SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

Hilton Wilmington Riverside Hotel
Wilmington, NC

November 30-December 3, 2008

DRAFT MINUTES

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The Scientific and Statistical Committee of the South Atlantic Fishery Management Council convened in the Cape Fear B Room of the Hilton Wilmington Riverside Hotel, Wilmington, North Carolina, Sunday afternoon, November 30, 2008, and was called to order at 3:10 o'clock p.m. by Chairman Carolyn Belcher.

Dr. Belcher: I would like to go ahead and get started with the SSC meeting. The first item on the agenda is the introduction, but I'm going to go ahead and take the time for us to go ahead do the approval of the agenda and the minutes from the last meeting. Let's go ahead and start out with voice recognition for those folks who are here.

Ms. Jensen: Christine Jensen, North Carolina Division of Marine Fisheries.

Mr. Chester: Alex Chester, research fishery biologist.

Dr. Cooper: Andy Cooper, Simon Fraser University.

Dr. Stephens: Andi Stephens, South Atlantic staff.

Dr. Belcher: Carolyn Belcher, Georgia Department of Natural Resources.

Dr. Barbieri: Luis Barbieri, Florida Fish and Wildlife Research Institute.

Dr. Williams: Erik Williams, National Marine Fisheries Service, Beaufort.

Mr. Carmichael: John Carmichael, Council staff.

Dr. Reichert: Marcel Reichert, South Carolina Department of Natural Resources.

Dr. Belcher: Okay, I know that we have more folks that are coming in, more than likely for tomorrow. I think we had a couple of more people who were going to be in today, but we'll have a bigger group with tomorrow's meeting. Today items, the only actions that we really have are just to approve the agenda and the minutes from the last meeting.

So, with that said, what I'm going to do is ask if anybody had any exceptions with the minutes as written? Without objection, we'll go ahead and pass the minutes. The agenda, we have a couple of additional things just for thought probably under other business at the end, one of which is the issue of transcription or our actual minutes being transcribed. Through the SSC National Meeting that we went to, we're actually probably in the minority as far as groups that actually still do transcription.

The council, I guess, is going to consider this action for us. Any comments that we have or any suggestions that we have as far as continuation or discontinuation of this particular practice we can discuss at a later time but just giving everybody a chance to think about it, what you like about it and what you don't like about it. So with that, is there anything else relative to the agenda that you would like to see?

Mr. Carmichael: Another other business item, when we get to the end, is to consider as we move through the agenda items and the issues before you, that your next regularly scheduled meeting is in June, so you should consider if a meeting will be necessary in March to deal with some of these issues.

As you know, we have some fairly important and controversial amendments on the table that are going to need some discussion, so it's just a thought that we'd like SSC to consider whether or not you can accommodate a meeting in March and if you think that will be necessary in order to meet the workload that is imposed upon the council system by the Reauthorized Magnuson Act requirements and the 2010 deadlines for that amendment and dealing with ACLs and fishing level recommendations and all of that business.

Dr. Belcher: Thanks, John. So with that, is there anything further that anyone would like to see added to the agenda? Seeing none, any objections to the agenda as it stands? Seeing none, the agenda is approved.

The next item on the agenda is a report on the National SSC Meeting which Luiz and I attended last month. What we will do is just kind of give you some of the flavor of what the meeting was about and what some of the take-homes were that we brought back with us. With that, I'll turn it over to Luiz.

Dr. Barbieri: Well, I actually have a few slides I've put in a powerpoint to help us go through the discussion.

Dr. Belcher: Yan, if you would, would you put your voice on record for us?

Dr. Jiao: I'm Yan Jiao.

Dr. Barbieri: Okay, this is just some general thought and really notes that I made at the meeting. The meeting focused on two main areas. One was SSC Operating Procedures and Related Issues regarding meeting frequency and other ways that the SSC can actually interact amongst themselves and the councils.

The other part was about peer review and setting the ABCs and ACLs. Carolyn is going to speak more to that second part, so this part is just a general introduction and discussion of the meeting procedures. It was interesting to be in this meeting with all of the other SSCs from all the other different councils and actually realized that we are a minority in terms of still using Roberts Rules and having a voting system and how we make decisions as an SSC. Most SSCs deliberate and resolve issues by consensus.

You know, they discuss issues extensively and then they come to consensus. They do not vote on issues. Most of them actually thought it was really weird that we still vote on issues. I thought that this was an issue to bring up for discussion here to the group, and perhaps later we can have some discussion on whether this is something that we should adopt as well.

You know, some SSC members felt that by having voting on issues we really didn't have sort of a major unifying voice from the SSC as a whole, which they felt would only be represented by a consensus statement for each one of the topics being discussed. It's something for us to think about.

Meeting frequency was another one that was really interesting because most SSCs seemed to meet more frequently than we do. Some meet a lot. An issue that I think would be useful for us to discuss is how often do we need to meet, how do we align discussions of issues that have to go before the council and our own meeting schedule.

We meet concurrently with the council, and in some ways this is very convenient, and other ways, as just came up with John's discussion of perhaps us needing a meeting in March, is that in some instances we're going to have to review issues and have enough time to review issues before we are to present them to the council for consideration. So how do we align the issues coming up for the councils to consider with our ability to review all the materials and present our recommendations to the council?

One other thing that came up that we thought was interesting was that most SSCs have not just tasked leads in terms of leading discussions on issues, but they also have note takers, rapporteurs, that will focus on taking notes about specific issues, so you have which one of the tasks the SSC needs to consider for discussion that will be for review or action.

There will be a task lead assigned as well as a task rapporteur that Carolyn would assign or ask for volunteers when she does the task assignment before each time we meet. That way it would be easier for us to take notes. We have perhaps a better report to present to the council. This intersects with this issue of verbatim notes for the meetings.

If we have somebody really dedicated to taking those careful notes on issues, perhaps we do not need verbatim meeting notes, which is an issue I think we're going to discuss more extensively later on. This brought up the issue of administrative records; you know, how much is enough. Right now having verbatim notes may be causing some unwanted issues to surface that I think we will discuss in more detail later.

We have a requirement for an administrative record that we need to balance with our ability to discuss issues extensively without problems that may arise when we have verbatim notes taken. Workload, you know, this has to do also with the meeting frequency and the number of tasks that each one of us or groups of us would take responsibility for.

At this point it looks like some of the other SSCs are meeting more often. They are dealing with more issues than we deal with. I wonder if it wouldn't be good for us to discuss this issue of perhaps adding more SSC members to our group to help spread the load. Some of us haven't been able to really step up to the plate on taking up responsibilities over tasks or attending SEDAR meetings or whatever task is at the table. This is something that might help.

If we had more people on the SSC, then we have more people to take up dividing responsibility over the overall load of task. That was the brief notes on the meeting conduct and frequency,

and I don't know if you want to raise those for discussion now or if we go straight to the peer review.

Well, I am just going to go straight to the peer review because some of those issues will resurface. National Standard 2 in the Reauthorized Magnuson-Stevens Act called for the SSC's role to be much stronger in terms of peer review, and it really formalizes the SSC's role in the peer review process for the council that involved a detailed review of stock assessments.

Most of the other regions or the councils have stock assessment review processes that are actually similar to SEDAR. I wasn't aware of how many of them there are out there, but very similar to SEDAR. The SSCs in this case participate mostly as part of the review process. In our case we have SSC members – and I think, John, two members, right, per SEDAR – that for continuity are supposed to attend all three SEDAR meetings.

In other regions the SSC participates mostly on the review workshop, and in most cases the SSC member will serve as Chair of the Review Panel, but not really participate in the data or assessment workshops. I thought that this was a relevant point of discussion given workload issues and the difficulties that we've had recently in finding volunteers to serve on some of the SEDAR panels.

This is another point for us to discuss at some point; shall we participate in this review process only or shall we continue as we do it now? In this model, having the SSC members participate only in the review, the detailed stock assessment review is done by the review panel, including the CIE participation.

The SSC as a body provides another layer of review, but instead of a redundant full technical review it would focus more on evaluating additional uncertainties and addressing and resolve disputes – I mean, perhaps bringing those review panel recommendations and comments into the management context of the council. So, it is sort of another layer but playing a role that is slightly different than the review panel would have, per se.

I thought that this was an interesting discussion, too, because we have at one point or another discussed the issue of whether we need to review the assessments in detail given the fact that the SEDAR process involves a formal review by independent experts, and this I think brings a different flavor of what our role will be as a body.

Again, this level of review by the full SSC provides the opportunity for integrating review results and recommendations into the council's management context as well as addressing the issue of best scientific information available, which we have considered to be our formal role in this review process. So, having us participate this way really defines the review process as an official SSC review and officially then endorses that assessment or whatever other analysis is being presented as being the best scientific information available. That way we can give the recommendation to the council as our stamp of approval on whatever assessment or analysis is being presented. And that's it.

Dr. Belcher: Any comments or questions about what Luiz has talked about?

Dr. Williams: At this meeting did they discuss the issue of the makeup of SSCs and in particular the topic of having National Marine Fisheries Service people on the SSC?

Dr. Belcher: It was discussed because with our changeover from not having an NMFS employee as chair of the committee, there were a couple of other committees that actually had a NMFS person as the chair. There was a discussion about that and the makeup; the issues of the socio-economic folks and their contributions into it as well, and just basically got a flavor of how different councils made up their groups. There are quite a few that are largely National Marine Fisheries Service employees. Any other questions or comments? Alex.

Mr. Chester: This body has discussed at various times a broader role of the SSC in terms of being principally an advice panel, vis a vis, actually, quote, doing the work, and I wondered what your sense was with respect to the other SSCs and how they have parceled out those roles?

Dr. Barbieri: Alex, do you mean doing the work in terms of conducting the analysis, the assessment and all?

Mr. Chester: Yes, conducting the analysis or actually doing the work to come up with, for example, an annual catch limit?

Dr. Barbieri: Well, my impression is that you had different models being used. Most of the councils have the NMFS Science Centers working with them in providing a lot of technical support, stock assessments and other analyses, but some SSCs have more analytical capability and in this case they played a bigger role.

My recollection, thinking now about the comments there, is that mostly the analysis was done ahead of time by the science centers or some panel. In some cases some SSCs had technical panels that met separately from the general meeting. You know, subsets of the SSC as small assessment panels would meet and then get those things done ahead of time and then present to the full SSC at their regular meetings. John.

