

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

**Crowne Plaza Hotel
North Charleston, SC**

October 20-22, 2015

SUMMARY MINUTES

SSC Committee

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Dr. Sherry Larkin
Dr. Carolyn Belcher
Dr. Brian Irwin
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Dr. Churchill Grimes
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Dr. Mike Larkin
Dr. John Foster
Dustin Addis
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Dr. Erik Williams
Dr. Jack McGovern
Dave Van Voorhees
Stacey Miller
Laura Lee

Other Attendees Attached

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The Scientific and Statistical Committee of the South Atlantic Fishery Management Council convened in the Crowne Plaza, North Charleston, South Carolina October 20, 2015, and was called to order at 1:00 o'clock p.m. by Chairman Luiz Barbieri.

DR. BARBIERI: I want to welcome all of you to the October 2015 meeting of the South Atlantic SSC. Before we go into introductions, I'm going to ask our distinguished new members to sort of quickly introduce themselves.

DR. SHAROV: My name is Alexei Sharov. I'm a new SSC member. I am a stock assessment scientist with the Fishery Service in Maryland. I do work with a number of technical committees, mostly of the Atlantic States Marine Fisheries Commission. I'm also on the New England Fishery Management Council SSC.

DR. SERCHUK: My name is Fred Serchuk. I retired from the National Marine Fisheries Service in January. I spent 38 years at the Northeast Fisheries Science Center in Woods Hole. Half of my career was spent as a population dynamics' person. The last half of my career was spent as a research division chief. I've served as a liaison from the center to both New England and the Mid-Atlantic SSCs.

MS. LEE: I am Laura Lee. I may be permanent and may be temporary; I'm not sure yet. Our director hasn't decided. I do stock assessments for the state of North Carolina.

DR. IRWIN: Brian Irwin; Georgia Cooperative Fish and Wildlife Research Unit at the University of Georgia. Prior to coming down here, I was at Michigan State University at the Quantitative Fisheries Center. My role there was to help the state and provincial agencies around the Great Lakes with fisheries' management questions.

DR. GRIMES: Churchill Grimes, SSC.

DR. SEDBERRY: George Sedberry, NOAA Office of National Marine Sanctuaries.

DR. BOREMAN: John Boreman, North Carolina State University.

DR. LARKIN: Sherry Larkin, University of Florida.

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

DR. IRWIN: Brian Irwin, Georgia Cooperative Research Unit.

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

MR. CARMICHAEL: John Carmichael, South Atlantic Council staff. I will just add for Laura; Will Smith was in the North Carolina seat and he took another position and has resigned. The council recently made a designated seat from each state agency. Laura is here on behalf of the North Carolina seat at this time; and then in December the council is going to consider a permanent

application for that seat. That's why it is a little gray here at this meeting; and we're glad to have someone from North Carolina here.

DR. BARBIERI: I'm Luiz Barbieri, Florida Fish and Wildlife.

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

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

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

MS. LEE: Laura Lee, North Carolina Division of Marine Fisheries.

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

DR. SERCHUK: Chris Serchuk, SSC.

DR. SHAROV: Alexei Sharov, SSC.

DR. YANDLE: Tracy Yandle, Emory University.

MS. LANGE: Anne Lange, SSC.

DR. BARBIERI: Looking at our agenda, we're going to have review and approval of agenda. I'll start by asking committee members whether you have any comments, issues or suggestions for the agenda. Scott.

DR. CROSSON: Am I to understand that we are or are not doing elections at the end of this meeting?

DR. BARBIERI: I think that the elections were put here as a placeholder; but John Carmichael actually checked on the schedule from when I became chair and how long that term would go and realized that actual elections are scheduled for the spring meeting. We will forego elections at this meeting and then proceed and have elections at our spring meeting.

Any other questions or comments regarding the agenda? If not, then with the exception of the elections, our agenda is approved as presented. The next item on the agenda is approval of meeting minutes. We have two sets of minutes, both related to our webinar meetings; one September 9th and one June 3rd; and then finally our April 2015 meeting we still have to approve as well.

We have our April regular meeting minutes; we have the June 3rd SSC webinar meeting and then the September 9th webinar meeting. Any comments, questions or concerns regarding the minutes for those meetings? Seeing none; the minutes are approved as presented. That brings to Agenda Item Number 2, public comment. With that, I'm going to open the floor for members of the public who may be willing to address the committee. Seeing none, we'll proceed to our next agenda item.

As usual, if you recall looking through our agenda, we're going to have another opportunity for public comment at the end of our meeting; so there will be another opportunity for that. The next agenda item is report on landings and accountability measures status. The Southeast Regional Office staff I believe will be giving a presentation. Mike.

DR. LARKIN: I'm going to go through the South Atlantic 2014 and the 2015 landings. We have the final 2014 landings and we still have preliminary 2015 landings. I'm going to go through the commercial first and then I'll go into recreational. These landings were summarized in October of this year.

As I just mentioned, the preliminary 2015 landings go from January 1st all the way to October 1st. In 2014 the landings, which are the final landings, come from dealer trip tickets; and 2015, the landings come from in-season monitoring by dealer-reported landings. I need to point out in 2014 we used to have a bimonthly reporting, but in August of 2014 we switched from the commercial dealers reporting bimonthly; now they have to do it weekly.

That's good; it lets us keep track of the landings much better. The landings were compiled and provided by the Southeast Fisheries Science Center; and landings are assigned by the fisher-reported catch area rather than the location of the dealer. These are the 2014 commercial landings of all different stocks here.

You can see blueline tilefish, we went over the ACL by about 20 percent. We actually did close that on June 23rd. Also, you can see golden tilefish, both hook and line and also the longline sectors exceeded their ACLs. I'm sorry, I should point out you can see in this table here we have the stock listed over on the left, then the landings in the next column and then the ACL for that year and units.

Most of them are in whole weight, but some of them gutted and a couple others in numbers for the recreational. The percent of the ACL is the next column; and then the closure date, if there is one. Whenever a stock exceeded the ACL, the ACL is highlighted in yellow. In this case, the blueline tilefish; golden tilefish, hook and line and the golden tilefish longline; those exceeded their ACLs in 2014, the commercial ACL.

Now we have got the jacks exceeded the ACL by 21 percent and the porgies just by 7 percent; red snapper by 9 percent; and then you have snowy grouper by about 10 percent; and you can see the corresponding closure dates listed there also for those four stocks I just listed. The vermilion snapper; that is put up in the two different time periods. From January to June, that exceeded it by 3 percent; and then you go from July to December; that one exceeded it by like 2 percent.

Now I'm going to go to kind of the ones that don't have an annual year. Instead they have like a fishing season; we call it like a fishing year. For example, greater amberjack is from May 1st to April 30th instead of January through December fishing season. Greater amberjack exceeded it by 6 percent; and black sea bass does not exceed it. So now I'm going – again is the 2013/2014 – I'm sorry, this is a mistake on my part. This 2013/2014 should be final commercial landings. I see it says preliminary on the top of that table.

Anyway, the Spanish mackerel went over by about 1 percent in 2013/2014 fishing season. Now I'm going to go into the preliminary landings we have for 2015, the current year. Blueline tilefish went way over the ACL, but you can see we had a change there. We started at the beginning of the season with 112,000 and it was reduced down to 17,000 from a recent amendment; and that explains that high overage there and why they closed it.

It was actually in March when the ACL got adjusted, and you can see in early April is when we closed it. You can see gray triggerfish, the season is from July to December; but one went quite a bit over, 59 percent over, but that one was closed September 8th. These two jacks were at 26 percent over. We closed that on June 23rd. All the way at the bottom you can see that snowy grouper went over by 15 percent, but we did have an early closure for that one, and that was on September 22nd.

In 2015 the vermilion snapper, the January to June one exceeded it by 2 percent; and you can see we had a closure on April 15th. The July to December one, it still could have some landings trickling in but only is currently at 96 percent of the ACL, but we still closed it on September 22nd. Then for these two stocks, greater amberjack and black sea bass – and I call these preliminary because we don't have final 2015 landings. We have final 2014 but not final 2015.

Anyway, you can see these two stocks did not exceed their ACL with the current landings we have so far. The same with these two stocks here, king mackerel and Spanish mackerel currently have not exceeded their ACLs. Now, to go into recreational, these landings were summarized in September of 2015. The best available we had was Wave 1 through 3, which is January through June. We are expecting Wave 4 – I was expecting this week, hopefully this week or early next week, but anyway it wasn't available in time for this presentation.

These landings came from the Southeast Fisheries Science Center and summarized by MRIP data or in cases where the ACL was still defined in MRFSS landings, MRIP calibrated to MRFSS, and then these landings are available 45 days after the end of the two-month waves. That is why I'm expecting Wave 4 to be coming in any day now.

These landings include both the MRFSS/MRIP and the headboat landings. We made a big step this year and now for all stocks we get every wave when we get the – I'm sorry, the MRIP landings; we also get the headboat landings whereas before we only on special requests got certain headboat landings if they had an in-season closure, something we had to monitor closely, but anyway the science center has made an improvement so now we get – every single wave we get both MRIP and headboat for all stocks, so that allows us in 2015 to keep a better track of the landings.

These are updated by NMFS here to be consistent with ACL monitoring. Post-stratification; for example, some species like gags, all of Monroe County, all of the MRIP landings in Monroe County are given to the South Atlantic. For a certain handful of stocks, we actually do post-stratification, meaning most of the stocks, the Monroe County MRIP landings are given to the Gulf. Black grouper or gag grouper, Monroe County MRIP landings were given to the South Atlantic ACL.

And now the 2014 recreational landings; Atlantic spadefish, we did go way over. We had one particular high wave that was really, really high. The way we monitor the recreational landings; we don't have the in-season closures like we do with commercial except for certain stocks. Most of these recreational stocks from the South Atlantic; we wait until they exceed; and if they exceed the ACL, then we monitor them closely next year; and if we see them or expect the stock to exceed the ACL the following year, then we close it, except for golden tilefish, red grouper and black sea bass.

Those have in-season monitoring meaning we watch the landings every single wave closely in the South Atlantic. I also need to say there is currently the generic amendment that will make – all of the South Atlantic stocks will have in-season monitoring; so we won't wait until they exceed it and then close it the next year.

Like in this case, Atlantic spadefish in 2014, if it exceeded the ACL and we saw it exceeded the ACL, but the way the accountability measure was set up, we didn't do anything. We would monitor it in 2015 to see if it exceeded it, which we are doing right now. Anyway, to get back to the table here, it says the same way as the commercial landings, so Atlantic spadefish, we see it went way over the ACL.

Gray triggerfish not only exceeded it the previous year, so we monitored it closely in 2014 and we ended up closing it on November 26th. Hogfish did not exceed the previous year so we didn't close it, but we're monitoring it in 2015 and it will go over it in 2015. Anyway, you see hogfish is 31 percent over the ACL in 2014.

You can see porgies, 20 percent over the ACL; red snapper went 40 percent over the ACL. That one has that special season, but that is the mini-season there. Then snapper is 14 percent over and snowy grouper was really high over, but you can see that with snowy grouper it is such a small ACL of 523 fish; so anyway you can see monitoring landings with such a small ACL number, it did go significantly over 2014.

Now to go to the 2013/2014 stocks like greater amberjack and black sea bass, they did not exceed their ACL in the 2013/2014 fishing season. King mackerel and Spanish mackerel did not exceed their ACL in 2013/2014 fishing season. Now to get into the 2015 landings, blueline tilefish did go over, but we also had a new ACL implemented in that one, and you can also see it is a really small ACL of 17,000 pounds. When you catch 47,000 pounds, you end up way over the ACL, as we did, but we ended up closing it on June 10th.

Cobia is a new one. We started splitting that one in 2015 between New York to Georgia and the cobia East Florida stock; but either way the landings were much higher this year than they were even if you add them together than they were last year. That one we're going to have to monitor closely; and I think we're going to have to reduce the season next year for that cobia New York to Georgia stock, because it did go significantly over the ACL; as you see here, 55 percent over.

Golden tilefish, you see here they went over their ACL, but again you're going with a small number of fish, just 3,000 fish, but it did go over and they closed that August 11th. Hogfish, since it went

over in 2014, we went ahead and watched it closely and we had really high Wave 2 landings for hogfish in the South Atlantic, and that one ended up closing on August 24th.

The next slide, you see no yellow on this one, so you can see that none of these stocks currently in 2015, none of them currently went over. Snowy grouper does have a very unique accountability measure. That one we take an average over the last three years and then predict when it will close the following year. Even though in 2015 the landings are low, the three previous years the landings were so high that we expect it to exceed its ACL by September 1st, we ended up closing it on September 1st.

We're still waiting for Wave 4 landings to see what they come in at, but anyway that's why we closed that one. I'm sorry; I got that one wrong. I think snowy grouper now they do have a fixed closure. I'm sorry; I get my years confused. Currently and right now for snowy grouper, they have a fixed closure that starts in – and that's why it says September 1st.

And then king mackerel and Spanish mackerel, currently – and again I say 2014/2015 are preliminary, because the 2015 landings are still preliminary; and these two stocks, you can see their ACLs and that's the current landings we have. And then also greater amberjack and black sea bass, recreational did not exceed their ACLs with the current landings we have. That's all and I'll take any questions you guys have.

DR. BARBIERI: Before I open up for questions, I just want to bring to your attention the action items that we're supposed to be addressing during this agenda item is review and comment with attention towards any ABC recommendation updates. You may remember that in years past we had made a request that those types of landings' information be brought before us so we can have an idea of how our ABC recommendations and our projection recommendations are doing and keep our finger on the pulse of those values. Think about that and then consider assessment schedule and research plan implications if you see anything that caught your attention in need of additional research and monitoring. With that, I'm going to open for questions or comments from the committee. Marcel.

DR. REICHERT: I've got a quick question or more a clarification relative to cobia. It seems like there is a huge jump in the recreational landings in the cobia New York through Georgia since Wave 2. The vast majority of that stock or the catches occur in Wave 3; and can you remind us quickly of the accountability measures or how that is going to be addressed next year?

DR. LARKIN: I agree it was Wave 3 is where we saw that spike in landings. It was actually in North Carolina and Virginia are where they came from and the really high landings that led to that overage of the ACL. The way the cobia is set up is we wait until the landings are all in for the full year, that New York through Georgia, and we'll see what the total landings are for the year.

Then we will make a prediction based on those years when do we need to close it to stay under the ACL. It means we close it in September or August or something like that; so once we have the final – so in February or actually maybe close to the end of February, when we have final 2015 landings; then we'll make a prediction of when we expect to close the cobia New York to Georgia season in 2016.

DR. REICHERT: And that could potentially be in the middle of a wave; correct?

DR. LARKIN: Correct; we could close it potentially in the middle of the wave, yes.

MR. CARMICHAEL: Mike, I had a question about the landings; is that the straight-up reported from MRIP or in the case of pounds is the science center's calculation of pounds; and does it include any of the adjustments or calibrations from the APAIS changes?

DR. LARKIN: We get it from the Office of Science and Technology and then it goes down to the science center and they do their own method – apply their own methods to it like make sure if there is – I guess if the weight, when available, it was filleted, make sure we have a sample size of 30 to estimate the weights; but these do not take into account – the second part of your question – the APAIS adjusted that we're seeing in the stock adjustments. What we're getting for the landings, they're not adjusted for the APAIS adjustments.

MR. CARMICHAEL: So I would assume before we pass judgment on something like golden tilefish, which is kind of close on the bubble, you might want to have that adjusted before you decide, when we get to final 2015, when we're looking at this next year, whether or not that fishery really went over.

DR. LARKIN: That point that you point out is the APAIS stuff started in mid-2013, so the 2014 and 2015, there really is no APAIS adjusted. It is already adjusted for, like they're already sampling throughout the whole time period, so it is the historical data is when you get into an issue there. Some of the ACLs are based on historical landings; so the 2014 and 2015, there is no need to do an APAIS adjustment there, but the historical landings are where it kicks in.

MR. CARMICHAEL: But like you said, the ACL is based on the historic data; so there is a potential difference between the data that were used to form those ACLs and the data that's now used for tracking.

DR. LARKIN: Yes, true.

MR. CARMICHAEL: So I think we would want the calibration applied when we get final numbers to know did we really go over. Obviously, something that's at 269 percent, we kind of know from what we've seen of the calibrations, the calibration doesn't make that big of a change; but for some of the ones that are small, it is possible they could make a change.

DR. SERCHUK: I have what may be a naïve question; but for the 2014 data, which I assume are final, how well do any of the landings match the catches in those fisheries? Is there any adjustments made for discards? I'm just wondering is typically one is interested in the removals from the fisheries and not just the landings.

DR. LARKIN: Yes; these were just the landings, just the harvested fish. There is some fisheries like the South Atlantic red snapper fishery where we take into account discards when we're determining whether there are some issues or not; but these do not take into account the discards.

This is just the landings. Jack came in and I said the wrong thing about cobia accountability measures that Marcel had.

DR. McGOVERN: Yes, the cobia AM is just the stock ACL, the commercial and recreational ACL combined are exceeded; then the following year the recreational – it is the sector that goes over; in which case this is the recreational sector, the fishing season would be adjusted so that the ACT is not exceeded. The ACT, in this case, next year it will be like 500,000 pounds; and the ACL this year is 620 or 630, something like that. Anyway, the AM is a little bit different than what we have for the snapper grouper species.

DR. BARBIERI: Thank you for that clarification, Jack. Just to confirm what Mike had just mentioned, so the commercial and recreational landings' values are actually not total removals, right, this is really the landings and not landings plus discards?

DR. LARKIN: Correct.

DR. SHAROV: I don't know when the comparison is probably later in the process; but considering the number of species exceeded – the ACLs were exceeded both commercially and recreationally; is there any sort of summary of which one of them has led to the excess of the ABC – in other words, the ABCs for any of those species were exceeded in 2014 and what would follow those and what kind of accountability measures are expected. First, just simply with respect to the ABCs.

DR. LARKIN: I can get back to you guys on that. I do have a spreadsheet. I could dig in my computer that has that. When you're talking about accountability measures, those apply to the ACLs. We do have status of the stocks where if there is an OFL defined for the stock so if the landings exceed the OFL and then it is declared as overfishing; it is experiencing overfishing.

Then we've got to send a letter to the council and stuff like that. I can get back to you. I do have that in my computer and I dig up the landings relative to whether the 2014 landings exceeded the ABC. I can provide you guys with a list of those stocks. I don't have it right now, but I can get it to you before the end of the day.

DR. ERRIGO: One think I can say just off the top is that for the vast majority of the stocks, the council has set the ACL equal to the ABC; so if both sectors exceed their ACLs, then the landings would have exceeded the ABC for the stock together.

MR. CARMICHAEL: So it sounded like, Mike, for future reports of this nature, for anywhere – say in this case you have highlighted things that were over their ACL; the SSC would like to see the total relative to ABC and OFL to see if we're over the totals in any cases.

DR. LARKIN: Okay.

DR. SERCHUK: I have a question for the committee. When, for example, we see landings exceeded by several hundred percent; that suggests to me that the target fishing mortality for that sector has been I would assume either greatly exceeded or the productivity of the stock has been underestimated in the assessment.

I'm just wondering given those two divergent ways of looking at interpreting the landings what the SSC tends to then do for the subsequent year. In some cases the ABC is already set for the subsequent year. Let's say if something has gone over in 2014, it may have already been set for 2015. It seems to me that either you're off your target fishing mortality plan or somehow the stock is much more productive than was envisioned by the assessment. I'm just wondering how in the past that the SSC has dealt with that issue.

DR. BARBIERI: Fred, that's a very good point; and it is one of the reasons why we have been requesting to see this type of information is just to try and gauge differences between what we expected to see when we set yield streams for ABC/ACL and then how they materialize. Our action items are exactly to that point; that we look at this and then comment with attention toward any ABC recommendation updates even if it is just identifying some red flags and warning signs in situations that we have that disconnect.

I think that the second bullet in the action item list is should the SSC perhaps make some recommendation to address that potential assessment issue in terms of the productivity of the stock and have the assessment done earlier than the schedule or warn the council and the SEDAR Steering Committee of any of that. Marcel, to that point.

DR. REICHERT: Well, to that point, I would argue some of the same arguments are true if the landings are significantly under the ACL. Point in case was red grouper where I believe the industry has told the council – correct me if I'm wrong, Ben or Michelle – that they had a hard time catching red grouper; so similar concerns. Correct, Ben?

MR. HARTIG: Correct.

MR. CARMICHAEL: I don't know if folks noticed, but you see snowy, it said the ACL in 2014 is 523; but if you noticed in 2015, because you reviewed an assessment of this, snowy went up to 4,152. We had reviewed the assessment in April 2014 so now we're seeing the change there. I think that's one where, as Fred mentioned, the productivity apparently was there.

I think we had been at that fixed level because it had been a while since that assessment; so you have your projections and the council sets the ABC and then it may flatten out and stay at one level because you're uncertain about the projections after a number of years until we get the next update. At least that one we kind of understand what is happening.

DR. BARBIERI: Fred, just to close this issue, this is the first time I believe that we have seen this much detailed information on landings. We had not been going through this before. Your point I think is very well taken and something that we should keep an eye on. Ben.

MR. HARTIG: My name is Ben Hartig. I'm the liaison from the South Atlantic Council. I was chairman of the council until we turned it over to Michelle. We have been coming to SSC meetings. I think I've attended every one in the last six years and Michelle has since she has been on the council as well.

To your point, Fred, it is a really, really good question about what you observed on your overages there. The one problem that you'll see that we have specifically in the South Atlantic is the relatively few intercepts of a rare species. We'll have a presentation of that I guess tomorrow and we'll talk about that more; but that's a real problem that we face in which numbers are real.

I think we had a motion from the council that we would like to see the MRIP numbers – how did we phrase it, John, do you remember? Yes; we wanted to review some of these anomalous numbers. I don't think we defined it, but we wanted to review these before they were used for management.

In a number of our assessments – well, not a number of them, but in several cases we've had snowy grouper and golden tilefish where we had huge recreational spikes that were actually smoothed by the assessment team. We would like at least some of those to be able to look at them before they're used for management and possibly be smoothed before that so we don't have these radical impacts that come out of the blue. In some years you'll have a species that just comes out of the blue where we get this really high peak and then it really throws a monkey wrench into management. That was just one other thing I wanted to mention.

DR. BUCKEL: I appreciate you breaking out cobia based on the last stock assessment into those two spatial regions. I think for the future reports doing the same for hogfish would be helpful for us. I know we're going to talk about hogfish here soon. It is broken out in those reports; but for these, it would be nice see that as well; so North Carolina to Georgia and then the east coast of Florida/Florida Keys. I assume this is –

DR. LARKIN: Yes; I agree with you totally. I was just waiting for Amendment 37 to be finalized, I don't know, maybe next February, but, yes, I agree. Probably by the next SSC meeting that will be all done, so, yes, I will separate the hogfish as well.

DR. BARBIERI: Any other questions or comments from the committee? Thank you, Mike, for the presentation and addressing the questions.

DR. LARKIN: I will dig into that landings relative to the ABCs. I will probably send it to you, John.

DR. BARBIERI: Our next agenda item is a discussion on units for fishing level recommendations. We're going to have a presentation from Mike Errigo. You guys can look at your overview document for the action items associated with this; so as you go through the presentation, you can get an idea of what we're looking for in terms of thought processes and input. Review the utility and methodologies for setting fishing level recommendations in numbers versus pounds; and provide a recommendation to the council on specifying recreational ACLs in numbers of fish.

DR. ERRIGO: The council has been talking about setting ACLs for the recreational sector in numbers of fish for several stocks. They currently do it for golden tilefish and snowy grouper and now they're talking about doing it also for hogfish. This has come up a couple of times in discussion, we thought we would bring it up here for you guys to talk about.

Why is the council talking about numbers? One of the reasons is to help track the recreational landings in a more timely manner. Currently headboats are reporting weekly, but we need to wait until the end of the two-month wave and then some time period after that – I don't know what the waiting period is on the headboats – in order to get weight estimates for the headboat landings, because they also have to sample for weight in order to apply that average weight across the landings that they gathered through their logbooks and such.

The council is also planning to have charterboats report on a weekly basis by 2017 through a logbook type approach as well; the same as the headboats are doing. If the recreational ACLs was in numbers, then they can track the higher landings on a weekly basis in numbers and maybe even use that as a type of index for the recreational sector, which might help to prevent overages of the recreational ACL.

Also, if it is set in numbers, it would be a reduction in uncertainty because then you wouldn't need to convert the landings in numbers to weight. Landings for the recreational sector come in numbers and then a sub-sample of the landings is sampled for weight and then the average weight is applied across all the fish that are landed to come up the weight in biomass landed.

Also, here we have an issue, but there are two sets of landings in weight. One is on the MRIP website. There is the landings in weight and pounds; and then the science center has landings in pounds, but they used two different methodologies to arrive at those weights; and they don't always match up. Sometimes the differences are small; sometimes they're larger.

The MRIP landings estimates are available online, but the actual quota is tracked using the science center's landings in weight. Those are not regularly available as the MRIP landings are. However, if the quota was tracked in numbers; that would be really available for us to get hold of; so we wouldn't have that issue of these two different databases of landings in weight that don't quite match up.

A little bit of background; the council set the recreational ACL for numbers because there were some really ACLs for golden tilefish and snowy grouper. The original ACL for golden tilefish was 1,578 fish and snowy was 523 fish, so they set it in numbers. The ABCs were set in pounds like they typically are from the assessments and then the recreational ACL was converted into numbers using average weight.

The average weight that was used was from the projections, so the projections come out in weight and numbers; and because there were too few recreational samples from both golden tilefish and snowy grouper, so on average golden tilefish are only ten fish in four trips on average per year. For snowy there were on average five fish in five trips per year.

They used the projections so they just divided the projected ABC in weight by the projected ABC in numbers and got the average weight, and then they used that to convert in numbers. Now the council is looking at setting the recreational ACL for hogfish in numbers. The SSC recommends the ABC in both pounds and numbers and then the council specifies the allocation and become the catch percentages using pounds.

Some of the questions is should the recreational ACL be specified in numbers at all? Should this be done with all stocks or just the stocks that have low recreational ACLs that are difficult to track or have very low sampling to get average weights? What does low mean and how should that happen, how should we set that in numbers?

First let's look at the conversions between numbers and weight. No matter what we do, if the ABC is in numbers or if the ABC is in weight, something has to be converted. Recreational catch is always collected in numbers; and the commercial landings are always collected in weights. There are two things to consider when converting the recreational numbers to weights; the error in the recreational estimates from numbers to weight and then the sampling effort of the recreational landings versus the sampling effort of the commercial landings.

I'm going to show some data that shows some of these things and it is the average of 2013 to 2014. I also am going to show the sampling level; and that's the percentage of the landings in number that was sampled for weight; so if they landed 500,000 fish, what percent of those were weighed in order to get weight. For the recreational fish, I looked at the difference in the percent standard error between the estimate in numbers and the estimate in weight to see which one was greater.

I was surprised to see that with the exception of snowy grouper the differences were pretty small, smaller than 5 percent for the species that I looked at. However, the percent standard errors in number were all smaller than the PSEs for weight. However, there are some caveats like the PSEs don't exactly consider the validity of the assumption that the average weight of fish reported killed but not observed, which are the B-1s, that's when during the interview the angler tells you, oh, yes, I caught five of these, but the interviewer doesn't get to actually see them.

The assumption is that the weight of those fish is similar to the observed fish, which are the A fish. Here is that table. Basically with the exception of snowy there in yellow, which is a fairly significant difference, 17.5 percent, the difference is only like less than 3 percent; so it is not huge. I think one of the reasons for that is that there weren't very many fish that were not sampled for weight in the recent years.

In years past they missed a lot of weight samples. Recently it is doing a lot better with that. The other piece to consider is the sampling level; how much of the catch is being sampled for weight? For the commercial sector, they're sampling approximately 17 times more fish – a higher percentage of the catch than the recreational sector is for weight.

Like I said, I calculated that as the ratio of the number of fish sampled for the commercial sector to their landings and the ratio of that to the number of recreational fish sampled to the recreational fish landings to put everything in the same unit; so the percentage of the commercial fish sampled to the percentage of the recreational fish that were sampled. That is what the ratio is.

I'm going to show a table of those. Typically, also, there are many more commercial lengths that are taken than weights; so in the commercial sector they might sample – out of 500,000 fish they'll sample 5,000 weights but 20,000 lengths. There is also the possibility of using the length/weight relationship to get average weight, especially if you don't have that many weights.

These relationships typically have greater than R-squared value of a correlation/coefficient greater than 0.9; and I ran a whole bunch of them with some of the SEDARs and the vast majority are very high R-squared values. However, that does add another layer of uncertainty if that is the way we needed to go.

For 2013 and 2014, like I said before, MRIP had no missing weights for the species that were shown. John Foster is here and he can correct me if I'm wrong, but what I think that means is if they weighed all of the fish that were actually inspected by the inceptor – if I'm off my rocker, you can help me.

MR. FOSTER: John Foster, NOAA Fisheries. I'd like that to be the case; that they weighed and measured every fish that they inspected. When we went through the process of developing the weighted re-estimation, we also, at that time, improved the length/weight imputation process. It is true, especially in the South Atlantic, that those states do a very good job getting lengths and weight measurements on fish. It is also true that much of this is probably explained by the better, more fuller imputation method compared to prior years.

DR. ERRIGO: So there you go; it looks like they're using a better imputation, which probably is approximating what the science center is using, which is why the PSEs for the weights are much smaller are much closer to the PSEs for numbers. Here is the table of sampling by sector, the sampling effort by sector. I just want to highlight a few things. The column over there on the right is basically what you need to see; and that's how many times more the commercial sector is sampling for weight than the recreational sector.

There are several species that is just quite a bit more; like gag, 12 times more; gray snapper, 40 times more; hogfish, 131 times more than the recreational sector for weight. That's in terms of the percentage of the landings; but the recreational sector also has a much higher landings than the commercial sector does for hogfish.

Snowy, it is almost eight times more, but, of course, the recreational sector is a very tiny – usually has very tiny landings. On average in 2013 and 2014 they weighed four fish and commercial sector weighed 131 fish. You get a much better estimate of average weight from the commercial sector there.

All in all, about 17 times more sampling weight of the catch in number for commercial than for recreational. For lengths, it is even higher because the commercial sector collects quite a bit more lengths than they do weights. You can see hogfish is almost 300 times more sampling; snowy grouper, 43 times more; white grunt, 58 times more, almost; and on average almost 46 times more sampling for length.

If there isn't enough sampling or if the sampling distribution of the weights isn't enough to get a representative sample of a length/weight relationship, you might be able to fill in the gaps in order to be able to – if we use numbers in order to be able to convert the commercial sector's ACL back to weight. The sampling level of each of the sectors help with identifying should we do it for all stocks or just these stocks that have a low ACL for like one of the sectors such as the recreational sector.

But even key recreational species such as dolphin and king mackerel, which have significantly higher ACLs or landings in number for recreational than commercial have much, much higher sampling intensity on the commercial side than MRIP does. Dolphin has over four times more weight samples, ten times more length samples; king mackerel, 12 times more weight samples and 46 times more weight samples.

Here is a table and all of the species highlighted have significantly more recreational landings in numbers and yet the commercial is sampling significantly more of the landings than the recreational sector is. How might we go about specifying the ABC? Currently it is specified in weight. For ACL in numbers we use this average weight typically calculated using the projections in weight divided by the projections in number.

However, we can specify the ABC in numbers from the projections because we get them in both weight and numbers. We could use the same formula to convert the commercial ACL in weight; but the projections don't give average weight for just one sector. It is the average weight for all the fish that were landed; so that not – especially if the breakdown is 50/50; that may not work, especially if the average weights are significantly different between sectors, which they are for quite a few of our species.

There is also the problem that there are some assumptions and projections that may or may not be met, which could affect the average weight. I'll give an example here of the Florida stock of hogfish, which has the average weight from the projections, the predicted increase over time due to the assumption of rebuilding; so if you follow the ABC and as long as you stay under it, the stock is predicted to rebuild and the average weight is predicted to increase from one year to the next.

However, observations indicate that there is no trend in average weight over time even in time before the stock was overfished; so the projected assumption of increased average weight may not be realized; and the average weight increases from 2.4 to 2.91 pounds. The commercial average weight is 3.5 pounds according to observations.

The projected average weights aren't anywhere near that, so they're probably not appropriate for that kind of conversion that we're talking about. Here is the average weight of hogfish from the projections. The red line with the error bars is the average weight of hogfish from the observations before and during the time when it was overfished.

The solid red line is the average weight. The green line is the average weight of the commercial. I didn't have it by year. The blue line is the projections. There is really no trend in average weight; so using that methodology, which we have been using to convert the ACL from pounds to numbers is probably not viable.

For stocks that have assessments, we can instead just use the landings. We can use the average weights from the observed data to do the conversion rather than the projections. For stocks that don't have assessments, we can instead use any of the landings-based approaches like ORCS and simply convert the historical commercial landings into numbers.

Using the average weight per year from the observed data; once that is done, we will walk through the decision tree method and we will proceed just as they did before, specify the ABC in numbers, then convert the commercial portion back to weight using the average weight from the most recent years. What are some of the pros of this?

First of all, it allows you to consider discards, which are only collected in numbers. We do have some estimate of weight of discards, a few observations – some observations from the headboat observer data and we have very little observer data from the commercial sector, but typically we're just using average weight of fish from the commercial sector to convert discards into weight.

Our data on discards is minimal at best; so using them in numbers would remove a lot of the uncertainty. Also, the units in assessments is typically numbers, so abundance at age and then that is converted to biomass at age using the von Bertalanffy Curve and the length/weight relationship; but size at age has a lot of variation for most of our species – typically most species in general. This is black sea bass on the top and blueline tilefish on the bottom.

You can see the vast range of sizes at age for those species and it is pretty typical of what a size at age plot looks like. That removes a large source of uncertainty that goes into the estimate of the ABC. It also allows each sector's landings to be tracked in their native units; so no conversion is necessary, which removes a lot of the uncertainty in tracking the landings and it removes one of those steps that we have to wait for, which is nice. The commercial collected in weight, we can specify the ACL in weight even though we have ABC in numbers. The recreational landings are collected in numbers and the ACL can be in numbers.

Here just are some examples of differences in average weight, recreational versus commercial, for a bunch of the species that we're looking at. This is to show that average weights of the commercial sector tend to be fairly constant for a lot of our species over time. They're fairly stable; they don't change a terrible amount for a lot of them.

These have some changes from the earlier years. King mackerel has that uptick there at the end. There are some species that you have changes in average weight, so what happens if the average weight changes dramatically? I was looking in the data and they often correlate the size limit changes or possibly sampling intensity. Otherwise, the change is fairly gradual.

If it is a management measure, if there is a size limit change, you can monitor the commercial average weight and then recalculate their portion of the ABC; so we can monitor that. If it is a gradual change, it has fairly little effect on the ACL after a single year or so, so we can evaluate on a fairly regular schedule to see how big of an impact the changes in average weight would make.

In conclusion, we saw that PSEs from MRIP are lower for numbers than for weigh, although not a huge difference. A much higher percentage of the commercially landed fish are sampled than recreationally landed fish, making the calculation of commercial average weight have less uncertainty about it.

So setting the ABC in numbers and converting the commercial ACL into weight allows tracking of landings in each sector's native units. No conversion is necessary. If an ACL is converted in

some alternate unit, then the average weight for that sector's landings would need to be monitored for significant changes and the ACL adjusted if necessary. Right now what we do is we specify the ACL in pounds for recreational landings and then we convert all the landings into pounds and track it that way. That's all I had. If you have any questions, I'll be glad to help answer any.

DR. BARBIERI: This was very informative, and I'm going to open up to the committee for questions or comments, keeping in mind our action item, the perspective that we want to bring into this discussion at a minimum. Alexei.

DR. SHAROV: Honestly, I'm still not sure what was the principal reason for this analysis? If the question has been raised that should we use the ACLs for at least the recreational fishery in numbers, then there must be a reason for that; and that is why are we not happy with the ACLs in weights?

I was not sure that I captured that, but nonetheless I'm guessing the answer could be different on what species you're talking about and what assessment methods are available. I will start with just saying that with the stocks where we have age-structured assessment models, we have a population that is a conglomeration of individuals and we model it as the changes in numbers, we also model the change in weight but in principle we're calculating the changes in numbers by age group; we're projecting forward as well and we're trying to manage and we're estimating the fishing mortality rate that is applied to the cohorts or year classes in numbers.

Therefore, it seems logical and convenient to use the numbers and calculate the ACLs in numbers where it is easily achievable, which would be with the age-structured models. When the age-structured models are not available and the ABCs or ACLs are based on the catch history, whatever ORCS methods you have; then you probably would have to look at how much variability is there in the conversion of numbers into the biomass using the average weight and how uncertain the average weight estimates are. I'll start with this and maybe there will be a following comment.

MR. CARMICHAEL: The council is interested in looking at this and some of the reasons are – so if you think about the report we just saw about the landings and Mike mentioned getting the weights from the science center, so not getting them straight from the MRIP queries and such; so it means that it is difficult for people to go to MRIP and look at the data and know where they stand relative to their catch limits because they're using a different calculation for the catch limits that can change it.

Also, in the headboat program, the headboats are reporting biweekly, is it, Gregg, or the headboats are reporting weekly now; and so then there is the data don't become available until the same timing as the wave because there is processing that has to be done to get the numbers converted to weight.

What the council members are recognizing is that MRIP is reported in numbers, all the discards are reported in numbers, so that is a more native type of information and it can be more readily available and it could reduce some of the lag, for example, in terms of knowing if you're at an ACL. For our assessed stocks, the SSC typically gives the council an ABC and projections that are based on both pounds and numbers; so the council members are used to seeing that.

Then the other issue is some of those stocks such as snowy grouper where they have such very low numbers is where this idea sort of came up of particularly low ACLs it might be easier to track some of those in terms of the fishermen out on the water by looking at numbers as opposed to pounds. The analysis sort of comes in because there were some concerns raised about what does this do to MSY, which is typically in pounds, and are there any technical things the council should be aware of if they were to start specifying more of the recreational at least in numbers.

DR. SERCHUK: I recognize as John has just indicated why this is attractive to go to numbers in terms of recreational fisheries. On the other hand, one has to be very careful about proceeding this way, in my mind, because it affects the type of assessment that can be done. What you're indicating is, in my mind, in cases of sampling is insufficient, it is low.

Thereby if we're going weight measurements or if we're going length measurements, we're seeing a difference between how intensively one sector samples versus another one; you're going for the lowest common denominator and basically saying, well, let's throw up our hands, we can't sample the recreational fisheries any more than X.

Maybe the thing should be, from an assessment point of view, we need to improve the assessment of the stock so therefore we can have a better understanding of what the ABC should be in the first place. I think we have to take a very synoptic view of this. If one goes into a monitoring point of view and says it is easier to monitor it this way, that has certain implications for what the assessment will look like in terms of our ability to track abundance.

It seems to me that one way I would have more assurance is if we did some simulation work, looking at applying these methods to assessments that have been done and doing it simply on the information in terms of length and then seeing whether we would have gotten the same assessment results based on that.

I am concerned of large differences as was just pointed out between the size structure of the commercial sector versus the size structure of the recreational sector. I agree with the Alexei that it is important to look at size differences and age differences. One might not expect on a rebuilding stock, for example, to have increases in average weight.

You have a good recruitment coming in for a stock that has – your average weight is going to go down for a couple years; and it may, depending on what is the fishing mortality; so there are lots of issues here that I think we need to be circumspect about other than it is easier to monitor; and I understand that. I understand people have very important concerns; but I'm also concerned, as I said before, that if we go down to the lowest common denominator, we'll never improve the assessment.

Really what is needed I would think is to step back – and I'm looking at the Good Practices Report now that was done – and maybe we should see if you're going to monitor and if you're going to assess the fishery, these are the standards that we need to do our best job. We may not be able to attain those, but there should be some standard or at least some bar that we strive to in terms of here is the sampling intensity that we think is sufficient for a fishery.

Okay, we may not have the funds to do it, but we should at least try to get it there because that will give us an assessment level that we're comfortable with and try to reduce that uncertainty. I understand why this has been done. Before I would move forward, I would like to see some simulation done on past data in a past assessment to see if we take that approach from a monitoring point of view whether we're really going to get what we think we're going to get.

DR. BARBIERI: That's a very good recommendation. Anybody else have any comments or questions?

MR. CARMICHAEL: I was looking around at some of our council members and I see some pondering because I would say I don't think in any of the discussions of it so far the idea that tracking and monitoring in numbers could lead to saying, well, yes, we don't have to collect as many weights has even arisen. I think that would be a huge factor that would need to go into this; but the council went down this path saying how important it is to continue to collect weights and strive to get realistic weights from all sectors for assessment purposes. That is a very good point.

DR. SERCHUK: I think it is really important. If one sector dominates the total catch – and we've seen some tremendous differences here in the ratios between the two sectors – to me it is silly to think that your assessment confidence is buoyed by saying one sector that takes 5 percent of the catch has 17 times more intensive sampling than the other one and think that you're going to improve the assessment by just sampling numbers. It is a little bit tongue in cheek, but the fact is you ought to be able to sample more intensively that sector that takes most of the harvest.

DR. BARBIERI: Any other comments or questions? I think they're very good points, Fred, but between the comments between you and Alexei – and I think we take your recommendations seriously; but I also thought that perhaps you feel that this could be explored in some specific situations, on a case-by-case basis, and not perhaps as widespread and across the board.

DR. SERCHUK: I think it could. I mean, we have two different sampling regimens in terms of the sectors. We have an MRIP thing that has every two months and then we have another way of doing it with the center does it on a certain basis. One has to be practical; I understand that. We ought not fool ourselves that we have more precision than we actually have based on the information.

On the other hand, I'm concerned about the assessment itself. I understand I don't want to encumber anymore problems; but I'm really trying to look at building blocks here. If there are cases where getting at numbers – you know, they do this in salmon, for example. I know that numbers in salmon are collected in the high seas. It is easy to do it that way.

The issue is if you just do it by numbers, you have to ensure that the distribution of age groups or the average weight that you expect is going to be realized if you have changes in selectivity, which can happen all the time. They change the methods of one sector in a recreational fishery that uses a different gear, so on and so forth, handline versus anything else; you can have major differences in average weights. Those are the reasons why I think some exploration and simulation might be helpful.

DR. BARBIERI: And, incidentally, you saw what happened with Gulf red snapper and the changes in selectivity and some of these various issues that are materializing over there and creating some problems in terms of monitoring the catch and addressing this reporting in numbers. Well, I think that unless anybody has any additional comments; I think we got some good comments and some good suggestions.

We are ready to move on to Agenda Item Number 5, which is no action required. It is basically informational. We appreciate Dr. Erik Williams coming over from the center to give us a more detailed presentation on the Headboat Data Evaluation Report. We received a very brief report the last time and the committee was excited to see the report completion and wanted to get some additional details.

DR. WILLIAMS: For those who don't know me, I'm Erik Williams. I'm with the Southeast Fisheries Science Center in Beaufort. I head up the stock assessment group there. What I was going to present today is the same talk I gave at a data workshop for Red Snapper SEDAR 41. Some of you have seen this presentation and feel free to go ahead and take a quick snooze if you want while I run through this for those who haven't see it.

What I'm going to summarize is a heavy duty data evaluation we kind of did on our headboat survey data. The outline of what I plan to talk about today is shown here; basically go over the impetus of why we did this evaluation, discuss the study design we used, go over some of the results and discussion that comes about because of the results, some of the recommendations that came out of this analysis as well as some of the review comments that we received from this as well.

Why did we do this in SEDAR 41? We started out and we had some questions about the headboat data that kind of surfaced to the top. There were concerns about some questions in the data, whether there was misreporting going on both in terms of fabrication of data or by non-reporting. As a result, there was a recommendation sort of put forth to remove pre-1992 data from the headboat survey or not use it in the stock assessment. To be honest, we couldn't answer the question right off the bat whether there was this degree of misreporting or not.

We were concerned enough that if there were some serious issues with this data, it would ripple into many of our assessments that rely on the headboat survey, which a lot of them do. The headboat survey is one of the longest-running recreational surveys on the east coast with data dating back to 1972; and so it serves an important role in many of our stock assessments.

As a result, we kind of halted the SEDAR 41 so that we could devote a lot of staff time to what we viewed as a very important endeavor in looking into this data and trying to see if we could detect any serious issues in the data. The study design sort of followed the following outline. We broke it into sort of components: programmatic component; an analytical component, which was broken into three sub-categories where we kind of define some strata.

We analyzed the catch records, which is sort of the logbook, one of the basic data sources we collect from the survey. We also then looked at our bio-profile samples, which are basically the port samples that are collected. We also considered a social science component. Then as part of

our methods we decided to have the methods themselves reviewed before we sort of conducted the analysis to make sure we were on the right track, because we knew we were going to devote a lot of time to this and we wanted to make sure we were doing it right.

The programmatic component, what we were looking for here was basically trying to look at all the protocols and procedures that we had in place and just sort of do a really thorough analysis to make sure that we were following these protocols and what these protocols might have been able to do in terms of QA-QC in detecting any potential serious misreporting or outliers.

We wanted to compile a history of the factors for participant responses. In other words, during the history of the survey, what was the motivation for folks to fill these out? Were there regulation requirements; were there payments being made for people to fill out the form and so on and so forth?

As part of the design, we kind of needed to break this into strata because the whole fleet up and down the coast from North Carolina down to the Keys of Florida don't behave necessarily the same. The boats operate slightly different. They have to travel different distances to get some of the snapper grouper species. They even potentially have different clientele that tend to board their vessels.

We kind of looked at this from a multivariate analysis standpoint and tried to find what were some consistent groupings in terms of both space and time; and what came out of it was sort of a suggestion that we should break it into three areas; the Carolinas, Georgia and North Florida, and South Florida. Five time blocks kind of fell out; and those really fell right along with regulatory changes.

Here is kind of a quick summary of those strata; basically showing the number of vessels and the number of trips that we had in each of those time/area blocks. You can see a fair number of trips in the tens of thousands, lots of vessels involved; the smallest down to 27 vessels in one of the time/area blocks all the way up to 64 vessels.

Once we had developed this sort of strata, then we started to dive deeply into the data. For those that have looked at the report, you'll notice that a lot of the sections are redacted. The analysis we were conducting was right down to the catch record level; and so a lot of what the analyses we were doing were confidential. You'll see why we did some of the things we did in terms of who could review this and who couldn't and that sort of thing.

A lot of that centered around the fact that we were getting down to such – the unit was a confidential unit ultimately that we were trying to analyze; so we had to be careful about how we were handling that. I brought that up here because that's one of the things we were looking at in these catch records. We were looking at all the individual catch records that we had in the database.

What we came up with was a series of sort of metrics that we used to flag vessels. We were kind of conservative with these metrics in terms of whether they would flag a vessel as a potential issue. They would flag it for various reasons. We'd look for things like for a couple of examples I have

up there. If a boat always reported 30 black sea bass repeatedly on several catch records, that would get flagged and we'd have to look at it and go, all right, well, why is this happening?

We had flags for the number of anglers. If they just kept consistently reporting 25 anglers, we'd look at that. Well, maybe the boat's capacity was 25 anglers and they're always running full trips. That could have explained it; but there might have been some other issues there. Anyways, in the end, my gosh, at point we had over a hundred metrics for each vessel that we were flagging.

We had some ways of paring that down, but it was fairly intensive with the number of metrics we were using. I only highlight a few in this presentation. You will have to read the report to kind of get down into the nitty-gritty details of all of them. One of the things we were concerned about is rounding or heaping. In other words, how often were catches being recorded at the zero, five, ten, fifteen, twenty, twenty-five; how often was that happening?

Also, the heaping is referring to how often they reported that same number; so we kind of considered this idea of repeated measures; rounding being reporting on the fives and zeros. Another metric we used was the species' composition; in other words, how many species were they typically reporting on a trip compared to other vessels.

You'd expect vessels in the same port that generally fish the same areas to come up with similar species' composition; and if one wasn't or several weren't, why was that? One of the measures we used was just like a diversity measure or even a species' composition metric of some sort. Basically we were looking for a bunch of different patterns is really the best way to put this was a big pattern analysis with all these metrics trying to flag these vessels.

Then once we had a list of these flags, we would then start to look in depth and in some cases pulling up the actual catch record and looking at it and saying, all right, what is going on here? The other component involved looking at our bio-profile samples or the dockside samples. The headboat survey, we have folks intercepting the trips as they come in and they sample the catch.

I better not try to even guess at the percentage of trips that are sampled, because I think it actually varies by area; and I think it is in the report. One of things we looked at was looking – we actually did an analysis where we were matching up the number of bio-profile samples and comparing that to the catch records.

There are some issues where we can't always match those up, which was unfortunate because they weren't actually keeping track of half-day trips sometimes; so we had to drop half-day trips from this analysis in terms of being able to match up the port samples to the catch records. Nonetheless, full-day trips tend to dominate the trips, anyways, in most regions; so it wasn't too much of a problem. What we were able to do by matching these up is to see things like if a port sampler sampled more of a species than the person reported on the catch record, then that's an issue.

The port sample is a subsample of the catch; but being a subsample, if they sampled more fish than what was reported on the catch record; that's obviously a problem. The other thing we were able to do with the bio-profile samples is compare those to the landings. It turns out that there is actually a good correlation between the port samplers' samples and the landings, which is good.

Basically because the design is not a very rigid design, but what it told us is that the design was actually proportionally sampling the landings very nicely, so that's why we had this high correlation between the number of samples and the landings. When the landings were up, so were our samples; when the landings were down, so were the number of samples for that particular species.

That was a good property that we could then use to look at some deviations from those correlations. We also considered a social science component where we were basically going to try to interview captains back in time to see what was going on with reporting; but after several consultations with various social scientists and such, they basically said it is probably not a good idea for multiple reasons. Recall bias would be a real problem.

They always consider recall bias to be a problem when it is on the scale of weeks or months; and we'd be dealing with recall bias on the scale of decades. That could be problematic. The other thing was the inability to really get any kind of statistically valid sampling universe because a lot of captains that were operating back in the time period of data that was under question aren't even around anymore.

As I mentioned, we wanted to have the actual design sort of reviewed, so we had mapped out this method that we were going to use to analyze the data and we wanted to have this reviewed. We did actually take the design and have it reviewed by three senior scientists with NOAA, a branch chief at the Southwest Science Center and another sampling scientist from the Alaska Fisheries Science Center.

Basically they all gave us the thumbs-up, more or less. A few little tweaks were made here or there, some good suggestions, but that gave us the go ahead to then engage in this analysis. Some of the results; again, the document, if you look through it, is heavy on results on figures and all kinds of output. I'll try to summarize it briefly.

One of the things we obviously looked for were just obvious outliers and we did find a few of those, which told us that some of the QA-QC procedures that were in place in the early years were missing some of these things that were pretty obvious outliers. We called those extreme outliers. About 15 percent of those were in the Georgia/North Florida area and prior to '92; but that percentage was not too different from most of the other areas.

Here is just an example of one of the plots we used to look at sort of rounding and heaping. I apologize, this is really small – I can't even see it – but you'll see a whole series of these panels in the report. Basically this was one of the things we kind of looked at to see where vessels might stand out in terms of whether there was a large amount of rounding going on in the numbers they were reporting and/or heaping. If we saw both, then that could be problematic.

You'll see on the X axis here the coefficient of variation, and that was one of the things we used to sort of look for repeated measures. In other words, if somebody kept reporting 30 black sea bass on every trip, well, we'd see a very low coefficient of variation in the catch for that species. Well, was that then a flag for us and say, well, why is it so low?

On the other hand, we have to be careful because, for instance, if it was for a grouper species, you would only expect them to report maybe two or three grouper at a time on a trip so a coefficient of variation might be expected. These are the kinds of things we had to deal with in this analysis. This is just kind of looking at the percentage of vessels that we kind of flagged with our methods.

This is looking by those time/area strata; and you can see on average we flagged about 6 percent of the vessels, 6 to 8 percent. In some areas and times it was a higher percentage that were flagged and then in other areas it was lower. This is the percentage of sort of catch records that we actually went into the trouble of looking at and trying to explain what was going on, why were they being flagged, what was the issue with them?

As I mentioned, another analysis we did was we did compare the port samples to the catch records; so this is what we called the bio-profile to catch record comparison. Again, the issue here was we were looking for obvious cases where the sampler might have sampled more fish or more of a species than was reported on the catch record, because that's an obvious misreporting issue on the catch record.

What is shown here is an example just by the Carolinas. I think it is all species; I can't remember. Anyways, you can't see very much, but underneath the high blue bars or aqua, teal, whatever color you want to call that, is an orange bar; and that's the few cases where we actually did have more samples from the port sampler than were actually reported on the catch record; but what you can see is it is a very, very small percentage.

Here are more examples from Georgia, North Florida and South Florida. This is by those area strata; so basically we had very few cases of that going on. It wasn't that clean; there were some species where you did see some issues. Triggerfish; we didn't see any species; but then you get to littlehead porgy, there was an issue there.

I think what we found is the cases where this was an issue, it was these hard-to-identify semi-rare species. I think what it was is just an identification issue. The port sampler we trusted was able to identify it better than the captain in that case. The captain may have actually reported these fish but reported them not as littlehead porgy and maybe something else.

Here is the example of red snapper, which was sort of the motivation for this, which is why we show some red snapper results. Again, very few cases where we have an issue with underreporting of red snapper in this case. Another analysis we did, as I mentioned, was looking at the port samples or the bio-profile samples in relation to the landings.

What we did was look at the correlation between those two. What we found in most cases was the correlation was fairly high, which was good because that gave us some confidence that perhaps the trends in sampling also reflected the trends in landings; and we could use that, then, to again look at these catch records to see if the catch records also matched these trends. If there were vessels that didn't, then that would be flag and it would be something to look into.

Here is just an example of just showing the strength of that correlation for, in this case, triggerfish. It was pretty good. You can see a few years where it is not quite spot-on; but in general we see a

pretty good correlation between the sampled fish and the landings. Again, I've glossed over a ton of analytical output that is in the report; and I encourage you to look at it.

One of the discussion items that sort of came out of this programmatic component is one thing to recognize is that these analyses are sort of a second-tier investigation. The first tier of detecting outliers or otherwise misreported data is conducted routinely; so we do have QA-QC protocols in place. A lot of them are pretty good and pretty solid; so really we hope that everything is being caught at the front line before it even gets into the database; and I think that is the case.

We do actually have some of the samplers still working at the lab that were actually sampling in the Georgia/North Florida area back in the early eighties. Mike Burton, for example, is one of them. He is still working in our lab; and he was able to help corroborate some sort of protocols that were in place at the survey at that time.

Port samplers do inspect all the catch records visually; and Mike corroborated this. If there was really gross misreporting – in other words, if we did have a case where a captain was likely reporting just 30 black sea bass on every trip and nothing else; that catch record would have never made it into the database because the port samplers see those catch records before they get entered into the database.

The port sampler would have looked at that and said this is not right and either taken it back to the captain or in some cases, if they get turned in really late, we just never put them into the database. They go in as missing catch records and we have methods to account for the fact that not all trips have a catch record associated with them.

Of course, database managers would make obvious corrections themselves when things were being key-entered or when we get to some really obvious outliers; but that still doesn't mean we didn't find a few. Like I said, we found about 161, but that is out of hundreds of thousands of catch records we found a few cases where there were still some obvious outliers in the database.

The key point is that what was being reported was that there was this consistent misreporting potentially going on prior to '92 and basically what we found is it is unlikely to have occurred for various reasons, as I just mentioned, partly because of our QA-QC protocols that were in place, but in the analysis we didn't see any evidence of that as well.

Now, if there was, basically our analysis would have been basically – the one thing that could have happened that our analysis would not have detected is if all of the headboat captains were in collusion to intentionally misreport in one direction; then we probably wouldn't have detected that; but I find that hard to believe as something that could plausibly happen.

