GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

SUSTAINABLE FISHERIES COMMITTEE

Opal Key Resort & Marina and Virtual — Key West, Florida

June 24, 2021

VOTING MEMBERS

Dale Diaz.....Mississippi
Kevin Anson (designee for Scott Bannon).....Alabama
Leann Bosarge.....Mississippi
Dave Donaldson.....GSMFC
Martha Guyas (designee for Jessica McCawley).....Florida
Robin Riechers.....Texas
Chris Schieble (designee for Patrick Banks).....Louisiana
Andy Strelcheck.....NMFS
Greg Stunz.....Texas
Ed Swindell.....Louisiana
Troy Williamson.....Texas

NON-VOTING MEMBERS

Susan Boggs.....Alabama
Jonathan Dugas.....Louisiana
Phil Dyskow.....Florida
Tom Frazer.....Florida
John Sanchez.....Florida
Bob Shipp.....Alabama
Joe Spraggins.....Mississippi

STAFF

Assane Diagne.....Economist
Matt Freeman.....Economist
John Froeschke.....Deputy Director
Beth Hager.....Administrative Officer
Lisa Hollensead.....Fishery Biologist
Ava Lasseter.....Anthropologist
Mary Levy.....NOAA General Counsel
Jessica Matos.....Document Editor & Administrative Assistant
Natasha Mendez-Ferrer.....Fishery Biologist
Emily Muehlstein.....Public Information Officer
Kathy Pereira.....Meeting Planning - Travel Coordinator
Ryan Rindone.....Lead Fishery Biologist/SEDAR Liaison
Bernadine Roy.....Office Manager
Carrie Simmons.....Executive Director
Carly Somerset.....Fisheries Outreach Specialist

OTHER PARTICIPANTS

Chester Brewer.....SAFMC

Rick Burris.....MS
Peter Hood.....NMFS
Kai Lorenzen.....GMFMC SSC
Kelly Lucas.....MS
Dan Luers.....NMFS
Clay Porch.....SEFSC

TABLE OF CONTENTS

- - -

The Sustainable Fisheries Committee of the Gulf of Mexico Fishery Management Council convened on Thursday morning, June 24, 2021, and was called to order by Chairman Dale Diaz.

ADOPTION OF AGENDA
APPROVAL OF MINUTES
ACTION GUIDE AND NEXT STEPS

CHAIRMAN DALE DIAZ: I would like to call the Sustainable Fisheries Committee to order. The members of the committee are myself, Dr. Stunz, Mr. Schieble, Mr. Anson, Ms. Bosarge, Mr. Donaldson, Ms. Guyas, Mr. Riechers, Mr. Strelcheck, Mr. Swindell, and Mr. Williamson.

Before we get started, I want to take just a minute to recognize that we have a former council member in the audience, Dr. Kelly Lucas. It's nice to have you back with us, Dr. Lucas. She's going to be presenting later on in the committee.

The first order of business is the Adoption of the Agenda. Are there any additions to the agenda? Seeing none, is there any opposition to adopting the agenda? Seeing none, the agenda is adopted.

The next order of business is the Approval of the January 2021 Minutes. Are there any corrections to the minutes? Seeing none, is there any objection to adopting the minutes? The minutes are adopted. Next up is the Action Guide and Next Steps, and Dr. Diagne is going to take us through that one-by-one, as we get to each of the agenda items. Dr. Diagne.

SUMMARY REPORT FROM THE JOINT COUNCIL SECTION 102 WORKGROUP

DR. ASSANE DIAGNE: Good morning, Mr. Diaz. We can go ahead and get started. Good morning, everyone. The first agenda item is a Summary Report of the Joint Council Section 102 Workgroup, and Mr. Rindone, Ryan Rindone, is going to lead the discussion, and he will essentially summarize the Joint Council Section 102 Workgroup that took place on June 3, and it was a webinar. I am going to stop here and turn it over to Mr. Rindone. Thank you.

CHAIRMAN DIAZ: Thank you, Dr. Diagne. Before Mr. Rindone takes over, I do want to mention that we're fortunate to have Mr. Chester Brewer with us here. Mr. Brewer has been participating in this Joint Council Section 102 Workgroup for the South Atlantic, and I appreciate it, and we're fortunate to have you here, Mr. Brewer.

MR. CHESTER BREWER: Thank you, Dale.

MR. RYAN RINDONE: Thank you, Mr. Chair. The Section 102 Workgroup is working on the component of the Modernizing Recreational Fisheries Management Act of 2018 that addresses alternative management strategies for recreational fisheries. This is the third time that the group has met via webinar, and we met on June 3, for just a couple of hours, to try to get our bearings on our next steps.

The first thing of business that was discussed was the NMFS allocation and use of about three-and-a-half million dollars that was budgeted for addressing the Modern Fish Act, and Dr. Cody went through where those funds came from and how they had been directed.

Then the second item was discussing flexibility under the Magnuson Act for alternative management approaches, and Mr. Russ Dunn from NMFS went through and answered a whole bunch of questions from the committee about the sorts of things that the committee could explore, and we had actually identified that there were several of them that the councils were already doing, things like setting ACLs over multiyear periods. There are several of the committee members here, and so, if they would like to speak to any of this in particular, I would encourage them to do so.

Lastly, we talked about recommendations to the councils on alternative management approaches, and the committee members thought that it would be best to try to figure out the things that they were already doing, versus the things that still had some potential, and they also agreed that they could probably make some more headway on this if they could meet in-person at their next meeting, which we'll try and plan for some time later this year, and we can probably do it in Mr. Brewer's office, and I'm sure he won't mind.

We'll get the workgroup together again, and staff will help create a list of all the things that the councils are doing that are in line with things that are viewed by the Act as being alternative management approaches, and, also, some things that have been talked about during the workgroup's meetings that may be worth exploring. Mr. Chair.

CHAIRMAN DIAZ: Any questions for Mr. Rindone about the workgroup activities? Seeing none, I did notice that step-downs was one of the things that you all discussed, Mr. Rindone, and we did talk a little bit about step-downs yesterday, as

something to potentially consider for red grouper, and so these things come up from time to time, and so we appreciate your group's work, and we hope that you continue to work and keep us informed as we go forward.

Seeing no questions for Mr. Rindone, we're going to move on to the next item. Dr. Diagne, will you talk to us about the SSC Recommendations on the Acceptable Biological Catch, and that is going to be Tab E, Number 5.

SSC RECOMMENDATIONS ON ACCEPTABLE BIOLOGICAL CATCH (ABC) CONTROL RULE

DR. DIAGNE: Yes, Mr. Chair. For this agenda item, Dr. Lorenzen will summarize the preliminary discussions in exploring the council's ABC Control Rule, the SSC discussion. Without saying too much more, we will just turn it to the Acting Chair of the SSC, Dr. Lorenzen.

CHAIRMAN DIAZ: Dr. Lorenzen, if you would.

DR. KAI LORENZEN: Thank you. We were discussing, or started discussing, a revision of the ABC Control Rule. The current control rule has been in place for over a decade, and we've made various attempts, over the years, to revise the ABC Control Rule, and so we're doing that again, with the help of the Science Center.

As background, obviously, the ABC Control Rule is used to create a buffer between OFL and ABC, to reduce the risk of overfishing in light of scientific uncertainty, and it requires characterization of scientific uncertainty, which is basically an SSC issue, and it requires the definition of the risk policy, or risk tolerance, which is a management issue, and therefore a council prerogative. The ABC Control Rule is proposed by the SSC, but adopted by the council, in a fishery management plan.

The aims of the revisions that we're looking to undertake are threefold. One is to better characterize scientific uncertainty, and the background to that is that most of our assessments underestimate scientific uncertainty, and, therefore, the true risk of overfishing, at a given ABC, and the reason that they do that is that we often have to fix certain parameters and assume them to be known without error, and we also have to cap the variance in certain data series and all that, to allow the models to converge and give us a sensible answer, but the downstream effect of that is those models then tell us the uncertainty is lower than it is.

Secondly, we want to clearly separate the characterization of scientific uncertainty from the risk policy. At the moment, what we do is, if we feel that the scientific uncertainty in an assessment is not well characterized, we effectively change the risk policy, and so we lower the P* to account for the fact that we think that the uncertainty is not really well characterized, and so we're kind of mixing up two somewhat separate things, and so what we are trying to do here is to separate that and have one risk policy and then one characterization of uncertainty, and, if we think the uncertainty is not well characterized, we have to improve that characterization of the uncertainty, rather than change the results.

