

CHAIRMAN NANCE: Thank you. Thanks for all of that hard work, and that was a great presentation yesterday, and I feel like we've accomplished a lot for Spanish mackerel. Thank you. We'll go ahead and move on, and so our first item of business, or second item of business, this morning then will be Item Number IX, Evaluation of Interim Analysis Process, Part 2, and, Ryan, the scope of work, please, for that one.

EVALUATION OF INTERIM ANALYSIS PROCESS, PART 2

MR. RINDONE: Sure, and so Katie and forayed into this a little bit at the last meeting, and she's going to take over for this one, and she has an updated presentation for you, going over the interim analysis process and discussing several of the things that you guys have said you wanted some more information on.

For this iteration, the Science Center is going to provide some direct recommendations for many of the points that you guys talked about last time, and so just consider the information presented and provide recommendations, as appropriate, please. The next SEDAR Steering Committee meeting is this fall, and it's October 3, I believe, and is that right, Carrie? Carrie says it sounds good to her.

CHAIRMAN NANCE: Okay. Dr. Siegfried.

DR. SIEGFRIED: Thank you, Mr. Chair, and thanks, Ryan. My voice tends to be low, and this is far away, and so, instead of doing this, just let me know if you can't hear me, and I will move forward.

What we have provided here is, in response to a request from the SSC, and I think Luiz articulated it last time, but it's been requested a number of times by various folks on the SSC, but specifically to provide a presentation about interim analyses and then include a few key topics for discussion, and I would like this presentation to be an open discussion, and I don't want to just talk at you, and I think a lot of these things need to be clear as I'm going along, and so please interrupt me. Just wave at me or whatever the Chair would prefer.

First, a general interim analysis overview, for those of you who are either new to the SSC or who just want an overview, a discussion of the timing of index processing for use in interim analyses, and we want to discuss the delivery dates with you, and the timing of fishery-independent index processing in particular, compared to when you all get the interim analysis, because there is -- Even though it is a spreadsheet exercise, as we've heard, over and over

again, there's a lot more that goes into an interim than just what we do after we get the index.

We want to discuss the catch advice changes, whether overfishing limit can be adjusted as well as ABC, and that's been a key topic of discussion at the SSC for the last two or three sessions, any time limits on the use of interim analysis for catch advice, you know, whatever number of years after the terminal year of the stock assessment, and then what is a health check, really, versus an updated set of catch advice for you, and so we wanted to go over that.

First of all, the advantages are -- I think there are some very clear advantages to an interim analysis over traditional projections, when they work well, when we have a good situation. Traditional projections use approximated catch data, as we discussed quite a lot yesterday, what years to use and everything, and the years immediately following an assessment, and then project the assessment dynamics into the future at fixed fishing mortality, and generally that's what we have done.

We assume uncertainty around key quantities, but we don't often reflect it well, and we don't carry the uncertainty from the assessment through the projections as well as we would like, and we are working on that, and the interim analyses use the updated index, which can be updated each year, and usually a relative abundance, and we have used the Great Red Snapper Count, which is absolute abundance, to modify the catch advice provided in the year immediately following the assessment, and we don't have to assume data, and it's actually new, updated data.

In general, we think that the uncertainty around interim analysis is less than the projection uncertainty, and certainly, as the projection moves on through the years, the uncertainty cone should get larger.

If the index is a good measure of stock abundance, this is particularly true, and, if you've looked at your materials, you will see that king mackerel will be a test, or an interpretation, of that, and so uncertainty here is clearly defined every time that we recalculate our indices, and we provide the uncertainty, whether it's an upper or lower confidence level, if we do it in some sort of Bayesian way, whatever the uncertainty is, and we do reflect that and show you the uncertainty in the index.

This is an example from red grouper, and you've seen this, I think, seven or eight times from Skyler, and you can see, in the purple zone, which is the red and blue overlaid, we show you the

differences, and the index is recalculated from year to year, and then we can do things like, for instance with red grouper, modify the index to reflect on-the-ground changes, such as, you know, reduced spatial coverage in 2020, and then we can show you what the effect is in real time, which is not possible to do with our stock assessments year-to-year, if we want to do all of our species.

My point there was just we can clearly define the uncertainty with an interim, and we're still working on that for projections, and my next point is that there are ways to also add, or reflect, uncertainty in either using our buffers or our averages, and that will incorporate the index variability. Typically, what we've shown you lately is an average of our index, and this is also a red grouper example, where we've shown you an adjusted ABC based on a three-year average of the index, but I will show you, here in a second, the difference between buffers and averages.

I did look back at the history of how interims have been presented to this SSC, and before my tenure as branch chief, and you have seen the buffers, and they sort of went out of favor, but I think it's -- I'm not sure that was purposeful, and so I just wanted to bring them back, to show the differences.

Here you can see the reference year, as opposed to the index calculation, and then the ratio between the two, based on the average of that index.

So do we recommend a buffer or a number of years to average an index? When I talked to leadership, the buffer was specifically mentioned in the paper. However, the average index seems to be pretty intuitive to folks, and I'm showing you the difference here on the right, with an average index on top and a buffered index on the bottom-right, and so, before we go through the words of it, you can see that the buffered index -- The larger the buffer, the less it follows the index, on the bottom-right, and, also, the larger the index average, the number of years, and so the five-year average, it doesn't follow every single movement through the index, and so a larger buffer, in general, provides more stability, and it does not follow the index exactly as well as the larger number of averaged years.

Our recommendations here, and they are recommendations, even though they sound fluid, or philosophical, but we want to consider index noise, the life history of the fish, and when the species recruit to the fishery, as well as the size and age composition of the survey, when we're deciding the number of years to average an index or to calculate a buffer.

By that, I mean, if your index is highly noisy, highly variable, you're not -- I'm not sure that you want to follow every peak and valley of an index that's highly variable. When the species recruits to the fishery is important, because, if you're interested in following recruitment, say right after a red tide, or you're interested in whether there's been a recruitment failure, you probably want to take a look at whether that index covers the life history phase that you're interested in following.

The size/age comp of the survey will help you determine what part of the life history you're actually covering, and so you can get some direct information about what age comps, or size comps, you are most worried about.

A question that we have, before we provide advice, is is stable catch advice a management goal? It certainly seems to be lately, and we've been asked for constant catch more often than individual years changing, and so, if a management goal is stable catch advice, it seems reasonable to ask for larger buffers on the index.

Is a quick response to the highs or lows, due to something like episodic mortality, a management goal? Then you probably want to choose fewer years to average or a smaller buffer on the index, and, now, this is -- This competes with the fact that the management system can't necessarily operate on a year-to-year scale, but, if we're just talking about the science of it, you might want to take a look at a smaller timeframe, to see how the stock has responded to episodic mortality.

CHAIRMAN NANCE: Katie, on this one, 1960 through 1965 is -- What's the difference between 1960 and 1965 and then 1965 to 1975?

DR. SIEGFRIED: So that would have been in the assessment, and so this is a theoretical example, obviously, but, in the assessment, and not necessarily 1960 through 1965, and so those years were set and fit, and that's what the model was assuming, and then, after that you, want to decide, during the interim analysis period, whether you wanted to take an average or you wanted a buffer.

CHAIRMAN NANCE: So, in the example from after, after the assessment, then you either use a three to five-year average to get your depiction of the index or using a buffer, and the buffer seems to be you're buffering around each of those points, it seems, as opposed to an average.

DR. SIEGFRIED: Yes, it buffers individual values, and I think Skyler has shown you somewhere between one and five, and it is

harder to interpret, and I think that might have been why it went out of favor, is because we can show you all of those results, but it's an eyeball decision of how close to the index you want to get, which is pretty subjective and difficult to defend, but a number-of-year average seems more intuitive, to me, on a management side, because you can decide what years are more similar, how far back in time you think it reflects the future, and all of that seems more intuitive, and so I think that's why --

CHAIRMAN NANCE: Yes, because I know, in our discussions over the years, that trend, where we're seeing an up or down trend, is a lot easier, for me anyway, to visualize that than the bumpy one at the bottom, which is just following the index, which has got a lot of fluctuation in it. Thank you.

DR. SIEGFRIED: Any other questions about that? Sometimes, when we get a question, more people -- Okay.

CHAIRMAN NANCE: Dave, please.

DR. CHAGARIS: Thanks, Katie, for, you know, kind of walking us through this, and I'm wondering -- You know, in this example here, where you have the -- Where you have an increasing trend, and the three to five-year average would sort of, you know, reduce the amount of increase in the catch advice, but, if the trend were decreasing, would that same -- The reverse would then be true, right, and it would maintain a higher relative catch, with a decreasing trend, and is that how that would work, and then so I'm thinking like would we need sort of a different set of rules, or rules to follow, when the index is increasing or decreasing? How might that play out?

DR. SIEGFRIED: Thanks, Dave, and that's absolutely right, and it would work either way. If this trend that I'm showing on the top-right was just reversed, you would get just a reverse average of it, and so, yes, the same would apply, that we wouldn't follow the index down at the same rate as we aren't following it up, and so I think I put something in this presentation about how many years of a downward trend worries us.

You know, there is a level of risk, and I think that the life history of the fish, the risk of episodic mortality, and then the way that the fishery acts on the different ages that may be at risk, that are showing up in that survey, would be a way for the SSC to determine the number of years of risk, and so, here, the top-right example, it could very well come back down the next year, in which case taking that three or five-year average isn't necessarily that precautionary, because it came back down, but, if

it keeps going up, then you may have left some fish in the water that you could have taken.

I do think the same concerns should apply to both up and down, but I realize that it doesn't always, and there's a bigger concern if we're reducing the catch due to an interim, and I also think you should consider whether it's in a rebuilding state, and sort of that -- Whether you're at risk of overfishing.

CHAIRMAN NANCE: I do think, with this one, we're potentially leaving fish and not -- But, on the other way, if it's coming down, we have the tendency to be overfishing a stock that's in a downward trend.

MR. RINDONE: We don't get letters from Andy when catch limits go up.

CHAIRMAN NANCE: Okay.

DR. CHAGARIS: That's what I was thinking, and the risk isn't -- The risk might be symmetric, right, but the consequences definitely aren't, and so the risk, you know, probably isn't symmetric, and, you know, we probably would be more concerned -- We would be less concerned about the not catching all the fish that were out there than we would be about catching, you know, too many, if the stock was declining, I would think, but I bring that up because it's not just about the variability of the catch advice, and it's also about kind of the risk and how we approach different situations, whether it's an increasing or decreasing index.

CHAIRMAN NANCE: That's a good point. Thanks for bringing that up. John, please.

MR. MARESKA: So, Katie, in one of the previous slides, you know, you're talking about whether the index is a good measure of stock abundance, and so, you know, removing the uncertainty of the index, and is there another way to evaluate whether that index is good, and have we ever thought about like taking a recent Spanish mackerel and, okay, we have the projections that come out of the assessment, and maybe going through the exercise of doing, you know, an interim analysis on it and compare how that would look to what the actual projections are, and would that kind of help us evaluate whether that index is good or not?

DR. SIEGFRIED: I think that you probably heard MSE thrown around as a way to test which index is best, or appropriate, for the interim, and, honestly, we have not had enough time to do that for each of these, and so, for instance, gag, which will be coming up

soon, we have -- One of the things that we did, and Lisa did that assessment too, but we used the diagnostics tool that is in SS to look at the predictive power of the index along -- You know, as far as the stock assessment goes, and so she showed two yesterday, the vertical line and the SEAMAP.

One of them was a much better predictor than the other, and so, although we don't necessarily choose to use fishery-dependent when we have a fishery-independent survey, we can look at the two independent survey performance diagnostics, for gag for instance, and that's something that we do plan to show for the interim, because we haven't done an MSE to look at which of the two independent series would be best, and so that's one way to look at the diagnostic results from the assessment, and I didn't have time to do that for king mackerel, which we're going to show this week, or today, and so that's one way.

MSE is -- I'm still sort of -- It's not just the workload, but sometimes it's not completely clear to me how we would know which one was best, using an MSE framework, because we haven't utilized that fully, but I do think the predictive power within the assessment is like the best tool that we have right now, and then, also, looking at the composition data that come from the surveys that we're thinking of using for the interim analyses, for instance, we're trying to --

It's very hard to get age compositions, but we are trying to get size compositions with the indices, so that we can make that evaluation and present that along with the results. Those are the two quicker tools that we have now, but MSE has been -- From two-and-a-half years ago, it's been said that that's what we should use, but we haven't been able to have time for that.

CHAIRMAN NANCE: Will, please.

DR. PATTERSON: Thanks, Jim. Yes, it would be great to see an MSE about how these perform, and also to compare that to what Dave Chagaris has mentioned in past meetings about just updating the catch in the model and seeing, you know, what the result is there, versus having to, you know, refit everything and put in new index values and go through the whole process that, you know, it's not very automated, and so there is the data handling, the data providers, and all of that that goes into this multi-month-long process of an update, but compare how just updating the landings information in the assessment, the previous assessment, versus the index, and I think that would be a strong component of an MSE.

To John's, you know, statement about, you know, what the index is

actually indexing, it's true that, when we compute the index, you get an estimate of uncertainty, but it's not the full uncertainty of how the index is tracking what the stock is doing, and it's just the statistical precision of the index, and, you know, if you go back and look and see how well a given index indexes the stock, based on the parameter, the metric, that Katie is talking about, that's one way to do it, but there has to be a way to actually put that uncertainty into the index as it's being used to project the stock.

I mean, if we buffer it, we're basically imposing some value, because we don't believe that -- Or we don't want to -- We want to tamp down, or temper, what that trend is, but there has to be a way to actually put the uncertainty, or attempt to capture the uncertainty in that trend, irrespective of what age classes it's actually indexing, and that's a whole other issue, but my fear is that, when we actually expand this out to the full uncertainty that is likely there, you know, we end up with no information.

CHAIRMAN NANCE: Doug, please.

MR. GREGORY: Thank you, Mr. Chair. I have become nervous about this whole interim process of using an index. When we do a stock assessment, we integrate a lot of information from a lot of different areas, and, here, we're changing -- That's used to set ABC and OFL, and, here, we're changing ABC, or OFL, based on one component of the assessment, and, unlike other regions of the country, here in the Southeast, we don't have that long track record of fisheries-independent estimates.

Granted, let's say SEAMAP started in 2008, with a new era, and that's fifteen years or so, and that seems good, but the bottom longline is -- I don't have the confidence that the actual index is robust enough to be making changes, recommended changes, to catch levels for a year or two, until another assessment comes out, and I just feel like we're being overconfident in our ability to manage things. Thank you.

CHAIRMAN NANCE: Thank you, Doug. Andy, please.

MR. ANDY STRELCHECK: Thanks for letting me comment. Just a couple of kind of management insights here, just kind of thinking through this, and the index versus the buffer, from a management standpoint, if you truly believe that the index, or, excuse me, the abundance indices is reliable, right, and it's a strong indication of stock abundance, right, I see an average kind of well suited to meet the needs of the commercial industry, because it provides more stability, whereas, if you have spikes in

recruitment, or changes in abundance, that are happening from one year to the next, the recreational fishery often follows abundance just simply based on availability, right, and so I wanted to make that comment, in terms of the two approaches.

The buffer index, to me, may be problematic, in that, by the time we get the information, in terms of the change in the abundance indices, right, we're actually thinking then about imposing that in the following year, and so there's an offset, in my view, for the bottom graphic of one year, in terms of the management response, and so we couldn't buffer the index in the year that we get the index value, and we would actually have to set the catch level, a year later, that would be commensurate with the index value from the year prior, and then we would be following the index kind of in that one-year offset.

CHAIRMAN NANCE: Katie.

DR. SIEGFRIED: A question then for Andy. How do you -- So we've been asked for the constant catch scenarios in general, and I think your point is very good, that there is a different potential goal in the commercial versus recreational fishery, but we've been asked for constant catch, and so how, as managers, do you separate those two goals with a set constant catch, and how could we inform that better, with either a buffer or an average?

MR. STRELCHECK: Well, so, with the buffer, as I'm mentioning, if we have strong indication that this truly is tracking abundance in the fishery, right, then we would want to take advantage of -- Avoid overfishing, but allow for maximizing harvest potential for both sectors, right, from year-to-year.

I don't think we have that level of certainty, in any of our indices, to actually accomplish that, and so then it gets back to the average, which provides, to me, for that uncertainty, in kind of sloshing the index of abundance, but it benefits stability in the commercial sector, because there's the reliance from year to year, but it may be more disruptive, from the recreational sector standpoint, just simply because, if availability is changing above or below that average, they're going to bump into their catch limits more quickly, or have closures more often, because we haven't fully tracked what's actually out in the water.

I don't necessarily have any good answers here, but we are trying to move toward a regulatory streamlining approach where we take the advice from the Science Center and are able to implement it more quickly, right, so that we don't have multiple years later from an assessment to implement say catch limit changes, but I

think the best we're going to be able to do is probably a one-year time lag from when we get the data to when we implement it.

CHAIRMAN NANCE: Okay. Any more questions? Katie, please.

DR. SIEGFRIED: I do want to either address or comment on what both Doug and Will said, and so I understand Doug's concern, and we don't have, you know, the triennial-type surveys that go back to the 1950s, like on the west coast, and I think that's a valid concern, and I am just validating that, because I don't have any way to make that better.

As far as the -- As to what Will commented, that he's worried that, if we are using the index, but not reflecting the full variability, just what is done in the standardization, I'm not sure that I either agree, or understand, that it would wash everything out after that, because I think, with the projections, especially if we update projections a few years after an assessment, we don't even have all of the interim data, at that point, to really inform a projection to the level that we do with an interim, and so it's like at least there's one ground-truthed data source, and so I'm not sure I understand how it would all get blown out, but I don't think it's necessarily updating everything that it needs in order to get as accurate of a picture of the stock as an assessment, obviously.

CHAIRMAN NANCE: Will, please.

DR. SIEGFRIED: I could have just misunderstood.

DR. PATTERSON: Perhaps I wasn't clear, but what I'm saying is that, if you have an imprecise index, and you have really large error bars, then the trend isn't as meaningful, right, because you have so much imprecision that you can't really say where the population is with certainty.

What I am saying is that, if you just do the standardization, and you get the statistical imprecision around that index, that's only one component of the uncertainty. How well the index actually tracks the stock is a total other source of uncertainty that is not captured in that standardization, and so, if you added that uncertainty to your trend, then it would eventually get to the point where the trend itself wasn't meaningful.