I think we do have enough vessels in a given area that you'd have to get a lot of people – I mean, that would be a true conspiracy; so for the conspiracy theorists out there, go for it. Again, just to report some of the other outcomes; only about a quarter of a percent of the values that were flagged as outliers were flagged as outliers. Those flagged outliers were associated with 74 vessels are blocks, representing a small percentage, as I said, in that one figure I showed earlier, 11.6 percent total combinations in the database.

Again, as I said, the suggestion here is there is little evidence to support a widespread and chronic misreporting in the database. There was a slight increase in sort of the occurrence of outliers as I think I showed in that one plot in the South Florida Region in very earliest time block; and part of that is it is sort of a little misleading that we put '72 to '83 as the time block for that, because the reality is boats in South Florida weren't really being heavily sampled until '78, so it actually really represents '78 to '83.

In the end, when we looked at these flagged vessels and we looked at some of these outliers, almost all of them could be explained pretty easily by some of these factors shown here. There were different vessels' fishing behavior. For instance, some vessels consistently fishing nearshore and targeting nearshore species; those popped out right away as you would expect, because they're behaving differently from the rest of the group.

But they were explainable; we could look at the data and we looked at the boat and we could tell, yes, they make half-day trips, they go nearshore, and that's what they catch is nearshore species. Different number of anglers; even though we did try to factor that in, we did a lot of per-unit-effort kind of calculations but still some of these boats that carry small numbers of fishers do tend to fish differently; so they get lower landings per trip.

Then the other problem was misidentification; but the fortunate thing is that misidentification issue tended to only really be a problem for some of these lesser species and not the focal species that we're mostly concerned with in our assessments and management and the assessments that we conduct. I think I mention later one of the recommendations that came out of here is be careful with some of these likely species where we have identification issues.

That is where the headboat survey is not going to necessarily be a useful data source or tool for assessments. Again, this is just reiterating that this BP analysis that we did I think just is a good way to – we actually should probably incorporate this as a QA-QA measure into our survey in the future is to use this to detect underreporting on some of the catch records.

We didn't see any temporal patterns in either underreporting or correlations between the CR-reported landings and the number of bio-profile samples. Underreporting and relatively low correlations between the landings and the number of fish sampled were most frequent in the South Florida Region and to be driven, again, by these species' identification issues.

Down in South Florida I guess they catch a bunch of these various porgy species and they're not easily identifiable or they may even have their own local names as some of the issues that go on; so don't do little porgy species' assessments from South Florida. Again, this is just discussing the species' identification issues; lack of agreement in species' identification with the vessel crew.

The port samplers are directed to sample stringers with rare species first so therefore the BP data may be more accurate for the rarer species than the catch records, particularly on vessels with many anglers. The point here being like I said the sampling design is not sort of a statistically rigorous design; but what samplers are told to do is sample random stringers but to grab anglers, if they can, that have some of the rarer species. Because they're doing this, we actually would

expect that we may actually have a better handle on rarer species from the BPs than on the catch records.

Again, no changes in response variables were noticed with major changes in regulations. Now, we did see a shift in some of those species' composition; but again when you look across the whole time, we didn't see major shifts that you might see if there was like this early year misreporting and then suddenly things got accurate. We didn't see evidence of that.

Again, this is sort of a known caveat with this sort of thing is in the absence of any independent source of validation, it is not possible to determine whether self-reported data are consistent or whether they're accurate or not. I mean we're still missing ultimately an independent survey to absolutely verify the catch records.

We just now have a very small percentage of trips that are being observed with the Headboat Observer Program, but it is a small percentage. Back in time we had no observers; so again we have no independent source to validate the data and that is potentially a problem. What we can say is that our approach basically relied on this notion of outlier analysis and hopefully this would have identified any serious issues like those that were being suggested were occurring in the working paper that was from SEDAR 41 and that there was this consistent misreporting by vessels prior to '92. I think this method would have picked up on that.

Some of the recommendations that came out of this analysis: to continue to evaluate and improve our QA-QC measures. Currently we do have fairly extensive QA-QC measures, but we uncovered a few that could be added to the repertoire, so to speak, so that we can pick up on some errors that might slip through our current QA-QC procedures. Again, they're minor issues. There are very rare things that might pop up, but again it is worth adding. As much QA-QC as we can do up front the better.

This was a recommendation, too. Basically in a few cases we did make enough changes because of these outliers that we detected; that there was a recommendation to consider whether we actually needed to go back and re-estimate some of the landings. This is sort of a recommendation. I don't know the extent to which some of the landings' numbers might change because of some of the corrections to the database that came out of this analysis, but a recommendation is to look into that to see if maybe this does warrant a re-estimation of the historical database landings because of some of these errors that were detected.

Again, as I mentioned, we had trouble linking the bio-profile samples to half-day trips just because the time of day for some of the trips was not recorded. As far as I know, actually this has probably already been fixed, but this is just a recommendation to make sure that we include in our survey a method to link the port samples to every single catch record.

Another recommendation; this is sort of an inside – this one I didn't even bring up. We have these headboat activity reports that are part of the survey that the port samplers collect; and this was just a recommendation to actually digitize those. For a long time they have been submitted in just paper forms. Again, this gets back to creating a unique identifier so that we could then match this to other databases.

Here is another recommendation. Again, I mentioned that some of these rarer species, we had species' identification issues. Well, this also then could affect what we call correction factors or k-factors. For catch records that we don't have submitted for trips that we know occurred, we correct for those.

Well, we could see where if we have species' identification issue, there might be some issues in correcting for those missing catch records because of the port sampler's identification versus what was written on the catch record; and so this is just a recommendation to look into that and consider some methods to adjust for that.

Again, these are more program recommendations just to maintain a living document describing all the details of the procedures or the survey over time. One of things we did uncover is that there was some poor documentation of what the actual protocols were that were in place in some of the early years.

This program was more or less spun up on a shoestring budget by Gene Huntsman and some others; and they just wanted to get the thing going much less worry about listing all their protocols and procedures for every little step of the survey. That sort of kind of came out afterwards. In looking in some of the historical records, we couldn't find some of the initial procedures and protocols that were put in place.

Another recommendation that came out of this was to – I mean, one of the things we realized is that these vessels do sort of fall out by – as I mentioned, we have these like inshore vessels versus offshore vessels. We have small vessels that carry few passengers to large vessels that carry large numbers of passengers.

The idea here was to recommend that we actually maybe categorize these vessels by these – you know, categorize it as a small inshore vessel, a large offshore vessel, small offshore vessel and so forth so that we can use that in subsequent analyses to just sort of immediately focus on one group of vessels.

And, of course, the obvious recommendation is to let's start verifying some of this data in any way we can and increase those efforts. More recommendations relating to the catch records; this was again correct these outliers and then possibly consider readjusting the database if needed; consider using a minimum cutoff of number of trips when using a species-specific index of abundance.

What this got to is we had quite a few vessels that actually entered the survey, were only there for maybe a year or even less and then exited the survey. Then their catch just wasn't consistent sometimes probably because they didn't know what they were doing and that's why they exited the fishery. Their catch did appear to be odd. There was like one vessel that was there for one catch record, made one trip and then exited the survey. What was up with that?

This recommendation is something we already do for when we compute indices of analyses is to try and filter these trips that are necessary for the analysis. For instance, when we do a red porgy index, we try to eliminate any trips that weren't likely to catch a red porgy, if they were clearly going to deep water, if they were an inshore vessel, all that stuff; and this is just reiterating that

fact that it is something to be careful of when looking at the headboat data in its entirety is be careful that these vessels do behave differently; and there are reasons to filter the vessels essentially to whatever analysis of interest you're doing.

I did want to touch briefly – this was important for SEDAR, but I'll go over this quickly. It may not be as important for this committee. We did have this reviewed and so we did have a terms of reference. The reviewers were all Fisheries Service folks because we wanted them to review the confidential version of the document; so it included all the data, all the analyses and so necessarily we kind of had to do this in-house.

Also, we kind of ran out of time to get a CIE review kind of in place; so we did sort of get stuck with, okay, what can we do at this point in terms of review, so we got a couple of folks from Woods Hole, a couple of folks from headquarters and another person in Miami to kind of review this document under those terms of reference that I just showed.

I sort of summarized some of their comments. This is not complete. Some of them were repeat; some of them reworded the same essential comment. I won't go into detail. You can look at those. I think we have a summary of the review comments in the report. Essentially they said the analysis met the terms of reference as we laid them out. It was the best we could do and they had noted some of the same things we knew were issue with this analysis and some of the shortcomings of this analysis; one of the big ones being we just don't have a verified data to compare this to and know for sure whether this is all 100 percent accurate.

DR. BARBIERI: Thanks, Erik; it was very good to get this thorough overview of the analysis. I'm going to open up to the committee for any questions or comments. Jeff.

DR. BUCKEL: Erik, one of the comments was something about it wouldn't be able to detect that folks were – because this is an outlier analysis, if folks were going towards the average – and I could see that happening. I guess I just wanted your comment on how likely that is to bias things where you might have a couple boats that are the highliners in the port and they don't want to – so they're going to underreport and they're going to pick values that are similar to everyone else – you know, the average in that port to hide that.

DR. WILLIAMS: Yes; to some degree maybe that was happening. It could have been happening. The analysis that would have picked up, though, whether that was happening again was that comparing – when we compared the port samples to the catch records, we would have seen that their port sample to catch record comparison might have shown that, hey, they're not reporting accurately. In that sense, we might have detected it there. But again there probably are some scenarios that might have slipped through this analysis, but I think it would require a large degree of collusion for that to be happening.

DR. SERCHUK: One of the things that the report mentions, it looks at the forms that the headboats had to use for archiving the data. One of the issues mentioned in your report is that in some cases there was a call for discards that was often very inconsistent. But that is one area where, unless you have an observer, you can't validate against the dockside sampling.

Therefore there could be cases that actually you would have a larger number of fish reported as caught. You keep referring to the catch records, but they're not catch records. They're landings' records in most cases if they're inconsistent. You could actually have more on your form of fish actually caught, including the discards. I'm just wondering – I'm not familiar with this; but I know that if you're dealing with a multispecies fishery – and it looks like from the photographs that there were a number of species that were landed.

I presume there were in some cases minimum sizes that – and I also understand that in most cases if you're dealing with a partyboat, quite frankly, and you're going and using their equipment; they're going to be using hook sizes, for example, that will be targeting what is allowed; so I expect the discards to be very small. It is a source of information which again, if they're properly trained, could be invaluable as opposed to putting observers out, which are going to be very expensive. I'm just wondering whether you'd comment on that.

DR. WILLIAMS: Just a little history on the discard reporting is prior to; I think it was 2004 is when that column was added to the catch records. Prior to that we were not recording any discards and the instructions were just to record the landed catch on those catch records; so, yes, it is really 2004 after is where we have that discard field.

Yes; we've talked about many ways to try and get at discard estimates and whether it is – you know, we even considered handing out separate cards to the anglers before they go on the trip to fill out their own discard card of sorts. Things like that we've looked at or talked about and we just haven't been able to implement. Frankly, the survey is at the mercy of using that field base largely for our discard estimates.

DR. REICHERT: And to that point, I agree with you, but wasn't the issue that started this something that was related to data prior to '92; so that was the period where there was no information on discards available, period. That doesn't mean that I don't agree with you, but just as a clarification, perhaps.

MR. BROWN: Mark Brown, South Atlantic Council member. Erik, I've got a question for you. Did you do any kind of an analysis on different fishing methods for the headboats? The reason I say that is when I moved here from Florida in the middle eighties, all the headboats here in Charleston were using electric reels and nobody else used electric reels.

Where I'd ever been before, they were all using manual reels and so it kind of impacted the landings and everything. There was a big degree of like a commercial emphasis on the headboat; and so a lot of the guys that went fishing, they were catching pretty big numbers of fish. When they unloaded them, they just came off the coolers.

I didn't see a whole lot of sampling going on back then. It was just a lot of real strong effort. We did have a sampler, but I think she got fired for wrecking her van or something or drinking with the guys or something; I don't remember what the deal was. But also I want to ask you one other thing. The reporting was they were paid for, right?

Wasn't there a fee or something and was there any chance or was anything that could have been manipulated because of – because I have heard stories about things that were happening and the people who were operating the business, you know, would just turn it over a crewman and just say, here, you just go ahead and fill out these and you can keep that money or something.

DR. WILLIAMS: So the first question was regarding – I've already forgot.

MR. BROWN: The electric reels.

DR. WILLIAMS: The electric reels; we don't have a record of gear changes and we don't record gear type on the forms. It is actually something we have thought about; but we do know that particularly in the early part of the survey or early part of the fishery, really, where electric reels were prevalent both in the Carolinas and I think they were even being used off Florida.

Typically what we've seen is that when – again, this gets to why we broke this into the strata that we broke it into is that what we see is these changes tend to occur regionally and tend to occur at similar times. In other words, when the Carolina boats, in particular North Carolina, started shifting away from electric reels, they all kind of did it roughly around the same time.

It seems like it coincided with a shift from deep water to more shelf species. They kind of started backing off the deepwater species. Yes, there were gear changes occurring; but again this analysis was relying on the fact if that was occurring, it was likely occurring within a whole group of boats and not just one boat being an outlier; because if they were, we probably would have picked it up as their pattern of fishing might have appeared suddenly differently. We didn't see too much of that.

MR. BROWN: Those shifts were in the later years, though, weren't they? They weren't like in that early time frame. It was kind of consistent right there with the fishing patterns in that time frame.

DR. WILLIAMS: Now I'm confused.

MR. BROWN: I'm talking about like when the time that was being questioned back in the eighties and stuff.

DR. WILLIAMS: Right; I think that's the period when they were shifting. My impression is that the Carolina boats were still using electric reels up through the seventies and even into the early eighties and then there was a shift then away from electric reels. Again, I'm most familiar with the Carolinas and talking with the folks there.

MR. BROWN: I mean me seeing it, I know that they used the electrics right on up until a lot of them were phased out in the middle 2000s. There were using electrics right straight through.

DR. WILLIAMS: Well, again, I think – and I don't know, but there were vessels that were – my impression is a lot of the vessels that used the electric reels were going to the deeper-water species, and they would show up in our analysis as one of those offshore boats of going to the deepwater

fish in contrast to some of the boats that stayed nearshore and went on just black sea bass trips or something. We separated those in our analysis.

MR. BROWN: Yes; the only reason I wanted to bring that up is that there was a potential there for there being some opportunity to misreport, because there were such big landings with these guys having this commercial emphasis on using the electrics and going and selling their catches. They were doing a lot of long trips, too, early birds and overnight trips. There was a lot of movement of fish and I am sure there was a lot of reporting going on.

DR. WILLIAMS: Well, again, all we have to go on is the catch records that were submitted and the port samplers that were there to intercept those and look those over and also sample the catch at the dock. When we look at that data, it is fairly consistent. The port samples tend to match the catch records.

From the port samplers' records, they seemed to have gotten a good accounting of all the trips that were made. Now, they didn't necessarily get a catch record from every single trip; we know that. That's why I mentioned that we have these correction factors for trips that no catch record was turned in by the captain. There was no regulation and there still isn't a regulation requiring them – well, I guess there is now, but there wasn't up until very recently to turn in a catch record for every trip.

MR. BROWN: Is there some sort of a degree of adjustment that use in evaluation on the catch records nowadays? In current times when you look at the catch records, do you use some degree of adjustment there and did you take that certain degree of adjustment and apply it to the time frame that was in question?

DR. WILLIAMS: No; there is no adjustment to the catch records. The adjustment that we do is to account for the trips that didn't turn in a catch record. The way we account for those is we assume that the neighboring ones that – both in time and space the catch records that we did get are close to the ones that we didn't get; and that is how we do a correction for those that are missing. In terms of when the data is turned in, we don't make any adjustments to the catch record themselves. The catch record is the catch record.

Now, what does occur is we look at that catch record. The port sampler takes a look at it and looks for obvious errors or species that person might know were not caught or anything like that before they submit it to our database. Once it is in the database, we also run it through a bunch QA-QC protocols at that point, too, where we're looking for outliers and looking for erroneous fields that were entered into the database.

DR. REICHERT: I think although there is no action required, originally this says you halted SEDAR 41, but it didn't just halt SEDAR 41. At that point it halted all South Atlantic stock assessments that relied on headboat data. I think it is important for us because this issue will affect or the resolution of this issue will affect not only the ongoing SEDAR 41 but a bunch of other stock assessments, too.

I think it is important for us as an SSC that we are comfortable with the analysis that Erik just mentioned because this will be applied or not applied because in a number of instances, if I understand you correctly, Erik, there was no reason to correct the current data. That will be used in future stock assessments; so I think for us an SSC it is important that we are comfortable with that so we don't have re-review these methods again in future stock assessments. I just wanted to bring that up and make sure that we're all comfortable with the approach and the results of the report.

DR. WILLIAMS: Yes; and I'll just add to that, yes, we think that the headboat data is the best that we can get, but recognize again – I think people might be getting confused in recognizing that this is ultimately fishery-dependent data and recognize the value that fishery-dependent data has to stock assessments. It depends on the situation and it depends on the species how useful it actually is going to be in the assessments. There are a lot of factors that have to be considered and we try to consider all those when we use this data in a stock assessment.

DR. REICHERT: I appreciate that and I should have said within the current caveats that come with these types of data.

DR. SERCHUK: One other question; I know that the reviewers' comments really didn't talk about effort very much; and I'm just wondering what your thoughts are on using the effort data. And also given the comments that we had about changes in the catchability or changes in the equipment, even an angler day is different with electric reels versus regular lines. I just wonder whether you might comment about it because the natural step is, well, we have the catch data, let's use these as indices, and I'm just wondering have you taken it that far or what your thoughts are on it.

DR. WILLIAMS: That is where a lot of time with sort of these GLMs standardization methods to look at this data to try and come up with an index of abundance; and we try to eliminate those trips that probably weren't targeting the species in question and things like that. You're right, there are a lot of factors that go into potential changes in catchability over time and gear changes and fuel prices and all that stuff can affect this data, and we try to account for a lot of that as best we can.

DR. BARBIERI: Well, to supplement what Erik just said, a lot of these issues on a species-by-species basis are actually discussed during the data and the assessment workshops as those indices are being built and hopefully getting multiple types of perspectives, you know, fishers and people with a history to give us some guidance on how to conduct the standardization.

Thank you very much, Erik. I think this was a very productive and very important discussion. Let's take a 15-minute break. We have to get back to our agenda. We have a couple more items to cover this afternoon I think starting with an overview of several SEDAR activities by John Carmichael.

MR. CARMICHAEL: There are a number of things here to bring your attention to. First of all, the data best practices, you will remember we had – a number of you were involved – we had the Best Practices Workshop this summer; and it seems that across the board everyone agrees it was quite a success in getting everyone who is involved in the data workshop to come together and talk about the issues related to them and ways to make the data better.

As we go down the path of making plans for the next assessments, the intention is to start putting these recommendations into play. This was reviewed by the steering committee when they met at the end of last month; and they're on board with the changes that have been recommended. You can expect to start seeing some of the things like the different milestones and the different timing and data delivery deadlines and such all starting to make their way into the SEDAR Project Schedules for the things that will be coming up in the next couple of years.

As we look into next steps, the steering committee agreed with creating a Best Practices Panel that will meet regularly to keep these data best practices fresh, up to date, consider what types of changes might be made. If issues come forth through the process, that will be the first place where they're vetted. They will meet probably in webinars at first because everyone has so many meetings to go to already. If the group decides they need to meet in person, then we're going to certainly try to accommodate that.

One of the things that was recommended from that workshop was the stock ID and meristics to do a review of all the things that have been assessed; and then as each individual species comes up, to review what is known for that and see if any changes need to be for that assessment. That was approved by the steering committee to happen in 2016.

Some of you will start hearing about that from the SEDAR staff to get involved and start planning that and conduct that workshop. I think that was most of the things related to the best practices; and as I mentioned, the steering committee – and you have their report, which you received just recently as Attachment 6. It documents everything that they talked about.

One of the things they did address is the SEDAR – and here is the first mistake I made in the overview document where it says Marcel Reichert is Chair for 41; that is actually 47 for goliath grouper. This is joint with the Gulf and South Atlantic; so both councils were asked to appoint a potential chair and reviewer and both did.

Then the steering committee had a discussion of it and decided what they would do is appoint Marcel as the chair and then Carolyn as the South Atlantic Council's reviewer. They decided to maintain equal appointments between the two councils, and the two folks appointed by the Gulf will serve reviewers.

There will be one South Atlantic appointed chair, one South Atlantic appointed reviewer and then two Gulf Council appointed reviewers. We're going to do this in the future just to avoid some of that confusion that comes when one council maybe has one person and the other has two people and just to equalize the participation of the councils on the review panels for the future, which I think that was a good decision of the committee.

Another thing that they saw that you'll also be seeing later on in this meeting was the NOAA Fisheries Stock Assessment Prioritization Plan. As you remember, Rick Methot has come here and talked about that when it was in its early stages. It has gone through the CCC. It has gone through the higher levels of the agency, and now he is making the rounds with the proposal and the plan. This came to the steering committee.

They discussed it a bit because, obviously, it affects all of those species and what is chosen to be assessed. What is going to happen is Rick will come and there will be the presentation later on in this meeting. We'll about it more, but the thought is that the South Atlantic may take a stab at applying the prioritization plan to our stocks at our next meeting in April.

Maybe we'll have a workshop or something ahead of time, because the steering committee wants all of the SSCs and councils in the southeast that are involved with SEDAR to review it and consider how they would apply it and how they would use it; and then the next steering committee meeting hear from everyone and get feedback and think about how that plan might affect priorities within SEDAR itself.

Usually at the steering committee we talk a lot about the schedule, but we ran into some issues in settling the schedule for 2017 and 2018. A lot of it had to do with dealing with the MRIP changes that are coming and how the changes in the MRIP data are going to be fed into existing stock assessments. Bonnie, the Science Center Director, wanted to go back and talk to her folks some more about how they're going to handle that and what their plans are.

The steering committee is actually going to meet next week, on the 30th, and hopefully resolve the 2018 schedule and sign off on the 2017 as well. I know those of you that are involved in data programs such as Marcel and those of you who participate in the SEDARs will be glad to have the schedule for the next coming years so you can get your work done and hopefully next week we will have that done.

DR. REICHERT: John, the schedule in the overview, '17 and beyond is tentative?

MR. CARMICHAEL: That is correct; that is tentative. This shows what has been requested for the South Atlantic, based on the South Atlantic Council's actions, and it has not been endorsed by the steering committee yet; and that's what we hope will happen very soon. The next thing that I want to highlight as we get into the schedule is the red snapper/gray triggerfish benchmark.

It says October 2016. Now we want this in April so this is a bit of an attention grabber, because the schedule now for the completion of the report – the review workshop for this project is going to be held in March and the report is going to be available April 15th. Now, your meeting is tentatively scheduled for the 26th; so this cuts into your normal two weeks prior to your meeting review time.

We kind of have a decision now from the committee; are you willing to waive your two-week review time for this report or would you rather have your SSC meeting moved back a week, say to the first week of May? I'll put that out there just to get guidance from you to make sure that – we haven't planned the meeting yet.

We haven't even initiated a hotel and all that stuff; so I wanted to hear from the committee sort of what your pleasure is. We'd be meeting the last week in April, which is kind of when we've met the last couple years; would you rather maintain that and give yourself just a week to review this report or would you rather push your meeting back and have longer to review that report?

DR. BARBIERI: This is just for clarification; but this is really SEDAR 41, right?

MR. CARMICHAEL: Exactly; this is for SEDAR 41 for the red snapper and gray triggerfish, which is soon to be completed.

DR. REICHERT: Personally, although it gets a little closer to the SEDAR 47 review, this is a pretty important stock assessment; so I'd much rather have a little extra time to make sure that we can collectively review it than pushing it; but that is just me and I'm looking at my calendar. I'm not sure if others have similar ideas.

DR. BELCHER: I was actually going to say the same thing. I don't know how much – obviously, academic folks are getting close to exams and things like that; but at the same time given the gravity of what is going on with that assessment, I don't think we can short-change ourselves or back ourselves into a hole if people have a harder time getting it read.

DR. YANDLE: The same way for me; exam week is easier than the week before exam week, so I'm fine with it.

DR. CROSSON: Obviously, it matters a lot to the academics that are on the SSC; so you might want to check with Steve Cadrin. I don't know what his schedule is in the spring.

DR. REICHERT: So it may be easier to ask if anyone has any objections of moving the SSC meeting to the first week of May, and then we can check with Steve.

MR. CARMICHAEL: Yes; that seems agreeable; so you're saying your preference would be to shift the SSC meeting back a week rather than shorten the potential time for you to review these probably lengthy and obviously important assessment documents. I believe we can accommodate that; so thanks for the feedback. We'll go down the list.

The next one is blueline tilefish; so that's listed here as an update. The council wants you to consider whether that should be a standard. I expect most of you are aware of the other issues surrounding blueline tilefish are questions about stock ID, what has been going on with increased landings in the Mid-Atlantic. We have this an agenda topic later on the meeting.

I guess late last week we received a letter from the agency giving some advice to the two council chairs on how to handle that. We will discuss that as well when we get to that topic near end of our meeting. I think that brings up with all the things that are underway in terms of projects. We will fill you in on what the steering committee does in 2018.

The last thing is the red snapper/gray triggerfish, as most of you know, the assessment workshop was planned for mid-November; that has been moved back to the week of December 14th, following the South Atlantic Council meeting. Everyone who has been involved in that have certainly been involved in those discussions and believe that we are in good shape on SSC representation. I see Julia; are we good? Is there anything you want to come up and add about this since you are here? You are well versed with what has been going on, so if you want to fill them in on the latest developments.

MS. JULIA BYRD: Maybe I can talk with folks not officially on the record about this; but what has happened is all of the folks who have been appointed to the assessment workshop – when we got word that there may need to be a delay, we held a call and we’ve done kind of a poll to choose the updated assessment workshop week, which is going to be the week of December 14th.

We haven’t heard back from all of the appointed folks yet of whether they’re able to participate or not. As far as SSC representatives, I know Luiz and Marcel, you guys are able to participate. Fred, I know you no longer are able to participate, but I think Jeff Buckel has agreed to kind of replace Fred. Alexei, I’m not sure if that works for your schedule. Great! Then we should have the four SSC representatives for that workshop; so I think we are good to go.

MR. CARMICHAEL: Our primary action item was commenting on assessment priorities for 2018 through 2020; so what is shown in the table is what the South Atlantic Council recommended in September. This was set up to prioritize a lot of the recreational species which in the MRIP Transition Report were prioritized and identified as ones that have a significant recreational component and should be top priorities for getting the assessments updated with the new MRIP information rather than rely on the back-calibration, as it would be, that we’ll probably have to do for a number of the unassessed stocks until we get the ABCs and ACLs all updated.

Really, the priorities that you see were provided to them to consider based on that and also based on how old the various assessments were. Then they came up with this list of standards and updates for 2018 and 2019 that really gets us through most of the primary recreational species that have been assessed and were identified as priorities. I would say certainly the council has gone with 2017 and 2018 to the steering committee. If you guys have some thoughts on priorities for 2019 and 2020, now would be a good time to point them out.

DR. BELCHER: Will some of that be affected by the potential discussion with Rick Methot since we’re talking about prioritization scheduling? Is that something that we want to reserve until after we’ve had a chance to do that?

MR. CARMICHAEL: Yes; it possibly could depending on the timing of that. If it could be done, say, over this year, then it could affect probably 2020. 2019 is what the steering committee would want to be setting a year from now. We could wait and see how that does and maybe see what comes out maybe in April if we try to apply that process. We still have time.

DR. BOREMAN: I’ve got blueline on my mind for some reason; but you’re seeing it again in 2019 as an update. We’re going to talk about this later in the agenda but I just want to point out 2016 is an update, 2019 is an update, the last benchmark was 2012. I’m putting out fodder for discussion when we get to blueline; do we want to wait that long? Even if a standard may not be sufficient in 2019; so some time along within the next decade, I would like to see another benchmark come out.

DR. BARBIERI: John Carmichael, can you recall for us some of the reasoning in terms of the council’s preferences for the schedule having all these updates and standards?

MR. CARMICHAEL: Well, the '18 and '19 was to bring in the recreational data, so all those have been assessed before. Unless we thought there was some other new information other than just revisions to the existing datasets, there wouldn't be a need to do a benchmark. The preference now is do a benchmark unless there is an explicit reason that something has changed or we need to do something different.

Blueline, we talked about that a little bit, so we can go ahead and throw this out there for folks to think about – my thoughts now, given what we know, is there is some genetic work that is underway. The center has been doing some sampling. We expect results from all those to start becoming available in December.

Under the normal process, you guys would probably look at the terms of reference for that assessment and talk about it in April would be the next time. I don't think it is going to be very wise to have that information come to the council in December and go through another whole council meeting in March before you look at.

What I'm kind of leaning to and maybe start thinking about this now is having some sort of SSC meeting in late January or early February, perhaps a webinar or perhaps in person – your choice – where we look at the genetics' information that becomes available and we look at the sampling from the center. We look at the charge from the council about considering the type of assessment. We consider the terms of reference that need to be done for this assessment.

Will a standard/update suffice? Is a benchmark required? Depending on what comes out of this, maybe we need to somehow involve folks from the Mid-Atlantic as well on that meeting. I kind of have the idea of some sort of dedicated blueline tilefish to lay out the assessment path for blueline for the next assessment in the next couple of years.

DR. BOREMAN: The Mid-Atlantic SSC has formed a working group, and their charge is to review the data-limited methods. If we're just going to be looking at the Mid-Atlantic Region; that defines data limited I think because the data is more than limited. They're going to be looking at the DLM toolbox put together by Carruthers et al.

We just successfully used that on black sea bass, so we want to look at applying that toolbox to blueline tilefish and see if we can get something out of that. That's going to happen probably in – our next meeting is in March; so keep that in mind in terms of your timeline and see how that works in. They might come up with something that the South Atlantic Council and Southeast Center may also want to think about using.

DR. SERCHUK: Because I'm a new person, I'm not really quite sure what the difference is between update and standard. I know when I read the report of the steering committee, they talked about going to operational assessments. Without wasting the committee's time, could you very briefly explain what the differences are here?

MR. CARMICHAEL: A benchmark is sort of like everyone one expects, everything on the table to reconsider new models and all that. The update is just a strict update. You add new years of

data to the existing data series that were used. Then the standard falls in sort of that gray area where you don't change the model type.

You could change the software package within reason; and you could bring in new data. If you have an assessment that has an independent index and you have some changes in that index, expansion in that index, maybe a new index, if that has been used in other places and kind of vetted, you could bring that in as well.

Most importantly, the ultimate arbitrator of what is okay in a standard and what goes beyond what would should be a standard and triggers a benchmark is the SSC. The idea is that SSC considers what new information is there and what is proposed to be changed; and you say, all right, are we comfortable reviewing that ourselves through the standard or do we think we'd like to kick this up and have the full CIE guys come in and do all the benchmark, have this independent peer review and trigger this extra process. Standard is kind of in a gray area.

Where we are now is the new proposal that has been out is to say the research track and then the operational assessments. The research idea would be the benchmarks as we do them now without let's say the burden of trying to include the most recent data as well. It would be done and use the data that were available when it got started; but it wouldn't be designed to give you the management advice. You'd then go in and add the latest data to that and get the management advice. The operational assessments would basically combine the update and standard as they're now done in SEDAR.

DR. SERCHUK: Just one other question; are those protocols codified somewhere?

MR. CARMICHAEL: They are; we have operating procedures for SEDAR, which lay out all of this stuff and certain things that trigger a benchmark versus examples of things that could be –

DR. SERCHUK: I'm not really concerned about the benchmark. I'm concerned about what information is allowed under a standard assessment. Is that determined by the SSC each time or are there certain things that are off limits?

MR. CARMICHAEL: There are certain things that are off limits. If you wanted to go from a production model approved benchmark to a catch-at-age model; that absolutely triggers a benchmark. Otherwise, if you didn't have any independent indices and now you had one and no one had ever vetted it and no one had ever reviewed it and never been used in another SEDAR; that would trigger a benchmark because that is substantially a new data source.

Otherwise, it is within the SSCs to apply their judgment. It is done that way because you're the ones that ultimately make the recommendations from it. SEDAR wants to make sure that the SSCs are comfortable with what types of analyses and the level of review that is going in it before it comes to you to make recommendations.

DR. BARBIERI: Any questions or comments regarding the SEDAR Schedule and the plans? We have a suggestion from John Boreman that we address this I think when we discuss blueline tilefish. I think that would be the best time. If no other questions or concerns from the committee,

I think we are ready to move on to Agenda Item Number 7. This is a discussion of the South Atlantic Fishery Management Council Citizen Science Project. We're going to receive an overview I believe from John Carmichael.

MR. CARMICHAEL: Just a quick overview to bring folks up to speed who maybe haven't heard about this project. I think it was around June when the idea started making the rounds within the council of having some type of a Citizen Science Program here within the South Atlantic. There has been an organizing committee convened.

It includes some council staff and some council members and the Science Center Director as well to start brainstorming what it means, how can the council get involved in citizen science, what would a citizen science program look like? The first major step in this process is going to be to hold a workshop to convene scientists, constituents, experts in citizen science to start considering what it will take to have a Citizen Science Program.

This is at a higher level than an individual project where someone goes out and collects the data; but really at a program level to give guidelines to ensure that projects give us data that are actually useful; able to be used in stock assessments, if possible; able to be used in management evaluations. Everyone that is involved is very cognizant of the problems that could arise if people go out and start collecting data and then they bring it to the council or it gets distributed to the council and say, well, that was nice, but for various reasons related to how it was collected or whatever it is not able to be used in the process.

The guiding factor is to make sure that there is information coming in that is robust and useful and to get the fishermen involved in it as much as possible; you know, ideas such making the most of existing things such as cooperative research programs. Are there ways to get more South Atlantic projects funneled through that and more fishermen involved?

There will be a lot of information and outreach components to this as well. We have this one-page flyer which was developed to just give folks some background on the information. The council made some appointments for the workshop at their last meeting. This workshop will be held in January here in Charleston.

As I said, there will be some discussions about what citizen science means, what are some of the considerations and concerns for an overall citizen science program and then a series of breakout groups getting like data people together to talk about how you can manage the data; fishermen together to talk about things they will realistically do.

There might be scientists who have a lot of great ideas, but is it something that fishermen are going to realistically do, particularly if we're starting this thing without any funding whatsoever. Obviously, finding funding and what will be required for funding will certainly be one of the things that we talk about at the workshop as well.

It is a big topic that is certainly making the rounds. There was a Webinar, White House, Citizen Science Day that they had as a whole big initiative through the White House a few weeks ago about citizen science, so it is something that's coming out at the highest levels. The Fish and

Wildlife Service has been involved in doing a lot of citizen science efforts within their properties; a whole initiative within their refuges that they're going to start doing citizen science projects.

It is something that is definitely becoming a lot more prevalent, and the council wants to get involved in this and just do everything they can reasonably do to facilitate getting good citizen science in our region. With the many species we have and the diversity and variety, we may be well suited to that.

Another thing is we've heard over the years from public comments and everything else the fishermen saying, "I'd love to go out and collect data for you. I'm out there every day and I can collect information." We want to have something in place that says, "Okay, if you're willing to do that, here are some things that we need you to do. Are you going to go out and do it; and if so, follow these guidelines. We'll give you this training"; what have you, whatever it may take.

At this point it is a lot of big ideas floating around. The workshop is a chance to get down to reality and start really hammering out what it would look like here within the South Atlantic. Folks are excited and it should be a very interesting workshop and certainly a different topic than so many where we're just going through the arduous task of putting together stock assessments and debating data.

The council has identified some folks it thinks would be useful to participate; for the SSC, Steve Cadrin and Luiz Barbieri; and then folks within the states, Marcel, Jeff Buckel and Carolyn were all identified as folks that are targeted for participation and we hope that you can; and then put it out if there are others on the SSC that you think you're interested in this, to certainly let me know.

We want to make that we're covering the science, we're covering the fishermen, we're thinking about all the angles that we need to make sure we get good, robust data out of this in the long run. Projects may be a ways down the road, but we want the framework there that we do have good projects with good data.

DR. YANDLE: The New Zealand Government and the New Zealand Fishing Industry have a long history of doing this working cooperatively; so I know a few people that I may be able to find someone who might be even able to webinar in and discuss what they've been doing there for the last several years.

DR. SERCHUK: This sounds like cooperative research; is that what it is?

MR. CARMICHAEL: That certainly one arm of it, yes.

DR. SERCHUK: Because there was a recent paper put out by the Service on cooperative research; and you know there are cooperative programs in the other two councils on the eastern seaboard. That work generally has been very productive; so I'm glad to see this initiative coming down here.

My only point is there is some history that could be useful in terms of how those programs are of cooperative people that you could interact with that could perhaps shed some of their expertise in this endeavor. Steve Cadrin is one of them, but there are other people within the Service that know

where funding has been. There has been NMFS funding for some of this stuff as well. I encourage that interaction.

DR. BOREMAN: Along those lines, the Mid-Atlantic is calling it now collaborative research rather than cooperative because they don't want to confuse it with the agency's cooperative research program. If you're going to have a workshop here, I suggest you get Mary Clark from the Mid-Atlantic staff. She has taken the lead on that.

DR. SHAROV: I want to test John. John, can you list maybe a few sort of expected projects that are most likely to come out of this workshop that is sort of lying on the surface of what the expectations are, I would be interested.

MR. CARMICHAEL: There has been a fair amount of discussion about some sort of kick-starter type projects that would keep people excited to show that it can work, get information that comes into the council process, proof of concept and build excitement. The types of things that have been discussed have been things that will affect the management and the management program but not are tied directly, say, to closures.

There is awareness that if people sense the data they're collecting are going to be used to open or close a fishery; then there is a huge potential for bias. There are some sort of narrow parameters of what types of projects are considered appropriate. One of the areas that I've always thought there is a lot of value from this is getting information on discarded fish.

Because it is so hard to get that information and observers are very expensive and fishermen are discarding a lot of fish, you could get, say, lengths or something from discarded fish, get more species' composition from our mixed species; just get general information on why a fish is discarded; because when the council does bag and size limit analyses or anytime they look at discards, well, why was the fish discarded?

Personally I think there are a lot of projects along those lines that could be really first places to start because they're important and they affect the management; but they don't typically lead to whether or not a fishery is opened or closed.

DR. BARBIERI: John, just to clarify, and also I guess one of the reasons behind this workshop coming up in January is for these very topics to be discussed this way and then get some level of concurrence on guiding principles or structure and framework that we want to use for development of this project.

MR. CARMICHAEL: And the other big area that we're looking at as having some potential is evaluating our SMZs and, the MPAs that exist, to getting people out there and saying, you know, in these areas where there might be area-based restrictions; can we get fishermen to go there and collect information; can they find spawning fish in the SMZs.

You will hear a lot more about that later on the meeting when we get to that topic; but that's something that fishermen may be able to do is go out and collect evidence of spawning fish and maybe bring some evidence. We can deal with all the hurdles and logistics and stuff of that nature

and maybe do some comparison fishing in areas that are open versus areas that are not. That kind of stuff is really expensive and is difficult to do, but some fishermen going out and doing a few – a lot of fishermen doing a few samples may start giving us some information that we were unable to obtain in the last 20 years any other way.

DR. BARBIERI: Any other comments or questions regarding this? I imagine that everybody received a copy of this pamphlet.

MR. CARMICHAEL: Right; that was Attachment 9, was it – yes, Attachment 9.

DR. BARBIERI: Well, that actually put us at the end of what we had scheduled for today; so I guess the question – and we should have a good solid hour. I'm glad to see how eager folks are to move on; but I'm trying to see which ones – if Gregg can do 36 right now; then let's go ahead; and that will be Agenda Item Number 8.

The members who have been here for the last meeting may remember that Gregg started by giving us a very general overview of Amendment 36. There was a presentation and discussion at the council meeting; and Gregg is going to give us an update on next steps. The only action item that we have at this point is to review and provide comments.

MR. WAUGH: I will be working from the summary and walk you through that part of it. I will cover some introductory remarks.

DR. BARBIERI: And by the way that is Attachment 10 in your briefing book.

MR. WAUGH: I'll be going through the amendment; and then once we finish with that, Chip will be covering the System Management Plan for the spawning SMZs. We have been at this for a while now. We convened an MPA Expert Workgroup; and they had some suggestions for some MPAs. There was a lot of resistance to moving forward with any MPAs, large areas.

The public felt we hadn't done – and they were right; we hadn't done an adequate job of monitoring our existing MPAs and enforcing our existing MPAs. It was very difficult to move forward with providing some additional action on these closed areas. There was a lot of interest initially of focusing on speckled hind and warsaw grouper, given their stock status. Given the resistance for MPAs, we tried to approach this as a slightly different approach and to go after smaller targeted areas that target areas important for spawning. There has been a lot of work in the Caribbean identifying spawning aggregations sites; a lot of work in Riley's Hump, and we've covered some of that in the past.

But it seems to be where you have these elbows sticking out into the stream seemed to very important for a number of species. We tried to move away from just focusing on speckled hind and warsaw grouper, to still protecting those two important species but then also providing protection for the other snapper grouper species; and to give us time to sort of rehabilitate the view of us in the public to try and go after smaller areas that they don't have to give up as much; so they're not investing as much in this with large closed areas.

The minute you say “MPAs” that is what people think of is these large areas that you’re going to close; so we tried to come up with a different term “spawning SMZs”. We have a successful special management zone procedures that works around artificial reefs in state waters; so we tried to approach it from that angle. We’ve been a little more successful.

There is a lot of resistance to any closed areas; we can tell you that. At the last meeting the council did approve a process and sites off of a number of the states, and I’ll go through those. I think when you look at this, I think from a scientific standpoint scientists would like to see larger areas. We tried that and we were concerned we would end up with nothing; and so we’re approaching it now with a procedure that, as you will see, allows us to identify these areas, start small.

We’ve got some sampled areas to use. Then as we document what is going on in these areas, work with the public through the Citizen Science Program; then if the public sees a lot of benefit in these areas down the road, we will have the procedures in place that you can expand these areas. The monitoring and research is a big part of that.

Enforcement, we don’t have a lot of influence over that; but we feel as has been demonstrated in other parts of the world that if you involve the fishermen in monitoring these areas, you get a lot more eyes on the water, you get buy-in, and voluntary compliance is much higher. That is sort of the approach we’re taking.

Chip will go through the System Management Plan specifically for these spawning SMZs; and then tomorrow or the next day he will cover the System Management Plan for the MPAs. Ultimately we see this having one System Management Plan with individual chapters for our MPAs, our spawning SMZs, our regular SMZs and our habitat areas of particular concern.

It is starting out separate, but we see them coming together ultimately. As you look through this, Chapter 2 in the amendment presents charts and tables and figures that we have used throughout the public hearing process. A lot of those are from our South Atlantic Web Portal. We’re trying to get people to see that they can create these charts and look at this information, using through our website.

Then in Chapter 4 you’ve got more quantitative analysis. The biological side was done by Nick Farmer based on some research with a number of different individuals. Then the social and economic impacts are included in there; and given the size of these areas and how finely we can determine where catch comes from, the potential impact is very minimal. With that as an introduction, I’ll just walk through this and briefly give you an idea of what we’re proposing.

In the purpose and need for this, what we have done is made clear we’re not trying to say that there is going to be any increase in recruitment from these areas. That is difficult to document, anyway, depending on how large your area is. We’re trying to be very clear with the public that what we want to do here is protect important spawning habitat, reducing bycatch.

You’ll see we have a sunset provision in here. As we sort of grade these things, if they’re going to stay in place, if we can document that there is spawning taking place in these; that is going to be the metric that we use. Action 1 modifies the special management zone procedure, and our

preferred alternative is to include protection of any important area for spawning by designating spawning SMZs.

Right now we have a procedure for designating SMZs, but we're going to modify that so that we can create spawning-protected areas; because within our existing SMZs, we can regulate the types of gear; but within these spawning SMZs we want to prohibit all fishing. Action 1 modifies the process to address these.

Action 2, the preferred alternative is to modify the framework so that we can make changes in the future without having to go through a full plan amendment. Actions 1 and 2 are the procedures that we will use to address these areas. Action 3 gets into looking at these closed areas. We looked at some areas off of each state; and I will start in North Carolina and work south.

The preferred alternative for North Carolina is to establish a spawning SMZ in the South Cape Lookout area, approximately five square miles, that prohibits fishing for, harvest and/or possession of species in the Snapper Grouper Fishery Management Unit year round. In each of these areas we're prohibiting all fishing for or possession of snapper grouper species, but you can still troll through there for billfish, tunas; so we're not tackling all the fishing, just the bottom fishing.

The depth of water in these, we feel that is sufficient. That is the area off of North Carolina. We had considered a couple of other areas, but that's the one we ended up with off of North Carolina. Within this document – I'm not going to go through this; but we've got charts that show the location. We've got a description of the depth on the inshore and offshore side. We've also got a description of what species we can document that have spawned in that area.

That's included in there and I'd be glad to answer any questions about any of these, for each of the areas – and picture of the bottom profile of these areas. In the appendix we've got some information, a little bit about some of the oceanographic information. South Carolina, the council has supported some research work. Pew and others have supported research work.

Throughout this area MARMAP has done a lot of sampling and all that information was presented to our MPA Expert Working Group; and the council has used all that information collected over the years, through MARMAP and others, to identify these areas. We did support some work by Dr. Will Heyman in the Georgetown Hole/Devil's Hole Area.

This is very exciting because in a couple of seasons he has been able to come across three spawning warsaw grouper. This is exciting to be able to document some of this. This has been done through an experimental fishing permit. Marcel and his staff at MARMAP have been instrumental in working up the samples from those species. This is something that we're going to have to build into our Citizen Science Program and we're trying to build into our research to get the level of funding for MARMAP back up to the level where they can adequately process the samples that will be collected through this procedure.

We had a lot of information for the Devil's Hole. This is also a very popular fishing area; so there was a lot of concern and interest about including that. What we ended up with; our Snapper Grouper Advisory Panel had approved an alternative that we not close an area larger than 3.1

square miles; and that is what the council chose as their preferred. We had alternatives ranging up to 15.2 square miles that were supported by some of the commercial fishermen and the researchers; but based on the impacts the council chose 3.1. Yes.

DR. BOREMAN: Gregg, how does the Coast Guard feel about that? That's a pretty small area.

MR. WAUGH: It is and in general the recommendations from our Law Enforcement Advisory Panel that includes Coast Guard and NMFS is large, rectangular boxes. That's fine from a law enforcement standpoint and viewpoint; but we're not getting an awful lot of enforcement in our existing large square boxes.

When you try to talk about increasing those areas; it is just not feasible right now to get anymore large square boxes. What we're trying to do is sort of get in with a procedure that will create these areas and allow them to be scaled up in the future should everybody agree that they should be and starting with some areas that are small enough and manageable enough that we can monitor them. Enforcement is going to be an issue.

Again, we feel starting with a bottom-up approach, you get the fishermen out there involved in the research and monitoring, and you've got a lot more eyes on the water and peer pressure that will more effective I think than our traditional management, at least until we get them to start training drone pilots by flying up and down over these.

DR. SERCHUK: What were the metrics that you used to, for example, to get all those subalternatives there? They go from one square mile up to fifteen square miles; what were the metrics you were using to make those determinations?

MR. WAUGH: In this particular one, it came from sampling in that area. The core of it is where the greatest habitat difference is. As you expand out over the course of the sampling, there were more fish in spawning condition encountered; and we got a better understanding of what the bottom topography was. The idea was to have some larger than that.

The 15.2 square mile area – actually the 13.5 I think is one that came I believe from a recommendation from the MPA Expert Workgroup. The 15.2 is one that was suggested by a commercial fisherman who was involved in the research work out there. Based on his seeing some increases around some of these closed areas, he felt there was a lot of support for protecting the larger areas. It is not all quantitative. Some of it is qualitative and trying to protect as much of this area based on the bottom topography and where we know there is some level of spawning.

DR. SERCHUK: So if you did a benefit cost analysis, what were the metrics that you were using to distinguish between one square mile, four square miles; and how did the 3.1 square miles come about, which was in none of the – I'm surprised at the precision is what I'm –

MR. WAUGH: Yes; there is no benefit cost analysis here to differentiate between those. The 3.1 was initially – we held a workshop in conjunction with our Snapper Grouper Advisory Panel; and that was a recommendation from the commercial fisherman at that time who was working on that research.

Based on his understanding of that area and the research that had been conducted to date, he felt 3.1 square miles was okay. That 3.1 comes from the coordinates that he provided. When you look at it, it is somewhere between 3 and 3.1. Our AP said that's the maximum we'll go along with. Then as he got involved in more research, he felt the area should be larger. There is no quantitative analysis to choose between those.

DR. SERCHUK: And if there is no indication from what you said of foregone catch because of the size of the area, because either we don't have it to that fine scale or the information doesn't exist; would that be correct?

MR. WAUGH: Well, we have information by these large statistical grids; and in Chapter 4 there is an analysis of the potential economic impacts. You're taking a large statistical grid and then carving out a small portion of this; so you have to make some assumption about, well, is the catch distributed – how is the catch distributed within that block.

We don't have that level of detail; but Chapter 4 lays out what the assumptions were in the economic analysis. Virtually all of the impacts are less than 1 percent of catch; but we've got that calculated. Within that, it is very hard to distinguish between any of them, obviously. The whole point is we're starting out small and we're not asking the fishermen to give much bottom.

DR. SEDBERRY: I just wanted to emphasize that on this site, I think all of them, Gregg, that these different size alternatives are not nested within each other. It is not a big box with smaller boxes inside. The boxes move around a little bit in these alternatives so that the bottom is a little bit different in each one of them as well.

The big box may have focused on an entire reef feature that included an elbow, which has been shown to be important spawning locations in other places. Maybe some of the other alternatives focus in on that elbow as a smaller box, but other alternatives focus in on other parts of that reef stretch that may not include that elbow or may include other kinds of shapes that have been shown to be important.

DR. SERCHUK: So those are apples and oranges, then, because the 3.1 that was decided upon could be here and other ones could be over here. I understand there is a process here and I understand you want to minimize the impact of new regulations; and I'm all for that. Some protection of spawning is probably qualitatively better than none; but in terms of what it might produce, it is a little bit fuzzy. That is my feeling.

MR. WAUGH: And you're exactly correct; and we're acknowledging that up front because we're not saying within the purpose and need we're trying to increase recruitment. We feel there are going to be positive benefits. We've seen that from looking at what has happened with Riley's Hump with mutton snapper in particular; but you're absolutely correct.

DR. BARBIERI: And, Fred, just to give you a little bit of background, we have been discussing this kind of concept for a while. In the very beginning I think – and I was very vocally opposed to some of the initial suggestions on this and providing more specific quantitative

recommendations to the council because at the time I felt like we are not being provided with any kind of analytical basis for that recommendation.

The metrics are not clear and extrapolating from an amount of area closed to some kind of benefit was impossible. I think what they have accomplished with this document is in the very beginning – I was paying attention to that purpose there in the very beginning is framing it in a more qualitative form as the council's willingness to put something forward that would facilitate conservation of the spawning habitat.

DR. SERCHUK: One of the ideas that is really well accepted worldwide by resource users is protecting spawning fish, and where other metrics would be highly controversial, this one is almost universally accepted. Irrespective of what the results are, if you protect spawning, it is felt to be a good thing.

I am all for supporting that and I think it will be well received. It is just a matter of sooner or later you have to draw a map someplace and you have to try to get some understanding of what the benefit will be. To the extent that the impacts will be minor, at a very low level, there will be no problem as far as I can see.

MR. WAUGH: Okay, so we move down the coast to the state of Georgia; and here we were considering – we had some additional area beyond the St. Simons area that we were looking at. That was removed and put into the considered but rejected appendix. At this last meeting the council chose to take no action.

The state of Georgia has a very limited length of coast line. We have MPAs there already; and the council felt that is sufficient. We document what is going on within those MPAs; and at some point in the future we can look and determine whether anything needs to be done further off of Georgia.

DR. SEDBERRY: Again, in this case off Georgia, there is a real apples-and-orange comparison there; because there are existing MPAs off of Georgia, but they're not associated with the shelf-edge reef that some of the other ones are. They're more of in a tilefish habitat; deeper and do not include the spawning areas for the species that we're talking about. Yes, there are existing MPAs, but the St. Simons one was more directed towards those spawning species.

MR. WAUGH: That's exactly correct; and again this is where I think the council clarified their intent to broaden it from just speckled hind and warsaw to all snapper grouper species. George is right; that one that is in place off of Georgia was targeting tilefish; and so that's the type of habitat that is protected.

DR. SERCHUK: I understand that this is a habitat protection issue and so these will be year-round closures?

MR. WAUGH: That is correct.

DR. SERCHUK: Okay, when you were developing it; did you ever think about some temporal/spatial closures for certain species at certain times? I understand the difference between protecting the habitat and protecting the spawning fish; but I'm just wondering whether they ever entered into any of the discussions.

MR. WAUGH: Yes, it did; and we had that suggestion from a number of fishermen. The issue is when you put up within the snapper grouper complex the list of species and when they spawn in this area; something is spawning virtually every month. That reduced the likely benefit that we would get from these; and when you combine that with you're not getting the habitat protection, the council decided not to pursue that.

DR. SERCHUK: One of the things I'm thinking about in reading over some of the documents and talking about looking at genetics and meristics is my feeling is when you look at the differences on a genetic basis, you will find it. I'm thinking that you will have much more of a patchwork quilt if you start trying to protect this genetic component in this particular area; so you might think about that. I'm almost certain that is going to happen because it has happened elsewhere.

What that means is because I think the whole idea of protecting particularly spawning fish is really important because that's one element in a temporal/spatial sense that you can handle as an additional element of a management program, and you could handle it separately rather than managing it as a stock. You might say, look, we have minimum size, but we think to protect genetic integrity, in addition to a minimum size, to protect three or four genetic stocks, we have to protect these fish at the time they spawn. If they spawn discretely, if they spawn throughout the year, that's a different issue.

DR. REICHERT: And to that point, as a reminder, there is a spawning closure in place already, and I believe that was at some point part of the discussion in this special management zone.

MR. WAUGH: Yes; we have a January through April closure. There was some discussion – the advisory panel talked about this – that once these are in place, if we start to see some benefit from these, maybe we can back off of that spawning season closure. We do have that added protection in place.

Then down to Florida; and again Florida, while it has a long shelf area, has lots of areas that are protected. This one was interesting in that we have – all the other areas we had documented spawning activity. In the Warsaw Hole we have records from fishermen that many years ago they used to catch fish in spawning condition there.

In the Daytona Steeples area; that is a part of our Coral Habitat Area of Particular Concern. It has bottom characteristics that led us to believe those would be good areas to protect spawning; that there was probably spawning taking place in there. There is no research that has been done within those areas to document it; and so we were asking the fishermen this one area we want to choose just based on the habitat and the expectation that there is going to be spawning fish in there.

They argued very strongly that, no, you really need to demonstrate that there is some spawning in an area first; and so the council chose Alternative 2B, which is the Warsaw Hole and a one square

mile area. If you look at the chart of this, you can see that in this case they are nested around the Warsaw Hole itself.

There is a lot of other fishing that goes on around here, a lot of greater amberjack are caught around here where the fishermen target those species. The economic impacts; while we couldn't demonstrate that there were higher economic impacts with the resolution of our data, the input from the fishermen gave us the input that these larger areas would impact their fishing quite a bit.

The council decided to start with the smallest area, one square mile, monitor that and document what goes on within that area. That's the one additional alternative that's being considered for Florida. That's all the areas. This is a cross-section of that Warsaw Hole; so it is really a fascinating area. We expect that the spawning is taking place up around the edges of this.

This is in an area in Florida that the state and others are doing other research. Luiz has indicated that they're going to try and work this into their sampling in that area; so we expect to have good sampling and monitoring in there. Action 7; we have an existing deepwater artificial reef that was established with the idea that the state would put material out there, others would put material out there, and so we created a box mapping around the permitted site.