Finally, we are considering making the buffer dependent on stock abundance, and the idea there is that, presumably, it's good to have a bigger buffer when the stock abundance is already low, and so, if we are in the territory where we're in an overfished state, or approaching that, then probably we should be more precautionary than when the abundance is high, and so those are the objectives.

I want to talk about these two issues, the characterization of uncertainty and making the buffer dependent on stock size, separately, and so I will start with the characterization of uncertainty.

Basically, what we get out of our stock assessments, and, basically, we're talking, both today, here, and in the SSC at the moment, mostly about our Tier 1 control rule, and so we're looking at assessments, age-structured assessments, or data-rich, where we get an estimate of the probability density function of the overfishing limit out of the model, and so this is an example.

We get the OFL, which is the catch that would be taken at the current abundance using the maximum fishing mortality threshold, or the F at MSY, or its proxy, and we get a distribution for that that characterizes the uncertainty. Now, we know that, typically, uncertainty is underestimated, and so the true uncertainty would look more like this, but we don't know what the true uncertainty is. Otherwise, we would just use that.

How do we get at the true uncertainty? One way of doing that is to look at the way in which our estimate of abundance changes with successive assessments, and so say we did an assessment in 2010, and we had a biomass estimate at the end of that period for 2010, and then we do another assessment in 2013, and we look

at how has our estimate of the biomass in 2010 changed with the new assessment, and then we do another assessment in 2016, and we do the same again, and so, because we're looking at how our estimates change as we add more information and do new assessments, that gives us a reasonable idea of how great the uncertainty really is.

The approach that the Science Center, and to, an extent, so far the SSC, has proposed is to base our estimate of true uncertainty on a meta-analysis of stock assessments that was done by a team on the west coast who goes by the Ralston method.

That produces -- Based on this meta-analysis of many stock assessments, it produces a probability density function and estimate of uncertainty that we believe is fairly representative of what we should find in a typical stock assessment done in the same way as the assessments that are used to do that meta-analysis, and so part of the proposal for the revision that came from the Science Center is to adopt that Ralston method and to have a default sort of minimum uncertainty estimate that is based on a meta-analysis.

Now, that would be modified in the light of the assessments that we have, and so Ralston did that for west coast groundfish, and the Science Center would essentially eventually redo this analysis for the stock that we're looking at in our region, and the result might be slightly different. Generally speaking, our data are less good, probably, than what they're using for groundfish on the west coast, and so it will be a little more uncertain than what we're getting out of the Ralston paper, but the idea is to adopt this methodology. I want to look at what --

CHAIRMAN DIAZ: Dr. Lorenzen, do you mind taking a question now, or would you rather wait until the end?

DR. LORENZEN: Absolutely.

MS. LEANN BOSARGE: That meta-analysis, we would do that by species? Is that how that plays out? Like you would do a meta-analysis for gray trigger and all the assessments in the past for gray trigger, and work on that PDF? Do you do it by species?

DR. LORENZEN: Initially, yes, you do it for each stock, but then you also combine that across stocks. Otherwise, you would end up with like three values for gray triggerfish, and that wouldn't give you a very good estimate, and so you also have to

integrate that across stocks, but one would do it for say our data-rich stocks, and it may be for the reef fish stocks separately, and so those are, I think, decisions that have to be made in the analysis.

CHAIRMAN DIAZ: Mr. Anson.

MR. KEVIN ANSON: Thank you for taking questions as you go through. You made a comment that the Gulf stocks would be less uncertain than the groundfish stocks out west, and is that because we have multiple sectors, or user groups, or is it in the data, or where is the uncertainty coming from?

DR. LORENZEN: It's more uncertain, and I think it's a little bit all of the above, and we have very large recreational components that are less well estimated, but I think, generally, we deal with a wider range of stocks and less good data, in a lot of them, but, still, even if we use the west coast estimate, it would suggest that the uncertainties, on average, are much larger than we're getting out of the assessments, and so that would already push us in the right direction, in terms of characterizing the uncertainty.

I wanted to briefly talk about the implications of that, and so what you see here is the probability of overfishing, which is basically the cumulative probability distribution, and, at the OFL, the probability of overfishing, by definition, is 50 percent, and what we're trying to do with the ABC Control Rule is to reduce the catch limit in the light of scientific uncertainty, so that we have a lower probability of overfishing.

Then I will focus in on that central part of this graph, and so you have the red-dotted line is what we get out of the assessment, and then you have the Ralston estimate, and you have the true uncertainty that we don't actually know, but we expect to be more closer to the Ralston method than to what we're getting out of the assessment directly.

If we are applying our current control rule, we go into that control rule worksheet, and say we determine a P* of 0.01, and then we go to the cumulative distribution here and intersect that with the distribution curve that comes out of the assessment, and then, where that drops down on the X-axis, that is our ABC, and so there we go. That would be our ABC determined using the uncertainty estimate that comes out of the assessment.

You can see that, if that is the case, we actually are

underestimating the true probability of overfishing at this point, because that's more represented by the other two curves there, and so you can see that, as we switch from using the uncertainty estimate that comes directly out of the assessment to something that is more realistic, like Ralston, it tells us that the true probability of overfishing at this ABC is a fair bit higher. In this case, it's about 47 percent.

The de facto risk of overfishing is higher than we think, in this case about 47 percent, and so now we can do two things. We can accept that higher probability of overfishing as what we are actually doing, or we can say, no, we want to stick with our 41 percent, but the consequence of that is we'll have to go a tad bit to the left, and so we'll have to create a bigger buffer, and so this is one of the things that we did want to bring to the council's attention, that, as we go through this revision, we will have to have a new look at the risk policy and that we apply basically the current risk policy to those more realistic estimates of uncertainty that will result in bigger buffers.

There was SSC discussion about the Ralston method and the alternatives, and, basically, the SSC was interested in using the Ralston method, and so, basically, defining a minimum uncertainty derived from that meta-analysis of stock assessments, and there were also some on the SSC who wanted to further explore other conceptually-different approaches for creating a buffer, and the argument there was mostly we have continued uncertainty about how big the actual uncertainty really is, and so some SSC members felt that it was better to essentially pick a buffer, rather than arrive at the buffer through these probabilistic arguments.

The two are really just different ways of looking at the same problem, in a sense, and so, if you're doing what we just described, it has a basis in probability and risk, but it results in a buffer that will be applied, and so the alternative approaches are starting with the buffer.

An example that you may be familiar with is the idea of 75 percent of the F at MSY that we sometimes use and sometimes describe as a sort of rough estimate of OY, and so, basically, so far, the SSC has not made a decision, and we have asked the Science Center to keep both of those ideas of the Ralston methods and others on the table.

The second thing that I wanted to talk about is that change in the buffer with stock size, and so this is what we refer to as a harvest control rule in fisheries. The background to that is

that, traditionally, typically, the minimum stock size threshold, and so from where we declare a stock to be overfished, was at the BMSY minus one minus M, or times one minus M, and so, basically, it was set below the BMSY by the unit of -- One unit of fishing mortality in that stock.

That resulted in an overfishing threshold relatively close to the BMSY, and so, basically, we would be using a maximum fishing mortality threshold as the F that is used to determine OFL up until the minimum stock size threshold is reached, and then, below that, the stock is overfished, and it would require a rebuilding plan. In that rebuilding plan, we would set an F rebuild.

The concern is that the council has since changed the minimum stock size threshold for many of our stocks to a lower level, to not 0.5 times BMSY, which means that, basically, you can be -- You can get quite far into a depleted state before you technically declare the stock to be overfished, and, in conventional fisheries parlance, we would pretty much consider a stock to be overfished by the time the biomass is below BMSY, but the technical definition here of overfishing only makes us define a stock as overfished once it's very, very much below BMSY.

The problem with that -- Well, the benefit is that you can keep fishing at the MFMT well into that sort of state of a relatively depleted stock, and so, in the short term, that's good, but, in the long term, once you get into the overfished status, you are quite far away from where you want to be, and so you have a long and arduous rebuilding ahead of you.

One of the ideas here is to actually change the harvest control rule and to start ramping the target, or limit fishing mortality down before we get to that MSST, and so it's something like this, where, actually, you are starting to reduce the fishing mortality that you use to set the ABC, once the stock is below BMSY, and so you don't have this very sudden control that kicks in only once you're at half BMSY, but you start ramping that down earlier, and you could also then, towards the low end here, have a threshold where basically you stop fishing altogether, and so you are setting the fishing mortality to zero.

Basically, the advantage of this is that it should give you faster return towards BMSY. Even the current rule will eventually return you to BMSY, and it's constant, but it will return you there, but it may take a long time, and so what this would do is it would speed that up, but, of course, the short-

term cost is that you have a bigger buffer and a lower fishing mortality and a lower ABC.