DR. SIEGFRIED: In that case, you wouldn't actually change the catch advice, because it would be flat enough that there wouldn't be a trend, and you wouldn't actually -- There wouldn't be any change, I would suspect, in which case it's a health check, or not

really useful, right?

DR. PATTERSON: If you have a high probability of false negatives, then it doesn't tell you anything, and that's my point, is that, if we don't actually incorporate that other source of uncertainty in computing our trend, our index, then we're fooling ourselves into thinking that we know more about what's happening in the population than we do.

CHAIRMAN NANCE: Luiz, please.

DR. BARBIERI: I think this is very interesting conversation, and it's a point that needs to be had, but I would suggest, you know, that we let Katie finish the presentation, because there are lots of broad discussion issues, I think, associated, and that's what generated, right, our request for you to come and give a presentation on interim assessment, is, you know, how can we sort of wrap our brains around, you know, the processes that we need to put in place to be able to accomplish everything that we need to get accomplished in a timely manner and be responsive to council requests, but be able to do everything that needs to be done, and so I would recommend that we go with --

It's just a suggestion, Mr. Chairman, that we go forward with the presentation and then have a broader discussion, because I think there will be things coming up in the presentation that are going to be relevant to these discussion points.

CHAIRMAN NANCE: I think that's -- I have David, and then we'll go ahead and go through the presentation. David, please.

DR. CHAGARIS: I can hold my question until she's done. Thank you.

CHAIRMAN NANCE: Okay. Katie, let's go ahead and go through, and I will not interrupt either, but, anyway, we'll go ahead, and then we can have that broader discussion. Thank you.

DR. SIEGFRIED: Sure. It's okay, and I did tell everybody to ask me questions during. Okay, and so this goes into some of what's already been brought up of which indices and how do we decide. In general, our fishery-independent indices, in general, are expected to track abundance better than fishery-dependent indices.

We've talked about this a lot at the actual SEDAR data workshops, and that there's issues, potentially, with dependent series, such as hyperstability, and that the fishermen are purposefully going and targeting the species and trying to maximize their catch rates,

and so, even though we apply statistics and try to standardize out those kinds of effects, in general, we think that the fishery-independent indices are expected to track abundance better, because of the behavior.

We do use headboat, the headboat index, for iTarget, for the iTarget method, which is a Data-Limited Toolbox method for lane snapper, and we've been calling it an interim, and it's really just an updated data-limited method, but that's a situation that diverges a bit, and so we need to determine whether the index represents fishable biomass and then the level of uncertainty of the different indices that are being considered.

Sometimes we're able to do the diagnostics, and this is relatively recent, particularly for Stock Synthesis, where these diagnostic tests show the predictive power of each index within the stock assessment, and Will is right that we don't necessarily take that MASE and incorporate that into our interim assessment, and it's, at this point, more an idea to use it as a tool to decide which index to use, if there's multiple options.

If we have multiple options, how do we decide, and an example of some of the indices that we've had to choose from are our SEAMAP surveys, and we have trawl, both the plankton larval survey and then the groundfish survey, as well as bottom longline from SEAMAP, and we have what's called GFISHER now, which is the combined video indices from Pascagoula, Panama City, and FWC.

However, and we'll note this with -- We're working on this with gag right now, and, if there is one video index that has longer processing times, for whatever reason, you know, they were in the field longer than the other group, or they're down a person, or they had major IT issues, whatever it is, it does affect the combined index delivery date. It's a lot of coordination, and a lot of person power, to read those videos.

Also, what do we do when there are absent or sparse years, and we'll talk about this during king mackerel, I'm sure, and it is a judgment call at this point, and it does depend -- When there is no best practice, based on sample sizes and historical encounter rate, and I think king mackerel is the first time we're going to have to address this, although we've been talking about COVID potentially causing this problem, and we will have to make judgment calls and rely on expertise, both from within the Center and from within this room.

Like I said to John's question, ideally, we would test the use of each index in an MSE framework, to determine which is most

appropriate, but time has just not allowed for that work, and there has been some effort, in the South Atlantic, to run simulation testing in an MSE to look at the performance of an interim, and I think, there, you will see that the -- You had that presentation in May, and, again, it depends.

It depends on if there's episodic mortality, and it depends on the performance of the constant catch advice, and it does depend on the species, and then this is an issue that can cause some problems, when we're deciding -- Or when you're requesting species and we're deciding, in the Center, whether it's possible to do that interim and then which terminal years to use, and so, for instance, gag is setting up a rebuilding plan, and, basically, we're setting that up for gag, and the original request was to get a terminal year of 2021, which is two years of additional data from the assessment, and, understandably, comments at the council were, you know, why can't we get 2022, because we really need that data, and we need to know what's happening in gag as soon as possible, and how do we get those data, and I understand the concern.

However, sometimes it's moving mountains. In this case, it's multiple groups trying to read video, you know, a whole extra year of videos, in the same amount of time that they would have read just the 2021 videos, and that may affect the whole rest of the schedule, if that work is prioritized and other work is deprioritized, and so that's -- I think that that's flexible. However, it does cause problems when flexibility is exercised.

This is just for more detail, because it is important, on the updates of timing of the index processing, because, as you saw, a lot of these are combined video, or truncated GFISHER, which is part of combined video, and that is our -- I think people would argue that's one of our best independent series now, but it is the one that's hardest to get updates to, and so I wanted to describe a little bit about the processing for that index.

The SEAMAP reef fish video survey design ended in 2019, and then we moved to the GFISHER design in 2020. However, COVID prevented the western Gulf NOAA surveys in 2020, pretty much entirely, and I think entirely, but FWC was able to sample the eastern Gulf. In 2021, GFISHER design conducted the Gulf-wide survey, and then GFISHER has a separate artificial reef design, which was important when Matt was discussing, you know, what videos were read.

The western Gulf artificial data were first collected in 2021, and so these partnerships improve the survey, but they may limit the expected video reading rates, and then the previous year -- At the

best case scenario, the previous year is completed around summer to early fall in the following year, and additional time after the video reads is needed to standardize the index, which used to be someone at FWC, that has since moved on to the Center, and so there is -- Anytime people move around, we have issues delivering these indices in the timing that has previously been discussed.

My point of that previous section was that it's pretty complicated just to get species selected, terminal years selected, and then get the index delivered before an interim is even provided.

Then how long do we recommend using interim assessments? This was brought up because of the large number of red grouper interims that you all have seen and the fact that, last time we presented one, you asked if we should still be using these. Red grouper is set to be assessed in 2025, or did we push that? Anyway, it's coming up, and we've done four -- There is a potential to put off an assessment if the index isn't showing a clear trend in either direction, which that is possible, and that's fine, and it's not necessarily alarming to not use assessments every time catch advice is wanted if we're not seeing any alarm, reason for alarm, in the index.

If a species is in a rebuilding plan, only an assessment can update status, and we can only monitor progress of status with an assessment, and interim assessments cannot necessarily detect range shifts, or explain the trends we see in the indices, and so we can use the index, but we can ask all kinds of questions, as you all did, even in the context of an assessment yesterday for Spanish, and so we can't explain what's happening when we see the trend, and it is more problematic to use interims long-term for species that experience episodic mortality, such as red tide, because the magnitude of red tide that's assumed can be -- Or can be tricky, and then, also, as Andy stated, and I think Carrie has presented this multiple times, it's just not possible to act quickly after, you know, a severe mortality event, and the management is just not quick enough to say, okay, drop the catch if the stock has been decimated by something like red tide, or vice versa.

A full assessment is needed to track what the age structure is doing in a stock or change an assumption about something important, like selectivity or retention, if there's a change in regulation in other species, and, you know, often, as a recreationally-dominated multispecies fishery environment in the Southeast, we really can't make any of those types of selectivity and retention adjustments in an interim.

Then, to Dave's point actually, how many years of decreasing trend would concern us? What level of averaging, or buffering, is warranted, given the species life history or the representativeness of the index?

Then what are the other options, besides using an interim? You know, if it's being used to monitor status, and it's not literally status, and it's sort of to take a look at the trend, or to monitor stock health, and I'm not sure there's another option besides interims at this point, and we don't have the automation, in our region, to do a quick update for these assessments, and so the interim seems like a better-than-nothing option, if you want to at least take a look at what's going on with the trend in the abundance, or the trend in the index of abundance.

Then, moving on to whether we can update OFLs and ABCs, I mean, yes, we can, and we haven't been doing that in the past, because there's been a lot of discussion at the Center about that, and then nationally, and you all received a presentation from Rick Methot about NS 1 guidance, and there's a passage here for you that discusses what to do in an index-based assessment approach, but what we're doing is we're have an assessment, and we modify the catch advice with an index and the interim, and so it is possible, just mathematically, to update the OFL.

It's just simply using the same I ratio as is used for ABC, and so it's modified in a similar way, but it's very important to note that when, or if, we do so, we are assuming that the FMSY, or its proxy, is steady, that only biomass is changing, and we're not saying anything about the status, and it's not something where we're, you know, assuming something like with projections, where we've modified the denominator, basically, and we're not doing that. We're holding that steady, and we're just assuming that biomass has changed, and so that's a big assumption, particularly if the stock is in a rebuilding plan.

I'm not sure if you were able to read that while I was talking, but it's there, if you're curious, and then you have the guidance document in your meeting materials, but, in general, it's saying that you can't update status with an index-only approach.

Then do we support health checks, and, by support, I don't mean emotionally, and I mean like is it something where we actually think that a health check is something useful for you all to see, and I think it's important to note that it doesn't require a different amount of work than something that you can use to modify catch advice, and so it's a slight difference in what we present, but the same amount of work is done, and so I think that's really

a decision of whether you see the interim and you decide that it's worth the effort to change the catch advice, or that you believe the index enough to change the catch advice, and all of the other determination criteria that I listed in a previous slide, like it tracks with the portion of the stock that you're interested in tracking, it's a good measure of fishable biomass, and all of that.

It requires the same amount of work, whether you use it for catch advice or you just monitor the health of the stock, and so, in general, this is the process that we go through.

There is coordination, by me and other folks in my branch, to get the index, which may include four different groups, or divisions, at the Center, and it's not in my group at all, and it's just a matter of communicating with them what the deadlines are and what they need, what the video reading is, all of that, and, you know, for the bottom longline, it's real quick, and that's automated, but, in general, it's quite a lot more coordination, figuring out what's possible.

We discuss the potential issues with the indices, and we gather all of that information to provide to you, and it's not just a here's the index and believe it sort of process, and it takes time for those employees to develop an index, or indices, when we don't have just one to offer you, and then what we would like to state is that our ultimate goal is to update indices on a regular basis and then put them on a website.

We don't yet know where that would be, but that's sort of like a SAFE report sort of system, where you can take a look at it, and you may not need a full IA, if you can take a look at the index and just visually inspect it, and you can do averages in your head and decide if there's something there worth addressing, and that would be a really efficient way for you all to take a look at the health of the stock, the way that we present it for the interim analyses.

Then it takes staff time to run the interim analysis, to discuss it, write up the results, and make a presentation to you all, and we encourage updated catch advice, rather than a simple health check, when it's appropriate, but we do realize that health checks can help prioritize assessments, as well as raise a red flag, if the results are complex, and I think king mackerel is a shining example of that.

Putting all of this into perspective, the Center cannot -- It simply cannot assess every species of interest, nor can you review every species of interest, if you're going to maintain the same

schedule you have to the council every year, and so interims are providing a viable alternative to take a look at more stocks than we can assess.

It takes a long time to use the catch advice from an IA, and I know that the council is working on streamlining those actions, and I don't fully understand where we are in that process, and I don't think that I comprehend how hard that work is, and so I think questions about that should be directed to Carrie or John or Andy, since he's here, but they may still require advice, or may within a certain range, in order to not need full rulemaking, from what I understand from the presentation, and I think it's a sort of, if it's within this range, the SSC has the ability to recommend a different ABC, and then the council can go through a streamlined process, but, if it's quite different, from Carrie's presentation, I understand that it's not just a carte blanche streamlined approach.

Within the Center, we would like to complete our automation work that would make running actual updates more of a possibility, because we see the value in updating more of the data than just the index, and I think that -- This is more my personal opinion, but I think life history data are still quite a bottleneck for automation efforts, and I think just running -- Just getting the ages, getting them in databases, running the analysis on that, and, I mean, it's thousands and thousands and thousands of otoliths, and I know that there is methods that are coming up that may streamline that, and I'm encouraged to hear that, but, right now, our life history data are still quite the bottleneck.

There are automation gain in spotting red snapper in our videos, but the progress on other species ID has yet to occur, and I think that, over the last couple of years, it has really improved just for red snapper, but it has taken a tremendous amount of work to just -- I think it's something like 600 different views of a red snapper that they have now where the AI can identify it as being a red snapper, and red snapper is really easy to identify, and so, if we try to, you know, figure out gag, I think that will be difficult, or yellowedge, or something, and not that they catch yellowedge in the video, but you know what I'm saying, and it's a lot harder to identify other species than red snapper, and so I'm cautiously optimistic about that, but I think it will be a while, and I may be farther down in my career before we have a lot more species under our belt with the AI.

At this point, I wanted to open it up for more discussion and questions, and I just want to say, before I do that, that I realize that this is not giving you a rubric of what to do with interims,

and there is not a rubric of what to do with interims, and I think it requires a lot of expert opinion, but I hope that there's a few sort of guidance topics that we went over that I would like to discuss in more detail. Thanks.

CHAIRMAN NANCE: Perfect. Thank you very much, and, while we think of questions, I'm going to go ahead and take a break, because the chance of taking a break after we start talking is zero, and so we'll take a break until 10:30 and then come back, and everybody can get their questions. That was a great presentation, and it's good food-for-thought, for sure, and so we'll come back at 10:30. Thank you.

(Whereupon, a brief recess was taken.)

CHAIRMAN NANCE: Okay. We'll go ahead and start gathering back. Okay. Let's go ahead and reconvene, and John has the first question.

MR. MARESKA: All right, and I'm just going to start out with some comments, I guess, before I ask my question, and so, on Slide 7, when we talk about it being a fishable biomass, and I guess that's one of the things that worries me about some of these indices, is most of those indices are probably on young-of-the-year or juvenile fish, and so, if we're chasing that indices, that when we're probably not allowing the spawning stock biomass to really rebound, or recover, and so we may just be chasing recruitment years with that index, and that's a concern.

I don't know if an MSE would actually address that fact, and does that -- Is that indices, and us allowing additional catch, and is that going to allow the recruits to actually make it to the older fish that are going to increase the spawning stock biomass, and so my question is the indices themselves -- How are they calculated?

Is it relative to a long-term average, or are we basing those indices on a set year where we know the recruits, or the spawning stock biomass, was in good condition, because, when I look at the index, I'm like, okay, are we going above or below that line with the index, and that's something that we'll probably put into our decision-making, whether we want to act on it or not.

If we're using the long-term, then, if the index is going down, then that line is going to continue to go down, and so I guess that's my question, is what is that index based on? Is it the long-term, or do we have it based on a year where we feel like the spawning stock was in good condition?

DR. SIEGFRIED: So, to clarify your question, you first asked how they're standardized, and so they're standardized a number of ways, but it's usually not saying we're only going to standardize based on a certain age class, or size class, and it's usually they're standardized based on environmental or condition variables of the survey, and then we look at the compositions, to see which size or age classes are captured by the survey, and so it's more after the fact.

If you're talking about the way they're designed, for instance, the Panama City video index was designed to capture between zero and five-year-olds for gag, for instance, but we still have to look at the comps, to see if that's still what they're capturing.

MR. MARESKA: Well, it's the calculation of the index itself, and so, when it's standardized, when it's presented, we would get that line that says, you know, we're above or below that one, averaged to one, and so is that based on a long-term, or is that based on a set number of years, so that we feel like that index is getting back to a period where we felt like the stock was actually in good condition?

DR. SIEGFRIED: Maybe go back to -- To make sure I understand your question, the relative nature of it is across the whole time series, and it's measured relative to itself across the whole time series. The only time that the size, or the age, of the fish comes into play is when we look at the compositions.

Lisa just told me what maybe you were asking about, and so the relative -- If we go to Slide 5, you're talking -- You're asking about what I ref is, and that's relative to the year right after the end of the assessment, and that's what we're looking at. If we're looking at relative to that red line, that red line is drawn based on the average of the index. If you're looking at relative abundance, on the Y-axis, that's relative to the whole time series of the index.

MR. MARESKA: I think my question is probably more relative to Slide 4, and so we're looking at -- You've got that hard that's relative to one across the entire time series, and I think you answered my question, that it's over the whole time series, and so this index in particular, if this was red grouper, I think this is where it becomes really important to get additional length information, that we've talked about in the past, so that, you know, what's comprising that increase in the catch per unit effort, the increase in the index, and is it just recruits, you know, and so are we going to allow the fishermen to just chase that year class, and those recruits, or do we need to just, as part of our

decision process, or do we just need to wait until we can ensure that some of those recruits actually make it to the older age classes, because the fishery is still going to target those older age classes, and so we can make sure that we're not fishing it down and allowing it to actually get back above this standardized line.

If this line is over the time series, then that index is not -- It's going to fluctuate every time you calculate it, and it's not going to be static, and so that's why I was wondering if maybe going to reference years, where we felt like that index was when the stock was actually in a good condition, so that it didn't move as much as it's going to move, because, every time you calculate it, it's going to be different.

DR. SIEGFRIED: I see what you're saying, and so my first answer about the whole time series is correct, and the reason that bottom longline is used for red grouper is because it's the older, fishable biomass, right, and so we'll, I'm sure, have this discussion again with king mackerel.

CHAIRMAN NANCE: I think that's a good point, in fact, that, whenever we see what index it is, we need to, in our minds, is this the young-of-the-year, or is this the older fish, those types of things, which will help our decision as far as what this indices is showing us. Thanks, John. We'll have David Chagaris and then Doug Gregory, please.

DR. CHAGARIS: Thank you. I mean, as I mentioned before, in previous meetings, my biggest concern with this approach is the disconnect from the population dynamics and the stock assessment, and there is really no relation -- I don't see where this sort of ties in in any way, and I still feel like it shouldn't be that difficult to extend the stock assessment with the updated index values and the catch information and run an updated model like that, just estimating the fishing mortality rates in these out years.