The state put two large vessels' material down there; but given the weather, current conditions and the inability to use as much explosives as they could in the past; that one landed right on the edge and one landed just outside. What they did was go to the Corps of Engineers and got their permitted site changed; and so now what we're doing is just sliding that box in to match the existing site. We're not changing the size of it; so this will now match up with the state's permitted site.

Action 8 is where we deal with transit and anchoring. The council is allowing transit with snapper grouper species aboard, but the gear has to be adequately stowed; and we define what that means. Where they still have to do a little more work is talking about prohibiting anchoring. They definitely want to prohibit anchoring in all the spawning SMZs with the exception of a consideration for Areas 51 and 53.

I don't think mentioned these actually when I did South Carolina. I apologize for that, but Areas 51 and 53 are two small sites that the state created with artificial reef sites with the sole purpose of having those be closed areas. The other artificial reef sites they have created, they allow fishing. We've designated SMZs around some of them to limit the types of gear, but these are two areas that they had done for research and as closed areas.

We're describing those areas but not giving the corner coordinates; and we're trying to do that as far into this process as we can. The state wants to make sure that they can go out and anchor as a research vessel in that area and they may want to allow dive vessels to be able to come and anchor in that area so that they can demonstrate how these artificial reefs work.

They may consider allowing anchoring within those two areas. Area 51 and 53; but the rest of them, there would be no anchoring. Then our final action deals with a sunset provision. The public really doesn't have a good view of closed areas; and so the council sort of offered this as, okay, go along with us on this.

If we can't demonstrate that there is spawning taking place in these areas within some period of time, then it will automatically go away. For these sites that are designated, with the possible exception of Areas 51 and 53, because the state doesn't want those to sunset; this one the council doesn't have a preferred alternative. They will be choosing that at the December meeting.

They're looking at having it sunset in ten, seven or five years. Obviously, there is a little concern that maybe five years is a little soon for some of these based on what happened in Riley's Hump. You didn't see much of a change for several years; and then once it started, you started to see a lot of different species start spawning again.

That's the tradeoff. We initially went out to public hearings with a ten-year sunset; and so they added these alternatives for seven and five years. As I said, they're going to choose their preferred; and they want us to lay out some more detail in what specific data will be collected and then how would they make this determination.

Our feeling thus far is depending on whichever sunset period is chosen, there will be interim reports provided to the council. This is what has been documented spawning in there each time we do that. Then it would be up them. When they were convinced that a site should be continued to be protected, then we would use our framework to move that into where it is protected on a permanent basis and not subject to this sunset. We'll be giving them all those additional details at the December meeting.

DR. REICHERT: I think especially since the goal is to look for spawning in longer-lived, later-maturing species, those deepwater snapper grouper species, perhaps a longer sunset area may be more beneficial than a shorter, because some species may not even expect to mature and spawn within a five-year period.

DR. GRIMES: As I guess you remember, George and I were original members of the MPA Working Group. We are glad to see this happen; at least I am. It is a little disappointing that they seem to be gotten fewer and smaller, but this is a start. Hopefully, if you can demonstrate to what you call the public, which I guess is really the regulated industry, that these work; that you can expand them over time.

Thinking about what Will Heyman's reports that I read had to say, he concentrated on biological things, observations and running ripe fish and behaviorally spawning fish; but the ocean circulation is an important part of this thing, too. I mean the models exist to look at all that sort of thing; because that's critical for making these areas spawning locations and making them important is how they function as retention areas and that sort of thing.

MR. WAUGH: That's an excellent point; and Roger is one to always point out that what we're doing in these sites is characterizing them and not just what is spawning but characterizing the physical bottom and then the oceanography there. We do need to know how that connects. I can tell you from being able to show the public the current studies that were done in Riley's Hump to see where those larvae are likely to move to and then to have fishermen say, okay, yes, that's why I'm seeing more mutton fish on the Florida east coast; that really gets people on board. That

current system, understanding that is going to critical; and that is something that we've got laid out in the System Management Plan.

DR. SERCHUK: I agree with Church and John Boreman in terms of these small sizes of areas generally; very small. I also think that anyone that knows anything about closed areas for whatever reason; the tendency for the fishery then is to fish on the periphery of these areas. We see this all the time. If the areas are too small, quite frankly, with respect to capturing the important spawning, you really have mortgaged your benefits.

Fishing will take place particularly if they're so small it becomes very difficult to monitor; but that will take place even if they were honest, which I think in most cases fishermen are. It will take place along the boundary of that; and when they're very small, if you missed the important habitat, you can really do the program a disservice for what the benefits are that should come out of it. I think that is a truism and you know that.

DR. SEDBERRY: I just want to join Church in patting ourselves on the back. We really started out with a huge problem and a lot of data. The whole working group looked at it; and like Church I'm a little disappointed that we ended up with something that's fewer sites and smaller sites. But, they are the cream of the crop and so I feel good that we have them, and I think that they will be helpful.

What Fred has just said worries me lot, though, and I think about that, too. I've looked at spawning aggregations in other parts of the world; and some of those species that we consider really predictable like Nassau grouper; and you go back to the same site the following year and the aggregation is not there. They move around a little bit.

The oceanography that Church mentioned is important, too, and causes them to move around a little bit; so if they move to the boundary or just outside the boundary, then maybe we might be creating a bigger problem than we're fixing, but I don't think so. I think what we have is a good start; and, yes, I feel confident that it will help every – like you say, protecting spawning fish has got to be a good thing and this will protect spawning fish.

It would be nice if they were bigger particularly in terms of – and now in light of climate change and we're seeing things like blueline tilefish moving great distances; spawning sites may change with changing climate, which is happening. These small sites; I think we're going to have to revisit them, and the management plan calls for research and monitoring to help us determine that. I hope we do have enough flexibility in the future to revisit them often to see if they're working or if they need to be moved to include the actual spawning locations or even to be expanded to include the variability in spawning locations.

DR. BARBIERI: To that point, George, I would like to ask the members that have more explicitly voiced concerns about the sites help us articulate those points in our report. I think there is a reason why this is being presented to the SSC in that the council is looking for some kind of recommendation from our perspective on whether these things would pass sort of like the red-face test of being scientifically valid or not. It is a way that we can provide them some additional guidance in this regard.

MR. WAUGH: That's all the actions here that I just walked you through. Chapter 4, as I said, has the biological, economic and social analysis. The appendices have a lot of information in there. I think Church or George mentioned some of the work that Dr. Will Heyman has done. That information is included there.

Take a look at that; and we apologize for getting that to you so late; but if after the meeting you have some thoughts, feel free to get them to us as well. We're very interested in them. If that's all for me; then we'll get Chip to walk you through Appendix N, which is System Management Plan.

MR. COLLIER: The System Management Plan for the SMZs is basically designed around the goals and objectives of Amendment 36. It stays pretty focused looking at spawning fish and potential locations. The goals and objectives start on Page 7. We have five goals and objectives. The goals and objectives are basically to design the SMP and make sure that it is going to have some evaluation metrics in there.

It is also looking at communication and making sure that we are going to develop a good communication with the public and utilize some citizen science. The new Citizen Science Program that is going on I think is going to be very key for the spawning SMZs and also being able to document if spawning fish are occurring in there.

If you continue on the Goal 3; that is getting into more of the biological objectives, looking at spawning fish in there. Goal 4 is looking at the enforceability and compliance within the SMZs. Then Goal 5 is looking at lionfish and the impacts of lionfish in the spawning SMZs. That was added at the end and basically came from the public; noticing that if we're going to protect an area, we don't want to make sure it is just a spawning SMZ for lionfish. Below the goals and objectives; that is the list of species that we're going to be looking at for the spawning SMZs and evaluating criteria for that. It includes several grouper species, some snappers and two species of tilefish. If you guys have any questions or suggestions on the species' list –

DR. BARBIERI: Well, I just have a question, Chip. What is the background; what is the origin of this list; how was the criteria formed to include these species? I guess warsaw and speckled hind I know.

MR. COLLIER: Yes; warsaw and speckled hind definitely; red hind is probably one that's a little bit different than what we typically try to protect. Red hind is known to aggregate in other areas; and they've been overfished in those aggregating areas, specifically in the Caribbean; so that was thrown in there.

The other fish; goliath has been overfished in the past. Nassau is considered a population for the endangered species list. Red grouper, the last assessment was overfished. Snowy grouper has had issues in the past and is in a rebuilding plan. Black grouper is probably one of the only ones that hasn't been overfished or overfishing on the list. Gag is actually recovered. Scamp is unknown.

Going through, you can see that these are kind of high-profile species, have had issues of overfishing or overfished in the past or commonly occurred in some of those areas. Going on to

Page 12, we're going to get into some of the management actions and looking at specific actions that we'd like to have done in order to evaluate this SMP and SMZs in general.

The first part, beginning on Page 12, is resource protection. That's looking at law enforcement. If you guys have any suggestions for law enforcement or different ways to do this, please send them along. We're going to take this eventually to the Law Enforcement AP even after the SMP gets approved; but this is a living document and it is going to change over time. If they make recommendations to us, we're going to try to get those in there.

DR. REICHERT: Remind me were there some restrictions in using drones; can we currently use that or are there plans to legitimately use them in the future. I just saw them on there. I'm thinking about the enforcement and the small areas and that may be one of the options.

MR. COLLIER: There is not only aerial drones but there are aquatic drones as well. Some of these are pie-in-the-sky dreams. If the technology is out there; can we do it? Duke is also a center for looking at the usage of drones; and some of these things are going to be tested in the North Carolina area. Could we potentially get them to go off the coast and actually use some of the research money to look at our MPAs?

DR. BARBIERI: And to that point, Chip, I've talked to folks at our Center for Ocean Technology in terms of using drones that are pre-programmed to kind of mow the lawn and patrol the areas. There are several possibilities there that are becoming more and more affordable in time.

MR. COLLIER: Continuing on to Page 16; we're getting into resource research and management; and there were 12 actions in that. If you guys have any suggestions on additions for this or subtractions, we do get into some of the larval modeling, suggesting things. I put that there based on the last meeting that the SSC had; and I actually looked into the Ichthyop Model. It can use ROMs; it can do 3-D modeling; it can do 2-D modeling. I'm not that good with the actual language yet, so I'm trying to learn that.

One of the critical pieces for this is actually maintaining the Annual Monitoring Program and also developing the citizen science in order to get the data on the spawning fish. There is actually some budget things in there as well where we develop cost estimates. Since many of you guys are researchers, if these cost estimates way off, please let me know. Some of these were back of the envelope. Are any questions or suggestions for this section of it?

DR. BUCKEL: Chip, I didn't read through all the document; is there anything on using hydrophones to listen for some of the grouper – there is some recent research in that area – to sort of document spawning aggregations and some folks have used the hydrophones to hear that.

MR. COLLIER: Yes; and I think that was going to be included in characterizing the spawning indicators, so trying to listen for fish in spawning condition. There is actually some hydrophones that are out there right now actually listening for right whales and trying to get some of that information and going through it and begin listening for the soniferous groupers. It is going to be a pretty large task having to go through all that data again – it has already been gone through for right whales – for the groupers. I'm not certain if the actual sounds are known for all the fish.

DR. SERCHUK: I just want to amplify on that because there is a project in the northeast looking at cod; and they apparently vocalize when they're spawning. We have fixed arrays of hydrophones; and also we have an unmanned submersible that does transects throughout Cape Cod Bay. What it does is it is a listening device. That technology is already operational; and to the extent that could be used for other species that vocalize should be considered.

DR. SEDBERRY: And we're aware of that. I think Todd Kellison at the Beaufort Lab tried that last winter or the winter before – I lose track of time – but the problem we have in the southeast is the diversity of things that make noise and that we don't have recordings on the target species, so we're not sure who is making what noises. There has been slow progress in that direction.

DR. SERCHUK: Even the fact that you can get a signature for some species and then you're picking up other noises may mean that there is a lot more going on than we actually know about; and that's one of the things that the detection devices have shown, particularly initially on marine mammals because they felt most of their work was sightings. Then when they put the hydrophones down, they found that, hey, wait, these guys are all around and we just don't see them very frequently. It has opened up a whole new vista.

MR. COLLIER: So if it sounds like a party, it might be a party?

DR. BARBIERI: Chip, I think you have something here also about acoustic telemetry and we have been talking about this. Jeff and I will be, next week, at the iTAG meeting that we are holding at the Research Institute in St. Pete. This is the development of a Gulf-wide array of multiple sub-arrays of acoustic telemetry receivers and to encourage folks to go out – this is a whole bunch of agencies and academic partners to go out and tag fish.

We just received about six months ago from the Ocean Tracking Network, the Canadian company – there is a Canadian kind of an agency that is formed to draw on Vemco Receivers; and they gave us free 500 VR-2s, so we can actually set an array that goes from northeast Florida all the way down to the Keys. This was like free of charge.

Of course, we're going to have to deploy – we have already started deploying some of these – and maintain the array. I think that they are looking for these types of things. They already have the act array and the fact array down south; so the opportunity is there to draw on those things, and maybe Jeff and I can be discussing this with Fred Whoriskey and some of the people from OTN next week and see if we can generate some interest for that. This is the kind demonstration project they are looking for to maximum the use of acoustic telemetry in natural resource conservation.

MR. COLLIER: Yes; acoustic telemetry is very important. In George's area where they were looking at – they were monitoring Atlantic sturgeon and actually found Atlantic sturgeon further offshore; so it is even monitoring some endangered species as well. It can be very beneficial. The next section goes into outreach and education.

That is going to be reviewed by the I&E and get their comments before it goes to the council. That starts on Page 23. If there are any suggestions that you guys have for that; we would welcome

them. This is very similar to what has been presented to you guys for the Oculina Experimental Closed Area where there was I think nine actions in that.

I believe we have one action that was completed; but we're looking at get the SMZs printed on maps and hopefully get some of the GPS companies to get our SMZs put on their maps; also develop communication with the public; develop rack flyers and different things to get the word out about these new SMZs and the goals of the SMZs.

Then finally for the management actions, the last thing is on Page 27. It is the administrative, and basically it is the formation of the SMP. Also, we're going to develop an SMP Advisory Panel; and considering who to put in there and different things like that; that is going to be up to the council. If you guys have any suggestions on who should be in there, if SSC members should be included, you guys could definitely suggest that. MPA experts are definitely going to be on the panel.

Hearing no suggestions on that, now we're going to get into the evaluation part of it. That's where we've been criticized in the past, especially in the Oculina Experimental Closed Area, is kind of having a lack of evaluation of why we have the closed area in place. I came up with some different ideas on how to quantify some of this. Probably the greatest things to look at is actually stock status. Even though these are very small SMZs; are they going to be contributing at all? We don't know; it might be minimal; but that is going to be one little piece information to keep track of.

The more important ones are potentially looking at some of biophysical parameters; and for this we're going to be looking at numbers of spawning – either look at the spawning stock biomass, potentially look at numbers or percentage of samples in spawning condition within the SMZs; compare numbers of spawning individuals inside and outside of SMZs or potentially the number of spawning individuals identified by the method of determination.

Right now we're recognizing the fact that it might be very minimal numbers of fish that are going to be observed within an SMZ. Over time it might increase; we're not positive, but we need to be able to quantify it in some way. Do you guys have any suggestions on the best to quantify how the SMZ is doing?

DR. SERCHUK: I have an additional metric that you might want to think about; and that is the size or age composition of the spawners inside and outside. Clearly, the age and size composition can be very different for spawners; and I think that's an important metric to look at.

MR. COLLIER: And that's the next group of metrics that I have is actually looking at – for groupers I have the percent males, because they're hermaphroditic; for tilefish, the sex ratio of females to males. I also have size structure greater than 75 percent of the maximum length; different things like that.

DR. REICHERT: For a lot of these metrics, you need biological sampling; especially the hermaphrodites, you need the gonadal samples. The smaller your protected area is, the higher the impact of taking biological samples out of that protected area, the higher the impact is on the

population right there; so that may be a consideration in terms of the relationship between monitoring the effectiveness and the size of these selected areas.

MR. COLLIER: And that was definitely a consideration when I was beginning to develop these; and that is why size is listed in addition to age. Age was definitely considered in the SMP for Amendment 14, for the deepwater, and so I wanted to drop back a little bit and try to protect some of those fish from even the researchers.

DR. REICHERT: Yes; and to that point, even whether or not a fish is in spawning condition, in certain species it can only be determined if you're looking inside the fish. Some species you can look at behavior, you can look at color patterns; but for other species, which again means that you have collect biological samples,

DR. SHAROV: Marcel and I are thinking alike. I had the same question and the concern about the size of the samples that you'll be taking; and the size of the protected area, you might essentially affect too much in your MPA or SMZ.

DR. BARBIERI: And to that point, just as an example, one of the things that we did, looking at closed areas and spawning aggregations in the Florida Keys, is to send divers down after the fish were caught by hook and line and then actually conduct either catheter sampling on site or tag the fish and conduct the surgeries underwater to tag the fish that way and avoid the depredation – I mean, sometimes even if we try to bring them up to the surface, just the amount of predation that you have on those fish that are released is just a very large impact.

DR. REICHERT: To that point, I think a lot of these areas are probably too deep for that with a relatively high current velocity; so I think that technique may not work in the areas that are proposed here.

DR. SEDBERRY: And the depth also affects survival rates; so non-invasive methods like hormone assays or kilometer studies where you take a tissue sample from the fish and then release it won't work in 50 meters where you release the fish and it is already suffering barotrauma. It is going to be very difficult to get the kind of normal life history information we get to do a comparison inside and outside of these MPAs or SMZs.

DR. GRIMES: Back to habitat metrics, you should be able to develop some measure of the strength of retended circulation at these sites from the existing ROMs model.

DR. IRWIN: My comment is sort of secondary to the larger points that have already been made; but the interpretation of some of the metrics on the bottom on the list will depend on presuming that some of those denominators are constant; and it could be that size or age of maturity could shift with respect to density or just over time through other conditions; so it might be something to be aware of.

DR. BUCKEL: To that point, recruitment is one thing that could influence that; so if you have more recruits and higher survival of the smaller ones inside, then that's going to shift your mean

size. It might look like you're not getting any benefits from larger fish, but in fact you're building a size structure on both sides of more small fish and hopefully larger fish.

Yes; the video or it sounds like an ROV or however it is done to document if – and that would be done both at the SMZs but also control sites; you really need to get out there before these things are closed with a good design, have your control, have your closures and see how the size of the fish change. These are so small and fish move; that there may be no increase in size within these. I think that would help us understand or explain that these probably are going to have to be larger to be effective.

DR. BARBIERI: Chip, I think the bottom line is you're not going to be able to capture – I think you have already included a lot of good information and good criteria here, a lot of good ideas to get things started; but some of these things are going to have to be iteratively adjusted with time. I think the advantage of having that advisory or technical committee is that those things can be addressed over time and narrowing down and resolving some of these issues. Some of the things that we have been doing in shallower areas sounds good, but, no, it wouldn't work for these. We're going to have to go to a Plan B. As far as this exchange of information as this thing moves along, I think it is very important to keep that scientific technical advice group going.

MR. COLLIER: And the way I envisioned it, it was going to be a yearly meeting just to go over what research has been collected by the SMP; and then depending on the timing of the sunset clause, there would be a couple meetings for final reports to be developed to do complete reviews of the data that is being collected and potential new techniques that should be considered.

I do have up here right now some of the metrics – it is from Page 35 – some of the metrics that could be considered. I have a time frame up there as well. We have pre-closure, 2016 to 2020; 2021 to 2025; recognizing that we're not going to be able to yearly data spots, are those somewhat good ideas for time frames? Do you guys think it is going to be possible to detect a change over that?

DR. REICHERT: As I mentioned earlier, given the longevity of these species, it may be difficult to detect any signals for some of these species over that time frame. Others you may very well see – if there is anything, you may very well detect it. I think it probably depends on the species in question. I'm not sure but perhaps suggest some flexibility in terms of the specific life history of each of the targeted species.

DR. SHAROV: I would think that somebody would need to do a growth simulation or maybe not growth but maybe also project the changes in relative abundance. If you do have some estimates of the population structure that is the current status and given certain assumptions of the fish that would be present in the closed areas would not move out, which is, of course, a weak assumption, but that would be your best-case scenario.

For the best-case scenario, it is those fish that you start with. You apply certain growth rates. You could estimate what is your expected size and age frequency within your SMZ and that would give you your sort of least expectations to which you could compare it. This would also allow you to actually make the judgment whether in five years you would accumulate enough of the difference

that you would be able to detect it and even look at what the sample size should be so that you would detect it; and then also figure out whether there will be enough fish in that area so that you would be able to catch and detect it.

MR. COLLIER: There are some other metrics on habitat mapping. Mapping is going to be very important and we're looking at very specific types of areas that could be potentially spawning SMZs. We have three different ways to potentially characterize I guess the work that has been accomplished based on the total area mapped and maybe looking at likely spawning habitat, thinking that a lot of recommendations come out saying that we should be protecting about 10 percent of the bottom from fishing and have those as marine protected areas. Is that potentially a good goal? Do you guys have any recommendations on a good goal for the amount of area to be protected? Silence means no?

DR. BARBIERI: I think folks are still thinking. Marcel.

DR. REICHERT: I really don't know.

MR. COLLIER: I caught you off guard, then.

DR. REICHERT: Yes; I think even if I would think about this for a week, I probably wouldn't come up with a percentage, to be honest. I had another question, but I can wait.

DR. BARBIERI: Chip, in terms of habitat mapping, this is so extensive because it is very time-consuming and very resource-intensive. One of the things that we are doing is accumulating over time opportunistically, as you have either vessels of opportunity or you have your regular sampling going on and you map when the vessel is idle or when the vessel is not actually directly sampling, because it is almost cost-prohibitive to set up something that would be in a whole lot more detail.

DR. REICHERT: And that was my other question. Remind me because I looked at the maps, but I can't remember. Have any of these areas actually been mapped or they have not? I thought some of these actually were visited and were mapped.

MR. COLLIER: I think there are some partial maps. I think Warsaw Hole might have gotten mapped at the last council meeting; but I don't think any of them are fully mapped. One of the concerns is – you know, it was recommended as a 20-mile radius around the SMZs be mapped; and that gets very expensive when you can only map – I think the Nancy Foster does 16 kilometers per night; so you're talking a lot of time to get that area mapped; so maybe reduce that 20 miles to five. Even that is going to take a while.

DR. REICHERT: Yes; I know the Pisces has mapped some areas in the last couple of years.

DR. SEDBERRY: Some of them have been mapped by the Nancy Foster. I mapped some of them in 2006 and 2007 and Lesley Sauder has mapped some of them. I was also thinking this would be a really good citizen science project. These multibeam sonar systems are now small and portable and it can be mounted on a pole on any boat. Fishermen are out there anyway, and they could be collecting all kinds of sonar data for us.

DR. REICHERT: And I was thinking about the time frame. With the current MPAs now being in place since 2009, I think there are a few studies that actually looked at areas inside and outside MPAs, looking at species' composition and length; so there may be some data out there that may help fine tuning some of that time frame.

One of our graduate students did that, but unfortunately I don't have the results off the top of my head. What I do remember in some species the results varied by species. Some species had a higher density inside the MPAs and others had higher density outside the MPA; but I can certainly look into that. I think there is some information out there and maybe elsewhere in the world there may be some information in terms of how long it would take to detect some differences between protected areas and outside protected areas.

MR. COLLIER: So that is going to be a little bit different than what – the Southeast Fisheries Science Center has been looking at some data I believe on some of the dive stuff that they have, the deepwater.

DR. REICHERT: Yes; that's another source of information. Were you involved in that?

DR. SEDBERRY: Yes, Christina Schobernd and a bunch of us are looking at old submersible data from the eighties and 2002 and then the more recent ROV dive data both inside and outside the MPAs. Well, I don't want to let the cat out of the bag, but there are not huge differences.

MR. COLLIER: And those are for the Amendment 14 MPAs, the ones that have been in place since 2009?

DR. SEDBERRY: That's right.

MR. COLLIER: Do you know if you guys have any recommendations on the sample size for that, George? Did they come up with potential sample size recommendations or have you looked into that, how many more samples you would need to detect the difference?

DR. SEDBERRY: I have not looked into that; but that would be a good analysis to do.

DR. REICHERT: Neither have we.

MR. COLLIER: The next part would be on socioeconomics and the impact of the SMZs on that; and that is being developed right now. It is not included in this. Kari is going to be working on that, trying to figure out some indicators. If you guys have any recommendations on potential indicators that we should definitely be looking at, please let us know and we can get that included in the SMP. I think that's going to be a very important of this, trying to look more into the economics and social effects of the SMZs.

Then the final part is on governance; and a lot of that is just dealing with are we following through with the SMP and actually listening to the public on managing the SMZs. This is hopefully going to become effective in December. If you guys have any great concerns, please throw things at me so we can get it changed and make it look pretty.

DR. BARBIERI: Any additional comments or concerns for Chip? John Boreman.

DR. BOREMAN: Yes; just something I was discussing with George. I don't know where it fits it. I guess it cuts across a lot of these, but it is just the actual spawning behavior of the fish you're looking at and how that might affect how you address each of these species in an SMZ.

Some of them, as George was saying, have very concentrated spawning areas and others tend to spread out a lot, a larger range of spawning for a given group of fish. That might influence how you set up at least filters for deciding an appropriate size for an SMZ. If you're going to prioritize some species, you may want to look at their spawning behavior.

DR. SCHUELLER: I guess I just can't over the size component of this; and I think all the metrics that you propose have to take that into account. Stock status; I mean that's a coast-wide thing; there is no way. I'm not sure I understand what you're trying to get at. The habitat percent area mapped; what are the goals and objectives of that piece of it? I'm not sure I understand.

MR. COLLIER: We have the Oculina Experimental Closed Area that has been in place since the eighties; and one of the original recommendations for that area was to map it. It has not been mapped yet; and so getting the area mapped is very important so we know the distribution of habitat within it, and also we could potentially identify new habitats where spawning might occur just based on the overall morphology of the habitat.

DR. SCHUELLER: Okay, I guess my recommendation then is given the area is so small; that all of these should be a hundred percent mapped. I mean we're talking about three square miles. That's doable. As far as the 20 square mile radius, I don't know about that part of it; but when you're talking about something that – I don't see why we wouldn't shoot for a hundred percent mapped within the areas.

DR. BARBIERI: Since the council is going to be taking final action in December, I think it would be good for them to get this type of feedback. This is our last opportunity, so to speak, in terms of providing – so think about not just what we're telling Chip here, but how much we can contribute to our report.

MR. COLLIER: If you have any heartburn on this, I am going to be giving a very similar presentation tomorrow for the Deepwater MPAs; so you can let it out then, too.

DR. BARBIERI: And to Amy's point, which I agree completely, but the thing is I think it is impossible to have all of the things. This is so complex and so multilayered and inclusive, it is almost impossible to think that one person is going to sit down and be able to put all of this together. This is where I think that panel over time would – after you have this basic kind of backbone of what it is, with the main components and the main ingredients there, then the advisory group can go in and help to flesh it out.

Some of those things are going to have to be adaptive in nature and trial and error and see what works and what doesn't. I thought what you presented, this overview, to me is very complete and thought about all of the basic data categories that we want to be collecting; and it is just a matter

of adjusting the knobs, a little bit more of this and a little less of that, and adjusting things like if we're going to have some of these areas that are relatively small, why not take advantage of that and map them all completely.

DR. SHAROV: I'm still thinking about sampling and monitoring. I think this is at this point the weakest element of it for obvious reasons because it is very challenging. I think maybe you're being a little too ambitious. It is not clear to me – and honestly I didn't have a chance to read the whole document, although I scrolled through it; but, for example, how is the seasonality of spawning going to be addressed here.

Do you intend to monitor it specifically at the expected peak of the spawning? All those are different for different species and the list of targeted species is quite long; it is not just one or two. My guess is that the – well, goal number one is to simply show that the fish are there and they are spawning. That is what you have to prove first; that the spawning takes place.

How is it going to be achieved? I assume that this will be probably like hook-and-line fishing mostly? You still have a lot of elements to think of and draw a lot of suggestions from this group and others. I'm not trying to discourage, but I'm just raising the questions that seem to be not answered yet to proceed forward. There is a lot of work to do ahead for all of us.

DR. ERRIGO: Actually I just wanted to comment to that point. I was also thinking about the seasonality of spawning for the different species. If you need to capture the spawning that's going on in an area, species that are spawning, for small areas you're – unless there is a species that truly does aggregate in a large amount, which would happen most likely in a concentrated season, so anything that spawns in a concentrated season, you can target that season and sample and hopefully find your spawning fish.

But for fish that have a protracted spawning season and happens over several months or over the entire year and with the size of the sites and the fact that you're probably only going to have very small numbers of fish spawning in any given time, find that season is highly unlikely. So just things to consider when designing how to – first of all, I'm thinking about like the sunset provision. If you have to document spawning fish, you need to carefully choose which fish you're going to document spawning. If you spawn year round and chances of aggregating are small, finding one in spawning condition is not that great.

MR. COLLIER: That is some of the work that Will Heyman was doing was actually looking at methods to document spawning. He came up with a whole methodology for people especially doing citizen science type research in order for documenting spawning condition and potential spawning areas. That is an appendix for this amendment as well.

DR. REICHERT: I think I brought it up earlier on several occasions in terms of the monitoring. Addressing your point, a lot of these areas are selected because they are special and because spawning has been observed in those areas using a variety of methods. They are observed so will likely be observed after they are now designated special spawning zones.

That doesn't diminish their value as an area where fish spawn, but how do you then document that they are successful. That's something that Gregg mentioned earlier if the metric is fish are spawning and particularly the target species are spawning there; then I think we can document the success. If we are using different metrics, it may be more complicated to actually document the success of these spawning areas.

DR. BARBIERI: Sure, but the way I would recommend this to go forward is the council kind of sponsors in some way some workshops. This to me would be like the fisheries-independent monitoring workshop that was held in Beaufort and spend three to five days there. You have a number of experts from different disciplines that come in and can form working groups like the SEDAR Model of different areas and report to the plenary.

That puts together the initial cut of how this would be structured; and then you eventually you have a follow-up one. It is going to take a while. We have been working with NMFS in developing this West Florida Shelf Sampling Program stack of eight different surveys; and it is a constant work to calibrate with them and align and make sure that we have all the biological sampling done in the way that is productive over the range of species.

Without them and without all these other specialists coming in; we just couldn't get it done. It is something that goes beyond the scope of what we have been doing over time. I think we're going to have to rely on people coming and being willing to go through that effort. That would be my recommendation.

DR. REICHERT: And I absolutely don't disagree with you. It is just I think you're right it needs some careful consideration in terms of what do you consider success particularly once the sunset rolls around. That is basically my point.

DR. BARBIERI: Okay, folks, it looks like we could benefit from recessing. We will reconvene tomorrow morning at 9:00 a.m. We're going to start with a review of the Snapper Grouper Amendment 37. I think this will be a presentation initially by Myra on Amendment 37. I see Dustin Addis there as well that can help clarify some of the revised projections that were produced for hogfish. With that, unless anybody has anything else to add to this discussion, I think we should call it a day.

OCTOBER 21, 2015

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Crowne Plaza, North Charleston, South Carolina, October 21, 2015, and was called to order at 9:00 o'clock a.m. by Chairman Luiz Barbieri.

DR. BARBIERI: Welcome back to the October 2015, Day 2, of the SSC meeting. We're going to start this morning with some presentations and review of Agenda Item Number 9; Snapper Grouper Amendment 37. You are going to see Attachments 11 through 15 of your briefing book contain a number of documents that are relevant for this discussion.

We're going to start with Myra giving us an overview of Amendment 37, discussing some of the council actions that are being put forth. Then we are going to proceed and review revised hogfish

projections that were put together to inform the rebuilding plan. At the end of Topic 9 on Page 12 of your overview document, we have a number of bullets and sub-bullets for action items. I am not going to read them all at this point because it is just too many of them, but I would ask you to keep your eyes on these action items and think about addressing this as we go forward.

MS. BROUWER: The attachment that I am going to walk you through is Attachment 11; and it is Draft Amendment 37, which deals with hogfish. The draft that you have in front of you is dated October 6th; this was before we received the new set of projections. What I'll do is just walk you through the actions and alternatives to sort of frame your subsequent discussions for where the council wants to go with management of hogfish; and then we'll go from there.

The purpose and need is on your PDF Page 18. This is the purpose and need statements that the council approved at their September meeting. Basically the amendment would split the hogfish stock into two based on the results of SEDAR 37 and then establish a rebuilding plan for the stock that is situated off of Florida and Florida Keys, which has been determined to be overfished and undergoing overfishing, and then adjust the fishing levels and biological benchmarks and look at some management actions for both stocks; both commercial and recreational.

Action 1 is on PDF Page 23. Action 1 modifies the management unit to split it out into two stocks; one that is off of Georgia northwards through the Carolinas; and then the other one, which is from the Georgia/Florida Border south around the Florida Keys. What the council had to do is look at what the boundary line would be that would differentiate the east Florida stock from the Gulf of Mexico stock.

You see their Preferred Alternative 2 modifies the management unit to establish these two stocks and then the subalternatives look at what that boundary would be. Subalternative 2A is the council's jurisdictional boundary between the South Atlantic and the Gulf of Mexico. Subalternative 2B is the Monroe/Collier County Line; and then the preferred, which is Subalternative 2C, puts that boundary at a line that is just south of Cape Sable running due west at 25 degrees 9 minutes north latitude.

This is a recommendation that came from Florida Fish and Wildlife enforcement officers. They determined that this would be a good line for enforcement purposes; and as far as tracking of the landings for ACL monitoring, that would continue to happen the way it has been, which is the landings are stratified according to the Monroe/Collier County Lines. We don't have a map yet for that figure, but both the South Atlantic and the Gulf of Mexico Councils have agreed on this boundary as their preferred. Action 2 is on PDF Page 25; and this one specifies the MSY for both stocks. Recall that SEDAR 37 was not deemed best available science for the Georgia/North Carolina stock. The stock assessment applies to the stock off of Florida; but the Georgia/North Carolina stock therefore does not have an MSY, so that has been left unknown.

Then Subalternative 2B is the value from the assessment. By doing this the council – you can see the language over here under Preferred Alternative 2 – would adopt whatever MSY comes from the latest stock assessment from this point forward. Action 3 is on PDF Page 27. This looks at the MSST, the minimum stock size threshold for both stocks.

The alternatives are to keep it the way it has been defined, which includes a value of natural mortality. But recall that the council last year, I believe it was, they approved Regulatory Amendment 21 to adopt a different definition of MSST for stocks that have a low natural mortality.

Based on discussions and recommendation from the SSC, they established the MSST for several snapper grouper species at 75 percent SSB_{msy}. That is currently their preferred for hogfish as well. You can see on this table what the values for natural mortality are from the latest assessment. As I said, these are the values from the assessment; and it is, of course, going to be unknown for Georgia/North Carolina.

Action 4 is on PDF Page 29. This is where we get into the ACLs for the stocks. This one addresses the ACLs for the Georgia/North Carolina stock; and we have the same suite of subalternatives that the council normally considers, which is just a step-down from the ABC by a certain percentage so here we have just 95 and 90 percent.

They have not picked a preferred for this one yet, because they had some reservations about continuing forward without getting some further guidance from you guys as far as the ABC recommendation for this stock. We'll get into those discussions a little bit later. This table that you see here is from the ORCS approach; the ABC recommendation that you put forth for the council to consider based on Tier 4 of the ABC Control Rule, which deals with the ORCS methodology.

Then you also see that we have displayed on this table the recreational ACL in numbers. At this time, I believe we used a conversion factor of 9.99 pounds per fish, and it is something that is based on landings for that portion of the range. Since we put this together, there have been several iterations and a lot of discussion about, as we heard yesterday, what is the appropriate way to convert pounds to numbers and so on and so forth.

As I said, all these numbers are probably irrelevant at this point; they are all going to change. Here is just to include in the amendment the methodology like a little summary table that shows people how that ABC recommendation was arrived at; the 28,000 pounds for that stock. Action 5 deals with – so here we get into the projections from the stock assessment and it is the rebuilding for the Florida Keys/East Florida stock.

These tables, as I said before, are based on the old set of projections, but the language in the alternatives is similar. Of course, Year 1 has changed now to be 2017, because that is when regulations are expected to be in place. Because the stock has been declared overfished and undergoing overfishing, then there is a statutory deadline that the council needs to abide by and so regulations need to be in place by February of 2017 to meet that deadline.

Here is your Alternative 2, which is a ten-year rebuilding at 50 percent probability of rebuilding under a constant F. Then their preferred is the recommendation from the SSC thus far, which is a ten-year rebuilding with a probability of rebuilding success of 72.5 percent. These tables, of course, have all changed, as I said.

There are I believe five alternatives and then just a little summary table. Action 6 is on PDF Page 34, and this one establishes the ACL for the East Florida/Florida Keys stock; again the same suite of subalternatives, stepping down the ACL from the ABC. Another thing that we're going to need some discussion and some guidance from you is this issue of allocation.

When the council established the sector allocations for hogfish, they used the same allocation formula that they've been using for all snapper grouper species, which is average landings between '86 and 2008; 50 percent of average landings between '86 and '08 and 50 percent of average landings between 2006 and 2008.

When the hogfish stock becomes two, then the sector allocations have to be recalculated. We've been going back and forth with the region trying to figure out which is the appropriate way to do this. Anyway, we'll get into a lot more detail about that in a little bit. That is why you see the percentages for allocations between commercial and recreational are different.

We have here the table that was originally used for this set of allocations, which has been updated; but we want to show the public the numbers that went into that calculation, so we'll have a revised table showing that; and then, of course, all the tables that correspond to the various ACL subalternatives based on the preferred rebuilding strategy.

Action 7 looks at the recreational annual catch target, which is something the council has chosen to specify just for the recreational sector thus far. As you know, there is no management measures that are tied to the ACT but we still go ahead and specify it. Consistently the council has been using the formula where the ACT equals the recreational ACL times 1 minus the PSE or 50 percent of the recreational ACL, whichever one is greater.

For hogfish, however, for the Georgia/North Carolina stock, because the PSEs are so high, they instead decided to select Subalternative 2B as their preferred, which steps it down only 15 percent from the recreational ACL. They would establish that ACT at 85 percent of the recreational ACL. To be consistent, they did the same thing for Florida even though the PSEs for that stock are a lot better; and those are down here.

Action 8, PDF Page 41, this is where we get into the management measures. The council has decided to revisit the recreational minimum size limit for hogfish. Currently it is 12-inches fork length for both sectors in federal waters of the South Atlantic and in state waters of three of the South Atlantic states except for Georgia.

For the Florida stock, the council has selected their preferred, a 20-inch minimum size limit; and they've selected 15 inches for North Carolina and Georgia. Then Action 9 is a commercial trip limit for both stocks, so they're looking at have a suite of trip limits for each. They did not yet select a preferred pending further analysis. We're looking at trip limits from 100 to 750 pounds for the Georgia/North Carolina stock and from 25 pounds to 200 pounds per trip for the East Florida/Florida Keys stock.

For their recreational sector, they are looking at stepping down the bag limit. Currently it is five fish per person per day off of Florida; and there is no bag limit off Georgia, South Carolina, and

North Carolina. We're looking at the range of 2 fish per person per day, 1 fish per person per day, or 1 fish per vessel per day for Georgia/North Carolina; and then for Florida a little bit, higher from 3 down to 1, and then again the 1 fish per vessel per day.

These are stricken through because instead of leaving them under the same action, we broke them out into a new action that would look at considering a recreational fishing season for both stocks. These have not been analyzed. This was just added maybe a week before I put this document together. We're going to have some analysis for the council in December.

Then finally Action 12 basically is just a way to formally establish the same accountability measures that are currently in place but make them applicable to each of the two stocks. It is just something that we have to go through. The council is not considering any changes to the current accountability measures; and these are what are currently in place for hogfish.

That is the amendment, 12 actions; and the council is looking at approving the amendment for public hearings in December. We'll have public hearings in January and beginning of February, and then they'll look at this again in March with the intent of sending it in for final review around June. That would give NMFS enough time to have everything in place by the end of the year, in time for the deadline. Any questions?

DR. SERCHUK: Again, this may be a naïve question, but it may just show that I know very little about this. Apart from the genetics' work, are there any other aspects either in growth, in maturation; any biological characteristics that would suggest that because of their distinct genetic stocks, the stocks show differences other than genetic?

DR. ERRIGO: I can help answer because I've looked at the item quite a bit. There are a lot of physical differences between the two stocks, and it could be because the Florida stock is heavily overfished; whereas the Carolina stock seems to not have quite as much fishing pressure. In the Carolinas the hogfish stock seems to be much further offshore, whereas in Florida it is much closer to shore and much more easily available.

Size at transition from female to male is much is much, much smaller in the Florida stock. Average weight is much smaller in the Florida stock, so the average weight off the Carolinas is closer to 10 pounds; average weight in Florida is around 2 pounds. Size at transition, I can't remember the exact numbers, but it is like 10 or 12 inches off the Carolinas and it is significantly smaller in Florida; 8 inches off Florida.

DR. SERCHUK: Do you apply the same growth rate formulas, the same natural mortality values? I'm just wondering where those differences are manifest in terms of the assessment itself.

DR. ERRIGO: In the assessment they used the same Von Bertalanffy Curve and used the same natural mortality. However, most of the data came from Florida. The Carolina stock is extremely data poor, which is why the SSC did not accept that assessment for the Carolina stock.

DR. BARBIERI: Before we go into projections, Myra, I'm thinking about you asked for some guidance on the Georgia/North Carolina stock for application of the ORCS approach, right?

MS. BROUWER: Right, the council, when they discussed this in September, there was some concern that the risk of overexploitation scalar that had been assigned to hogfish had been assigned mainly based on characteristics of the Florida stock. The council thought it prudent that the SSC revisit this now that we have a little bit more information – there is the evidence of the two stocks – and see if there is an adjustment perhaps that needs to be made to the risk of overexploitation that is more realistic for the North Carolina/Georgia stock.

That is one of the things they talked about. They talked about are the landings that were used for the ORCS approach; are those considered really reliable for the Georgia/North Carolina stock, because there are also some issues perhaps with misidentification of pigfish in the Carolinas that could have had an impact on the landings? There are all these various issues with that stock and so the council wanted some further guidance from the SSC.

DR. BARBIERI: Just to help situate you, if you will look at PDF Page 30 of the Amendment 37 document, you have a table with the parameters that were used for the application of the ORCS approach. It is on Page 15 of the document, but PDF Page 30, I think. I don't know if our council liaison –

MR. HARTIG: Luiz, what do you need?

DR. BARBIERI: Well, Myra already explained what were some of the council's questions regarding hogfish; but if you can help articulate some of the other details that may have come up during this application of the ORCS approach, the risk of overexploitation, parameter used and some of the other questions that came up at the council meeting.

MR. HARTIG: I don't know how much more I can really add from what Myra said. Maybe Michelle has some other things to add. I think the most important thing that the council saw was that the size at transition in the North Carolina/Georgia stock and the size of the animals are so much different than Florida; and obviously the fishing pressure is lower on that group of fish; that we were looking for some way to have a relook at what you have done for the ORCS approach.

Basically, as Myra said, the moderately high; is that appropriate for this particular stock, which the size at transition is pretty consistent with what it was probably in the past for this animal. They get to be really big in North Carolina, much bigger than they are in the Florida stock; at least in the area where they are fished heavily.

Now I'll go outside the box here a little bit and talk about there are places in Florida in the closed areas where we have big hogfish. That is one of the differences we have, and that is one of the things that went into – when we talked about the difference in size limits, we gave Florida a little bit of a leeway in talking about since you have a number of closed areas in Florida, you have some insurance policy for that stock.

Those animals are growing to the size and age that they can based on no fishing pressure for those animals; so we gave them a smaller size limit. I don't think I can add a whole lot. I went a little bit off the reservation there. I don't know what else I can add. I'm sorry I couldn't answer it better.

DR. BARBIERI: But it is just to help clarify for the members that perhaps are now listening to the council meeting or they are present to understand the basis of this request from the council and the discussion and for us to go and look at those parameters and see what our recommendations are. Mike, you had something to add?

DR. ERRIGO: Well, this is directly in relation to the ORCS parameters. The risk of overexploitation; one of the things that you might want to look at is the dynamics of the fishery itself. It seems that the fishery in Florida has fairly easy access to these fish, which are easily harvested; whereas in the Carolinas it is not quite the same, they are much further offshore.

I assume that is why the fishing pressure is much lower off the Carolinas than it is off Florida. Otherwise, they probably would suffer the same type of fishing pressure and we would see some of the same issues off the Carolinas that we do off of Florida; but we don't. There is some dynamics of the fishery that is different off the Carolinas than off of Florida.

DR. BARBIERI: Two questions here for us to address. One is first to reevaluate our risk of overexploitation and make a recommendation on whether we are still comfortable with that moderately high risk of overexploitation; or if we feel that now the stocks have been broken apart, that it warrants a different risk of overexploitation for the northern portion of the stock.

Two is for us to review the range of years or the landings time series that were used for development of the average catch that is applied to ORCS and to see does that meet the bar, perhaps, of having reliable catch series?

DR. SCHUELLER: I guess I have two points. One is for the risk of overexploitation, didn't we walk through a table to get to that? It would be helpful to put the table up and look at where we had placed things and if we wanted to change anything. Then, two, if we're talking about landings during 1999 to 2007; was any work done to provide those in an easily digestible form for us to look at; and if so, we need to put those up there as well.

DR. BARBIERI: Right; and we should have an Excel that Mike usually has, so it is Attachment 15 in your briefing book, which has a lot of information about the landings, the average weight, MRIP data, and actually size at transition information there.

DR. SCHUELLER: I guess I suggest we take this one piece at a time; so what do we want to start with?

DR. BARBIERI: Well, I think we should start with the landings since they are up there. By the way, the criteria that is used – remember, this is a data-poor method to provide a catch level recommendation when you don't really have a valid accepted assessment and you can't do anything further. The criteria there that are used; you are looking for a period of time that is the most stable in terms of landings to sort of represent a credible average over time.

DR. REICHERT: But we went through that exercise for hogfish.

DR. BARBIERI: We did, but I don't know did we do this for the Georgia/North Carolina?

DR. ERRIGO: This is for hogfish when it was one stock. Those landings are for Georgia/North Carolina. For Georgia/North Carolina we did go through ORCS, but we did not look at the classification. All we did was look at the landings from the assessment and came up with that.

MR. CARMICHAEL: You did look at all the criteria when the question was the moderate high qualitative categorization; are you comfortable with that and do you think that is appropriate? It wasn't the application of the scoring that was done for that Georgia/North Carolina stock alone. Maybe you're comfortable with it; you don't think anything should change, that's fine; but here is your chance to say that.

DR. SCHUELLER: Just for clarification, so 1999 to 2007, right, that's the time frame; that is like a standard time frame that was chosen across species, right? I guess I don't see any justification to change from that based on looking at landings. Now, if there was some other information, maybe, but landings alone don't help us.

I mean, obviously we wouldn't want to move it to 1995, because there is that odd-looking recreational spike; but other than that, I don't see any information here that helps us decide to move that for any reason. Then I thought the other question was there is some issue where the council thinks that there might be some species ID issues. What data has been provided to us to discuss that topic?

DR. ERRIGO: Actually in 1995 there were most likely species ID issues, which are causing that spike. That has to do with the allocations, because they go back further, they go back to 1986. I provided all the intercepts that were in question. This species is taken by diving primarily and not by hook and line. Any that are taken by hook and line is usually very rare; and when they come up on the boats, there is very few numbers.

But for some reason – and the intercepts by year especially in the Georgia to North Carolina stock were very, very low, usually 10 or less, usually less; but in 1995 there were 60 some odd intercepts of hogfish. The trips that were intercepted caught quite a few hogfish on each trip, and they were listed as hook-and-line trips. From the fishermen that I spoke to; that just wouldn't happen. This doesn't seem right.

DR. SCHUELLER: Isn't 1995 a moot point since we're talking about 1999 to 2007? I don't know why we're talking about that for this right now.

DR. BARBIERI: Then let me explain, Amy. The council asked us to review this and provide some – apply our professional judgment on whether this is appropriate or not and even having in our report that would say we actually discussed this issue during our meeting and we don't see any reason to depart from – I mean this is what they're asking us to do.

If we have any concerns, they are giving us the opportunity to review that and provide an alternative. We don't have to change anything; we can just basically address their question by saying, no, there is no – but we're going to provide them in our report the documents that this issue was reviewed by the SSC and we didn't feel any reason to provide a change. Church, you had a point?

DR. GRIMES: A different thing. I was just a little confused about the species ID problem. Nobody has really said what were they confused with; what was that?

DR. ERRIGO: They called it a species ID issue but it was recorded incorrectly. People also call pigfish hogfish; and the species' codes were recorded incorrectly is what we think might have been happening.

MR. CARMICHAEL: Yes; I think we have to be clear that is a hypothesis. We don't know this.

DR. ERRIGO: We don't know what happened.

MR. CARMICHAEL: We need to be very clear when saying things are reported incorrectly.

DR. ERRIGO: Right. The other issue is that – so I provided data back to 1986 because the council is also looking at allocations and asked the SSC to comment on calculating allocations. Those data need to go back to '86.

DR. BARBIERI: Okay; but as far as the ORCS time series approach, we are basically just reviewing that for the time 1999 to 2007. Michelle, do you have any additional information?

DR. DUVAL: Mike got it.

DR. BARBIERI: Okay, thank you. Any additional points? It looks like we've discussed this and made a decision not to change the time series; we're still comfortable with that choice. The next question is the exploitation status. The issue here, Amy, just to clarify because you were not here when this happened, we had that table, Table 4 from the ORCS document that we went through.

But then because of the lack of information for a lot of those stocks, we ended up all pretty much in the same – 99 percent of everything came out as moderate. We decided to reiterate that and have a broader discussion and include a whole bunch of input from different people and try to come up with a qualitative characterization to try and break up from the moderate something that could give us more of a high, medium and low within those stocks.

MR. CARMICHAEL: One of the questions I think the council was getting at is whether any of the various criteria that you use to score species would differ for hogfish on that stock component compared to hogfish overall, which is how you scored it. One thing that we know is the scales of the fisheries between South Florida and the rest of this are vastly different.

The level of targeting could be quite different, the desirability and availability. A lot of the criteria that you have used for scoring ORCS maybe have different values when you look at just that stock component.

DR. BARBIERI: But Amy is right and maybe if we can just we pull up the ORCS Table 4 just for folks who haven't gone through that exercise basically see the criteria?

DR. SCHUELLER: I think it is okay that they don't all fit in the column, but morphological characteristics of one; what does that mean? I feel like we need to have the other table up on the other screen that says morphological characteristics one, two, three, four, five, whatever they mean, so everybody can look at that together and know what the number means.

DR. ERRIGO: They go from one to three; and a three would get you to a higher level of overexploitation and a one would get you to a lower level of overexploitation or risk of –

DR. BARBIERI: John is sending Mike the table and we're going to just put it up there, because, yes, it would help.

MR. CARMICHAEL: Generally across the board, low was a one and three was a high in the different categories. I just sent you the ORCS report. You want to go to the table on Page 6 that lists all the attributes, the criteria of the attributes and then what the scores were.

DR. REICHERT: It is also Table 4 in the ABC Control Rule Document that should be in the briefing book.

DR. SERCHUK: Can I just ask a question? My reading of some of the background materials suggests that these things are very territorial. To me, if something is very territorial; that would be highly susceptible to exploitation. Where is that covered under this? Is there a behavioral characteristic? Is that something we should be concerned about?

DR. BARBIERI: Yes, definitely. Marcel is going to help clarify some of this; but perhaps if there is need – I mean I understand that we did this and reviewed this whole process all together. We had a couple of dedicated workshops that integrated a lot of people to make those choices, but we have a lot of new SSC members.

Depending on how we want to get this item completed, we could postpone discussion of this little piece. We could move into projections and then give everybody a chance to perhaps peruse quickly over the ORCS approach, look at that Table 4 in the ORCS document.

DR. REICHERT: Four and the ABC documents. It is a different table in the ORCS, though.

DR. BARBIERI: Okay, go into what is there so you get a flavor for really what this is trying to accomplish. But the idea, Fred is exactly that; it is to take those things into account. In this case they are protogynous hermaphrodites; they form harems and they are very territorial. Males patrol and keep their harem sort of protected. There are a whole bunch of those characteristics that we are trying to integrate into this risk of overexploitation with the lack of anything more quantitative.

DR. SERCHUK: I don't want to slow down the proceedings because of my ignorance. If I get the background documents, I will look at them, but it just seemed this had low for this characteristic. I just wanted to know whether this characteristic of being extremely territorial, which to me is very vulnerable, was taken into account. If it was, fine, we don't need to delay things.

DR. BARBIERI: Fred, no need to apologize. Looking at our agenda; the way that our meeting is going, I think we're going to have some extra time tomorrow that would allow us – and this would be an opportunity to get all the new members familiar with the ORCS. I don't see a problem.

We can just move on to the other item, which is very independent, which has to do with the Southeast Florida stock, which for that we accepted the assessment and we have projections; and we revisit this tomorrow after having a look at this. Mike, if you could distribute to the committee the ORCS report and the spreadsheet; we have an actual report that was the result of our own couple of workshops that we did on this, just to get you up to speed.

DR. BELCHER: I'm actually going to ask for a point of clarification. It is something that I've brought up in the past before; but under the Alternative 2, where we have ACL equals OY equals ABC; for this particular stock OY is defined as 40 percent of SPR. If you go back to the document in the front, there is that proxy definition.

If there is a number already for OY, which comes first, because you are basically saying we already have a number there, which technically should be our ACL/ABC; but yet we're talking about projections that are setting an ABC which will then set ACL, which that number could be different. It could be higher or could be lower.

It was something we had brought up before, because optimum yield means more than just the definition of optimum yield. We actually have numerical values that if they come out of assessment, fill in that value. How do we reconcile or how do we provide them with information on that?

MS. BROUWER: I acknowledge that, yes, the SSC has had those discussions and has issued sort of cautionary statements to the council for setting OY the way that they have it set up; equal to the ACL equal to the ABC; but it is one of those things where I don't know what to say about it. That is just how the council has proceeded thus far.

DR. BELCHER: I just feel it is difficult because if those two numbers – if we derive numbers that are not equal, how do you make that determination what is going to be what number? Because basically you are saying we've calculated the OY; and even if we look at some of the F rates, they are pretty high relative. The F is relative to that F 40 percent is relatively off the chart when you look at some of the projections.

It is two; it's three times what it should be. If that number – again, which number is going to be intercepted first? If a fisherman doesn't exactly like what we derive for an ABC from projections and it's sufficiently lower than the OY number that is out there in a stock assessment document; how do you decouple that, well, that's an OY calculated through a stock assessment process, it really doesn't mean anything. But it does because we derived it based on the biology of the animals; and we're saying that that is really not the same value.

MS. BROUWER: I guess what I would suggest is that you go ahead and reiterate your position on that to the council and include that in your report.

DR. BARBIERI: Myra, what page is that; I am trying to find the OY.

DR. REICHERT: Twenty-nine.

MR. CARMICHAEL: Carolyn, do you have a page number; it would help to show that on the screen.

DR. BELCHER: In Myra's document it is Number 14 by the document number. I don't know what it is PDF wise myself.

DR. REICHERT: Twenty-nine.

MR. CARMICHAEL: Action 4?

DR. BELCHER: It is Alternative 2.

DR. BARBIERI: Action 4, but this is for the Georgia/North Carolina stock.

DR. BELCHER: It shows up quite frequently in a lot of these documents regardless of that. To me if there is a number out there for it – I think if it was for the Florida one, which we actually see an SPR 40 percent for the Florida; and if it is written that way for the Florida one, you've got the same problem.