Mr. Carmichael: Yes, that's how I remember it. There are various ways of going about it. A lot of the other councils have more of a subcommittee, plan team kind of structure that does an awful lot of that, so then it feeds stuff into the SSCs. And, of course, like everywhere, SSC members sit on both, sit on both things and as well sit on the SSC.

It wasn't an issue that the other SSCs really seemed to have a lot of concern over as far as whether or not they were being asked to do stuff as opposed to review stuff. They just sort of saw it as rolling along and fitting in wherever their responsibility suggested they should.

Dr. Belcher: One of the things, too, observational-wise, is we had a couple of the SSCs, specifically, New England, I remember, because Steve Cadren, he is chair, I guess, they're kind of in the new stages of reestablishing themselves, both them and the Mid-Atlantic. At the risk of sounding like I'm kind of making us sound like we're not – they're very gung ho about the process, meeting as many times as needed.

You know, there is just this whole big huge like it is a new thing buy-in that they have where a lot of the other groups are either well established or kind of like us, that we're trying to work within the realm that we have already set forward and just morph ourselves into what needs to done, so that you have kind of the ends of the extremes relative to how that workload is being done.

We were kind of surprised to hear that there is a few that meet as many times as five times a year. Granted, now there are times that they're not meeting for a full five days; they're meeting for two or three days, but they're still meeting five times a year. That is with academics as well on board, which I found kind of very surprising, because in the time we talked about what months worked for best for us relative to setting around the council dates, it's basically December and June because of the fact that it doesn't interfere with the school year.

So, the dynamics of how each of them works is very different. The Caribbean is still coming into it. They haven't really kind of even identified themselves yet as to how this is going to be done. Their meetings are still getting up and running. The Gulf kind of is trying to form themselves, but either through lack of guidance or support they're not quite where they need to be yet, but they're acknowledging that they need to be there.

So you get a wide diversity of how they're working it through, but we did hear a lot about basically technical committees, which we've discussed in this group, and subcommittees that actually get together to meet and discuss key topics as well as to how that workload is getting looked at. John.

Mr. Carmichael: And I definitely think it would be good to talk about how you deal with stock assessments, how do you review them, and that was an issue that all of the SSCs definitely seemed interested in, as Luiz said. That is a nationwide thing, especially with the new Magnuson Act and stuff, is what is the SSC's role in these assessments that have come through a rigorous, independent peer review system of some sort, whether it be SARC, STAR, SEDAR, what have you.

And then the other side of that, of course, is then what is your role as an official SSC appointee within those procedures. The STAR, which is the northwest process, it falls squarely under an SSC-run process. Their members chair that and they have a pretty good involvement in it, and there is cross-fertilization between the people who are on the SSC and the people doing the assessments.

The SARC in the northeast doesn't have designed SSC member involvement at this point but whether or not it does in the future is hard to tell because, as you said, both of those SSCs weren't really active. The New England didn't have one and the Mid-Atlantic had one but only met once in a while for special issues, so they never had a big role or an official role as SSC members on, say, the working groups that contribute to those assessments that feed in here.

The SEDAR, there are the designed seats as was noted and certainly as we all know sitting around this table, those can be pretty hard to fill. Part of the reason for those seats is that SEDAR kind of evolved out of a council stock assessment subcommittee. We're dealing with

three councils in this region and sometimes the opinions vary on those councils as to what role the SSC members should play. Luiz knows that better than anybody probably because he sits on the Gulf as well.

But I think if you have a question, if the SSC wonders if that is the role that you wish to continue to fill within SEDAR and having these designated SSC member seats, that's definitely something worth talking about because SEDAR is a council process, which I have said many times here, which means that you have an influence on how it is constructed and how it is administered.

If you feel that there is time for a change or you'd like to consider it running in a different path maybe than what it has taken by following along from that stock assessment subcommittee type process, then certainly the council will be listening to that and the Council SEDAR Committee can consider your arguments and how you think that fits into your final task of how you deal with that assessment.

The one concern is you wouldn't want to have SSC members out of the process along the way because then there is this complicated 800-page document you have to read and that's why we have encouraged one or two members – you know, basically the rule is one member per species or per stock, so if you had two stocks you would be looking for two people to run it through, so you have someone from within your body who has that continuity.

But if you willing to say, well, we'll look at it at the end and have trust in that data and assessment workshop process, then maybe that's not as critical as it used to be. But I think both of those issues are definitely something to take up here and discuss. Just remember, as an SSC you have some influence over how these things go, and you can look at how you want to operate should be the way we do it and not necessarily how someone else does it or how we've done it in the past. I think it is going to be pretty flexible as to where we go from here.

Dr. Belcher: One thing, too, that I found interesting was a question that was posed to us as to who has authorship of the stock assessments, because apparently with the STAR process in the northwest there is a person who writes that report and then the review is applied to that report, but there is a single person that authors that report.

Well, we don't have that here; it's more of a group report. That was kind of interesting thing that I thought had come forward from that group. The peer review, kind of the flavor around the room was very much of that same thing is do we really need this second level of review. But the involvement, as John was saying, from the SSCs at each of those levels is very different.

Where our people are involved, it's step one, two and three and their people may not come in until the very last step, so their review is more of a peer review where ours tends to be kind of an embedded review and then a secondary level of review. But none of them had really run into problems that we had had where we had a stock assessment that didn't meet a term of reference.

You know, most of them just kind of felt like it is a quasi rubber stamp, for lack of a better term on that, but they have not had that exception where we have had that, and we said that was the one thing that as an SSC we were able to do because we were given that second level of review.

I'm not saying we superseded anything, but based on what we knew about the fishery and the fact that there was a term of reference specific that we did not feel was addressed, we had that ability to say we couldn't put it forward without considering that.

Dr. Cooper: To that point, not meeting a term of reference is a review of a process and not the science. I can't remember exactly what the case was, but it was that we didn't feel it was addressed fully or they did it –

Dr. Belcher: King mackerel.

Dr. Cooper: King mackerel; that doesn't help me any. If what we're reviewing is whether or not they met the terms of reference, that's not necessarily a scientific review. That's still kind of a process review. What I would be interested in is do the other stock assessments actually have terms of references they go in, because actually if it was just on a DFO stock assessment and they basically hand you the paper and they say, "What do you think?"; that was like, well, what are my terms of reference, so I say, "Well, whatever you feel like." I mean, no guidance, and so I don't know in the STAR process if they are as detailed as we are about here are the 85 questions we want addressed.

Mr. Carmichael: We are the middle of the road in that respect. The SEDAR tends to have five to eight fairly concise terms of reference, you know, provide the catch at age and then give an assessment, give reference points, very much like our – it is kind of like a mixture of a couple of key ones from ours throughout, and then the STAR has – I think the example they provided for their last round of assessments, it was about 12 or 15 pages, which was the terms of reference and dedicated specifications for conducting the assessment.

It had the regular terms of reference like, you know, we're kind of accustomed to, and it also had detailed specifications for the process leading up to it. It had some things laid out about who would do what; you know, what would the council do and what would the science center do, what everyone's role was.

A lot of the things that are within SEDAR are kind of embodied in the procedural documents that we give to individuals that are participating where part of their terms of reference – and they even went so far as to specify the nature of outputs and the types of things to be provided for the council and through the process. They were extremely detailed. So, we're kind of in the middle of the road, but definitely the norm is to have some sort of terms of reference that say this is what we would like to see, this is what you should do and varying levels of detail with those.

Dr. Barbieri: Well, just to address the point that John made earlier about SSC participating in the SEDAR process, I feel that it is essential for the SSC to participate in the SEDAR process. I mean, we really represent the link between the assessments and all the other analytical materials that are produced out there by whomever is producing them in the council. I think that we need to be intrinsically involved in that process.

What I question is the degree of involvement and if it is realistic to have the two members now that we ask to participate in all three workshops, which represents a commitment for three weeks

plus all the other meeting times that we meet regularly. To be perfectly honest, this is not as much of a problem for me because basically that is what I have to do as part of my regular job, anyway.

To me this is just part of my job, but for some other people it may not be, and I think it will create some imbalances on how people will be able to participate in the process, and we may end up with just a few people who have the ability to participate in the process and deprive the other members who might be very enthusiastically trying to participate in the process but not being able to because we create a workload burden that's unrealistic for their level of commitment.

I wonder if this issue about us participating just in the review process, and that way another advantage of that is that person who gets assigned – and in that case it could be two people because there will be just one workshop year perhaps – yes, one workshop a year per SEDAR for those two members – those people will be responsible for doing basically the heavy lifting and really reviewing that specific assessment, and the rest of us wouldn't have to put so much time plowing through all the documentation that we get in detail. In a way it will be a division of labor that I think would be advantageous to the group as a whole in terms of workload.

Dr. Cooper: I know this was a recent change, but can someone remind me why we switched over to having a person walk through all of the different meetings? I seem to remember it was because we weren't getting all the full information in the end, but perhaps if we could remind me as to why we were doing that we might be able to talk more about why we might change it.

Mr. Carmichael: The why was continuity. It has always kind of been in there that it was encouraged. It's not something that happens necessarily very often, but when the councils are asked to appoint people to SEDARs, they are asked to consider that continuity so that there is someone who has seen that thing from the data to assessment to the review, and they know the background on all the issues and the stream of issues so that because you have that final check on the process and as well as officially at some level on the science, that there is someone who has seen it from start to finish and can provide that continuity.

Another part of it was a desire to build more continuity into the data to assessment to review, because one concern that came up was, well, issues came up at the data workshop, that there weren't enough people there outside of the analytical team who were on some level kind of in a different role.

There wasn't someone else who was outside of that group who had seen the whole thing and at times the issues kind of got left on the table, perhaps, or people weren't sure why a particular issue had been settled a certain way. It was continuity both for the process and for you as people who have to act on it. But, granted, yes, the workload is always a problem within SEDAR and is probably the biggest challenge we've faced since one is getting enough people in there for these workshops.

The problem in our region is that we don't have enough people to really have someone who – you know, we don't have five people in each state who are qualified to either sit on the SSC or

go and participate in a SEDAR or go serve at ASMFC technical committees or what have you. It is such a very, very small group of people that everyone is stretched to the maximum.

Dr. Cooper: So it sounds like, if I was hearing you correctly, that one reason is that in the SEDAR process there needs to be some person or somebody who goes to all of them to try and flush out, when all of a sudden the assessment workshop has questions about what actually occurred at the data workshop, and for some reason the SSC is filling that role.