I think that would just more informative, and a step in the right direction, and I understand that there will be data that we won't be able to include in time, but you work with what you have, and it would still be, I think, better than what we have here.

I understand that you guys are still working on that, but, in the interim, you know, one thing that might -- That you could consider is, if you think about the stock assessment models, they never capture the variability in the indices, and, basically, it's a smoother that's going to go through that index, and so you could

look at the variability in the predicted biomass, or abundance, relative to the index from the model and maintain that same relationship, with these buffers or averaging approaches, and, at least that way, we know that the stock would not be -- It would be responding at the same rate relative to the index, at the same proportion that it would from the assessment model, and that might be at least one way to start to incorporate this relationship between the population and the index, which the assessment models do resolve at some level.

You could look at the proportional, you know, how strong does the index and stock correlate, and I think that could provide some information about, you know, how much we want to try to track the index in the interim analysis, but, again, you know, going back to actually getting this into the assessment model and letting the model sort out and reconcile the changes in the index with the changes in catch, by estimating fishing mortality, I think would be preferable, but there might be some ways to actually bring in information from the stock assessment to help us make some of these decisions about the interim analysis, and so I just wanted to share some thoughts on that. Thank you.

CHAIRMAN NANCE: Thank you, Dave. Katie, please.

DR. SIEGFRIED: Thanks, Dave, and so don't ever stop saying that, because we do want to work on that, and so you don't have to apologize for bringing that up again, and one of the things that we want to do is exactly what you mentioned, and I think I said this on a previous SSC meeting, but let me just ask a few questions of you and the SSC about an approach like that.

What you mentioned is using the index and catch data, potentially, minimally, as a form of a quick update. Now, one thing that would make that very possible is if we did things like fixed other parameters that might move around, like selectivity and retention and other things, that we wouldn't have, maybe, the age composition data to inform, you know, that update, because, like I said, the life history data, mainly the age data, tend to be quite a bottleneck.

Are there qualms on the side of the SSC with doing -- You know, attempting an approach like that, where we would update catch, and maybe not discards, because that's model-based, but maybe discards and the indices, but fix those other parameters that we think would need more composition data, to get a better estimate than what we have in the previous assessment?

That seems like -- Except for the fixing part, that seems like

what Dave was suggesting, and I don't know if you have an issue with the fixing, Dave, but, I mean, I would like to hear people's thoughts about that, because it's sort of like a mini-update.

DR. CHAGARIS: Not at all. I mean, I think you would fix all of the selectivity parameters, and you would want to estimate recruitment deviations I think as well, and maybe some of the recruitment deviations, you know, for years prior to the terminal year, right, to see how those play through into the index, but, I mean, I think you would have to fix a lot of that information, unless you were able to bring in the composition data.

CHAIRMAN NANCE: I think that would, Katie, the only way to do it, is all of those others would have to be fixed in time, in order to -- Or you're just doing a complete assessment again. Ryan first and then Luiz.

MR. RINDONE: Green is better than red, or whatever color you've got going on there. As far as whether or not you would be violating any assumptions about selectivity and retention, I mean, you guys are, obviously, going to get continually updated from us on any, you know, changes in management or anything like that that would otherwise throw a wrench into that assumption. I mean, that would likely be one of the first things.

You know, if there was a size limit change, or something like that, or a bag limit change, or something with fleet dynamics, we would certainly keep everyone apprised of that, but, other thank you know, outside of something like that, there shouldn't be much of an issue in changing those -- Or in fixing those functions.

CHAIRMAN NANCE: Luiz.

DR. BARBIERI: Thank you, Mr. Chairman. Right, and I don't disagree. I mean, to some extent, this is what we had to do, FWC-FWRI had to do, with the yellowtail snapper assessment, right, because we didn't really have the bandwidth to do a full update, right, after we had the benchmark, and there were like -- It took so long, since it's a stock that's managed by both councils, and it took so long to develop all the regulatory scenarios and get everybody on the same page that we had to -- You know, the terminal year of the assessment was way behind now, and we had to provide an update, right, with more recent data, but we really didn't have the bandwidth to do a full update, and so we came up with this hybrid that, Dave, if you may remember, Dave Chagaris, and, I mean, this is very much in line with what I think he just described.

To me, I don't disagree with Dave, that this would be a better

thing, and, in a way, I think that it would help us, Katie, at some point, right, for the SSC to have a discussion with the Science Center and SERO, in this setting of an SSC meeting, about basically what kind of a tiered approach, you know, can be developed by the Science Center to address some of these things.

An interim analysis -- There is an interim assessment, right, which is basically what Dave Chagaris is talking about, if I understood him correctly, right, and then you could have other things that are not as data intensive, easier and faster to process, because, you know, we're going to have, in addressing all of these issues for all of these stocks on a timely basis, considering data processing and other things, we're going to have to, you know, have some of these other types of analyses that are done in between full assessments, and seeing the full scope of what can be done, right, and to develop a priority list might be helpful. Thank you.

CHAIRMAN NANCE: Thank you. Doug Gregory, please.

MR. GREGORY: Thank you, Mr. Chair. I just wanted to explain my earlier comment, and, again, looking at Slide 4, the stock that we're managing are multiage stocks. Unless there is an episodic event, I would not expect the abundance of the stocks to really change from year to year in any dramatic way, and certainly not enough to change an ABC, and, if we're going to use these are indices of abundance, I think we need to start looking for some environmental covariates.

This year is a good example, with the hot water, and the hot air, and hopefully this will be considered an episodic event, when it's all over with, and not a new normal, but, in this example with the red grouper, let's look at it. Other than two years, everything is basically flat, and we've done a number of assessments, and we have identified and incorporated episodic events of red tide, and is that reflected in this index?

Is the two high years of recovery from the red tide in the rest of the years, from 2005 on, a depressed stock because of red tide? I don't know, and my memory is that the stock assessment was not that pessimistic, and so I just don't trust the indices to provide the detail, the specificity, that we're looking for, and I understand the purpose of the interim assessments, and I was as excited as everybody else in the beginning, that we could use this to do some fine-tuning, but I think we're just chasing the noise, the way things are going, and it's even worse when we start looking at king mackerel shortly, and so I just wanted to explain what my concerns were. Thank you very much.

CHAIRMAN NANCE: Thank you, Doug. Steve Saul, please.

DR. SAUL: Thank you, Mr. Chair, and thanks so much for the discussion, Katie, and for our conversation here. I certainly appreciate the Center's workload challenges for you all, but I also am excited to be talking about sort of this improved approach.

I think, before we had the sort of assessment tier approach in place, when we were doing updates, we were updating more than just the index, typically, but sometimes I recall just updating those two and rerunning the model, and I think that -- I very much agree with what folks have said, in terms of getting a much better estimate out on a model-based approach.

I think fixing, you know, parameters, selectivity and life history, at whatever their estimated value was from the last benchmark assessment is totally reasonable, and, at least here, you're contributing the true uncertainty in the population, and true is -- But the true uncertainty of the population as the stock assessment models, moving it forward in time, versus, I think, a comment that -- I forget who made it earlier, but regarding estimating the indices and looking at the CVs of the index, where those CVs are really a reflection of the variability of the data going into the index.

Yes, we make the assumption that an index is directly proportional to abundance, and we kind of raise our hands at that, but there's a lot of weight that goes behind that, and we all know, in reality, that that's often not the case. I think this is a much better approach, and I think it's more statistically robust, and allows you to look at the uncertainty from the entirety of the assessment forward in time, through and into your projections.

I think, also, to the conversation earlier, when Andy was presenting, he had mentioned something, and I wrote it down somewhere, and I can't find where in the heck I wrote it down, but something about -- To the effect, and somebody correct me if I'm wrong, but something to the effect that the interim assessments don't align, ideally, with, I guess, National Standard 1, or with what's required of us for setting catch limits, and so I think, by using -- By sticking with the sort of integrated model approach, which, you know, is a big part of the language within Magnuson that helps guide our policymaking and our decision-making, and I think this keeps us in a lot -- A much firmer ground from --

Again, I'm not an attorney, but from a policy or a legal perspective, when we're trying to set OFLs and ABCs, and so that's

my two-cents, and I think this would be great, and hopefully not a major lift for the science, and hopefully really not that different, or that much more work, than the current sort of interim approach, and we're just updating the index. Thanks.

CHAIRMAN NANCE: Thank you, Steve. Mike Allen, please.

DR. ALLEN: Thank you, Mr. Chair, and my comments almost mirrored what Steven just said, but I just will add that I do think that there's a real advantage to using the assessment model with the last known age and size composition, and those things held fixed, as we talked, but bring in the new indices and see what the results are from the assessment model with that new information, and I think that puts us in a lot better place, justification-wise, by propagating that uncertainty all the way through, rather than just an index-only approach, and so I like this suggestion.

CHAIRMAN NANCE: Thanks. Carrie, please.

EXECUTIVE DIRECTOR CARRIE SIMMONS: Thank you, Mr. Chair. I have some general comments and then maybe some weedy questions, perhaps, and so we've used this tool, and I see it as a tool, for several species already right now, right, and we've used it for red grouper twice, and we've used it for red snapper, in some capacity, and we've used it for gray triggerfish, and we have used it for cobia, I believe.

I really do think this is a valuable tool, and it probably is not perfect right now, and I think we've got to figure out the best way that we can use this make it comfortable for folks, and there's going to be times that it's probably not appropriate to use it, because it's too far out from the stock assessment, blah, blah, blah, all those things that Katie laid out for us, but I think this is important to take a step back and think about what we're dealing with here.

The Science Center is working as hard as they can, and all their staff and the data providers, to get stock assessments. We just got a Spanish mackerel stock assessment, and the last one we had was ten or eleven years old, right, and it's already two to three years old, by the time we get management in place, and so the way we've used this tool, for example with red grouper, is trying to see, from what the fishermen were telling us, has there been an increase, an uptick, from those episodic mortality events that were captured in the stock assessment, and is there a need to change catch advice, and so I think there was a level of information there that was on the tail of the assessment that made everybody feel more confident in moving forward with that.

I guess these other methods, if the Science Center is able to do an interim analysis, and able to -- Or not interim analysis, but an interim assessment, or update assessment, I think that's great, but, right now, we really don't have that fleshed out on the table, and I think that's something they may be working towards, but we just don't really have that in our toolbox right now, and so, if that's something that we could -- Maybe the tiered approach, or, as you said, like a decision tree approach that the SSC may recommend, maybe we could work it in that way.

I love the idea of trying to have some type of automated index process, as we work through this, and we're able to do it for certain species, and I don't see that we can do this for all species, and, I mean, we're data poor in the Southeast right now, and so I think it's going to be just a handful of species that this may be practical for, as we work through it, and we may not be able to build out, you know, exactly that we'll be able to change catch advice every year, or every other year, for many of these species, but I think just getting that information on a trend, an index trend that we're confident in, is important.

It's important to the staff, and they're telling the constituents what's going on, and it's important to council members, right, and so I think it is a valuable tool, and so how we can work that into this process, with less workload for the Science Center, is still important, and I think we should keep that in mind, kind of in our pockets.

Okay, and so that was a lot of general blah, blah, blah, and so I don't know how the comfort level with the SSC is with this moving forward, and so what else do we need? I mean, the bottom line, to me, is we've used this in the past, and so how can we utilize it in the best of our capacity moving forward, and so maybe there's these other approaches, like have been mentioned several times, more of an update assessment, more indices, more whatever else, you know, catch, landings and age comps and other things that might be needed, before the SSC is comfortable making changes in catch advice, and maybe that has to be handled on a case-by-case basis, and I'm not sure yet, and so maybe the tiered approach is a better approach, but I don't -- I guess my fear is us losing momentum on this tool.

Not every council has this, and I don't think the South Atlantic Council has this tool, and so I don't want the Science Center to be disenfranchised, I think, from this discussion, or our constituents to be, you know, disenfranchised, and so I think we just have to kind of keep that in mind, and, you know, we don't

have the resources that other councils and regions have.

My other question, lead question, for the Science Center, I think, is, when we first started getting these, and I went back to the red grouper interim analysis, there was a lot of discussion about beta, and there was different like catch advice changes that could be made from those betas, but, since we've had the other interim analyses presented to us, I don't think that was discussed at that level of detail since then, and could you explain why that happened that way?

DR. SIEGFRIED: I can look back to see if that's what the buffering was called. I think that that's what Skyler first presented as that, but I just need a minute to see if that's what she called it in the original. That's why I presented the buffer, because, the very first time the SSC saw it, they saw the same thing as I presented on Slide 6, which was the buffering and the average, and so it might have been called a beta, but let me check, really quick.

EXECUTIVE DIRECTOR SIMMONS: Yes, and so it's just where the catch advice is strongly driven by the index deviations, and I think it was right from zero to nine, and so maybe more explanation and information on the buffer, how the buffers are being derived, and that might be helpful as well, for the future, but I don't want to push the SSC too much, Mr. Chair, but I do think we need to come up with kind of a skeleton, or a path, or a something forward, be it tiered or what you would like to see more information on, so that we can kind of try to gather that and move forward, because we're getting ready to embark on a big effort with our staff and, with the Regional Office staff, in trying to develop a big fishery management plan that analyzes, just as Katie said, this range of percent increase and decrease for OFL and ABC, and so we'll have to analyze all of that in advance, so that, when we get this information, we may be able to react, for changes of a certain percent in catch level, bag limits, season changes, and so we are trying to set up a management process where we can be more agile, but it's going to take a lot of resources.

If we are not confident in what we've done in the past, maybe we need to redirect, before we put all of these resources into our streamlining, you know, efforts moving forward, and so I just also wanted to inform the committee on that. Thanks.

CHAIRMAN NANCE: I agree, and the fact that -- Here's where I'm coming from also, is that I like the approach, but we need to have a sit-down meeting where we're talking about this, but I would also be interested in seeing -- Because, right now, a -- I am going

to use a -- We have an interim analysis, and I think that's what we call these, right, and we've not looked at an interim assessment, in a way, and so Dave has been bringing this up for quite a few meetings, and those types of things, and maybe what we need to do is have that, have an interim analysis and an interim assessment done, where we can see if they're -- I mean, if we're getting different information from them.

I think that would allow us to be more comfortable with an interim analysis, because, right now, we haven't seen, you know, just running an assessment with everything fixed, except for new landings data, to see what that gives us, as opposed to just a simple analysis with an index only, because, right now, I think a lot of us are not comfortable with just that index, and we want to see all these different landings and what that does for us. Carrie.

EXECUTIVE DIRECTOR SIMMONS: Well, I mean, I guess I would defer to Katie and her staff, but, I mean, I guess the question is, is the Science Center willing to do those long-term, and it's great that we want to have one exercise where we're making these comparisons, and maybe that would make people feel more comfortable moving forward using the interim analysis, but, if not, then that means we're back to an update assessment, and I don't know that they have the capacity to do that.

CHAIRMAN NANCE: I don't see doing it every time. That's just work, but maybe for one species to be able to do that. Ryan, to that point.

MR. RINDONE: To that point, I mean, I think it also kind of depends on the species, right, because, for some of these species, there might be an index that serves as a great representative index of abundance, and then, for other ones, it might require more of a combination of things to be present to be run in a single analytical body of work, in order to have a cogent examination of what might be going on, and so, you know, in the furthest extreme, I think about like kingfish, and I guess we'll see more about that in a minute, you know, for fear of flipping to the last page of the book, but, you know, kingfish and Spanish are not so dissimilar, in that you have to have all the pieces together to try to get an examination of what it actually looks like.

Any single index, or any single, you know, landings stream, is not going to be enough to tell you what's going on, and so -- Even then you might still have questions, but, for other species, you know, like when we look at red grouper, and, you know, red grouper is -- The NMFS bottom longline is focusing on the larger spawners,

but the recreational fleet, and the for-hire fleet, is selecting for smaller fish, on average, than the NMFS bottom longline index is, and so, you know, we're getting disparate opinions about what is going on, where we have a flat NMFS bottom longline index, but we have booming landings on the recreational side.

We're not examining the length comps from those directed fleets, and so we don't see that part of the examination, and so, for red grouper, if we had done, I will say the yellowtail snapper approach, you know, we probably would have had a different output for what catch limits might be, based on that, but we also probably would -- Never minding that, we would have had a better way to look at what sort of recruitment signal we might have seen in the last couple of years, which really would have been the important thing that you guys were looking for.

You know, what do we use to justify increasing the catch limits? You know, has there been recruitment, and well, we don't have those data, and so I think it's going to depend on the species, and it's not going to be as simple as just -- You know, as running both of those things side-by-side, and I think some of them are just going to need even just a little bit more information.

CHAIRMAN NANCE: To that point, Luiz, and then Kevin.

DR. BARBIERI: To that point, and thank you for making those comments, Carrie, because I think it helped, you know, frame the discussion, right, that we kind of wanted to have, in terms of use of this as a tool.

I think we need to also kind of have clarification on whether, you know, the SSC is perceiving this interim analysis as a substitute for an assessment, right, and I don't think that is the case, and I think we need to clarify that this is something -- You know, I asked Ryan to send me the Gulf SEDAR schedule, you know, the most recent SEDAR schedule, because, if we are keeping assessments, full assessments, within a reasonable number of years, all this interim analysis is doing is trying to provide a more up-to-date, right, real-time kind of finger on the pulse of what may be happening there in between assessments, right, and so it's something that it's not meant to be as a tool, the way I understood it, to be a substitute for, right, and so, you know, the same way that we can have five, or sometimes ten, year projections, right, that are put forth, and, you know, this would be capturing more of that real-time change.

Something that can -- I think a conversation that can help the committee really fully evaluate what are the options that are on

the table, what are these tools being used for, clarify those things, so that people can become more comfortable with the use of some of this, quote, unquote, lesser analysis that can be done interim to actual assessments, and I think that would be helpful.

MR. RINDONE: Sorry, but can I just intercept -- Just a language thing, because we've talked about this a little bit in the past, you know, and I would hate for some of these things to be labeled as, you know, like a lesser analysis, and I know that you didn't mean it like that, but just for people listening and stuff, and, you know, we're really talking about like what is the level of analysis that is appropriate to do what's being asked and not so much that, you know, one product is necessarily inferior to another, but it's just applying the right tool for the task at-hand.