DR. BARBIERI: In my opinion, the Georgia/North Carolina one is easier. This one on Action 4 is easier to handle; because in reality the OY that may have been calculated as part of the assessment was not considered the best available science. But the one that has to do –

MR. CARMICHAEL: In this case, the first assessment you have an OY that was in existence long before the Act changed and the assessment was done, which might have been based on SPRs; and we had OYs and OFLs that were based on 30 or 40 percent SPRs long before we had any of those values.

I think the council's intention in this is that it redefines the OY. That OY, no action, if there is an OY that is 30 percent SPR; that no longer exists. Now we have this separate stock and we may have an OY definition that existed under the SFA rules and now we're defining a new OY. That is certainly where the council was headed with this.

DR. BELCHER: But doesn't that have to be stated someplace; because in going back to the documents relative to the assessment, it says that specifically is defined as 40 percent of SPR with the proxy. So unless there is something that restated that definition or redefined it in some manner or fashion –

MR. CARMICHAEL: That is what this is doing. This is saying OY equals 95 percent of ABC. OY no longer equals SPR. What is in there in the assessment is an old out-of-date definition. It might have been what was available then; but it no longer applies under the new rules, because we now have an assessment and a new OY. I think the thing needs to be maybe that it needs to be

explicitly stated that OY is changing, because this could be misread. There isn't a clear action that says we are changing the definition of OY.

DR. BELCHER: Exactly, because again you go back to the stock assessment document where the guidelines for management are OY is defined as 40 percent of SPR as a proxy.

DR. BARBIERI: Right; but in terms of some of these assessments that haven't been assessed since MSRA and that were still going on SFA-based criteria; the assessment has at times done using what is on the books and not really updating. As we have those assessments and the council goes through the discussion, those things get redefined.

DR. REICHERT: I think Gregg may have a clarification.

MR. WAUGH: Just to clarify; what you see there for the no action alternative, it does state that ACL equals OY equals ABC; and that is 137,824 pounds. That applies for the hogfish right now from the combined stock from North Carolina to Florida. That's what is in place now. It may be that we just had an old version in the stock assessment document. But that is what the OY is now; and what we're doing now is dividing that to reflect the two different stocks.

DR. BELCHER: I think what I'm trying to get at, though, is the fact that we do these stock assessments and we do derive these measures. There is an actual OY number that comes out of that stock assessment. That number in and of itself is really already generated and it's out there. If the person wants to read the report, they can find a number for OY.

In doing this, though, we're doing the exercise of setting an ABC that really isn't dependent on the OY value. Technically there is a number already for OY, so why would ACL/ABC not be equal to that OY value if you've already got it is my point. That is kind of what I am trying to get at is how we're going to define it.

DR. BARBIERI: You were right; but the thing is for the next assessment of hogfish, the OY calculation that is going to come out is going to be whatever is defined here. It is just because before it had not been redefined since SFA and the old snapper grouper amendment. It hadn't been updated yet to this new one. The next one should be defined as it is defined in this amendment, correct?

MR. CARMICHAEL: Yes, that is correct, and I think there is a reality here that an assessment can say whatever it wants about management quantities and they really don't carry weight until you guys make the recommendation. An assessment can say Fmsy equals something. That doesn't become the OFL and that doesn't translate into ABCs and all that until you guys make that recommendation.

We have assessments that might say this is what the ABC would be under the rules that you put in place; but that doesn't carry any weight in terms of what the ABC actually is. It is what you guys recommend that becomes it. An assessment could come and say OY could be this; but until that is taken and acted upon and you make recommendations which come after it's done, it doesn't carry any weight. We probably just need to be careful that people understand that just because a

particular value is listed in an assessment; that doesn't mean that is the actual recommendation that comes out of it and that is not the final word.

DR. BELCHER: And I understand that; I'm just saying when you end up in situations where what we're proposing, we are basically saying, okay, we have a derived value of OY based on the biology and all the information that is out there. We're going to wipe that out and replace it with what we develop for an ACL/ABC.

MR. CARMICHAEL: OY is not based on biology necessarily. OY is reduced from MSY based on the council's recommendations. It is not a biological criterion. Are you suggesting that future assessments not include OY? That seems to me the clearest – if it is confusing, we should do something to make it different.

DR. BELCHER: Well, I think from the standpoint of – like I said, it's a chicken and the egg argument to me is that if you calculated an OY, it is defining why that is just kind of a placeholder value and has no meaning. I mean because to me you can go through the report and find a value for OY.

Then after the fact, it is like I said chicken and the egg. We have an OY, which by putting a number in there says we've got an ACL/ABC, but really what we're doing is saying, no, we're going to develop ACL/ABC and then force OY to be that number. Then what is the purpose of producing an OY for the stock assessment if that number has no –

MR. CARMICHAEL: Are you saying don't produce an OY in the stock assessment?

DR. BELCHER: Or at least make sure it is clear what your OY is supposed to be. This is where I had this discussion –

MR. CARMICHAEL: Just say yes; just say yes.

DR. BELCHER: – optimal yield economically versus optimal yield in a fishery population sense could be two very different triggers.

DR. BARBIERI: Let me make a recommendation here. We got your point and I think you do have a point. I think what we need to do is be attentive to this issue when we see the next terms of reference for the next assessment; because usually in our terms of reference we have projections and we have management quantity estimates that we request in our terms of reference.

Either we can define them in those documents or we can take them out in situations like this where the OY is being estimated differently. But this is something that we will have an opportunity to review for every single assessment, because terms of reference come before this committee for every single assessment. At least there we're going to have an opportunity to catch it; and unfortunately we didn't do that last time.

DR. BELCHER: It is Table 2.3.2, Specific Management Criteria. This is part of SEDAR 37 has OY defined as 40 percent SPR; and the results from 37 were to be determined. That was where like I said in following those; that was the thing that for me the decoupling was difficult.

DR. SERCHUK: In the document, could we just take out the OY portion of it? Why is that important in the document? This is looking at the status quo. You have OFL and ABC. Why do we even need the OY if it is going to bring up this issue? That is one thing; and again the other thing is completely off base, but I will just raise it.

Maybe your science is better than the science in other parts of the country, but I am always dumbfounded when I see things going to the pound. Okay, ABC is going to the pound; from my own personal perspective, I think it gives the wrong level of precision to those people that don't really understand the assessment process that says that we can get ABCs to the pound. Have you ever had a discussion about sort of rounding these things off just to give the indication that we don't know ABC to the pound? Does that ever come up?

DR. BARBIERI: It hasn't.

MR. CARMICHAEL: It has actually if you go back far enough.

DR. BARBIERI: I guess it has. It is something that we can, Fred, perhaps propose for our next meeting as an agenda item.

DR. SERCHUK: I'm worried about giving the impression to people that aren't familiar with the assessment process that given the data that we have and given the analyses that we can come up with ABCs to the pound; that is a level of precision. Given all the uncertainties that we have with data reporting and with indices and everything else; that is far from that level of precision. I know it is off track, but it just seems to me that we're sending a subliminal message here that we're more confident in this than we really know we are.

DR. BARBIERI: Point well taken. Tomorrow, when we wrap up, we should have an "other business" item under our agenda. Let's bring this up again as a potential point of discussion for our next meeting.

MR. CARMICHAEL: It has been discussed long ago and the council's direction was to specify things in pounds. If the scientists were to say we'll round up, then they would probably say okay, because so many of our things we end up with, as you've seen, such small catch limits; that 1,000 pounds rounded to a fisherman can seem like you took 1,000 pounds away from us.

Because they feel like they are held on their quotas and whatnot to the pound on their trip limits to the pound, then it is basically saying, well, then take that 30,346,095; if we round that out to 300,000, then the fishermen give up 40,000 pounds. If we rounded it up to 350, then they gain 4,000 pounds and they would probably be acceptance of that. If we rounded up to 30 –

DR. SERCHUK: If you rounded it up to 346,100 pounds; that connotes a different level of precision than 095 pounds. I don't have the answer where to round up or where to round down,

but certainly the science can't support a number to the pound in terms of any of the techniques that we use.

DR. BARBIERI: Valid point, and we'll discuss this in more detail tomorrow and then hopefully have a discussion in April that kind of revisits all of this and provides the council some guidance in that direction.

DR. SHAROV: Honestly, I am a little bit lost through this whole discussion. There is a lot of information but it is also a lot to digest and learn. We're going from small things to big things and then back to small things. Finishing up on the small thing, yes, like a natural mortality estimate of 0.79; that is really a super good precision.

I suggest we shouldn't be reporting things like that at this level of precision. On a big thing, though, I don't understand why – of course, OY could be important to the council, ACLs, et cetera, but our primary responsibility as the SSC is to establish the limit that set the ABCs and have a clear definition what our OFL is and what our ABC is. I think that is what we need to focus on.

Not knowing the history – correct me if I understood it in the wrong way – for the Georgia/North Carolina, we don't have an assessment anymore; and then therefore we're looking at the alternative, the ORCS method that we would like to establish the ABC based on the catch history. I think that is what we need to somewhat focus and finish this.

So far what I've heard we've looked at the proposed period. There were no proposed changes. I don't understand why, for example, a full time period that is 1999 through say 2011 is not considered. Not that I am necessarily proposing, but I didn't hear an argument why not. At this point if we are focusing on Georgia/North Carolina; that is probably what we need to do to make any conclusions as to whether we have a better idea of the proposed ABC rather than the period of the catches that were in consideration.

DR. BARBIERI: Well, two clarifications. We decided that we're going to discuss the ABC recommendation application of the ORCS approach to the Georgia/North Carolina stock tomorrow. Yes, we're going to give everybody some additional time to go over the background documents and how this methodology actually was developed, how it is applied and how we have actually applied all of this and revisit that tomorrow.

The question about OY – and I understand your point that the SSC's main role is to provide recommendations on OFL and ABC, and that is absolutely correct; but the council is actually giving us the opportunity to review some of those regulatory amendments and provide some review and recommendations on some of the technical issues that are imbedded in those amendments.

Since we are their body of scientific advisors, they want to work with us iteratively. As they develop recommendations and as they propose some steps forward or define management quantities, they want to make sure that they have our concurrence and agreement that all the scientific bases behind some of those discussions are actually going in the right direction.

This is why we are discussing some of those issues about OY and we're reviewing this document as a whole is just to see if there is something that catches our eye that could be straying off too far; we have an opportunity to discuss it here. Okay, so we discussed the OY issue, we decided to postpone the discussion on the Georgia/North Carolina stock; I think we are ready to move on to projections.

We have Dustin Addis here to give a presentation on the projections; and the committee is being asked to review the hogfish projections and consider do the new projections represent best scientific information available? What are the projection uncertainties and how might they affect rebuilding efforts and strategies? Does the SSC have any other guidance for the council on rebuilding strategies? Those are our action items as far as reviewing the revised projections.

MR. ADDIS: These are the updated hogfish projections for the Florida Keys/Southeast Florida stock. We were approved to develop alternatives for rebuilding this stock. You guys requested updated projections with good reason. There are increased landings from the MRIP survey in Wave 2 of this year; and those preliminary landings were much larger than we assumed in the initial projections we ran back in March.

Another difference is we were asked to provide projection results based on year one of 2017 and we extended the projections through 2027. This is for the same suite of scenarios as last time. We also used interim landings that were recommended by the SSC; and these take place between 2013 and 2016. The methods were very, very similar.

We used the same base model configurations for the Florida Keys/East Florida stock from SEDAR 37. We assumed that the biology, the recruitment, selectivity, relative atypical F_s among fleets were the same as the last three years of the base model as 2010 through 2012. Predicted fleet F allocations, we averaged those for 2013 through 2015 to be held constant; and we applied those to the interim landings and all projections.

Base model catch and forecast catches were in total dead fish; this is total dead biomass so that discards are included. We have to tease those out; and we did that by partitioning the total dead biomass into the landed and discarded components. We took observed discards by fleet and we divided that by total biomass or numbers to give us fleet-specific discard exploitation rates.

We take those and we subtract those from the total exploitation rates that are fleet-specific to get landed exploitation rates. These exploitation rates were then multiplied by stock biomass or abundance to calculate discards and retain catch. All projections involve iterative searches to solve for annual scalars that are applied to these exploitations to match the F_s that are needed.

The suite of scenarios, we have F of 0, F -current, which is the geometric mean rate for 2013 through 2015. We have constant F at F equals 75 percent of F_{msy} . We have constant F at F_{msy} and then we have our rebuilding scenarios, which are a ten year and a seven year; and both of those have – we ran a P rebuild of 50 percent and a P rebuild of 72.5 percent. Here are the results.

These are the fishing mortality rates that we applied. On the left we have F -0, F -current, 75 percent F_{msy} and F_{msy} . On the right we have the rebuilding scenarios. You can see that the rebuilding

scenarios don't exceed an F of 0.1. This is our spawning stock biomass projections. On the Y axis we have pounds in thousands. You also see the horizontal red line that represents SSB at MSY . You can see that the $F=0$ projection ends up rebuilding the stock after seven years.

The other projections on the left do not meet the SSB_{msy} at 2027. The rebuilding scenarios rebuild the stock in their implied times. Annual stock biomass again shows the same pattern. We have retained yield. F -current, you see it takes a slight initial decline and then slight increases through the end of the time series. The other scenarios show a steeper decline in the first year and show steeper increases as the years go by. The rebuilding scenarios take a steep decrease and show increases. Here we have discards, which are either stable or slightly increasing. That's it.

DR. BARBIERI: Thank you, Dustin. This is a pretty standard process that we go through. Besides this presentation, we also had a report that has all the tables and all the quantities for those projections. I'm going to open up to discussion, questions or comments from the SSC.

DR. IRWIN: This presentation is helpful for me. I've been a little stuck in my thinking about whether or not we're really thinking about considerations of where a fishing mortality rate should be versus alternatives that might differ in their effectiveness at achieving that particular fishing mortality.

Things like the catch limits and the size limits and season closures I think are ways that we can adjust that fishing mortality rate. This was more of a consideration of what we expect from those different mortality rates. I guess it's just more of a procedural check-in to make sure that is kind of where we want to be with our thinking on this since it is new to me.

DR. SHAROV: Question on the calculation of discards. Under the $F=0$ scenario, you are still showing an increase in discards that would be discards generated by the fisheries that we will retain other species but not this one, right; is that the assumption?

MR. ADDIS: Yes; the discards increase as the spawning stock biomass increases is what the projections show.

DR. SHAROV: Right; so the current discards are not from a directed fishery; the current discards are assumed essentially coming from everywhere else, and therefore you would assume that the same rate of discarding will continue or will increase with the increase in the population size; is that correct?

MR. ADDIS: Right.

DR. ERRIGO: Did the model assume that the rate of discarding would continue for all of the fishery sectors the same if the fishery was closed down? Because the majority of the fish taken in Florida are by diving, it doesn't seem that you would have discards from diving if you weren't allowed to take hogfish. Maybe the model did not assume that; I'm not sure.

MR. ADDIS: No; I don't believe the model assumed that. Now, the discard mortality for speared-caught hogfish is 100 percent; but for hook and line I believe it was 10 percent discard mortality. But, yes, if the fishery was shut down, it does not assume that there wouldn't be discards.

DR. SHAROV: I cannot imagine how could it be a discard in the spear fishing; because unless you are an inexperienced fisherman, then you are misjudging the size of the fish; but other than that, I cannot imagine of any discards coming from that kind of fishing. Am I wrong?

MR. ADDIS: There were discards from the spear fishery; but again all the discards were pretty low. If you compare it with landings, it is miniscule.

DR. BUCKEL: Just a point of clarification; I don't think the model – the projections don't have F equals 0, it does have a slight – that F_0 is 0.001 so that is where those discards are probably coming in.

MR. ADDIS: Correct.

DR. SERCHUK: I appreciate that the projections were done to give us a flavor of where these different scenarios would be. I am always concerned when we have rebuilding trajectories at very low F s, not because they're not needed, but because the major factor then that is controlling the population is the N , is the natural mortality. I'm thinking that my brief look at the document, I don't know exactly what value of natural mortality was selected, but the values that are given in the table are about 1.17.

Now, when you start looking at ones that are half that amount or lower than that amount and recognizing that natural mortality can fluctuate, you use an average value but it is one of the most difficult parameters to determine.

We need to be careful about interpreting these trajectories. Anything other than zero, because it gives the impression that in a time certain we'll achieve this level of biomass at this level of removals when in fact the parameter that is mostly controlling the abundance of the population is not fishing mortality. It is natural mortality.

If we go forward with that, I would like statement in that just to cover that aspect of it, because quite frankly that is going to be the driver at these very low fishing mortalities, this 0.001 or 0.05. It is going to be 75 percent or some fraction of what we assume the natural mortality is, and we assume that is constant in most cases; but that can vary from year to year, and it is a caveat in terms of these rebuilding projections.

DR. BARBIERI: Those were the scenarios that were requested by the council, so I asked John Carmichael to sort of go over the reasoning behind that procedurally.

MR. CARMICHAEL: For the values that they asked for?

DR. BARBIERI: Yes.

MR. CARMICHAEL: Yes; it is a fairly standard suite to define the rebuilding plans, figure out what would happen if they did nothing, took no action, and to cover the different basis for the rebuilding alternatives that the council is considering. They are looking at ten years; we all know about the ten years. They are looking at seven years, because it could be rebuilt in ten years and they can rebuild faster; Fmsy, of course, which is our OFLs. It is a standard set that we get.

DR. SHAROV: Just a clarification on the structure in the model where – I'm sorry I am not familiar with it yet – you have, well, obviously, fleets, plural, so at least can you explain whether it is recreational and commercial fleets; and if so, what was the approximate ratio of removals?

MR. ADDIS: The model had five fleets. We had a commercial trap, commercial spear, commercial hook and line. We had recreational spear and recreational hook and line. Those fleet allocations were extended through the projections.

DR. SHAROV: What is roughly the allocation in terms of harvest between the total commercial versus the recreational?

MR. ADDIS: I would have to look at those numbers; I don't have them in front of me.

DR. ERRIGO: In terms of landings, it is a little over 90 percent recreational and a little less than 10 percent commercial.

DR. BARBIERI: Okay any other questions, comments, clarifications for Dustin? If not, I am going to ask the committee to address some of our action items. We need to determine whether we consider the new projections as best scientific information available, have some comments. We can do some of this commenting during our report; but I just want to see if we can get some committee participation on those three bullets that we need to address.

DR. SCHUELLER: My recollection of this uncertainty component piece is that the way these projections are done incorporates less pieces of uncertainty than what we would see coming out of other assessments we might view before this committee; but that was accounted for in our P-star value, right? I mean as long as that is still appropriate, then I think that is fine.

DR. BARBIERI: But this is basically to give us the opportunity, Amy. Your points are correct. It is just to give us the opportunity in building our report, if there is any kind of recommendation. For example, Fred brought up the issue about the projections with very low F values being driven by a parameter that is very uncertain; and to give us the opportunity to put those caveats and comments in there if we feel they are appropriate.

DR. SCHUELLER: Maybe I missed this, but I didn't see like distributions of what these look like; is that available? Okay, this one hits it 72.5 percent of the time, but what does that distribution look like in that term.

MR. ADDIS: I could provide those. I don't have them with me, but I would be happy to provide those.

MR. CARMICHAEL: I'm just thinking about the low Fs and looking at all the rebuilding, the tens and the sevens and those are all obviously – I'm assuming those fall into the very low Fs. Would the committee say something that perhaps it may be very hard to even distinguish outcomes in a real sense between any of those; because then you'd be kind of telling the council there may not be value to choosing 7 over 10.

I think if you could put that into perspective that there is really – given the very low values and the M and the uncertainties, it may be very difficult to truly discern a difference between those four on that right-hand side. If that is kind of the gist of the comment, coming out and saying that would certainly help the council when it has to then choose which one of these do we go with.

DR. SHAROV: I had a quick question. What was the last year of the assessment or from what year have you started your projections; was it 2014?

MR. ADDIS: The last year of the assessment was 2012. We then filled in interim landings that were recommended by the SSC for 2013 through 2016. The first year of the projection is 2017.

DR. BARBIERI: Alexei, just for clarification; we had seen projections for hogfish before, but those projections did not include the most recent landings' data. The projections were updated and there was a procedure for estimating those interim years between when the assessment ends and the time series that we want to use. This was just updated to include the latest data at the council's request. This is what those are providing.

DR. SERCHUK: I just have one other question about the landings or the catch assumed in 2016. The reason I have it, it is a sharp reduction from what was provided in 2015. Could you just remind me why it goes from 419,000 to 289,000 in 2016? Is it a quota that is much lower in 2016? I am looking at the pounds in the column, one back from the right. You see 149, 299, 419, and then it drops to 289. Do we expect that actually to be the case; I'm just wondering.

DR. ERRIGO: I'm trying to remember how the 2016 was some sort of average or geometric mean or something like that from the other years; but 2015 had an unusual spike in the MRIP data. There were intercepts that were inflated in certain areas that was unusual for that species, so we weren't convinced that would continue.

DR. BARBIERI: Fred, if you look at the numbers for 2013 and '14, '14 is much more in line with '16; and the one that's relatively higher is '15. Marcel.

DR. REICHERT: Just a point of clarification; Mike, you mentioned the 2015 data. If there were issues, that higher number was nevertheless used so I am not entirely sure how to interpret that.

DR. ERRIGO: There was no reason to think that there was anything wrong with the intercept. It is just there were intercepts that fell in certain areas with very high expansion factors, which caused a very large spike in the landings. It wasn't a typical occurrence so we had no reason to assume that 2016 would continue that way. Since we have no data for 2016, we just used the average – which is the same thing that was used for the original projections was an average of landings.

MR. CARMICHAEL: There is a whole document on this. I can send that to you if you would like. The recommendations are actually from the council and not the SSC. You guys didn't recommend these; this is from the council.

DR. SERCHUK: My concern is a pragmatic one. All of these ones except for the status quo show sharp reductions in removals, what you might expect, but some of them show that you couldn't take more than 20,000 pounds, which is one-tenth of what we've assumed for 2016, and so on and so forth. Those are the sort of things the fishing industry looks at, whether it is recreational or commercial, what is the rate of change where I am right now?

That is why I am looking at these numbers, because that is the first thing someone is going to look at and say, well, okay, we know we have to rebuild the stock; is it going to be 75,000 pounds or is it going to be 30,000 pounds, and so on and so forth. That is why the most recent numbers are really important, because, one, we want them to be as accurate as possible, and that may be uncertain.

But the impact of management is going to be seen as a step function here, as a quantum leap from where we are now under any of the rebuilding things other than the status quo, and so that is what I'm trying to get at. That is one of the things I guess people first look at; what do we harvest now, and, gee, whizz, I mean next year we're going to have to take one-tenth, one-fifth, one-quarter of what we've been taking and that is a shock.

DR. BARBIERI: That again reminds us to add to our report comments regarding uncertainties associated with the projections and the fact that we have to make a number of assumptions for 2015, which hasn't even ended, and for 2016, which, of course, is in the future. Those are the things that if we can help document in our report and explain might provide a rationale and give folk's perspective about uncertainties associated with those quantities. We're doing the best we can, but we can only go so far predicting the future.

Folks, we need to move forward as far as addressing our terms of reference. We've had some excellent discussions and a lot of very good questions. Are we ready to proceed in addressing those three sub-bullets? Any concerns from the committee? Let me phrase it this way; any concerns from the committee in considering these projections the best scientific information available?

DR. REICHERT: No, I do not, but I think it would be good to include the comment that John made earlier about the uncertainty and whether or not the differences between some of the scenarios we feel are real or not; but other than that, I have no heartburn.

DR. BARBIERI: By the way, that goes to the heart of the third sub-bullet there; does the SSC have any other guidance for the council on rebuilding strategies? We don't need to discuss this explicitly right now; but as you see our draft report, add some language there, if you can, to sort of help explain to folks some of these uncertainties, some of these issues with very small F values and perhaps the relative efficacy of these different rebuilding strategies or the lack thereof.

DR. IRWIN: This might be more of a comment for us to think about ourselves; but when we talk about uncertainty, especially if we're using it to somehow condition some information or passing along, uncertainty could bear upon us in two different ways. One is that it is just acting as basically a scalar. We might get a very good projection, but we're just off by a certain amount because of something we haven't accounted for.

But all of the relative performance of the different options wouldn't change at all; and so whatever option we think is best or most likely to achieve whatever fisheries' management objectives there are, none of that ranking would change based on reducing that uncertainty; and that is different from reducing an uncertainty that actually would shift the performance of different options.

If an option is not robust to a certain form of uncertainty, then it might go from being the top ranked option to a lower performing option; and so now you're shifting the relative performance of the alternatives rather than just what specific performance do we really think that option will achieve? I sort of view it is more important at this stage to figure out which of those options point us in the right direction and then just be cautionary that we can't exactly predict the future. Uncertainty can definitely come in those two different ways; and I think it is important to keep them distinguished.

DR. BARBIERI: Yes, excellent point. John Boreman.

DR. BOREMAN: On that first bullet on the screen, I think, Mike, you want to say these projections are considered the best scientific information. I don't think we can say anything about uncertainty by definition.

DR. BARBIERI: I personally think that we have had quite a bit of discussion and we have a lot of good information, but let me approach the committee one last time regarding additional comments, opportunity for input and rebuilding strategies or uncertainties in a way for us to beef up our report in developing a narrative to explain what we reviewed and how we are providing advice to the council.

Well, seeing none, I think we are ready to finish this bullet. We still have to make some comments on the methodology for setting the recreational ACL in numbers as part of one of our action items here and perhaps provide some additional comments on the document. Given the extent of the discussion we had so far, let's have a 15-minute break and reconvene here a little before 11:00.

We are going to get back to hogfish. We are still discussing hogfish issues. We have some action items to finish on this; but any discussion, now that we had the break, on any of the previous items is still game.

DR. SCHUELLER: I am guessing that the distributions around these different scenarios is narrow given the uncertainty that was used, which gives us sort of impression that we're more certain than we actually are. I just want to put that on the record. But then at the risk of actually making a recommendation, the options that were up there I guess; my thoughts on it are that maybe they should go with a rebuild time of ten years since it is allowed for within the Magnuson Act.

Then if they follow the ABC Control Rule that 72.5 percent probability of rebuild would be – I mean, it seems like a straightforward standard recommendation that the SSC could make based on what has been done in the past.

DR. BARBIERI: That is an excellent recommendation, and Myra was shaking her head back there. This is the council's preferred right now; so basically this is the kind of thing that they are looking for is if they chose a preferred; do we have any concerns on the technical issues or all the science backing of that information that is going into that?

If we go back to our Overview Document Item 9.4, which are action bullets; we have decided to postpone the second bullet discussion until tomorrow; but we still have Bullet Number 3, comment on the appropriate methodology for setting the recreational ACL in numbers. We had that presentation yesterday from Mike Errigo that discussed some of the general concepts and parameters behind the catch advice in numbers versus pounds.

You may remember that yesterday during Mike's presentation he brought up specifically the fact that one of the reasons for us to be discussing this item is because the council has expressed interest in setting forth a catch level in numbers, an ABC number or ACL in numbers for the recreational sector with hogfish; so there are some sub-bullets to help us think about this issue. Should the ABC be set in numbers and the commercial ACL be converted to pounds or should the ABC be set in pounds and the recreational ACL converted to numbers?

Also provide any guidance on how or whether to address sector allocations as a result of setting the ABC in numbers and in case that methodology is chosen. Again to refresh your memories, the council is not asking us to weigh in on the actual allocation. It is really just asking for us to provide review and guidance of the methodology being used to set the allocations. With that, we're going to open up for comments or concerns.

DR. ERRIGO: I can help with a little more background and clarification. In terms of the allocation, currently they have an allocation set for hogfish for each of the stocks. It is calculated based on the landings in pounds. If the ABC is set in numbers, you may want to comment on the fact that perhaps saying the allocation using landings and pounds may not be appropriate and perhaps numbers should be used unless you don't think that is appropriate.

Then for setting the ABC in pounds versus setting it in numbers and which way to convert, in particular hogfish was one of the ones that were particularly poorly sampled by the recreational sector. Commercial sector sampled almost 200 times higher than the recreational sector did in terms of the landings for hogfish, which is significantly higher than almost all the other species that I showed. I can pull up those tables if you want to see anything.

DR. BARBIERI: I do think it would be good. I guess you have your presentation handy that you can put up there, because you had some tables and some quantities that I think would be helpful for us to see. Mike, given the context for this discussion, you had before some bullet points that were trying to basically clarify some of these issues.

DR. ERRIGO: Are you talking about how to calculate?

DR. SERCHUK: With Amy I am trying to look at some of these numbers and average weights. It is clear that the recreational sector has a much less sampling intensity. The problem that I have with that is we're between a rock and a hard place. We either use what we have, which is poorly estimated, or we go to use the commercial average weights.

If there is a large difference in the mean weights between that landed in the commercial fishery and that landed in the recreational fishery – and let's say it is a factor of two. There are some cases where it is that large – the average overall is I think 4.3 pounds in the recreational fishery and 7 or 9 pounds.

Then if you use the commercial weights, what it means is you're going to reduce the numbers by half of what you would have done had you used the recreational data. I think we've got to be very careful about this, because we're dealing with information that is poorly sampled; but we're dealing with a completely different selectivity in the commercial fishery.

I don't have the answer, but you can think about the impact, and the impact is that if the commercial fishery takes on average a much larger-sized animal than in the recreational fishery; applying that mean weight to any numbers in the recreational fishery just means it is going to have an impact, and it could be a very large impact.

DR. BARBIERI: These are the types of comments and the type of discussion that they are looking for. They are not necessarily asking us use one or the other and tell us which one to use; but to let them know that there might be some concerns given the data, given the sample sizes, given differences in the fisheries that they need to be aware of, because otherwise they might end up in a place that they didn't mean to be.

DR. ERRIGO: I just want to ask maybe for clarification. The idea is not to use the commercial average weight to convert the recreational. It is to use the commercial average weight to convert the commercial. If you set the ABC in numbers, take the commercial's portion of that and back-convert the commercial's ACL to pounds using the commercial average weight and leave the recreational sectors ACL in numbers.

DR. SERCHUK: How would you get the numbers?

DR. ERRIGO: Well, for the Florida stock the projections are in pounds and numbers; so you just take the numbers instead of pounds.

DR. SHAROV: Are we talking here about specific stocks or species or are we talking as a general approach, first of all?

DR. ERRIGO: Just hogfish.

DR. BARBIERI: Right now just hogfish. We had the presentation yesterday that was discussing all of this in general. This was an introduction to this topic; but right now this action item that we're addressing is specific for hogfish. I see our council liaison approach the table.

MR. HARTIG: Well, as long as you cleared that up for me, my comment might not be – but to Fred’s comment about where the numbers come from; in the assessments I guess – Erik us here, he might be able to chime in – a number of times in different years you don’t have enough of the recreational samples to actually get a weight; so you plug in commercial values at certain times through the assessment.

You’re absolutely right about what you were saying about, yes, the commercial numbers, as they may not relate to the end point, they are used in the assessment to derive the numbers. They’ve been used. I really appreciate your comment, because that is something that will help us make a decision.

DR. SERCHUK: Just one point; in the projection tables that we have, the summary tables, I know that these are aggregated. I know he said it was done by sector; but it is not clear what numbers are imputed and what numbers were not imputed. We have a thing in yield and we have a table in numbers overall; but that obfuscates a lot of details that are going in in terms of imputing mean weights from one to the other, and that is what I’m concerned about. I am not really quite sure.

DR. BARBIERI: You mean going back to how the assessment was?

DR. SERCHUK: No, I’m doing the projections now.

DR. BARBIERI: Just the projections. Dustin, can you help?

DR. SERCHUK: I’m looking at all these projection tables that give F, SSB, probability, biomass, yield in pounds, and yield in numbers. I don’t know how actually the pound and numbers came from.

MR. ADDIS: The pounds in numbers come directly from the report output of SS3. I would have to read the stock assessment report again, but I’m sure there was some sort of conversion that wave used.

DR. BARBIERI: Another complication is that the lead assessment scientist for this got another job and left the agency; so eventually we’re going to have to go back and look at all of this. Dustin and Mike Murphy at FWRI have kind of taken up the code and have proceeded in providing the projections. This is the process that has been taking a while, and they have all of those things I think correct because we have reviewed all of this. But the issue is it is difficult without going back to the assessment to find some of the history about which values had to be imputed, which values we actually had good sample size and enough to come up with these estimated quantities directly; but as far as those outputs of the projection runs that were run in SS3, they came out in pounds and in numbers of fish.

For the recreational sector, considering that the assessment was parameterized correctly, and that how those lengths and weights and all the information there was inputted correctly; we should be okay. The thing is how do we then go for output? These outputs are for both sectors combined and they need to be broken down to those two.

DR. SHAROV: In terms of hogfish, as I recall about 90 percent of the catch is recreational and about 10 percent commercial. Recreational catch is measured in the numbers of fish. The assessment model is consistent; that is, it models the changes in the population size in the numbers of fish; and then the total biomass is then estimated by applying appropriate length/weight relationships.

Well, it would seem logical to recommend setting ACLs in numbers of fish for the recreational component as it eliminates a component of uncertainty related to weight at size or weight at age and a small sample size in the recreational fishery. I would make this a recommendation.

DR. BOREMAN: Yes, Alexei stole my thunder, because I was going to suggest the same thing that if you have nine times as much recreational catch as you do commercial, trying to have a case where the tail is wagging the dog here; that you want to minimize the sources of uncertainty. Numbers is a logical choice.

DR. BELCHER: Well, even to the degree what Mike had showed us yesterday, too, as far as that actual sampling for weight within the commercial sector; not that it is a high, high number but it does show that there is at least some degree of larger sample size associated with that. That conversion then for that number to a weight for commercial seems a little bit less uncertain than what it would be to go for the recreational to weight.

DR. ERRIGO: For hogfish it is 132 times more sampling in the commercial side than the recreational side. That is the largest one of all the species I looked at.

DR. DUVAL: Just a quick question for Mike; Mike, I didn't see golden tilefish in the chart of species that you looked at. I just don't see it in the presentation and maybe I'm missing something.

DR. ERRIGO: I didn't calculate that out, because there is almost no golden tilefish that show up in MRIP. There weren't any in 2013 or 2014, so it would have just been zero.

DR. SCHUELLER: It seems to me that there are some underlying assumptions or values being named in the assessment and the projections to go between the two metrics. I guess my suggestion is to be consistent with that as we go forward. Now whether you use numbers for recreational and pounds for commercial, they can make that decision; but I think there needs to be consistency with what is in the assessment projections with what is going to be used for those calculations; whatever that may be. I don't know what it is based on what we have.

DR. BARBIERI: The assessment projections are provided for both sectors, and that is the problem that we're facing here is that we have in numbers and pounds projections that were made for the fishery as a whole with the different sectors all imbedded there; but now the council is thinking about splitting the metrics that are used for commercial and recreational.

They're asking us are we potentially increasing the margin of error, the uncertainty? Are we going to end up with something weird here because of that conversion or are we okay? It is much easier for us to set this in numbers for the recreational sector, but we want to consult with you first to see if you have any technical concerns with this; and if so, what are they?

DR. SCHUELLER: I guess for me this is the way projections are set up for menhaden. We have information that goes in. I could tell you in metric tons what each fishery was taking, which then could be converted back and forth. What you're saying is you're not doing that; you are just averaging over everything in those projections.

MR. ADDIS: To my understanding, there is an internal conversion like in the model. The model output is in metric tons which I then convert to pounds. Numbers are an output of the model as well.

DR. SCHUELLER: I know, but that is not what I'm asking. What I'm asking is I can get total metric tons out of my projection, but I can tell you the bait south, bait north, reduction north, reduction south; each had this much. Then there are some internal conversions within there.

MR. ADDIS: The output shows you all the landings, all the projections by fleet and we combine those.

DR. BARBIERI: This is the level of consistency that you were saying, Amy, that whatever is coming out of the output report of SS3, if we already have those conversions done internally; that we just use those numbers that come out there, which already come out in pounds and in numbers.

MR. ADDIS: Metric tons.

DR. BARBIERI: Metric tons and numbers, mass and numbers by fleet; but this would be a good way for us to then separate the sectors.

DR. SERCHUK: I understand what has been done. You can take the total catch, you can divide it in pounds and you can divide it by the total numbers. Let's for the time being assume that it is all recreational, because it is down there and you're going to get an average weight for fish. If you go to the projections, you can look at what is the total number in pounds in the yield and what is the total number of fish. You can get also an average weight per fish.

It is important then that we have a check on how robust setting a TAC or an ACL in numbers is relative to what we have projected the average weight for that sector to be. If the average weight in the projections is not realized; that is, if the fish are smaller; that means a higher fishing mortality simply because you expected these fish to be two pounds apiece and now they're one pound apiece.

I still think no matter what we do, if we set it in numbers, which may be the easiest thing, you still have to have some way empirically to see whether you're on track. Not only just the numbers, because the numbers are only going to be one metric; you have to see that the average weight for that sector follows what you thought it was going to be. This gets back to the point I raised yesterday, it is still important to get information on the average weight in the sectors because that is what we've projected that to be when you go up.

For example, just looking at now 2013; just dividing the pounds, it was 2.5 pounds per fish, then it went down to 1.9, then 1.9, then 2.0. Then the first year of the projections it goes up to 2.14 and

it keeps going up, 2.28, because you are getting larger and larger-sized fish. If that metric is not followed in terms of what we see in 2017 and 2018; the fishing mortality is going to be off.

DR. BARBIERI: Before I go to John Boreman, since Dave Van Voorhees is here, but just to refresh my memory, the scenario that Fred described is pretty much what we were observing, differences between average weights that was estimated by the assessment for Gulf red snapper and actually what was being realized at the dock by the survey.

It was because the data series were being really informed by this historical pattern in the fishery; and because the fishery was changing somewhat over time, there was a difference. When the council over there asked us to look at those numbers versus pounds as well; there was a difference that would come up with something different.

DR. VAN VOORHEES: What was the question?

DR. BARBIERI: The question is was there a difference between the estimated – can you confirm that or am I misremembering that there was a difference in the mean weight of the fish coming out of MRIP versus what was the mean weight of fish estimated by the assessment in these projections?

DR. VAN VOORHEES: Related to this topic, this may not be the answer you're looking for, but I know I've had discussions with Rick Methot about the use of mean weights for recreational numbers. The annual catch limit that is set for a fishery takes into account a certain mean weight in converting a recreational number or catch number into weight.

Usually what is done is an average weight of the most recent several years is used to convert the number into a weight, a target that is a weight target. When we're actually getting estimates in a given fishing year that are being compared to that target, the question is should you be actually comparing numbers to a numbers target?

Certainly, it sounds like there has been some discussion of doing that; which seems very reasonable to me; but if you have a weight target; then how do you convert the numbers that you're generating into a weight? Do you use the actual measures of average weight for the current year or do you use the same conversion that was used to set the target? I think it is an interesting thing to discuss.

I don't want to say that I know the answer, but I know that it seemed reasonable to me that the same adjustment that is used for setting the target should be used for adjusting the numbers to a weight in monitoring the catch relative to that target, because basically you're putting everything in terms of numbers by doing that. But there has always been an interest in using the average weight for the current year. The problem we have sometimes in recreational surveys is we don't have enough actual observations to get a really precise measure of the mean weight of the fish for the current year.

You can obviously get a much better measure of mean weight if you're using several years' worth of data from previous years in coming up with that adjustment factor. It is a question I think of precision and accuracy. At any rate, that is what I can say about that particular topic; but in terms

of the comparison in the Gulf to red snapper, I am just not familiar with how that comparison came out.

DR. BARBIERI: It was very much what Fred said; that basically the weight of the fish were changing and what had been projected from the assessment was no longer representative of what was actually showing up at the dock. There were different conversion factors depending on whether you used the observed values versus the values that were coming out of the assessment.

DR. BOREMAN: I was just going to say that what Fred is describing as a caution can be also characterized as a rumble strip. I think that is philosophically what we're talking about here where you would monitor the average weight just to make sure that you are not seeing a trend of continually increasing size, or whatever. If you are, it is going to set off some bells and whistles to go back and take a hard look at the whole basis for the assessment.

DR. SHAROV: If we had sufficient number of weight measurements, we wouldn't be arguing about this because then it would be not an issue. You could have a quota in numbers and weight if you were confident in your weight estimates. The key problem is the lack of sufficient number of weight samples.

That is what Fred is talking about, so we should be making recommendations that if we are to use the biomass as well; that is what we need. We need an improvement in terms of the sample size of weight measurements. If that is not possible, then we should focus on numbers.

MR. CARMICHAEL: It would seem if you have this issue where the projections expected an increase in average size in the catch and you weren't observing that; then if the fishery under those projections is reaching that landings' level, it is killing more fish to do so, which is the mortality problem; so regardless of how the council specified the ACL, whether it is in pounds or numbers, that potential problem is happening because there was, at least from a weight perspective, some selectivity trend that was going to happen and it didn't.

I sort of come back to that. It is like a lot of these concerns are big; and if there are selectivity changes happening, they are going to be happening. I kind of like the idea that this is a rumble strip and something to monitor, as both John and Fred have captured on. You are pointing out something that we should be observing to make sure that what we've projected is actually happening in the fishery; and if not, we should be aware, because it could be an explanation for why we don't get the response from the fishery rebuilding and such that we expect.

DR. SHAROV: Certainly, both the model and the projections assume certain selectivity occurs. That is the caveat that maybe also is worth to mention; that is, the projections would be good so far as if the size preferences will not change that; its selectivity stays the same. Therefore, generally if regulations remain the same, it would be reasonable to expect that the selectivity remains the same and the projections would be reasonably good.

But if we're looking at like we looked earlier today, proposed significant increases in the minimum size, for example; that will wreck the whole projection thing and therefore using numbers as the

ACLs would be difficult or at least adjustments would have to be made to account for the change in selectivity size.

DR. BARBIERI: Did we capture that, Mike, because I think this is exactly the kind of narrative advice that they are looking for.

DR. ERRIGO: With changes in management such as that – actually this is something that has been an issue for a long time – whether the ABC, ACL was in numbers or pounds should make no difference. If the selectivity changes; then those projections are pretty much invalidated. That is always a problem.

Actually, one of the suggestions I had made in the presentation I gave was that if we're converting an ACL, whichever one in any direction, then we need to monitor average weight in the sector that we're using the average weight for in order to make sure that it doesn't change significantly; because if it does, then the calculation of ACL may be not quite correct.

In terms of what Dave had said, it's an interesting idea. What it does though is if you use a constant average weight from a particular time period to do both your conversion and to convert all your landings from year to year; you are basically just looking at numbers if your average weight doesn't change at all from year to year.

DR. BARBIERI: Okay, I feel that we have a lot of good material, good discussion and captured a lot of good points on this issue. Are there any thoughts regarding concerns with sector allocation as a result of setting the ABC in numbers?

DR. REICHERT: Well, other than the ones we already mentioned, I think we covered the important concerns we had.

DR. BOREMAN: I am trying to roll my tapes back to figure the ones we've already mentioned. This is sector allocations, though. All right, I'll withdraw, because I was thinking of state-by-state allocations, but that is different; because we already discussed that hogfish tend to be smaller in some parts of the region than others, so I would take that into account.

DR. BARBIERI: That completes 99 percent of our action items for Amendment 37. Now, are there any additional comments that we can provide Myra with regarding the rest of the document?

DR. ERRIGO: In terms of the allocations, would it be appropriate to recalculate allocations based on landings and numbers if the ABC is in numbers?

DR. IRWIN: I may just be repeating some things here, but I am kind of seeing the allocation and the conversion between numbers and weights as sort of an intertwined thing. I am thinking of having two sectors, Sector A and Sector B. If the management decision is they should have equal allocation, just for an example, and then if it was originally set up by biomass, then let's have each get 10 pounds.

But if their selectivity curves are very different, Sector A may get to 10 pounds by taking 10 one-pound individuals and Sector B may get to 10 pounds by taking one 10-pound individual. Their yield is equal in biomass because the decision was to allocate it equally. If you know that conversion between average sizes so you can go from numbers to weight, then you can solve for what the allocation should be if you want them to still be achieving equal biomass; but you're just reporting everything in numbers.

In this case it would be Sector A gets 10 individuals and Sector B gets 1 individual. That is accounting for their very different selectivity curves. I think all the information is there, but the thing we want to be extra cautious about is leaping from one to the other, because that is where you get into trouble if you're really off and you're thinking the collection is one-pound fish and they are really ten-pound fish.

DR. BARBIERI: That is exactly it I think, Brian. I wonder given all the uncertainties that we have in terms of getting good sample sizes apparently from the recreational side – and I think this is one of the concerns that Fred brought up earlier, which is if we're not collecting enough numbers of weights from the recreational side; I mean we're already dealing with a moving target anyway, so it would be advisable perhaps for the council to wait and not set this. No?

DR. SERCHUK: I think a basic precept of any management action is that you have a system that you can do some performance evaluation. In the case of setting it in numbers, which is fine, it assumes a certain average weight, quite frankly. Unless there is a program to get reliable information on that, the management system will be chasing its tail.

It really won't know whether it is performing the way it is expected to perform. I think that is the message that has to go forward. That is why I was concerned about just going to numbers without having a system to check on it. It is not because I want to incur more monitoring costs. It is because I want to ensure that whatever plan goes forward has a performance metric that can be used to evaluate whether the council is actually going to attain what it hopes to attain through its management system.

I think that is the strong message that has to go forward. I think any management wants to know – we set out in this course of action, we have this desired result, and we want to know the waypoints to make sure that we're going to get the result that we desired in the time that we desired. If you don't have the data to do that, quite frankly, you won't know where you are.

You are lost; you don't have a road map. That is why if the recreational sampling has been poor or limited, it needs to be improved not because the scientists want it improved, simply because we want to make sure the management system attains its goal in the expected duration.

DR. BARBIERI: Yes, very good point, Fred. I think this summarizes it well. We're going to have an opportunity as we get a draft report circulated later this week or early next week to sort of beef this up a bit more and make the argument more complete. I think this completes Agenda Item Number 9. Considering the time is a quarter to noon; I suggest that we break for lunch now and then we reconvene here at 1:00.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Crowne Plaza, North Charleston, South Carolina, October 21, 2015, and was called to order at 1:00 o'clock p.m. by Chairman Luiz Barbieri.

DR. BARBIERI: We are ready to get started for the afternoon. Thank you for all the great discussion and all the points during the review of Amendment 37. The next item on the agenda is Regulatory Amendment 16. The only action item required now is review and comment. This is the final review for Snapper Amendment 16.

I would imagine that final action will be taken in December. This is to give us an opportunity – and it is not a requirement, but it is an opportunity for the SSC to provide any additional comments or guidance to the council regarding Regulatory Amendment 16. I don't know if we have an introductory presentation.

DR. CHEUVRONT: You looked at this at your April meeting and in your October meeting of last year. The only thing that has happened since the April meeting is that a couple of additional alternatives for the proposed closed areas were introduced; and in fact at the September meeting council chose one of those alternatives as their preferred.

Basically what they're trying to do is to allow a black sea bass fishery to occur during the wintertime. Currently the pot fishery is closed from November 1 through April 30th. The reason for that is because of potential interactions with North Atlantic Right Whales. There has never been a documented interaction between black sea bass pots and a North Atlantic Right Whale; but the potential has existed.

There have been some interactions that have occurred that couldn't specifically rule out black sea bass pots. The possibility is it could have happened that nobody knew. The reason why this closure was put in place so quickly by the council was simply because there was an increase in the ACL. There needed to be a new biological opinion for the snapper grouper fishery; and the way to get the increased ACL to the fishermen was they went ahead and put in a pot closure at that time.

So now what the council is doing has gone back and tried to figure out a way to allow pot fishing to occur during that time period again and still provide protection for the North Atlantic Right Whales. Their preferred alternative is this new Alternative 11. What that basically does is off of Georgia and Florida it says that you can't use black sea bass pots from November through April within 25 meters of shore. That is basically again to protect the whales.

Well, the whales migrate from New England down to primarily Georgia/Florida, but they do go back and forth a fair amount. It is not just all pregnant females that come down. There is a fair amount of traffic that is coming, including off the Carolinas. The alternative that the council chose like I said is 25 meters off of Georgia and Florida.

During the month of November and the month of April it is at 25 meters as well off the Carolinas but 30 meters the rest of that time. That closed area encompasses about 96 to 97 percent of all

known North Atlantic Right Whale sightings at any time. The idea there is let's just keep them separate. The fishermen are okay with that.

If you'll recall, there are now about 16 or 17 different alternatives and subalternatives; and when you consider that there is only 32 endorsements in this fishery, that's one alternative for every two endorsement holders. I'll just leave it at that. As somebody who was very involved in that analysis for the last year, a lot of effort went into that over the last year for 32 endorsement holders.

The council has come up with a solution that represents a compromise. There were some fishermen present who have said, "Well, this is what we're willing to do." The Protected Resources folks were happy with this choice as well; so this is going to turn out to be a compromise.

It is going to be a hard trip for some fishermen because there is some variability in how people participate in this fishery. Those with some of the smaller vessels are going to have a little more difficulty and especially in the wintertime off the Carolinas it is a little rougher fishing, anyway. Now that they're going to be forced out to 30 meters or more, it could be difficult. Some of them may not be able to fish traps at that time.

Some of the guys are also saying the weather is bad anyway, we only get a few trips during that time of year, period, so they may be a little less affected than was originally feared. The second action that's in the amendment is some gear-modification things. Things that the council considered were weak links on the traps that would allow the lines to break away more easily.

Currently the weak link strength is 600 pounds; and they considered a 400 pound reduction in the weak link. They also looked at some issues with breaking-line strength and considered some reductions to the breaking-line strength. As part of this compromise to move the traps further offshore in rougher fishing conditions, the council said, well, perhaps we don't need to do those things because we're already separating traps from over 96 percent of the known North Atlantic Right Whale sightings; so that might be a bit of overkill.

To help prevent gear loss, they considered maybe we don't need to do those reductions. However, one thing that the council did decide as a preferred alternative is right now from – there is no easy way to describe it because in the Atlantic Large Whale Take Reduction Plan there are several different gear-marking requirements that are required on gear based on spatial location of the gear; and it doesn't line up exactly with what we have in the South Atlantic for black sea bass pot fishing.

There is a little bit of variability by area; but they're all required to have a 12-inch colored band three places on the buoy line, at the top, the bottom and the middle. The problem is that even if they were to recover gear with that current color scheme; they would not know exactly which fishery it came from.

The fishermen themselves said, "Well, we think ours is a very clean fishery. We don't think there is an interactions occurring; let's come up with a scheme that will allow us to identify these gear; if there is a gear that is recovered; does it or does it not come from black sea bass traps." The new requirement that the council voted on to include will be to add an additional 12-inch purple band next to each one of the other bands that is already on the buoy line.

That way if a line is recovered, they would be able to tell for sure whether it belongs to a black sea bass trap or not. From an economic perspective, I think I calculate out the entire cost to the fishery as being roughly 400 and some odd dollars to all those 32 fishermen together – is all it was going to cost them to do that marking.

In terms of allowing the fishery to be prosecuted now even on a limited basis in the November through April time period, it increases the expected economic value of the fishery by only about \$50,000; but what it does is it shifts some of the landings that were occurring in the hook-and-line part of fishery back to the pot fishery where historically the pot fishery had been about two-thirds of the landings, hook and line was a third, and now it has reversed because of the closure.

None of the alternatives would get it back to that historical proportion between the gear sectors; but this restores it back probably closer to 50/50 between the two gear sectors at the best-case scenario, or maybe 40/60 in favor of hook and line; but it does give the pot fishermen some opportunity to get back in there at a time when the fishery is more lucrative to them economically.

They really wanted that November into December fishery because that is where they make a fair amount of money. The price per pound is much higher during that time. The fish are of higher quality. There were some compromises that went back and forth on this; but that's kind of where they are now. As we said, the council is scheduled to vote this up or down in December. Actually in September they have their preferred alternatives and we were given direction to present them with a final document in December. That's where we are.

DR. BARBIERI: Let me open it up to the committee for comments, questions or suggestions regarding Regulatory Amendment 16. Jeff.

DR. BUCKEL: Thanks, Brian, for the update; and I'm glad to hear that there was a compromise reached. I think for the reasons you mentioned it is a good thing for the fishery. A couple of things just to get on the record for having more pot-caught black sea bass in the commercial fishery is it is a very clean fishery.

There is less discarding compared to hook and line; and then those fish that are released that are too small, there is less of that because of the selectivity of the traps; but those that are too small have a higher probability of living because they don't have the deep-hooking. A couple of other things that are win-win.

DR. BARBIERI: Any other questions or comments? I guess not; I think the committee is satisfied with the direction of this from a scientific perspective and no major concerns that we feel can be resolved at this point.

DR. CHEUVRONT: There are lots of comments that this SSC had given over the last year or so on this; so there really wasn't anything new that needed to be added; just the decisions had been made and we're just updating you on what had been done.

DR. BARBIERI: Okay, moving right along, Agenda Item 11, we're going to review a similar but different System Management Plan. This one has to do with Deepwater MPAs that have been set

up as part of Amendment 14, I believe; and Chip is going to give us an overview of those. This is Attachment 17 as part of your briefing book. We don't have very specific action items to review other than review and provide comments. This is actually expected to be approved by the December 2015 meeting; so an opportunity for input here before final action.

MR. COLLIER: The Amendment 14 enacted the Deepwater MPAs; and those became effective January 2009. I have the eight MPAs listed up there; the Snowy Grouper Wreck; the northern South Carolina MPA; Edisto MPA; Charleston Deep Artificial MPA; Georgia MPA; North Florida MPA; St. Lucie Hump MPA; and East Hump MPA.

These have been in place for a little while longer; however, we did not have a management plan to figure out are they being effective. What we want to come back with to the council and also get your comments on this is how do we evaluate these Deepwater MPAs. This is what led to the System Management Plan for SMZs yesterday was recognizing that we didn't have a way to rate the overall MPA functions and so we came up with the Deepwater MPA.

While we were working on that, we also worked on the SMZs. Going through, it is going to be structured very similarly. It is also going to have some of the same text in some parts because they are very similar. The goals and objectives of the two amendments are different; and we try to focus the system management plans based on the goals and objectives listed in the actual amendments.

The goal and objective for this one is to look at achieving a more natural sex ratio, age structure and size structure while minimizing economic and social impacts. It is a little bit different than the spawning SMZs. We are going to be looking more at abundance of fish, the size of fish and the age of fish while considering some additional socioeconomic impacts.

The species in this are a little bit different than the species that are listed in the SMZs. The species for this are warsaw grouper, speckled hind, snowy grouper, yellowedge grouper, misty grouper, golden tilefish and blueline tilefish. When you're thinking about this overall structure for the Deepwater MPAs, consider those species. They all have very high discard mortality.

When the amendment was being developed, they were all overfished or overfishing was occurring. Since the amendment has become finalized, golden tilefish is actually no longer overfished or overfishing; so that species recovered. Yesterday when I was talking about the overall recovery of a stock, I kind of mentioned are these MPAs functioning to actually recover a stock.

What I'm thinking more along the lines of – and I didn't vocalize it well yesterday – is the overall management program making the stock more sustainable or improving the stock; because this is just one little aspect of the overall management program for any single species. Going to the enforcement; I believe these enforcement recommendations or actions are all similar to the SMZs.

You guys didn't really have any comments on the enforcement side of things; are there any comments today in regards to monitoring and enforcement? One thing that did change since 2009, Florida had modified their actual distribution of assets or vessels; and so they feel enforcement of the Deepwater MPAs off Florida is much better.

We also got rankings from the Coast Guard in the most recent version of this. They listed the Snowy Wreck off North Carolina as moderate. The three MPAs off of Florida are rated as high for enforcement; and then the other ones remain low.

DR. BARBIERI: Chip, just for the benefit of our new members; do you have a figure that would have an overview – figure or table or the overview of the sizes and locations of the MPAs?