Have there been cases from the SSC perspective where we have actually been thankful that we've actually had someone at all three because it brought up an issue that would not have been otherwise; not from the assessment and review process but in our deliberations? Is most of this potential worries or is this actually – do we have cases that demonstrate thank goodness we were doing this?

Mr. Carmichael: I'm not sure from the SSC's perspective as far as you felt it was beneficial, but I certainly know there were criticism along the way leading up to this point that the SSC did not feel they had enough understanding of what happened over the 18 months that the assessment played out before it got to the SSC; and that those who perhaps came in at the review level expressed the opinion that they didn't really know what was going on and it would have been much better for them if they had known what was going on.

I guess I'll certainly say that in conversations with people from the Gulf SSC is they feel very strongly about this need for consistency when they get the assessment to look at it. Maybe that isn't something that this SSC has as much concern about, but it is certainly something that we have tried to accommodate and deal with some past complaints when it didn't happen.

Dr. Cooper: And I may very well have been one of those complaining, but I guess the question is if we change our desire to be basically a reviewer of the process rather than of the science methods and the specific analytical approaches, then that may alleviate some of the need for the whole SSC knowing all the different pieces all along the way if our goal is to more understand the processes that it went through as opposed to the scientific details of it.

Ms. Jensen: My question is when we're talking about the SSC members reviewing the stock assessments in detail, exactly what do we mean by that because some of the people on this group have different levels of technical knowledge regarding stock assessments, particularly the socio-economic folks who aren't even really biologists. They might have a hard time and not quite feel comfortable reviewing the technical aspects of an assessment.

Dr. Barbieri: Well, then I think that their participation is that more important because they bring a dimension that up to that point had not been incorporated in the analysis. I mean, the way that we interpret the significance or the management context of the assessment would be different depending on the socio-economic input.

Not everybody will be reviewing the assessments from that technical perspective by reviewing and looking at benchmarks and reference points and looking at whatever is missing in terms of

incorporating that socio-economic context that not explicitly was incorporated in the assessment. That's my opinion.

Mr. Carmichael: Certainly a big part of the question as to what is that nature you're reviewing, I think that is true. There are people here bringing another perspective which can be very helpful. The other thing is if you want to just not review the scientific validity of it and not consider that and just talk about process and procedure, that's probably within your ability. As I said, that's kind of a thing that we're not sure of what SSC's role should be.

If you look around the country, you'll see that in the northeast, that when their SARC Review Panel completes its work, it goes straight to the council. It doesn't come into an SSC. The councils take whatever comes out of that, and the SSC has always been kind of at arm's length out of that whole assessment process. Some think that is good and some think that is bad. So far the past has been the SSC hasn't been willing to relinquish the ability to have some scientific feedback and review of those assessments.

One of the reasons for that, too – it should be probably mentioned – is the idea that those review panels are primarily composed – right now within the SEDAR there are three appointees from the CIE and we've added the council-appointed reviewer to provide the local knowledge, but the concern has been raised from the beginning with having that nature of a review panel is that you could get a guy from New Zealand and a guy from Belgium and a guy from Canada.

They're reviewing it and they're providing a very high-level technical review of the science, but they may not know the intricacies of our data collection programs or an issue that is facing the fishery. So the concern with that review was that you were losing this local knowledge that might prevent you from making a tragic mistake simply because you didn't understand something that happened specific to our region ten years ago, perhaps.

That's why we needed that knowledge, and it was always part of going to that review panel – at first it was that, well, we do have the SSC review; so if they did something that was just completely crazy when the SSC looked at it and said that is completely inappropriate. Knowing what we know about the fishery, the management of the past, the data, what have you, you had that backstop.

Now we have gone to the council reviewer to try to fix that. We don't always get that council-appointed reviewer, which was an issue with the – you know, it's an optional seat for the council – no one was appointed for SEDAR 16 on behalf of the South Atlantic Council. We had one person who serves on both, who was sort of representing both.

Then we had, I guess it was the last one that we did with 15, I guess the review was – I got my numbers mixed up on my SEDARs – 17 where there was just the CIE reviewers and no one was appointed by the council. That could be an SSC member, but no one on the SSC had the ability to step in and do it then, and we didn't identify anybody else to come in and do it, so that is an optional seat that sat vacant. So there is that issue of the local knowledge that needs to be respected because it has been brought up a lot by the SSCs.

Dr. Belcher: The other thing, too, that I think came up relative to that is where the endorsements were based on best available science as well is does that fall to the SSC or do you assume that coming out of the review. Right now that reserve has fallen to the SSC to endorse that. That was one of the questions that kind of got kicked around the table and only a few of us have actually seen where – especially ours, we pretty much are the ones who endorse it as best available. That was a question that came up as well, you know, is that the whole key of having the SSC do a second level of review?

Dr. Barbieri: And how this review really fits into the context of National Standard 2 now; with NS 2 coming into implementation, how does our role – you know, what role do we really play in that process.

Dr. Williams: I'm glad you mentioned NS2 because I'm on the working group. Right now there is an ANPR, which I forget what the heck that stands for, but basically it is open for public comment right now until December 17th. They're looking for comments from – and they would like to see it from all the SSCs on what we would like to see in the NS2 Guidelines as far as peer review goes. I think as an SSC we might need to consider putting in a formal response to this ANPR that is due December 17th.

Dr. Belcher: That was another point of discussion, too, was the involvement of SSC members relative to those three workgroups; that some of the SSCs would have liked to have seen more SSC representation on those groups. Just so that we can kind of move on to some other stuff, we can definitely come back and revisit this.

But to give you a kind of where we are relative to ABC/OFLs, the good news is that we kind of fall in the front of the line and not so much to the rear of line. The North Pacific has a tier system for determining how to set ABCs/OFLs based on types of data that they have available, and there are six tiers to their system, ranging to "we don't know anything" and it is an automatic zero de facto on ABC/OFL to "we have a lot of good information" and they can actually use different types of means to set those levels.

In seeing that, we have kind of talked about a tiered system but haven't really put a design together. We have kind of kicked out some strawman stuff at the last meeting, which when we talk about Amendment 17 we'll come back to getting some clarification on why we did a couple of the things that we did.

But in seeing that, what was interesting for us is that having known that the North Pacific has been doing this type of management for a while, we kind of put them back on their heels because as we're talking about the development of a P-star methodology and how we're assessing uncertainty, that's not something that has really come into play for them, the management uncertainty of it.

They have given numbers the same way that we have given numbers in the past, but that whole how well does it perform as a management action to end overfishing hasn't really come forward for them yet, so we kind of got them thinking. And, again, like I said when I looked at us

relative to the rest of the stack of the eight committees, we actually are pretty much in that middle to upper part of the tier.

We could in the case of the Caribbean really be hurting where we don't even have the datasets to actually do anything. In the sense of snapper grouper where I at one point was saying it's tough when you have 73 species and 63 of which you know nothing about, well, we have no reason to cry because there are 400 and some species in the West Pacific that they don't know anything about, and they're in the same dilemma we are.

So their Snapper Grouper Reef Complex is probably a bigger problem than ours is. I mean, granted, we hold the same issues. So with that, like I said, just to let everybody know, we're really not falling behind. We're actually pretty much on the front edge of this stuff, which I think we should pretty much give ourselves a good pat on the back for at least trying to stay ahead of that.

Like I said, we'll go ahead and defer anything further unless anybody has direct questions or comments to those points. The other thing that did come up, too – and this is something I don't know if, Erik, you can talk about at a later time – the reliance for a lot of the other council committees on these reports, the SAFE reports that they tend to see every year, I'm not really familiar with the South Atlantic and our either use or disuse of them.

But it was surprising that they have them annually that come forward, and I just was curious about the play or non-play in the South Atlantic, if you had any – or anybody who actually works within NOAA who might know why we have not really seen them. I'm just curious. It's not pointing fingers or condemning anybody.

It is just that when you hear of the reliance of these other committees to seeing these reports on an annual basis, it was kind of one of those questions that kind of came up. I know we had talked about bringing trends' reports at one point in time, which might help some of us in future stuff as well. But, anyway, it's just food for thought because I'm not sure exactly how that plays in with the South Atlantic.

With that, like I said, if anybody has any further pointed questions or if there were topics that you were wondering if we discussed, we would be more than glad to address those for you. If not, we will move on. Okay, the next item on the agenda is SEDAR 19. This is administrative stuff from Julie relative to participation, schedule and terms of reference.

Dr. Neer: Okay, SEDAR 19 is the next SEDAR of concern for the South Atlantic Council. It is Red and Black Grouper. The black grouper is a joint assessment with the Gulf Council. For your consideration, we have three attachments, the terms of reference, the schedule and the suggested participants' list.

I believe the first thing is the terms of reference is identical to what you saw and approved in June; one small change under the assessment workshop term of reference. There is an addition by the Gulf Council under 6A. I'm just making you aware of it. It sort of feeds into the

comment that John made earlier about how different SSCs have different views of what their roles may be.

I'm just making you aware it is an addition by the Gulf under the Assessment Workshop Term of Reference 6A. In addition for black grouper, the Gulf Council requests that the panel specify OFL and recommend a range of ABCs for review by its SSC; just so you are it is in there. There is also an additional terms of reference that was added under the Review Workshop Terms of Reference 4A, a similar request for having the review panel look at the methods used to estimate OFL.

That was the only change from what you saw of these terms of reference when you looked at them and initially approved them in June. Any questions? Secondly, I'll talk about the schedule for SEDAR 19. There was a slight change. We ended up moving the data workshop from May to June. This change was made due to a conflict with a holiday weekend.

It was discussed with both the lead assessment teams, which is Florida, and Beaufort, and they agreed to that change. That's the only shift in the schedule essentially is the data workshop got moved to June, but all the other dates remain the same. Any questions or comments on the schedule. The review workshop is now scheduled for January 2010; therefore, you won't see these assessments as an SSC, if you maintain your June/Decembers meetings, until June of 2010 would be when you would receive this full assessment.

The final thing on 19, you were provided a list of suggested participants for SEDAR 19, just to let you see who have spoken up, SSC and otherwise, various suggested people for participants in the various workshops, data, assessment and review. We do have two SSC members already identified to handle the two species under review.

They say they're coming to all three workshops; we will see if that still happens. Luiz will be the lead for the black grouper assessment, the SSC, and Anne Lange is serving as the red grouper assessment SSC representative. One thing I do want to point out and have you guys look at is there were a couple of fishermen or AP representatives that were named or identified here.