DR. BARBIERI: Right, and, to that point, absolutely. You know, to clarify, when I say "lesser analysis", it's because, of course, it's not taking into account, right, life history and population dynamics attributes of the stock explicitly in this analysis, and just looking at changes in abundance can be cause for whatever factors, right, but, if the purpose is really just to adjust or, you know, have an idea, a health check, it may be quite appropriate for that.

MR. ANSON: I had to step out for some of the conversation, and I came in at the tail-end of some part of it, I guess, that was talking about establishment of some tiers, which might be some decision-making, a decision tree type of thing, and that would be helpful, at least from my perspective, as we have talked in the past, on the council, about how we might be able to respond, I guess, in between these assessments to changes in abundance, and having a clearer direction, or path, as to what is available is very much, you know, what, at least myself, I am interested in, and it would be helpful to make it clearer to the council members, as they look at what is available and such.

I know, in the last couple of meetings, we've talked about, you know, trying to find out, you know, what is entailed within a health check, you know, even down to a species level, and what data would be available, what the most appropriate data currently is available to use in a health check, species-by-species, and then also to look at it for an interim analysis, you know, and it's also another, you know, point to look at to see, you know, what data is available for each species.

I think, if we had some sort of summary of that, of where we are and which indices could be appropriate for each of those, and then

what the outcomes of a health check, or an interim analysis, would be, and that would be helpful for us to make those decisions, because, I guess, when you look at it, there may be eight or ten species that we can do health checks with, you know, with indices, and then the rest are basically data poor, and so we're not really talking about a lot, I don't think here, but I don't know if, Dr. Siegfried, if this presentation was part of the process, but my recollection is that Dr. Porch was supposed to be having internal discussions with Science Center staff to try to get down to some of those level of detail, relative to health checks and interim analysis by species, and looking specifically at specific indices that would be useful for Species A, but may not be useful for Species B type of thing, and is that --

Are you all working through that level of precision, because, as Dr. Simmons mentioned, I mean, that's essentially what we're trying to do, is to try to, you know, get to a point where can, you know, be more responsive, I guess, to comments and questions that stakeholders have about, you know, Species A at the time, because they're seeing a decline, or an increase, and we want to have something that would be able to go and look, with the data that's available, to corroborate that.

Then, if it's significant enough data, to be able to maybe address some of the catch advice, is ideally what we would like to do, and so is this part of that process? Do you know?

DR. SIEGFRIED: Since this was requested of the Center, and I'm supposed to be the Center at this, I did meet with Clay and John and Shannon to go over what we were going to say in this presentation, and a lot of -- Also, what we're doing at the Center involves the South Atlantic input on interims as well, and so the list of which index by which species was created a few years ago, and we've been saying -- The Center has been saying that we want to do an MSE to verify that these are right for these species, and so I tried to address that here, that that work has not been done, and we haven't had time to do that.

You know, that's all good intentions, and we've always wanted to do all of that, but we've realized too that there are times when the index approach is not ideal, or maybe even pragmatic, given the constructs of the previous assessment, or the issues with the index, and COVID has thrown a big wrench into the usefulness of the indices for that, and so we have started to talk, and we've formed sort of this decision tree matrix internally for discussion of sort of tiers of what we could do with which data.

One of the things we were thinking, you know, was to look at this

not based on the council, or the SSC, would prefer this level, and it would be more what data are available at which time, because it's more of a delivery schedule issue, and so it's not complete, and it's not something that I showed, because we're still discussing it, but I have a whole matrix of options, you know, whether we have index data, landings data, discards, length comps, age comps, what is required, what level of complexity, for everything, you know, and what type of documentation is required, you know, whether we get diagnostics from all of that.

We do have projects that, you know, have recently been successful in getting money to address this, but we are at the stages of trying to explore something more than an index, and not that the index is the lowest value, but it's the lowest data requirement, all the way up to our full age-structured model, and we're trying to create a spectrum of what's possible, given the data.

Now, it is case-by-case, and it something where every tool can be broken, and I don't -- We're not thrown off of interims entirely, based on, and, you know, Carrie was concerned about that, just because it might not be good for a certain species, given all of these limitations, like COVID and the lack of sampling that that caused, and, the fact that we have difficulty indexing coastal pelagics, that could be something that we discuss about king mackerel, but that doesn't blow up ever using an interim assessment, or an interim analysis.

We do need to be careful about the naming, because we will get totally confused, and so an interim analysis, and so I hope that answers your question, but it's definitely -- It's definitely something we've been discussing at the Center, and if I can address something that Carrie said, while I have the mic.

CHAIRMAN NANCE: Absolutely.

DR. SIEGFRIED: So the buffer and beta are the same thing. The issue with the buffer and beta is that it was not simulation tested by Quang the same way that the average of the index was simulation tested, and so Skyler just chatted me and just mentioned that that's 2021 that she presented the buffer, but we've moved past that for the snapper count, triggerfish, and red grouper since, because not only is the averaged index easier to understand, but the simulation testing part of it is different.

CHAIRMAN NANCE: Thank you. Jim Tolan, please.

MR. TOLAN: Thank you, Mr. Chairman. I will yield. All the points that I was going to bring up that have been brought up by other

committee members.

CHAIRMAN NANCE: Thank you. Mandy, please.

DR. KARNAUSKAS: Thank you, Mr. Chair. I've had my hand up for a while, and so I wanted to address some of the concerns brought up earlier from my fellow SSC members on making adjustments to the ABC based on a single piece of information, and I think those are valid concerns.

However, sort of the alternative viewpoint is that, if we look at the net impact of our stock assessment enterprise, we are making, in some cases, some major changes to the catch advice based on single pieces of information that we have a lot less confidence in, and we've seen like assumptions about steepness, or estimates of natural mortality, or recent recruitments, or just the estimates of recreational catch can have a huge influence on our assumptions about the stock productivity and the catch advice that comes out of the assessments, and I think we saw this just yesterday with the Spanish mackerel.

I don't really share some of these concerns with the interim approach, and I think it's not subject to pieces of information that can change drastically based on very little information, and it avoids some of the need to estimate these big unknowns, and it's actually rooted in some information that we have a reasonable amount of confidence in, and I also think that we should keep in mind what we saw, and I think it was in the last SSC meeting, where we had the MSE section, and we saw some of the simulations that Nikolai had run, which essentially showed that you get the same performance from the interim assessment approach, or, I'm sorry, the interim analysis approach, as a full-blown stock assessment, but with about one-tenth of the effort, and, you know, I think that's really groundbreaking, and we shouldn't lose sight of that.

I think we have no basis to call this sort of approach a lesser assessment, if it essentially has the same performance as a full-blown stock assessment, and so I'm kind of curious to know what else the SSC would need to see to be convinced that this is a feasible way forward, and I am not sure that I agree with trying to integrate this into the assessment, you know, back into the stock assessment, and I actually like, in some ways, that it's independent of the assessment, because it's not subject to a lot of the uncertainties that our models have, and so I like this approach.

I like the interim approach, and maybe it won't work for every species, but I think that it has a lot of promise, especially as

we enter this era of rapid change, and I think it's really something that we should try and embrace, moving forward. Thank you.

CHAIRMAN NANCE: Thank you, Mandy, for those comments. Steve Saul, please.

DR. SAUL: Thank you, Mr. Chair, and thank you, Mandy and Carrie, for that perspective, and sorry if I was not clear, and I think this tiered approach makes sense, but, obviously, you know, for some species this will work, for which we have models, and those that are data-poor, obviously, we don't, and I think it makes sense, for those that are data-poor, where we'll have to use something a little simpler, like the index-based approach, et cetera.

I would be curious to have -- Almost have us, or the Center or someone, build a table of kind of the -- You know, the amount of effort, or workload, it would take, kind of like a tradeoff table, right, and so how much effort does it take to add just catch to an existing stock assessment model and run that, versus effort to develop an index and then use that for an interim analysis, versus developing an index and length comp data to look at for interim analysis, versus adding an index and catch to an existing stock assessment model and running that.

I am not saying I would put more work to you all's plate, but I wonder if that would be a useful way just for us to sort to conceptualize and understand the tradeoffs across different species and needs, so that we could better target, you know, the, quote, unquote, ideal approach for each stock.

CHAIRMAN NANCE: Katie.

DR. SIEGFRIED: We're working on that, but I just don't have it ready for this meeting.

CHAIRMAN NANCE: Okay. Perfect. Thank you. Josh, please.

DR. KILBORN: Thank you, Mr. Chair, and thanks to the SSC for this presentation. First, I guess I want to agree with some of the stuff that Mandy was saying, and I thought that she brought up some really good points about the independence of these interim analyses and some of the uncertainties within, you know, the full-blown assessment models, and so I do kind of support some of what she's saying, but I want to go back to some of the comments that Kevin was making, because I just want to clarify some questions that I have.

The first one is I would like to know, and a couple of people have already alluded to this, but like which species are we actually talking about here, and like what is the candidate list of species where we potentially have decent, or good, interim indices that we're going to be considering here, because, I mean, we've got dozens of species that we're managing, but, you know, I think somebody said this could be maybe like eight to ten actual species that we're considering here, and so I think it would be really good for us to get a sense of exactly which species we're talking about here, so that we can kind of start wrapping our heads around the life history and the ecology of those animals.

Then the other question I have is kind of more related to the intent of this process, and, again, kind of getting at something that Kevin mentioned, which is that he said that the council's perspective is that, when they hear something from the public, they want to be able to react quickly and figure out what's going on in that stock, and that's a little different than I had originally conceptualized it, where I thought that maybe this was something that we would apply to as many managed species as we can, kind of as regularly as possible, for those sort of health checks, and then, when we see something, we can react quickly, with more of an interim analysis, or assessment, and so, again, my question is really kind of getting at what is the real intention of these interim analyses, and which species are we actually considering doing this to. Thank you.

CHAIRMAN NANCE: Thank you, Josh. Ryan.

MR. RINDONE: Thanks, Mr. Chair. Josh, to your question of which species, one of the rules from the Science Center for doing the interims is that it has to have a previously-approved quantitative stock assessment on the books, which right now is our main way of evaluating whether or not an index is appropriate for use or not, and so it would immediately limit those species to -- You know, the candidate species to those species that have been assessed before, and we have since --

You know, through some trial and error, we've learned that some of these we can do interims for and some of them we probably can't, and so like cobia doesn't have a fishery-independent index of abundance, and so the odds of doing an interim on cobia seem almost zero. For other species, we've called it an interim in the past, like for lane snapper, but it's not really an interim, and it uses the DLM, the Data-Limited Modeling, Toolkit, and lane snapper uses the headboat catch per unit effort index, and so it's not truly fishery-independent, but that is an option that can be used for

really data-poor species.

It might be that, for something like cobia, instead of using the interim approach, we pull something out of the DLM Toolkit and see what kind of advice we get out of that. For other species, like kingfish, we went back and forth about the kinds of thing that might be able to be used for that, and, as you guys will see, you know, the story didn't end so well, and then, for other species, there might be a couple of things that could be used.

You know, thinking about some of the reef fish species, you know, especially species that are more data-rich, like red snapper, there are probably several things that could be used, but any one thing by itself, like we talked about with red grouper, might run into issues with selectivity between what the fleets are catching and what the index is observing.

We, generally speaking, like when Mr. Anson was talking about -- You know, I think he had mentioned, you know, about eight species, and I think we could probably all make a list of eight species, and six of those eight species would probably be the exact same, and so they're all the species that we normally assess most frequently that are perennial favorites on the stock assessment calendar, and, if we could take some of that routine assessment workload off of that calendar, and use a -- Especially once some of these approaches get automated, and, if we could use a more automated approach to examine what's going on, that would certainly result in a tremendous time savings for all involved parties.

CHAIRMAN NANCE: Thank you, Ryan. Will, please.

DR. PATTERSON: Thanks, Mr. Chair. Mandy brought up a good point about Nikolai's analysis, and perhaps we should revisit that on our own and remind ourselves exactly what that showed, but, as far as the index, or the indices, being independent of the assessment, or an independent way to look at population trends, in a sense that's true, right, and you can look at an index, if you have a sense of what the fully-selected age classes are that that applies to, and, if you compare that back to the original assessment, it seemed to fit pretty well, and so if, in all the other data sources in the integrated assessment, there was not huge conflicts that caused a poor fit to that index, then, yes, you could use that as a means to perhaps track what at least those age classes are doing.

I disagree though with the idea that, you know, in the assessment, using this index to affect management, or to rescale OFL or ABC, is independent of the assessment.

On the one hand, you know, the integrated assessment -- The reason we do the integrated assessments is so that we have all of these various data sources, and they kind of fight for influence in the model, and we can downweight the effect of sample size, et cetera, to give maybe indices more weight than the age comps, and there can be conflicts between age comps and an index, which might cause a flat line through an index, because the age comps aren't picking up the years classes that the index says are increasing, and so there's all this conflicting information that we're utilizing to fit the overall model.

It's true that steepness and natural mortality are going to scale our productivity estimates, but doing this interim analysis doesn't divorce us from those estimates of productivity, and it's simply using a single index, you know, divorced from the integrated assessment, to then scale up or down what the ABC would be, based on what the index is doing, but the overall productivity estimate from the stock is still based on our either fixing steepness or estimating it or fixing M, and we don't estimate M traditionally in this region, or ever, I think, but, anyway, I don't think it's completely divorced from that side of the analysis.

The last thing is this idea of health checks. You know, originally, when we started doing these interim analyses in this region, and maybe my memory is failing me here, but they were based on health checks, right, because of red tide and red grouper and gag, to examine how the stock perhaps had responded to red tide events, and so, initially, it was to make sure that the stock wasn't in a bad place, and keeping the ABC at a higher level could drive the stock to collapse, and so that's how we employed them.

Then, more recently, they have been used as a tool in between -- You know, in long time periods between assessments, but, if you think of health checks like in the medical field, at least for humans, health checks are done typically -- If there's a type of health check that's done at a coarse level, it's to produce false positives and avoid false negatives, right, and it only goes in one direction.

Then, if you get a positive result, you may have to go in for more significant diagnostics, to figure out if that's actually a true positive or a false positive, but it's all in that one direction, and this gets back to something that Dave Chagaris asked early on about the direction of the trend.

You know, it seems to me, keeping in the spirit of MSRA and what we're all sort of accustomed to here with precautionary management, is that we would be more worried about a downward trend than an

upward trend, and Andy Strelcheck had mentioned before about, well, you know, if you have a recreational-predominant fishery, versus a commercial fishery, the perception of what's happening with an upward trend is different, because, you know, if you have a recreational fishery, and they want to go and chase recruitment, as pulses of age classes come through the fishery, it just seems to me that there's a conflict here about what a health check means and how -- You know, the directionality of whether you have an upward trend or a downward trend.

I know that I didn't really explain that in great detail, but I do think there's a difference in perception in how they would probably be used, in that respect.

CHAIRMAN NANCE: Thank you, Will. Carrie, please.

EXECUTIVE DIRECTOR SIMMONS: Thanks, Mr. Chair. I think, Will, you bring up a good terminology concern that we've had with the public as well, and so the "health check" term was kind of a terminology that our staff came up with, and we weren't looking at getting the associated catch advice, and we were just asking for the trends, and so I think we kind of ran into a -- I don't want to say a roadblock, but just like a lightbulb went off, when we were looking at these things and there is associated catch advice changes considered, versus just looking at the trend.

I think, you know, expectations -- It just happened recently with red grouper, and it was at the beginning of this year, and we asked for this update, and there was associated catch advice with that, and the SSC decided not to move forward with that catch advice, based on the information presented in that trend and the length of time it had been since the stock assessment, plus all of the other reasons that were provided at that meeting.

I think we, our staff, have to be careful with the council about expectations when we're asking for these, and are we asking just to look at this trend, and are we asking for the catch advice to be included, or do we want it all, and that just goes to the SSC to consider, and that's kind of how that "health check" term came about, from my perspective anyways.

CHAIRMAN NANCE: That's my recollection too, Carrie, and I think it was good to have Katie's perspective of just having the index run without the catch, and having the index run with the catch, is the same amount of effort, and so I think we just go with the interim analysis, when we're asking for it. Kevin.

MR. ANSON: Just to follow-up on that, Dr. Kilborn, you know,

referenced my comment about, you know, the health checks and such, and kind of where it germinated in the council, and that was, as Dr. Simmons just explained, my impression. When we talked about health checks, it would be relatively something simple that would be done, and so just, I guess, to the point that, for clarity, and making sure that we're all on the same terminology here, I guess, it's just to make sure that, Dr. Siegfried, that it is just to do a simple index or a simple -- Just even looking at the trends of -- It doesn't have to be an index, but just an actual trend line of a particular data stream.

I think that was kind of more along the lines of what we were talking about at the council as well, is just something very simple to say, is it actually going up, like the anglers say, or is it going down, or is it, you know, the same, and I just wanted to make sure that there is -- Because there might be a nuance in the health check, as far as what would be provided, and what could easily be provided, versus something that does take a little bit more time.

CHAIRMAN NANCE: Katie, please.

DR. SIEGFRIED: We could probably simplify that, on the Center's end, if it's just the trend that's preferred, and so what we've been providing is the trend as well as the reference. If you go to Slide 5, we have still provided what's in that inset box, the I_{ref}, the I_k, and the I_{ratio}, even if the catch advice has not been provided underneath the plot, and, if that's not needed, we don't need to do that, and it's still complicated, in that we have to provide the index, preferably in the way that it was provided for the stock assessment.

One thing that I noticed, in a different region, is, when there's a SAFE-type report that's put out, and it's potentially not the same index that's provided in an automated report as was what would be provided for a full-blown assessment, because the index working group has created ,usually, a more representative index, with all of the different variables considered in the standardization than what would be easier to automate for multiple species.

What we do for the interims, whether it's catch advice or a health check, is the exact index that was produced for SEDAR, and I think that's preferable to just a blanket sort of quick-and-dirty automated version for all indices, but we certainly can take that to heart and not run anything having to do with the interim or provide the I_{ref}, the I_k, and the I_{ratio}, if it's just the trend that is requested.

CHAIRMAN NANCE: I see this as, if we just have the trend, and nothing else, it's discussable. As soon as you put catch on there, it changes the discussion. People say, oh look, it was 5.57, and now it's 6.58, and we need to do something. We need to, you know, add, as opposed to just a discussion to see -- If it's a health check, we're just looking at what is happening with a stock and not the perception of a decreasing catch, or an increasing catch, depending on this index.