MR. COLLIER: I don't know if they're all together. There are figures at the very end that actually has all the MPAs. I can give you the sizes; I have those written down; but I don't have a graph that has all the MPAs or a figure with all the MPAs together.

DR. BARBIERI: That's fine; anything ballpark; basically just because of the discussion yesterday about size and location and all of that just to give the new members some references.

MR. COLLIER: The sizes of these MPAs range from 8 square miles to 150 square miles; so they're much larger. It is actually encompassing some of the potential migration and movements of the fish. When you're considering a 150 square mile, it could potentially protect that fish through its entire life range; whereas, the SMZs are only protecting an area where they're likely to be spawning; so it is a little bit different.

DR. REICHERT: And also as a reminder, this does include the Deepwater Artificial Reef MPA off of South Carolina.

MR. COLLIER: That was listed in there; wasn't it?

DR. REICHERT: Yes; but that is kind of a different MPA than you traditional MPAs; so I just wanted to remind everyone of that.

MR. COLLIER: And that's the one in Amendment 36 that's being slightly moved. Okay, if you look to the right of the screen; that is the one that actually has them. The version I have pulled up actually doesn't pull up all the figures.

DR. ERRIGO: This was Snowy Wreck off North Carolina, 150 square nautical miles.

DR. BARBIERI: Right; the smallest one was eight square miles.

MR. COLLIER: St. Lucie Hump off of Florida.

DR. ERRIGO: Charleston is 21 square miles; that's the Georgia MPA, 100 square nautical miles. The Georgia one I believe is the one set up for tilefish; so it is mostly muddy bottom. Florida is 100 square miles; St. Lucie's Hump is 8 square miles. Here is the East Hump MPA, which is 50 square miles.

MR. COLLIER: And another thing to note from this figures, they all have been mapped for low-resolution bathymetry. They are still working on high-resolution bathymetry to get some of the specific features within each of the MPAs; so that is going to be a process. That is going to be

developed through time. Every year the Southeast Fisheries Science Center is mapping more and more of those areas, but it is a long and slow process.

DR. REICHERT: I have a question if anyone else has a problem with the PDF. There is probably about ten pages I cannot read in my PDF; and I'm wondering if that's just a corruption of my file or other people have the same issue.

DR. SCHUELLER: I had that problem originally and then I asked for a new version. That was sent out and then that new version worked.

MR. COLLIER: Apparently I'm still working on that old version. With the goals and objectives listed early on in the document; were there any questions or concerns with that? The goals and objectives focused on some broad topics ranging from adopting the SMP basically – that was Goal 1 – and developing the SMP. Two is looking at biological benefits of the Deepwater MPAs all way through enforcement and then to outreach as well. There were seven goals altogether.

DR. BARBIERI: Jeff, if you don't mind, if you could go to PDF Page 4, maybe we can just review briefly the main goals. We don't have to go into the more detailed ones, but that instigate a bit more discussion.

MR. COLLIER: Goal 1 is adopt and utilize an effective process to evaluate and refine management of Deepwater MPAs. Goal 2 is biological benefits maximized; Goal 3, adverse social and economic effects minimized; Goal 4, enforceability and compliance within the MPA is enhanced; Goal 5, research and monitoring capabilities maximized; Goal 6, research and monitor impact of invasive species enhanced; and Goal 7 is environmental awareness and knowledge about MPAs improved.

One thing that is kind of Goal 5; it is recognized in the South Atlantic that we are kind of fund-limited as far as doing research, and that's why we try to – that was one of the goals actually listed in the amendment was to maximize the fishery-independent data that is being collected. That is definitely something that the council wanted in the SMP and also in the amendment.

DR. BARBIERI: I know that we had a lot of discussion about the System Management Plan for Amendment 36 yesterday; but any additional input that the committee would like to provide regarding the goals or implementation of this plan? Amy.

DR. SCHUELLER: I guess overall I'm happy to see there are goals and objectives. That is a great step. What I wonder about is what are the actual performance metrics that will be associated with those objectives and then whether or not we're actually going to be able to disentangle those performance metrics from MPAs versus environmental things versus what is going on in the fishery. Some of these I'm just concerned that we're putting them in here, but we really won't know whether or not it has anything to do with the MPA.

MR. COLLIER: Some of those metrics are going to be similar to what we discussed yesterday as far as some of the abundance metrics. For of these species it is down to its presence/absence; do

we even see the species within the MPA? They're just not that common; and going from zero to one might actually be a significant increase.

Other ones are going to be looking at the actual size structure or age structure and sex ratio; and that's similar what was in the SMZs as well. The metrics within there, whether it is 75 percent of the maximum size or whether it is being compared to inside and outside of the MPA; some of these MPAs are pretty unique where like the Snowy Wreck; that's very different than other places.

It is hard to find an artificial reef essentially in 600 foot of water; and so having a good comparison can be difficult. I hope those are in there. I have developed some of the metrics, but they're essentially the exact same as what you saw in the SMZ one. Some of the action items for this one is determine pre-closure distribution and abundance.

There is some data that has been collected prior to the closure in 2009; and we're working to get all that information together. Obviously, there is no cost to that; it is just staff time putting that all together. Action 2 is going to be maintain an annual program, MARMAP and SEFIS. We need those to look at the data within the MPAs as well as some of the ROV work that is being done. Action 3 is identify fish population demographics within and adjacent to MPAs; that is what I just went over.

Action 4 is locate spawning aggregations of deepwater snapper and grouper species. Action 5 is to track movement of adult fish. Once again, this is looking at improving the age structure and size structure; and so it is mainly concentrating on those adult fish. Action 6 was develop and apply a couple of biological and physical models to locate potential nursery sites. This is going from spawning into location of where these juveniles might end up after they're spawned from the MPAs.

Action 7 is to characterize deepwater snapper grouper species within the MPAs and compare those to reference sites. That work is being done right now. That's a lot of ROV work as well as the mapping from MARMAP and SEFIS. Action 8 is to look at the overall ecosystem and characterize fish communities inside and outside of the MPAs.

Then we're going to go into habitat monitoring, which the first one is to complete multibeam surveys of the MPAs. The second one is going to be looking at areas out of the MPAs. Yesterday we suggested maybe reducing that 20-mile radius to something that might be more manageable for mapping; but once again these areas are much larger than what the SMZs were. Do we want to have comparable areas to what the actual MPA is or just a potential buffer around the MPA?

DR. REICHERT: Spawning aggregations are mentioned in four and seven; and I would suggest to make it a little broader than aggregations. Is there an increase in spawning activity whether or not it is an aggregation or not is occurring in the MPAs? That may be very valuable, too, in terms of measuring success of an MPA. I would suggest to make that a little broader. If we can identify spawning aggregations, I think that would be awesome; but I would suggest to make it a little broader than just the aggregations.

DR. SCHUELLER: I was thinking about this sort of outside of the MPA mapping. It is in order to look for more habitat, right, so I guess my thought about it was sometimes there are these sampling programs so you start sampling and you're looking for that habitat sort of random; and once you find it, then you go out from there.

I guess that's my suggestion for how they might operate; rather than just we have huge area, let's just map it all. They might do something where they're sort of randomly looking things, although this logistically probably isn't very feasible, but in my mind it seems like the most reasonable way to go.

Then when you see something, then you would go out from there, but that depends on how the habitat is distributed, right? I mean if it is clumped, that works; if it is not, it doesn't. I don't know that I have a very good vision of what the habitat looks like nor maybe do we at all because it hasn't been mapped very well.

DR. REICHERT: To that point, a lot of the reef fish survey monitoring sites were in the MPAs; and that was part of why those areas were chosen as well as outside the MPA; so we have already a lot of knowledge of the general distribution of live-bottom habitat. That doesn't mean that we know all the live-bottom habitat; but that may help in selecting some of these areas for mapping. That is clarification there.

DR. GRIMES: I was just curious if there is any prioritization of this list of things? It is quite a long list. Some of those things; do you really need to do them for this specific place when other MPAs where people have done research have demonstrated that these things happen? If it works ten other places, do you need to prove it again here? Anyway, it seems like you would really want to prioritize this list.

DR. BOREMAN: A couple of comments. First to Amy's comment; one thing you might want to look for is a slope, because in the Mid-Atlantic what we've found is that slope is correlated with certain kinds of habitat, especially for rough bottom type species. They're at the top of the slope or along the slope; but if it is flat, you wouldn't expect as much rough bottom as you would if it is not flat.

The second is a point that was raised yesterday. I think Fred raised it, too, and it is worthwhile thinking about; and that is not only spawning aggregations but fishery aggregations around the edge of the MPA. Are we seeing the MPAs serve as – as one of my former bosses used to say – crosswalks or just concentrated prey for the predators? Is this a situation where fishing folks know there is an MPA there so they go out and deliberately fish around the edges and concentrate fishing there, which may or not be good, but at least it is worthwhile knowing if it is having an effect on the fishing behavior?

MR. COLLIER: I think that's something that should be in here is actually trying to map fishing effort and figuring out where it is occurring. There is some people working on potentially looking at satellite imagery and trying to figure out where fishermen are or other techniques, whether it is a hydrophone in an MPA listening for vessels. That is another piece of information that we need

to get hold of is compliance for the MPAs. There might be a boundary there, but the fishermen might not be abiding by the boundary.

DR. BOREMAN: Is there a VMS requirement for vessels in the South Atlantic?

MR. COLLIER: The only VMS requirement in the South Atlantic is for rock shrimp vessels. The last action for the resource monitoring is to groundtruth some of the bathymetric data for habitat classification and try to figure out what habitats are supporting some of these deepwater fishes. We are going to add a section on socioeconomic monitoring; and then we have our outreach and education sections that are already completed. Once again, that is going to be reviewed by the Information and Education Advisory Panel at their upcoming meeting.

DR. BOREMAN: I noticed that your socioeconomic section is as long as the one you had yesterday to be added. Oh, yes, we need to think about those folks, too, so let's put something in there. I'm just curious about what you would be monitoring in general for socioeconomics on MPAs.

MR. COLLIER: Well, I am not in socioeconomics; but there are some ways or some papers out there looking at how effective your MPA is and they do have sections on socioeconomics and what techniques you should actually look into in order to figure if it is being effective for that goal. Pomeroy et al, 2004, is one of the documents that we've been citing quite a bit.

DR. BOREMAN: But what goal are you talking about; that's my question? What is the point of monitoring the socioeconomic section?

MR. COLLIER: Yes; within this amendment the goal was to minimize socioeconomic impacts to the fishery and to the fishermen; but if the socio-economists have any comments on things we should definitely include, we would love some suggestions.

DR. CROSSON: I don't see why it has to be negative, the economic effects. If it results in a larger stock over time, then you may see some positive increases and positive economic indicators. Even if fish are just fishing around the edge, they may get larger fish or something along those lines.

DR. YANDLE: This is not an area I've studied; and I know there is a lot of literature out there that should be able to provide some good guidance on what to look for; but again the little bit I've read has suggested that it depends on the species and how territorial the fishing communities are; so what happens to the people who are displaced from usually fishing in those areas.

If they are able to be absorbed into the surrounding area; that definitely helps which would seem to me to be much more the case of the South Atlantic than start thinking about things like lobster trapping. That would seem to be a positive; but it is a whole specialized area in figuring out how to do this, but often, yes, it is like Scott was saying the spillover effect can end up being a long-term even if there is some short-term pain.

DR. BUCKEL: Mine doesn't have anything to do with socioeconomic; so if that is to the point of socioeconomic, I'll wait.

DR. BARBIERI: Ben, are you going to discussion socioeconomic issues here?

MR. HARTIG: I think so; I'm going to give it a shot. One of the interesting things that came out of the Citizen Science Workshop I went to in California six or so months ago was that in Southern California they actually have an MPA Watch Program. Their MPAs are closer to shore so they're able to utilize whole numbers of different people to watch, quote, their MPAs.

They have transects along the beach. They have transects up on the hillside surrounding some of these MPAs. They have pilots that donate time to fly over. They have boats that do these things. They actually document what is actually happening in the MPAs; and they do this with the long-terms impacts of something like what happens if the Exxon Valdez or something like that happens in their area.

They'll have idea of the uses and the value of those MPAs; so that's one thing. From my standpoint, if you develop just an MPA Watch where you had vessels that were able to go through these particular areas and document activities; that would help us in the long term, too, but it would also just have MPA Watch in your mind if there is somebody watching the MPAs besides enforcement.

Now, these wouldn't people who would be doing enforcement. They would be people just documenting what is happening. If you're in there and you're seen bottom fishing, that is something that would in your mind, well, here, if somebody categorized me as being in an MPA illegally.

That is one thing that I think some kind of value for that particular program on our side, some way to develop that. The other thing I was thinking is that a number of vessels are going to be involved in the monitoring through the citizen science part of this; so this is another socioeconomic benefit that we could get from this particular MPA. People will be able to do the research. They get vested in the research they collect; so this is another potential positive benefit that we could get. There are some things that we can get out of this socio-economically, I think.

MR. COLLIER: I did put together a one-sheet piece of paper looking at usage of the Deepwater MPAs because they are Type II MPAs, which means you can still be pelagic fishing but bottom fishing is no longer allowed. Hopefully, that would be a requirement to fill out for the citizen science; and potentially if researchers that working in the area of these Deepwater MPAs, would they be willing to fill out a sheet like that and kind of report where fishing effort is occurring, what potential effort are they doing; are they bottom fishing; are they trolling. That way we would get some information on some of the effort that is going on in these Deepwater MPAs.

DR. BUCKEL: Along this same line of getting effort data, I'm glad to see the action items involving enforcement folks; and so I'm sure they'd be willing – they don't have to be that close but just looking on their radar. If they see folks sitting still, they could get the latitude and longitude off their radar and record that for you. I think that's a great idea.

As the data come in, hopefully, there will be some metrics that show the benefit – showing the enforcement folks the benefit of them being out there and keeping an idea on it. I think that goes

a long way that they feel like, okay, although their efforts are paying off. As some of those metrics come in, if they could be presented to the enforcement agencies, I think that would be another item to put in here.

Then totally unrelated to that, on the identifying features there is, similar to what John Boreman was talking about with the slope is related to habitat features in the Mid-Atlantic; there is a paper that Daniel Dunn – I can't remember the other authors – related different independent factors to hard bottom in the South Atlantic. I know SEFIS has used that.

I'm not sure, Marcel, if you guys have used it to identify new hard-bottom habitats for the video trap program. That may be something you could – and I think he has updated some of that for SEFIS; so that would be something to include in this document as well, some of the factors that were used for identifying those hard-bottom habitats. I think that's mostly on the shelf, but I'm not sure how far out it goes. It is a good place to start instead of from scratch.

DR. REICHERT: To that point, that was that modeling effort that they did, right? Yes, okay. Yes, we've used it in the past, too.

MR. COLLIER: The next part I was going to go over I actually skipped; but it was actually looking at the metrics. We have discussed that some already and I feel like I have a pretty good handle on what you guys would like us to include in there.

The next part is do you guys know of any literature that should be included in the description of some of these habitats that potentially hasn't been included already? I know talking offline there has been some research projects that have occurred; and if you guys could give me those again, I would greatly appreciate it.

DR. REICHERT: Yes; I can look that up for you. The thesis I mentioned yesterday, the comparison, I can look that up.

MR. COLLIER: And, then, Jeff, you said you had some stuff for the Snowy MPA and potentially changes in the size distribution of snowy grouper?

DR. BUCKEL: Red porgy.

MR. COLLIER: Red porgy, okay. George, you had mentioned yesterday that there was work by Kristina Schobernd?

DR. SEDBERRY: Yes; there is a group that are reviewing the old submersible dives on some of these types in the eighties and 2002 and then comparing it to the more recent ROV dives that have been done by Andy David and the folks in Panama City.

MR. COLLIER: Is there any other research that should be included in it?

DR. REICHERT: This year we resumed the short bottom longline survey; so we should be able to provide data as a result of that. That is actually MARMAP and SEAMAP. SEAMAP provided a significant amount of funding for that, too.

DR. BARBIERI: Just in general; we are discussing this and thoughts are kind of floating through our heads. I know that these are different MPA systems, so to speak. One is more inshore and focuses and spawning. The other one is more offshore and focusing on broader protection. The amount of science investment, data collection, science programmatic investment for these two systems is astronomical, needless to say.

A lot of what is being developed here costs hundreds of millions of dollars, really, right; so have you or the council discussed some of this prioritization that Church brought up and also seeing what could be accomplished first? This might be something that the council wants to discuss with funding agencies at a broader level and generate some kind of a coordinated effort, programmatic effort; because expecting folks to get this level of funding for the implementation of these programs I think is not very realistic.

I still think it is important to lay this out the way that you guys have and to set those expectations, outlining exactly, you know, because this provides guidance to everybody. I would recommend development of some kind of an outreach to broad programs going beyond the Fisheries Service that would be tying with the National Sea Grant Program or some other funding agencies that come into play. That funding will be sorely needed.

MR. COLLIER: Yes; I think that's a really good point. We recognize the fact that not all of this can get done and put in a prioritization will be beneficial; but another way to consider this is right now we don't really have a System Management Plan for the research that needs to be done for the area.

Right now it is more difficult for another group to pick this up and say, all right, what does the South Atlantic need for the management of these Deepwater MPAs. This is another way to get that started and potentially somebody cite and say they do need this information to improve their management.

DR. CROSSON: I guess just an overall observation; compared to something like 17B, the Deepwater Closure, which I think also was intended to protect Kitty Mitchell and Warsaw and everything; these are very small MPAs. They're very localized and it is a much more complex problem for enforcement than the Deepwater Closure was.

I'm glad to see something like this trying to at least track how these are working over time and how enforcement is going to be working. I do wonder about the effectiveness of this, but I guess that's the goal of this is trying to find out how well they do work. Yes, even just the knowledge of people knowing that they're there in some of these areas is going to be a challenge. The lack of JEA with some of the state partners is going to be a problem; so I guess we'll see.

DR. REICHERT: Another thing I just thought of especially relative to funding when RFPs come out I think is very important, especially – although these are bigger than the new area that we

discussed yesterday, they are relatively small areas if you look at the overall area. The coordination of effort is probably very important especially if you start collecting again biological samples in these areas. Also in terms of making the most use of the limited resources, I think coordination of those efforts is probably going to be very important.

MR. COLLIER: And I think that's another benefit of a System Management Plan with the annual review and maybe a three- to five-year larger review is to begin to consolidate all the information that is out there and to think about it as opposed to having to come to an SSC meeting and ask if there is more information that is out there.

DR. BARBIERI: Okay, Chip, anything else regarding this item? I don't know if folks have any additional comments or suggestions.

MR. COLLIER: That's all you have to hear from me.

DR. BARBIERI: Thank you for the overview and we will try to articulate some of the points in our report. That brings us to Agenda Item 12, recreational catch estimates for rare species. We had a presentation document and a few summary documents that were e-mailed to the committee. I think John Foster is going to giving that presentation. The action item that we are being asked to address is to review the methodologies presented and comment on their utility in providing more accurate and reliable estimates of rarely encountered species.

MR. FOSTER: First, thanks very much for having me. The presentation I'll go through today is really an extension of one that Dave Van Voorhees gave to the Snapper Grouper Committee at the meeting back in June, I believe. I'm going to go through some of the same material, although I'll give a condensed version, and then I'll really sort of expand on some very, very preliminary work that we've done looking at sort of custom or alternative estimation methods for these deepwater species', alternatives to what we do as our sort of standard estimation approach under MRIP.

The first sort of four major bullets there are things that Dave went into more detail; and I'll just give kind of a summarized overview of; and then really I'll focus in on the last one there, the custom estimation methods. We're presenting these as ways that may improve deepwater species estimates, but really they could be applied to rare events, whatever that might be. Like I said, I'll run through these first one pretty quickly. In general, increasing sample size reduces variance; that's almost always the case.

It is not impossible that you could end up in about the same place whether you increase it or not. It depends on how much more variable the data might be, especially if you're bringing in something that may not have been covered under your original sampling or if you're expanding, say, across years or something like that where the variability actually increased.

But as a general of thumb if you increase sample size, all other things being equal, you reduce your variance. Now, in the South Atlantic MRIP is a number of component surveys. When we talk about increasing sample size, there are a number of surveys you could do that for. In general we'd be talking about doing it for the intercept survey, the Access Point Angler Intercept Survey, or

APAIS, but there are also effort surveys; and in certain sectors perhaps you could also make a gain if you increase the sample size for the effort surveys.

In addition to just increasing sample, which is sort of a blunt instrument that sort of improves things across the board, we can also look at how we might optimize allocation. Particularly in the intercept survey for these deepwater species, if you don't increase the sample at all, you can still do some of this, but you're much more limited in how much sample you can shift.

So things like shifting sample from the shore mode strata to the boat mode strata, shifting sample among sub-state regions; so now under the new design several different states have been further stratified into sub-state regions, basically groups of contiguous counties. I believe in the South Atlantic all the states, except for Georgia, now have sub-state strata; so if fishing activity for these species is concentrated in one area over another, you could shift some sample sort of spatially and perhaps help things some.

Then we also have temporal strata in the intercept design; and you could think about shifting sample among months; if there is a seasonal aspect to the fishery, weekends versus weekdays, the kind of bay/tide strata. Now again with the new design changes we made in 2013, each day is carved up into six-hour time interval strata; and so if, say, the afternoon or early evening time block is more productive for these trips, you could think about how you might allocate samples among those intervals as well. But, again, without increases in sample size, we are limited in how much we can move before we start creating sort of coverage gaps or creating instability in estimates elsewhere.

DR. REICHERT: Can I interrupt real quick? For our benefit, could you tell us what the acronym CHTS, FHS and FES stand for?

MR. FOSTER: Yes, I apologize for that. The effort surveys, the CHTS is the Coastal Household Telephone Survey. That is what is currently used to provide estimates of fishing effort for private boat mode and shore mode. The FHS is the For-Hire Survey. That is currently used in the South Atlantic to provide estimates of effort for the charter mode only. Elsewhere it is also used for headboat effort.

The FES is the Fishing Effort Survey. That is the new mail survey that has been developed, and we will be transitioning to for private boat effort and shore effort. In addition to those, we can also look at some additional changes – or I shouldn't say changes – tweaks, adjustments to the intercept survey design in the form of adjusting the weighting of sample units. The APAIS design uses an unequal selection probability at the first stage, which the first stage is the sort of site, day, time block combinations or site cluster, day, time block combinations.

Unequal probability can also be known as probability of proportional to size or PPS. Each of those sample units has a selection probability associated with it; and it is currently based on sort of an average kind of categorization of the activity levels for those sample units. But, that doesn't have to be; other factors could be considered as well such as levels of desired characteristics; so in this case fishing activity for deepwater species.

That doesn't introduce any sort of a bias or problem for the design. It is not that the selection probabilities have to be perfectly correlated or representing some factor or some dimension of the site or the fishing activity; they just have to be known. The selection probabilities for these first stages just have to be known. They just have to be incorporated into the estimation.

There are a number of different ways we could think about adjusting those probabilities. This approach basically has already been implemented in some states to address other issues such as sort of the geographic distribution of field staff as well in some cases in the Gulf where we had short red snapper seasons we adjusted sample units sort of in a temporal way; so that sample units that were occurring within the open season had a higher selection probabilities than sample unit outside. But, again, we didn't do it in such a large way that we had a drastic shift in the sample.

We had to be sort of modest about how we made those adjustments. It does not introduce any sort of problems with the design or introduce any sort of bias in the estimates. It is perfectly consistent with the design-based sampling and estimation. So sort of along the same idea is, of course, additional stratification.

Adjusting sample unit weights does not require additional stratification; but we can do that. You could think about creating a sort of deepwater sampling stratum which would be comprised of sites that had sort of reliable, predictable fishing activity for whatever your priority species are. As I said, we've already done this in Florida.

We worked very closely with the folks there to identify those sites, create its own sampling stratum and then allocate, you know, sort of carve out samples from the existing strata to populate it. I would say that's working reasonably well. That is not say it would work everywhere. You have to have a reasonable number of sites with the predictable level of activity; but it certainly is worth looking at.

Beyond just what we can do with the existing programs, of course, you could create a specialized program. I am not describe how you would do that, but I just listed a number of considerations for doing so. Right off the bat are you going to go with a survey or a census approach? Often that's dictated by sort of the magnitude of the fishery or what you're trying to measure.

Certainly, there are also political considerations there. A census approach is often more attractive because it is more understandable, for one. It is a larger number of folks. Second; is this going to be an independent program or can it be integrated with existing programs? A sort of default I think has always been to have an independent program; but as resources become more limited, not just fiscal but also sort of human dimension resources. Folks are becoming less and less willing to participate or be happy about participating in an additional program.

To the extent we can limit reporting burden on folks, it is certainly a good thing. Thanks again to Florida, we have a model I think of how we can integrate specialized programs within sort of the existing MRIP Framework. We've worked closed with the Florida folks in their Gulf Reef Fish Survey on the Gulf side to develop adjustments for the general APAIS so that those two programs can be integrated; and you end up with sort of a combined intercept approach and then a separate specialized effort survey.

Again, they can ultimately use data from multiple sources and produce – what we’re hoping ultimately is one sort of best quality set of estimates. What will be the coverage; temporally, spatially? Will it be a single species or multiple species? Catch disposition; will it be landings only; will it try to cover releases or discards? Will biological data be collected?

Motivated collection; increasingly everyone wants to see sort of electronic options. That is the way everything is headed, but a number of existing programs still have sort of catch cards, pen-and-paper methods. Again, will be mandatory or voluntary and lots of cost considerations there. Okay, so now moving to custom estimation, again what we’re looking to do with the approaches I’ll be describing today is increase the precision on estimates by basically changing how we’re using the data.

You don’t get something for nothing. If you did, we’d have already sort of switched over, but basically in this case we’re talking about generally changing the size of the estimation domains. These alternatives look at instead of producing estimates at the current cell levels, wave, area fished, that sort of thing; it is sort of coarsening that up to a level that might produce more stable estimates; but again hopefully would stay at a level that is the standard input into the assessment or for management needs.

These methods can be design-based, which is in line with what we currently do. It basically just means there is no model components. You don’t have any sort of model assumptions that you’re relying on; or, it may include some model components; and that brings with it again model assumptions; and to the extent those hold, you’re fine. If those don’t hold, you may start to introduce bias into these estimates.

These things sort of fall out into two groups. There is sort of the large domain approaches I’ll be talking about today where instead of trying to estimate at a fine scale; we’re coarsening it up and producing the estimates for larger domains. I’ll produce sort of some annual approaches as well as, in this case, three-year estimates.

Then there is a whole suite of estimation approaches, sort of termed small-area estimation. Basically this was initially developed just in general survey methodology to provide estimates sort of at county level or very fine-scale geographic levels. The general approach is that you have your survey estimate that is produced in its standard way; and then you produce an estimate that is coming from a model of some kind.

You take those two estimates and you sort of composite them or produce a weighted average of them in some manner; and that then becomes your final estimate for this small area, whatever that might mean. In our case it may mean the specific rare-even species. Generally these approaches use either external data to produce the modeled component or it may use data within the same survey, but, again as it says there, from adjacent time periods or geographic areas, whatever the case might be.

Once again, you’re sort of balancing this tradeoff between the bias you might be introducing – it is not to guarantee there is going to be bias, but you may introduce bias through the modeling components. You’re balancing that against the gain in precision; so the overall sort of thinking

about a mean square error, sort of the total error picture, the variable error as well as the systematic error, you're hoping that you get a net gain in that reduction in the overall error.

But again, from what I'll show, it does look like we do make gains in precision and stability in the estimates for these species. Here is a table that sort of just gives a quick comparison along several dimensions for the methods that I've just run through. I'm not going to go through all of it. It basically boils down to the old adage of there is three kinds of service, good, fast and cheap, and you can have any two of them.

What I'll be presenting in just a moment is the fast-and-cheap combination; but there are a couple of other important considerations here, which is if we don't have increases in sample size, a number of these options sort of represent tradeoffs. If you want to increase the precision and stability for the rare-event species, you're going to losing precision somewhere; and generally in this case it would be from either shore mode or boat inland species that are generally caught inland and things like that.

As well, we're just limited in how much of a change we can make to the existing design to help improve the estimates for the deepwater species. Then for custom estimation things I'll be going through today, these simple initial approaches you don't get estimates at the same level of resolution as we do now; but again if those estimates aren't particularly stable at that level of resolution, you're not necessarily losing anything.

We've developed a number of annual as well multiyear methods. Again, these are just sort of for illustration purposes. None of these are we recommending for use as is. They would all require additional sort of evaluation and further development. They just give you some idea of the level of change that you might see from going with an alternative approach.

These are all using what I've called the larger estimation domain methods. These aren't really small area methods that could be developed although there will be some modeling components to what I'll show, but they're very simple sort of implicit models. I'm not going to go into a lot of technical detail about these methods. Again, they'd all need to be sort of further refined before you'd want to use them.

On the left-hand side we've got the annual methods. Number one is just the standard MRIP approach, producing estimates at the two-month wave level and then summing them up to the annual level, as is currently done. Method 1.1 is instead of doing that, we're going to calculate the mean catch per trip component or the catch rate component, which comes from the intercept survey, at the annual level instead of doing it at the two-month wave level. We'll calculate this catch rate at the annual level and then we'll expand it by the annual effort; so that's what I mean by larger domains.

Method 1.2; we're going to basically do that same thing; but instead of just using one year's worth of data from the intercept, we're going to use three years' worth of data. This will be sort in a lag approach. For Year "T", we'll use the data from Year "T", T minus 1 and T minus 2, to produce a catch rate for Year "T" and then expand it by the effort for Year "T".

Then the final one there, 1.3, we're just taking our annual catch estimates produced the standard way and just average them, average three years' worth of them for a given one-year estimate; so we just have a moving average. Again, Method 1.2 and 1.3 sort of have some implicit modeling assumptions that are going into them; whereas, Method 1.1 is still sort of design-based. There are no model assumptions there.

On the right-hand side; the first four there, Method 2 through Method 2.3, those are just take what we get out of the annual methods and sum them up for a three-year period; and that represents then an estimate for that three-year period. There is one additional one there at the bottom, 2.4; well, okay, let's expand up even further so now we're going to use a catch rate estimated for a three-year period and we will expand that by the three-year effort; so these are really large domains now that we're producing estimates for.

We're just going to do this at the regional level by mode for three species, blueline tilefish – in all these cases we're just going to look landings. The results are fairly similar for releases, but in the interest of time we'll just focus on landings in numbers of fish. We'll look at the CVs, which are again just the percent standard error a proportion scale instead of a percentage scale.

Compare the annual and the three-year estimates for blueline tilefish, snowy grouper; and hogfish we'll just look at the private boat landings. The story is basically the same there for charter as it is for blueline tilefish and snowy; but there are some important differences as it turns out on the private boat side.

I apologize for the size of this plot; this is landings – this is charter mode South Atlantic annual landings by estimation method; and again landings in numbers of fish. The series with the solid line is sort of standard MRIP estimates summed out to the region annual level; and again you sort of see these large estimates here in the early part of the time series.

I chose 2004 to 2014 just because that's the range of years we have the revised estimates for and just the complete years we have. Again, the solid line is the standard estimates. The series with the red, solid squares would be the one-year catch rate multiplied by annual effort. The green triangles there is the three-year catch rate, again expanded just by an annual effort estimate.

Then the three sort of asterisks is what you get with the three-year moving average of the MRIP catch estimates approach. You see you get pretty sizable reductions with several of the methods. The moving average approach also shows some reduction in these peak landings, but again it is more limited in how much it could actually move. It is, of course, highly correlated with the original estimate series. That's the point estimates. Again, this is just for charter mode.

If we look at the CVs, the table here at the bottom are the actual CVs. The top row here would be for the MRIP estimates, the standard estimates; and then each of the alternative methods below that. The figure here gives you the ratio of sort of the custom CV to the MRIP CV. In the majority of cases we're making sort of noticeable or substantial gains in precision when we go from the standard to the alternative methods or custom methods with a couple of exceptions here.

In general the red bars here, the ones that have a few of the positive values; that's where we were looking again at the annual catch rate multiplied by annual effort. It doesn't do quite as well in reducing variability or increasing precision, which makes sense because it is not using quite as much data as the other two methods are; but again the other two methods are bringing some model assumptions. Yes, they're improving the precision more so, but that comes at something of a cost that would have to be evaluated.

DR. BARBIERI: John, we have a question over here.

DR. SHAROV: There is no explanation – I assume that the bars are alternative estimates all relative to the standard MRIP. Can you explain the different colors of the bars and what the ratio is?

MR. FOSTER: I apologize for that; at some point the legend got cut from this. The first bar in each series; the red bar is for Method 1.1, so that's the annual catch rate multiplied by annual effort. The sort of middle green bar is Method 1.2, so that is the multiyear catch rate expanded by effort. The last bar, the brown bar is the moving average approach, the CV of the moving average approach divided by just the standard MRIP CV.

Values that are less than 1 would indicate that the CV for each of the alternative or custom methods was less than that for the MRIP standard CV. Again, the values are all given down here in the table. In the best cases you're almost cutting the CVs in half. Now, I would say these are somewhat optimistic. Again this is very preliminary and needs a lot more evaluation.

I think for a lot of these rare events that may not be too unrealistic because the CVs are quite high to start with in many cases; so cutting them in half may sound like a lot, but you may still not be all that precise. Going from 1 to 0.5 is a big reduction, but you're still at a CV of 0.5; so it is what it is.

Now, this is also for blueline tilefish. It is private boat mode now and the same legend as before. Here we do see we've got one of these sort of spikes in the landings estimates in 2013. Again, we see the same sort of pattern where all of these alternatives are reducing that spike quite a bit. The moving average approach is still sort of taking that spike and – I don't think I mentioned this moving average approach is sort of using a midpoint approach; so it is using the most recent prior year as well as the next future year to calculate a moving average for the current year.

Basically it just takes a spike and pushes it out a little bit in both directions; whereas, a lag approach would take that spike and kind of push it into the future. At any rate, we're not advocating one over the other. They both have considerations you have to think through. But, again, basically you're seeing a reduction in the outliers.

The other years tend to be similar, more similar when the MRIP estimates are lower. All of the methods here, all of the custom methods again tend to reduce that and they're behaving fairly similarly. That won't be the case with some of the other species. Okay, again the plot of the CV ratios. Here we see a little bit difference performance in the methods.

The annual catch rate method, the red bar is not showing as much reduction or consistent reduction in gains in precision as it did for charter mode; but both of the other approaches are still reducing those CVs quite a bit, with the exception of 2014; and that's sort of an artifact of the moving average approach losing one year of data. It would not have been such a large increase if it had 2015 included in this series.

Now we will move to the three-year estimates. The bars here are representing basically the sum of the individual annual approaches summed up for the year ranges that you see presented. Three of them are three years and then in the beginning we just ran out of years, so it is only two. Again, this was for charter; so basically you see similar results to the annual.

For most of these year ranges the estimates are fairly similar. For the 2006 to 2008 range, which is where the charter annual estimates were quite high for MRIP, you do see substantial reductions; again, not so much with the moving average, but that is still again sort of tied. It is highly correlated with the original series.

I should point out this adds one new estimate series. The purple bars are what you get when you take three years' worth of data to calculate a catch rate and then expand that by the three years' cumulative effort estimate. It is performing similarly to the other methods as well. The CVs are down here at the bottom and you see that you generally are making the same kinds of gains in precision, particularly with the two sort of modeling approaches.

There is less gain with sort of the two design-based methods. That tends to be the case we'll see with the other species as well. Now this is just for private boat mode; again, sort of a similar story. You've got reductions from the – well, that one large peak was in 2013. All of the methods except for the moving average tended to bring that down quite a bit.

The moving average actually increased it; but again in 2015 it had been included in the series and that estimate had come down quite a bit and this moving average bar wouldn't be as high as it is either. It would have come down as well. Again, the same kind of gains in precision that we saw for charter mode.

Okay, so just to sort of quickly summarize for blueline tilefish, the custom methods are producing smoother series. Overall you get those sort of very large MRIP estimates reduced somewhat or substantially; and the smaller MRIP estimates are fairly similar when you look the estimates you get out of the custom methods and basically similar results whether you're talking about annual estimates or the three-year estimates, although there were some differences in the three-year estimates.

For precision, it is sort of what we expected; the custom methods are more precise in general. I didn't present a slide that explicitly compared the PSEs on the annual estimates – the three-year estimates; but if you go back and look at the tables, you can see that the three-year estimates are more precise than the annual, and that, of course, makes sense. It is what we would expect.

Then all of the design-based methods for the three-year estimates had similar precision; so we didn't really see much of a gain there. What I mean by that is if you use the annual catch rate and

multiplied it by the annual effort and summed that up for three years or if you produced the three-year catch rate and multiplied it by the three-year effort, those all tended to have sort of similar precision compared to just the MRIP estimate itself even though there had been some reduction in those peak landings.

Okay, so moving now to snowy grouper, again this is charter mode at the region level. These are annual landings again in numbers. Here it is sort of a similar story except that the approach where we have the annual catch rate multiplied by the annual effort actually didn't do anything to reduce it. It actually increased what looks like here this outlier peak landings' estimate.

There is nothing that says these things have to all work in the same direction. Except for the moving average approach, there is more independence and so these estimates don't always again have to move in the same direction. But, the moving average approach, which again is the asterisks as well as the multiyear catch rate expanded by the single-year effort; those did show substantial reductions from this MRIP peak or outlier estimate.

Then the PSEs again are given here at the bottom; a similar sort of pattern. The two modeled approaches, the moving average approach, which is the bottom row, and then the approach with using multiple years to calculate the catch rate; those showed some reduction in the PSE. The method that just used an annual catch rate and annual effort really didn't make too much difference for CVs.

Okay, moving to private mode, again very similar results that we had for charter for snowy grouper. The Method 1.1 that used the annual catch rate didn't do anything to reduce this spike estimate here we see in 2005; but the other two alternative approaches did bring that down considerably.

Again you see with the green triangle series here; that's the one where we used the three years' worth of data to calculate catch rate; and again as I said that is done as a lag, so that's why you see these larger estimates out here because the catch rate and spike here again is being used for these two years as well. If you change how that is done, you would change that picture as well.

Okay, so now we're moving to the three-year cumulative estimates. This sort of outlier year for charter mode was in 2006; and that falls within this range. Here you don't necessarily see a large reduction at the cumulative three-year level. They're somewhat similar and in fact somewhat larger than the standard MRIP estimate.

Again, the two modeled approaches are going to give you a more precise estimate, but they're not reducing that estimate. Again, I'm just showing this to give you some indication that things don't always reduce the estimates, these alternative approaches. Moving on to private boat mode, we do see some reduction in the range of years that had that outlier again for the two modeled approaches.

The green bar here is the approach where we used three years' worth of data for the catch rate, but again multiplying that by annual effort. The brown bar is the moving average approach; so we

saw some reduction there; but the other two alternative approaches are very similar to the MRIP series.

In 2006 and 2008 our approaches that included modeling are actually noticeably higher than MRIP; and part of that is because again that spike is sort of being pulled out of – or pushed forward in time; more so for this green bar series, which was sort of the lag approach, calculating that three-year catch rate; not quite so much for the moving average, which is the brown bar, which was again using the midpoint approach.

This is kind of tedious work; we're almost through it. Some summary for snowy grouper; overall again the results were similar for blueline tilefish for the annual estimates. Those big spikes sort of got reduced noticeably in the custom methods; but results are more variable. For the three-year estimates we didn't always see a reduction in whatever range of years had a spike in the MRIP series.

For precision, again the approach is that included some modeled component, did reduce the variance, increased the precision; but the design-based methods were all sort of similar. We weren't seeing gains in precision compared to just the MRIP estimates.

DR. BARBIERI: John, just a quick question. I guess you've completed snowy grouper. Any insights on the reasons for the differences in performance?

MR. FOSTER: None of this has been fully evaluated; so just sort of speculating, the approaches that are bringing in – the modeling approaches are basically bringing in more data relative to the design-based approaches. For the annual approach, 1.1, that uses three years' worth of data for that catch rate and then expands that just by an annual – you know, you're got three years instead of one year for the catch rate information.

Relatively speaking, that's still more than – you know, you've got an approach on the three-year method where you've three years' worth of intercept data for the catch rate and then three years' worth of effort; but relatively speaking, that is equivalent to one year's worth of data for the catch rate and one year's worth of effort.

I didn't explain that particularly well, but the modeled approaches in general, relatively speaking they're bring in more data than the design-based approaches; so we would expect some gain there. That's about all I can say. It is likely that there are sort of peculiar things specific to these data series that might be explaining some of the differences; and we just haven't had time to look at those.

Okay, the last one, hogfish, and here we're just going to look at private boat mode. I'm glad that one of the species sort of showed this pattern; because again it should temper expectations that these approaches will always – not that anyone had them, but that these approaches would always reduce the estimates.

In this case we've got a least two years here, 2007 and 2014, where you could classify these as spike estimates in the MRIP series. Again, the approach that uses one year's worth of catch data

for the catch rate, expanding that by one year's effort estimate, is producing as large or larger estimates.

The other two approaches do show reductions; but then in the remaining years, basically almost all of the alternative approaches are producing larger estimates compared to the MRIP standard estimates. I have not looked into this case at all to see why that is, if there is some strong perhaps seasonal differences or sort of differences in how the data line up between the trips that had hogfish landings and sort of the overall effort; so you've hogfish landings in a wave with low effort estimates whereas in these other approaches; so you're bringing in – you know, your effort estimate is much, much larger than the reduction in your catch rate, basically, is how this situation might occur.

But again, we have not looked at that; so the main take home here is that you're again not always going to get estimates that outside of the peak estimate years stay close to MRIP. They may move. There is much more independence. Now, the moving average series again does stay pretty close. It doesn't move as much as the others, but again it is pretty strongly correlated.

But even in this scenario you still see the same basic pattern in the CVs where the two modeling approaches still reduced the CVs. You made gains in precision even though again the actual point estimates went up. Then we sort of see the same results here for these multiyear cumulative where the blue bar, the MRIP estimate is actually lower in most cases than the cumulative estimates from these custom approaches in almost all of the different year ranges.

I don't think I need to revisit that. That's basically what this slide says as well. Again, I didn't show the results for charter for hogfish. I can certainly send those around; but basically they tell the same story as for the other two species; but the private mode results were different for hogfish so that's why I included them.

Okay, to wrap this presentation up; in the short term it does look like some of these estimation approaches have promise. The ones that I presented here I would strongly advise against using as it. They all need again additional work and development. They do show gains in precision, which was the overall goal in looking at them; but we haven't had any kind of time to sort of try to look into what bias, if any, might be present for those approaches that include model assumptions.

Just from the little bit we have done, it seems very unlikely we're going to find sort of one size fits all best approach here. You would likely have to have sort of a custom solution for each species that you don't – you know, that there is instability perhaps in the MRIP estimates. Coming up with some sort of set of criteria to how best to pick that method would be very important.

You could talking about lots of additional time to really fully sort of develop and vet these approaches beyond what we've done for this. It is long term and it is likely we're going to get at this with sort of a combined approach. We will definitely continue to look at working to implement the deepwater stratum and APAIS in the other states where it can be done.

Again, not all states have sort of concentrated effort for these species. It may be too diffuse to really be able to target with this sort of stratification approach or there just may be so few sites that

it doesn't make sense sort of logistically to try to create a stratum out of those sites. Coming up with some sort of specialized survey for deepwater anglers either on the effort side where you, say, create some sort of a permit so that you come up with again a specialized effort estimate that could be used in conjunction with something done on the intercept side certainly seems viable.

That is Florida is doing currently on the Gulf side. Again, if movement can be made towards a multiyear approach to management; that would certainly help because a lot of these approaches work a little better if you're talking about two, three, however many years versus just an annual estimate. Then, again, even with these, it still likely we would need to have some sort of a modified approach to estimation for them beyond just what the standard MRIP approach is. We made it; thank you.

DR. BARBIERI: I think this was very informative. For the committee, I will open it up for questions or comments. Alexei.

DR. SHAROV: Thank you, John, very, very interesting presentation. I just enjoyed it a lot and a very important one. I'm just happy that something like this is happening. When you calculate catch rate per trip in your annual catch estimation, in this case you drop all the stratification than that you would normally do. It is just total average catch per trip for the whole year, ignoring the waves, the modes; is that right?

MR. FOSTER: That's right. In terms of the estimation domain, that is correct. We're calculating the catch rate at that level; but in terms of sort of the machinery of the estimation, the sample weighting, the design stratification; all of that is still taken into account so that you're getting – the reason I say that is you're getting an appropriate design-based estimate at the annual level. But, yes, in the sense that the domain is being collapsed across the waves – in these examples, across waves, across areas fished, even across states; so it was collapsed all the way to the region level. Again, I'm not advocating that is the way it should be done. This was just a first cut/

DR. SHAROV: So it seems, then, that your basic result that the improvement in precision is achieved by one of the two basic ways; so you either increase your sample size or you generate the stratification scheme where you achieve the more homogeneity within a strata, and that's how you do it.

Apparently what it shows is that we do not get much of the precision; that is, our stratification unfortunately is not as good. The standard method does not provide us with or provides us with the worse precision level. When we ignore the stratification, we essentially are increasing the sample size. In all your alternatives, they're resulting in just simply a higher sample size for the catch rate either way, and that would be sort of the basic math result that leads to the improved precision; is that correct?

MR. FOSTER: Yes; in a general sense I would agree with that although it did vary by species. I think as a basic take home; that is a good point; but just bear in mind that case by case it may not work out that way. That's why for some of those, I think snowy in particular there were a number of instances where the CVs were actually larger when you calculated the annual catch rate and expand it by annual effort than when you looked at the standard MRIP estimates. As a general

conclusion, yes, for rare events, they're so rare that the stratification really isn't – we're not gaining anything by it because, again, they're such rare events.

DR. SHAROV: Can you comment on the use of the three-year method versus the annual method in terms of your potential advice?

MR. FOSTER: Again, it is sort of case-specific. If you have an extreme outlier, you will tend to see a similar result in the three years where these alternatives or custom methods would have reduced that effect. They have moderated the effect of that outlier, smoothed it a bit. If you don't have those sort of outlier spikes, then the results are somewhat similar whether you're using an annual or the three years.

One result is that the three-year estimates are more precise than the single annual regardless of the method; and that would be expected. If you wanted to stay with a design-based approach that was free of modeling; that would be one reason to go a multiyear approach because you will have some gain in precision just using your standard estimates or the designed-based estimates; any of the designed-based methods. You may not gain much precision; so that argument may not be that strong.

DR. SERCHUK: I agree with Alexeie that it was a very informative presentation. My concern is what is an outlier? This is the difference between accuracy and precision in my mind. We know that fisheries can have lots of annual variability even when they're well sampled. Things change because they go to new areas; somebody finds a concentration.

Really, I think the important thing at least for me a couple of contexts; either it is a context for monitoring when we have a very large catch when we didn't expect it or we're dealing with annual data so that we don't the luxury in many cases of doing the averaging. It is certainly most important that last year in many cases, because you can't average out, that really is there any way of detecting what really is something that can't be explained by the performance of the fishery.

In other words, something that would on subsequent evaluation reveal that it was an outlier; you know, it was based on such a small sample size or something and it was non-representative. I think that's the issue that I'm seeing in a number of these assessments. Something spikes and you say, well, gee, whiz, we can dampening it down – okay, by another estimation we can average it out, but then someone says will be close the fishery on it?

Will we basically say, hey, wait a second, now we're getting a big spike, we're going to close the fishery this year because it is far above what we expected it to be. Personally I think that's the real critical issue for estimates that are based either on small sample sizes – when do we say something is an outlier and when do we say it is a real event? We may have different answers whether we're monitoring the fishery or whether we're assessing the fishery. Those are the sorts of things that I wonder whether you could give any insight to us on.

MR. FOSTER: Yes; I completely agree, you don't want to go searching for a method that is going to return the solution that you'd like to have or that would be politically expedient or what have

you. I would think again that gets to – backing up, yes, there are a number of regression type techniques that could be used for outlier detection and things like that that could be developed.

We could also just develop additional criteria to sort of flag those things that weren't sort of model-based. That could be done; but I would think that if any of these methods were to be adopted, you wouldn't apply them sort of on a year-by-year or a point estimate by point estimate basis. You would make a decision that just – generally the historical performance of the survey for this species has not been – the estimates provided haven't been stable enough.

However, that determination was made and so we will switch to using an alternative method and then go with that method henceforth or until something else changes that the standard approach is more stable. I wouldn't think you'd want to, well, this year we're going to use the point estimate from this method and this year we'll use it from that one. You'd want to adopt an approach and just stay with it.

DR. ERRIGO: I cannot help clarify just a little bit about what we might say would be an outlier here in the South Atlantic, but the 2013 spike in blueline in the private sector was traced back to I think a single intercept or two intercepted trips that extended into catches that were way above any of the surrounding years. These one or two intercepts can get into expanded to catches that are just enormous.

DR. SERCHUK: I'm looking for a control rule of the type that he is talking about. We need to at least have this many so on and so forth, and that is the rationale for them saying wait a second, it may have happened, but this could be an artifact; and that's really very important way to proceed, I think.

DR. BARBIERI: Right; and, Fred, I would go back to some of your earlier points about some of the other topics related to sampling. I mean this is a custom estimation method they actually applied to see if we can increase the accuracy and increase the precision on these estimates. Really in the beginning John was talking about perhaps developing some customized sampling programs that can be developed in some situations that have ten or twenty years of the regular survey; that if you look over time, you're going to find patterns for specific access points or specific areas where there was a much higher likelihood of those species being landed.

You can develop a whole sampling strategy that is focused on those species. At this point, unless we are – and all of this costs money and we shouldn't lose the perspective of perhaps making a recommendation also for the limitations we have in doing this. This is great stuff; but it doesn't really completely substitute for development of more appropriate sampling programs that would require resource allocations that we need to have put in place. Alexei.

DR. SHAROV: I know that there is probably no answer to the question, but I still have to ask. Specifically in the introduction John was talking about, well, customizing the estimation towards the – you know, getting better estimates for a species of interest; but in most cases I assume that it would still be attempted to complete within the existing framework of sampling both the APAIS and the effort surveys, existing surveys; because species-specific separate survey is expensive.

Currently like today we were talking about hogfish or blueline; and that's what we will be probably looking at how best to design a survey to get better estimates. At another meeting you're going to be looking at another species. If you would want to customize the survey, every state will have at least five to ten species, whatever they're particularly interested in; how would you attempt to achieve this improvement within the existing framework where you have say at least five prime species of interest and has there been any thought as to how you would be – how would you try to customize that for more than one?

MR. FOSTER: The short answer is you may not be able – without any additional sample, there is a limit. You cannot optimize the allocation for everything because it is going to ultimately end up pulling in opposite directions; and so if you've optimized for everything, you've optimized for nothing. A state needs, whether they do care about inland species relative to offshore, you know, commissions versus councils, all of those would have to be worked through.

The only thing I guess I can say is that at least initially there is probably – again, it varies considerably state; but I would say in at least some cases, perhaps many, we do still have some flexibility. You could perhaps still shift some sample so that the loss that you would – the loss and precision for say many of your inland species may be minimal to the gain that you might make on some of these offshore species.

That's only slightly more than wild speculation because we haven't really had time to look at it. It is not like you can likely customize it for all offshore species. It is pelagics versus bottom fish; fish typically caught in this part of the state versus another part of the state. There is lots of things that just make it a very difficult, complicated problem to deal with. If a set of priorities could be established; that would be very helpful in terms of guiding the kinds of design changes or adjustments, I should say, that we could make; but, yes, there is no sort of silver bullet, unfortunately.

MR. HARTIG: John, thank you very much. Using those real world examples for us is really helpful. I know that Dave came and gave us a presentation on this earlier; but I think if you followed up with this to the council with these real world spikes that we have seen in our fisheries and the problems they cause, it would be really helpful to the council to be able to look at them.

One of the things that came up in our visioning as one of the highest priorities was to have a reef fish stamp. That was one of the things and it ties into your Gulf Program where you would have a Gulf Reef Fish – that you're doing now. Obviously, you're already doing that; so that will give us some kind of a template, to look at that program and see how it has worked and see how much value that we could get out of that on our side.

You've answered a lot of questions for me today. The other thing is on the effort estimation side as far as the deepwater species go, if you went a little bit further than just a stamp and had, say, for the recreational fishery a deepwater endorsement and you actually had the number of people involved in that fishery; does that give you more ability to have more precise estimates?

MR. FOSTER: Just in general I think the answer is yes; but I just sort of – creating the stamp or the endorsement would also require a survey to go along with it to generate that more precise effort

estimate. I think you would likely see, yes, a gain in precision; but the other thing that you would see I think is some sort of – you know, you can talk about all of it in terms of precision, but there would be some increase in stability because your expansion factor, the expansion factor is going to go from the full recreational sector basically by mode down to this very specific population of anglers; and that effort estimate is going to have a sort of consequential reduction as well.

You're going to have a specialized effort estimate. It is going to be similar to or very analogous again to what is done both in Florida with Florida's Gulf Reef Fish Program or Gulf Reef Fish Survey, excuse me, as well as what is in place for the Mid-Atlantic and New England with the large pelagic survey, the federal survey., which is basically sort of bluefin tuna centric.

It uses the highly migratory species permits as the basis of a frame for the effort surveys. You sort of get a couple of benefits there. Once is on the effort side you're getting a lot more reports of these kinds of trips. That is helping with the precision, but it is also again a well-defined universe of those anglers; and so your effort estimate, while it is more precise, it is also smaller. And because of that, you're making again the sort of magnitude of the expansion, the potential for an outlier spike I would say is much reduced again because you're dealing with only a targeted subset of the overall recreational population. Hopefully, that made some sense.

MR. HARTIG: One of the observations that I was looking at – and it is important from the assessment aspect, because in some of these cases some of those values are smoothed in the assessment. And so the way you've looked at it, you smooth them and you get more precision over time, but you have carryover of those into the other years, so you never get rid of the high spike in terms of the pounds of landings. You just move it over.

In the assessment we actually get rid of some of it by smoothing it. I'm not sure what kind of procedures they go through to say what is an – to what Fred said, what is an outlier. We have certainly have done it for several species that I can recall. That was a little bit concerning to me that if you still carry over that spike; that the landings' values carried over in time.

MR. FOSTER: I guess one sort of counterpoint could be that, yes, you have spikes; and I think most folks would see those as overestimates; but the converse can also be true, which is you are underestimating in other years where you have the zeros. That is not to say that any of these methods which are sort of pushing that spike out into other years are doing it exactly correctly; but there may be some additional gain there because they are correcting some of the underestimate as well. In other words, it may not be a bad thing that you're not just lopping it off, but you're sort of in a sense redistributing it.

DR. SCHUELLER: I was wondering if anything had been done to look at – so you guys looked at a ten or eleven year period here. Cumulatively over that time was the total landings a lot different between the methods. This says increase sample sizes; it is a little misleading because it is not really increasing sample size. It is just getting rid of stratus; so the sample sizes is the same. You're just analyzing it differently.

MR. FOSTER: Yes; that's right. I think initially I had about using the same data just in a different way; and that's really what I meant. For each estimate that's being calculated, we're using,

relatively speaking, more data; so when we calculate the catch rate, instead of a wave level amount of data, we're using an annual level of data; but we're only calculating one catch rate versus five or six catch rates for each individual wave. So, yes, it is just sort of a tradeoff.

It is kind of an accounting practice in a sense; but there is real gain there because you are in fact using more data to support that one point estimate that you're making now, which is kind of the take home. It is not meant to say somehow the data are better. It is just saying that it should be a more stable approach to estimation; because instead of trying to produce an estimate at a very fine scale where there is not really the data to support it at that fine scale, you're calculating it from a much larger domain where again you do have – for an estimate for that one domain, you do have more data that you're using to produce the point estimate. It wasn't meant to be some chicanery on my part to say that, no, we have more data this way.

DR, SCHUELLER: So have you looked at the cumulative landings?