None of these things have been approved yet by the council. They go to the SEDAR Committee later this week to approve them; so if you have any additional suggestions of potential participants, let me know and I'll make sure it gets added to the list that goes up to the SEDAR Committee for appointment later in the meeting.

The only thing that not specifically has a slot here under the review workshop, which it should have, was, again, the council-appointed reviewer. As John mentioned, that is a slot that can be filled by an SSC member or someone else to provide local knowledge of the fishery in addition to the CIEs that we currently have helping on the review panel.

Currently there is no one recommended, no one listed and no one suggested for a council-appointed reviewer. It needs to be someone that has not participated in the data or assessment workshops. As I said, it can be an SSC member or someone else; so think about that and let me know if you can think of someone.

If you don't give me any suggestions this time, I'll ask you again next time you meet because the review isn't until January of 2010, so we have a little bit of time, but the sooner we get things on people's schedules, the more likely we are that they will be able to participate.

Mr. Carmichael: One comment on the council appointee, it could be an SSC member. That would be nice. The SSC members have different feelings on whether or not that is appropriate, though, which is understandable. This SSC has shied away from that and it kind of felt it would be nice to have someone from outside with knowledge of the regional a little bit but maybe not on the SSC to sit on that panel.

For 15 we used Joe Hightower from North Carolina State University. If you guys know of someone at a university who may be willing to donate a week of their time, plus a little extra to prepare and get the report done, and who has knowledge of these two fisheries or these two species, someone who has a good background in grouper – I know there are a lot people down in Florida who may fill that role, some of those universities – you know, if you have someone you could twist their arm a little bit and get them to come, that would be very nice.

Just let us know. As Julie said, this is a year away, so we have time to identify these persons, but we want to make sure it doesn't fall through the cracks, especially with the regular meetings scheduled six months apart. Next December is going to be too late. If we don't ask anybody until June, they may already have other things on their calendar; so the sooner we can get someone lined up, the better chance we have of actually getting them to do it.

Dr. Belcher: Any further comments or suggestions for Julie? Okay, seeing none, we will move on to SEDAR Methods Workshops Reports, and this is combined with Andi and Julie.

Dr. Stephens: I'm going to talk briefly about the procedural workshop that we've already had, which was the Indices Workshop, which was in Miami in October. Julie and Walter Ingram did a wonderful job of running the workshop. It was a week-long workshop. Marcel was there as well, I think he will agree that it was a very useful workshop.

The purpose was to get to some agreement on standardization of the data that would be used for developing indices of abundance and also the methods for manipulating that data and developing the indices. People talked about the recreational and commercial surveys available, the fishery-independent surveys, large scale and small scale, and talked about methods. The methods were pretty rigorously gone through by Mauricio Ortiz.

I thought that one of the interesting outputs from the meeting was really the forums that you guys developed for describing the data that was being used. The outcome of this should be better standardization, better agreement on methods. The report is forthcoming, but in your briefing books you do have the presentations that were given at the meeting.

Dr. Neer: Just as a follow up to what Andi said, you have been provided with the terms of reference or the statement of work for the workshop, the agenda, who spoke and who attended and a copy of all the presentations that we were seeing. Just as a quick backup, the thought process behind the procedural workshops arose from the fact that often at the individual

SEDARs topics come up over and over and over again, but within the context of a certain SEDAR and the timeframe of trying to get that assessment done, we don't often have time to look at those issues in depth.

To try and address that SEDAR has come up with this process and series of procedural workshops. The first one, as Andi said, was the Indices Workshop that was held in October. We have two additional workshops coming up, which I'm going to talk about briefly in a moment here.

The goal of the procedural workshops is trying to really get at some of the questions that come up over and over again in multiple SEDARs. To that end, SEDAR is always looking for additional topics for the procedural workshops for us to really delve into. The next two that are coming up is one on catchability and one on Caribbean data to stress some of those issues that Carolyn said that we don't even know what species we're catching.

The thing that Andi alluded to that I see you do not have that I'll make sure you guys get a copy of is basically a checklist that came out, which is about a five-page thing that is going to be checked off and examined by the Indices Working Group at each SEDAR for each index being developed. It has everything from where the came from, how long the survey is, seasonal coverage, temporal coverage to a host of diagnostics that we're going to provide in code to help run the diagnostics and get the plots that we need to people who may not be able to do it.

A lot of this work is going to be done in R, so it's going to be freeware so people at state agencies don't necessarily have to go out and buy a certain version of a certain code to run some of these diagnostics. It is still under development, how much the diagnostics are going to come, but basically one of the big things that came out of the Indices Workshop is that in general, when you get to the review workshop, the analysts end up doing a lot of defending on which indices got included, which ones got thrown out.

And often it is, well, we recommended this one and we recommended that one. It has become a process and sort of standard to say, well, it was constructed correctly; therefore, we included it without taking it through the step further of it doesn't really track population, what is the spatial coverage, all of those sort of other questions, and the reviewers have often pounded on the analysts at that point at the review saying you shouldn't have included this one or you should have.

So that is what this checklist is supposed to help – it is going to be provided to everyone preparing an indices index before they get there so they know this is what we're going to be looking for, these are the things we're going to try and look at on your review of your index, and it has got satisfactory, not satisfactory, details not provided, that kind of thing, and basically you go through and you check it off for each index, and this gets attached to every single index.

I will make sure that you guys get a copy of the checklist. We're still tweaking it; so if you have suggestions, we would be happy to hear them. Now, I'll talk about the two I'm supposed to talk about, which is catchability and Caribbean. Catchability is listed next so I'll talk about that. The

Catchability Workshop is being held – it was supposed to have been held in November. It got postponed until February.

It is being held to try and examine the question of we all know catchability changes over time, but how do we model it? Do we do a standard percentage over time, as some people have done it? Do we ignore it entirely? We get picked on regardless of what we seem to do. What we're trying to do is bring together a host of people, analysts, fishermen, some SSC members, various people from other regions, the other science centers and not just the southeast, to come in and try and talk about the issues that we see specifically in the southeast with tracking our catchability using the type of data we have available and trying to identify and make recommendations for ways to model and incorporate it in future assessments.

Luiz will be attending that workshop now that we have switched it to February, so we do have one SSC sort of representative who can kind of check it out for you guys and come back and report back hopefully. I'm not sure if Erik will be attending it or Kyle or Paul. Someone from his team will be coming; we don't know who.

That's the goal for the Catchability Workshop. What you guys have in your packet was a copy of the statement of work as well as we have called "the catchability questionnaire". This has been put together by a couple of the analysts at the science center and is being provided to some of the fishermen representatives, the industry representatives that have been identified and who will be participating in the workshop.

It's a list of questions to get them thinking about what the analysts are talking about when they're talking about catchability and try and get information on things such as when did you start using GPS; have you seen major shifts in the fishery; what do think the causes were; when did they happen; how long did that change take. That is going out to the industry representatives and hopefully they will hand that out to further people so it will help get a lot of feedback from the industry standpoint of what they actually think catchability happened and when things changed.

We also have some people that are looking at individual logbooks trying to see if they can track changes with specific times when we know we implemented GPS or regulations or those types of things. So that's the Catchability Workshop. There is also included in here a list of participants for the Catchability Workshop, those people that are currently identified to attend. Then the final workshop, which is actually now –

Dr. Belcher: Julie, Alex has a question for you.

Mr. Chester: Julie, if it is all right to interrupt on this topic, I know when the subject of this workshop was first suggested, there was a discussion about having one or more individuals from the marine electronics industry or at least to explore whether that kind of body of knowledge might be available as to the intersection of technology with catchability, and I wondered if that panned out, if any of those people are represented on this participants' list?

Dr. Neer: Currently they are not. I have contacted the Marine Manufacturers Association trying to get someone or find someone. I have yet to hear back from anyone, but I will try again. Yes, we would really like to get at that. We're hoping at least that we might be able to get it in a roundabout way by having by some individual logbooks of 10 or 20 fishermen and having them tell us when they at least implemented some of these things. Currently no one is actually attending from those organizations yet, unfortunately.

Okay, on the Caribbean, the Caribbean Data Evaluation, it is a little bit of a different procedural workshop than the other two. This came about because the last two SEDARs that were held by the Caribbean basically got pooh-poohed at the reviewers' stage saying, "Why are we sort of here; you have no data? You can't do these involved assessments; you need to go back and look at what your data is, especially when your data says 'potfish' and you don't even know what species you have."

It's a real problem, so that's pretty much the focus of that workshop is bringing in a lot of state representatives as well as port samplers and fishermen, trying to get handle on which species we have, what data we actually have, what datasets are actually useful. Unfortunately, some of the last SEDARs went through an extensive list and they had 15 or 16 surveys, but they are all one and a half or two years' long. It isn't very useful for indices of abundance.

So, that is pretty much the focus on that. It is a joint effort, very much so, with the Caribbean Council. We're expecting about 45 people to attend so the Caribbean Council is putting up a big chunk of money. They're bringing in and paying about half the people to attend. SEDAR is only funding half of the workshop. What you basically have is the draft statement of work that was available.

I can get you a list of participants now if you really want one because we finally have one. It has been a little tough getting stuff out of the Caribbean. It is sort of a data exploration. The goal is to look at what the data we have, identify species we think we can do, sort of more advance assessments, and also look at alternative assessment techniques such as length-based techniques, which may be all we have available for some of these fisheries. That's the Caribbean and that's the last week in January of '09 in Puerto Rico.

Dr. Cooper: A question on the Caribbean one; on your participant list do you have anyone who specializes in eliciting traditional ecological knowledge? Have you heard that phrase in your discussion?

Dr. Neer: Not that particular term.

Dr. Cooper: Well, basically, if you look in the field of anthropology mostly and sociology, it is people who specialize in talking – they do a lot with First Nations, talking with the elders trying to figure out, usually in qualitative terms rather then explicitly quantitative terms, but it is an up and coming way to try and get historical landings over time to figure out what has been going on.

It doesn't fit nice and neatly into our AD Builder stock assessment packages, but given the limited data that is there, having people who know how to talk to communities and talk to people

who may not record data as we're used to, to elicit those from the communities to try and get something that we could use.

Dr. Neer: We actually do have several of the long-time fishermen that are supposed to actually come and give a presentation on the first day of sort of their historical perspective of how their fishery has changed over the last 10 or 20 years.