I think the terminology is important, because, you know, we had an interim analysis, which had the indices, and it had the catch tables and things like that, which we were using, and the health check, I think, went on to a different scenario of just let's look at what is happening, but not to make recommendations, and so anyway. Will.

DR. PATTERSON: So, in this particular scenario, if you had the error bars around the index, and you actually tested statistically if you had a significant trend, or change over time, and the result was not significant, then what do you do?

CHAIRMAN NANCE: Katie.

DR. SIEGFRIED: That's in the slide above, and I bet the test would say that they weren't.

CHAIRMAN NANCE: Yes. I think that's a good one to look at, for sure, because the other one just looks like a point estimate, doesn't it, Will? I mean, it looks like there's no variability along those points. Luiz, please.

DR. BARBIERI: Well, to that point, and, again, not to continue imposing on the Center and putting more work on the table, but, at some point, I think it would be helpful, right, to have a presentation and discussion, a longer presentation and longer discussion, more in-depth, about, you know, this approach, from a national and regional perspective.

I mean, I'm looking at the Huang et al. paper, right, and that paper suggests, to me, that development of interim analysis, you know, this approach, and application at the regional level, is part of a comprehensive plan for the nation, right, to be applied in different regions, to provide some level of responsive management, you know, when we have lower assessment frequency, meaning it's not annual or biannually for every assessment.

The same way that Rick Methot came yesterday, and there is that NS 1 guidance document that says, okay, here are the parameters for

how the agency is handling all these issues and providing generalized guidance for this thing, and it has to be, you know, a best practices sort of approach that develops, you know, like you said, Kevin, you know, some rules of the road, so to speak, that identify some of the criteria that will facilitate people -- The actual analysis that is being provided, or the intent of that analysis, right, taking into account that the council is trying to be responsive to stakeholders and adjust management, you know, as nimbly as they possibly can, right, to address stakeholders concerns, which, of course, is part of its job.

I think that that would help, and, you know, I remember when -- I think it was Clay that gave a presentation in Texas, and it may have been ten years ago, Kevin, or maybe a little less than that, but he came and gave a presentation to the Gulf Council on the broad discussion of development of the interim analysis, the purpose of it, and contextualize all of that in terms of assessment frequency, right, and providing interim advice in between assessments, considering that, you know, you have a short enough timespan between assessments that you don't expect MSY to be changing significantly, right, and so, in that case, and I remember -- Maybe it was Skyler that came and gave a presentation here as well, and this was in broad terms, and it had the betas, and, you know, talked about that methodology in general.

You know, just to help the committee understand, really, what is the purpose, for the different purposes for this analysis, right, and what context it's being applied, because, otherwise, people, with all the best intentions, I think, interpret this as a substitute for the assessment, and of course nobody wants something that doesn't include all of the potential information that could be taken into account.

It's creating this sense of, you know, resistance, I would say, from the committee, in terms of accepting the interim analysis, and so having a more in-depth, you know, discussion of that, that contextualizes in that broad picture, I think would be helpful. We had that conversation, but that was maybe too long ago, and we don't remember anymore all of that context.

CHAIRMAN NANCE: Katie, please.

DR. SIEGFRIED: I haven't don't all of the research to figure out what's been presented prior to about three years ago, but we just had a national stock assessment workshop, and there are things that are unique about the Southeast, and I think the need for interims might be one of those things.

You all have been to the Council Coordination Committees, and I haven't, and so I hope that you can tell us what the other council staff and members have said, but I haven't heard the assessment scientists from other regions say they want more throughput, and it's a set of species that, a lot of times, the same person does the same species, and, to me, from the assessment side, it seems like a different world, and it's not -- I don't know how much guidance we'll get from a national perspective, but, I mean, I can look into it and everything. Maybe that's very negative, but I don't know if we'll get help on that, and I think we might have to blaze that trail on our own.

CHAIRMAN NANCE: I think that's true, Katie, from the fact that, from a national perspective, it's -- From years and going to meetings and things, we are very different than a lot of the other centers, as far as the assessments that are done and those types of things. I do think that it would be interesting to see, perspective-wise, but I think, from an internal standpoint, the Southeast is -- What do we need to do, and we know the species, and we know the assessments, and what do we need to do to make it to where, from a management standpoint, that we're able to give advice that's being able to be used for species here. Carrie.

EXECUTIVE DIRECTOR SIMMONS: Thank you, Mr. Chair. Okay. So my understanding, from Dr. Porch, was this was always meant to consider catch advice, when this was presented, if the index was robust enough, and it was up to the committee that was reviewing it to decide, you know, essentially if they were going to move forward with recommending catch advice changes.

I think I got that right in our discussions with him, and so I guess the conundrum we're in is that things are complex, right, and so I'll give you an example of I think what you're going to see in September for gag, right, and so the council has asked to see an interim analysis for gag.

We just took final action on the rebuilding plan, and the currency for the rebuilding plan is in the State Reef Fish units. Right now, we're managing in FES, because that's what the emergency rule was implemented in, and you're going to look at this index. First, I think we're going to find out do we have a good index for gag, which I think is important to know, and so, if we get that, I think that's good information to have, but I assume that the Science Center is not going to give us the catch advice with that interim analysis in September, because we don't have the ABC on the books that in the SRFS yet to use. Everybody thinks the stock is coming back, because the assessment is several years old, and so everybody wants to see the index, and so you see the conundrum we're in right

now for gag?

CHAIRMAN NANCE: Katie, please.

DR. SIEGFRIED: Yes. We're going to bring two indices. We have the diagnostics that Lisa did from the assessment to look at the relative predictive power of those indices, and I need to talk to you all about the terminal year, and we'll do that on a break, but -- I know the state units versus the FES issue, and this will be relative, and so it will be the -- You know, it will be unit-less, and I guess I -- I wasn't trying to confuse things when I said that we could just not do this extra step, if you want a health check, but it's the same -- I mean, it's the same amount of -- It's like a spreadsheet thing, and so it's available.

We will present what you all need, and I was just looking back at the -- Slide 8 has little stars on it if it's going to be used as a health check, and it's not starred, and so we would have provided catch advice, but I always check with Ryan about these things before we present, and so we would have deleted that, if need be, but -- Sorry.

MR. RINDONE: We need to update that.

DR. SIEGFRIED: Yes, and it was just the last one that I had, but, anyway, it's -- We don't need to confuse health check versus IA, and it's the same amount of work for us, but I have tried to explain, and I understand the difficulties that you all are facing on the other side of things, and so, luckily, ours won't be in units, and the timing is an issue, and I'm curious to hear how you all are going to work on the streamlining side of it, and the matrix of potential scenarios that we could do between interim and full-blown age-structured assessment would fall into that as well, needing, you know, streamline action along the way, and so I don't think that effort is wasted or anything, and I think that's still very useful. Was there anything else about it that you want us to know for gag?

EXECUTIVE DIRECTOR SIMMONS: I think, if the index shows going up, and it's not flat, or it's going down, I think, the next time the council asks for it, I assume that they would ask for catch advice, right, to see -- I don't know how that would work with the rebuilding plan, and we've got to work through all of that, right, to figure out how that's going to happen and for how long, but I think we'll have to tackle that in the out years, and so I guess that's why we're trying to come up with some type of tiered process, decision tool, a table that kind of gives everybody an idea what our plan is, what we might be working on, and then try

to inform this regulatory streamlining process. I mean, if you guys want to be on the IPT, that would be great.

CHAIRMAN NANCE: I certainly appreciate the discussion, and, Katie, thank you very much for leading that discussion for us. As we move forward on this, I think having that table I think would be a good idea, and we would be able to sit down and look at each species, what we're doing, what do you think is the best way to approach it, and those types of things, and I think that would give at least me good guidance on where we want to be for a lot of these different species. Thank you for that.

I think we will go ahead and take lunch now, and we'll come back at 12:45 Eastern Time, and we will go ahead and start our Gulf of Mexico Migratory Group King Mackerel Interim Analysis and have that discussion.

(Whereupon, the meeting recessed for lunch on July 20, 2023.)

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July 20, 2023

THURSDAY AFTERNOON SESSION

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The Meeting of the Gulf of Mexico Fishery Management Council Standing and Special Reef Fish, Special Socioeconomic, and Special Ecosystem Scientific and Statistical Committees reconvened on Thursday, July 20, 2023, and was called to order by Chairman Jim Nance.

CHAIRMAN NANCE: Okay. Welcome back. We'll go ahead and start our after lunch, and we're going to do Item Number XI, which is Review of the Gulf of Mexico Migratory Group King Mackerel Interim Analysis. Ryan, would you give us our scope of work, and then, Dr. Siegfried, we'll turn the time over to you.

DR. SIEGFRIED: Francesca Forrestal will present.

CHAIRMAN NANCE: She will? Okay. She's not here though, right?

DR. SIEGFRIED: She should be signed onto the --

CHAIRMAN NANCE: I am just teasing you. We'll certainly take Dr. Forrestal no matter where she is. Go ahead, Ryan.

REVIEW: GULF OF MEXICO MIGRATORY GROUP KING MACKEREL INTERIM ANALYSIS

MR. RINDONE: All right, and so Francesca is going to present the results of the council's requested interim analysis on Gulf kingfish, and so there are a couple of fishery-independent indices that are explored here against the landings and the ABC. Hook-and-line landings for kingfish in the Gulf have declined substantially in the last couple of fishing years, and, in some years, fishery-independent indices were either not conducted, like in 2020, during COVID, or had zero, or near-zero, observations of kingfish.

Further, the council has heard from stakeholders, during public testimony at recent meetings, that kingfish are not being encountered as frequently as in past years, but, in contrast, the commercial gillnet fleet, that operates in southwest Florida, is still landing its allocation of the commercial ACL, and so you guys should consider the data and analysis presented and make recommendations to the council, as appropriate. It's your show, Francesca.

DR. FRANCESCA FORRESTAL: Thank you very much. I'm sorry that I was not able to be there in-person. I am Francesca Forrestal, and I'm a stock assessment analyst out of the Miami Lab. This is the 2023 interim analysis for Gulf of Mexico king mackerel, and so the last time this stock was assessed was in SEDAR 38, which was an update, and this assessment had a terminal year of 2017.

We are presenting some updated catch advice, and this advice has been adjusted using an index-based harvest control rule, and I'll be presenting both a three or five-year moving average of two different survey indices of abundance, and so we have the SEAMAP fall plankton survey as well as the SEAMAP fall groundfish survey, and Katie did present some of this earlier, as the broad interim analysis methodology, but we are updating the catch using the reference year of 2018, and so this is the first year following the terminal year of the previous assessment.

We either have -- In the first blue box on the left, that is the recent mean index, and so it is either a three or five-year moving average, and then the box on the right is the reference mean index, and so these are the years selected around the terminal year of the index, and so these are referred to as the I_k or the I_{ref}. The reference catch for 2018 was 11.54 million pounds whole weight.

These are the two indices that we have available for this interim analysis, the fall plankton survey on the left and then the fall

groundfish survey on the right. They have been updated through 2022, and the scaled index is the solid line for the fall plankton survey, surrounded by the confidence limits, and then we have the groundfish survey on the right, and you will note that there are several missing years of data, and I will discuss that in a little bit.

During the last assessment, SEDAR 38, the fall groundfish index was recommended as a measure of abundance for young-of-the-year fish, and so quite young size classes, or age classes.

There were some issues with sampling that the data providers pointed out when they gave us these updated standardized indices, and so the plankton survey, which is also referred to a larval survey, it did not have any sampling in 2020, due to COVID, and then, in the years of 2017 and 2021, the sampling did not achieve the Gulf-wide coverage that is necessary for inclusion, based on the current methods. Then, in the eastern Gulf of Mexico, there were no king mackerel encountered in 2022 for the bongo nets, which is surprising, as generally always a few are encountered.

The fall plankton index is on the top-right figure, and so you have the frequency of how many kingfish -- Or frequency of kingfish occurring, or king mackerel occurring, within the survey, and then the orange is the number of sites, or stations, that were sampled.

The groundfish survey also had extremely low catches in the last two years, and there was only positive encounter in 2020 and two in 2022, and any gaps in the index are due to zero catch years, and they're not due to missing sampling, and so, again, for the fall groundfish, we have the green is the frequency of occurrence of king mackerel, and then the orange is the samples -- The number of stations that were sampled.

If we were to use the plankton survey to adjust the ABC, we have two options, the three-year moving average on the left and then the five-year moving average on the right. The black is the scaled index, and then the red-solid line is the index reference years, and then this is either a three-year scale or a five-year scale, depending on which method we're using, and then the dotted lines are the recent index, and then the longer dashed one is the ratio of these two values, and so the values for the index reference, the recent reference, and the ratio are in the table on the top-right, and so you can see how they compare, with the three or five-year average.

Using the three-year moving average, the catch would be adjusted down to 6.15 million pounds whole weight, and then, for the five-

year moving average, it would be adjusted down to 10.24 million pounds whole weight.

These are the adjustments using the groundfish survey, and so, again, the three-year moving average is on the left, and then the five-year moving average is on the right. There is a bit of a difference in the last -- For the recent index and then the ratios, compared to the reference index, and you can see those values in the table on the right.

Using the groundfish survey, this would adjust the ABC, or the reference catch, down to 1.77 million pounds, from 11.5, or, using the five-year moving average, it would adjust it down to 5.86 million pounds whole weight.

This the preliminary catch advice summary. To put this in context, for the 2023-2024 fishing year, the ABC catch is set at 9.9 million pounds whole weight, and then these are the adjusted catches, using the two indices we have available, for the three-year or the five-year, and so some decisions the SSC needs to make are if we're going to use a three or a five-year average, and should it be based on the plankton or groundfish survey, and then what year to adjust, and do you want to use 2018 or 2022?

Obviously, this is missing some data, and there are some concerns. We are concerned that the requirements of a robust interim analysis may not be met in this case. We need an index that does track the biomass trends, and there are issues with both the encounter rate and sampling. These two indices track age-zeroes and age-ones. From the assessment, the natural mortality on age-zeroes is 0.66, and so it's quite high natural mortality, and presumed lower uncertainty is in question.

There is also concern that the catch is currently far below the ACLs, and this suggests that the stock has declined overall for all age classes and not just age-zeroes and age-ones.

These are the recent recreational ACL monitoring catches for the 2022-2023 fishing year and then the 2021-2022 fishing year. Currently, for this, just this past year, it's at 7 percent of the total ACL, and then the previous was at 18 percent for recreational. Then, for the commercial, these are the preliminary landings, and these are at 48 percent of the catch. I think this is my final slide, and so I'm going to open it up to the group to discuss these results.

CHAIRMAN NANCE: Francesca, thank you. Just one quick one, and I was looking at this, and so, for the plankton survey, the three-

year moving average is really just a single point, and is that correct?

DR. FORRESTAL: Yes, that's correct, and it is only from -- Let me bring it up. It is just from 2022.

CHAIRMAN NANCE: Okay. So, basically, for both of these scenarios, or, well, for plankton and for groundfish, it's that last point, in plankton for sure, and, for groundfish, those last two that drives the entire thing down, and that's just an observation that I had. David Griffith, please.

DR. GRIFFITH: Thank you, Mr. Chair. I'm just curious, and are the landings down in the Atlantic stock as well, and maybe the Caribbean? Do you know, or are they just down in the Gulf?

DR. FORRESTAL: I will defer to someone else who is more familiar with the Atlantic stock.

MR. RINDONE: Hold please.

CHAIRMAN NANCE: Ryan, please, or do you have that?

MR. RINDONE: Give me a second. I'm working on it. For the 2021-2022 fishing year, for Atlantic kingfish, it looks like 24 percent of the ACL was landed for the recreational sector. Let's see if I can just pull up the historical landings and look at it all at once.

DR. GRIFFITH: Are these distinct populations, or do they mix?

MR. RINDONE: So they do mix. They mix south of U.S. 1, from -- They are believed to mix south of U.S. 1 from November to April, and it's considered the winter mixing zone. In Amendment 26, the councils agreed to set the management boundary for kingfish at the Miami-Dade County line, and so -- That was mostly because of the operation of the gillnet fleet in southwest Florida, and so the Gulf Council manages from Brownsville all the way to that Miami-Dade County line, and then the South Atlantic manages everything north of that.

Kingfish in the Atlantic have been under their ACL by margins not dissimilar to those in the Gulf, and let me pull up the commercial side now. On the commercial side, landings can vary. Going back in time, until like the late 2000s, and the early 2010s, landings got within 80 to 95 percent of the ACL. After that, they kind of dropped down into the 40 to 60 percent range of the ACL, and then, in recent years -- Let's see. In recent years, they're also under,

by about -- They have landed about 50 percent of their ACL on the commercial side, and so they're seeing some -- They're not catching all of their fish either, essentially.

CHAIRMAN NANCE: Thank you, Ryan.

DR. GRIFFITH: Thank you.

CHAIRMAN NANCE: Will, please.

DR. PATTERSON: Ryan, what does the trend look like in the Gulf, especially on the commercial side, over time? We just have this one year, where it appears to be much lower, and, you know, we looked at this a few times, with respect to king mackerel recovery in the Gulf, because it looks like the allocation has changed, but it used to be 70/30 rec/commercial, and, historically, the commercial fishery caught its quota, in most years, but, after mercury warnings went in place in the 1990s, the recreational fishery only landed about a third, or a quarter, of their allocation, and so the stock recovered in those years, because of the landed catch being much lower than the quota, on the recreational side, but this sounds like a different pattern, that the commercial fishery is now not landing its quota.

MR. RINDONE: So, across gear types -- Handline and gillnet combined, kingfish landings appear relatively stable from about 2001 to 2013, and there's a jump-up in 2014, and then, after 2014 though, there's a precipitous decline, from an average of about -- Let's call it six-and-a-half to seven million pounds, and this is all of -- All the kingfish, and this isn't just commercial or recreational, but this is all kingfish.

From about six-and-a-half to seven million pounds and now down to about three million pounds for 2021, and so the 2021 -- That's for the 2021-2022 fishing year, and so the data from the 2022-2023 fishing year, which terminates, for most commercial zones, on June 30, those data aren't finalized yet, but they are low.

DR. PATTERSON: But that's the combined recreational and commercial, and there is no way to pull out the commercial catch, especially the commercial catch relative to the quota as a percentage?