MR. FOSTER: Yes and no. For these specific methods which were developed very rapidly, very recently, we had not looked at sort of the overall grand total for this total time period. I did some initial work early on where I was looking at a number of different ways of doing the moving average method, thinking that – before looking at all of these other alternatives; and for that one approach, yes, I have looked at that; and so the moving average can't really deviate that much from the original series, so it does stay very close.

With the exception of what you do with the beginning and end years, the grand totals will be the same. These other methods; again, there is more independence, if you will, between them so they don't necessarily have to end up at the same place; but it is not a difficult thing to calibrate them if that was important so that you would get the same grand total over some range of years, but you would have whatever the difference is in the series.

DR. DUVAL: Thank you for letting me ask a question. Some of the concern that the council has had in regards to hogfish has been the survey's ability to capture dive boats. I was wondering if you could address that. I assume that would fall under the private mode; but I think just given the behavior of dive boats that I'm familiar with, I'm wondering if we're missing some of those catches in the intercept survey.

MR. FOSTER: To the extent that dive boats with catch might returning to sites that are not on the intercept survey frame, we would not be capturing those within the survey. However, that's not to say that the catches are being totally excluded because the intercept survey is only calculating the catch per trip.

If the dive boats that are returning to sites that aren't on the frame have catch rates that are similar to the ones that do return to sites on the frame and the proportions of those trips between the sites off frame and on frame are roughly the same, similar, then the overall catch rate that's coming out of the intercept survey should be okay.

That's a similar issue we have not just with dive boats but just in general. If there is a sizeable amount of private access, private docks, gated community docks, boat ramps, those sorts of things

where we can't access it with our field survey, if the trips returning there are very different and they make up enough of the fishery to matter; then there could be bias in the estimates.

Unfortunately, that's a limitation that we looked at, trying to address through off-site survey methods, panel surveys, things like that, longitudinal surveys, and we will continue to look at to try to make sure that there is not a big difference, but again that is just sort of a functional limitation of the intercept survey is we legally can't go everywhere for it.

That's the doom-and-gloom side I guess. If the catch rates, though, are not that different or those boats that are returning to sites that aren't on our frame, if their trips don't make up a sizeable fraction of the total effort; then any bias that would be present should be minimal or even negligible.

DR. DUVAL: Do you have some kind of annual review of the sites that are within your frame, if something pops, just to make sure your catch rate – I'm sure you do; I'm just clarifying it based on the council's concerns.

MR. FOSTER: The short answer is yes; and that work in the South Atlantic is – the conduct of the field survey is done by the state agencies in every state in the South Atlantic. There are procedures in place not only to make sure that all of the sites on the frame are visited annually, but that any sites that the field folks become aware of can be added to the frame as soon as possible.

MS. LEE: I apologize if I missed this, but have we identified for what species we need to consider these alternative methods; and if not, how do we do that?

MR. FOSTER: I haven't done that. These were three of maybe four or five species that were requested for us to take a look at. Certainly looking at things like precision or rate of encounter in the survey or some sort of metric on sample size, possible trip sample size, that kind of thing could certainly be looked at in terms of making a determination; but that's work that all has to be done and not just by our shop independently.

DR. IRWIN: On the time series plots of annual landing estimates, I was interpreting those as sort of a cumulative total of sorts for each particular year. How is that actually split out in terms of observations? What goes into making that annual total?

MR. FOSTER: The design is stratified – well, the design would reflect all of the data collected through the intercept survey for that given year. The standard approach does the point estimation for each two-month period, January, February and so on, where the sampling occurs. In some of the South Atlantic states we don't start until Wave 2, until March, but in Florida and North Carolina we also sample January and February.

The standard approach calculates the point estimates, the catch rates and the effort estimates that are used to expand those into total catch for each two-month period and then those are summed up to give an annual total catch estimate. That's the standard approach. These alternative custom approaches did things differently.

Instead of doing that point estimate calculation at the wave level, it was done at the annual level. All of the data for the year from the intercept survey was used to calculate a mean catch per trip and then that was expanded by the annual effort estimate. The annual effort estimate was still calculated the standard way. The effort estimates are fairly precise or very precise as is; so we just use the standard effort estimate.

DR. IRWIN: Just to follow up, if I was wanting to quantify sort of the number of observations or maybe it is the number of intercepts, I'm not sure what to call it, but what would that plot look like over time? Is it sort of constant and where was the sort of scale of it?

MR. FOSTER: For the entire South Atlantic, in terms of intercepted angler trips, I think at the annual level we would be talking about thousands, tens of thousands. I'm looking at Dave Van Voorhees; I don't recall right off the top of my head. I think it is certainly on the order of thousands; but again just off the top of my head I can't break it down further than that.

Now, at the wave level, of course, it would be considerably less than that; and then when you further divide that amongst the different modes, you've got another level of reduction. I'm sorry and over years it has generally been somewhat stable. It is dependent on funding. We did have sort of a dip around 2013 because that when we had implemented the new, more robust intercept design, and that had some implications for productivity; but we've basically recouped a lot of that in 2014 and 2015. So not wild changes in overall sample sizes across the years.

DR. ERRIGO: Just a suggestion about the hogfish; I noticed that the private boat estimates were different for the estimation methodologies than they were for blueline and snowy. It might be from what Michelle had suggested, hogfish are mostly taken by dive boats. Either a lot of that effort is returning to docks that can't be sampled and it is a lot of catch or that it is not being correctly captured in the effort survey; so given the catch is expanded by the total effort survey but perhaps what is being intercepted is not representative of the proportion of the diving effort or something like that; and that might be why it is significantly different. Just a suggestion; but, yes, it kind of an odd and very different species from mostly the hook and line that we're dealing with; but that one is almost exclusively taken by diving.

MR. FOSTER: So some comments along those lines; so, yes, on the effort side we really don't have the ability to produce sort of robust gear-specific effort estimates that you might then expand the gear-specific catch rate by; but when we look at the – we have looked at the intercept data and the proportion of the weighted proportion of trips in the intercept data that were dive boat trips has basically stayed fairly stable, but in more recent years has been increasing.

But, again, we're talking about again these weighted proportions and something that's generally much less than 5 percent, usually on the order of about 1.5 percent or something close to that. I think those numbers may be specific just to East Florida. It is not like the proportion of trips in the intercept that come from dive boats bounces around a lot and in some years it is accounting for some large fraction of the data.

It has sort of stayed a fairly constant small proportion of the trips. That may not be in its correct proportion exactly. In other words, the reason for saying that is that the large increase in hogfish

was not due directly to a large increase in dive boat trips being intercepted. That increase has been much smaller.

DR. BARBIERI: Any other questions for John? And by the way, John, this kind of helps to prove that your talk was not boring and generated quite a bit of interest and discussion points from the committee. Thank you so much for taking the time to come down here, both you and Dave. I think this has been extremely productive. We are almost at 3:30; let's take a 15-minute break.

We are ahead of schedule and making very good progress with our meeting. The next topic is Agenda Item 13. We're going to have to do a bit of a different game plan than we had originally thought about. We had some discussion of ABC Control Rule revisions; and a working group was put together.

We had that discussion here the last time or the time before and then eventually we realized that there are still several issues that needed to be addressed. We kind of felt that the first time around had not addressed all the issues; so we thought about getting back – I just noticed I guess I'm out of order here because we still have a presentation. Forget everything I said. We now have a second presentation from the MRIP Group. It is a follow-up to John's; and this is a discussion of options for standardizing the quality of MRIP statistics. We have Dave Van Voorhees here who leads that Fisheries Statistics Group. He is going to give us the presentation for committee input.

DR. VAN VOORHEES: I want to explain that this is really intended to be a discussion to present some idea for the group to consider. I don't want anybody to think this is something that MRIP is pushing or advocating necessarily.

It is a discussion that grew out of discussions we had with John Carmichael, folks from our Southeast Regional Office and Southeast Science Center a couple of weeks ago when we were getting ready to come down here for basically the talk that John presented. I brought up the idea that I had recently attended the Joint Statistics Meetings for 2015 in Seattle, Washington, back in August and attended a session where three big government statistical agencies were talking about developing standards for reporting of statistics out of their survey programs.

I realized we don't really have standards like that in our program and perhaps it is something we should be thinking about; so that's what stimulated this. We talked about it over the phone and John said he really thought that the SSC would appreciate having a discussion about this; so that's what this is all about.

There is a fairly short set of slide here. There is also some handouts that were distributed to you that have tables of some scenarios that I'm going to walk through later. That's coming at the very end of the slides here. The outline for this is basically posing the question why would we set minimum standards for survey statistics in terms of what we actually share.

If we decide that only certain statistics are acceptable to share, how do we actually define what is acceptable? How does acceptability relate to specific uses given that different uses of the statistics might necessitate setting slightly different standards? I'm going to go over some current standards that I learned about in federal statistical agencies, show a couple of examples just to stimulate

thinking about what sorts of things could be used as performance measures that would be important for determining what you actually share; and then take a look at what the possible standards potentially could be for MRIP statistics.

The handout tables will basically give you a chance to look at some “what-if scenarios”. These are just “what-if scenarios”. There are no rules in place currently; and we would never develop rules or standards here without discussing it with all of our primary customers of the statistics. We would want to be sure that everybody is on the same page about this. It is not something we would just go forward and implement on our own.

The first question is why set minimum standards? Well, the idea behind it is that you want to ensure that only estimates with adequate precision are provided for use in decision-making. The key word there is “adequate”; and that’s something we’ll get to later. Secondly, you want to reduce the potential for misinterpretation of results.

I think we can all relate to possible misinterpretation of results that come out of the MRIP surveys, right? Okay, how do we define what is acceptable or what is worthy of use for decision-making? Well, there is certainly statistical measures we can look at related to precision, the precision of the estimates. It could be the proportional standard error itself, which we always provide along with the point estimate of catch for a particular species. It is there.

Not everybody uses the percent standard error perhaps like we hope they would in terms of deciding how to use the number, but the number is there. You could also set standards in terms of the sample size. A certain sample size might be required. When we were talking about rare-event species like the ones that John was just talking about and presenting options, there is an issue there in terms of the amount of trips that actually caught the species that are included in our sample.

It could be that we have some sort of standard in terms of some minimum number of trips that would have to be intercepted to make an estimate for that particular species acceptable. We could also look at things like the absolute value of a 95 percent confidence interval around an estimate. We might want to set some sort of limit on that in terms of depending on how important the estimate is like for a particular species. If it is bluefin tuna, perhaps every individual fish might count a lot; so the size of the 95 percent confidence interval rather than estimate for that species might be something a lot of people would scrutinized very closely.

There is also going to be a potential for bias in survey estimates; so we need to be concerned about things like undercoverage of a target population. Are we actually doing a good job of getting to all the people that are fishing for a particular species? Non-response; we do surveys but not everybody responds. It is a voluntary survey; so the people that don’t respond, are they different from the ones that do respond? If so, are we accounting for the potential non-response error in our estimates? Finally, reporting error is something we worry about.

We may get people reporting, but then we may not be getting accurate reports from those individuals; and so we need to have checks built into our surveys to try to account for that and correct for any reporting errors in our estimates. These are just some of the quality issues that you want to worry about in survey results.

In our case we may want to think about different standards for different uses. Stock assessment scientists tell us it would be a good annual measure of fishing mortality for a species based on recreational fishing. They're not as concerned about the detailed estimates at the wave level or the mode level, specific area fished level, things like that.

In some cases they're using recreational catch data to develop indices of abundance; but the managers are monitoring fisheries relative to an annual catch limit; and therefore they need accurate measures of the kept catch, the catch released alive, some sort of an estimate of the catch released alive having some level of mortality, which is, of course, important for assessments as well.

But then they're also looking at a more detailed level in many cases trying to look at how the estimates vary from state to state, from mode to mode within a state, from one area to another area, wanting to manage at a higher level of resolution, I should say, trying to get to a more detailed level of resolution.

Well, here are some current standards that I learned about back in August at the Joint Statistics Meetings. The focus of the discussion was on presentation standards within the Federal Statistical System. There was a representative there from the U.S. Census Bureau; one from the National Center for Health Statistics; and also a person from the Substance Abuse and Mental Health Services Administration.

In general the focus of this discussion was that estimates were identified as not meeting precision-based guidelines would not be posted on websites and would not appear in tables, figures or written text, essentially not be available for people to use for decision-making. Some examples; the last one on the list, the Drug Abuse Warning Network has set standards for estimated numbers of drug-related emergency department visits. They're not shared if the percent standard error is less than 50 percent or if the sample size upon which the estimate is based is less than 30.

Another example from within that agency, the National Survey of Drug Use and Health has some rules about estimated proportions. Well, proportions are important for us because, really, the estimates we make of catch rates involve a two-step process. What proportion of the trips that we intercepted actually caught the species and then what is the actual number of fish caught for positive trips for that species; so there is really two components to the catch rate, the actual number of fish per angler fishing trip and the intercept survey.

Proportions are really important for us, and they've developed some very specific rules about what is acceptable in terms of estimates of proportions. I don't want to get into the details of this because it is kind of hairy-looking, but basically the estimated proportion, if it is very low, less than 0.00005, or very high, it is not going to be reported. It will be reported as a zero or a 1.

Then they standards for the percent standard error where instead of looking at the proportion itself, it is the percent standard error of the negative log of the proportion; and they set standards based on that. Also, they a standard in terms of the nominal sample size; and they also go so far as to set a standard related to the effective sample size, which is defined as the nominal sample size divided by the design effect.

I don't know if most of you are familiar with the design effect, but the design effect is the variance of the estimate that is correct based on the sample design for the survey divided by the variance you would get if you have simple random sampling. I'm just giving you this slide to illustrate that it could be fairly sophisticated how you develop your standards in terms of what you consider to be acceptable. These standards do exist for federal statistical agencies.

There is interest in developing more and trying to look across agencies to maybe use somewhat similar approaches rather than have a lot of different ideas about how to set these standards. That discussion is ongoing. It turns out that one of our consultants that is helping us with MRIP research studies and pilot studies, Jenny Lesser from Oregon State University, was actually the discussant for this session. She comes from an academic institution, Oregon State University.

She was invited to come in as a discussant that followed the three presentations by the federal agencies; and she was very supportive of the setting of these standards. Another look at statistical quality standards from the Census Bureau; these are pulled out of documents I googled and found. Serious data quality issues related to sampling error occur when the estimated coefficients of variation, CV, which is analogous to the PSE, for the key estimates are larger than 30 percent, 30 percent.

Okay, well, we frequently are looking at some tables with PSEs much higher than 30 percent. They also make the point that serious data quality issues are related to non-sampling error when unit response rates for surveys are below 60 percent. Well, we have difficulty achieving response rates at that level in our surveys.

Coverage ratios for population groups associated with key estimates are below 70 percent; so we certainly want to have a certain standard for how much coverage you have of the target population that you're trying to produce estimates for. But, there is note down below there; if non-response bias analyses or other studies show that bias associated with non-response is at an acceptable level or that steps taken to mitigate non-response bias or coverage error are effective, these thresholds do not apply.

What we've been doing in MRIP, with the research we're doing with the help of consultants, is developing ways that we can actually account for the level of non-response in our surveys and make appropriate corrections as are described there in that note. There are also things we can do to address problems with coverage. Hopefully, as we move forward and develop improved survey designs, we're going to be able to resolve those types of non-sampling error issues, but it is always something we need to pay attention to and be worried about.

Okay, I've sort of planted the seed here that standards are out there for federal statistical agencies. It is not a new thing. It has been going on for a while. We haven't really done anything like that for the statistics we make available to people for recreational fishing. As I can recall from back in the early nineties, when I started out with NMFS, working on recreational statistics, if people asked for it, we gave it to them.

If you want a number at the lowest level of stratification, yes, here it is, and here is the percent standard error on it. Well, it might be 70 percent; it might be 80 percent. If people asked for it,

we gave it to them. It would be a very big change in how we operate if we actually considered setting some standards on what we actually report or make available.

Okay, there are some alternatives. We could produce and post estimates at the finest level of resolution, which is our current practice, and just highlight those that do not meet the standard. As you look on our website and you do a query, you'll see that when you pull up a table of estimates there will be some estimates with PSEs shaded in red, with a red background.

Those are the ones that we highlight. I think our current standard for that is a PSE of 50 percent or higher. Those get highlighted. Another alternative would be to only post estimates that meet the standard that we set. You'll see in the tables I've provided there are some scenarios we can look at. We might not go through all of them, but I'll let you take a look at those just to see what it would look like if we actually did something like that.

Certainly, aggregated estimates are more likely to meet the standard. If we aggregate across areas fished within a fishing mode – if we aggregated across fishing modes in addition within a state or if we aggregated across states, as we go up we're going to get greater precision; so you're going to eventually reach a point where you meet the standard that is set, and those numbers are available for use in decision-making.

Certainly, cumulative wave-by-wave estimates would be more likely to meet the standard. From examples John provided previously, if you actually were looking at estimates cumulative across years, you would be able to meet the standard more successfully. That's the basic idea. Okay, the "what if" scenarios, I gave you some handout tables that we can look at for different species just to see what it would look like.

For the purposes of these examples, I just said, okay, let's assume that we set a standard of PSE not exceeding 40 percent and then alternatively what happens if the PSE is set at 30 percent; how differently would the tables look? I gave you a couple of different sets of tables. There is the first table for each species that shows what we currently do, which we highlight estimates – the PSE is highlighted if it is greater than the standard.

In the case of 40 percent, you'll see those that exceed 40 percent are highlighted in that first table. Then for wave-by-wave estimates I also look at the alternative of not actually posting the estimates that exceed the standard. You'll see in those cases there is an asterisk with a red background; so you know that there is something going on there, but there is not a sufficiently precise estimate to actually share for that particular cell.

Then, finally, the last table you'll see in each sequence is looking at cumulative wave-by-wave estimates where you keep using additional information to update an estimate at that point through the year. Starting with Wave 1; you go to Wave 2, the Wave 2 estimate is a cumulative estimate of Wave 1 and 2 and onward toward the end of the year.

You can build an estimate that's actually sufficiently precise in many cases by the middle of the year and then continue to report estimates cumulatively to the rest of the year that are still

sufficiently precise to share. With that, I want to see if I can switch over to the tables. They don't show up very well there, but you have them in front of you.

I picked summer flounder. I realize it is not a South Atlantic priority; but it is a species for which we have estimates for a lot of different states. It sort of helps to illustrate the fact that for states where the fishery is common and we actually get really a precise number and we're going to characterize the majority of a range of the species; you notice that there aren't that many estimates highlighted as not meeting the standard; but as you get towards the fringes of the range of the species you'll find that it is harder to produce an estimate that meets the standard.

In the first table what you're seeing there is just highlighted in red are the PSEs that exceed 40 percent and this first example which is using the 40 percent standard. Okay, so you go down to the second table and now all of the estimates that were highlighted – okay, this second table is still summer flounder with the 40 percent standard; and you're seeing that instead of actually sharing estimates where the PSEs weren't sufficient to meet the standard, we have an asterisk indicating that there is something going on there in that cell but it is not a sufficiently precise estimate to share.

You can see that the totals at the bottom in many cases are still sufficiently precise to share for each individual wave. Low activity waves, we generally don't have as much precision; so Wave 2, Wave 6 generally will produce a cumulative estimate across states that actually meets the precision standard.

If you go down to the last table, here is the cumulative estimates. The main difference between this table and the previous table is that although there are some states on the fringe of the range where you can't actually share an estimate even at the end of the year at the state level, you can share estimates at the coast-wide level starting with Wave 3 and throughout the rest of the year.

You can actually produce cumulative annual estimates for most of the states but even wave-by-wave estimates for the states where the species is common. Rhode Island through Delaware is generally pretty good. Even Virginia and North Carolina, we have sufficiently precise estimates cumulative throughout the year.

I'm going to show one other example from the South Atlantic just so you can relate better to that, perhaps. The next set of tables are for summer flounder again, but this is a different standard at 30 percent instead of 40 percent, so you'll just see less to share relative to the prior table. I'm not going to walk through that. You can look at that on your own.

Here is black sea bass for the South Atlantic sub-region. I just have North Carolina, South Carolina, Georgia, East Florida estimates provided here. The first table shows the estimates with the PSEs shaded that exceeds 40 percent. The second table does not share those estimates. The third table is a cumulative wave-by-wave estimates' table that does share cumulative estimates that meet the requirement throughout the year.

Here again this is black sea bass but using a 30 percent standard so less is shared overall; but you can sort of see how things would look if we did something like that. I also have some tables for

king mackerel that are very similar. You can look at those on your own. They're also for the South Atlantic sub-region.

Finally, I threw in a table for red snapper. I have been hearing about red snapper in the South Atlantic sub-region and some concerns about the precision of those estimates. For 2014 where we have final estimates, you can see if we apply a standard of, say, 40 percent PSEs, not a lot can be shared for individual wave-by-wave estimates.

Although if you look at cumulative estimates, you can actually produce cumulative estimates and final estimates for the year at the state level for Florida and for the sub-region. Anyway, this is intended to give you some idea of what might be something that could be considered; but I'm really interested in just hearing what people's ideas are about this and concerns they might have; but idea here is to promote a discussion.

DR. BOREMAN: I think this is a great idea. I think this is something we absolutely have to do with MRIP; and I'm just thinking of our favorite friend in the Mid-Atlantic, Captain Hawkins, who just loves taking numbers and extrapolated from – I know his heart is in the right place, but to me he doesn't grasp the idea what a PSE is and why should we worry about it.

This would eliminate a lot of the so-called criticism of MRIP of not being relevant to what is being caught out there on the water, because what they're doing is they're taking their immediate area and extrapolating that all the way up to total catch, which is appropriate. Also for red snapper, for example, by not producing these estimates at a fine level, it would reduce a lot of the criticism of MRIP there, too.

It is not that we're deliberately withholding these estimates. We're just saying it is inappropriate. The trick is, number one, to get the buy-in of everybody involved on the estimation side. The state folks, the operation's team, whomever, should come up with a set of standards and then stick with it in terms of what is going to be made available to the public and what is not.

Again, I'm totally in favor of moving this exercise forward within the MRIP Program. I think it is a fair way of treating the data and it shows that if we're not publishing the data; that we have very little faith in it so everybody else should, too. By putting it there even if you put an asterisk or red saying, well, this PSE is at 200 percent but we're publishing the data, it gives some false expectation that this is actually true, good data, and people will use it no matter what. Either they don't understand what a PSE is or they don't care; they just want to use the numbers for whatever. Anyway, I think it is a good idea and is worthy of pursuit.

DR. BELCHER: Thank you, Dave. One of the things I think that was helpful in hearing from yours is the precision relative to resolution; because the one thing that was really kind of kept throwing my head into turmoil with John's presentation was it is more precise; we're collapsing but it is more precise. I'm seeing a dampening of variance by collapsing.

If we go from representing you have six waves or collapsing it down to now three representations or one representation, it is not necessarily that you've got the precision better, but you don't have

the precision at that current level so you have to go one step below. This kind of shows I think more to that degree of we can't give you wave-by-wave estimates.

The precision is not there so we have to collapse it to a regional level, state level, some other level that gives you that ability to put the variance at a point where it is a little bit more easy to work with. I think that's kind of the key point we were talking around in a sidebar, because I just could not get my head wrapped around how that was a more precise estimate, but you're seeing it at a different level.

It is more precise given that level, and I think the harder part was thinking about it from the standpoint of we're used to working from that simple random sample approach. Post-stratification helps us bring the variation down but you're going from a very general to can we come with these compartmentalizations that help us account for the variability.

You guys had it where it is compartmentalized about a thousand ways; and the question is at what point do we have to bring it back to where we can actually have a level of precision that is easy to work with. I think that segue was helpful was helpful to think about the fact that it has to do with that resolution level. It is not just that it is more precise at a given resolution.

DR. SHAROV: Thanks, Dave, for the presentation. There is lots of things to think of. I am divided in terms of the current approach where you report what is currently estimated versus the proposed template where you simply do not report the estimate if it falls below the standard. I think, number one, it is going to be difficult to develop a single standard because the level of the standard will really be dependent on how we use the precision estimate.

At this moment we don't use it much. It doesn't mean that we will not use it in the future. For example, you showed two principal customers, stock assessment scientists; so that is where the idea should be coming from as to what is the desire toward a minimal level of the precision for the recreational estimates that would go into the assessment model.

That in itself certainly will depend on what is the contribution of recreational harvest relative to the commercial. In some case we probably wouldn't care. Do we really need to spend that much money increasing the precision of the landings' estimates if recreational is only 5 or 10 percent of the total.

And vice versa, in other cases we do need to know really well because it is primarily a recreational fishery. I think it is a little bit more complicated than just selecting an average. We were talking about 30 percent PSEs or 40 percent PSEs being some sort of target, maybe, but I think it is going to be quite variable, so it will require additional consideration.

For stock assessment people at least, I would still want to have an access to the information that would have those estimates on the wave or whatever minimal level of estimation we have with the corresponding PSEs, as high or as low as they are. I understand the difficulty with presenting this to the public where people are using the estimates inappropriately. I'm sure there will be, obviously, a concern raised over the fairness of the treatment of public versus scientists; that is, they want to have an access to the information equally to us.

While definitely seeing a table like this makes me feel uncomfortable, maybe this is a really good example for people to look at and say, hey, we really need to improve the survey, we need more money or more brains or more workshops, whatever it is; and we need to significantly improve the survey so that instead of this red cells, we see the estimates that are at least at 40 percent or 30 percent or something. This is really, really instructive as to what is out there for some species that we're very much interested in.

DR. VAN VOORHEES: I wanted to clarify that the statistical agencies that were at the JSM this year or that session all said they do share all of their data with all customers. What they do is they caution people or people are using the data to produce estimates of their own, they caution them about the precision of the estimates and to be aware of standards in terms of what is considered to be acceptable estimates. I don't think we would ever consider not releasing all of our data. We're certainly required to make that data available. It is just a matter of whether or not you share a data product; in this case a statistic estimated from the data.

DR. IRWIN: I just need a little help getting over a conceptual hurdle; and I just goes into how the standard errors are being calculated once the aggregate is formed. If somebody just showed this to me out of context, I think the first thought would be that you have one area where you trust the estimate and you take three estimates you don't trust and add that to it; how does that make me trust your other estimate more?

DR. VAN VOORHEES: Well, that is an interesting way to look at it; and there are a lot of other people who have sort of looked at this the same way. I actually had a discussion with one of our consultants about this, actually Jenny Lesser who was at that session. It is difficult to get out of the way we currently do it, because the way we do it is we have an estimate in each of those cells, right; so the way you get the total estimate for the coast or for the sub-region is you add them up.

You're right, conceptually, as you look at this table, there is an estimate in each of those boxes where there is an asterisk that you could produce, but they would be insufficiently precise so you'd have no confidence in that estimate at that level, at that state level. But, if you think about the way the surveys are designed – and John did a great job explaining how the data actually gets weighted according to the probabilities of selection of sites and days and time intervals and the actual sampling fractions that occur on those assignments, when people are at those sites; all that is taken into account, the weight, the data.

If you think about it at the higher level in terms of we have a survey that is designed to produce a sub-region estimate – well, we actually produce the sub-region estimate based on the design. It is straight designed-based estimation. Now, if somebody asked me, well, could you actually produce an estimate for Florida; well, I think we could.

As a matter of fact, we can actually produce an estimate that we can share because it meets the precision requirements. Could you produce an estimate for Georgia? Well, no, we can't really go down to that level. It is a different way of thinking about the way we produce the estimates and the way we share them.

The reaction we got actually when we talked with some of our consultants about this is they were like you're sharing what! Why did you ever start doing that? It is like, well, we're trying to serve our customers and people wanted to see the numbers and we share them kind of innocently, naively, I guess, looking back on it now.

DR. BOREMAN: David, as you know but others may not, we have an NRC review of MRIP coming up this coming year or two into the future. In hindsight, I wish we had thought about this before we developed the terms of reference for that review; but I hope that we can somehow shoehorn this idea into that review because it would be – number one, it would be good to get the feedback of whatever panel the NRC puts together in terms of advice on this.

If they are in favor of it, it would give us a lot of impetus to move forward with it. But also just by presenting something like this, it will again give them an understanding of what some of the criticisms are against MRIP that are basically unwarranted because people are working with the numbers that they can get hold of, which maybe we shouldn't have released to start with. They will serve two purposes; so I think what we should try to do is try to get the NRC Panel to address at least this idea during the review coming up.

DR. VAN VOORHEES: One thing I wanted to bring up that was discussed on the conference call we'd had with John and folks from the Southeast Regional Office and Southeast Science Center a few weeks ago was the question that I posed to them was if you were in a situation where we couldn't actually produce an annual estimate that would meet minimum standards in terms of precision or some other performance measure that we use other than precision, some sort of sample size requirement or something like that; what sort of a situation would that put you in in terms of managing a fishery relative to an ACL?

If you didn't have that number posted on the MRIP Website that everybody is going to see and go to as sort of considered to be – what I was told on the call we consider it to be the official estimate from MRIP; if that wasn't available, would you have other sources of information available to you that would perhaps be considered for use in decision-making rather than just relying on an imprecise estimate? I think that's a question that managers need to be thinking about in terms of what would be the potential advantages or disadvantages of not sharing these estimates in terms of management decision-making.

DR. BOREMAN: To that point, I think it is analogous to not having the observer coverage that you would like on commercial fisheries. The council passes a plan that basically dictates when we need observer coverage to get a good, precise estimate of discards; but through cost or timing or whatever the agency can't come up with the funds or the personnel or the way of providing that level of observer coverage; well, then, what do you do? Again, you're stuck with more imprecise estimates and may have to change your management strategy.

DR. SHAROV: I think there was an error on Slide Number 7. You probably wanted to say a PSE larger than 50 percent. It is on the slide. It is just an example that you provided us with. It doesn't matter; but if it is an error, then you'll fix it.

DR. BELCHER: Dave, was there any discussion about when they were – did they give you any idea of like where the PSE cutoff for the 30 and the 40 were being used and how they derived those PSE percentages? We've had that kind of – I don't know if you want to call it the urban legend of the 20 percent cutoff for using certain things. Was there any guidance or any particular paper they referenced that gave them the 30/40; and like with your examples, why would did you pick 30 for some species and 40 for others?

DR. VAN VOORHEES: Well, I want to emphasize very strongly that we would not pick a particular standard on our own. That would have to be jointly decided by all of the customers of the statistics as well. It wouldn't be something that we could just decide for everybody. I asked the folks who were there representing these statistical agencies if they actually did consult with their primary customers on setting these standards. They said, yes, they did.

It is not something you would just decide on your own as a statistician sitting back in Silver Spring behind a computer this is the standard we're going to set and we're just not going to make these available to anybody. I don't that would be well received. Yes, I picked 30 just because I saw that reference in the Census Bureau Standards about being cautious about estimates that have a percent standard error greater than 30 percent.

But as you saw, there were some standards set by another agency of PSE at 50, and they release stuff with a PSE greater than 50. I think as Alexei was saying earlier, it would depend on the uses; and you might have a desire to set slightly different standards for different situations. I don't think it is an easy decision as to what the standard would be. I think that's something that would require a lot of thought and a lot of interaction region to region. This is sort of the first time we've brought this up here at the South Atlantic sub-region, but we would certainly want to extend this conversation more broadly.

DR. BELCHER: As you were showing red snapper, you know, using a 40 percent PSE for red snapper, you could still basically go with the total even though obviously it is more dependent in three waves in eastern Florida; but the idea being is that based on that PSE of 40, those are usable; yet if you used the 30 percent, you can't use it.

DR. SERCHUK: I generally agree with John on this in terms of making sure we have a sufficient minimum level that we have confidence in the estimates. On the other hand, when you don't have an estimate, you have to do something, you have to impute something. You can average something; you can use a value; and how much you have to do of that really is the devil in the details.

Until one steps back and saying, okay, suppose we put this system in at this level, what sort of havoc would be created by not doing it? I disagree that it is observer coverage. Observer coverage is not a management measure and it is not a performance measure. Catch statistics are both. There are management measures and there are performance measures.

To the extent if you had to impute a lot of it, someone would say, well, gee, whiz, we have a system that is built on sealing wax and string here. It doesn't have any real skeleton to it. It will depend

on the species. I think in principle no one would disagree with the fact that there should be some minimal level to have confidence in the estimates.

On the other hand, without going through a number of exercises on a simulation basis to say this is what we looked at, what sort of problems would we have would be very difficult to accept it *carte blanche*. Do you take another wave; do you take last year's wave? There are a million ways of doing it; but if you have to do it for a significant amount of imputation and basically you take the first wave and the last wave and you have to fill in all the ones in the middle – I'm using just an extreme example – that's not the way to go. It really isn't the way to go.

DR. CROSSON: I think this is really an interesting discussion and I'm really glad that we're having it. Just as a little side note, I think right now when I go and use the MRIP Query Tool online, my eyes are always drawn with the cell with the estimate; and I know that the cell to the right of it, if it has got that pinkish red color, it means, hey, be careful here.

I think it wouldn't be the worse idea at least in the short term that that cell that has the estimate also be that pinkish red color because I have to – I mean, it is just a very small thing, but you see that estimate in there that has that color, again, it is a warning. It is a warning that this is something that this is something that may not be a reliable number.

DR. ERRIGO: This is just a suggestion; but instead of not providing an estimate at all, it could be that you can provide a range for those cells that don't have the appropriate precision, provide your upper and lower bounds for your 95 percent confidence interval or something of that nature. You wouldn't get a point estimate, but you would have numbers to work with in order to look at, well, somewhere in here – just another way to go with it.

DR. SHAROV: Just to follow on this, well, if you know how the range is calculated using your PSEs; then you should be able to do this with any estimate. If you would provide for the ones with the large PSEs, then we should be providing the same range for the ones that are within the acceptable range, 30 or 40.

But just one more thought on the sort of standards; whatever those people are thinking of standards, maybe it would be probably as the first step be better to consider them not just as standards but rather than as initial targets for the level of the precision that is desired. If we plot the annual estimates in all species on the Atlantic Coast and the corresponding PSEs, you would see that there are species in which we are confident with in terms of the landings and estimation of the population status based on the assessment.

Well, those are somewhere with the PSEs of 20 to 30 or less; and that's how we short of intuitively define this as the desirable level. There is a bunch of unfortunate ones that are in the red. Whatever is designed as desirable probably should be defined not necessarily as a standard right away because it is going to be very difficult to achieve that standard for all species but at least as the target towards which the survey should be improved and modified in the future.

DR. BELCHER: Well, the other thing, too, is relating this back to John's presentation of how do you determine which species maybe you need to go in and do customized ones for? If you end up

with, say, again using 30 percent for red snapper and you don't have a utility at 30 percent; then maybe you do need to go the customization route. If you get down to that absolute total most generic sense and it doesn't work; maybe that's where the custom comes into play. This seems like it almost could be a precept to where John's next step would need to go.

DR. BARBIERI: Dave, I can't help but recall that ACCSP Workshop we had a couple of years ago up in Maryland that was discussing this very issue from their perspective. When Fred brought up those simulations results, I was thinking about John Weidman's work. Basically, if I remember correctly, the results for the PSEs up to 60 percent seemed to not really – depending on the amount, as Alexei said the amount of recreational proportion of the total catch, but that they didn't seem to think for different life history types – you know, fast, average and slow growth – they really didn't think impact the outcomes of assessments of the estimates for catch level recommendations.

I'm kind of thinking about this from a reporting perspective, I agree completely that we don't want to give a false impression of higher confidence on something that we don't really – but then I wonder how that's going to intersect with the assessment realities that we're going to have to face. Any response on that?

MR. VAN VOORHEES: Well, I guess I assumed that the fisheries managers that are actually managing relative to these ACLs are the ones that are going to be maybe setting more strict standards in terms of what is acceptable. I know that many of the approaches that are used currently build in some sort of a buffer to take into account the imprecision of estimates; but I know buffers are not real popular with a lot of the folks that are being managed, right.

In terms of where you accept the standard, it needs to be a joint decision; so it would be sort of a compromise in terms of what people feel is needed. I think people who have concerns about not being able to have access to an estimate that has a 40 percent error, if you set the standard below that, then maybe you set the standard higher. I think that's really where we should go with this is to make sure that any standard that is developed, if we do it, would be to make sure that it is a joint decision on how to do that.

DR. BOREMAN: To follow up on your comment, Luiz, about that workshop, John Weidman used kind of an MSE approach in some generic, slow-growing, fast-growing species and so on; but I think that might be something we could recommend here. This is not a management strategy. Well, it is and it isn't, but some type of simulation modeling approach on species using the life history patterns here.

The types of management that are being done right now is how sensitive is this PSE level. If we choose to, say, eliminate all numbers above PSE of 40 percent; what does that do to the ability of managers to manage the stocks? Where does the risk go way up if you start dropping numbers off versus the gain?

DR. SHAROV: Just this morning Amy was asking for the distribution of the estimates from the assessment. I'm sorry I'm focused on the stock assessment usage of this data, but that's where and how it should be approached from – it should start with the question how much of uncertainty

would we allow in our estimates of the fishing mortality or spawning stock biomass being able to tell that the current level of the SSB is different at a certain level of probability from our target.

Working backwards you should be able to estimate what is your minimum level of the precision of your catch variability that would allow you to answer that question. Because this can vary substantially for species to species, there is likely not to be a certain single standard. Depending on the level of confidence that we choose for our final conclusion, your requirements will change as well. That is the way I see it approaching from our perspective from the stock assessment.

MS. SCHUELLER: I guess Alexei and are both on menhaden; so to give it some context, we actually use MRIP/MRFSS here for menhaden, but it is a miniscule amount of the landings. For us the PSE, we don't spend a lot of time laboring over what the PSE should be. Okay, this is what the estimate is for removals. We're going to add that on to our hundred thousand metric tons of this fishery and this other fishery has this much and go from there. I agree it has to be species-specific and I agree we didn't really think about this from a user's perspective.

DR. BOREMAN: Just to respond to Amy, but we are obligated to use the best scientific information available. In this case we can just say any number with a PSE higher than this, we wouldn't consider it best or even good or better.

DR. SHAROV: But on the other hand the alternatives – that is, if we are in the red zone, then it would jump into what John talked about earlier, right, we could reverse or was using a three-year average or something; there are ways of trying to somehow use the information even though at this level it is imprecise – so, right, I understand, I agree with you but we should be creative as much as possible.

DR. BARBIERI: Any comments or questions for Dave? Dave, thank you so much. I think you generated a lot of good discussion and hopefully all the comments were informative to you as well in moving forward or some suggestions there for you on how to implement this type of an approach.

DR. VAN VOORHEES: Thank you and I welcome any feedbacks folks have they want to share this discussion. Maybe this is a discussion I think we will be having in other venues.

DR. BARBIERI: Now we are actually approaching the time to have our Agenda Item 13; the ABC Control Rule Revision Group Report. I just forgot about the second MRIP presentation and I jumped this gun to this topic. Basically, to refresh your minds, we had a discussion about revisions with basically a way for us to go back to our ABC Control Rule that has been around for a while and see if we are happy with its performance and if there is any room for improvement and refinements that could be made.

We discussed this quite a bit; and actually at that time we didn't really feel that we were ready to make any specific recommendations. The idea then was to go forward and put together a working group that would be at this meeting discussing some of these issues. This group is chaired by Steve Cadrin and has John Boreman, Amy, Tracy and Eric.

Chairman Cadrin is actually away this week so he couldn't attend the meeting. The idea was to have some of this discussion here in person at the meeting and start putting together a series of points and ideas to be followed and pursued later on by the group or discuss with the committee. Since Steve couldn't be here, let me ask the folks who have been involved in this, members of the workgroup, if perhaps we can put forth some ideas right now or criteria that could be looked at or perhaps the method that we're going to be using to treat this issue going forward, how we're going to be handling this procedurally. With that introduction, John Boreman.

DR. BOREMAN: I thought the motivating factor at our last meeting was there was a general sense that the current control rules are too inflexible. I thought the charge to the group was to look at the control rules to see if we can build in more flexibility without compromising the rules to a point where they're just ad hoc. Because of the scoring system that we have and all that, people felt they were locked into having to give a score they weren't really comfortable with. They were less comfortable, but there wasn't a general across-the-board comfort level with the approach that is being used and wanted a little more room to maneuver. That was one of the motivating factors, I thought.

DR. BARBIERI: Yes; that's correct; flexibility, perhaps, or additional discretion regarding some of the dimensions and tiers and the scoring of our ABC Control Rule is an item that we can be considering going forward.

DR. CROSSON: I'm not part of this subcommittee, but I know one specific item was the MRAG PSA scores that we were using; and we felt that those – the king mackerel assessment was where it really came to a head when there seemed to be a pretty uniform agreement in the room that we were assigning some unfair numbers to king mackerel. We felt rigidly that we had to follow the MRAG recommendations; and I think that's a very specific subject that the subcommittee needs to look at.

DR. SCHUELLER: To be perfectly honest, we haven't met since the committee was formed in April. We haven't talked. I guess my thought about it is this is a pretty important topic and it would be really nice to have some sort of terms of reference. It would be nice to have staff sort of coordinate this more just so that we're actually making progress on what it is we're supposed to be doing rather than come back here in April again and say, oh, well, we've done this or we haven't done anything.

DR. BARBIERI: Well, Amy, to that point is I'm working on a separate project with Steve and it has been difficult for us to coordinate schedules and send materials back and forth. He is super overcommitted and I'm super overcommitted and it is just difficult. Given your interest, would you be willing to chair – well, her boss already said no, I guess. Well, think about it and we can revisit it in a little bit. Tracy.

DR. YANDLE: Well, definitively not volunteering to chair this, I would like to essentially second what Amy said that we really need some time and some space to think about this and take it seriously. I'm comfortable with just putting out some ad hoc notes up there right now. I'd really like to have some time and some space to really dig into this.

DR. BARBIERI: Let me make a suggestion. Can we think about having either an in-person meeting or a webinar meeting to discuss some of this and have a report to the full committee? I'm just brainstorming here.

MR. CARMICHAEL: I think it is kind of up to you guys because I had reached out to Steve some and you guys; and we did try to coordinate some sort of meeting and it couldn't come together. The folks came to me, well, let's get together, we're all going to be there and we could talk about it. We thought about maybe meeting Tuesday morning or some night, and then Steve got ill and couldn't be here. That was our plan to do that.

We can coordinate and we can tell you another meeting to go to, but we do need you guys to be able to make the time to have it happen and decide whether do you want to meet over a webinar or do you want to get together before an SSC meeting so you don't have to travel an extra trip. Whatever your pleasure is we can probably accommodate.

DR. BOREMAN: What I'd like to see is a specific charge to this working group, exactly what is this working group supposed to do? People have their own ideas right now. Maybe that's something we can talk about here is some terms of reference for the working group. Then we can collect documentation and data, that we can organize ourselves and go through those terms of reference one by one and knock them off. Just to say, well, look at the ABC rules and come back with some recommendations, yes; well, what is the overall objective?

DR. BARBIERI: Well, remember that we did have a dedicated workshop that did have specific terms of reference, and we can pull them up. I don't see any reason for us to depart completely from that and not use that perhaps even as a first draft starting point for where this could go. We had all of that in place, and at that time – it is one of those things; the committee did not feel that we really needed to have any changes to the control rule.

DR. BOREMAN: I think that was because the control rules hadn't been in place very long; so there was nothing really to look back and say are they working or not. That was one of the reasons I think there was a reluctance to change them at that point in time; but now we have another few years under our belt.

DR. BARBIERI: Yes; we do have more assessments now. We held this October –

MR. CARMICHAEL: A year ago; so it was a year ago and I doubt we've made a whole lot of progress and certainly not in terms of assessments that would allow us to make more on Term of Reference 1, which was the performance. It seemed like at that meeting, after going through this and then reviewing a couple of assessments, the issues that you have raised here came more to the forefront.

The issue about the lack of flexibility, the concern with the MRAG, the concern that despite a number of levels and a lot of complexity in that rule, all the outcomes were sort of very narrowly clustered within a few adjustment values or the narrow range of adjustments that you were doing despite what you were feeling like in many cases was the much greater range in the actual

assessment information, its level of uncertainty; so it seemed like this group wanted to just dive into that.

I think if we could off of these and come up with some more specific terms of reference for that group or a charge of however you want to term it, that would definitely help give some structure to those on the subcommittee and maybe feel like they know what to dive into. Maybe that's part of the part of the problem; they're not really sure what to attack.

DR. BARBIERI: John makes a good point. If we kind of start from this draft and have this new working group kind of revisit all of this and frame the charge and perhaps better draft these terms of reference in a way that can be more intelligible to the committee; we're going to have better results. I'll start by asking either Mike or John to – you know, given the fact that we have so many new members – to distribute this document to the committee.

I didn't mean to say anything negative about Steve Cadrin. Steve is a friend of mine and he is a great guy and we're working together on a couple of different things; but it is just that I can see how he is struggling right now just because he has so much on his plate. I feel that he would be appreciative – I mean, the fact that he was not here last October is one of the reasons, I guess, that we volunteered him to be the chair. Fred.

DR. SERCHUK: I haven't seen the workshop report, but clearly there were some terms of reference for the workshop. The workshop did their thing. Either they completed their terms of reference or additional issues came up that needed to be further scrutinized. It would be helpful, then, as a preface to say problem statement.

The workshop took place, investigated these sorts of things, these issues came up. To me, just looking at what we have down there, I don't know why more flexibility is needed. I don't know what the issue was, whether it was one case, five cases, they didn't have enough time or whether – so I think it is important.

I mean, again, I think people around the people, particularly new people might have an interest in this and might be able to contribute, but I'm lost right now. With a little bit more detail about – again, I know there is a workshop report. Evaluating actually what the workshop did in addition to the findings and why something else is needed would be very helpful to frame the beginning of the terms of reference of what this group should be looking at.

DR. BARBIERI: Well, the workshop was conducted last year around this same time; but it didn't really accomplish much. Basically by the end of the workshop, our understanding was that in general there was some consensus that we didn't really have to change the control rule; that it didn't really – for different reasons. We do have our meeting report which has some more explicit language about what we discussed and what we got and what we failed to get. I'll distribute all that so you guys can have access to that thing.

MR. CARMICHAEL: Done.

DR. BARBIERI: Done; there we go! Marcel.

DR. REICHERT: Well, I think part of it was we had a very good discussion and we kind of ran out of time because it was prior to our regular SSC meeting; and we had to start our regular SSC meeting. As John indicated, later during the regular SSC meeting, during the review of some of the assessment issues that we actually had in the terms of reference came up and created additional discussion.

I think that's when we realized maybe this – although we decided that at this point maybe we don't have to change the ABC Control Rule, at that point we thought, well, maybe we need to think about that again. I think that's how we came to create the committee. I would like to throw something out because this is an important issue. Although it may be more productive for a smaller group to discuss this, I think a discussion of this as an entire group is probably something that I think should occur. I'll leave it at that.

DR. BARBIERI: And this is something also that needs to be decided. What we tried to do the last time is to do this with 16 or 18 people, however many we have, and we felt that we have so many differences in opinion and we never really were able to produce something that could be reviewed by the whole committee.

The idea was to form this subcommittee that would produce something that we could then go in and not necessarily accept but basically go in and use for discussion. Then the committee as a whole would have something in front of them that already attends to those terms of reference and can provide some clarification. Michelle.

DR. DUVAL: Someone who was in attendance and I was your council liaison at the point when you attempted to have this ABC Control Rule Workshop. I made just a couple of suggestions from the council's perspective because we are the recipients of your ABC recommendations. I do recall that there was some confusion around the table regarding terminology; so the use of tiers when perhaps we were referring to dimensions within Tier 1 of your ABC Control Rule.

That might be one item you would want to address and there are probably examples from the other councils to look at. Another item is simply the number of tiers that you have. I think there is a lot focus given to Tier 1 of the ABC Control Rule; but we don't have assessments like traditional stock assessments for our stocks.

Given some of the developments with regard to data-limited approaches, I would encourage you to perhaps spend a little bit more time on the other tiers within your ABC Control Rule. Finally, part of your development of the control rule was the council's risk tolerance at that time and how that was bracketed; and perhaps at our upcoming council meeting, as part of the update from the SSC, this could be noted because it might be important for us to have a discussion about that as a little bird reminded me. I just wanted to provide that for your consideration.

DR. BARBIERI: Well, thank you so much, Michelle, because this does help. Yes, this is one of the advantages of having the council members here to provide with this type of more explicit guidance on issues where they need clarification. John Carmichael.

MR. CARMICHAEL: Yes, I'll just throw out what I had sent out from the April report is actually in your overview here for this meeting; and it goes right into the flexibility issues and trying to deal with the group. If we can build on what is in there under Item 13, I think it would certainly help. I pulled up here the control rule because what Michelle was saying was sort of triggering that.

One of the things that has been pointed out for an example is that Tier 2 and Tier 3; they're very explicit about DB-SRA and DC-AC. Yet the state of science in terms of data-poor methods has come a long way since then. You've got the whole DLM Toolkit and other things that have been explored; and we have set this up being very explicit for two methods that in the whole time this has been out there, as many stocks as we have evaluate, we've used one of those methods for one stock.

We've kind of pushed ourselves out either everything is up in Tier 1; in which case in Tier 1 we're just using a couple of the levels, but everything is down in like the lower tiers. As I recall, that was sort of part of one of the issues, too. After the workshop, we got into some assessments and some issues came out; and it seems like that is often the case with something maybe complex like this.

I went through it in the workshop and going through those terms of reference, it was like, well, you know, this seems to be not so bad; but then immediately in that meeting we got into an assessment and people had issues with, say as Scott mentioned, the MRAG values for some of those species.

We looked at some of those and said, well, you know, maybe we don't quite agree with this, we don't how those were derived and maybe our opinion of what they thought about the susceptibility of a particular stock or its life history traits we no longer agree with. New research might have changed and we haven't allowed ourselves any way to change that.

That was definitely something else that folks felt they wanted to do was maybe evaluate that or perhaps get that whole piece out of there or maybe no one feels that is of a lot of value anymore. I think the subgroup was going to try and put some strawman together and to bring all these various ideas together.

If we can focus them and I think getting a list of things that people are concerned about is a step in the right direction and if we could then turn that to a problem statement and some things to consider, then the group may be able to come better prepared at the next meeting and we can finally make some progress.

DR. BARBIERI: Right; and specific to some of the suggestions, some of the topics that Michelle brought up are issues that we can definitely handle through our revised terms of reference. It is just expanding what is there or substituting some of those and we can address all of those. I'm trying to understand what the consensus of the group is regarding having a meeting with everybody versus this approach that we have been applying of having the working group develop a strawman and bring that to the whole group. Is that the preferred option? Okay, I'm seeing a lot of nodding heads for the latter.

MR. CARMICHAEL: The working group?

DR. BARBIERI: Yes; and since this is my last meeting as chair, I'll be more than glad to –

DR. REICHERT: The election won't be until the end of the meeting. Anyway, it doesn't matter. I would like to ask the subcommittee what they would like from us. For instance, would it be helpful if we individually e-mailed the group some of the issues that we identified or think should be addressed to help fleshing out that strawman? How would John, Amy, Tracy and Eric like the rest of the committee to approach this?

DR. BOREMAN; I was looking through the report from the last year and the terms of reference that related to how the ABC rule is working; those are the ones we couldn't answer. I think what we need to do this time is put that aside for a different topic and then focus on are we happy with the facility that we have – I can't find the word, but are we happy with the way we can work now with the ABC rules. As we've said, sometimes we felt they were too inflexible or off base.

The notes the last time said some areas maybe we want council input because we're on the risk side of things versus the science side of things. Maybe getting this working group to focus on the ease of use now and the relevance as we see it now of what we're asked to do when following the rules; is there enough flexibility? Does it make sense to continue using the MRAG approach? Not come in with radical changes, but as a way we can sand and polish the rules now to make them easier to work with.

DR. SERCHUK: I certainly endorse John's remarks; but one thing that I'm having difficulty is with this word "flexibility"; because control rules are meant to be mostly inflexible. It is basically saying you're in this box, you do this thing; you're in this box, you do that thing. When I see flexibility – and maybe this is just my own way of looking at it and maybe I'm tainted a little bit by how we often fit our preconceived notions about, well, we're talking about this species, so we have to be very flexible; okay, but we're talking about this species and we have to be inflexible.

That basically says there are no control rules in my mind. If we can better define what is the problem here rather than saying we need to be species-specific. If you're species-specific, I think that you're not a control rule anymore. That is just a little pet peeve that I'm getting right now seeing this term "flexibility". Maybe the tiers are too rigid and therefore the control rules that exist now are not relevant for all the species in the box. That may be, but I would like to get away from this term "flexibility". We ought to be able to fit the control rules that are appropriate for whatever tiers we decide upon.

DR. BARBIERI: And to that point, Fred, just to help you understand where some of these issues came from. John used the term "flexibility", but it is really discretion by this committee to exercise its professional judgment.

At times you don't have something that is so algorithmically set that in reality you could just push a button on one end and end up with a product at the end and our collective judgment here, which is the very reason for this committee to exist, wouldn't be – you know, we wouldn't have much opportunity for our own input based on our experiences and professional judgment. Yes, it is a

control rule and it is a rule, but those rules can be very, very specific or allow some level, depending on the situation for something that we can – depending on the lack of data, depending on a number of things, come up with alternative ways of handling it.

DR. SERCHUK: If I may, I agree with you that these control rules, as I understand it, are developed by the committee and therefore that experience, that expertise should go into the control rules and ought to reflect that. That ought to be the subsequent basis for any sort of decisions about how to treat stocks that were in any boxes. Nothing is ever cut and dried; I understand that.

Every situation has a certain uniqueness, a certain glitch, and therefore it can't be so rigid but by the same token we're creating the world here. The world that you create ought to reflect the expertise, the wisdom and the experience around the table; and that should go 98 percent of the way to dealing with whatever situations arise given the fact that every situation will be somewhat unique. That's all I'm asking.

DR. BARBIERI: And I get your point completely and I agree, but a lot of the motivation here was the control rule was created and now they have been test-driven. You look at performance and you see where could we adjust a little bit the knobs here and there or was it done to the point that we feel like we're going to be definitely happy with the structure that came initially. John.

DR. BOREMAN: Well, when I was talking about flexibility, I was going back to John Carmichael's comment, too, and I'm looking at the report here. The SSC recommended a revamping of the control rule's Level 2 and 3 to be less prescriptive in the methodology to be used. That is what I was thinking about in terms of flexibility. The DB-AC or whatever it is, the DB-SC, two methodologies that were developed on west coast; well, now we have the whole DLM Toolbox. Why can't we take advantage of that? We've been using that in the Mid-Atlantic and you've got to be very careful about what criteria you set up ahead of time before you go in and start using the toolbox. Anyway, that's what I was referring to.

DR. CROSSON: The control rule was originally set up because years ago, whatever, four or five years ago when we first started setting ABC recommendations we were doing it one species at a time in this very excruciating process, and we'd get bogged down for an hour or two hours just dealing with one obscure snapper; and there were 60 more on the docket that we were just not getting anything done it. We also realized what we were doing was to some degree arbitrary because we were not apply any kind of consistent approach to this.

There was definitely a reason for developing the control rule, but there are some questions I think that have been with us ever since then. I remember another one I think that should be probably be up there for the subcommittee to consider and the SSC to consider is from the very get-go we talked about the dangers of double-counting, basically looking at the same characteristic as popping up multiple times and multiple buffers were getting applied for something that's really one core characteristic of the stock knowledge that we have.

Again, as a follow-up, I would like the subcommittee and the SSC as a whole to look through the control rule and look for instances of double-counting. That's a specific term of reference I think

should be included here and consider again whether some of those buffers can be removed or consolidated.

DR. YANDLE: One other one, since we're starting to brainstorm here a bit, is I have noticed that we have uncertainty only going in one direction. Uncertainty is always negative. We can also be uncertain of things that may be better than we think they are. I'm not saying I have the answers on how to deal with that, but that's something we may want to think about, too.