CHAIRMAN DIAZ: Mr. Strelcheck.

MR. ANDY STRELCHECK: Thanks, Kai. Maybe I am missing something, and so the Magnuson Act requires us to end overfishing immediately, and we do, obviously, have situations where the biomass would fall below BMSY, and get closer to MSST, and I appreciate that in not all circumstances that might be because of overfishing, but it seems like we are, in practice, implementing lower fishing mortality rates that are different from kind of how it's being shown with kind of the MFMT level being across-the-board from 0.5 to one, and so am I missing something?

DR. LORENZEN: No, and we are implementing the MFMT there, and so just the F at MSY, or its proxy, but that will result in -- Like, when you apply that to the lower stock level, it will result in lower catches, and it will result in the stock returning towards BMSY.

Also, the overfishing definition, of course, is based on the maximum fishing mortality threshold, that we're not exceeding in any case here, whereas it could be overfished, but it wouldn't be undergoing overfishing, if that makes sense. I think, Clay, did you want to --

CHAIRMAN DIAZ: Dr. Porch.

DR. CLAY PORCH: Thank you. The exception to that is when we have a rebuilding plan in place, and then you're using F rebuild, which is typically less than MFMT, and so one of the questions that has come up is could this replace the need to calculate a rebuilding plan every time, and I think we would have to do some research to see that it actually demonstrates, if we implemented something like this, does this obviate the need to go the extra step to calculate F rebuild and all that, and we haven't done that work yet. It's something we need to look at, and there's also the legal question of whether it would replace it, because, in some -- Although other councils do this, in some sense, the concern is, is this just sort of an extra step that doesn't really do anything if you have to implement F rebuild anyway.

There is both a legal question and a practical question of whether this would achieve the same thing as calculating F rebuild in setting up a rebuilding plan, and so would this get

us out of having to designate rebuilding plans.

CHAIRMAN DIAZ: You can proceed, Dr. Lorenzen.

DR. LORENZEN: I think we have a few more.

CHAIRMAN DIAZ: Sorry. Go ahead, Mr. Strelcheck.

MR. STRELCHECK: Thanks. I guess a follow-up, and I would certainly be interested in the SSC's input with regard to setting MSST at 50 percent of BMSY, versus some other level, and I know, for a number of stocks, we've set it lower, because we wanted to avoid the bouncing around of uncertainty in the assessment, in kind of triggering an overfished condition, when, in reality, the stock is just kind of naturally fluctuating potentially near BMSY.

DR. LORENZEN: To that point, I think there are actually analyses that have been done that suggest it's very rare that you will end up at that low level, just by natural fluctuation, but, from that perspective, I would say, from the SSC perspective, that's a bit low.

CHAIRMAN DIAZ: You can proceed, Dr. Lorenzen.

DR. LORENZEN: Thank you. Okay. This is all in terms of those graphs that I wanted to show, and, as I said, we're discussing this, and we're already discussing it in this forum too, and so this is not -- We are nowhere near a decision on this.

What we have done is -- Well, we had a discussion about this, and, overall, the SSC is interested in exploring a range of options for this harvest control rule, and, on the whole, the SSC was strongly in favor of simplicity and robustness, and so not too many hinge points or opportunities to tweak that rule, so that we have a really clear rule on the books that we would use, so that we don't then, every time we want to use it, we have to get into a discussion and do we have another hinge here, and do we do something there.

This is what we have basically given back to the Science Center, and, as I said, this is a cooperative endeavor, and so they will come back to us with more information and exploration of these things.

We also made specific requests to the Science Center to help us evaluate the performance of alternative ABC control rules, and so we are looking for information on the past performance of our

existing rule, and so, basically, would we have done better with a different rule, or how well did we do, in terms of avoiding getting into the overfished state, past performance of deviations from the existing rule, and then we wanted to look at simulation performance of potential alternatives and implications of alternative rules for ABCs of the Gulf stocks, and I know that is something that the council will be particularly interested in.

I did explain that there would be implications for larger buffers, if we apply the current risk policy and a better characterization of uncertainty, and so clearly that will generate some interest.

We also asked for information that should help the council to consider its risk policy, because, as I said initially, part of this is science, and part of this is the council having to decide what risk policy it's comfortable with, and so, eventually, after probably several iterations of this in the SSC, we will take it to the council, and we will want inputs as to what risk policy you find acceptable, and so the sort of information that we want to bring, and a lot of this will ultimately come from the Science Center, is to look at risk of overfishing versus fishing opportunities foregone.

Then costs of overharvesting to stocks and stakeholders, considerations of phase-in, of changes to catch limits, and social considerations for management buy-in that would come from implementing particular risk policies, because some of those are harder, in the short term, than others, and that's where we are, and so are happy to get feedback, and we don't need any decisions or anything, and this is really just for information only. Thank you.

CHAIRMAN DIAZ: Thank you, Dr. Lorenzen. Are there questions and feedback for Dr. Lorenzen? Mr. Anson.

MR. ANSON: Thank you, Mr. Chair. Thank you, Dr. Lorenzen, for your time and the presentation today. Going back to the first section of your presentation, when you were discussing the characterization of uncertainty, you mentioned that the analysis that the Ralston method -- That it would require or utilize some of the previous assessment OFLs and PDFs and such.

I'm just wondering, does the -- Does the impacts, such as changes in recreational data streams, does that have an impact on those prior assessments? Would those have to be rerun, or, basically, are you starting from scratch with no information,

since those were calculated using the old data stream, and did you all discuss that?

DR. LORENZEN: We have not, and this is an interesting question, I think. If you're looking at sort of a more narrow sense of uncertainty, you would want to do this on assessments that are done on the same data streams, but, of course, the reality is also that we have had changes in the data streams, and so one could argue that that actually implies some greater uncertainty here, but I would let Dr. Porch comment on that.

CHAIRMAN DIAZ: Dr. Porch.

DR. PORCH: All right. Thank you. I wanted to clarify a couple of things, at least as the proposal came from the Science Center. Initially, we would actually use the Ralston analysis straight up, because they did an extensive analysis, and, granted, it was west coast assessments, but, as Dr. Lorenzen said, those assessments, in general, are probably more certain than ours are, just simply because they have fewer datasets and longer time series of information, and so it makes sense that those assessments would be a little more certain, but they're looking across the entire time stream of their assessment history, and so it implicitly includes things like different people in the room making different decisions, because the true uncertainty in an assessment is not just how well the assessment model is fitting the data that you put in front of it, but it's which data you're incorporating, other decisions that are made, like natural mortality.

When you look back across the whole suite of assessments, you're getting a better sense of that overall uncertainty, but, as Dr. Lorenzen said, it's not perfect, but it's probably a better characterization of uncertainty than what we've been giving the SSC recently, and so that's what we would start with.

Now, one project, and it would be a massive project, is to go back through all the historical documents in the Southeast Region and redo the Ralston analysis, conditioned on our own stock assessments, and that's something we've been talking about doing for years, and we haven't done it yet, just simply because we're swamped with other things, for one just completing assessments, but that would be the next step, is to try and do it for the Southeast, and we would start though with the number that's already been published, and so just to make that clear.

One other thing I wanted to raise, when I had the mic, is the beauty of that approach is it does sort of allow this separation

of church and state, in the sense that it separates the roles, as Dr. Lorenzen said, where the council specifies the probability of overfishing that they are comfortable with for this particular fishery, given all the things that are at risk, and I will come back to that in a second, whereas the SSC focuses on how uncertain the assessment is, which is a scientific consideration.

Right now, it's I think even a little grayer than you so eloquently put it, because the ABC Control Rule, as it stands, allows P*, the probability of overfishing, to be adjusted commensurate with the level of uncertainty the SSC feels is in the assessment and things they didn't consider, and so it actually, depending on it's interpreted, you could end up having a very, very low P*, because you feel like the assessment didn't characterize the uncertainty very well, and so it does get kind of muddy, and so I like this separation of roles.

The missing piece, however, is that we typically talk about the probability of overfishing apart from the notion of risk, but risk actually means that it costs you something, right, and we haven't done a good job of giving you an analysis that -- What is the risk? What are you losing if you're overfishing?

If you think of it as if you were sitting at the blackjack table, and you had a 40 percent probability of winning, meaning a 60 percent probability of losing, but, if I'm betting a dollar at a time, my risk is low, and I can afford to lose it, and it doesn't cost me much. On my salary, if I'm betting a thousand dollars at a time, my risk is a lot higher, and I am going to change my behavior, and I am going to be more risk-averse if the stakes are high, and that is the part that we're not always explicitly considering here.

DR. LORENZEN: That's the sort of information that also we're looking to bring to the table when we revisit the risk policy.