MR. RINDONE: The commercial sector has caught its quota for the last almost twenty-five years, save the last two fishing seasons, and so it went from landing 100 percent or more, and there is some variation around 100 percent, just because of the time it takes to send the closure notice and all of that, but the commercial sector

has routinely caught its quota, with the exception of the last two years, and so it's only in the last couple of years that they haven't, and it went from catching 100 percent of it to catching like 50 percent of it, for the handline. The gillnetters are still getting theirs.

CHAIRMAN NANCE: That right there is 48 percent and 97 percent. Kevin, please.

MR. ANSON: I guess just one of those things, as far as the data, that we might be able to look at, when we're trying to evaluate in between assessments, and maybe it doesn't need to be looked at for this particular instance, but I was going to suggest, Ryan, if there had been some changes in some of the regulatory process, and I'm trying to remember whether or not there was any restrictions on, you know, access, you know, South Atlantic anglers coming over to the Gulf and such, and whether or not something changed, and maybe that there was less of those coming over, but maybe inasmuch as just looking at catch per trip and whether or not, for those trips that are successful, that reported or had king mackerel landings, you know, what are those, the numbers of those trips, and what are the average catches of those trips over time, in addition to just looking at landings.

MR. RINDONE: Was it you and I that had talked about Grand Isle and traveling fishermen and whatnot? I talked to somebody about that recently. So, historically, there have been a group of fishermen that travel from the Atlantic coast to the Gulf, to fish in the Western Zone, and they basically track the fish as the fish migrate from west to east, and they used to stay in Grand Isle, or a good number of them did, and not all of them, but a good number of them did, and used that as kind of like a base of operations.

When -- Was it Ida? There was a large hurricane, and I can't remember which one, because we get a few, that just about leveled Grand Isle, and so it wasn't really available at that point anymore to serve as a base of operations for these traveling fishermen, and I think this was in 2021.

Whoever it was that I spoke with briefly about this, and I wish I could remember, but said that there was up to about 50 percent housing capacity there now to what it was prior to the storm, and so there's still not quite as much space there, and, you know, there's still some marina damage and things like that, and so, you know, perhaps there is some decrease in the Western Zone, as far as like the number of trips that have been run, and that would be something that we would have to look into, but we've been hearing from fishermen, from Louisiana and Texas, for a couple of years,

and you know this, from hearing it from them directly, that they're just not seeing the kingfish out there.

I remember talking with some of those guys, a couple of years ago, that were suggesting that we should change the start date for the Western Zone to June 1, or May 15 or something like that, because that's when they were seeing the fish, and, by the time the season opened in July, they said the fish were gone, and so I don't know if that's still the case, and I haven't heard that story repeated beyond, you know, a couple of years ago, but now what we're hearing, from the commercial fishermen, or from a lot of them anyway, is that they're just not seeing as many of them out there, and that's reflecting in the landings, obviously.

The difference for the commercial Southern Zone gillnetters -- The way that that fishery operates is they use spotter planes to find the schools of kingfish, and then they use runaround gillnets to make the set, and there is a little more than a dozen boats that are participants in that particular fishery, and they only actively fish -- Their season opens the Tuesday following the Martin Luther King Jr. Holiday, but they typically wait until they get what they have agreed is a preferential price per pound before they start fishing, and so sometimes it's February or March or, you know, into the Lenten season, when they can get a little bit higher price for their catch.

They are still routinely landing theirs, but the hook-and-line guys haven't been, and the Western Zone would typically close -- They close it as early as August, or as late as November, but, you know, when the actual fishing year closes in June, and, basically, those guys have that entire window to try to make a strike on those fish, and so, even if it's like towards the end of the fishing year, and the fish are coming back around, in say, you know, April, May, or June, they would still have the opportunity, if the fishing season was still open, to catch them then, if they were there to be caught.

The same goes for the rest of the zones and their opening and closing dates, and so, just because they missed them on the first pass, it doesn't mean that they couldn't get them if they were coming back around again, but they have to be there to be caught.

CHAIRMAN NANCE: Thank you. Jason, please.

MR. ADRIANCE: Thank you, Mr. Chair. Ryan summed up most of what I was going to say, and, obviously, some of that Western Zone lack of reaching that quota is due to that traveling fleet not showing up, but even the guys, the Louisiana commercial folks, that are

still chasing them, they're just not seeing them, and I can't recall the last time we had to close that Western Zone in state waters. They have also mentioned that, you know, when they do find a few fish, they're in singles and pairs, and not in bigger groups anymore, and so there's definitely something going on.

CHAIRMAN NANCE: Doug.

MR. GREGORY: Thank you. I have a question for Ryan and then a couple of comments on this. Ryan, are we not scheduled to get an operational assessment for king mackerel next year?

MR. RINDONE: No.

MR. GREGORY: I thought I saw, in I think it was March or something, that you gave us a list of -- A schedule for operational assessments.

MR. RINDONE: No.

MR. GREGORY: And king mackerel was for 2024.

MR. RINDONE: I think that was the old interim analysis schedule, and so -- That you might be recalling, and so that would be this, and we had gone back and forth, council staff and the Center, for a while, trying to figure out how best to try to approach this, and, as you can see from the work here, obviously there were some difficulties with the data.

MR. GREGORY: Okay. Thank you. Well, clearly there is some urgency now to take a look at it, and it's been five years since the last terminal date, and it would be nice also to see the recreational data broken up by zone.

CHAIRMAN NANCE: Doug, just let Ryan respond to that one, and then we'll go on.

MR. RINDONE: I just kind of wanted to remind the committee that the situation with king mackerel is not that dissimilar from that with Spanish mackerel, and we would be in a situation where we would need to look at a lot more information to try to piece something together that you guys could examine to try to make an informed decision.

You know, both of these indices that Dr. Forrestal had showed you today are looking at either larvae or young-of-the-year, and so they are not indicative of what the fleets would be interacting with, and so the directed fleets, or at least by and large not

what they would be interacting with, and so it's not, obviously, going to give us a full picture.

It might give us some indication of what could be going on with recruitment, and, in this case, you know, it's not picking up much of a signal there, and so, if these fish are out there, you know, the directed fleets are not catching as many of them, and the independent -- The fishery-independent indices are not picking up the numbers that they have in the past, but it is a -- You know, it's only as much information as we have, right?

CHAIRMAN NANCE: Doug, go ahead, and, when we looked at the schedule, king mackerel is for 2025.

MR. GREGORY: Okay, and so two years from now. It would be nice to see the recreational data broken out by zone as well, and one thing that I wanted to point out here is the Western Zone, at one point, was pretty much -- It's a western migratory group that intermixes with Mexico, and there were thoughts, way back when, and Will and Luiz and some of the other old-timers will remember this, that we had the eastern Gulf stock that mixed with the Atlantic, and we had a western Gulf stock that mixed with Mexico, and they would actually mix, in the summertime, in the northern Gulf, off of Louisiana, and that might be the spawning area for both stocks.

I don't know if, genetically, they were shown to be that distinct, but, if there are some distinctions, then the Western Zone could be influenced by what's happening in Mexico, more so than what the Northern and Southern Zones are, which are part of the eastern migratory group.

Now, recall that, also, in about SEDAR 38, and I don't know what year that was, 2014, or 2013, but the Eastern Zone stock was subdivided, and what used to be considered part of the population on the east coast of Florida was taken away, and, afterwards, it was assumed to be part of the Atlantic stock and not the eastern Gulf stock, and so that's something that happened in the mid-teens that might be an influence here.

The other thing I will note is, in the Southern Zone, and maybe the Northern Zone, but the Southern Zone harvest was 67 percent. Now, recall -- Look at the fishing year, and this fishing year just ended three weeks ago, and so clearly all of these data are preliminary, but, in the Southern Zone, recall that the fish migrate from the northern Gulf into the south in the fall.

Well, last September, we had Hurricane Ian that pretty much made

a mess of our fishing fleets in southwest Florida, and so I am actually amazed that they caught as much as 67 percent, given what Ian did to southwest Florida, and I think what somebody said earlier -- We need to look at more data than just one year to make a decision, but it certainly does get our attention, and we probably shouldn't focus on the 48 percent, which is an average of two migratory groups.

The problem in the Western Zone might be explained by what Ryan was saying about the traveling fishermen not coming over anymore, and they didn't take those fish back to the Atlantic, and they sold them in the Gulf, and so that's my concern with interpreting the landings data, and this just is too preliminary, and it's just one year, and it's not complete data, but it's definitely a good heads-up, and I would urge getting a stock assessment as quickly as possible for king mackerel. Thank you.

CHAIRMAN NANCE: Thank you, Doug. Ryan, to that point, please.

MR. RINDONE: Thank you, Mr. Chair. The change in Amendment 26 went into effect -- I think it went into effect in 2016, and so we had several fishing years following that change, and the determination of where the winter mixing zone was, which, again, is now much, much -- It's thought to be much smaller and only occurring south of the Keys from November to April.

We had several fishing years where the commercial zones in the Gulf were all catching their quota, and it's only in the last couple of fishing years where that hasn't been the case.

The amount of fish that are thought to intermingle with one another in that winter mixing zone south of the Keys for that time period is only thought to be what's tantamount to a couple hundred thousand pounds, and so it's enough to maintain genetic homogeneity between the Gulf and Atlantic groups, but, because of the migratory behavior of those fish -- That's the main reason why those stocks are differentiated.

It's not that there's a lot of Atlantic fish coming over to the Gulf, or vice versa, and there's -- The tagging studies and the trip ticket information that we had used to look at that had shown that there is not an awful lot of commuting of kingfish going past the Keys in the Gulf, or going the opposite direction, from the Atlantic.

CHAIRMAN NANCE: Thank you. Luiz and then Will.

DR. BARBIERI: Thank you, Mr. Chairman. I just have a question,

a quick question, that I think is perhaps more for John Mareska, because I am not familiar, you know, with the plankton survey, right, the larval plankton survey. You know, how much confidence do we have on those, you know, identification of larval kingfish, to say we actually -- Indexing kingfish here from the plankton, do you know? That's a tough question, I know. Sorry, John.

MR. MARESKA: Since most of that is done in Poland, you know, at the center over there, I can't give you an answer to that question. All I do know is the plankton survey -- Those are fixed stations, where the trawl survey is random stations, and so that's one fundamental difference in those surveys.

DR. BARBIERI: Okay. Thank you.

CHAIRMAN NANCE: Will, please.

DR. PATTERSON: Thank you, Mr. Chair. What Ryan was talking about before, about the mixing, and so there was a winter mixing zone that went from Collier-Monroe up to Flagler-Volusia, and the reason -- That went into place in the 1980s, and the reason it did was because the Gulf stock was estimated to be severely overfished, and we knew there was some mixing in that zone, and so all of the winter landings, and so from December through March, were attributed to the Gulf stock.

Later, it turned out that wasn't conservative, because you were overestimating the productivity of the Gulf stock, and later studies, through otolith chemistry and otolith shape, showed that most of those fish were Atlantic fish, and that's when the zone changed.

To Doug's comment, I think that happened during the last stock assessment process, and so these estimated ACLs would have reflected that new estimate of productivity. The pattern that we're seeing though, from both the Atlantic and the Gulf, especially the western Gulf, and commercial, as a percentage of allocation for commercial landings, is troubling, but what would be really good to see is what the CPUEs are for the three migratory units, western Gulf, eastern Gulf, and Atlantic, especially on the commercial side.

In both regions, the Gulf and the Atlantic, the recreational fishery historically has not landed anywhere close to its full allocation, at least for the past fifteen or twenty years, because of the mercury issue, but the fact that the Gulf is now down to single digits, for estimated landings, is really troubling.

Lastly, you know, Doug mentioned the western migratory group going between the western U.S. Gulf and Mexico, and it would be good to look at the pattern of Mexican landings and see if those have ramped up in recent years, or maybe they have dropped off considerably, and either of those trends would be something to consider. At one point, about, I don't know, six or seven years ago, there was motion, within the Fisheries Science Center, to do an HMS assessment of king mackerel, incorporating Mexican scientists and Mexican landings, and then I never heard like what kind of came of that, but it might be time to try to pursue that approach once again.

CHAIRMAN NANCE: Thank you. Jason.

MR. ADRIANCE: Thank you, Mr. Chair, and I think you wrote that life history section, and I think I was in that life history group when we split that, but, also, if -- I am reaching back into my brain, and the last time that Michael Schirripa presented this assessment, wasn't there some work on water temperature in this stock as well, speaking of other data that might be pertinent to see what's going on with this stock, but I just wanted to bring that up. Thanks.

CHAIRMAN NANCE: Thank you, Jason. Luiz.

DR. BARBIERI: Well, I have another question about the survey, John. I mean, looking at -- Because, you know, we're trying to get our bearings, right, on the data and the informational content that's there, and so I am looking at that Slide Number 4, and I guess N is the number of stations sampled, right, Francesca, and that seems to have dropped, you know, in half, right, from about 150 to about maybe seventy-five or eighty, and I don't know if the -- I mean, I'm trying to see, and is there something with how the survey was conducted, you know, sample size and distribution of the sampling, that may have influenced -- It's just interesting that we find the two mackerels, right, coming out of SEAMAP having very low numbers, unusually low numbers, over the last couple of years. Anything that you remember, John, in terms of changes potentially in the survey implementation or design?

MR. MARESKA: Just off the top of my head, I think they've had some issues with the Oregon II here, and I know that boat has been in dry dock for repairs for an extended period of time, and I don't know if that had any bearing on the decreased samples in 2021. I can reach out to David Hanisko and see if maybe he can answer some of these questions for you better than I can.

DR. BARBIERI: Thank you, John.

CHAIRMAN NANCE: Okay. Any other -- Jason, please.

MR. ADRIANCE: Along those lines, John, was there any -- Was there possibly also a spatial shift in that survey, in terms of protocol, that might -- When the sample reduction went into place, or fewer samples, and could there have been a spatial shift as well? That's something to think about.

MR. MARESKA: Again, I don't think there was a spatial shift, because those are fixed stations, and so I know what has happened in the recent years is the state partners are no longer sampling a lot of their stations, and the Southeast Fisheries Science Center Pascagoula has kind of taken over, trying to do all of the sampling, but I think Louisiana is still collecting some samples west of the river.

CHAIRMAN NANCE: Thank you. Mandy, please.

DR. KARNAUSKAS: Thank you, Chair. I think it was Will that brought up the potential collaboration with Mexico, and I did want to bring up the Gulf of Mexico Large Marine Ecosystem Project, and it's a funded project, and I happen to be the focal point for it, and we actually just had an inception meeting last week, and Lisa was also there and was involved, as well as Matt Lauretta, and so that project gives funds to Mexican fisheries agencies, INAPESCA, to do a joint stock assessment exercise with the United States, and so I just wanted to let you know that that has been restarted, and we'll hopefully get some more information out of that project.

We've been talking about, you know, otolith analyses, microchemistry, and genetics, to try and get better estimates of mixing rates, and so hopefully we'll get that started up in the next few months.

CHAIRMAN NANCE: Thank you. Katie, please.

DR. SIEGFRIED: I do have plots from David Hanisko, and it is true that there is the fixed stations and everything, but, when we were discussing the indices, when they were submitted in the middle of June, and I think we got the groundfish in the middle of June, and then this one just shortly after, but with all the plots, and it does show, in 2021, the fact that there is no sampling south of Tampa Bay, but that's the year that Francesca mentioned there in the second bullet, and then it shows the zero samples in the eastern Gulf and then quite large catch rates in the west, but he has particularly noted, or specifically noted, that we normally catch something in the east, and it just happened to be nothing

this time.

CHAIRMAN NANCE: Is that plankton or groundfish?

DR. SIEGFRIED: This is the plankton.

CHAIRMAN NANCE: Okay.

DR. SIEGFRIED: We did struggle to get this done, because of the field season, and Adam went out, and it's a little bit disorganized, what we've been able to provide, but I can provide those plots that David submitted to me as well, if that's helpful.

CHAIRMAN NANCE: Thank you, Katie. Doug Gregory, please.

MR. GREGORY: Thank you, again, sir. I am a little surprised to see the groundfish survey like it is, when, in Spanish mackerel, it was divided into an early and late period, because the two surveys were not providing the same data, in the sense that they weren't collected the same way statistically, and so, by combining them all here, it could be misleading, to some extent, and so I think to look at this with just the late period would be helpful. The other similarity is that Spanish mackerel and this one had low catches, and that could be --

CHAIRMAN NANCE: It appears, from the graph, and, Francesca, please correct me, but it says fall groundfish, and so that just would be what's presented here, is the fall groundfish without the spring.

DR. FORRESTAL: Yes, and that's how I understand it.

MR. GREGORY: So the spring is the one that was divided into early and late, and not fall?

CHAIRMAN NANCE: They both were. Katie, please.

DR. SIEGFRIED: This is what was used for king mackerel, and so we were being consistent with what was used in the assessment, and, yes, Doug, it should be split. I mean, that's a fine point, but we were trying to continue what was used in the assessment.

MR. GREGORY: Thank you. Well, I think it's important here, because we're operating off of anecdotal and visual information that is affecting us. The other question I have for the Center relates to the using plankton samples as an index of spawning stock biomass.

King mackerel I think was the first stock to have an assessment,

and it was so long ago that it even predates me, and so I don't know why the decision was made to use the larval survey as an index of spawning stock, but I don't think any other stock does the same thing, and so I'm wondering, in the next assessment, if, as I guess a sensitivity run, or a scenario, to look at what the assessment would be if you just used adult biomass as spawning stock biomass, like we do all the other species. That's just a curiosity.

I have a couple other comments, and one is, in the SEDAR 38 update, there was some discussion about the groundfish survey, and there was apparently some confusion about whether it was using age-zero and one fish estimates of if they were estimates just for age-zero, and one of the recommendations from the assessment was that this should be looked into and clarified, and that could make a difference here. What else do I have on this? I think that might be it, and I appreciate it. Thank you.

CHAIRMAN NANCE: Thank you, Doug. Any other general comments? From this information, do we want to make any recommendations? I am kind of nervous that we use this data to make anything. I am a little worried on the fact of -- This is just me, and not as the chair, but just as me, but the plankton survey -- We've got one data point, and the rest seem to average along the line, and we've got that one point in 2022 that is driving the entire thing down, and, really, the same for the fall groundfish.