Dr. Belcher: Any further questions or comments for Julie? Julie, there has been action requested from us as far as recommending topics for future workshops. If anybody has anything off the top of their head they would like to see done, it would be nice if we could get on the record for her now. If not and you want some time to think on it, Julie, when would you like to have some topics? Is there a rolling date or do you have a –

Dr. Neer: No, it is pretty much a rolling date. Currently the topic that was next that has been identified was a natural mortality workshop. However, there was also some discussion that NMFS wanted to perhaps do it at the national level, so we have been kind of waiting to see what happens and how that moves forward. That was the only one that was tentatively scheduled, but we will take topics.

Basically topics come to us or it can come to me, and that's fine, and we will send them up to the SEDAR Steering Committee and they will get discussed and prioritized. And, of course, future workshops are always based on funding. The assessments come first and the procedure workshops come second. But, yes, if you come up with a topic, send it to me anytime.

Dr. Belcher: Okay, I don't see any hands from anybody. Thank you, Julie. The next item on the agenda is the SEDAR Schedule Review, and this is going over to John.

Mr. Carmichael: Okay, part of the continued housekeeping is a review of the SEDAR schedule to let you know what is on the schedule, what things have been done, where the coming workshops are. There have not been any significant changes. I will tell you that your request to change species for SEDAR 19, as you know, was accommodated by the council and in place. We're moving ahead on that.

The next thing to bring attention for your long-term planning is SEDAR 24, which will be involving black sea bass; and note that there is a slot there, so if there is another species that the SSC believes is important; perhaps something that has been done under an update that you think needs a benchmark or some other species that you believe has potential for assessment or has a need for assessment, there is a space in 2011 and now would be the time to start thinking about it.

The next one we're looking at is 28; whereas, the South Atlantic Council speckled hind and warsaw grouper, that is going to come up in 2012. It looks like a bit of a window until you look over at the update schedule and realize because the South Atlantic stocks got started early in the SEDAR process, you have got a number updates coming up in the coming years; starting with yellowtail snapper, which will be led by our esteemed colleagues in the state of Florida, I would presume. It is scheduled for 2009, but I think Luiz might have a comment on that.

Dr. Barbieri: Thank you, John. Yes, we're discussing this update for yellowtail snapper and wondering whether it wouldn't make more sense to postpone this update; the reason being it doesn't look like it would make sense for us to just do a regular update for yellowtail snapper considering the model choice and the data limitations that we had for the last time around.

So, considering another benchmark that would potentially have use of other more appropriate models I think would be better than do another sort of crank of the – you know, and since we will be doing the Black Grouper SEDAR in 19 in association with our colleagues from the science center, it would be difficult for us to take two benchmarks in 2009. So, postponing a yellowtail snapper update to potentially 2010 or '11 would be great, if possible. Would anybody have any concerns in having this update postponed?

Mr. Carmichael: Well, I would think that given Florida's integral role in this assessment and this species management, if Florida has that opinion, the people who have to do the work and did the benchmark have that opinion, I would imagine that the councils will probably support you on that. We can take that up to the Steering Committee and see what they think about that. Have you thought some about when you would like to do that; is that something you would consider in 2011 in SEDAR 24?

Dr. Barbieri: Yes, that would be a preferred choice.

Dr. Belcher: Any further suggestions or comments for John relative to the schedule?

Mr. Carmichael: Are there any other stocks people have in mind that you feel have potential and should be looked at; that's certainly what we would like to know now for the long-term planning?

Dr. Cooper: To that point, I can't name any specific stocks – surprise, surprise – but just a general concept of we need to get as many benchmark, first-time-out-of-the-door stock assessments out as we can, especially for those who have looked at the tiered approach to ACLs; and that even if it is a simple model, if we can get anything beyond a catch time series, I think the managers will be most appreciative given where the tiered ACL approach will end up doing to those stocks that we don't have any assessment on; and so taking into consideration just getting something down, even if it is rough, will be an improvement over updating a species that we just looked at a couple of years ago, probably.

Dr. Williams: Do you want us to throw out species – gray triggerfish, white grunt, cobia would be the top three.

Dr. Reichert: Scamp, especially since scamp is probably going to be fished pretty well as a result of 16 and 17.

Mr. Carmichael: Would you believe some of those stocks should take priority over our next slot, which is black sea bass, and then the slot after that with speckled hind and warsaw? Certainly, those two are a high priority. I mean, if you feel those are feasible stocks to be done, it arguably isn't necessarily a science decision, but you do have a chance to influence it.

Black sea bass I guess we did an update, and I can't quite remember how we ended up putting that on there. It may just be the timing where there has been some thought about trying to do this sort of every five or so years, so it's certainly a influenced decision to say whether or not you think this has been five years, do it decision makes any sense.

If you think, as Andy said, given where we stand in our system, it's more important to focus on getting something for these stocks that we've done nothing for than trying to get new benchmarks on some of these other species and focus more on updates for some of these and going ahead with the benchmarks we have; is that a fair statement?

You know, think hard about why black sea bass was on there and whether or not we wouldn't be better off doing gray trigger and white grunt and cobia – I don't think anything else works in well with a nice compliment to yellowtail snapper within that group or not.

Dr. Barbieri: And my suggestion, John, is perhaps if you give us some additional time, now that you've raised this question, for us perhaps over the next day or two to think about this and bring it back during a working day on Wednesday with some suggestions. Maybe we can discuss it a little bit, but we can look at what has been done and what the cycles are and kind of align our thinking with the cycles and perhaps come back with some suggestions.

Mr. Carmichael: Yes, I think that would be excellent. There is time. As I said, these are working out pretty far into the future, which is why we're bringing this to you now, because if we are going to make change, say, for 2011, we need to probably by June of next year, by June 2009, know that is what you'd like to do.

Now, the next SEDAR Steering Committee meeting is scheduled for May; so if we could have some suggestions in place, we could make that change through the steering committee by May. Normally when it is involving a particular council and their science committee and council members are all on board, it is pretty much an easy change, especially if the science center is also on board with it and thinks these are species that have potential and we need to look at it. I think that is okay.

I know one of the things that has come up was trying to get more things done in time for the 2010 and 2011 Magnuson-Stevens Act deadlines. The steering committee discussed that last year, and part of the realization was that pretty much whatever you did through 2009 was going to be what you could get in place, because with the South Atlantic proceeding to have an amendment in place that is approved in time for it to be in place at the start of 2010 kind of meant you had to have this stuff done and into the SSC system like – well, SEDAR 19 is one of the last slots that was going to influence those amendments.

So for the stocks that have not been assessment, there is probably going to be management going ahead without the benefit of these assessments just because of the timing of those requirements in the Act, unfortunately.

Dr. Belcher: Further comments or suggestions? Julie.

Dr. Neer: Just one thing; you had mentioned white grunt. Remember hogfish was initially on the schedule for 19. I don't how important people think that is, but don't let that species drop off because it didn't get stuck back on there when we bumped it.

Dr. Belcher: Any further comments or discussion? Seeing none, we're going to move on to the Tilefish LAP Workgroup Report, which is from Kate Quigley.

Ms. Quigley: Well, I am here to just give you a quick update on limited access privileges. If you recall from my last presentation, the Snapper Grouper LAP Workgroup had delivered a document to the council in March 2008. At that time the council had decided not to move forward with a LAP for the Snapper Grouper Fishery.

One of the reasons why was they had about half the workgroup, maybe a little bit more, saying, yes, they'd like to go ahead and explore a LAP in depth; yes, go ahead and do an amendment, but we had this 45 to 50 percent saying, well, they're really not sure or no, so the council decided not to move forward at that time.

Instead the council chose to form a Golden Tilefish LAP Workgroup. They chose golden tilefish because it is a fishery characterized by a "race to fish", a small number of fishermen, and they thought, well, maybe this could be a pilot program if the fishermen are interested, and we can see can an LAP – is it something that can work here.

The golden tilefish fishermen, what we did was we took a look at their historical logbook landings, and those that had an average of 500 pounds or greater over the period of 2000-2007 were asked – we called them up and we asked them would they like to consider LAPs. We also asked them what kind of problems they wanted addressed as far as management and if they are interested in serving on an LAP Workgroup.

So this was basically phone calls that we made just to find out and to gauge interest. Slightly over 60 percent favored LAP consideration. The problems they cited in the fishery were a race to fish, an inability for North Carolina and South Carolina longliners to participate. For example, they typically don't enter the fishery until April or May each year because of the weather, so in 2007 and 2008, for those two years there was a step-down from 4,000 pounds down to 300 pounds, and so longliners, it wasn't profitable to go out once 300 pounds was set forth.

Then there was the inability for hook-and-line fishermen to participate at all because the fishery closed in 2006 in October and '07 in October and in 2008 in August the fishery closed completely because the fishery had reached the TAC. There are a couple of different problems that people wanted resolved.

Eight commercial harvesters were chosen to participate in the Golden Tilefish LAP Workgroup. These are harvesters, no processors, NGOs, Sea Grant or NMFS staff, although we invited several of them to please come if they were able to, and in particular NMFS staff enforcement to please join us.

There were five longliners which take the majority of the catch, about 90 percent historically, and one hook and liner who met in October to discuss LAPs. There were a couple of other hook and liners that were invited. One resigned and one was a no show. The group of those six people represented about 60 percent of 2007 landings, so a pretty large portion.

All workgroup members decided unanimously that they want a species and gear-specific endorsement under a status quo management to protect historical fishermen. They also wanted an August 1st start date. They said on the phone, yes, they were interested in considering LAPs, but then when they talked about LAPs and what kind of TAC that they would be looking at, they said, well, so that's 295,000 now for a commercial quota; it may go down once ACLs and ACTs are identified, and they said, well, we're not sure we really want to go to a LAP right now.

They would rather continue the race to fish, and they thought – those particular people in the room at that time are highliners and they thought that they could do better under a race to fish than they could under a LAP that was based upon historical landings. Instead they said, well, what we really want is an endorsement to keep other people out and to protect fishermen that are in right now, and we want an August 1st start date to get Carolina fishermen able to fish at the beginning of the season and hook and liners can fish, so felt like they solved several of the problems that they were encountering.

They didn't want a LAP at this time under the current commercial quota. However, they did say if the commercial quota were to go up with an assessment review in 2010, well, then, that's something that we want to consider. We might be able to do a LAP at that point in time, but they want to be able to catch what they're catching now.

They're not foreseeing the race to fish to be a problem for them, for those particular people sitting in the room. Here is what they want as far as an endorsement. These are some details. They wanted an endorsement and they wanted it put on a fast track; they wanted it put into Amendment 17. Some language has been put in, and the council can go ahead and decide if they want to keep that language in there, but here is what they wanted.