CHAIRMAN DIAZ: Mr. Anson.

MR. ANSON: Dr. Porch, that's interesting, the way you summarized that, and it kind of ties in with the last slide that Dr. Lorenzen had in his presentation relative to some of the considerations going forward that the council needs to consider, and so, as these deliberations continue amongst the SSC, and the Science Center can facilitate some of their needs and wishes, that goes into some of the social and some of the costs.

What is the risk of overfishing versus fishing opportunities

foregone, and so we've discussed, in the past here, about new ways to reduce uncertainty, i.e., for the recreational data stream, and what systems could be put in place if we had a better idea as to maybe what the fruit is, the carrot is, for folks to go to a better reporting system, and that might be very helpful in some of those discussions and as the public gets engaged and we have those discussions. Thank you.

CHAIRMAN DIAZ: All right. I am not seeing any more questions. Thank you, Dr. Lorenzen. We appreciate your information, and please keep us informed as this progresses.

DR. LORENZEN: Thank you.

CHAIRMAN DIAZ: Next up, we have Manna Farms, Gulf of Mexico Update. Dr. Diagne, can you walk us through the action guide and next steps for that agenda item?

MANNA FISH FARMS, GULF OF MEXICO UPDATE

DR. DIAGNE: Yes, Mr. Chair. For this agenda item, Dr. Kelly Lucas will provide an update to the committee on the finfish farm operations of Manna Fish Farms in the Gulf of Mexico. She will cover a range of issues, including site requirements and screening, as well as the production plan, and so we will turn it over to Dr. Lucas. Thank you.

DR. KELLY LUCAS: There is one slide update in here, and I believe they sent it out, but I will point out which slide it is for you all, so that you all are aware of it, if you all have already loaded the presentation.

Thank you, and so, in 2019, I appeared before the council to discuss kind of the early operations of Manna Fish Farms Gulf of Mexico, and I'm happy to be back to kind of update you on where we are and some of the potential changes that have occurred since 2019.

With that, I'm Kelly Lucas, and I'm the agent, and I work for the University of Southern Mississippi. Manna Fish Farms is the applicant, will be the applicant, on the permit, and Donna Lanzetta, with Manna Fish Farms, is present today, and she flew in from New York, and so, if we have questions, she's also available to answer those questions as well. For USM, I serve as the Associate Vice President for Research as well as the Director of the Aquaculture Center.

This is just a basic overview here of what we'll walk through

today, so you have that available for you. As I mentioned, Donna is here, and Mike Meeker, our COO, is also the inventor of the Storm Safe Submersible Cage that we will be discussing later. As you can see, if you look at all of the different logos around the slide, besides Manna and Storm Safe, you have USM, and you have Sea Grant for Mississippi-Alabama, and you have Sea Grant Law, the University of Mississippi, and you have New Hampshire and New Hampshire Sea Grant. NCCOS has been extremely helpful in supplying the team with data and information related to the spatial planning analysis, as well as funding from the Gulf States Marine Fisheries Commission.

A little bit about Manna Fish Farms. Any time you as a university, or whoever, go out to partner, you want to make sure that the people that you're partnering with share your goals, so that you all can easily work together and move forward, and Donna certainly is committed to sustainability and transparency and best aquaculture practices, and so she wants to not only work with us and engage with us on research and making aquaculture better, but she wants to make sure that she's considering this with others, so that she can continue sustainability practices, help others get in business as well.

She is working on permits not only in the Gulf of Mexico, but in the Northeast, off of eastern Long Island, and so, in addition to her operations with Manna Fish Farms, she also has a foundation, which will work to educate people on sustainable fisheries, and that's both wild capture and aquaculture, and there's just a little link there, for those who want to learn more about Manna.

In terms of her partnerships, like I said, she has reached out across a whole breadth of people, and so working with Woods Hole, doing some other work with MIT, Stony Hook Lab in New York, and, in addition to that, she has recently reached out with a partnership with IBM, and she has launched the Manna blockchain, and she has recently opened a restaurant, and so I was happy that she can join us, and she's in the middle of opening this restaurant, and, across the way, she has her Manna Foundation, where she will work to educate people on sustainable aquaculture and fisheries.

Here is how we started with the Manna Fish Farm project. We originally started with just a concept of where do you want to be, what is the area you're looking for, and so, when we filled out the information for NCCOS, we said we want to be anywhere from the Mississippi-Louisiana line all the way through the Florida Panhandle, and we provided them with the information

between the fifty to fifty-five-meter depth contour, and that was kind of a critical range for the cages, and so we were looking there, and we provided information about some of the biological characteristics.

What we really wanted them to do was to look at a couple of ports that we had in mind and try to minimize the distance from the farm to the port and try to reduce as many user conflicts as possible in siting them, and still get all of the biological conditions, and so a lot of information going on there.

In addition to that, we did supply a list of species, and these are the top-three species that you see there listed that we think are ready to go. Red drum, we actually have red drum in the tanks. The brood stock are in tanks already at the Aquaculture Center in Mississippi. Then almaco jack, which Mote Marine Lab has been working on, and Gulf striped bass, which there are local Florida hatcheries that do Gulf striped bass, and so those are the three species.

After supplying that information to NCCOS, they come back with this map, and what you're seeing here is relative suitability of habitat in the range we identified, and so the Mississippi-Louisiana line through the Florida Panhandle, and, as you can see the colors in the darker blue, those are sites that are more suitable to the aquaculture farm.

This is just some of the data NCCOS considers, and so this list is not exhaustive, but this is data that they consider when they're looking at their siting model, plus others, and that's just kind of a little blurb, on the right, that shows them how the siting model works, and so, if there is something that is present in that area, it would be less suitable, if there is a pipeline that's running underneath, if there's an oil rig there, if it's a navigation channel, if it's on top of an artificial reef or other critical habitat.

You have probably seen this before, and this is just the basics, and so, in this case, you see a submarine cable working through this grid that was created, and so, obviously, very less compatible, because you can't put your aquaculture farm on top of this cable, and so that's just how the model works.

In this slide, this is what we're going to call our east cohort of sites, and so, originally, when we started, we had a large area, and so we had both a west cohort, which is kind of south of Mississippi, and then the east cohort, and so there was five additional sites over in the west cohort, and then here's the

east cohort of sites, and so these are the five sites that met several of the parameters that we had, in terms of acreage, in terms of all the things that we provide, and so, in this, you can see up there that they just have some of the other factors that are considered, but, clearly, you see that four of those sites are getting pretty close to a navigation channel.

In this one, they added on the DOD areas, and so you can see we do have four sites, and only one of them is kind of encroaching maybe on some of the DOD-related areas, and Site E is clearly in one of those areas, and so Site E was listed as our preferred site, but certainly we recognized that we needed to ask the question to the Department of Defense, and so NCCOS reached out to the Department of Defense Clearinghouse, to discuss this with them, and they did issue us a letter saying that it was okay to do aquaculture in this area and that we would just need to coordinate with them as we move forward, especially in terms of what actually gets put on the form in terms of recording devices and such. This is just those sites listed on the navigational chart for you all, so that you all can see them.

As I mentioned previously, when we looked at the sites, the four sites, A, B, C, and D, that were kind of close to the navigation channel, you can see that there is some lines that are going through some of those sites, and so some tracks of vessel traffic. As you can see, over on Site E, there is no traffic, and so certainly reducing some of those user conflicts that we were concerned with being close to the navigation channel about.

On this map, you can also -- What we were trying to do is show you the artificial reef areas, and so Site E is very close to the Escambia County, Florida artificial reef area, and so that was just to give you all some images on that.

This was shrimp trawl effort, and I want to point this out, because this is 2004 to 2013, and, on the next slide, you'll see a little bit more of an update, and so, again, trying to reduce user conflicts, and we wanted to look at where these shrimp trawls may be occurring, and all five of those sites are minimal, if any, traffic.

This is the slide that was updated from your previous package to now, and this is 2004 through 2019, and what you were looking at, the red boxes that are there, those were -- I will explain it in just a little bit more detail in just a moment, but those were three of the potential farm footprints, and so we had selected these kind of as a secondary farm footprint site, and so those are the actual trawl efforts, and that's summed from

2004 to 2019.

Certainly we recognize that those who are participating in the electronic logbooks and all that varies, but, in fifteen years, we feel like it's very much not an area where we should see a lot of conflict.

Originally, when we did the first bathymetric survey, this is what we were looking at, and we had selected where we -- Our ideal farm site, and, when we went and did the bathymetric survey, there was this ridge, and you can see the ridge that runs like right through the middle of that black box, which was our farm site, or what we thought was going to be the farm site.