You've got the 2021-2022 that brings the three-year average down, and there is a point in 2018 that is low, and then it goes right back up in 2019, and so this seems to be very scattered around. It's a very scattered plot, and so I'm not sure that -- In my personal opinion, we don't have enough information to make a recommendation of change in OFL and ABC, based on this data.

Certainly, from what I'm hearing, we need to be keeping track of this stock, and certainly that data point with the plankton is concerning, and the groundfish survey -- We've got a couple of years that are low too, and we need to keep an eye on this, and I think, our next intermittent analysis, we can see if it has continued down here and make some recommendations. Our next assessment is in 2025, and so that's a couple of years off, but, anyway, any thoughts on that? Any difference from individuals on the SSC? Jim.

DR. TOLAN: Mr. Chairman, thank you. I will just reiterate what I said yesterday about the level of effort on the Texas side. There is still plenty of kingfish out there, but they're just not as targeted, and Will brought up the point of the mercury warnings, and the people that do target them -- They don't have really a

hard time finding them, but it's just that they're not all that desired.

The headboats, that survey, for the last ten or fifteen years, has just been a flat line, and so they're still out there, and, if you're targeting them, you know, you can find them, but it's just, on the recreational side, our intercepts at the docks, people just -- You know, they don't want to go and bring a kingfish back, and so, for at least on our side of the Gulf, it can be explained a lot by effort.

CHAIRMAN NANCE: Okay. Thank you. I think it would be good to have a CPUE associated with those, as opposed to just a landing. Doug Gregory, please.

MR. GREGORY: Thank you, and I will keep it brief. Kingfish had its heyday when red snapper was in the tank, and nobody could catch them, and, now that red snapper is recovered, kingfish has been delegated to the backseat, so to speak, and I have a question for Francesca.

There was a number of indices used in the SEDAR 38 for king mackerel, and why these two were chosen, other than they're recruitment-oriented, and we used a vertical line index for Spanish mackerel, but we didn't use a similar index, or see the similar index, here, and that seems to be a difference between the two, and could you explain why just these two indices are being used here?

DR. FORRESTAL: From my understanding, I think it's because they are the only fishery-independent indices, but I would have to defer to Katie about the finer details of that.

MR. GREGORY: I agree, and I think, before though, the headboat survey was used as an index because it was figured, or decided, that it was probably not a targeted species with headboats, but more of a random catch, and so it might be similar to a fishery-independent index, but I was just curious. Thank you.

CHAIRMAN NANCE: Thank you. Katie, do you have any --

DR. SIEGFRIED: No, and Francesca is right.

CHAIRMAN NANCE: Okay. Thank you. Luiz, please.

DR. BARBIERI: Well, you know, again -- I don't have anything negative to say about the analysis, right, itself, or, Francesca, what you did here, given the tools that you were provided, but, I

mean, I continue looking at that graph there on Slide Number 4, and, to me, there are too many unknowns still, and it is unclear, when you have so many changes to the survey, for different reasons, and changes sometimes will happen, beyond our control, and we just have to roll with the punches and go with it, but, you know, when you have that dramatic reduction in sample size, and you have some potential changes in the geographic coverage, it is unclear -- I mean, I can't tease apart what may be changes in abundance versus changes in survey implementation and coverage. That, to me, is -- I can't resolve it in my brain at this point.

CHAIRMAN NANCE: Thank you. Katie, please.

DR. SIEGFRIED: You asked for SSC members, and is it okay if I provide my --

CHAIRMAN NANCE: Absolutely. Please do.

DR. SIEGFRIED: I think that, as a health check, this is informative, because, if you look at the king mackerel assessment, it's not undergoing overfishing, but it's close one, and it is similar to the Spanish. It was close to one, and it was below MSY, but above MSST, and so it wasn't hitting any status marks, but it was in the yellow zone of the Kobe plot, and so I think it's good to keep an eye on it.

If we were doing an assessment with these two indices, we would heavily scrutinize them, and so, when we first did this interim, and Francesca showed me, we just thought, okay, and what other information do we provide, because this didn't seem like enough information, and so we looked at the catches, and she saw that it was below the ACL, and all of this additional information, knowing what's happening with the large marine ecosystem efforts and everything, and Spanish, you know, being in the same group, and we see all of this together, I think it's very helpful as a health check, and it's lucky that we have an assessment coming up in 2025.

I think it would be very hard for us, as a Center, to recommend one of these catch levels with certainty, and I just think, as Doug said, there's not quite enough information here to feel confident in one of these recommendations, even with the interim recommendations that I just provided.

If you look at those, you know, the variability of the indices is difficult to categorize, and I am not sure if you want to follow all of the ups and downs here, or the sampling is affected by COVID, which is something we need to get a handle on, with what we're going to do with indices, and so I don't think that we can

recommend one of those values wholeheartedly, and I think it should be used as a health check, personally.

CHAIRMAN NANCE: Thank you, and that's pretty much what my thoughts were directed to, also. Unless there is opposition from SSC members, I would like to thank Francesca for the analysis, and for being willing to present it to us. I think it gives us a good idea, from a survey standpoint, what we need to be looking for, and I think, next year, we can have another look at it, see what it's still doing, and then, in 2025, we'll have that full assessment that will give us that information, and so, if there's no objection, we will go ahead and end this presentation and move on to our last presentation. Kevin, please.

MR. ANSON: I am just curious if Francesca -- How much time did you spend analyzing the data and putting this presentation together?

DR. FORRESTAL: This was my first effort doing interim analysis, and so it took me a little bit to get up to speed, but I don't know, off the top of my head.

CHAIRMAN NANCE: Katie.

DR. SIEGFRIED: I think that Francesca will agree that it took me longer to coordinate getting the indices together than it took for she and I to run through the spreadsheet, and so -- I mean, it's her first time, but it was very quick, and putting the presentation together took longer than the spreadsheet and all of that, and so, once we got the results, it took longer to talk about, well, what else do we present here, and, if you need hours or weeks or whatever, I spent about a month, on and off, of every day doing a little bit of something, communicating with somebody on it, and I'm sure she spent, you know, two to three weeks. Francesca, weigh-in if I'm completely off-base.

CHAIRMAN NANCE: Francesca, please, go ahead.

DR. FORRESTAL: I was going to say that sounds right, Katie.

CHAIRMAN NANCE: Kevin.

MR. ANSON: Just asking just to kind of get a sense as to the, you know, the workload issue of health check, interim analysis, you know, that they're on the same par, and I'm just trying to get an idea as to what that means, and so thank you.

CHAIRMAN NANCE: Luiz.

DR. BARBIERI: Not to sound like the sappy Latino guy again, but I really want to thank Francesca for putting together this Slide Number 4, you know, and, I mean, this is super helpful for us to see, you know, and get some of these concerns, some of these things that you folks at the Center were already thinking about, about potential problems, and you bring this, you know, to the committee, and so it gives us an opportunity to evaluate those issues ourselves, and it's super helpful. Thank you.

CHAIRMAN NANCE: Thank you. We will go ahead and go to -- I am going to come back to Public Comment, but we're going to go to Other Business first, and we have on there SEDAR 85: Gulf of Mexico Yellowedge Grouper.

OTHER BUSINESS
SEDAR 85: GULF OF MEXICO YELLOWEDGE GROUPER

MR. RINDONE: We do. Katie.

CHAIRMAN NANCE: We have a lot of these Ryan and Katie deals this week.

MR. RINDONE: Hot potato, right, and so, yes, SEDAR 85 is an operational assessment of yellowedge grouper, and this is supposed to be akin to how we used to do the update assessments, and most of it was going to be done in-house by the Center, and there hasn't been a breathtaking, you know, revolution of new research into yellowedge grouper in the last ten years, but the stock assessment does have a nice thick layer of dust on it. The last time it was assessed was SEDAR 22 in 2011, using data through 2009, and so it was time. Katie has a couple of requests that she wants to make of the group for moving forward with some of the finer facets of the assessment, and so I will let her talk to that.

DR. SIEGFRIED: Thanks, Ryan. I am going to give just a little blurb at the beginning, and then if Skyler can be unmuted, and this is her assessment, and I would like for her to speak on it. The reason that we're bringing this to you is because, when Skyler started working on this assessment, sort of moving it over, we noticed that there would be some bigger changes than were outlined in the terms of reference.

When we have spoken to council staff, and council reps, at the SEDAR Steering Committee, when we're talking about research track versus operational, and topical working groups and all of that, one of the big concerns is what if we want to make bigger changes than is in the TORs, and why on earth would we not incorporate

that at that time, and do we just stick to what was decided two years ago and not, you know, consider current science?

In this case, if we're continuing the metaphor, after she, you know, took a squeegee to the dust, there is a few big things that need to be examined here, and so we're bringing this to you to say we would like to make some changes that aren't in the TORs, see if you agree, and then, you know, hopefully we can move on from there with what Skyler has recommended, but I will turn it over to Sky. Thanks.

CHAIRMAN NANCE: Thank you for that introduction. Skyler, are you on?

DR. SKYLER SAGARESE: I am. Can you hear me?

CHAIRMAN NANCE: Yes, we can.

DR. SAGARESE: Okay. Great. I apologize for not being there, although this shouldn't be that much, considering the agenda, and you guys had a lot to talk about with Spanish mackerel, and the interims as well, and so we just wanted to give you a very quick sneak-peek, kind of check-in, on where we're at with yellowedge, with SEDAR 85.

The good news -- Well, one part of the good news is we do have a continuity model running, but, just for some background, SEDAR 22 was back in 2011, and it was one of the first Stock Synthesis assessments that was developed at the Science Center, and I think they had very, very high expectations. They did a lot of customizations within the model that, now that we're kind of looking back at it, there's things that we would have done differently.

In addition to those configuration changes, there's been a ton more data collected. For example, the NMFS bottom longline survey, the index of abundance, has essentially doubled in length, and so we've got a lot more of that data now. In terms of what I have really been struggling with with this assessment, it's the composition data.

The model uses length compositions, as well as the conditional age-at-length compositions, but, since it's been over a decade, there's been some big improvements at the Science Center with data management, data processing, with QA/QC, and so the datasets that I am getting are fairly different than what was provided last time, and most of those reasons are because of just updated better practices or, you know QA/QC and a better check on some of the

data inputs.

We really wanted to just kind of put all this on the page and kind of get our thoughts together, and this assessment, honestly, is nothing -- I have never seen a Gulf assessment like this one, and it is much different, in terms of the data we use, and so it's mostly a commercial fishery for yellowedge, and, I mean, we've got the MRIP-FES issue, but it shouldn't be that big of a deal for this assessment, because there is very few rec landings, and we've got mostly composition data, and so we use length comps and conditional age-at-length for each of the datasets, and so I don't think we've really used all of the age data for all of the different surveys in the past, as well as the length comps, and so it's just a different structure. There has been a lot of data to work with.

You know, there's been these big kind of roadblocks, or big adjustments that we want to make to the model. As we've got the continuity up and running, we've been looking through the data, and we're using, obviously, a more recent version of Stock Synthesis, after converting it 3.3, to give us the same results, and, basically, one of the biggest issues we have are the landings.

If you look back through SEDAR 22 for yellowedge, there was a ton of work that went into just quantifying the landings, both historically and more recently, and there was -- Actually, there were six different candidate models that were up and running through the base model, and one of them was a low-landings scenario, and so there was a lot of uncertainty in the early 1980s longline landings.

A lot of effort went into the landings, and, this time around -- So we've had really similar effort, and a lot of effort has been put by the analysts, and they have a great working paper that describes all of the landings, how they have developed them, and there are some differences, and this is a very complicated species. We've got misidentification in the commercial landings with yellowfin, and they were actually, you know, historically called yellowfin grouper and not yellowedge.

We've got lots of landings of unclassified groupers before 1986, which we've seen with other stocks, but, since yellowedge isn't really one of the biggest species, it's a bit more challenging to break it out, and all of the assumptions, and so, when you look back at all the methodology, there's been a ton of work that's been done, and some of those changes have been revised for better practices, and not only do we have potential changes within the landings, but the model last time was treating the landings as known exactly, and so this is no longer a limitation.

We don't have to necessarily do this anymore with Stock Synthesis, and we know that we can incorporate uncertainty, and so one of the biggest changes that we want to do with the model is not only use the updated landings streams for all the different datasets, but also incorporate that uncertainty, to give us a better handle on capturing that, especially for that early period.

This assessment does start in 1975 at virgin conditions. Because the yellowedge is a deepwater species, the fishery didn't really start until the late 1970s, or early 1980s, and so it's just a different scenario, but, you know, that potentially has big implications on the model, what landings we use, how we fit to the landings, and such.

In addition to, you know, the landings are one of the biggest data streams, we've also got the composition data. As I mentioned, it's a big more cumbersome than I've ever seen for an assessment. On top of the different sources, we actually have sex-specific compositions that were put into the model for SEDAR 22, and so the length compositions, the conditional age-at-length, and they were produced by female, by male, and then by unsexed, or unknown, and so it's an overwhelming amount of data that went into the model, and, looking back at it now, sex determination --

It wasn't just based on histology, and so histology tends to be the preferred, and recommended, way to determine sex, according to, you know, life history groups, and, with macroscopic identification, just by visualization -- When I took a deeper dive into the age data, and I would say, when I compared the data, macroscopic versus histological, 91 percent of the time, females were correctly assigned, and 82 percent of the time males were correctly assigned, and so there's a bit of uncertainty there, and not to mention that, when you break the data into those stratifications, most of the years and areas don't even meet our current length sample cutoffs of thirty lengths, or ten trips, for our composition data.

These kinds of -- I call them better practices, and we have certainly been working on more standardized approaches to doing our assessments, and so many of those decisions -- I don't think we would have actually broken the species out by sex, for those concerns that we have, and so that's a big issue that we want to touch on, moving forward with the model.

As I kind of alluded to earlier, a lot of the data streams have changed, and so some of the years that were provided last time were no longer provided, or a sex determination was changed, or

sample sizes have changed considerably, and there's been a lot of changes to the input data, and so these are just issues that, you know, I've been banging my head against the wall, with the data providers, trying to be able to explain every single difference, and it's -- We have certainly addressed a lot of the issues, but this is just one of those assessments, and it's been so long that it's really hard -- As our title says, it's going to be really hard to get a true continuity model for this assessment.

I think this is the third kind of issue that we've discussed, that we just wanted to highlight here, the way that the hermaphroditism is handled in the assessment model.

We use this for gag and red grouper and scamp, and, essentially, because we know we have a hermaphroditic species, where they transition from female to male, we model that within the stock assessment. In this case, the parameters -- We usually estimate them externally to the model and fix them, but, for this assessment, they were actually estimated last time, and the reason why that decision was made -- That's why the sex-specific data were input into the model, because putting in male and female data gave the model the ability to estimate those parameters.

Again, you know, in hindsight, there is very little data, sex-specific, and so I don't necessarily -- I don't think we're terribly comfortable, especially if we were to specify sex by histology, and we would have even fewer samples, and, in the plot, I am just trying to highlight -- So my terminology here is a little wrong, and so let me say this clearly.

We've got, on the X-axis -- That's the ages from the plus-group, is forty years, and on the Y is just the hermaphrodism transition rate, which, within Stock Synthesis, it's the proportion of individuals that transition at a given age, and so, when the model estimated -- When the SEDAR 22 model estimated this parameter, for the three parameters in this function, that plus-group is saying that those females that are forty years old have about a 7 percent probability of transitioning to male, and so that's a pretty low probability.

It doesn't mean that 7 percent are female or male, but it just -- It's the probability of transitioning, and the output with the model -- What this says is that, at forty years, about 20 percent of the population are still females, and so this -- You know, we've never really seen this estimated in the first place, and I think there's cause for concern, given the data limitations, given the other issues we've had, and, with more recent efforts, looking into this transition, it's just one of those things that I think

we really want to revisit how it was made, and, of course, we can't do it within this assessment, but, hopefully in the future, more life history data will be produced, and we can kind of reevaluate many of these data inputs.

Just to summarize, you know, we've talked through the biggest issues that we're currently having, and, you know, obviously, we're proposing major changes. I am excited to see how Spanish mackerel went yesterday and today, because, you know, we think of an operational assessment, and it's going to be quick and easy, and we're not going to have to make changes, but we are, and so we're planning on making a lot of changes, just like Lisa had done for Spanish mackerel, and so, number one, looking at the landings and incorporating the uncertainty, as well as explaining the differences due to FES, which are -- FES data are pretty minor for yellowedge.

Talking about how we model the landings, and we don't want to fit to them perfectly, and we know there's a lot of uncertainty, and, to do that, we have to change the configuration. Within the model, we actually have to estimate the fishing mortality estimates for each fleet by year, and so that's general practice now for all of our assessments, and I believe that's the method that we use anyway, and the reason for that switch is it allows us to incorporate uncertainty.

The way that the yellowedge grouper was previously set up did not allow for uncertainty in landings, and they had to be fit perfectly, and so, I mean, that's just a given, that, looking back at all of the sensitivities, and the discussion that went through SEDAR 22, and that's one easy change we can make, is to actually use, through Stock Synthesis, the ability of incorporating that uncertainty into our model framework.

Then the last one, you know, the composition data, and there is definitely concerns with the sex-specific compositions. Of course, the reasoning was to try to get at the hermaphroditism, to estimate the sex ratio back at virgin conditions, and it's just the sample sizes are just so small, not to mention the changes that we're seeing in the composition data based on newer methodologies and QA/QC, and we do think that we have to make some changes to how the data are going in the model and what we're fitting to.

The crux of this -- The problem with this one is that all of that data, to now, have been provided for female, male, and unsexed, and so it's now going to take a little bit of extra time to go back and develop a combined -- So combining males and females and

unsexed, and I at least did request all the data in frequency tables, and so I can make those additions myself. However, the one thing that we really want to get are the length compositions weighted by regional landings, just to better capture the distributions.

I mean, that's the best practice, at this point, and that's one of those changes that, unfortunately, is out of our control, and we'll have to have some of the data providers assist with that, and so that might take a little bit more time, in terms of getting those data ready for the model.

Just to give you an idea, all these changes that we wanted to make, we wanted to first take the old model, the SEDAR 22 model, and rerun that model with the new data, or the new configuration, that we were proposing, just to show what would it have been in the last assessment had we used the new data, and, for example, had we used the new landings, had we changed the fishing mortality estimation method to incorporate uncertainty, had we removed the sex data and fixed the hermaphroditism function, or had we used the new composition data that were provided.