They want to have a hook-and-line and longline commercial quota split of 10 percent of the commercial quota for hook and line and 90 percent for longline, which is similar to historical landings. The hook-and-line guys said that they want two different eligibility options considered. One is best three of five years, 2001-2005, averaging 1,000 pounds.

The second option is best three of five years, 2001-2005, averaging 500 pounds. The reason why they're back from 2001-2005 instead of using recent years is because in recent years a lot of hook and liners have not participated in the fishery because they closed the fishery in October. The hook and liners typically come into the fishery in September or October. That's when they're not fishing other species so this is kind of a filler fishery for them, so they wanted to rely upon those older years.

Now, the longliners said they would like have a requirement of landings of golden tilefish, 2,000 pounds or more caught between January of 2005 and November of 2007, so they wanted recent years to be used because they wanted to leave out some of those people who used to fish several

years ago but they're no longer in the fishery, so they want to protect the people who have hung on this long.

They also wanted to protect the new people that have come into the fishery in the past two to three years. This is what they wanted as far as an endorsement. Now we did ask them, well, because you're interested in an LAP, just not at the current TAC, could you please go ahead and design some sort of LAP-type program.

So they've got some preferences that they were able to come up with. They wanted the same eligibility requirements as exists under the endorsement program. The hook and liners wanted the 500 pounds or the 1,000 pounds, and the longliners wanted the 2,000 pound requirement. This is just to enter the program.

Then the hook and liners said, well, initial allocation, we won't know exactly what we want the initial allocation to be, but we want some sort of methodology that yields 4,000 pounds per person. I ran through a bunch of different scenarios with them, and I was not able to come up with anything, really, that left 4,000 pounds per person even when we whittled it down to ten people left in the fishery.

So that was something that they have historically fished but that they would like to fish, so I just left this here because that's what they wanted, but we couldn't find exactly what we wanted so that requires further discussion. The longline people, what they wanted is to use this equation that they saw used for allocation in Amendment 17, and that was 50 percent times average landings 2004-2006 -- now they used different years than is used in Amendment 17 – plus 50 percent times average landings 2007-2008, so they want recent people, but the really new guys, they want to give them everything.

But the people that have participated throughout that period of time, 2004-2008, then they would get a pretty good allocation. The Option 2 that they wanted analyzed was average of a person's landings from the best three of five years, 2004-2008, so similar allocations that results, most likely. Again, they wanted to have the hook and line and longline commercial quota split of 10 percent and 90 percent.

They wanted this to be a hard allocation both under the endorsement and under the LAP Program. They wanted a harder allocation, and what they meant by that was they wanted a commercial quota that was not going to change in the future, the percentage would not change. They realized the poundage would change but the percentage would not between the two groups.

They wanted a harder allocation between commercial and recreational. They didn't want something that was going to fluctuate in the future. They talked about transferability. They wanted transferability for both quota and pounds whereby there is one type of quota and one type of pounds for both longline and hook and line. The longline and hook and line would have different eligibility requirements; they would have different initial allocation, but everything else pretty would be the same for an LAP-type program.

Ownership cap on quota, they had three different scenarios; they're all between zero and 49 percent. There are a couple of people that take very large amounts, something like 30 to 40 percent, and they wanted to make sure those people are grandfathered in and that that was allowed because they felt that is something that they were economically viable right now and they didn't want to have that lowered in the future.

Ownership cap on pounds, they wanted no cap. Rollover allowances, they wanted to have both an underage and an overage allowance. They did not specify how much. They didn't feel they had enough information to be able to do that. Recreational and commercial allocation, again, hard and unchanging allocation between the recreational and commercial sectors. Cost recovery, they felt that needed to be estimated by NMFS.

Then they would be provided the information and they could say whether they'd be able to afford that or not. However, they did feel that any increase in costs at all would be very difficult for them to deal with. They wanted to have some sort of referendum before final action was taken on Golden Tilefish LAP Amendment by the council.

They wanted to know eligibility requirements, the 500 pounds, so that would incorporate in these hook-and-line guys that have the eligibility requirement of 500 pounds; so that everybody that would be eligible to participate could participate in the referendum. They wanted to have a voting rule whereby you have one vote per pound harvested between 2004 and 2008 or 2005 and 2008, so they wanted to have some sort of weighted vote.

Then we talked a bit about enforcement and monitoring. They said, said, yes, hail in for dockside monitoring is find; however there are some problems to resolve there; we need to talk to enforcement. NMFS Enforcement wasn't able to attend the meeting that we did have in late October.

They said that they would attend future meetings; however, we don't know at this time if we're going to have a future meeting because these guys basically said we want an endorsement system until something changes with the TAC. Something has got to change or else we're not willing to consider an LAP. They opposed VMS because of the added cost. Even if NMFS subsidizes VMS, you still have this added cost which shrimpers have estimated of about $1,200 per year. They've got maintenance and repair time; you could be down for ten days.

The workgroup felt that the fines that currently exist; enforcement fines are a major deterrent to illegal activity, such as harvesting over quota. The group also felt that the number of participants was small enough so that they could police one another. They felt that the paper trail could be a sufficient monitoring mechanism.

However, they are open to other monitoring options as long as they don't cost any money. They had a lot of different ideas about what a LAP could be, but they basically came to a consensus that they just wanted something very, very simple; that no matter what, they've got to be able to catch what they're currently catching now. How likely is that in the future, we couldn't tell them exactly.

We said we're just going to have to wait and see. That's just a very quick update of what is happening with the Golden Tilefish Workgroup, but it looks like at this point in time they're saying to the council, "We would like an endorsement system. If you can't do an endorsement system, then we want to go ahead and consider a LAP much more seriously. We think it would work for us, but we've got to have a much higher commercial quota."

There is a report under the LAP Committee. This might have passed to you; this might be in your briefing book under SSC. That outlines what a lot of them would like to see is a commercial quota of 480,000 pounds. There was some disagreement in the group, but that's the number they're kind of looking at this point in time. Are there any questions? I know this is a really quick update. There is the full report in your briefing book that you can take a look at.

Dr. Belcher: Thanks, Kate. Anybody have any questions or comments they would like to provide to Kate on the document? The next item on the agenda is the Gag Natural Mortality Document. Andi.

Dr. Stephens: Okay, this is included in your briefing book for you to look at. The Fishing Rights Alliance and Southeastern Fisheries Association contracted with Trevor Kenchington to review the SEDAR 10 assessment of the Gulf of Mexico Gag. He found in particular that there could be questions raised about the natural mortality rate calculated and used in that assessment. It is a fairly technical document, and as far as I know has not been submitted for peer review. It is here for you to take a look at, if you would like. I think Erik might have some opinions. No, he does not.

Dr. Belcher: Andy, did you have anything you would like to say? Andy was actually one of the few folks in room that has seen the presentation relative to this paper. They had approached us in June to see if we could have gotten it onto our agenda for us to look at, but obviously we were pretty full in June. We at least said that we would consider it to come through the process.

This is kind of one of these things that if the group would like the review, John felt that we could ask for that in the future if we want to see what he has to say. If you're just happy with reading the report and forming your own opinion, this is the point that we can either proceed to have him come and talk to us more to see if this is a viable alternative or we just want to hear it or we're happy with what has been done and don't really see a need for it. Are you interested in an opposing view on how natural mortality for gag can be looked at? That was, I guess, basically the paper. Luiz.

Dr. Barbieri: Well, I think that could be interesting, but I have read the report. Dr. Kenchington actually gave a presentation to the Gulf Council SSC, and Andy attended that meeting as well. I thought that the report was informative but not really relevant in terms of anything that we would change.

I mean, some of us participated in the SEDAR 10 Data Workshop and particularly the Life History Working Group and did those discussions and calculations and estimations and all the work that is necessary to come up with those natural mortality estimates. We felt that there is a lot of uncertainty associated with estimating natural mortality. Several methods could be used or

alternative methods could be considered, but that the group during the SEDAR workshop had a long discussion, evaluated and considered all of the methods and exhausted all other possibilities as viable for estimating natural mortality.

I continued to support the estimate that we put forth during that SEDAR workshop. I would be interested in hearing what Kenchington has to say, but I don't believe it would change my mind at this point having read the content of the report.

Dr. Williams: And that brings up probably the more interesting aspect that we should consider is should we even be looking at a report such as this? What is the proper place for a report like this? This is a very technical detail of an assessment that seems like it should be addressed in the SEDAR process; and if it is not addressed in the SEDAR process, why is it coming before the SSC?

Mr. Carmichael: It is coming to you because it came to the council and they passed it on to you to see whether it's something they should consider or given its technical nature it has trickled down you to see what you think of it. Yes, you're exactly right, normally this would come within the SEDAR process, but occasionally the council gets comments like this submitted and it was asked that you be asked to look at it, so that's what we have done.

Dr. Cooper: Then I think we were asked to look at it; we've looked at it; and we've got a lot of things to do, yes, it is all written there; I'd say we move on.

Dr. Belcher: Any further comments? Okay, the next item on the agenda is the Comprehensive ACL Amendment, and this is Gregg Waugh.

Mr. Waugh: Thank you, Dr. Belcher. Before I get into this, I'd like to address something Carolyn and I talked about on several occasions since the last meeting. I know some of the SSC members have talked to her about what would appear to be strained relationships between the council staff and SSC in some of the exchanges during our last meeting. I would like to apologize for the somewhat strained discussions.

I know we've been pushing you very hard to come up with these OFLs and ABCs without guidance. I think I let my frustration over the lack of guidance, the lateness of getting the proposed rule and the looming deadline that the council, in trying to meet what we have to give the council, that I think that discussion flowed into the SSC.

I just want to assure you that we'll do everything we can to keep our working relationship very positive. I think what you all did at the meeting in June was excellent. I think we have got a good start at what could be an ABC control rule. I think you're being asked for some clarification and some additional details to be added that will help with that. But I think, as you all have seen from the national meeting you attended, our SSC and our council are out in front on this, and we appreciate all the hard work you all have put in on this.

As far as the Comprehensive ACL Amendment, if you look under Tab 11, which is the Snapper Grouper Tab, Attachment 13 lays out a list of the items that we're looking at. The intent is that

Rick DeVictor will be working on this as well. If we get Amendment 17 done in the timeline that the council has laid out right now, then Rick will be working on the Comprehensive ACL Amendment.