This ridge actually contains consolidated substrate, and the EPA had requested that we be 1,000 meters away from any hard substrate, and so this meant that we needed to kind of go back to the drawing board and do another bathymetric survey and move away from that drowned barrier island, is what it is, and so this consolidated substrate that's on the bottom.

The EPA let us know this in July of 2019, and so what we had to do was really start diving into the details of where can we be and still be in the optimal depth for the cages, and so we went through kind of a precision siting analysis to get there. The other thing was the artificial reef that Escambia County manages, and so EPA requested that we talk to Escambia County about the offset that they wanted from the boundary of that artificial reef, and they replied to us with 500 feet from the boundary, and there is buffers on both their boundary and our boundary, and so the distance would probably be a little greater than that, but that was their request, and so we've honored that.

In addition to that, as we were doing the -- We had to go out and do a second bathymetric survey, and you had to contend with -- Are you going to go to the north or south? Of course, you get deeper moving to the south, and you get a little bit shallower to the north.

At the same time, in the summer of 2019, NOAA was working on a new Bryde's whale habitat map, and there is just some recent developments, and I think you all have seen that, where it could potentially be the Rice's whale, and we'll have to go through a process, but we also wanted to move away from any known sightings of the Bryde's whale, and so chose to go to the north of the previous site.

You will see the box at the bottom, that doesn't have any of the blue lines, is the previous survey, and so we moved to the north and to the east to do the next survey, and we had kind of precision-sited, based on what we knew, three potential farm layouts. We do still need to be in depths closer to fifty meters.

On this, this is some of the second bathymetric survey that was completed. The actual multibeam was only done on those three potential farm sites, since we were looking for the precision of being able to lay out the anchors and all that, but the side scan and everything needed for archeological and biological information was completed, and so the image that you see on the right-hand side is showing you that the majority of that is sand substrate. The ridge is, of course, still present, and we expected that to be the case.

These are the two images, side scan images, that were stitched together, and so this was just to show you that that ridge does continue, which is what we anticipated, where that consolidated substrate is, and this was so that we can maintain that 1,000 meters from that hard substrate.

The Storm Safe submersible cage, this is just some information on kind of how it's designed, and on the right-hand side are some images of them actually deploying the cage and putting it together onsite, and this is actually the layout of the farm that we have selected.

Originally, when I presented to you all, we had eighteen cages, and we have reduced that to twelve cages, and it fits into the site really nicely. You will see that the cages are a little bit more weighted, if you look towards the south and west of the image, and that's because the deeper water is there, and, for engineering analysis purposes, we really want to be in deeper water. We can go a little bit shallower than fifty meters, and you have to change a little bit of your engineering to do that, but the fifty-meter depth is really so that, when we lower the cage during a storm, you will have enough water under the cage as well as on top of the cage, in order to maintain stability.

This image is just showing you, and I don't think it's exactly to scale, but it was to show you kind of where the farm would essentially be, area-wise.

Here is just some primary gear lists and deployment phases that we have listed, and I will say this is draft, and the team is kind of working to finalize that, and we have been in

discussions, and we have an engineering analysis, and we will make sure that all of the components meet the engineering analysis, and the engineering analysis also models for storms, and they were able to use Hurricane Michael that went through as part of their modeling information, so that we can make sure that we maintain very tight lines and that the gear is very structured and appropriate.

At the bottom, you kind of see the phases of deployments, in trying to get the pens out, and, in addition to that, you will see kind of the feed barge, and so, initially, when there's only a couple of cages out there, we'll be going in and out of the port with feed.

Over time, as you move to have more cages out there, it becomes more economical, and a better fit, to have feed barges that are in place, and those barges will be livable barges. Therefore, somebody will be out there all the time, and what you would have coming and going is you would be bringing the feed to load onto the barge, as well as harvest and some other stuff, and so we're still working on narrowing that down.

Here is kind of the production timeline. As I mentioned, we did reduce the number of cages from eighteen to twelve, just because it seemed possible for that area, and so we reduced the number of production pounds, and so, originally, I think we had eight million pounds, and we're half that now.

This is just some feed information for you, and, of course, feed is making huge strides in feeds for aquaculture, but this is what we have just listed, in terms of type, making sure we have the slow-seeping pellets, 44 percent protein and 13 percent lipid. We certainly recognize that feeds are making huge advancements, and so we look forward to potential updates in that.

We know we have three species listed, and so, of course, the feed and all that varies by your species, but we did use a feed conversion rate of 1.7 in all the calculations, and then this is some basic information on how we intend to stock the cages, as well as a daily feeding at max biomass, which is used for the modeling that they do on the nutrient analysis on the cages out there, and so that information has been supplied to the team that will do that modeling.

For our next steps, we have not filed permits yet, and we are working on all of our what we like to call best management practices plan, but it's really like all the details of

everything that you will do, right, your operations, your maintenance, how many times a vessel will be going back and forth, what type of vessels, what kind of feed, how often, and like all this information that goes into it.

What are you going to do for health and biosecurity, what are your onshore operations going to look like, and what's the harvest frequency, and all of that information will be contained in these plans that will be submitted along with the permit application.

In addition to that, some of the more critical plans include environmental monitoring, that we will work on with the federal agencies, as well as our emergency response plans that need to be in detail for the Corps of Engineers, and quality assurance plans that are part of your application package. With that, I appreciate you all's attention, and I happy to update you, and we'll take any questions.

CHAIRMAN DIAZ: Any questions or comments for Dr. Lucas? Ms. Bosarge.

MS. BOSARGE: I just wanted to thank you. I really appreciate you putting that slide in there with the shrimp trawl. I appreciate that, and it does seem to be located in a spot that, at least by the ELB data, shouldn't be too heavily trawled, and so I do appreciate that. I did have one question, and, Kelly, this is probably something I should already know, but, the fish that you're going to put out there, they're sterile, and they can't reproduce, and how do we ensure that? I know you all have protocols, but I don't remember them.

DR. LUCAS: They're not sterile, but they are the first generation. I believe, in the State of Florida, one of the new requirements, and Martha may be able to speak to this, is to get a, I guess, a release -- Almost like a stock enhancement program, and so, if the red drum were to be released, you would treat it almost like stock enhancement, because it's from the first generation, and those red drum did come within the mile limits around the cage, and we appreciate those states who issued us permits for that.

CHAIRMAN DIAZ: Any other questions or comments for Dr. Lucas? Mr. Strelcheck.

MR. STRELCHECK: No questions, but I just wanted to thank you, Kelly, and your team. We have been collaborating with Kelly for quite some time now, weekly meetings, or maybe even more

regularly, and I know we've made a lot of information requests from you, and I just appreciate your responsiveness, and I know we've run into some tough issues, but I continue to look forward to working with you as this project progresses.

DR. LUCAS: Thank you, and I did want to say, just to Andy's point, as part of our grant from Gulf States Marine Fisheries, we recognize that this is probably one of the first commercial-scale farms to operate in the Gulf of Mexico, and so, as part of that grant, it's this commitment to working hand-in-hand with the agency, so that we can share lessons learned, and we can be as responsive as possible and try to figure out a path forward that works for the agency as well as any applicant.

CHAIRMAN DIAZ: Mr. Anson.

MR. ANSON: Thank you, Mr. Chair, and thank you, Dr. Lucas, for the presentation. I don't recall, but what are the restrictions, as far as the public and the distance from the cage or from the farm area? Is there a buffer, or can they go up to the line that they identify here, or is there a buffer beyond that line?

DR. LUCAS: Typically, and we've been talking to the Corps about this, they don't have like a restriction, in terms of a buffer, and, if you think of other structures that are out there, like oil rigs and stuff, it's basically like don't tie up to the oil rig, and so I think part of the discussion the agencies are having is should there be some level of buffer.

Of course, it will be more -- As you can see in that image, you have multiple buoys and information that is marked, and, in addition to not tying up, it's making sure they don't get caught on lines and stuff, but certainly these become fish aggregating devices and stuff, and so they become good fishing spots, and so it's how do we work with the community that will be fishing around there. We certainly want them to be able to fish there, but we want to make sure that they're safe and the cages are safe as well.

MR. ANSON: Thank you.

CHAIRMAN DIAZ: Mr. Donaldson.

MR. DAVE DONALDSON: Thank you, Mr. Chairman. Again, like Andy, not a question, but a comment. I just wanted to reiterate what Andy said. We've been working with Kelly for a few years on this project, as part of our regional pilot program that's run

through the commission, and we appreciate her flexibility in dealing with some of the obstacles that have come her way, but we're looking forward to the final outcome of it, and we appreciate you working with us and continuing to work with us.

DR. LUCAS: Thank you.