One thing that I want to highlight -- I mean, for the most part, we're not seeing major differences within the model outputs. When you put in the new compositions, we do see changes. For example, one of the big differences is, this time around, we've got groundfish trawl survey data provided back to 1987, whereas, last time, it was only provided from 2000 onward, and so there are some years of data that -- You know, we definitely want to discuss the merits of including it or not including it, and that might take a bit more discussion, but, overall, we have seen some changes, and the biggest issue there is those are younger yellowedge, and so that can affect our estimates of recruitment, which you can see on the left-hand side.

Then the other thing, just to touch on, is that uncertainty within the landings, and so this plot on the right is just showing the estimates of fishing mortality as an exploitation rate, and the biggest change you see is that, number one, you see that, when we use the new landings, there is a big difference in the early 1980s, and that's due to the methodology that has been used for commercial landings for that period that the data providers have described really well in their working paper, and have made some better decisions, and kind of better captured that uncertainty with those landings, but, even when we include those landings, and then we change and we allow uncertainty in those landings, it just --

On the left-hand side is just a comparison of the base SEDAR 22

model to making that change, to allowing that uncertainty, and you can see the error bars, and there are really no error bars for the blue line, but, when we allow uncertainty, we can see the uncertainty within the early 1980s, and, I mean, that's just more reflective of what we know, and we don't want to treat the landings as known, and so I think that highlights -- That kind of gets us closer to where we want to be, better capturing and better acknowledging the uncertainties we have. I mean, that's kind of the biggest-picture issues for now.

To summarize, what we've done is try to put our thoughts on a page, try to go through the biggest issues that we're currently seeing, you know, the one option, and we're really interested in hearing your feedback.

We know these assessments are supposed to -- The more changes we make, the more time it takes, and the more review that needs to happen, and so we just wanted to kind of get some input. We wanted to highlight that going forward might require a little bit more time, just to get more of the data in the structure that we need, and then the process.

There are no topical working groups, and there's been no webinars, and are these sorts of changes something that we just proceed forward and get reviewed at the end by the SSC, or would the group prefer to have an ad hoc panel put together, and we can kind of talk through some of these issues? I think that's something that, at the Science Center, we struggle with, and we have lots of internal discussions, but sometimes it's helpful to just get an outside perspective on a few of the issues or to identify issues that maybe we didn't notice.

Then the report, and so this, of course, assessment will be a bit more than just an update, and so there will be a bit more content that we'll plan on presenting, and I almost envision like a hybrid between the scamp assessment report and our traditional operational reports, if we do have a lot of changes, and so I think that's -- I think that's it. Okay. Thank you. So, if you just go back to that previous slide, and so this is kind of where we're at, and we're really curious to see what the SSC -- How they would like to proceed, and thank you, Mr. Chair.

CHAIRMAN NANCE: Thank you for that thorough presentation. I remember, in 2011, I mean, this SS was brand new, and this was probably one of the first species that we utilized this methodology with, and so I know that, through time, there -- As the Center has learned SS, and through all its iterations, things have changed, and things are done differently, and so I think forcing us, forcing

you, to run it the way it was I think misses a lot of the caveats that have been changed through time, and so I would certainly think we would want to go with these changes.

The process, I don't know exactly how, from a SEDAR standpoint, we do things like that. If we, as an SSC, recommend these, is that within our prerogative, or is SEDAR -- Do we have to go through a process, from a SEDAR specificity, and I know that Julie will answer that question for us, or help us. Julie, please.

DR. JULIE NEER: I think there is two ways to go on this. If the SSC is comfortable with allowing Skyler and the analytic team to move forward on these processes, they can just develop it and bring it to you for your consideration, as part of the overall report, when she presents the assessment, and that's great. She can continue on and do it.

The term "ad hoc panel" is kind of odd, and potentially fraught, and I don't know that anyone would be upset with it, if you went that way, and certainly one option would be to basically just come up with a topical working group, which is part of the SEDAR process for operational assessments, and we could do that relatively quickly.

Could we do that in time for this to be returned in September? Probably, if we acted fast, and that, from a process perspective, would be my -- If you wanted to have someone take a look at this, as things go along, I would prefer it as a topical working group, but, if you're comfortable with Skyler and the analytic team, based on what they presented you here and how they're planning on working on it forward, and just seeing it when it comes to you for review, then you don't need a topical working group, and so you have some flexibility in there to see whatever the panel -- How the panel feels.

CHAIRMAN NANCE: Okay. Thank you, Julie. I appreciate that. Will, please.

DR. PATTERSON: Thanks, Mr. Chair. Thanks, Skyler, for the presentation, and I really like this approach. It's something that different members of the SSC have advocated for in recent years, to not stick strictly to pigeonholed definitions of what different assessment types are, and I don't even remember what the current names are, and they have changed so much through the years, but I think this is a really smart way to do it.

Why limit yourself, based on what was done over a decade ago, and I do think it's a good idea to have an external group from the SSC

look at this along the way, just for your own peace of mind, and also given the level of changes that may occur here, and it makes sense to have, you know, different sets of eyes looking at this. You know, based on Julie's comments, I guess it has to be called a certain thing, but, whatever it's called, I think that is a smart approach.

CHAIRMAN NANCE: I think it's called different things for how you want to proceed, and I think, we as a council, could have our own panel, right, to look at this while they're proceeding, and so a technical group, I guess, is --

MR. RINDONE: Well, I mean, if we have to call it a topical working group, fine. I mean, at the end of the day, I think the goal is to make sure that, you know, the Center has what they need to be able to move forward, and the SSC is being given this opportunity to weigh-in at this point, which, normally, with the way that the terms of reference were written, you guys would have just gotten a finished product at the end, and so, you know, if you think there would be a benefit to contributing at this point in the process, to provide more feedback to Skyler et al., then you can recommend that, or, if you're comfortable letting the Center proceed with the recommendations that they've provided this far and then, you know, you see what you get at the end.

CHAIRMAN NANCE: From one perspective, we see that as they change things, or we see that at the end, and I think that Will's point is it would be good to have some other eyes on this as they proceed, just to give feedback. That way, when we're getting at the very end, we've had an opportunity to have some look at it and make sure that it's -- Not make sure, but just to give advice while it's being continued.

MR. RINDONE: If nothing else, it gives you the opportunity for additional differences of opinion, and so --

CHAIRMAN NANCE: Yes. Jason, please.

MR. ADRIANCE: Thank you, Mr. Chair. Yes, I think I'm comfortable with all of that, and I did have a question though on Slide 7, just because I haven't paid attention, and was there a reason there is what appears to just be an average of recruits beginning in 2001, and is there more data, moving forward? That's just a curiosity. Thanks.

DR. SAGARESE: Jason, that's a great question, and so the SEDAR 22 model -- Because most of the data are the adults, the recruitment deviation estimation ends in 2000, which is eight or nine years

after the terminal year, and so we just don't have a lot of data, and so those recruitment deviations were stopped eight years before the terminal year, which that's one of those decisions that we'll be making with the new model, is we just, you know, keep that same logic for the newer model, or, because we do have the groundfish trawl data in the model, although the sample sizes are pretty low, we might be able to estimate recruitment for more of those years, and so that is a good observation from the last model, and that is a pretty big period. Normally, the recruitment deviations get estimated through the terminal year, if we have a lot of age-zero or age-one data, but yellowedge -- That decision was different.

CHAIRMAN NANCE: Katie.

DR. SIEGFRIED: So whatever it needs to be called is fine, and I guess I wanted to just lay out a few things that would be important as to how to proceed, and so Skyler mentioned that the combined weight-at-length comps need to be run. We do need some weeks to get another analyst on that and to get that product out.

If this -- I made the council staff aware of this, you know, enough to put it on the schedule and let them know what was going on, and we were also concerned about the idea of ad hoc seeming a little off-the-books, or odd, and so I understand that point, but I am also concerned about delaying this by doing unneeded noticing, if it's possible to do a group with the SSC sanctions, and I don't know if that's possible, but, in order to do this, we need those length comps done, and it will take a few weeks to get that completed.

Skyler would have to do the work to incorporate it enough that a panel would have something to look at, and we would have to do a noticed meeting, I would assume, if it's through SEDAR, and so that would take time, and then, if we need two, it would take more time, and then I assume that, if there's a panel formed, whatever type of panel, we wouldn't have this until the meeting in 2024, and I don't think it's possible by September to get everything done, especially if it's through the formal process.

MR. RINDONE: I don't have any expectation of it being ready for September, even despite the rest of it, and so I was expecting that February -- I mentioned it at the beginning of this meeting as being when we might have the opportunity to look at this.

DR. SIEGFRIED: Does SEDAR have the capacity to take on an extra set of topical working groups, or an extra panel, at this time, because, of course, this isn't in their workplan either, and I suppose we would probably have to consider that.

MR. RINDONE: That would be a Julie question. As far as noticing the meetings and whatnot, I think they have to be noticed I think it's twenty-eight days in advance, and so, if you were going to be thinking about your workflow, Sky, and when you would want input on different things, and, you know, baking time, to be able to work through the previous meetings recommendations, you know, you need twenty-eight days, at a minimum, to call up another publicly-noticed meeting.

CHAIRMAN NANCE: Julie, please.

DR. NEER: I don't see any real issue with getting -- From my aspect of trying to put together a topical working group, the Gulf is extremely efficient at making their appointments, and certainly, from my end, I could handle scheduling a couple of webinars, and that's really all we're talking about here, and, yes, we can -- Just in terms of having to know every twenty-eight days, we can schedule more than one at a time.

You know, if we think we want to schedule one on, you know, November 1, and we want to schedule another one for December 1, we can schedule both of those. If we don't need them, we can always just cancel them, and so we can always schedule, you know, in anticipation of perhaps needing two, and then it turns out we're done in one, and great.

Not a problem, and so, yes, SEDAR can certainly handle taking on this task and get this done, and I think it would be -- I agree that it would be wise to have some SSC members to look in as it's being developed, and I think that would be helpful. I think there's a lot of things that Skyler has presented that they would like to have feedback on, and so I would certainly support it.

CHAIRMAN NANCE: Thank you, Julie. Ryan, to that point.

MR. RINDONE: I mean, at this point, do you guys want to nominate a couple of people to help out with this, or do you want to just tell Skyler to just run what you brung, and we'll see you at the end?

CHAIRMAN NANCE: Well, I would think, from hearing -- Let me have Jim first.

DR. TOLAN: Thank you, Mr. Chairman, and my question that I was going to pose to Julie had to do with the scheduling, and I think it can be done in just a couple of webinars, and there's no big issue, but I would throw my hat in the ring for having the panel

look at it.

CHAIRMAN NANCE: Okay. I think, from my perspective, in listening to the committee, it certainly is -- As opposed to waiting until the very end, and I trust everything that Skyler is doing, but it's a matter of maybe just having other eyes on it, to make some suggested changes and those types of things, and maybe you want to do this, that type of thing, and so, when we have the product brought to us, people will have had at least some ability to look at it, and so I would think we would want to have two or three individuals picked, or asked, or volunteered, I guess, to be able to be on this, to look at this during the process of development.

MR. RINDONE: I will take volunteers, and, if I don't get volunteers, I can get voluntolds.

CHAIRMAN NANCE: So, gang, is there anybody in the room or online that would like to be on this panel? Dave Chagaris.

DR. TOLAN: I see to get drawn into these species that aren't on the western side of the Gulf, but I will volunteer.

CHAIRMAN NANCE: Okay. You always have good input, Jim. Anybody else?

MR. RINDONE: Is Dave saying yes?

CHAIRMAN NANCE: Dave, were you saying yes, or you had a question?

MR. RINDONE: Yes, Ryan, I would love to volunteer. Thanks, Dave.

DR. CHAGARIS: No, and that's right. I am volunteering.

MR. RINDONE: Thanks, Dave.

CHAIRMAN NANCE: Thank you. That's what I assumed when your hand went up, but I shouldn't have assumed that.

DR. CHAGARIS: I am surprised you gave me the opportunity to back out, but thanks.

MR. RINDONE: The illusion of choice. Anybody else?

CHAIRMAN NANCE: I will do that, too.

MR. RINDONE: Okay, and Dr. Nance, and so that's three, and so we'll follow-up with you guys via email, and we'll get it set up with Julie and help them move forward.

CHAIRMAN NANCE: We ought to be able to do webinars. Okay. Any other input for this? I think we're finished with this one, and we'll go ahead and have public comment. Any individuals that would like to provide their comments to the committee, please let Jess know, and we will call on you. Julie, you have public comment? That's going to be unusual.

PUBLIC COMMENT

DR. NEER: Well, it probably should have been other business, if I had the forethought to let Ryan know in advance, but I just wanted to let everyone know that Kathleen Howington, who has been serving as the other SEDAR coordinator in the SEDAR program is transitioning up a flight in our office building, and she's going to be working for the council, taking over the Habitat Specialist Position, which means we are currently advertising for a new SEDAR coordinator, and so the job announcement is available on the South Atlantic Council's website, or you can contact me, if you want a copy, and I'm just letting people know.

If anyone knows anyone who is graduating, or anyone who might fit the bill for this unique position, come work with me, and please pass along the announcement, and it is open until the 31st of this month. Thanks.

CHAIRMAN NANCE: Maybe John Carmichael will do it again. No, I'm just kidding.

DR. NEER: You tell him.

CHAIRMAN NANCE: Thank you, Julie. Bob Zales, please.

MR. ZALES: Bob Zales, II. Spanish mackerel, I'm going to just touch on that, real quick. This morning, you all set the ABC at, what, 9.6 million or something, and, if you look at the landings over the past several years, they average out somewhere around six to six-and-a-half million, which is about two-thirds of the ABC.

Now, if you go back in time in history, back thirty or forty years, when I was dealing with Spanish mackerel in these assessments, the SSC, and the stock assessment panels at the time, and then the councils, they would set the ABC up there, and the quota, and they had it set real high. Well, they wouldn't catch it, and so then they would come back, on the next assessment, and say, well, gee, they're not catching what we're doing, and so let's reduce it.

It didn't have anything to do with the status of the stock, but

it’s just that they weren't being caught, and so they would reduce it so much that then, the following year, they would go out and exceed it and shut the fishery down, and so you would have economic and social impacts.

I don’t know that we’re going to be able to catch 9.6 million pounds of this year and next, or anytime with Spanish, because I just don’t think there’s enough hooks in the water to do it, until you let nets back in, which ain’t going to happen, and you’re not going to catch that kind of Spanish mackerel. When this comes up again in the future, keep that in mind, so that you don’t say, well, gee, they only caught two-thirds of the quota, and we need to drop it. Well, leave it alone.

King mackerel, we started in business in 1965, and that’s how long I’ve been fishing king mackerel in Panama City, Florida. I was twelve years old. Back then, if you didn’t come to the dock, in a five-hour trip, with a hundred kingfish on your boat, you were laughed out of the marina, and we caught fish like that for several years, and then, when they finally got to the point to where they started reducing the quota, and then they had closures and did everything, and they eventually put in bag limits and eliminated captain and crew and added captain and crew and went back and forth, but you don’t catch that many fish now.

I have been one, and you all have heard me, and I have been one that has been questioning kingfish now for the last three years, because, back then when we were fishing, the fishermen, the old-timers, which I’m one of them now, and all the others are dead, but, back then, they used to talk about a seven-year cycle with kingfish, to where you would have about six years of so-so fishing, great fishing and then so-so fishing, and then you would have a real slow year in the seventh year.

This is the first time that I ever remember, in that fifty-eight years, that we’ve had three years steady of slow fishing with kingfish. Now, the caveat to that, and I’ve been questioning a bunch of people what the problem could be, whether it’s the fish, whether it’s the baitfish, which we haven't had any bait up until this year, for the past three or four years, and clearly kingfish don’t come to Panama City to look at bikinis and thongs on the beach, and they come up here following the bait.

This year, the bait showed up in the spring, and I let everybody know that, and, so far, we’ve had -- In the past three days in particular, we’ve had a good run of kingfish, and kingfish are doing a whole lot better this year than they have in the past three, and I have caught more fish, kingfish, this year so far, in

the two or three months that they've been here, than I caught all of the last three years, and so the key to that is the bait is here with them.

Apparently the stock of fish, in my mind, seems to be okay, and you also have to go look at, years and years ago, when they first came out with this mitochondrial DNA stuff, especially in fisheries, and kingfish, if I remember, was the first fish that they ever did mitochondrial DNA to identify stocks, and they identified a Mexican stock and an eastern Gulf stock, and, unless I missed something somewhere, we still have two stocks in the Gulf of Mexico, and they intermingle somewhere around the river.

When you're looking at the different zones and things like that, you have to take all of that into consideration, and, if you're going to look at redoing the stocks, to make them one stock or whatever, I would suggest that you get into some kind of genetic testing, like they did before, so that you can properly identify these fish, and the Mexican fish -- Some of you all may remember Karen Burns, and some of you probably never heard of her.

She worked at the Mote Lab, and she worked on kingfish for years and years and years, and she has passed away now, but she always did a lot of stuff down in Mexico, to keep that part of the stock informed to the council and the Fisheries Service, and so there's a whole lot more to king fishing than all the new stuff that they've come up with, and you've got a lot of history there, and, to my knowledge, Doug Gregory, I guess, is the only person sitting at that table that really knows that history, that's been involved since before me.

My first stock assessment panel was probably 1988, somewhere around in there, at the center down there in Miami, and so that's how long I've been playing, and, you know, you really need to look at the history of this fishery, to see where it's going and what it's doing.

I am not sure that the fish is in trouble, and, like I said, there's other factors here. There's been a lot of dirty water, and you had all that dirty water come out in Mississippi last year and the year before, that they got disaster relief for, and there's a lot of factors playing with the stock, and I think the fish are there somewhere, but now they seem to be coming back to their traditional places. That's it.

CHAIRMAN NANCE: Bob, thank you so much. We appreciate that. Any comments or questions from the SSC? Thanks, Bob. We always appreciate your willingness to comment.

MR. ZALES: All right. I will see you in Austin, Texas.

CHAIRMAN NANCE: I will see you in Austin. With that, we will go ahead and be adjourned. We have a meeting in September, and that will be good. Anyway, you all have a safe trip back home.

(Whereupon, the meeting adjourned on July 20, 2023.)

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