This will basically do what we have asked you all to do for the overfishing species in Snapper Grouper Amendment 17 for all our other species. Now, certainly, a lot of those we can shift over in that ecosystem component groupings and I think that is something we should have some discussion about.

What we've got as Attachment 13 is a list of items, annual catch limits, annual catch targets, accountability measures, allocations, and then looking at regulations to limit total mortality to give the ACT. The main component we would look for you all to provide would be those OFLs and ABCs. You can see the timeline that we're operating under right now in order to meet the congressionally mandated deadline of January 1, 2011.

I would add that we would look to have the SSC input – if you do end up meeting in March, that will give you an additional opportunity, but then in June as well. The council would be looking to approve that document for public hearings in September of 2009. That is a quick overview of what we're looking at, and I would be glad to answer any questions if you have any.

Dr. Belcher: Any questions or comments for Gregg on this? Thanks, Gregg. The last item on the agenda for today is review actions and report assignments for the upcoming days. Everyone should have gotten a list of what your items were to focus on for the meeting. This kind of gets to the point of what we're talking with the issues of whether we're going away from transcriptions.

In discussing with folks, especially at the national level, as Chair there are times that I end up going back to the minutes, when they're available, to kind of get dialogue that we have had when there are concerns or there seems to be missing pieces from our discussions that I know we have had, but I just need to go back and pull from the record.

If we really want to move away from this official-type dialogue, we have to be better about our report writing. I'm looking at it as double-sampling. I hesitate to do away with our minutes until we get better at this for fear that if we have to go back and it is there, we don't have the ability to pull that back except on group recall.

With this exercise, I'm hoping that we can kind of at least get a better feel for our reporting assignments. What I would like to do is get one person for each of those particular items that you're on to act as either a rapporteur, an informal rapporteur at this point, just to take the notes of the dialogue and our key points.

I would still like to see us proceed with putting motions forward and at least putting them forward as a voted consensus, per se, but kind of get us into that flavor of how we need to develop these reports so that we can have a stand-alone consensus and kind of walk away from the formalities that we have tried in the past and seemed to fall apart there towards the end of keeping of tight.

In looking at your list, I'd like you all to consider, for each of the items that we have to discuss, someone actually being willing to take on the responsibility of writing up informal notes. If you don't mind, let's go ahead and just look at the list and I'll take volunteers as needed. Amendment 17, everybody has been assigned to that, the reason being is especially relative to warsaw and speckled hind. Our intent with the zero was not clear in the record, so we need to clarify specifically for that.

Pretty much my take-home, from discussions that we had in between meetings, that was more of the concern than anything else. I don't there were any issues with what we had chosen for the 90 and 95 percent assessments for black and red grouper. I think the concern was more what our intent was by saying an ABC was zero; is that correct, John?

Mr. Carmichael: There was also some question about the black and red for making it clear of what you discussed, which is in the minutes, for why you felt black deserved more of a cushion than red, and there is just a very brief statement in the report as to why. You actually talked about it for a couple of pages.

I think that is what the whole gist of dealing with that comes down to is getting more of what you actually talked about into that written report. That's where their questions have arisen; certainly, what was meant by the ABC of zero; why was this species deserving of a greater cushion than that species, and then how do you deal with the recommendations that you've made in the past for those species that have been assessed.

Dr. Barbieri: And to just add to that, I completely agree that basically discussing the rationale for some of our decisions and better documentation of the reasoning behind those decisions I think would strengthen the weight of our recommendations.

Dr. Belcher: So is that kind of clear of what we're getting at in 17? We're not necessarily revisiting numbers or going back to the drawing board on what we're recommending. It is just making sure that our arguments as to why we have recommended what we have and the levels that we have chosen, why they were selected. It is just firming ourselves up a little bit better.

Dr. Cooper: How would this be different since we talked about it for pages, supposedly, in the minutes than just summarizing what is in the minutes? Why do we need to actually pretend to talk about it again without trying to say anything new or reopen a can of worms?

Dr. Belcher: There was concern over some of our language that was stated as we were having our discussions, even though we know amongst ourselves what we were saying in terms of are we being arbitrary. It was kind of searched for and related that we were saying "arbitrary" in the documents, and it wasn't very clear that we were making this based on collective knowledge within the group, if that makes sense.

It's just basically anything that was put in there ABC is zero; well, does that account for discard mortality or non-discard mortality. It is just firming that up and making that we're understanding what we're putting forward and that the intent is clear with what we put forward. Was that a good synopsis, John, or not?

Mr. Carmichael: Yes, I mean, I think that is kind of what you're being asked to do, to summarize what it is you discussed and why you made these recommendations. It is just that no one at staff wants to dare go in there and read between the lines and pick certain words because we may pick the wrong words, so if it would be much better if comes it comes in writing in your words. We're not asking that you relive the discussion, and we're not telling you have to go in there and change your mind on any of this, but you need to state why it is you did it and give it the proper perspective so that we understand.

Dr. Belcher: I think some it, too, is coming into the fact that as we put forward, especially the 90 percent and 95 percent, that it is not viewed that we just arbitrarily picked those numbers; that we were basing it on scientific knowledge around the table that discussed the confidence that we had in data that was available or observations that had been made to say, you know, as far as trends and what is currently there we could relax it with some relative number; and that are informed numbers, let me say it that way.

Dr. Cooper: I look forward to your skills as Madam Chairman, as we tend to discuss things, to not reopen all the can of worms and beat those same bushes; and given the tone of the discussion in the past, I think it will be an amusing discussion in the future.

Mr. Carmichael: There are really three issues that have come up since time. It's the black versus red, the speckled hind and warsaw, what does zero mean. Does that mean for directed; does that include discards. Then, of course, across the board there is some question as to is ABC including discards.

What we've done is we have provided a table that shows what is in place now, what the council has, and information about what the limits are. If you could something that follows through with specific numbers, because the recommendations were just to use this but not actually – there was never any filling in of the actual numbers.

There are some questions like when you say use 75 percent of FMSY, well, is that including discards or would discards be something else; is that contingent upon how they were handled in the assessment? Hopefully, we're trying to alleviate these questions that lead people to trying to interpret what it is you meant.

Dr. Cooper: Then my suggestion would be that we limit our discussions to the specific questions at hand as opposed to revisit the topic in general. If someone could write down, for instance, the questions you just posed and have those be the basis for our discussions, that would be perfect.

Dr. Belcher: That is what I had in mind, so thank you for that. Luiz.

Dr. Barbieri: Just one more comment, Madam Chairman, is that we have on the agenda scheduled for Tuesday morning, 10:45 to 12:00 noon, as part of our revisiting of the Snapper Grouper Amendment 17 discussion; we have one item there to review the June '08 recommendations, right, on Tuesday morning.

This will give us this introduction by Madam Chairman today, give us an opportunity to think about this and perhaps revisit the SSC report, the document that we submitted to the council, review our meeting notes, and then put everything together and bring our thoughts perhaps a little more distilled and summarized for the Tuesday morning discussion.

Dr. Belcher: Does that sound okay to everybody? Okay. So with that said, who would like to be the quasi-rapporteur for this as far as who is volunteering to actually track our commentary so that we can have a section written for the report?

Dr. Barbieri: I'll volunteer for that, Madam Chairman.

Ms. Jensen: If we're going to have somebody in charge of writing this up for each section to take the place of the verbatim minutes, do we want to do this in teams because sometimes when you start participating in the discussion it becomes difficult to take notes on that? I think you might want to pair up in twos for each category.

Dr. Belcher: Yes, I don't disagree. We have tried this route and I don't have a problem with that, if everybody wants to do that, to keep your own sets of notes. You can pretty much by the table who is working on each of the items. If you want to keep with that for now that's fine. Like I said, as we work through this, I'm all about suggestions on how best to handle this.

The biggest problem is in the past, when we've tried this, sometimes it works and sometimes it doesn't. I'm willing to give it another go. We still have official minutes and such, so if you want to do that and just keep your notes, and then on Wednesday we work in our groupings and just recognize that there will be some overlap since we do have two and three agenda items that are assigned to each of us. I'm fine with trying that again.

I'm open to suggestions. Again, it is a new group since the last time we tried it. We started strong and then kind of fizzled out towards the end, which is my only hesitation. As long as everybody is under the understanding that we do have to have something put together so we can actually talk as a group on the report output on Wednesday.

That is the biggest thing, so that when I go to take the report forward it has had everybody's eyes on it and it is our standing document as opposed to the last time. I'm not saying anything evil towards anybody in the group, but it ended up being five of us or six of us together working on it, and I just assumed – you know, I took the responsibility and said this is my report with help from other folks on the committee.

But in the future we will make sure, as we move towards a consensus-type panel and hopefully away from our transcriptions, that as our report-writing gets better – I'm sorry to say that, but my hesitancy is still there a little bit, but I'm fine with that if everybody is in agreement that we will do it as a joint effort on each item. Andy.

Dr. Cooper: I seem to remember train wrecks in the past around a group of people would write the report, but then the whole SSC has to read it and agree that the summarization actually

represents what goes on. I vaguely remember that just turning into a wordsmithing absolute nightmare. Do we have something on our agenda where we all review each others reports?

Dr. Belcher: The one thing we have built into this meeting that we haven't had in the past is that workday on Wednesday. We, in theory, can have the draft document ready for us to look at on Wednesday and make sure everybody is happy with what we're putting forward on that Wednesday, and that also gives us time to discuss other items. I think we can just kind of play that one by ear.

I was hoping that as we work through this, that by the end of the day, whatever item we're discussing, like with Monday, SEDAR 16 Review, it would be nice if we could have some sort of draft from those folks for the first thing the next morning so we can kind of look at it with that delay of an overlap. We would be looking at Monday's documents Tuesday morning in draft form.

People can work on their Tuesday items Tuesday night, and Wednesday morning we would be working on Tuesdays. That would kind of at least give us an idea of that little bit of offset so we're not getting everything collated Wednesday and spending all of our time trying to fix it in the final form Wednesday. We can kind of phase it in over that time period and then we're not looking at everything all at once. I don't what everybody's feeling is on that. John.

Mr. Carmichael: I think it would be good for you to look at things along the way, definitely. We tried to schedule some time everyday; not nearly the large blocks of time that we were able to schedule at the last meeting, but we saw how that worked out anyway, but that's part of the reality.

But I think as things were done, if they were written up and you could look at it and have time to digest it, I think that will certainly help your role as a group as a whole of approving the final report, however you go about handling that. But one thing to keep in mind under the electronic recordings that can be done now, you could receive an electronic file, you know, sound recording where you could sit on your laptop in your room as you're working on your report and listen to that segment of the meeting.