CHAIRMAN DIAZ: Ms. Bosarge.

MS. BOSARGE: Just one more question. I see you have those surface buoys listed on here, and I guess that's maybe kind of what I'm seeing in the picture there, but are they going to be -- Well, I'm thinking about navigation. Are these things going to be lighted, so that you can see them at night?

I mean, when you think about oil platforms, you think about the loud noise, and so there's a lot of different precautions that they take to let people know that they're there, so they don't run into them, and so what, besides just a buoy in the water, what are we doing? Do you have any sounds or lights or anything?

DR. LUCAS: We haven't listed any -- There will be lights, and so this will be done in accordance with the Coast Guard, and so you do have to fill out the Coast Guard information for all the hazards to navigation, and so that will be part of it, and so, yes, those will be lighted buoys. The number and how they want to do it, we'll work with them to make sure that we get everything adequate that they need.

CHAIRMAN DIAZ: Mr. Swindell.

MR. ED SWINDELL: What is the feed efficiency or assumption by the stock? Do you have a percentage of how much feed you put in versus how much feed is actually used by the stock of fish?

DR. LUCAS: You do, and that was the feed conversion rate, and certainly some species are better than others, and you actually feed to that, but you use cameras, and so you want to make sure that you're not overfeeding, and so you have cameras that are set on there, and you have feed that goes in, and so the feed conversion rate we used here is like 1.7, and, I think, for red drum, it's probably closer to 1.5, and so you're feeding them in accordance with everything that you're watching.

As soon as they are no longer interested in eating, and you're not putting food out just to put food out, because that would be waste, and that would just be more nutrients in the water that

don’t need to be there.

CHAIRMAN DIAZ: Go ahead, Mr. Swindell.

MR. SWINDELL: Do you know anything about -- What is the typically movement of water through that system, or what direction does it move?

DR. LUCAS: It moves to the south and west, as that current is moving towards the west, and we do map that, and we put out an acoustic doppler current profiler for several months, which calculates the currents in that area, and so they use that in the feed model, to look at where you will see any of the effluent coming off.

CHAIRMAN DIAZ: Dr. Frazer.

DR. TOM FRAZER: Thanks, Kelly, for the presentation. I was thinking about it, and, originally, when you guys were talking about doing this, you had eighteen cages, and you kind of scaled it back to twelve, and you had a production cycle that was over five or six years, and I know the focus has been primarily on almaco jack, but you had kind of redfish and Gulf striped bass, and you had others too, and what I’m curious about is whether or not you intend to like focus specifically on one species for the next five or six years, or, after you get a permit, do you intend to have like a polyculture of fish in there, and then, finally, what are those others that you are considering?

DR. LUCAS: So a lot there. Red drum, of course, just because of what is known on red drum and how often that is cultured and the information, and it’s very much a commercial-ready species, and so we will start with red drum. The Gulf striped bass and the almaco jack both have availability, and Donna has worked with striped bass in the Northeast, and so that’s very much a familiar species for them, and so it would be a good potential species, but we will start with red drum.

We will look to almaco jack, as the production of that increases and becomes more readily available to move out, and I know that Mote Marine Lab has been working on that, and then the Gulf striped bass, of course, because it is already cultured, and we do know about it.

Somebody recently sent me an article, and I haven’t had time to look into it, but there was some concern, kind of early on, that maybe some of the warmer temperatures that you would see on the site might not be great for Gulf striped bass or whatever, and

so you might want to try to culture those kind of in cooler temperatures, but it's a new article, and so don't hold me to that, and that new article just came out, and somebody sent it to me, and I haven't read it, and so maybe it kind of changes the game plan.

I think Donna and them, and she's here, and so she may have a different plan, but the potential, of course, is there for polyculture, but definitely start out and get good at something.

The other species that were on the list were ones that were being cultured in the Gulf of Mexico and were being worked on by a group that is kind of like all of the southeast aquaculture centers, and they kind of provided a list of these species and where they were in those species development, and they included things like gray snapper was one of them, and tripletail was one that our lab has worked on a fair amount that was listed. Pompano was listed. Cobia, of course, was listed, but we think it's, I guess, a little too cool in this area for cobia, and so some of those traditional ones that are already done were listed for those that were being worked on in the Southeast and that we could talk to our colleagues about, and certainly look to them for production.

DR. FRAZER: I appreciate that, and so I knew I threw a lot of questions.

CHAIRMAN DIAZ: Ms. Boggs.

MS. SUSAN BOGGS: Thank you, Mr. Chair, and thank you, Dr. Lucas. It's 265 acres, and is that what I am seeing here, the area?

DR. LUCAS: I think it's a little bit smaller than that, but if it says 265 on your slide, then you are correct.

MS. BOGGS: Okay. I just wanted to confirm that, and then I know one of the questions, and we talked about this before, and I heard from some of the charter fleet, was the disease in these fish farms and how you would control for something like that.

DR. LUCAS: The best way to control disease is your biosecurity plan. You want to make sure that -- There are a very limited number of drugs that are available for aquaculture already, as regulated, and you don't even want to get there, and so you want to control any of the disease that could potentially occur through very tight biosecurity measures, and that is everything from before they leave the hatchery, all the different controls

you put in place, how your boat is cleaned, what gear people are wearing, how they're handling everything.

Then it's making sure that you give the fish plenty of room in the cage to move around, to reduce disease, and so, yes, that will be part of that safety plan that gets submitted, and we will have certified vets that will be part of the plan and monitoring as we move forward, but mostly I think what we see is, the tighter your biosecurity controls are, the less chance you have for any disease.

CHAIRMAN DIAZ: Ms. Bosarge, and then we're going to wrap this up.

MS. BOSARGE: If staff could go back to Slide 14, and, Kelly, this isn't for you, but this is just kind of something to keep in mind for the council, as we move forward with other things that are coming up on the horizon, and so, if you look at the rectangular boxes with the little lines going across it at an angle, and I think you have those listed as fish havens, and so like artificial reefs, and so we can't shrimp there, because we'll tear our gear up.

Then, of course, you're going to have a site right in between those, and so, that area that is in between them, we won't be shrimping there anymore either, and I only bring this up because the other thing that's coming up on the horizon, and this looks like you're pretty much at the head of the canyon, and we're right up in there close to it, and so the other thing that's coming up on the horizon at the head of the canyon is possible wind farms, and that will be another big chunk of area that we can't shrimp, once they put them in there, and so I just bring that up so that the council can think about this in a holistic view.

You know, you hear me fussing, a lot of times, about you're taking more bottom, you're taking more bottom, and yours is a small piece, but it's when you start looking at all of this in aggregate that it really starts to build up on us and takes away our ability to access our historical shrimp grounds, and so that's all, and I think you've done a great job, and I'm not blaming you, but I just want to think about this holistically.

CHAIRMAN DIAZ: (Chairman Diaz's comment is not audible on the recording.)

DR. LUCAS: Thank you, all.

CHAIRMAN DIAZ: All right. Sorry about that. Next up on the agenda is Bycatch Reduction Methodology. Dr. Diagne, would you take us through the action guide and next steps for that item?

BYCATCH REPORTING METHODOLOGY

DR. DIAGNE: Yes, Mr. Chair. Thank you very much. First, the agenda item should read "Bycatch Reporting", instead of "Reduction", as noted. For this last agenda item, Mr. Dan Luers from SERO is going to present a review of the standardized bycatch reporting methodology for the Gulf of Mexico and joint FMPs, and these are required to be reviewed once every five years, and, currently, the agency and the council are in the process of conducting this review. It is expected that a draft would be presented to the SSC, and later on to the council, and so we can turn it over to Dan. Thank you.

CHAIRMAN DIAZ: Thank, Dr. Diagne. We have Mr. Luers to do the presentation. Whenever you're ready, feel free.

MR. DAN LUERS: Good morning, everyone. My name is Dan Luers, and I work with SERO, with the Gulf Branch Sustainable Fisheries Department, and, today, we're going to talk about just where we are on the update with the SBRM review.

The purpose of the presentation is to remind the council that we need to review the SBRM, and we're going to talk about the SBRM review, and then we're going to discuss specific fisheries and SBRMs for the fisheries and the timing of the progress and review, and then, hopefully, we can answer questions about specific fisheries and bycatch reduction methods that might be applicable in the FMPs.

I think the best way to do it is to maybe go through each fishery and maybe have questions after, but, if we want to wait until the end, or if no questions come up, we can kind of decide that as we go along.

Again, SBRMs are an established, consistent procedure, or procedures, used to collect and record bycatch data. The purpose is to use the information to assess the amount and type of bycatch, and, just as a reminder, the council has SBRMs for each of the FMPs.