DR. BARBIERI: Just to summarize, I think we have the same five members of the ABC Control Rule Working Group still committed to continue working on this. I'll call Steve and ask about his ability – and I'm sure that he is going to be very honest and direct about his ability to chair this. I know that he wants to get involved; and we felt that was a good thing.

We might revisit by e-mail the issue who is going to chair this working group so it can move forward with a little more structured set of procedures going forward. We are now thirty minutes beyond our scheduled time. Let me see either your willingness to continue until 6:00 or – I mean, this is a relatively light day.

MR. CARMICHAEL: Were you at the same meeting the rest of us were? (Laughter)

DR. BOREMAN: Are we locked into starting at 9:00 tomorrow or can we start earlier?

DR. BARBIERI: We can probably start earlier, but I think John's suggestion is perhaps we address some of the other issues.

MR. CARMICHAEL: You have three topics for tomorrow. We have the research recommendations, which is just to pass on to you what the council approved and fill you in on the change and approach that was on there. I don't think that's going to take long. We have the stock prioritization tool, which I think the presentation takes 30 minutes – I'm thinking that's probably about an hour. Rick is calling in from the west coast and he said 9:30 or 10:00 o'clock eastern time would be great for him. Then we have hogfish to go back to. I think we'll probably be done lunchish, it looks like to me at this point, depending on how long you talk about tilefish.

DR. BOREMAN: What is there to say that hasn't already been said?

MR. CARMICHAEL: That's kind of my thought. We have the letter from NMFS to talk about and you can decide what to do there; but I wouldn't think that will take the better part of the day. I think we can start at 9:00, accommodate Rick and I would guess we'll be done around noon.

DR. BOREMAN: Not to get ahead of ourselves, but I thought the letter from NMFS said just continue doing what you're doing, both councils.

DR. BARBIERI: Yes, blueline tilefish is the gift that keeps on giving. With that, then we're going to recess for the day and we're going to reconvene tomorrow at 9:00 o'clock.

MR. HARTIG: You left the ABC Control Rule so quick, I didn't have the time to respond. Out of all the species we've done in ORCS, there are two particular species that the commercial fishery is having some problems with. It is in the jacks complex; it is almaco jacks and banded rudderfish. If you notice over time we're hitting that ACL in about the middle of the year and we're going substantially over.

There is a reason why that is happening. It is because the landings of the past have not indicated the productivity of either one of those stocks. What I would like to do is to try and bring you a presentation about how we would like to move forward with possibly an adaptive management approach for those two species.

It is not entirely fleshed out yet, but I've had this idea for quite some time; and I've talked it over with a number of people. I don't know if you would have to add that to your control rule as an adaptive management approach to allow harvest outside of your ORCS process for a particular species. I don't know how that would work, but I'm bringing it to you now, and I'll try and have something for you to be able to look at during the committee meeting.

DR. BARBIERI: Thank you, Ben. Any additional comments or questions?

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Crowne Plaza Hotel, North Charleston, South Carolina, October 22, 2015, and was called to order at 9:00 o'clock a.m. by Chairman Luiz Barbieri.

DR. BARBIERI: If we could get to our seats and try and get started promptly at 9:00, since we have that webinar presentation. Rick Methot is going to give us that presentation on the NMFS National Stock prioritization tool. Before that, we're going to have an overview of the revised research recommendations.

MR. CARMICHAEL: Each year the council does a research recommendations plan per the requirements of the Magnuson Act. You guys typically see it in April. It gets approved by the council in June. This year, when it was approved, it was suggested that it be modified to more specifically state research needs and to include dates and times by which things are needed.

We went through a major rewrite of this, a reorganization of the information that was there, starting with looking at assessments that were coming up and the types of things that have been asked for those assessments to give what is the new Section 1. That is the primary short-term research needs for assessments that are coming up.

The general language that was in there before, as you can see this is very specific for this assessment; we need these things by this date. It is hoped that this starts to make this document more effective, more useful for groups within the agency or even others to use this as a way to maybe get resources to get some of these projects done.

There is new Section 1 and then Section 2 and 3 address things for the SMZs and the MPAs that we've heard a lot about here as well in our earlier discussions. These were research needs that

were noted within those plans. Then we've got some long-term things that come in the next sections.

This is a new format we'll be going with on this document. Then the details and such that were in the other ones such as prioritization for species and other background information; we didn't want to lose track of all that so we're going to keep that as essentially a source document for this; but this is the type of approach that we're going to take to the agency in the future years and submit to them as our research plan.

When we come back in April, we'll be looking ahead to things that we need for the next five- year plan and assessments that are coming up and things of that nature. At that time we'll be asking you on the SSC for what advice you can give particularly towards specific things that can be done, the kind of specific, direct, measurable types of information that we can put in this report.

Because it was a pretty big change, we just wanted to come back around to you and give you a little heads-up that the document that the council has now approved, which is this one, is substantially different from the one that you guys saw and commented on back in April. If anyone has any comments or suggestions for this, we would appreciate it.

DR. SERCHUK: I've seen a number of these in the two councils that I was liaison for; and John can speak to Mid-Atlantic Council. It is good I think that you have everything that you have here, but it is a little bit overwhelming. From an agency point of view, because I've often asked the agency, what do we do with this stuff, and basically they say, well, we would like to take cognizance of what the needs are from the fishery management councils.

A couple of thoughts; one is it is really important I think to put your highest priorities up at the very beginning or to note in each of these sections what is your highest priority? One can assume, looking at some of each section that the first bullet is – but it may not be. If there are generic things, whether it is sampling or surveys that would across the board be of benefit; then I think those should be highlighted, because those will be multipurpose and the agency then can start thinking about, well, yes, we're going to get the biggest bang for the buck if we increase observer coverage, or if we institute a fishery-independent survey, or if we do a stock structure sort of thing.

Those are just a few suggestions you might want to think about. I'm not going to go into the recommendations themselves, because you're familiar with what your needs are. My feeling is you might want to separate it out and say high priority things right up front; and then take care of all the specifics later on.

DR. CROSSON: I guess my recommendation on this is, first, when you get down to the second page I guess where you have like Item 4 in the long-term needs; and even above there; when you have these research recommendations, it is best if they're very specific. Some of these are really broad; and when you think about them, they could just basically occupy the Science Center staff for the next year.

Evaluate the cumulative economic and social impacts of snapper grouper regulations; since when? That is a fishery that has undergone so many changes in the past ten years, since I've been doing

this stuff, that you have to start a baseline point. The reason we stopped using the Jim Waters model is because we couldn't keep up with all the changes in regulations and the whole model kept crashing in SAS.

Management strategies to produce discard mortality; if there are specific fisheries like the black sea bass pot or something specific in the snapper grouper fishery, as specific as you can get it's much more manageable; because when the Science Center staff look at these things, there are these huge, broad requests.

I can't remember if this one keeps asking for SAFE reports, yes, Item 6, this is the specific reporting request; SAFE reports for which species are the highest priority. I mean there are, what, 60 or 70 of them in the snapper grouper complex. If there is a specific one that you want to see some information on an annual basis, specify that. It is just these really big broad ones tend to drive you crazy when you're looking at them.

DR. BOREMAN: I'll get back on my soapbox again; I think I do this every time. This is fine and dandy; and as Bonnie Ponwith likes to say this is basically fodder for dust bunnies unless we do something with it; and to do something is where is the accountability again in here? Maybe to encourage a little accountability, after each of these topics leave space for current status, check the box so people are encouraged to do something about these or at least fill in that we're not doing anything on this one; some sort of feedback.

As Fred said, the Mid-Atlantic SSC, we go through this every year like all the SSC's do, work with the council to develop the research plan. But, you get a little jaded after awhile, you would say why bother? You go through all this effort and we went through prioritization process, spent a couple hours, one meeting, on it; but why?

Because people say, well, that's nice, thanks for your input and then we never hear back. There needs to be somewhere in here a built-in mechanism for feedback to at least see that if they are making progress in what areas and what projects and when they expect completion, who is doing it and so on, so we can do our own planning.

DR. BARBIERI: Yes, very good point. Actually, I think that one or two meetings ago we had this discussion, John, about this. Gregg Waugh was in the room and he mentioned that this is something that they were trying to integrate into this as well. There used to be an annual meeting or maybe biannual meeting where they would discuss progress on this plan, and that this hasn't happened for quite a while.

DR. GRIMES: That was my comment. I think I've said this before, too; but in the way-back when Brad Brown was Center Director, there was a meeting every year with the council, both of them; the South Atlantic discussed research plans and priorities. It would be reasonable to initiate such a thing again.

MR. CARMICHAEL: I think these last two bullets here – and I guess saying that they're the last two bullets clearly doesn't give them the importance that they deserve – but the one is the annual

progress report at the June meeting; so that is where we asked for the agency to tell us what is being done.

Maybe we should move that up to the March meeting so that you are then informed by that at your April meeting; and then we want from your last meeting where it says direct appropriate SEFSC staff to meet with the SSC; so we plan to implement that for the spring meeting and ask that they come when you guys look at this for the next year in spring. I think that progress report to accommodate like John said, June is probably getting late. We probably need that from the agency by your April meeting.

DR. BUCKEL: I agree with what has been said; but I do want to compliment the council staff on this new document, which is much improved over what we had before. Thanks for making it much clearer and it is more concise compared to what we had before. Also, one of the comments I've had on this over the past several years is that these research recommendations don't make it into the RFBs in our region; but this last round I noticed in MARFIN and CRP, a lot of the research recommendations from council were in those RFPs; so thanks for getting that in there as well.

DR. BARBIERI: That was going to be my question, too, Jeff. When you go through those RFPs, MARFIN, CRP, SK and all the others, you seem to see like very small, miniscule changes from year to year, it seems like. I don't know the process that they go through in terms of putting those together; but it looks like they haven't been updated as often perhaps as they should have been. It is good to see that some of those items are beginning to show up. Okay, any other comments, questions or suggestions for John regarding the research plan? If not, I guess we can check on the status.

MR. CARMICHAEL: Yes I just looked; I don't see Rick yet. I think it is a little early yet. I wonder if you want to maybe start talking about the hogfish, if we can circle back around to the hogfish Georgia/North Carolina stock now that people have had a day and a half to think about that. We might be able to wrap that up between now and 10:00, maybe in a half hour; 9:45 would be good. If not, when Rick gets on, maybe we'll just pause.

DR. BARBIERI: Yes, that is a good idea, John. Mike, if you can scroll back up so we can look at our action items to review the Georgia/North Carolina stock ABC and consider basically all the criteria that have been used in application of the ORCS approach. In the amendment document, it had Amendment 37. She had a table with the criteria.

The main issues have been already highlighted in our list of action items. We already discussed the time series used; and we agreed to maintain the time series as we had it before. Questions still lingering, number one, is ORCS the appropriate methodology for determining ABC for this stock given the information that we have?

In this case my interpretation of this is does it even meet the bar of ORCS? You may remember that we had 40-odd stocks that we started with in terms of applying the ORCS approach. By the end of our workshop, we ended up only providing catch level recommendations for 22 or 24, something like this, because some of the other ones had so many issues with the data series of

landings that they were not considered reliable even for application of the ORCS approach. With that, I will open up for committee comments or recommendations regarding this issue.

DR. ERRIGO: For the time series in ORCS, I can give what I know of from all the research I've done into it. For the time series '99 to '08, it seems that the intercepts seem fine for the most part. There is not too big of issues within those years in terms of species ID, coding issues or anything of the sort, so that is one thing to consider.

The other thing to consider – and we do have some North Carolina people here who may be able to help better; but in the Georgia/North Carolina stock there seemed to be – in the MRIP data there is almost no trips intercepted coded as dive trips; but from what I understand, the vast majority of hogfish in the Carolinas and Georgia are taken by diving. I'm not sure why that is or how that came to be, so that is another thing to consider in terms of whether the catch series is a reliable catch series or not.

DR. BARBIERI: Those are good points to get the conversation started. Just as a reminder, Attachment 15 of your briefing book is an Excel spreadsheet, which has –

DR. ERRIGO: I e-mailed an updated copy to everyone.

DR. BARBIERI: Yes, he e-mailed the updated copy. Perhaps first things first, we start by discussing the appropriateness of the time series of landings and perhaps problems with misidentification or lack of appropriate sampling of the trips that are more closely related to hogfish. Laura Lee, I don't know if you are the most appropriate person in terms of discussing biological information for North Carolina regarding sampling. Anne, are you up to speed on that?

MS. MARKWITH: I guess.

DR. BARBIERI: Well, the question was we are trying to get some more information about sampling – I guess commercial and recreational sampling of hogfish off of North Carolina and South Carolina; that we have these trips primarily being spearfishing diving trips. Mike noticed that not too many had showed up I guess in the database. He was just trying to get some clarification on that. Then Mel could perhaps give us some information on the South Carolina side of things.

MS. MARKWITH: I know at least in Wilmington, because I only sample the southern region of the state, we do have a lot of dive vessels. I think part of the issue with it, at least concerning the MRIP, is they might be at what is considered private docks. I don't know how that plays into the MRIP exactly.

Some of the dive boats are docked at marinas instead, and we might be able – if there is a way to add them into the MRIP; then we might be able to capture the data that way. At least in the southern part of North Carolina we actually do see a lot of hook and line of hogfish as well, though, because they've actually been able to figure that out pretty good.

DR. ERRIGO: When did that start?

MS. MARKWITH: Michelle, do you know when the hook and line for hogfish started, when they've got a little bit better?

DR. DUVAL: To my understanding it's actually been going on for a little while. I know that the folks that have figured out how to successfully fish hook and line for hogfish recreationally have been understandably reluctant to share that information. There have been pictures that have been posted on websites in the past; but this is a group of anglers that is concerned about the sustainability of the resource and so they're a little reluctant to share the knowledge of how to do this, just so as to not create I guess more or less a run on recreational hook-and-line fishing for hogfish.

I mean even when they engage in this activity, they are not necessarily guaranteed to bring up a certain size hogfish or even a hogfish every time that they're going down and casting. They are not catching fish during the time of year when they are spawning just due to the behavior of the animals at that time during the spawn. It has been going on for a while, since probably at least before we put in our state waters' proclamation restricting harvest to five fish.

I think one of the other issues that may have occurred, just looking at the MRIP sampling data, is we have this issue of calling things pigfish in North Carolina. My guess is that there has probably been some miscoding based on calling things pigfish. I mean people call grunts pigfish. I am guessing that there has probably been a little bit of miscoding there just based on the average weights that you have in your spreadsheet. Hopefully, that helps you a little bit.

DR. BARBIERI: It does help a lot. Mel, if we could get your perspective from South Carolina, that would be great.

MR. BELL: Mel Bell, South Carolina DNR and South Atlantic Council. We have some pretty decent commercial landings, and we're very comfortable with documentation of those; and that is our normal port agents encountering folks in terms of monitoring that, but then the landings are reported. We're talking over 10,000 pounds of hogfish a year.

It is predominantly boats that aren't from South Carolina, and it is spear predominantly. That has been going on for quite a while now, but that is the bulk of the commercial landings. Some are taken – and I think folks are figuring out the way to use hook-and-line techniques, so you're seeing a little bit more that are coded for hook and line, but it is predominantly spear.

For us, you are talking about going 40, 50 miles offshore; we're talking 150, 160 feet of water. What has kind of evolved both in the recreational community and the dive community, the commercial side is the use of tri-mixes and technical diving and decompression diving and stuff. These guys are diving fairly deep and that is where they're getting the fish, whether it is the recreational divers or the commercial divers.

We have our own charterboat logbook system that we've had in place since '93; and going all the way back to '93, you will see anywhere from a couple to six trips a year that we catch that are designated as charterboat trips, where the fish are landed with dive or spear being the gear type, so we see it in that community.

Those are predominantly boats – they have to be bigger boats to go that far offshore, so they may be boats that go to docks and aren't normally captured in the normal MRFSS or MRIP creel-type surveys. In talking to our creel folks, they very rarely encounter – I mean occasionally they will, private dive boat, smaller boat that comes to a landing, they might occasionally see a hogfish there from dive.

But I think just like in North Carolina, people are kind of figuring out the technique, and I won't go into the techniques. You will probably see more coming in with hook and line, but it is predominantly deeper water, farther offshore, bigger fish and predominantly spearfish right now. Bang sticks are not allowed off of South Carolina, so it is spear. That is the nature of the fishery.

What makes them – and I've always had some concerns about this, particularly with the landings that we've seen coming commercially is that the fish are susceptible. If you go down on the bottom, the grouper might be kind of skittish or stay away; the hogfish will come up to you. They form these sorts of harems or groups. They are just kind of sitting ducks.

That is just their nature; but they are particularly easy to spear; and then from a commercial standpoint the price is very good. It is a very desirable meat, grouper prices. But that's sort of our fishery, but the bulk of it, in terms of the landings, is really the commercial side based on the dive component.

DR. ERRIGO: I have one more piece of information. I calculated out from 2004 to 2014, there was only a single year where any intercepts came from spearing; that was 2005. Overall from 2004 to 2014, 96.6 percent of the intercepts were from hook and line in the data.

DR. SHAROV: Then it becomes an issue of the scale. If you look at the comparison of the commercial versus recreational landings, recreational are at least for the recent period that you're considering, '96 or '97 through the recent times, the percentage of recreational landings is somewhere between 2 percent and 11 percent of the total.

If the recreational estimates are more or less in the ballpark, it would be nice to know more details, but it generally doesn't matter. It really doesn't matter if ballpark the level of estimates is correct. However, if somebody believes or if there is some anecdotal information that tells us that the survey consistently is missing a significant amount of recreational landings; that would make it instead of 10 percent, 30 or 40 percent or maybe 200 percent of the current totals; then we should probably discuss that; but I'm guessing we don't have any information on that.

Looking on this graph, the recreational is just pretty much flat. If you would expand it on its own, there is variability, but there is variability within the relatively narrow range. It is either the survey actually capturing the average level of landings or it is consistently biased to the unknown level because of the non-coverage of the divers. That is what I would like to hear. If we don't have any additional information on recreational, then we'll just have to work with the fact that the current levels are rather stable and their contribution is low. But if we suspect that the total removals by divers can substantially be higher, then that somehow should be accounted for in calculating the ABC.

DR. BARBIERI: What I'm hearing is basically that – let me try and summarize that and you tell me if you disagree or if you have something else to add – is that at this point given the proportion of the recreational catch relative to total landings; that it is really not anything that would have a big impact; and that the information that we got from the states that have those landings suggested they are being picked up consistently from the commercial sector. We don't really have any major reasons not to use this landings time series for application of the ORCS approach. Would that capture –

DR. SCHUELLER: I'll just go on the record to say I agree with that general statement and I agree with what Alexei said.

DR. BARBIERI: Okay, so that resolves our appropriateness for application of the ORCS approach. Now, the other issue is the risk of overexploitation that we discussed yesterday. Fred, you had raised some very good points regarding life history attributes and the biology of hogfish and vulnerability of susceptibility to overexploitation factors.

Now that you've had a chance to review the criteria in that table of attributes that the methodology applies, are we satisfied with the current classification of hogfish as moderately high risk of overexploitation or not? Again, those are the values there highlighted on the table. I know it looks small there, but you should have access to that document. It was e-mailed yesterday to everybody.

You can see how the scoring was assigned on all those different attributes. Now keep in mind what we are looking at here is appropriateness of the values assigned, the scores assigned to each one of those attributes, plus whether we see any reason to change any of this now that we are dealing just with that Georgia/North Carolina portion of the stock. This classification here was actually done for the stock as a whole. John Boreman.

DR. BOREMAN: Yes to go back to Fred's comment yesterday about this particular species being more vulnerable because of the territoriality aspect; I looked through these characteristics and the only one that comes close would be the schooling aggregation; but it is not entirely applicable here, because I think that is, like schooling, you can easily catch them with a purse seine, for example, the aggregates or you can make them more vulnerable. We might want to loosen the interpretation under that category to include the territoriality aspect, and that may cause us to increase the score from 1.75 to something higher than that.

DR. REICHERT: To that point; the second part of that is other behavior responses affecting capture; so that actually does capture that type of behavior. That doesn't mean that we shouldn't reconsider that scoring, but I think it is captured in that category.

DR. ERRIGO: When the SSC went through ORCS the first time for hogfish, it did go through life history characteristics and overall categorized hogfish as having a high risk of overexploitation in terms of life history characteristics, which is what I think everyone agrees is true unless you think that would change. Their life history characteristics are very similar. When you go to the Georgia/North Carolina portion of the range, most differences are going to probably be in where they are and how the fishery is prosecuted. Their behavior and life history does make them a high risk of overexploitation, and that is what the SSC decided they were in the end.

DR. BARBIERI: Additional factors here I guess would be changes in accessibility, availability of the fishery; but, yes, I agree that in terms of the life history attributes we wouldn't have any reason to change anything.

DR. CROSSON: The bycatch are actively targeted, 1.5; from what I've been hearing today it seems like it is very specifically targeted at least by a substantial portion of the fishery. I mean you are telling me that they are learning to catch them and using specific techniques, and it is and/or it is the dive fishery where they are targeting these fish.

MR. CARMICHAEL: The criterion there for, say, a 2 was occasionally targeted but occurs in a mix with other species and catches; and for a 1 was no targeted. Then the high for 3 was actively sought after.

DR. SCHUELLER: If this is a predominantly commercial fishery, when the commercial guys go out, are they targeting anything else? I guess that is the question. Can anybody speak to that?

MR. BELL: Yes; basically it is the full suite of whatever is down there in the complex. Again, I mentioned the hogfish kind of present themselves sometimes as an easy target and it is a valuable product; but they are getting the full range of grouper and snapper and things that are legally obtainable. It is just their behavior that unfortunately for them makes them a little vulnerable; but, yes, it is a full suite of species.

DR. BARBIERI: Yes; and I see Anne shaking her head back there.

MS. MARKWITH: Ours is only for the dive boats. We don't really see a hook and line except maybe one or two fish every so often for the commercial.

MR. COLLIER: In my old life I did a cluster analysis for looking at the commercial fishery, the hook-and-line commercial fishery and also the dive fishery. What that came up with was the commercial hook-and-line fishery; it was basically the full suite of species in the complex was associated with hogfish. There wasn't a real good association there; but when you looked at the cluster analysis for the dive fishery, it was mainly other groupers what was caught on those trips. Gag and red grouper were the common species associated with those.

DR. BARBIERI: My understanding then meaning that there wasn't really very strong targeting. Mainly the trips were catching something else; and if hogfish were available in the areas, they are being brought in as well.

MR. COLLIER: For the hook-and-line trips they are mainly not targeted. There will be a bycatch associated or an incidental catch associated with other catch. Even though they are truly targeting hogfish, they are not going to spend the entire trip going for hogfish. For the dive vessels, which are a very small component of the overall commercial fishery, yes, they do target hogfish and general areas that hogfish are likely to be. Up off the Carolinas it is a lot different than where the hogfish are and down in Florida; and so that is another consideration for the fishery.

DR. SERCHUK: I am not very familiar with this ORCS technique; but I'm seeing the committee is struggling here and actually I am struggling as well with this technique. We have a number of different categories. Presumably they're all equally weighted to come up with a mean. That is a problem, I think, quite frankly.

I think some categories should have more weight than others; but that is just my personal opinion. Then I am looking at does it make sense with respect to the scoring for other stocks and other species? I don't know whether that is the case or not. I am not familiar with these sorts of things. You mentioned yesterday, and several other people did, about trying to get the expertise around the table, whether it is either qualitative or specific.

I am thinking that in using this we choose a scoring system. It has no variability around it. We get a mean; but I can tell you looking at these numbers, they're all not very much different. The mean, I see one at 2.05, one is 0.203, one is 0.83. The qualitative category is moderately high. That is lower than some of the others that have a higher score. There are some inconsistencies here, which you might expect with this sort of thing.

I'm thinking that the question is it moderately high? We should use this as one tool but not get stuck with this tool. If there is some aspects that people feel are either of any of them that really should have more weight and whether we think this is more vulnerable; that is the sort of decision I think the committee should come to. That is my personal thing. I think we're betwixt and between. We have a framework; the framework covers a lot of things; but it may not be appropriate across the board. That is an observation that I'm making.

DR. BARBIERI: To that point, Fred, because I think that is an excellent point, I think that independently – because we had two workshops and the workshops involved the SSC plus members of industry, fishers that know how the fishery happens. We had council members. It was really a workshop of multiple inputs for this.

At the end I think that qualitative characterization there on the right; we came to the very conclusion that you did. Basically, after going through the whole thing, there was so much variability and inconsistencies that we're going to just use our best professional judgment and intuitively integrate some of these things and then come up with that classification, the column on the right.

It can be yes or no; so that is the thing. Since the council asked this question specifically at the last council meeting, it is good for us to have the discussion and have on the record our reasoning for expressing an opinion. I think we've been discussing this for a while. We have some good arguments to sort of put a narrative in our report that explains our reasoning for changing or not changing.

That is the thing; I don't see anybody jumping up or chomping at the bit to say let's go ahead and change it. I see more of a level of comfort of staying where this is intuitively. Okay, I think this is fine. I think that between some of the discussions that we had yesterday and some of the discussion today; we are going to have enough material to kind of build our narrative record of the reasons behind this decision; and I think that's fine. Do we have any values that we need to

provide, because we had already gone through this exercise? No; so we're suggesting or recommending no change. Thank you so much.

DR. ERRIGO: The council would like to set the ACL in numbers as well. Would you make the same recommendation for this stock as you did for Florida, to have all the landings in numbers, create the ABC and then convert the commercial into weight or not?

DR. BARBIERI: Yesterday we had an extensive discussion to basically make that recommendation. Unless the committee has any reason now to disagree with that recommendation that we made yesterday as we discussed the North Carolina through Georgia stock of hogfish, we'll retain that same recommendation. We may be ready to move on to the webinar.

DR. METHOT: Can you hear me?

MR. CARMICHAEL: Yes, we do. That's good.

MR. CARMICHAEL: I'll call up your presentation.

DR. METHOT: While he does that, thank you for this opportunity. We have Stacey Miller here. I don't know if she's had a chance to introduce herself yet. If not, please ask her to do so. What we're here to talk about today is beginning steps of implementation of the prioritization of fish stock assessments.

What I would like to do is give you an overview of how we got to this place and what are the plans for implementation from here collaboratively with the councils. We initiated this prioritization project to assure efficient use of our limited assessment capacity in getting here, because John Bush from the budget office, from the Government Accountability Office and from Congress to have such a protocol in place in order to assure and to document we are using our resources in the best way possible.

It is definitely designed to be implemented in collaboration with the councils of which the factors to be considered would not be unfamiliar. What you are just looking at is very much a building block in the prioritization approach. The way in which we develop this collaboration with the council to implement in each region is going to be a little bit different in its nuances because our relationship with the councils, the way in which committees have been organized is different.

We are ready to be tailoring the process to work with the council and its various committees. It is designed to assess every managed stock at some sufficient and objectively determine the level and the frequency. There will be data-limited approaches that are rationalized as part of this process, and there will be identification of stocks that need to have better assessments than we have to date.

It is going to produce ranking of the stocks and there is strong advice who will recognize that it can't be prescriptive. There are other issues that are at play, things that we have not been able to include in this framework; but we do see this as an objective way to really carefully start on what it is that we should be assessing, and how frequently.

I'll take us through just very briefly the history of how we got here, goals, the overview of the process and the relative roles of NMFS, SEDAR and the council in carrying this out. The timeline in getting us here, we actually got started in 2011 where we initiated the developing of it in response to the budget process.

A couple of years later we started seeing a very similar looking language showing up in some of the proposed reauthorizations of the Magnuson Act. Basically, congressionals were getting it. They realized that we needed to have some limit on what it is that we expect to be able to spend on stock assessments and they wanted to assure we indeed are utilizing it in the best way possible.

We presented the draft process to the Council Coordinating Committee in February 2014; and since then we've been working on developing a way to respond to the public comments. We saw in 2014 also the GAO report endorsing that draft plan. We presented the revised process in June and in August this year we were able to read the document, so they have a starting place.

We realize that this process will evolve over time as we work on implementing it, but this document that we've made available is something that defined the starting place so that we have something to work toward implementing the first round and to give us a place for which we can revise and make it better in the future.

Why prioritize is really a pretty simple one. The data and the capacity limit the number and complexity of the assessment that we complete each year. All stocks need some level assessment at some frequency, but there are some diminishing returns. Perfection is not an option. The most important stock, if we put all the energy into assessing them better and better, we won't make it perfect.

We need to have a portfolio that does them as well as we reasonably can and also deserves enough of our overall assessment energy to take a look at all of the other associated stocks we're comfortable that they are not being overly impacted and that we are providing advice that can get them out of overfishing and get them to be part of the optimum yield.

The basic categories of factors that are at play here; in the upper left you see stock status, so basically things that are pushing towards overfishing limits or overfished limits are stocks that need a closer look so that they don't exceed these limits. That is closely related to fishery importance, because stocks that are important to the fisheries are the stocks for which we want to be pushing close to the overfishing limit; because that is the only way to get close to MSY out of those stocks.

They are particularly deserving of close looks at their assessment so that we can keep their annual catch limit tuned up to be as close as possible to what the biological limits are. Ecosystem information also plays into the ecosystem importance. Stocks that are important to the ecosystem also, even though they may not be contributing proportionately as much direct yield of the system, they are important to maintaining a healthy system and maintaining a sense that we are doing a good job of managing the overall ecosystem.

Assessment information plays into this as well. No matter what the need is according to the fishery importance of stock status, if we don't have the information, that doesn't put us in the position to improve that assessment. Simply relooking at the old information again doesn't necessarily give us a better assessment.

Where we have new information that is telling us that it looks like there is a change in the projection of the stock relative to what we previously had thought or we got some new information coming forward that can give us an opportunity to answer an old question; those are the opportunities that really should be prioritized to bring forth in assessments. One of the constants we very strongly have built into this is the idea that variable stocks should be assessed more frequently than stocks that are slow moving over time.

This is a retrospective look at haphazard gathering of six stocks from around the country, some showing pretty substantial changes from one year to the next or certainly over a three- or four-year period; and others like dover sole from the west coast and rougheye rockfish from Alaska are just rock solid over just about a 25-year period. Those clearly don't need to be assessed frequently.

This concept of what factors are going to be driving stocks to have high fluctuations are part of the process in driving us towards setting a target frequency with which they should be updated. The importance of stocks to the fishery is something that we also have built in. Now this shows on a national scale the landed value on a log rhythmic scale. It is huge.

At the upper end we're pushing up towards a billion dollars a year from a few stocks; and there are a large number that are in the one to ten million dollar range. For the non-FSSI stocks there is a large fraction that are showing no catch whatsoever even though they are in fishery management plans.

We recognize that the more important stocks need more attention. They are dependent on a log rhythmic scale so they don't get overwhelming extra attention, but they do get more attention in the prioritization process. The reason for commercial value of the system that we have will basically rank things within a region and not looking at it totally nationally. We also recognize we don't have a comparable scale that really accounts for recreational importance in actually developing the relative recreational importance to be something that is an important part of the process.

Because of that which stocks are pushing limits – so this is what we call a KOBE plot – we're looking at the relative fishing mortality rate on the Y axis and relative abundance on the X axis and each little blue dot is a stock according to our most recent assessment. Actually, even though there is only one stock that is fully in this red circle I drew, there is many in that region.

We actually do pretty well from a big-picture perspective in terms of having a fair number of our stocks, a fairly high proportion of our stocks in the vicinity of where we would want to be, which is fishing at a bit below the limit fishing mortality rate and the stock abundance being a bit above the target level of abundance. That's doing it right.

But where we have stocks that are pushing down towards overfishing limits or pushing up towards that fishing mortality limit, those are the ones that we would have a higher degree of retention so they don't exceed the limits. But also just maintaining stocks in this vicinity also takes some degree of constant attention so we can fine-tune catch limits to make adjustments per natural factors that are happening. A process starts by listing and grouping out the stocks for prioritization. You already have this information pretty well in hand. Tell me if I'm still being detected. It says my audio –

MR. CARMICHAEL: Yes, Rick, we lost you there for just a second and then you came back and then you were gone again. All right, now try.

DR. METHOT: I just heard that I'm unmuted. Grouping stocks into prioritization groups, it may make sense in the South Atlantic to keep them all in one group. But if there is some group that is clearly different and a different constituency, a different resource, it may be fine to separate it off into a separate group.

We're already starting to work on collecting available data for various databases. Clearly, you have a lot of it already assembled there; but to get the data and organize it into the categories of the prioritization process is the next step. Then from there we'll have the data we have, the tools we need in order to look at the factors for setting the target assessment levels.

That is the concept that we'll start with here, but we are going to draw up that more fully with the stock assessment improvement plan; but more importantly we'll be setting the target assessment frequencies. Once we have levels and frequencies that are the goals that we're trying to achieve, then now we can then look at calculating what are the annual priorities for assessment and then moving that forward into your decision process.

MR. CARMICHAEL: Rick, just pause just a second; I think we're on the older one and I can shift over to your newer one here. I am having trouble with my machine here. Mike, it is not reading the USB again; that is the problem.

DR. METHOT: The intention is that this is a collaborative process between NMFS as the action agency and the councils as the place for which we have this strong connection, the entire fishing community. Together, thinking through the various factors on the effect of the prioritization of assessments and working this through; we're already starting, as I say, of collecting the data from the databases.

We need to begin conversation in this meeting, and certainly as I follow up with the South Atlantic Council in December, figure out what are the right groups to involve with doing this? Clearly, the kind of dialogue we just heard plays into this and may well be that the SSC is the primary group we work with in the South Atlantic Council in order to do this.

In addition to the scoring, there is also an issue of assigning weights to the various factors; and that is something that we see happening at a bit higher level in the process, more like the council level with the agency weighing in as well in order to come up with the weights after the scores have been provided more by the regional experts.

Also that would then come through advice of presumably the SSC here, but then going on to the council in order to look at the drive list and then make decisions about what to actually do and where to make adjustments after looking at that list. The first step is organizing the stocks for prioritization.

It is best to include all the stocks from the region plus their shared resources, shared constituencies and assessment resources and to separate out those where there is clearly some distinction. Something to pay attention to is how we want to deal with species-rich complexes; the degree to which you want to keep the individual stocks as individuals within the prioritization process; so we could keep thinking about them at least in a PSA kind of sense, a vulnerability kind of sense, so we can keep looking at them individually as we work our way through this process and not just immediately step back only looking at the complex as the complex.

The extent that you have already been doing that will be useful; but something to think about as you organize the stocks into prioritization. The second step is getting the scores for these back. This is the total list of factors that we have arrived at, and this is the new size that could fit after the first round that got floated out to the councils for comment.

I believe I made a trip to the South Atlantic SSC at one point to talk us through what may have been the first round of this. We have six factors in this fishery importance category. I already have talked a little bit about commercial fishery importance and recreational fishery importance. We have another factor here that is importance to subsistence, something that is there largely from the needs of the Western Pacific where subsistence fishing is a substantial fraction of the activities that go on.

We have in here non-catch value to recognize that some of the reef fish and some of the other members of the regional ecosystem that have importance to our overall constituency that goes beyond just their value as catch. We need to be able to recognize –

MR. CARMICHAEL: I think we've dropped again. Rick, I'm not sure if you can hear us. The display here is telling us you're offline. I wonder if you're having some connectivity problems at your end.

DR. METHOT: Okay, I'm back. All right, so I was talking to myself about how important it would be to get the advisory panels involved with coming up with some sense of the constituent demand or which stocks are particularly important, where do they have an expectation of excellence in assessments, where do they see that we need to pay more attention to a stock that is represented by its level of catches, importance directly to the fishery?

It is a way to account for some of those intangibles that certainly are important in our thinking about the assessment priorities. Further down you see relative stock abundance, relative fishing mortality; that is straightforward. Ecosystem scores, they are getting hard to come up with. I expect we'll have a lot of stocks that just have middling scores of that for the time being, but it is a place for us to evolve and where we can identify stocks that are particularly high or low on influencing the ecosystem.

It doesn't help anything if everything is labeled a high. These factors are only useful to give us a way to distinguish between stocks. They're there with scales of basically 0 to 5 in order for us to establish that kind of rankings. For the assessment category, unexpected changes in stock indicators; basically where you have many years between assessments, you do have stock indicators. I saw some in the previous slide that you're looking at.

Where you have stock indicators, where you have traffic lights, if you will, where we have trends showing up in surveys; we can and should be looking at that information on a routine basis so we can get some sense of where things are drifting off from where we thought they were going to be. Again, where we have relative new type of information, if we've done a previous benchmark and you have a bunch of questions to be resolved, well, it doesn't make sense to revisit that benchmark until at least one of those questions has new information in order to bring it forward for resolution.

Certainly, the number of years a stock is overdue relative to the established target frequency is something that we expect to be a factor playing into the assessment priorities. This factor gives us an explicit way to cycle through the stocks so that a stock that is recently done and not yet up to its target frequency, when we get to zero, and each year as it goes beyond its target frequency it goes up in this score; so hopefully, that would give us enough of a way to cycle through stocks to occasionally look at them as they work through the system over time.

The factors that play into setting the target frequency; we see this as the interplay between mean age in the catch and stock variability. I'll get to that in a little bit more detail. Identify the target levels; for now we're just going to basically assume that each stock needs a somewhat better assessment and more data rich than what we have today.

In a year we plan to – and it has taken a while for us to get there – to get out the updated stock assessment improvement plan; and it is in that plan rather than this prioritization document that we're going to describe in more detail what we see as a way to revise the levels that were in the original plan in a way that better helps us work into this prioritization process.

Basically it is a way for us to say what is the group level; what is the current data availability; what is the current modeling approach; what is the current degree to which we're including ecosystem factors and include this as well as an opportunity to set a target run? Where do we clearly see a need to do better on one or more of those factors?

In doing this, we'll be considering where we need better surveys, better age data, and more ecosystem linkages. We need to be realistic about this, just doing everything pie in the sky, we need Cadillac assessments for everything is not useful. We're never going to get there; but we need to be judicious about where do we think there is a feasible need for improvement in an assessment.

Again, back to more variable stocks need to be assessed more frequently; in looking at this what we see is using the mean needs of fishery catch or a proxy for it as a starting place for how frequently stocks should be assessed. The upper left you see mean age versus total mortality for a handful of stocks in the northeast, showing some relationship there, unexpected relationship.

We also see for those stocks no particular relationship between mean age and recruitment variability, which is good because sense is that mean age is a way to establish the degree of inertia in the stocks, their degree of resistance to change over time, whereas recruitment variability is one of the key factors.

There certainly can be others, but recruitment variability is the key factor in causing variability in a stock over time. It is the interplay between these two that really establishes how quickly a stock is going to be drifting off of its past established annual catch limit. The protocol that we've developed would have us take a minimum age as a starting place and being able to multiply it by a regional scaling factor so that we can sort of adjust the overall expectation of frequency of assessment up or down to be in the ballpark of what that region is able to produce in terms of assessments.

Again, it is not useful to establish a goal that is so far beyond the current capability that we're always looking way behind the curve; so dialing this so that we have some degree of potential for growth, but it is realistic as well. We need time to regional scaling factor and then to go one year earlier in their assessment frequency for highly variable stocks, by fish important stocks, by – Okay, I'm back; can everybody hear? Okay, I'm going to switch to my phone.

MR. CARMICHAEL: Rick, I think if you have sound coming up on your computer, it might be picking that up.

DR. METHOT: Stacey, take over if I get lost again. Can you hear me?

MR. CARMICHAEL: Yes, we hear you now.

DR. METHOT: I was just going to say let Stacey take over. Stacey and Erik, take over if we get lost again here and I'll follow along as I can. We were just going through target assessment frequency as a way to set how frequently; and we really expect that many stocks will end up pushing down towards needing annual assessments out of this.

It is certainly room for it to be extending out to several years in between assessment for those longer-lived stocks that don't seem to show much variability. The next step is assigning the factor weights. The factor weights are the same for all the stocks within a prioritization group. Again, all the South Atlantic stocks could be a group; all the Gulf of Mexico stocks could be a group. All the Caribbean stocks could be another group from the SEDAR perspective.

Tackling them separately does seem to make sense to me at this point in time. These weights are sort of how the entire system views the importance of these factors. It is something that would seem to be developed by the leadership levels, the council and regional NMFS leadership. It allows for regional tailoring of the contribution of each factor of the overall score.

For example, the factor for subsistence is expected to be particularly high for insular species. We expect that the factor for recreational importance to be pretty important in the southeast and not so much in the north Pacific. We will develop some prototype factor weights to be used, because we

are like just starting fresh on that. It takes a lot of facilitated process in order to work your way through it.

We will find a starting place there, but we certainly envision it as something that can evolve over time and get really regionally tailored. The way this works together is we have basically regional expertise; science groups, advisory groups, developing factor scores for each stock. Then we have the regional managers providing adjustments that are weights for these factors.

Together the factor weights times factor scores gives us a total score for each stock and then we can rank those. That sorted list of the results provides guidance on the assessment priorities for the upcoming cycle. Here is an example we took from comparing it to the Pacific Fishery Management Council's current process in thinking about assessments, which again they bring a lot of information forward, but they haven't taken it to that next step of trying to organize it into a scoring system and coming up with an overall rank.

But, nevertheless, it brought information forward that was very similar in scope to the kinds of factors that we have here in this national prioritization process. I'll leave that for you to consider, but just recognize I don't think there are going to be things in here that are going to be unfamiliar to you or things that you have been considering that you don't have some place we could plug it into here in this national system.

Now, you have been working your way through some other projects as well that have national scope. This one was the stock assessment prioritization. There has also been a habitat assessment prioritization underway in order to identify regional habitat science priorities with the intention of using it in a way to help us get better assessments because they are more linked to habitat factors.

We also are seeing strong efforts to develop a climate vulnerability assessment; basically which stocks are available to climate. We see this as something that we can work into the system over time, not so much in terms of our frequency of assessment perspective, but where we would need to account for climate factors directly in the assessments in order to make them more responsive to these climate changes.

Again, I'm not going to go through this in detail, especially because of the delays we had, but I'm just pointing out that across these three things there is a fair degree of overlap and consideration factors. They certainly have been developed independently. We recognize that, but for some of them you can tap into the same bodies of raw data, raw information in order to feed into the process.

Especially with regard the fact we have our key role in the ecosystem; I see that as something that we can look at pretty closely with the factors from habitat science prioritization and climate vulnerability. What I see as the next steps for the South Atlantic is to basically identify a feasible timeline for implementation.

I plan to get to the December council meeting in Atlantic Beach to talk with your group about this; and certainly this conversation here with you is the starting place so that you could be considering how to provide your perspective on how this can work on to your council. The next step would

be the design that collaborative process to assemble the factor scores, and some of which may need some specific workshops to do a complete job of it.

Then the next step would then be to get into that system, the system as laid out here, and define that stock list for our prioritization, particularly how to deal with complexes. We see this evolving over time potentially in some very explicit ways. I know that within the Beaufort Lab and elsewhere there is work on doing management strategy evaluations to look at the value of stock assessment information and how this plays into good assessments.

This can really help us refine this concept of setting a target assessment level and frequency, so that it could be even more quantitative and objective about this. We've not set this as an immediate goal, but it is certainly something that when we can, it can help us evolve in the future. We've not designed this as a total national process.

We've designed it as a national protocol to be implemented regionally. We've not designed it in a way that is intended to reallocate resources in any way between regions; but it does help us identify where are the gaps. This will help the agency and everyone involved figure out how can we best fill those gaps and having them quantified and showing where we can make improvements and what those improvements would look like can help us continue to tell the story well; that story that has allowed us to grow the expanding of stock assessment budgets from two million dollars in 2001 to 70 million dollars today.

That growth is largely because we have a strong story to say in fish assessments and having this prioritization process in place will help us articulate that message to an even greater degree. We also see its own possibility to have this system evolve. Right now a simple factor score drives factor weight; but there is some more elaborate things that we've done that really look at the marginal benefits of providing another assessment.

In talking with several economists nationally and some of them at the Alaska Center, they came forward with ideas along these lines that you really could work towards what would a portfolio of assessments look like that would achieve the greatest overall benefits. We've not set that as an immediate goal here.

We are trying to start easier; but we see this as a direction that we could evolve with into the future. I think that is the finish. Questions? The follow-up slides, I am not going to get into them; but they are there if we want to talk about any particular factor; but we do provide that information. Again, we want to begin the conversation here about how to go about implementing this for the South Atlantic; and I'll continue on that conversation with the council in December.

DR. BARBIERI: Okay, thank you so much, Rick, for this overview. I'm going to open to the committee in terms of any thoughts or comments or questions regarding this plan; and more specifically in terms of our report to the council are any issues that you might see regarding applicability of this process to the establishment of South Atlantic stock assessment priorities.

DR. BELCHER: I think it's kind of hard until we actually sit down and work some examples. I mean as we went through ORCS, we kind of found how that clustered and made it a little bit harder

for distinction. I think until we actually get a chance to implement, it will be harder to make comments.

DR. METHOT: We agree. We provide in the document some made-up examples, but I agree that until we actually have a full set of scores to see how this works, it will be hard. That is why we want to be able to get started now with some trial applications of this.

DR. YANDLE: This may be stating the completely blindingly obvious, but I think one thing we may want to think about is there are almost two sets of questions we need to be thinking about here. One is the sort of technical scientific advice about this is how from a scientific perspective we need to be thinking about these different variables and incorporating them.

The other thing is I see a lot of somewhere between political and value judgments in here of how as the South Atlantic do we value different aspects of the fishery and how do we prioritize placing our scarce research dollars. That seems to me that value political end of it; that needs to be a decision that the council is very consciously making and not sort of saying, well, this is something the scientists need to decide. I think a very important part of their job is explicitly thinking through the value judgments that are inherent in how a matrix like this gets set up.

DR. METHOT: Agreed, and thank you for that. That is why we really see that the factor weights are best set at basically the council level and its leadership level, so that certainly the science process can advise it, but they have other advisors, too, that are really relevant to those kind of questions. I don't think it is going to be easy to set those weights; so again we'll come up with some prototype weights that seem to make sense, but we don't want to present them too definitively, because we certainly recognize everything that you say is very important.

DR. SERCHUK: This morning, among the many other things the SSC was doing, we were reviewing our research and stock priorities and a monitoring prioritization plan. As you know, each of the councils and each of the SSCs do this. I think it is a requirement under Magnuson for the five-year prioritization.

DR. METHOT: It is.

DR. SERCHUK: In most cases the councils and the SSCs are concerned with improving stock assessments or improving monitoring for evaluating the performance of the assessments that are done. I'm just wondering how your prioritization tool is linking up with this or whether they're redundant or whether they don't mesh at all, because it seems to me that they should. This is an input that is being asked of the councils.

In many cases there are data-availability problems where there are issues related to assessments such as stock ID or movements of parameters that would go into the assessment. There is a feeling by some that the requirement to do this research prioritization, which not only includes stock assessment but would include the other things as habitat as well, doesn't seem to link up to anything. I'm just wondering have you thought about specifically linking up this sort of activity with the stock assessment prioritization tool? That is the first question I have.

DR. METHOT: Okay, yes, there is certainly a synergy there between the research and data needs, is what it's called, and it is a requirement that the councils be working on that and provide that information, and it is information that can be tapped into in a variety of ways. I believe that the SK Grant Process tapped into that to some degree so that we have a defined set of needs that are laid out that potentially people can work on doing.

We should be looking at those results in parallel, I would say, with the prioritization, because we've not drilled this down to the data level. We certainly have built in the idea that where we are able to identify a gap, where we need to get to a higher level; well, I think that research and data needs document could feed right into an identification of where we need to get to a better level with some data component. There will be a connection there, be a little bit more at sort of our next stage as we try to elaborate --

MR. CARMICHAEL: Rick, can you hear us?

DR. METHOT: I hear you.

MR. CARMICHAEL: We heard you just then, and we think you're gone again. All right, you're back.

DR. METHOT: It doesn't unmute me immediately so it was a little unclear. Yes, Fred, I see a connection. It is not explicit but it is certainly something for us to be working on and looking at side by side.

DR. SERCHUK: Thanks, Rick. I have one specific question about one of your slides. I may have misunderstood you, but I thought you said that on one of the slides you were looking at the mean age of the catch versus the total mortality value. If that is correct, I am wondering why you're not looking at the mean age in the population versus the total mortality.

DR. METHOT: Because it is the mean age in the catch that is more going to be what is responsive to the annual catch limit. Animals that aren't yet selected by the fishery are not going to be influencing the change in annual catch limit yet.

We are thinking more in terms of the nearer shot in the bottom line of the annual catch limit, which for stocks that have delayed selectivity that is going to be the mean age in the population; it would then get us into a situation, well, how young do you go in doing that calculation; whereas, this approach would basically be looking at the mean age among the selected animals. They are certainly going to be some high correlation; and if you use the other, if you use the mean age of the population, well, then you would just do the different scaling factor, I think, in order to make it work.

DR. SERCHUK: Yes, I'm just concerned that, for example, in a case where you might have a mean age in a population – let's say it is an animal that lives 15 years – mean age in a population of six or seven. You have a good recruitment of that coming in, and all of a sudden you get the mean age going down and you might think, oh, gee whiz, we need to expedite the assessment; but it is nothing more than a good year class coming through the population.

DR. METHOT: Yes, and we would not want to have this adjusted. We really want to average it across a bunch of years so it is really more responsive to not the variability, but responsive more to average conditions.

DR. BARBIERI: Other questions for Rick or comments or suggestions regarding the stock prioritization process?

DR. METHOT: Luiz, at certain times when I was speaking it struck me that your SSC is really quite engaged and quite active. Is it your sense also that the SSC would be a primary group to be working with?

DR. BARBIERI: Yes, absolutely. I am looking around the table here, Rick, and I see a lot of shaking heads; people basically agreeing with that statement that we are very interested, very engaged and would like to be closely involved in this process.

DR. METHOT: Okay. Again, from our side we are prepared to do as much of this as we can. Stacey is there and she is our lead on the species' information system so she has a lot of the information at her fingertips. We're looking to roll the results of this into the species' information system so that we have a good archive of how we're scoring things over time.

That is sort of the key; we'll provide that support from the national level through her in this case. Also, Erik and others at the Center are prepared to strive and engage in this. What we end up with here needs to satisfy the needs of the agency to be providing status information on all the stocks for the region; as well as council's needs. We're looking to satisfy both in this process and so we're all prepared to contribute as much as we can to make it work.

DR. BARBIERI: That is wonderful news; and I see Erik back there giving us the two thumbs up, so he is agreeing fully with what you just said. Rick, let me say that from when you first came to give us that general introduction maybe last year or the year before, whenever that was; I am very glad to see how much progress you've made, all of you combined the agency has made in pushing this forward.

I think this is unlikely to be perfect, like anything else, but I think it is very well thought out, very well organized and provides a very clear road map really for us to start discussing those issues and providing guidance, in terms of stock prioritization. Scott, you have a question?

DR. CROSSON: I just have a comment for Rick. I really like this document, I really like the approach to it. It reminds me of the control rule that the SSC uses when we're trying to give ABC recommendations where we try and get this big systematic approach so everything doesn't feel as ad hoc as it often would.

It is good to see something like this prioritization tool developed to again think systematically about how you are approaching this process of review. In terms of the SSC's engagement, there are some indicators on there I saw that were social and economic. It is something that the Socio-Economic Panel, which is basically a subcommittee of the SSC, could look at as well and so we could be involved with that.

DR. BARBIERI: Yes, we'd really value your input and particularly on this issue of how we're going to go about assigning recreational importance for us. It is going to be okay for a whole bunch of stocks that have the same score, but we also need to create some differentiation and that we can do that systematically. Our ability to do it is going to vary by region, but I know there are studies going on that could help. I really value your input in helping us access them and making that work.

DR. BARBIERI: Rick, I don't know if you thought about this already, but it looks like this would be something that should be discussed at those annual or quasi-annual national SSC workshops.

DR. METHOT: Yes, we just ended up out of sync. I mentioned it at the last National SSC, but we were sort of in between drafts on it, and so we just did not have a National SSC Workshop happening at the right time. But, yes, the next time we have one I certainly will create an opportunity to talk about this there.

DR. BARBIERI: Any other questions or comments? Rick, thanks again for taking the time to give this thorough presentation and address out questions. We look forward to staying in touch and following up on this with the Center and Stacey and you and your staff, as this moves forward.

DR. METHOT: Very good. I wish I could have been there in person to get more deeply into it with you, but this worked out for the best, and I'm glad we made the technical side of it work; despite a little bit of challenge. Yes, carry on and we'll be in touch. Again, I'll be planning to get to the December council meeting. It is quarter to eleven; so let's have a 15-minute break and then we're going to engage on a discussion of blueline tilefish.

We are approaching our finish line here, but we still have a few topics to cover. The next topic on the agenda is Agenda Item Number 16, blueline tilefish assessment and fishing levels. I want to bring your attention to Attachment 21 in your briefing book; Mid-Atlantic Blueline Tilefish Draft Action Plan. Your overview document has a summary of the issues that were discussed at the last council meeting and some specific requests made by the council regarding what we discussed yesterday in terms of SEDAR assessment scheduling.

The council was interested in changing the type of assessment that is now being planned for blueline tilefish from an update to a standard given some discussion of studies and new data series coming in. They wanted to hear our opinion and judgment on whether this is warranted or not and get some information on that.

Our action items are comment on the appropriate type of assessment to be conducted for blueline tilefish and then consider the actions being taken by the Mid-Atlantic Council as well. I guess John can give us an update on issues that were not on our overview document that came in afterwards; a letter from NOAA Fisheries regarding blueline tilefish management as well.

MR. CARMICHAEL: Yes Luiz, that is right. The other item we would add to this is your comments on the letter that came in from the agency. It just came in last week and forwarded to you. The council staff's opinion on this and where the recommendation pretty well stands now is that you've given an ABC recommendation.

You've reviewed the assessment a number of times, you've given the recommendation. The council has the ability to parse that out to deal with the jurisdictional management, jurisdiction unit area issues that lie before them. They did this initially by parsing out their ACL. They had the overall ABC and they set aside essentially, as they called it, a portion of the ACL to go toward the Mid-Atlantic jurisdiction area.

What the council likely will do and what we're going to recommend they do is that rather than at the ACL level, they do that at the ABC level and set a portion of that ABC that you've recommended toward the Mid-Atlantic; and then they can do with that as they wish in terms of setting ABC, ACL, and everything else. The council is looking at alternatives for the percentage or the amount that would be set aside, is that right? Yes. I was looking at Gregg for confirmation on that; so the council is going to be looking at different percentages that they could consider for that.

That is our recommendation and we certainly appreciate your comments on that and any advice you can give, thoughts on the letter, whether or not it changes any of your opinions about things. Then if you want to talk there and then talk about the assessment later, however you want to handle it, Luiz; do you want to jump into this first and then we can talk about the assessment issues?

DR. BARBIERI: Yes, because that follows up right from this general introduction.

DR. CROSSON: I did not watch the entire council webinar from the September meeting, but I presume that you had a discussion with the council about blueline tilefish and our recommendations. Is there anything you can convey about that discussion that might give us a bit of guidance for what they're looking for?

DR. BARBIERI: Well, am going to ask Marcel and John to jump in and Mike to jump in if they see it differently or if they have something to add; but my perception was that the council didn't really have any points of disagreement with our ABC recommendation or the process or methodology that we used to come up with that ABC recommendation.

We had a fairly long discussion about issues. There were quite a few questions, many from the Regional Administrator and a couple from NOAA General Counsel, regarding the procedures that were used and the process that was used. My understanding at the end of that meeting was that we really did not have any issues coming from the council that disagreed or had concerns about our recommendation. Dr. Duval is right there and she can jump in as well and give us her perception of that presentation.

DR. DUVAL: Yes, Scott, most of our discussion was focused around the management aspect of things and how we move forward given that both councils have expressed a desire to manage the stock within their jurisdiction. We had a liaison from the Mid-Atlantic Council who was present and provided more details on how the Mid-Atlantic is moving forward with looking to manage blueline tilefish within their jurisdiction; development of an amendment to add this species to their existing Golden Tilefish Fishery Management Plan; and really how to work within the ABC recommendation that you all provided as a result of your September webinar to acknowledge the fact that there are catches that are occurring outside of our jurisdiction.