Basically, what this review is, there's four mandatory components of the SBRM review, and so these are kind of -- I guess you should probably look at these sort of as questions, and so what are the characteristics of bycatch occurring in the

fishery, is the methodology feasible, from a cost, technical, and operational perspective, and is the uncertainty acceptable in the data that results from the methodology, and how are the resulting data used to assess the amount of bycatch occurring in the fishery?

The FMPs, we're going to talk about Reef Fish and Shrimp, and those are the major ones, where there is a lot of SBRM. Coral, since there is no active fishery, we won't discuss that here, and then the CMP and the Spiny Lobster are joint with the South Atlantic, and so we'll discuss those, but, again, there is a little complexity, because of that.

Starting with the Reef Fish FMP, there is thirty-one species in the Gulf, about 890 permitted vessels, commercially, and then the primary gears are longline, vertical line, and modified buoy gear.

The types of bycatch reporting methodology that are currently going on, we have logbooks, which are required for all vessels, and they must include the quantity, in pounds, of all the species, the area caught, the gear, et cetera. Supplementary discard data program, and so, if the vessel is selected, they report the number and the average size of the fish being discarded by species and reasons for discards, and so that happens -- 20 percent of the vessels are selected each year, and that changes each year, and so it should occur that, every five years, every vessel has reported on year.

Then we also have the Reef Fish Observer Program, which the observers report all catch, including protected resources, and that usually covers about 2 percent of the trips annually. The shark longline, I included that here, because we get some ancillary data from it, and it's not really a reef fish SBRM, because we don't require it, but it does record all catch, including protected resources, and it gives a good estimate of reef fish bycatch and that sort of thing.

Characteristics of bycatch for the for-hire vessels, we have MRIP, which includes the APAIS, the Access Point Angler Intercept Survey, and then the CHTS and FES, which all are used, or the FES is what is used now, and I think we've discussed that a lot, but estimates estimate catch rates and effort for captured species, and there is also the Southeast Regional Headboat Survey, and so there is limited headboat observer coverage, dockside sampling, and discard reporting.

Then, of course, we've talked about SEFHIER, which was

implemented in 2021, and so we're hoping that will provide -- It's mandatory, of course, and we're hoping that will provide a lot of discard information as well. For private vessels, again, MRFSS, MRIP, CHTS, or FES, and estimates of catch and effort for captured species, and information on dead discards is also obtained.

The amount and type of bycatch, we're not going to get too deep in that. Really, what this report is looking at is we will report the numbers of bycatch species, but it's not really asking if we're catching too many bycatch species or that sort of thing in a fishery, and it's basically saying are we adequately capturing what is being captured, if that makes any sense.

Also, the importance of bycatch in estimating -- We will use the estimates of numbers for species, versus release mortality, to estimate dead discards, and, again, the numbers aren't necessarily important here, or as important, as whether we're actually getting the information we need.

The next criterion is the feasibility of the methodology, and so are these SBRMs feasible, from a cost, operational, and technical standpoint, and, for the commercial, we have the logbooks, and, again, this is just a list of things that are the SBRMs, and so the question is whether they are feasible, and most of these programs have been run for quite a long time, which would indicate that they are feasible.

Also, with the recreational, for the for-hire, we have MRIP and the SRHS, which have run for a long time, and SEFHIER, at this point, is -- It seems like it's going to be the -- It's going to provide a lot of data, and it's just being started, but it appears to be feasible, but these are questions that you should be asking yourself, are these things feasible? Then private angler, the same thing, the MRIP and, formerly, MRFSS.

The next question we have to ask, and, again, this is for Reef Fish, is, is the uncertainty acceptable, given the obstacles, such as financial, legal, et cetera, and so, with the commercial SBRMs, we have logbooks, which often have high uncertainty associated with the discards, and CVs sometimes exceed 100 percent. As Clay mentioned the other day, rare species are often -- They may not be identified before they're discarded. If the captain doesn't know what it is, and he just throws it back, it's not going to be identified, and potentially species are potentially not reported.

Supplementary Data Discard Program, we have a problem with non-reporting, and not that people won't turn in reports, but they just say no discards, and, technically, they're still in compliance. Those aren't generally used, or they aren't used, I don't think, in the estimates, but I guess there are possibilities where no discards would be correct, and so it does lead to some uncertainty.

The Reef Fish Observer Program, again, the 2 percent coverage, that is less accurate in estimating the capture of rare species, and so you're hoping to get a better idea of that from the logbooks, hopefully, with the rare species that are being reported.

The observer program indicates that self-reported discard rates are consistently lower than observed reported rates, and so logbooks, basically, aren't always as accurate, and they're not telling you everything they catch, in general, is what that indicates. Then the shark, again, this one is in blue, and it's not really an SBRM, but it does provide ancillary data on the reef fish discards in the fishery.

For recreational SBRMs, we have MRIP, which is self-reported, including the dockside surveys. The SRHS, the regional headboat survey, has a limited headboat observer coverage. Also, there is dockside sampling and discard reporting, and so it does provide a measure to estimate accuracy of self-reported headboat landings. Then SEFHIER, again, is self-reported, but it's much more comprehensive, and the private anglers are self-reported, including dockside surveys.

The final criterion is how is the data used to assess the amount and type of bycatch occurring in the fisheries, and this is kind of the same for all the fisheries, and so, if I go through this here, I probably won't go through it again on the other slides, but the Science Center uses the data in stock assessments to incorporate bycatch into estimates of total fishing mortality.

The council uses SBRM to derive bycatch information to assess if new management measures are necessary and develop measures or evaluate the potential impact of measures, and then the SSC uses information, as they review the status of fisheries and develop ABC recommendations. All aspects of fishery management in the region that have bycatch implications use data from the SBRM.

That is, basically, all the criteria that we look for for each fishery, and so that's the end of the reef fish, and that's kind of what's going to go into the report, a very brief version of

what we're looking at, and, like I said, in the report, I will outline all of the bycatch species and that sort of thing, and that will be comprehensively addressed in there, but, really, this is more about whether the methods are acceptable and adequate for what we need them for, and so, at this point, I'll take some questions on the reef fish, if anyone has any.

CHAIRMAN DIAZ: Ms. Bosarge.

MS. BOSARGE: On Slide 11, you're going to do the analysis, but the analysis will eventually be used to see if changes or improvements are needed somewhere, right, and it helps to inform those types of decisions, and so, when I look at the analysis, I see that -- If you look at the commercial side, we're passing judgement, and we say high uncertainty, with discards CVs often exceeding 100 percent. We're essentially pointing out the weak points, right?

MR. LUERS: Yes.

MS. BOSARGE: Protected species potentially not reported, and then you look at the -- So that's the basic thing that everybody has to comply with, and then you get into the supplemental discard program that fishermen are required to comply with, if they're chosen, and you say, you know, non-reporting is an issue, and then you go down to the observer program, that is 2 percent coverage and less accurate, and so you're giving some feedback there, and you do the same thing with the for-hire.

Then you get to the private, and all you say is self-reported from rec fishermen, including dockside surveys, and we don't speak to any of the uncertainty, and we don't pass any judgment, and we say nothing, and I thought it was funny, at the beginning, when you talked about the Reef Fish FMP, and you said there is thirty-one species, and there is eight-hundred-and-something commercial federally-permitted boats, as if there is only 800 boats with bycatch in that fishery.

I mean, it's just -- I realize that I'm a little sensitive about it, but, at some point, we have to get down to both sides of the issue, especially when you start to look at the magnitude of bycatch on both sides of the issue, and we just looked at it for red grouper.

The commercial side had about 287,000 fish discarded in 2017, and the recreational side had 2.5 million, and so the fact that we don't say anything about the uncertainty, or that there might be room for improvement there is a little frustrating, and so I

hope that we can improve that, so that the council can really look at this with an open set of eyes and find out where the room for improvement is.

MR. LUERS: That's a good point, and perhaps -- I think the report will be more comprehensive on the private, but I probably neglected it a little bit more in here, and it's more from the aspect that there is only one way of reporting than from the aspect of I intentionally was downplaying it, and so I understand your concern, and I will definitely address that going forward.

CHAIRMAN DIAZ: Any other questions or comments for Mr. Luers at this point? You can proceed, Mr. Luers.

MR. LUERS: Okay. Thank you. The next fishery is the shrimp fishery, and so four managed shrimp species, the brown, white, pink, and rock. There are 1,467 federally-permitted vessels, and it's primarily trawl.

The bycatch reporting methodologies include logbooks, including electronic and the cellular ELB, which you've been talking about, and so they require all vessels -- They are required for all vessels, and they give accurate calculations of vessel effort, catch per unit effort at fishing locations, and they must provide the size and number of trawls and types of bycatch reduction devices, and TEDs as well.

In general, the observer program gets about 2 percent of annual trips covered. Some of the other programs, which aren't SBRMs, but kind of work in concert to make sure that we're on point with bycatch is the Science Center cooperates with states to monitor fishing effort, and then the NMFS OLE maintains spreadsheets with boarding details, and the Sea Turtle Savage and Stranding Network maintains a database of strandings. They use that, with observer data, to monitor sea turtle mortalities from fisheries interactions.

Again, we're not going to get too deep into the characteristics of the bycatch, and shrimp does generally constitute less than a third of the fishery catch, and that will be summarized in the report, but the focus, again, is more on the adequacy of the SBRMs than catch.

Shrimp gear, it's worth noting, can affect the abundance of species that are targeted by other fisheries, and red snapper is the most obvious example, and the ecological effects of bycatch mortality are the same as fishing mortality from directed

fishing effort.

Most of the fish that are caught in the trawls are finfish and invertebrates of little-known species, and little is known about them, because they aren't important, and they aren't generally targeted in any fisheries anywhere.

From a feasibility standpoint, we have the ELB/cELB, and the modifications are currently being discussed, but it seems like this is going to go forward. The Gulf of Mexico Shrimp Observer Program is expected to continue as long as we have funding, and, largely, the other programs, which aren't really our SBRMs, will likely continue as well.

This is the level of uncertainty understood and acceptable, given the obstacles, and so SBGM, and that's the observer program, is the best method for estimating discard rates for species, and the logbook data provides reliable effort of fishing data and location. There is some biases in the logbook data, as we mentioned before, but they are more useful for effort by area or info on captured and rare species, and so using the SBGM, combined with the logbook, is the best method, overall, for estimating bycatch.

Again, this criteria is the same, and so they are used in stock assessments and for management measures and that sort of thing, and so that is basically it for the shrimp fishery. Does anybody have any questions regarding that, or comments?

CHAIRMAN DIAZ: Any questions for Mr. Luers at this point? I am not seeing any, Mr. Luers. You can proceed.

MR. LUERS: Okay. On to the coastal migratory pelagics, and this is jointly managed with the South Atlantic, the king mackerel, Spanish mackerel, and cobia, and then trolling handline and gillnet gear are the most common gears used for those.

They are required to have logbooks, which includes the quantity of all species, area caught, gear, et cetera, and the supplementary data discard program, the same as the reef fish, is 20 percent every five years, and then the Southeast Gillnet Observer Program covers all anchored, strike, or drift gillnet fishing, regardless of species, year-round in the Gulf.

For recreational vessels, we have MRIP, and it's basically the same as the reef fish, and so we have MRIP and the headboat, and then SEFHIER. For private anglers, estimates of catch and info

on dead discards through MRIP.

The amount and type of bycatch is characterized by low discards, and so the highest discards are when trolling, but, generally, it's a pretty clean fishery, and so that will be summarized in the report. Again, the importance of bycatch in estimating bycatch mortality rates vary from about 5 percent -- Bycatch mortality, rather, varies from about 5 percent for cobia to 100 percent estimated in the king mackerel gillnet. Again, the ecological effects are the same from direct and indirect fishing mortality.

Feasibility, logbooks, supplementary discard program, and we've discussed this for mostly everything, and, previously, the Southeast Gillnet Observer Program seemed to -- It seemed to be feasible, and then, for the charter boats, the same types for CMP as we have for reef fish, and private angling as well, the MRIP.

Is the level of uncertainty understood and acceptable, given the obstacles? It's the same issues, and logbooks have pretty high uncertainty, and protected species are potentially not reported, and non-reporting is an issue with the supplementary data programs, and then the gillnet observer program does give accurate estimates of bycatch for the gillnet fisheries. However, there is no observer program for any other CMP fisheries.

Recreational is mostly self-reported, which comes with a lot of questions, and the SRHS does have a limited observer program and dockside sampling and discard reporting, and, again, SEFHIER is on its way. The same thing with the private recreational, and it is self-reported, and so it comes with a lot of questions.

Again, basically it's the same wording here, and the data is being used in this fishery the same way as it's being used in the other two fisheries. Any questions on CMP, before I move on?

CHAIRMAN DIAZ: Any questions for Mr. Luers at this point? You can proceed, Mr. Luers.

MR. LUERS: Okay. The final one I'm going to talk about is spiny lobster, and it's currently managed with the South Atlantic, and this is mostly traps and diving, with a small percentage using hoop nets and bull nets.

They are required -- The commercial fishery is required to have

logbooks, catch and discards, and the Sea Turtle Stranding Network also does report on -- The same as the reef fish, they report on any strandings of sea turtles and then what may have caused that stranding, and so if it's fisheries related.

Recreational vessels, Florida FWC monitors the bycatch of spiny lobster, and there are low discards. The amount of type, it's low discards, again, and 8 to 15 percent is generally what -- I think that came out of the Matthews and Donahue paper that I point out there down there as well, and most of the finfish caught in the commercial traps are juveniles that escape within forty-eight hours, and, again, it's summarized in the report, because it's not really important.

Although this isn't necessarily important, but the mortality of commercially and recreationally-important finfish is largely negligible, as determined by Matthews and Donahue in 1997.

Feasibility, for commercial, we have the logbooks, and, for recreational, really, because it's not in NMFS, and this is not mandated by NMFS, we don't really have any recreational SBRMs for spiny lobster.

The uncertainty resulting from the SBRMs has been evaluated through analyses associated with regulatory and FMP amendments implemented for the Spiny Lobster FMP. Bycatch levels are low for both sectors, and then the review criterion for Number 4, the data is used to assess if new management measures are necessary and develop measures, and so that's the end of the spiny lobster. Does anybody have any questions regarding that?

CHAIRMAN DIAZ: Ms. Guyas.

MS. GUYAS: Thanks, Dan, for this presentation, and so I'm with FWC, and is there a draft of this report available somewhere? I am particularly interested in this for spiny lobster, because there is a lot of SBRMs kicked to FWC, and I would love to be able to see kind of what the meat of this is.

MR. LUERS: There is, and I am still working on the draft for the Gulf. It will be very similar to the South Atlantic report, because it is jointly managed, and that one is more likely to be available soon, and I will check on whether it's available yet, but it's likely to be available very soon, and so I think that would help you out.

This report, I expect to have it available to the council for the next meeting, and I'm not sure when we're on the schedule

for the SSC, but we will endeavor to have it ready for the next SSC meeting as well, and so you will have it. It's just we're still working on it.

MS. GUYAS: I would encourage you to reach out to me, if you can, with this lobster part, before you get to the SSC, so that we can look at some of this, so I can help you out and make sure you've got the right stuff in there. Thanks.

MR. LUERS: That sounds fantastic, and I will definitely reach out to you on this, and I can use all the help I can get.

CHAIRMAN DIAZ: Any other questions for Mr. Luers about the spiny lobster section? All right. Any questions or comments at all for Mr. Luers on the presentation? His next slide, I believe, kind of lays out where we're going with this, and so our staff and NMFS staffs are working together on these documents, and the SSC will eventually review them, and the council will get another chance to review them and finalize them at some point in the future, and that's kind of where we're headed.

MR. LUERS: Yes, and the deadline for any actions would be February 21 of 2022, and so we would like to have the determinations made -- We're hoping we can have them made this year, and we are a little behind schedule, if we decide that we need to really implement anything else, but we'll find a way, if we need to.

CHAIRMAN DIAZ: Ms. Bosarge.

MS. BOSARGE: I just want to say thanks for your presentation, and sorry I was tough on you. It's been a long week, but you're doing great work.

MR. LUERS: No, and it's very important, and I probably should have focused a little bit more on that, and so my apologies.

CHAIRMAN DIAZ: All right. I am not seeing any other questions or comments. Go ahead.

MR. PETER HOOD: Just real quick, I just wanted to say that Dan is working on this, and he's been doing the lion's share of the work, and John is also working on it, and I've been sort of doing some of the reviews, I guess, but Dan is doing the overview, and, if there's anything that anybody sees in there that you think we've missed, or has any further comments on, contact us, and let us know, and we'll try to incorporate that

and make sure we get it covered in the report.

CHAIRMAN DIAZ: Thank you, Mr. Hood. I am not seeing any further comments on this agenda item, and so I think that wraps us up there. The last item on our agenda is Other Business. At the beginning of the meeting, nobody mentioned any other business, and so this concludes the Sustainable Fisheries Committee.

(Whereupon, the meeting adjourned on June 24, 2021.)

- - -