We felt that the prudent thing to do was to look at that ABC recommendation and look at – there were several different options for time series of years to look at, what the average proportion of catch was within the South Atlantic jurisdiction versus outside the South Atlantic's jurisdiction, and there are a number of alternatives that have been developed with regard to setting the ACL at some proportion below the full ABC recommendation that was provided by the SSC.

As I said, most of the discussion has focused around moving forward with separating the management by jurisdiction. I guess the only other thing that I will add while I have the microphone is in regards to – and I'm sure you'll get to this – discussion of the assessment and this being an update assessment. Your initial recommendation recommended a standard assessment on the next go round, and that was I think after your April or October meeting last year.

I forget which one it was. The default is to always list the next assessment as an update once you've had a benchmark. I raised the concerns about whether an update was going to be sufficient given some of the additional information that is being collected right now at our SEDAR Committee meeting at the September council meeting.

Dr. Ponwith and I, I think we're in agreement that might not be sufficient. Unfortunately I was not able to make the SEDAR Steering Committee meeting. Mr. Hartig represented me there, and I understand that we've not finalized the schedule for 2017 and 2018 yet. I just wanted to make sure that you all understood that the council has not advocated for an update. It continues to be listed as an update in the assessment schedule.

DR. BOREMAN: I don't know if this is an appropriate time or not, but I can fill you in on what is going on in the Mid in terms of the SSC activities. We have formed a working group, as you know, last year to look at the South Atlantic assessment to see if it was applicable or not. They have the report that we talked about at the last meeting here.

That group was recharged by the SSC to look at – since the SSC was asked by the council to at least start thinking about giving some ABC recommendations to the council. We haven't been formally asked yet but we see that coming down the pike as the Mid-Atlantic Council moves into ACL mode for bluelines.

That working group has been charged with looking at data-limited methods and coming to our March – our next SSC meeting is going to be in March of 2016; coming there with some recommendations on which data-limited methods might be appropriate to use. They are looking at the tool box that Caruthers et al had put together. It seemed to work well for us for black sea bass, so we're going to look at it for blueline tilefish.

Even though I haven't talked with Chris Moore about this, I'm sure that we can extend an invitation to this SSC to have some people there for that discussion, because I think it is important that both SSCs continue to exchange at least on the science side to talk about – because there is a lot of knowledge here about bluelines that we lack in the Mid-Atlantic.

If we can get some representation here to our March SSC meeting for that discussion, we'll probably spend a couple of three hours on it at that meeting. We'll see how it shakes up. I noticed

here that in the summary of the council meeting you had Tony DiLernia saying that the intent in the Mid-Atlantic is to manage it primarily as a recreational fishery.

Tony was called out on that at our Mid-Atlantic Council meeting. That is Tony's interpretation; but that is still up in the air on how the Mid-Atlantic is going to manage this species. Whether it is primarily as a recreational species or not, I don't think makes much difference in the long run. Some council members disagreed with that characterization.

DR. BARBIERI: Thank you for that clarification, John. I agree that having some South Atlantic SSC input in your meeting would be good for both SSCs.

DR. GRIMES: A question for John. You said that your group is looking at data-poor methods. Are you talking about applying those to just the Mid-Atlantic part of the stock or assessing the whole stock using data-poor methods?

DR. BOREMAN: No, we're not looking at it as an entire stock assessment. That has already been done. We're just looking at the portion of the catch of the stock that is north of the North Carolina border, basically, or north of Hatteras at this point. If it means we need to go back and look at the whole stock, we will, but right now the ABC recommendation we would be coming up with is not for the entire stock. It is just a portion of the stock north of Cape Hatteras.

DR. GRIMES: Does that make some kind of assumption that it's separate; that it is a separate thing?

DR. BOREMAN: Again, as Michelle said, it is a management thing. Each council wants to manage their portion of the stock. We're going to respond to what our council wants.

DR. SERCHUK: I know that we struggled to put text together for you when you made the presentation. One of the things that you may recall that I am concerned about is the assessment model only takes us through 2011, as I recall. We were asked to provide information for 2016 to 2017.

That's a very long distance away; and we know there have been developments in the fishery that have occurred that were somewhat expected, changes in distribution of the catches, large increases in the catches, closures that are coming in and so on and so forth. One of the things that seemed to me that should be in our report, and which you asked me to put in, was something about not really understanding what the current status of the stock was relative to the status determination criteria, because we have no basis to do that.

I am looking to get some feedback from you about how that was received. Then I was thinking this over afterwards, because our recommendation as I understood it for the ABC – now the councils can do what they want in terms of putting buffers in and ACLs and so on and so forth. It implies at face value a very large increase in the catch from what it is presently, as I understood it.

Typically – and I'll let others that are more familiar with the fishery speak to this – when I've presented information of this type, people that are involved with fisheries are tending to look for

stability; particularly if they're looking for markets or they're looking for revenues. They don't want to see large fluctuations.

It is not good for the labor pool if you're in a commercial fishery. It is not good for your market share, because the fluctuations can go up and then they can come down. When I was thinking about it afterwards, just a personal recollection, it seemed to be that on face value that our ABC recommendation represented a large potential for the catch to increase in 2016 and 2017 to what it had been just prior to that. I am concerned now.

I'm not saying we should change that, but I am concerned now that because of the large uncertainty between the assessment and we rejected the projections; that at face value if we were to make the ABC the ACL, for example, that we could be in a position when we finally do an update or we do a standard assessment, we'll find out that things are not as optimistic in terms of the catch. I am just wondering were there any discussions, because that must have been clear to people that this ABC recommendation represented a significant increase in the catch for blueline.

DR. BARBIERI: Let me give you some of my perspective and what we discussed with the council during the presentation back in September. First of all, nothing is really clear about assessment and management of blueline tilefish as far as I'm concerned. There is a fair degree of variability and uncertainty there.

We don't really seem to have a really clear story about what is going on; but we were looking at a number of indicators. We knew that the assessment had been very uncertain and had had some major issues that had to be dealt with, but still we consider that the assessment was good and we considered that the best scientific information available.

The stock status determination that came out of the assessment consequently was accepted as representing status of the stock. I think that one of the things that created problems is when we are looking into those projections and the distribution of catches and the lack of fishery-independent information over the range of the stock and poor or not even reliable indices, even fisheries dependent, to cover the entire range of the stock.

On one end, the projections that we had seen were really not well, we felt – right, if you looked at our reports from the webinars that we had to discuss this – the projections were not very well linked with the assessment. There was a discontinuity that we felt was creating problems. The next step forward was to say, okay, if we are not going to accept those projections as valid for providing catch advice, what then?

Without repeating that discussion – I think you participated in that webinar – we actually decided to go with setting the ABC at the equilibrium yield at 75 percent of Fmsy. The issue is, of course, uncertainty that is there; but it is also this idea of whether the projections, the way that they were parameterized, whether they were really able to capture the productivity of the stock and account for that appropriately versus just the exploitation side of things.

There was some variability in recruitment that seemed to be coming out of the assessment estimates. As a committee we felt that this catch level recommendation at the equilibrium yield at

75 percent Fmsy was a recommendation that was more in line with our perception of the productivity of the stock. I don't know if this long answer addresses your question and if there are others.

DR. BOREMAN: I talked about this last evening with Fred. I agree with Fred's point, though, that this happened in the Mid-Atlantic, too, when we switched the basis for an ABC recommendation and all of a sudden the ABC jumped considerably.

Given all the uncertainty here, what we do in the Mid-Atlantic if something like that happens is we deliver the ABC with a note of caution attached to it saying that if you are going to get serious about this ABC and set your ACL here, be careful because there is still some uncertainty here, so we basically suggest incremental approach to increasing landings. I think even more so here with blueline, because even greater uncertainty associated with that ABC recommendation; I think it would be appropriate for this SSC to give some words of caution to the council don't get carried away at least in the first year.

DR. REICHERT: I think we did that as an SSC. I believe we were very clear in indicating the multiple sources of uncertainty; and in addition to that we said that we did not feel comfortable to have this as a recommendation beyond two years. I completely agree with you, John, and I think we did.

DR. BARBIERI: Our report was explicit about the fact that this is a recommendation that is interim in nature. I didn't pull it up here in front of me, but I think the language was very explicit about the fact that we knew that this had to be a placeholder until a new assessment came online and no more than two years in terms of this catch level recommendation.

MR. CARMICHAEL: One thing that fits into there, too, is the difference between what was actually landed and what the ABC/ACLs actually were set at. The councils had a lot of difficulty in reining in this fishery. They got the report that it was overfished/overfishing. They put in emergency rules to drop it down to the 75 percent of Fmsy equilibrium yield, which was about a 50 percent or more cut in what the landings had been leading up to a number of years before that; with the exception of the year when there was the deepwater closure, but the landings had been in the 450 to 625 total. They dropped it to 250.

Then when they got all the projections and everything; that is when in 2015 it dropped to like 35,000 pounds; but they were at nearly 600 during the year under the emergency rule. When it was at 250; they were 175 or more in 2015. There is a little separation between what it was targeted at and what was actually achieved. We can expect the same thing to be happening this year, because there continues to be removals taken out of this population. There is some knee jerk and it is somewhat related to not just the recommendations but difficulties in achieving them.

DR. BARBIERI: On that point, Fred, I remember the first day that we were meeting and discussing it, I think it was hogfish I guess at the time perhaps was the length and the weight issue, but you mentioned some of those estimates that come out of the assessments and how we aligned them in looking at what is realized and what isn't and basically us questioning whether the assessment and/or the projections had really underestimated the productivity of the stock and that the

information – you know, the data series going in there were weighing all the different factors, not just the exploitation level, but were reflective of indexing abundance as well and accounting for all the other inputs that go in.

DR. SERCHUK: You're certainly correct about that. It is just that when you have a long lag between a baseline that you've said we accept and then you discount everything after that because the projections don't make any sense or you can't understand what the dynamics are; it seems one of the – I'm not talking about doing precautionary science, because precautionary is management.

What I would have hoped is the message of all that uncertainty and not recognize that we have no idea what the status of the stock is relative to the status determination criteria; that was a big message, and that is the reason I – because my feeling is when you have that large uncertainty, one of the things managers should do – not scientists; managers – is like a practitioner, do no harm.

My feeling is when you have that sort of uncertainty you should ensure, quite frankly, that whatever you do is recoverable. I am not convinced – and maybe people here say this fishery has bounced up and back, so we're in the normal range of fluctuations. If that is the case, fine. But I've seen cases in the past where someone jacked something up and all of a sudden they come back two years later and say, oh, gee, whiz, we're in the bucket now.

I understand; but my feeling is getting that message to the managers. We've done the best possible job here. That was my concern; that we shouldn't try to put in because of our – recognize that this might, based on our recommendations, might jack up catches or reduce catches rapidly. Typically the fishing industry doesn't want that; they really don't want that.

I've been to many, many meetings that basically say we really want to have a situation where we have confidence what the future will be based on where we are now. If you're in a commercial fishery, it is a labor pool; if you're in a commercial fishery, it is access to markets. You don't want to start having markets and then find out, okay, now you're cut off 50 percent; you no longer can supply that.

Maybe in the recreational fishery it is the same, too, about providing recreational fishing opportunities for certain species. That is all my concern is. If that message got across to the council, then fair enough. That is all I'm asking.

DR. BARBIERI: And it did, explicitly, and not just with my verbal or oral report, but they have this in writing and I had this document. Actually, I didn't have time to put together a Power Point for the presentation to them, so I scrolled through the document so they had all of this, not just said to them but right on the screen for them to see. Chairman Duval is here and my perception is that message of uncertainty and all of the issues associated with this recommendation were explicitly received by the council. Any other comments?

DR. CROSSON: Do we want to make recommendations as to which members of this SSC should attend the Mid-Atlantic SSC meeting in March? Am I jumping ahead too far?

DR. BARBIERI: I see John Boreman nodding his head yes.

DR. BOREMAN: We don't even know where the meeting is going to be or what date in March yet.

DR. BARBIERI: We can revisit this offline. John, I don't know if you're still the Chair for Mid-Atlantic SSC.

DR. BOREMAN: Yes.

DR. BARBIERI: Yes; so John Boreman and I will be in touch, and we will be briefing the committee on that and then ask for volunteers initially and see from that pool of volunteers whether we want to make some recommendations as well.

DR. BOREMAN: People with expertise in data-limited methods would be more than welcome, because that is what we're going to be talking about; basically the DLM toolbox approach and all the 47 methods included in that toolbox.

DR. SHAROV: I will probably volunteer for that. I don't know what is going to happen in March or whatever, but in terms of the methods I am particularly interested in this. And just simply geographically, I live in Baltimore. They usually meet in Baltimore, so no cost

DR. SCHUELLER: Yes, I would like to volunteer for that as well just because I have some assessment experience, of course. The Science Center obviously has interest in this topic.

DR. BARBIERI: Yes, absolutely, glad to have already a couple of volunteers; and if there are other folks who are interested even without really knowing the specifics of the meeting times and locations. I mean, that's a plus that we see this level of interest in engaging and participating in this discussion. Back to our action items, comment on the appropriate type of assessment to be conducted for blueline tilefish.

DR. REICHERT: I personally believe in my mind there is no question whether we should at least have a standard assessment. I am actually wondering whether – and it might depend on the outcome of some of the information or the analyses that is done on stock structure. I'm really wondering if we really need a benchmark rather than a standard.

Again, I'm not sure what new data will be available. There is just one-year effort to characterize the stock. There is some sampling going on right now. I think there is probably going to be some new information. The other thing is – and that is something that John brought up – if we go the standard route, I am not sure if we can choose a different assessment method. I think personally we may actually have to go the benchmark route, but that is just my personal idea.

MR. CARMICHAEL: Marcel's last question, if you choose a different assessment type given the review panel and you accept it and put forth the catch-at-age model, then you couldn't do that through a standard. That will require a benchmark. The interesting thing about this is the stock ID question. The management jurisdiction is to the North Carolina/Virginia Line. I assume when the Mid-Atlantic is talking about looking at it, they are looking at Virginia northward.

We've got to keep in mind Hatteras is a break for some species. It is a break for black sea bass between us and the Mid-Atlantic. We're going to get the genetic information. If that were to show a break at Hatteras, we're still going to have a jurisdictional management unit area situation that we're going to have to deal with in some way. We don't know what that is going to show.

Two things we do know are underway, the genetic information, the stock ID work going on there. There is sampling that is being done by the Center now. As I alluded to when we talked about SEDAR, my feeling right now is the best approach is that we get this SSC together either in person or over a webinar late January/early February. We'll have the results of that genetic information that is supposed to be shown to the council in December.

We can have a dedicated discussion about the assessment type. I think there is clear recommendation that a standard is going to be put forth. You are going to need to consider what would be changed in that standard, what are the terms of reference you're going to write for that to dictate what is considered in that. I think that will take a dedicated meeting.

I don't know about the status of the Science Center sampling, but maybe Erik can tell us about any outcomes or results – what the timing would be on having that – because I think you'd want to consider that, perhaps. I think the best thing is that we have some sort of dedicated discussion. We could consider a benchmark if the stock size were to shrink so that you were doing potentially a standard of a subset of the data that was in the last benchmark.

My SEDAR perspective is that wouldn't necessarily trigger a whole new benchmark, it could, but I think that at least for me from SEDAR perspective is in the gray area for the SSC to weigh. If the stock expands and you've got to bring in new information, well, then that is going to require a benchmark; but we think that maybe if you were to shrink your data included, you could perhaps manage that through a standard if you're careful.

It is obviously very gray; and if you're not comfortable with that, then it is your call to say do a benchmark. Now, the problem with the benchmark is, of course, the timing. Benchmarks take longer. I think we all know the issues with the timing. Fred has pointed out the issues with the timing well; and when you throw in the high age of selectivity for the stock, our information on recruitment even pushes us farther back beyond that terminal year and when we actually know a good estimate of a year class. Timing is important; and when we talk about what type of assessment we do, we have to factor that in as well, perhaps.

DR. BELCHER: Having been involved with the bonnethead assessment under HMS, where there was enough information that required that the stock be split; they went in with the idea of a standard, but they changed the stock definition so they could not continue under the guise of a standard. If there is any chance that this range expands to include the Mid-Atlantic –

MR. CARMICHAEL: It already includes the Mid-Atlantic.

DR. BELCHER: Well, I'm saying in the sense of our assessment has worked on it in terms of it's a South Atlantic stock. No?

DR. BARBIERI: No.

DR. BELCHER: Okay, so this this is where I am kind of outside of that. I guess the question would be then, as John has indicated, if the Mid-Atlantic is thinking about data poor, why would there be a separate assessment done in the Mid-Atlantic with a data-poor approach and not bring both councils together to discuss how to manage it as a bigger stock similar to what we do with king mackerel? I wasn't at the September meeting, I apologize. If that was discussed, I apologize for that being reiterated.

DR. BOREMAN: We're not doing an assessment. This is the methodology to develop an ABC recommendation. We're not going to be doing an assessment in the Mid-Atlantic; it is just how do you come up with a catch level?

DR. SCHUELLER: I guess the way I view all this is that the data and the science on stock structure should really dictate whatever decisions are made. I know the Science Center is collecting data right now, but we don't know when it will be done. I really think that all of that information should come to bear on this decision instead of getting part of the information and then barreling forward and then at the ninth hour that information coming in.

It would be a huge problem if it's different from what has already been presented. I guess my thoughts on this are wait for all that information to come to bear on this decision; and then once that is available, then make the decision instead of going forward with blue line. I think that has implications for the whole stock assessment schedule.

MR. CARMICHAEL: Yes, regarding the Center's data; can you tell us anything about what is being collected and when it will be done? This is scheduled for this assessment to start with a data delivery date in August of 2016. We can't wait around until June/July to even start talking about what we do. At some point, like always, we have to proceed with the information we have in hand.

I think it would be very problematic to push this assessment back again. Remember the council has been asking for an update or a standard or some new information of blue line for almost two years now. I think if we could hear something about what the Center is doing and when we might have some results, then maybe we can decide if it is something we wait for or we go on with what we have.

DR. SCHUELLER: I know they are currently collecting some fish, but I don't know when. I think Marcel has something to say about this, too.

DR. REICHERT: I am marginally involved in that; but I have been talking with Todd about that to see if we can coordinate some sampling on the coast. I think the intention is to have this information available or at least some preliminary information available in the spring of next year. To be honest, this is really a Todd Kellison question, but I believe that is the case.

Some of the more detailed information, for instance, reproductive information depends on the number of samples and how long it will take to process that. In my understanding that is the intention, to make this available in the spring.

DR. SCHUELLER: Yes, I think somebody suggested having a webinar or some sort of meeting in early spring to go over some of the information that is already underway. We should invite Todd to that same meeting and then see where he's at.

DR. REICHERT: I think that's a good idea.

DR. GRIMES: I wanted to make a comment about this hunt for a separate stock of fish in the Mid-Atlantic. Bluelines have been referred to several times using a genetic method. My view of this is highly unlikely to provide any useful results in the context of fisheries management. Genetic method is sort of a one-way test.

If you find differences that are meaningful, it tells you they're really different. If you don't find any differences, there is still likely to be considerable differences in the vital rates, because a very small percentage of mixing between adjacent stocks will show you equal genetic homogeneity. Genetic methods are good for examining like evolutionary questions, but I don't think the evolutionary time scale is really not all that relevant to questions that we have about fishery stock structure.

Anyway, I think there is clear evidence just anecdotally that propagules from a lot of larval transfer between the South Atlantic and into the Middle Atlantic Bight. I mean if anybody is doing much looking around in the water in the Middle Atlantic, well, in fact in the New England area you see sergeant majors on the rocky jetties in New Jersey and up into New England.

Clearly, there is a supply of larvae coming from further south. That is bound to be where the larval supply – there may be some of their own, but they're getting plenty from the south. They're not coming from Canada. Anyway, if you wait a thousand years, maybe there will be some genetic differences between the two, but right now I don't think so. Anyway, I just wanted to say that.

DR. BOREMAN: Okay, this is something else I want to add to the discussion at this point, something we're dealing with in the Mid as well as the New England in our new process for benchmarks and standard/operational assessments versus updates. And that is whether a standard assessment or a benchmark is done on blueline, based on recent history there is a high probability it will get rejected by peer review; lack of information, lack of data, whatever.

I'm not saying it will; but if there is a probability greater than zero that it might get rejected, there should be a Plan B. I think in parallel my recommendation is to have the South Atlantic Group investigate data-limited methods as well as a fallback – that we could come up with an ABC recommendation to the council as a fallback in case the updated assessment or the standard or whatever you want to call it is rejected in the peer review process.

DR. SERCHUK: Church said much of what I was intending to say. I'm stepping back from this. The few genetic studies that I've seen really require once an optic sampling in time and space to get the best understanding of what the signatures are, whether the signatures are stable over time and stable over space.

The studies that I've seen of that nature generally require multiyear and intensive sampling; because not only do you need, as Church pointed out, to show differences, but you need to have some idea of the intermixing rates, because that is a key. While I understand that the Center is working on this; it really is very important to recognize that if we're looking for something for next year or the year after that, we're likely going to be very limited in terms of the temporal aspect of what has been achieved. Even then there will be questions.

I am saying we should be very pragmatic that if the differences are so acute, that we see total separation – aha – but I think that is not going to be the case. I seldom see that to be the case. I would not expect that to be the case and we shouldn't hope that is the case, because again I think the sampling regimen itself will limit the inferences that could be made from that.

DR. BARBIERI: Very quickly to that point, Fred, the hogfish study that was looking at this population; that was 12 years' worth of sampling; and still when we discussed this here, we had a lot of questions on whether really how well could we determine those separations?

DR. BELCHER: Just a point of clarification, because I was assuming if ABC development was being done in the Mid-Atlantic separate from us; that the stock was basically considered separated. Is it really doing us any favors if the Mid-Atlantic develops an ABC separately from the South Atlantic if we're talking about all the same stock of animals?

Shouldn't we be doing a joint development of ABC? Like I said, I apologize; I wasn't on the phone call in September; so if they are questions that have already been asked, I apologize for that; but it just seems like if it is an overarching concern for the entire stock, which encompasses Mid-Atlantic and South Atlantic; why are we all not working together to develop the ABC as needed?

DR. BARBIERI: At the risk of putting my friend John Boreman on the spot, maybe you can address that, John, or maybe this is a question for the Mid-Atlantic Council to address; because based on what John said, they are basically trying to follow recommendations from their council on how to proceed.

DR. BOREMAN: Very simply, our council wants to develop an ACL for blueline tilefish in the Mid-Atlantic Region. They have come to the SSC, or they will be coming soon, and asking us for an ABC recommendation they could use so they can set an annual catch limit for bluesines north of Cape Hatteras or north of the North Carolina border. We'll be looking at the assessment that has been done.

We'll be looking at data-limited methods, anything we can get our hands on. I call it a data depauperate species up there, because we have close to zero information. At this point it is anybody's guess what method we'll come up with; but again it is an ABC recommendation. It is not Bmsy or Fmsy recommendation that we're going to be doing. We won't be doing a full assessment; we'll just be doing a catch level recommendation. It might just be status quo at the end.

DR. ERRIGO: The one difference in the Mid-Atlantic is that their SSC did not consider the assessment best scientific information available. Therefore, they are proceeding as if it is not.

DR. BOREMAN: I want to qualify that; did not consider it the best science available for developing catch recommendations in the Mid-Atlantic Region.

DR. BARBIERI: Just to make a comment here, Carolyn, your comment can still be captured in our report as a recommendation that those. I saw that when John was mentioning that their SSC is already thinking about inviting members of our SSC to come up there in March is all ready to generate some level of integration and development of something that could be jointly.

DR. BELCHER: To that point, I think again I keep getting myself maybe wrapped around the axle with it. I think about how we manage king mackerel, and I'm trying to figure out how this particular thing would be much different than a king mackerel type. We have allocations that are split between the Gulf and South Atlantic. We have a joint assessment; we bring groups together.

There is a catch level that is developed for the region together and then parsed out. Why let one regional council get ahead of the other in the development if the overall is for the stock? If the stock is both pieces, why would we not approach it in a similar manner to that? Like I said, if the question has already been answered, I apologize for the reiteration.

DR. BARBIERI: To that point specifically, it hasn't, but that assumes that the councils are agreeing with a joint way forward. King mackerel is actually a very good example. I've been involved with the Gulf SSC in following up what is going on between the Gulf and the South Atlantic; but the councils need to find some concurrence and consensus on how to proceed. Otherwise it is up to them to, I guess, make those decisions over their jurisdictions.

DR. SHAROV: I think in the end what needs to be done is the decision should be made even though there is quite a bit of uncertainty; but given the current knowledge of the biology of the species, do we deal with the single stock or do we deal with the two stocks? How much of the movement is there that would preclude us from considering at least two large management units if it is even a single stock.

Based on what I've learned, it doesn't seem that there is so much of the like inter-animal mixing or at least I think it is not happening with other truly migratory species that are moving up and down the coast. In that sense it probably would be best to at least initially approach it as has been done in the last case; that is, consider it as a single stock.

But in terms of the management, you could have two management units, which are in the Mid-Atlantic and the South Atlantic, because generally what we're concerned about is local exploitation rates. That is something that we can control, that the fishing mortality is something that we're likely or at least exploitation rate we're more likely to be able to measure and attempt to control as opposed to having a total coast-wide estimate of the SSBmsy or Fmsy, et cetera, that would be a more difficult thing to do.

If there is some sort of residency on a large scale, Mid-Atlantic versus South Atlantic, then we should be able to assess regional exploitation rates or fishing mortality rates and generate the ABCs on the regional scale. In that sense, I don't think honestly that the genetic information will help us

much in processing. In proceeding forward, I think you could proceed forward without waiting for the genetic information.

DR. DUVAL: Just speaking to some of the management issues that have been raised here and I think Carolyn's question about why are we not moving forward in some joint way; I think what you all have discussed here in terms of the SSCs talking together is looking at joint approaches in the future. I think the councils have made it pretty clear that we're each interested in managing within our own jurisdiction.

In terms of timing, you provided us with an ABC recommendation from the September Webinar. It sounds like you were not on that webinar, so we have moved forward taking your ABC recommendation. It is in a regulatory amendment that we are due to take final action on in December. We are moving forward with using that ABC recommendation for management purposes.

I appreciate all the discussion here about the fact that genetics does not have to play a role in how the stock is managed jurisdictionally. I guess one of the things that the council has been operating on the assumption is that your ABC recommendations have been coast-wide recommendations. That is why we're moving forward in the fashion that we are with the alternatives that we have in terms of how to set an ACL for the South Atlantic Region based on those recommendations.

It has been made abundantly clear to the council that this is an interim recommendation; that there is uncertainty surrounding that recommendation, so we're moving forward accordingly. We'll wait for future direction that may come out of a January webinar it sounds like you might have to have a discussion that is more fully informed by the data collection that's currently going on.

DR. BARBIERI: Thank you, Michelle. I that helps at least solidify in my mind some of the issues that the council has been discussing and how it is taking our advice and how it has decided to proceed, so it is really helpful.

DR. BERKSON: Just a question for Michelle or others. Because it is considered coastwide, the catches in the Mid-Atlantic are going to be counted against that ABC, is that right, Michelle?

DR. DUVAL: It is an excellent question. What we have been told is that when we set an ACL for our region, only catches within our region are counted against that ACL. I have no idea if any catches outside of the region would be counted against the remaining ABC. I think based on the letter that was sent to both myself and Chairman Robins; both councils and their SSCs are being urged to move forward with developing separate ABC recommendations for their different regions. It doesn't sound to me as though any harvest – well, I'll just stop there. I can't make any comment on whether harvest outside of the South Atlantic is being counted against any ABC or how that is being addressed by the agency.

DR. BARBIERI: Gregg, can you perhaps help us clarify some of this?

MR. WAUGH: Yes, the approach we're taking is to take the ABC that you all approved, it is coastwide. What we're doing is we're looking at various years to assign a portion of that ABC as

a South Atlantic ABC; and then we will set an ACL for the South Atlantic. Using that approach, then any catches outside of the South Atlantic would not count towards that.

There will be a portion of the ABC from the approved stock assessment that is left on the table. Certainly, one option would be for the Mid-Atlantic to use that or to come up, as John has described, their other methodology to come up with an ABC for the Mid-Atlantic area. That is the approach we're taking; and under that approach, catches outside of our area would not be counted towards our ACL.

DR. BUCKEL: Thanks, Gregg. That is important, because we don't want all that ABC to be taken out of the South Atlantic jurisdiction because of the recent high landings north of our area. Yes, I think for John's group, that is a great addition, John, to add beside the data poor to look at that amount that is left over after the South Atlantic does their calculation.

DR. BARBIERI: Well, I think unless committee members have any additional comments, questions or concerns; I think we have really addressed all of the action items in terms of comment on the type of assessment to be conducted and considered the actions being taken by the Mid-Atlantic Council.

DR. BELCHER: Would it be one of those things to say to be maybe the most – I want to say liberal I guess is probably the better way to look at it; but would you be better off going in with the idea that at least worse-case scenario you have to go the route of a benchmark; but if nothing changes, a standard.

Because at least if you go in with a benchmark and you choose to go with status quo, you're not penalized; but if you go into a standard and need to do something more than the standard allows for, you're stuck. Like I said, that was what we found with the bonnethead. You got in there, there was information going in that said they were separate stocks, we had originally run it as a single stock, and it was a standard and we couldn't go anywhere with it.

DR. BARBIERI: That's a good plan. I see a lot of members kind of nodding their heads and saying, yes, that is the situation that you're in. You can always kind of step it further down but stepping up is more difficult. I think it is a point that we can include in our report, and at this point just make a justified recommendation to the council that will be considered by the SEDAR Steering Committee when they cross that line.

MR. CARMICHAEL: I was waiting for you to finish with what that recommendation is. Are you going to recommend a benchmark; to prepare for a benchmark? I will say if you do that, the interim of this ABC will probably be extended to a longer period of time.

DR. BARBIERI: Those are all the points to consider is that when we made our catch level recommendation and we had that update; that was the scenario that we were considering at the time, and because that is what happened to come out of the SEDAR Steering Committee, even though we had made before recommendations – I think Amy brought that up or Church for it to be a standard.

The Steering Committee had actually recommended – and they have the last and final say on this issue and they put forth an update. We were working within the timelines of having a new assessment was in the timelines of an update. Now the council is requesting some advice on whether we want to continue recommending a standard given some of this new information that might be forthcoming. Yes, you made a good point about the benchmark, but John's point is very good as well, which is if the Center has to prepare for a benchmark, that is a much more involved process.

DR. BELCHER: This is a question to pose I guess towards the SEDAR coordinators and such; because if you're saying it is a longer time window on a benchmark – and like what happened to us with bonnethead, we had prior knowledge that we could have changed it. If you had given yourself a big time window and you need to constrain it because we don't need to do a benchmark, it shortens your time window; that is doable; but if you need to extend your time horizon, it becomes harder for that accommodation. That is why I was thinking is it better off to say let's mark it for the benchmark. As we get closer to time, if information says that that is not warranted, we can actually shorten that time window; and that is not as big an issue for adapting the schedule as the other would be.

DR. BOREMAN: I agree with that logic, because the alternative would be to get almost all the way through a standard and then go, oh, crap, now we've got to go to a benchmark and now we've got another two years beyond that. If we can leave the door open for a benchmark here with the understanding that we may drop back to a standard, depending on what we learn this coming spring; timing-wise that might work a little better.

MR. CARMICHAEL: I'll tell you the many years with SEDAR what we will be told then is – looking here at what is planned; remember 2016 is on the books, supposed to be done. 2017 should be done; but there is a little question about scamp and gray snapper and getting those benchmarks done as well as getting the various updates and potentially standards for dealing with the MRIP data.

That was kind of raised as a question at the Steering Committee. The question will be what do you give up? Blueline and red grouper are scheduled simultaneously; so if we give up red grouper or vermilion snapper; I don't know if the analytical team can do scamp, gray snapper and blueline benchmarks all at one time. But if they were to say no; then we just need a sense of priorities. What do you think is most important so then we can juggle accordingly?

DR. BOREMAN: That is not our call. It is our call to talk about the priorities; but in terms of looking at this schedule, that is the SEDAR Steering Committee's call. That is why they get paid the big bucks, to make the choices. We can use Rick Methot's prioritization process, and this is where the political side also enters into it.

They have to understand what all the factors are. We can give them priorities for ours, but there is no guarantee that they are going to follow our list of priorities, anyway if we give them one. I guess we're going to just have to make our recommendation known and let them deal with it.

MR. CARMICHAEL: Yes, I agree with that. That is why I was putting this up there to show people what the current priorities are; and so to try and say if you think blueline is a priority, where does it rank in the existing priorities, because that information will help them then make the shuffling? I absolutely agree, it is not your call to decide how things get shuffled and where things go; but to the extent that you can tell them do you think this is more important than the other priorities we've identified, then that will help them know how they should fit this in.

DR. BELCHER: The other thing to think about, too – and I'm not saying this from a derogatory sense; but the learned experience from what happened with bonnethead is it was a wasted resource. We ended up in a data workshop having this discussion, knowing full well, and they continued the process.

There was a whole window of time that basically we lost that could have been shifted elsewhere to a different priority. It is just thinking about those time resources of getting in there. You don't want to embark on that process and not have the ability to adapt to it. I felt like we swept it under the rug, there is this big lump that went on to review, and they are like you're kidding, right? We're reviewing this and you knew that there was a split; why did we get this far?

It is just kind of putting that out in front, too. They are precious commodity resources that we've got could be SEDAR schedules as is. I would rather see us go forward with the best scientific availability to us, look at all the things that should be available to us than be constrained because the time window is not what we want it to be.

DR. SERCHUK: It is unfortunate that we didn't have this discussion when we had the webinar, because I'm now feeling very uncomfortable. I think the council feels very uncomfortable saying that we wanted to move forward with recommendations it was going to be for two years until we did the update. That preconditioned, I think, how the council reacted on it.

Now we're talking about perhaps replacing that with a benchmark. To me it changes the playing field a little bit, quite frankly. "Woulda, coulda, shoulda"; that's in the past; I understand that; but the requirements for a benchmark are really quite different then the requirements for a standard. I think we need to be very explicit this time about what our recommendation is; because if we're saying that we ought to plan for our benchmark to meet our concerns, then we ought to be very emphatic about it.

I think there is a need for a benchmark. Actually my own personal feeling is it is too long to go from 2013 to 2017 without really having a benchmark, just as a matter of good housekeeping for most stocks. I think we need to be very clear about it, Chairman.

DR. BARBIERI: I think that this will be very informative to the council and to the SEDAR Steering Committee as argument for how to handle this issue; but perhaps we should think about the timing of the next SEDAR Steering Committee. I don't know if that is going to be planned for spring '16 or when that is.

MR. CARMICHAEL: We have one next week and the intention was to settle '17 and '18. You make this recommendation here and there is not time to get this recommendation through the

council for consideration, so this just makes – you know, coming at the eleventh hour like this to talk about a benchmark throws a real monkey wrench into the works and I don't know how it will be perceived.

DR. BARBIERI: To that point, John, I'm not sure it does throw a monkey wrench, because your point is well taken. The council will get this information in December. I don't think that the Steering Committee will be able to appropriately – because the council may not agree with this recommendation, right? I don't think that this will be discussed at the Steering Committee meeting next week. I think this would be for forthcoming, maybe spring. No?

MR. CARMICHAEL: If you guys were to say you want a benchmark, we can't in good conscience go to the Steering Committee and ignore that; because it has consequences for that scamp, gray snapper benchmark that is scheduled. It has huge consequences for probably red grouper, I would imagine. It probably has consequences for either vermilion or greater amberjack. I think it has consequences for 2017.

If you start a benchmark sometime in 2016; that we would have to tell the Steering Committee and they would have to try and figure out what to do with it. Yes, the council can then look at this in December; and so then we'd be in the position of the Steering Committee maybe meeting in the spring, we've been thinking May-ish to give you guys time to talk about the prioritization plan and other things.

So they would be looking at May; and so by then you're saying if they decide to do a benchmark in May, we're probably talking about something that doesn't start until into 2017 sometime, most likely. Now channeling back to what Fred said, you're talking to something that maybe you don't get it in April 2018; you're getting October 2018.

There are just so many moving pieces here to this recommendation. I want to make sure that you guys are very clear about the need. Just as long as you're aware of the cost to all of these types of things, then that is fine and we can deal with whatever they are; but just make sure you're aware of them.

DR. SERCHUK: I want to get back to an issue that John raised, because he talked about what happens if we do a standard update and find out, okay, the existing model can't stand up for it. I'm getting a feeling that there is more than a zero percent probability that might be the case. We need a Plan B.

Even if we went to a standard, I'm just wondering what are the ground rules to say, okay, what do we do in a case where we try to do a standard update and find out that the framework on which that is predicated; do you have a decision rule that allows you to do something else in the meantime? I don't know; but I think if we did a standard, I think there is a high probability in my own mind, people might not share my view on it, that we would have to do something else.

MR. CARMICHAEL: I think if you were in the rejection mode and you rejected it, then I would think that frees up the other parts of the ABC Control Rule so that then you could look at those and decide how to go. I think the Plan B idea is good. The Plan B idea now becomes is the Plan

B idea a benchmark or is the Plan B idea data limited, because which you choose has huge time consequences for you.

DR. SERCHUK: If you did a Plan B, you might say for next year we want to do this, but to do a benchmark you are talking about a multiyear process then; so you are pushing that off to 2019, 2020, 2021; I don't know. It depends on how long the process is. Then I become very uncomfortable going from an assessment that only went through 2011; it would be 10 years out. That is not good for anybody.

DR. BELCHER: Yes, and I think similarly if you think about right now just how the potential between the two SSCs to handle this problem, you've got the Mid-Atlantic is looking at data-poor approaches, and yet we're saying that we're still willing to use the science that we currently have in front of us for a coast-wide determination, right, for an ABC?

My question becomes, okay, so we use that, we get a number that is for the coastwide; what if the data-deficient approach has an ABC that is fairly large or butts up or goes over what we're proposing; and how does that joint come together? There are just a few things in it that to me with knowing that there is this much – we're agreeing that it is a unit, but yet we're acting like they are separate enough that we can do these things independently of one another for the good of the stock. I just feel like we have to have that ability to come together and make the determination on what the science can and can't tell us. I understand timelines; but if you're compromising the science to meet a timeline, what are we gaining in doing this?

DR. BARBIERI: To me, this is what I was thinking in terms of trying to gain some time is if there would be a webinar in January; if perhaps we have some additional information, and we've seen some life history characteristics of blueline north and south of the border; but if in early 2016 we might have more conclusive evidence and perhaps that is not enough time for us to have it; then all this discussion is primarily moot, right?

DR. REICHERT: I texted Todd Kellison, who is in charge of that additional sampling information. He said that they are expecting to wrap up sampling by the end of this month. They anticipate having the full data available currently in the summer of 2016. However, he said that the summary data of sampling effort, distribution sampling, sizes and fish caught could be available in early 2016. I am not sure how much this helps, but I just wanted to share that information that I just got from Todd.

MR. CARMICHAEL: I have kind of a hanging note here; it sounds like we want a Plan B. Maybe we need a Plan B and a Plan C. Maybe Plan C is – we know we need a benchmark. Maybe the plan is if you had to have a benchmark and the earliest you could get it was 2019, that is Plan C; then what is Plan B? Do we join forces with the Mid-Atlantic and pursue what we can with data-limited approaches to bridge the gap until we can solve this problem properly?

DR. SERCHUK: I'll propose perhaps a Plan D trying to really think outside the box. We're now presuming the benchmark has to go through a SEDAR process; but because the Mid-Atlantic Council is involved, it could actually go through a CIE process, which might obviate the long

timeframe. They could basically say, look, we have an issue here; we are concerned about it; we can't wait that long.

We're going to see whether our own process – and they can use a SAW/SARC process, a CIE process, and maybe they can take the lead on it with the cooperation. That is a Plan D. That is just further outside the box, but that may get around to scheduling. I'm not saying it could, but the fact is it is a possibility.

DR. BARBIERI: My perception here is that we don't really have a definite recommendation as yet. We're still struggling with this decision. We have different ideas, all of them have merit, but we haven't really been able as a consensus group to kind of zero in and make a recommendation one way or the other.

I think that having Plans A, B, C and D is a good idea, but it may confuse the Steering Committee. Offline I was reminded that we have two South Atlantic Council members participating in next week's Steering Committee meeting and that they are going to be thinking about this discussion as a way to make their recommendations and vote accordingly for what choices are made to go forward.

DR. BELCHER: One of the things to think about, though, is not necessarily that Fred's approach is a Plan D; why would it not be an alternative Plan A? I mean, if it is this issue of the timing through the SEDAR process, is it a possibility that the Mid-Atlantic's process could pick it up, which would help expedite the process? Does it necessarily have to be dropped down to the bottom of the tier? It seems to me that those are questions that you could ask. If the SEDAR doesn't look like it is appropriate, is it a potential for a SAW/SARC approach to do it?

DR. BARBIERI: Are you suggesting a Plan A an A prime?

DR. BELCHER: Yes, if you want to call it that. I mean, it just seems to me that you shouldn't have to go, okay, we couldn't meet A, B, or C to get to the idea of now we engage the Mid-Atlantic. Why can't the Mid-Atlantic have that conversation at the same time?

MR. CARMICHAEL: They can. The assessments that come to the South Atlantic aren't all obligated to go through SEDAR. It could go through the Mid-Atlantic. You could farm it out and have it done by a university researcher. That is always an opportunity. Now, I would expect they have the same issues we have with this urgency to update important recreational species.

With the changes in MRIP, they probably already have priorities for 2017. It brings me back to where we were before, blueline could take priority in SEDAR if you guys want to put the first step forward and say we think with blueline and the uncertainties and the risk of what could happen to that stock, this is more important than scamp and gray snapper.

If you say that, then we have some information to start knowing where to put this in there. If you don't say that, then we're into blueline probably becoming something that is pushed further down the road into the SEDAR schedule. I think the ball is kind of in your court. If you want to say this is the most important priority, then say it.

DR. BOREMAN: Yes, in the northeast we have an NRCC meeting, which is kind of like your SEDAR Steering Committee. The NRCC oversees our stock assessment schedule. We have a meeting coming up in about three weeks. I could raise this there, putting it on the agenda there. I'm looking at their version of your matrix here. \

One of the unknowns at this point is the MRIP and how MRIP is going to affect benchmarks starting in 2017. They are holding space now in 2017 to handle the transition to the new MRIP; but I could raise this as an alternate. Another Plan A prime, prime is we've already done this here. We set a precedent by doing a peer review within the SSC. We don't have to go through SEDAR. The Magnuson Act allows the SSC to do a peer review, too. We can do it internally if we needed to.

DR. SCHUELLER: I guess my thoughts were we could leave blue line here but then fill in the quarters after it and just pull vermilion snapper and leave scamp, gray snapper, and then have blue line going in parallel with that. I don't see why that couldn't be a possibility. I mean, it does pull vermilion snapper, but –

DR. BARBIERI: Well, I think we've been operating – I mean, the thought process and that matrix is really the resources that Bonnie has identified could be handled in terms of number of assessments.

MR. CARMICHAEL: Yes, and like John said that is not your concern. He is exactly right on that; but the more explicit you are about what you think should be done the better. If you were to say, as Amy said, recommend that blue line tilefish be scheduled as a benchmark, run parallel with scamp and gray snapper and that if necessary vermilion snapper be delayed; then you've given kind of clear information and you've put it where it stands relative to everything else that is planned. Then the council can go to Bonnie and say this is the request that we have.

DR. BARBIERI: Right; and as much as I would like to have all this argument and discussion in our report, I don't want to get the Steering Committee confused by getting so many different suggestions that they don't know which one is our consensus recommendation on the way forward.

With that, let me make a suggestion that we stop a bit to think about Amy's suggestion right now; that we suggest that we have a benchmark of blue line tilefish that is done in parallel with scamp and gray snapper and that vermilion snapper be postponed, if that's what it takes in terms of resource allocation. Would anybody have any problem or any concern about this being our consensus recommendation going forward? Not seeing any concerns; that will be the recommendation that is going forward.

MR. CARMICHAEL: To that, we add make sure there is coordination with the Mid-Atlantic for however this is prosecuted. If there is multiple stocks, one stock, we deal with that properly within them.

DR. BARBIERI: Absolutely, yes. All right, talk about compromise, this was very good. Thank you, Amy, that helps a lot. Okay, we are approaching the end of our meeting, so I am afraid that

the best course of action is for us to push forward and not have any breaks right now because we are really almost at the finish line.

The next item on our agenda, Item 17, is the council work plan update. There is no specific action that is required from the committee. It is an informational item that is presented for your perusal and comments or concerns and input.

MR. CARMICHAEL: Do you have any questions about any of the things that are underway? We do this to just keep you abreast but not to tie you up per your request in things that are moving along and make you focus on everything. We focus on things with actions items within each meeting; but if you have a question, now is a good time to bring it up.

DR. BARBIERI: Seeing none; I think we are ready to move on. Our next item is other business.

DR. SCHUELLER: I'm looking to make a request. The materials that we receive are voluminous. For instance, I think the SMZ component piece, I think they're really looking for comments from us on Appendix N out of O, A through O. I guess I would appreciate if there was some way for us to be able to prioritize what things we are supposed to be spending a majority of our time on. I mean if staff or council, if they really want comments on specific pieces rather than here's our document, here's our 20, 19 appendices; please comment on that. It would be nice to have that be a little bit more focused.

DR. BARBIERI: To that point, Amy, not to disagree with you, I think that invariably that is what we get. When the council is explicit or when staff do have some specific requests over parts of documents, they usually have this in our action items, more explicit in terms of the types of information that they need a direct answer from us; but by and large – and John correct me if I'm wrong – I think they're trying to err on the side of giving us the opportunity to review all of those documents and provide comments.

MR. CARMICHAEL: That is true; but if I gather what you're saying it would be, say, here under action items more detail there about we intend to go over appendices N through O. We want you to focus on the monitoring and research aspect; just something simple like that.

DR. SCHUELLER: Yes, absolutely; that is exactly what I'm looking for. I still agree that we should get all the materials. It is just it would be nice to have a little bit more focus on these review-and-provide comments parts.

DR. REICHERT: That was one of the remarks I had. The other thing is – and I know I may sound like one of our former SSC members; but the timeliness of the documents that we are receiving; and I know we've had this discussion before in terms of getting some of these documents e-mailed to the last time. The sheer volume of what we need to go through; I would like to reiterate that it would be good to get that in a timely manner.

DR. CROSSON: Perhaps I was a bit fatigued at the end of the day yesterday. Do I understand that the Control Rule Subcommittee is going to try to meet before the next SSC meeting and deliver some recommendations; and is Steve Cadrin still the Chair of that committee?

DR. BARBIERI: Yes, and just to clarify that, Scott, is that I'm going to reach out to Steve probably this coming week, reach out to him and see if he's still able and willing to serve as the Chair. If he is and he feels that he has the time to provide us the guidance and the leadership in that process, great. If not, he can participate as a member, but perhaps he doesn't have enough time and we kind of – by e-mail we can revisit that issue and come up with some other person to lead that process.

DR. BELCHER: I guess for the record, because I said it to you off record in conversations with some other folks, that if you find yourself short a person and to help bring in institutional knowledge, I am willing to sit on that committee as well.

MR. CARMICHAEL: You're on the committee.

DR. BARBIERI: Your participation I think is very welcome, and I think this is great. I already counted you in. Fred, you had either yesterday or the day before some comments that I cannot recall right now; but that we thought that we would discuss during other business. Yes, reporting units.

DR. SERCHUK: I know I'm going into murky waters here, because when you start saying, well, here is an ABC and we have to divide it between sectors and so on and so forth; you are going to get odd numbers out of that. I'm concerned about a larger issue and that is having numbers that connote or suggest more precision than actually we have.

Maybe it is just food for thought rather than taking any action on it; but I just think that the methods that we have generally don't provide estimates. If they provide absolute estimates to the pound, they certainly have variance around them. Typically I like to see things rounded off to hundreds and those sorts of things to indicate that if we don't have absolute measures of variability around these sorts of things; that we realize that we're not that precise. I will just leave it as food for thought.

MR. CARMICHAEL: Luiz, you could maybe have a little discussion about that with the council in December when you give the report. I think it would be good.

DR. BARBIERI: Right, and we took some notes and I'll bring this up with them. I've been asked that question once or twice before, so this is something that perhaps we can discuss.

MR. CARMICHAEL: Open the dialogue.

DR. BARBIERI: Exactly, yes, open the dialogue. Any other items that folks would like to discuss under other business? Well, seeing none; we go to Agenda Item Number 19, public comment. This is the second and final opportunity for this meeting to have public comments. I see Chairman Duval.

DR. DUVAL: I wanted to just on behalf of the council welcome the new members to our SSC and to just thank you for a job well done. It is a thankless job that you all have to do. You are a very important part of our process. I just want to extend my gratitude. I am sure that many of you

feel underappreciated for taking two days out of your life to come here and discuss these topics, but that is indeed not the case.

We often have more council members here than we do, but myself, Zack Bowen, Ben Hartig, Mel Bell, and Mark Brown are all here; so I just want to make sure that folks know that we are very interested in the discussions that you have and we appreciate everything you do. Thank you.

DR. BARBIERI: Yes, thank you for that, Michelle, and I can tell you on behalf of the committee that we feel loved by our council; we really do. I have made this comment several times with colleagues in other areas that I really appreciate the love or collegiality and interest and participation that we get from our council members. It is just great. It just generates an atmosphere that is just very, very productive and oftentimes that we need input. It is wonderful to have you here participating and observe. Bob Mahood, our Executive Director, has some words of wisdom as well.

MR. MAHOOD: Yes, I don't know if everybody knows, but December 31st will be my last day after 30 years in this job. I don't know where the 30 years went. I just wanted to thank you all again like Michelle did for your participation. You would not believe what the SSC was like 30 years ago.

We used to hold half-day meetings that only took two hours and nobody said anything and we all went away. It has blossomed and changed so much, and the quality of the people we have is just tremendous. I think we have the best minds in the southeast and beyond now sitting on our SSC. I just wanted to say I've really enjoyed working with a number of you. Luiz has been around a long time and hopefully he'll be here for some time. I want to take this opportunity to thank everybody. I may or may not be seeing some of you in the future. I appreciate your participation and everything you've done for the council. Thanks.

DR. BARBIERI: Thank you for that, Bob.

DR. BOREMAN: Bob, thank you. (Applause)

DR. BARBIERI: Yes, indeed, it has been wonderful, Bob, we really appreciate you. The next item is just a clarification that chair and vice-chair elections, just to clarify that this had been included in our agenda technically I guess as an oversight that we were supposed to have this done at our spring meeting in April, so we're going to postpone. I want to say that Marcel and I are very, very hurt about the fact that by acclamation – and I heard this from several people – Alexei has been elected as the coolest accent. (Laughter)

Alexei, I have to say I've been approached by a lot of people who say we thought that we had a cool accent with you and Marcel, but now we've got a real cool one. Welcome aboard! The next item is to look at our next meeting schedule. I bypassed the report and recommendations review, because I think that we have been following along on the screen a lot of the notes that Mike has been taking.

MR. CARMICHAEL: I'm just sort of pondering another thing that has just come to my attention. Apparently when you guys were recommending ABC for blueline, you have a way old from projections OFL, is that right, Myra, because Mike is telling me here that you've gotten a question from SERO about OFL for blueline tilefish?

MS. BROUWER: For blueline; I don't recall.

MR. CARMICHAEL.: Not for blueline? Good then because I was going to say if there is anything else that we're not clear for management things that are coming up, let's get what we can here. No, you're saying okay.

DR. BARBIERI: Okay, we're good. The next item on the agenda is a review of our schedule. We have our next meeting scheduled for April 26-28 and that will be moved back a week, so mark your calendars May 3 through 5, 2016, here in Charleston, most likely at this very place.

MR. CARMICHAEL: Most likely in this very room; you can have your same seats if you want.

DR. BARBIERI: Then again October 19 through 21; and having participated in other SSCs, I have to say I consider this a plus here that we have this much notice about marking our calendars for these meetings. It really facilitates us scheduling things and planning around this. I appreciate if you can, mark your calendars right now.

DR. REICHERT: Quick clarification; according to my calendar the 19th through the 21st is Wednesday through Friday and we normally meet Tuesday through Thursday.

MR. CARMICHAEL: Yes, just make it 18th through 20th.

DR. REICHERT: Okay, thank you.

DR. BARBIERI: With that, let me, before we adjourn, just thank the committee and again welcome all our new SSC members that have come aboard. I'm really, really happy to see our SSC composition right now and all the great contributions and discussion points. I again want to thank Chairman Duval and all the council members who have taken the time to come and participate and listen in and come to the microphone and ask questions and provide input. We need this interactive relationship with the council. We really appreciate you being here and offering your support and helping us move forward.

I think that we have a good set of notes to thank staff, Mike, as always, for putting together those meeting notes. We are talking fast and having conversations back and forth and he is capturing all of that information. John Carmichael and all the other council staff who have participated and made this meeting possible; so with that; meeting, adjourned.

(Whereupon, the meeting was adjourned October 22, 2015.)

SSC Committee
October 20-22, 2015
North Charleston, SC

Certified By: _____ Date: _____

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October 31, 2015

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South Atlantic Fishery Management Council – Scientific & Statistical Committee Meeting N. Charleston, SC

Date: Tuesday, October 20, 2015

PLEASE SIGN IN -

In order to have a record of your attendance at each meeting and your name included in the minutes, we ask that you sign this sheet for the meeting shown above.

Name:	Mailing Address/E-mail: (If your information is currently on file, just check the box.)	How do you participate in South Atlantic fisheries? (Check all that apply)	
Lora Clarke	<input checked="" type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input checked="" type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
John Foster	<input type="checkbox"/> On File John.Foster@noaa.gov	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input checked="" type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
Anne Markwith	<input type="checkbox"/> On File anne.markwith@ncdenr.gov	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input checked="" type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
Dustin Addis	<input type="checkbox"/> On File Dustin.Addis@myfwc.com	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input checked="" type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
Dave Van Voorhees	<input type="checkbox"/> On File Dave.Van-Voorhees@noaa.gov	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input checked="" type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
	<input type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe

South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
Charleston, SC 29405



South Atlantic Fishery Management Council – Scientific & Statistical Committee Meeting N. Charleston, SC

Date: Wednesday, October 21, 2015

PLEASE SIGN IN -

In order to have a record of your attendance at each meeting and your name included in the minutes, we ask that you sign this sheet for the meeting shown above.

Name:	Mailing Address/E-mail: <i>(If your information is currently on file, just check the box.)</i>	How do you participate in South Atlantic fisheries? <i>(Check all that apply)</i>	
Dustin Addis	<input type="checkbox"/> On File Dustin.Addis@myfwc.com	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input checked="" type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
Lora Clarke	<input checked="" type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input checked="" type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
	<input type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
	<input type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe
	<input type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ Describe

South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
Charleston, SC 29405



South Atlantic Fishery Management Council – Scientific & Statistical Committee Meeting N. Charleston, SC

Date: Thursday, October 22, 2015

PLEASE SIGN IN -

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Dustin Addis	<input checked="" type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input checked="" type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ <i>Describe</i>
Lora Clarke	<input type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input checked="" type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ <i>Describe</i>
	<input type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ <i>Describe</i>
	<input type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ <i>Describe</i>
	<input type="checkbox"/> On File	Commercial <input type="checkbox"/>	NGO <input type="checkbox"/>
		Recreational <input type="checkbox"/>	Govt. <input type="checkbox"/>
		Charter/For-hire <input type="checkbox"/>	Other _____ <i>Describe</i>

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