They can be broken out according to agenda topics, which is kind of the normal way I think that Julie is doing it over there and keeps track of all this. But, like I said, however you guys would like to see it done, it could be done. You could have it done every hour, so, you know, you say I want to see what happened at three o'clock or it could be what was agenda item – you know, the red snapper, where did we talk about that and what did we say.

You could get a file that contained all your discussions about that particular agenda item, which might help you that evening as you're trying to write down some notes and see what was really talked about. You could listen to that, which is faster than the transcript. A lot of us have a much easier time of reading that page than listening to that.

It's however you want to do it, but that is an option that you could consider, which might alleviate some of Christine's concerns about understanding, you're sitting there, you're trying to

participate, you're trying to take notes at the same time and sometimes the two don't necessarily go hand in hand together so well.

Dr. Barbieri: Right, John, and sometimes if you are participating in the discussions, it is difficult to take notes, so having that as an option – do you mean that we can, during this meeting, after the meeting adjourns for the day, we can have that file e-mailed to us or given to us on a memory stick?

Mr. Carmichael: Yes, Mike is saying yes. I mean, you could walk over to Julie or Mike and ask for it and say – is that correct, Julie? I think things are saved on her computer, so that USB and everything else or however it wants to go or e-mail to you, we can work all that out. There is some way that it is saved as a file with an identifiable name. You could say, "All right, I'm the rapporteur for this item, can you give me the file on that?"

Dr. Belcher: So with that said, everybody is clear on how we're going to proceed, basically take notes on your assigned section. As you're talking, obviously, you're not going to be able to do that, but as you're at will to do that, just pay attention to your items and then you can work as a team to put your consensus or your basic overall summary of what we discussed and then we can put it forward to the group as to whether that is the standing write-up for us on that topic.

Ms. Jensen: Basically, we're just supposed to capture our discussion and not necessarily the presentation, right?

Dr. Belcher: Yes, the discussion. Is that correct, John; would it be better just to focus on the discussion?

Mr. Carmichael: Well, yes, most of the time the presentations or the material is available and you have all that. What is needed is what did you decide and why and what were the issues that you discussed that you felt were critical to it and give some perspective and context for the council in acting on your report.

You know, when they're looking at it, what they've got are the words that you give them; and if those lead to questions, then people are going to try to turn elsewhere. So if you move away from the verbatim minutes, then they're going to go and listen, which is always a possibility, but it would be much better, as Carolyn said, if your report prevents any of that need, make it clear and they don't have to go look elsewhere.

Ms. Jensen: Are we going to still assign like a rapporteur for each section, so you have like one main writer and then the other folks kind of help?

Dr. Belcher: I'd feel better about more than one head on it. If you are fine with trying – I'd just as soon like to try and see if we can do that again. Then that way, if you are – again you're trying to write and you're not catching – I mean, I completely commiserate with that as I try to take notes at times, but I think the more people that hear it, you get the full view of it as well if there are two or three of you on it.

We'll try it and see how it goes and it's too much of a difficulty, then we can probably go ahead and try doing a rapporteur but make it an outside person. That might be another option, too, so that those folks who have their heads wrapped up in the idea can pretty much have their discussion but be a little bit freer of having to write and talk at the same time. We might be able to think about that. I mean, we can kind of morph it and let it go, but I'm up for suggestions at this point. John.

Mr. Carmichael: And it might be a thing, you know, the people who are responsible for taking the notes and getting the rapporteurs for any issue, you know, don't be afraid to say, "Well, that was a really good comment there, Andy; can you slow down and let me write that down?" But, you know, when someone makes something and it kind of captures what seems to be probably the consensus that they're going to and reasoning, I think it's certainly fine to say, "Okay, I'm taking notes on this; now that was good; now let's pause; let me write this down."

We shouldn't feel like the person who is doing it has to always exist in this background that they can never control the pace of how the meeting is going. I think it's important for that person who has to take notes to say, "Okay, let me control this." Maybe it is something that Carolyn, as we conclude an issue, to say whoever was taking notes to say, "What were the high points that you have down" and sort of right then, while it is fresh in everybody's mind, perhaps, you could list sort of what the major reasonings were behind a particular decision.

That's a good time when it is fresh in everybody's mind that someone might say, "Oh, wait, that's right," but also add so and so said this so we should make sure that gets in there. You know, if we do this maybe part of it is changing the kind of meeting flow and not to feel like, okay, does everybody agree and nobody says anything else, let's move on to the next issue. You know, take a moment and pause and think about it and reflect then and say, "Here is what we have agreed on; is that what you agreed to?"

I know from experience in dealing with other bodies and the council, especially, if you sit there and sometimes you say, "Okay, here is what I think you're agreeing on"; sometimes you'll get somebody who goes "That is not what I'm agreeing on; what do you mean?" Well, that is the last position I had, so I think a little bit of review perhaps at each stage of the way might help prevent some of this and let those rapporteurs and the lead person feel like they know exactly what was talked about and not have this pressure of I've got to go back and listen to that tape because I don't know what they talked about. If you don't know, just bring it up right now and not feel like we have to present this data and, okay, I've got it, we can move on, we'll work it out later.

Dr. Belcher: And that was kind of discussed again, back to the SSC national meeting, where those groups that operate by consensus, there is the SSC recommends, so that there is usually a general statement. It's not so much of a motion that you vote on, but we're recommending X, Y and Z. Well, the whole group has to be in agreement on that statement; and if they're not, then we have to come up with a way amongst ourselves in that discussion to make the statement reflective of the group as a whole.

I mean, we're kind of working towards that, so probably towards the end of those reports we need to come up with one capturing line of what we recommend or our suggestions or our advice is the following. That, I think definitely needs to be part of that write-up as well instead of saying we made a motion.

I mean, that's what we're moving away from is moving away from the formality of the Robert's Rules and the motions, but we need to make sure our recommendations and our actions are captured in such a way that people understand our intentions with our statements. It's just not a loose report of this is what we discussed, these were the key issues, and then we move on. We need to make sure that if there is some action item asked for, that whether it's, again, a recommendation, advice, suggestions, that language is captured within that section as well.

Dr. Cooper: The whole idea of consensus versus voting, we may have to be flexible and do both, especially given our last meeting. There may be things that we can't reach a unanimous consensus on.

Dr. Barbieri: Andy, to that point, one of the things that was discussed at the national meeting, too, by some of the other SSC members is that the consensus-type meeting is actually more flexible in incorporating a number of different opinions. So if you don't reach consensus and if we cannot get that consensus to work on that specific topic, you can have a minority report of sorts or statement that is presented so the council is actually able to see that one or two members perhaps were not in full agreement and why with the overall consensus of the group.

Dr. Cooper: Then that's not a consensus; that's a majority and a minority report. When it comes down to picking a number for, say, an ACL, it either needs to be a unanimous consensus or a vote. My guess is if we give the council a majority and two or three minority reports, I'd be interested in hearing how the council would respond to such information if we provide that as concerning best available science.

Dr. Barbieri: Obviously, we're going to have to exercise our best judgment in picking whatever topics are more suitable for a consensus decision versus not. I mean, obviously, that's where our judgment comes into place and we see that some topics have to be resolved in a more objective or directive way with making a very clear recommendation to the council. And others that are just discussion items or just suggestions and recommendations to the council, they may be just more informative on the science discussions that we have. But I agree, in those cases it would be difficult to make that decision.

Dr. Belcher: I'll be honest and I feel like we need to morph it slow. We don't even know necessary that we have a hundred percent endorsement to move off of certain things. I honestly, in the past with what we have worked on – and for those of you who have been on the committee long enough, you kind of know where we went with this.

The original idea was to get a little more relaxed but to forward advice and recommendations. Somewhere in that process we got a little bit – and I'll take blame if it was something I did in chairing, but through the discussion prospects of it we had a lot of conversations and we put

forward a lot of things, but the structure wasn't there, which for me was difficult, which is why we went back to forming motions.

We were in the minority on the motions, as far as using that. So, I'm thinking in terms of as we write forward our recommendations, working towards a consensus statement, but would still put a motion to it as far as do we have an endorsement of the group for this statement overall. We can vote, we can do however you want to do it.

To carry on with Robert's Rules, the motion is that we recommend the following, but idea of getting into this consensus statement being the motion for now and then the formality of motions can kind of go away if we find that we're really leading into consensus statements, if that kind of helps ease some of that.

Again, I kind of think of it as a double-sample approach is that until we can get the methodologies to overlap and really work the way that one can stand alone. I don't think we should just totally do away with one and do away with the current operation because right now it is working well for us, but if we try to morph into this – it's not necessarily informal but a different type of approach – we need to be sure that we're capturing the essence with the new approach before the old approach goes away.

Dr. Cooper: So, to summarize, what it sounds like we're going to be doing, big picture, moving away from dictated minutes to summary reports. On top of the summary reports we're then going to have consensus statements, which leave out a lot of the details in the summary reports; and then on top of the consensus statements, we may or may not then also have a vote; am I parsing it – and the council will get copies of all of those or what will be the chair's report?

Dr. Belcher: It will be the committee's report liked it's supposed to be and not the chair's report. That is kind of what I had in mind. Where the highlights right now is we're making consensus statements, they're still going to be couched in the sense of motions. Again, what we can do is leave it in the current form that we've had where we put a motion forward and we all vote on it, but start trying to word the motions in such a way that they would mirror a consensus-type statement. We don't know that we're going to move away from minutes, correct, John? That's kind of going –

Mr. Carmichael: We don't know; we're asking you for comments and the council will be asked to comment on it as well. You should probably, in your report, note whether or not you think you need verbatim minutes or whether you can get by with recordings for the future.

Dr. Belcher: So right now the way I see is you're correct, there are about four steps to this, two of which are redundant of one another, but I think it is just for ease of transition because we do need both until we find that the report will stand in lieu of the transcript minutes and that the consensus reports will stand in lieu of motions and voted motions. Does that capture that?

Mr. Carmichael: Yes, if that's how you'd like to go, that sounds good to me. I don't want to overly influence which way it is you want to go. I just sitting here pondering a "what if",

because Andy has kind of laid it out as a vote and a minority report versus you don't quite consent, so how does it play out?

Say you had an assessment and you don't know what MSY is and half the committee says, well, I think you use 30 percent SPR; the other half says use 40 percent SPR; if you force a vote, it's tied and the chair picks, say – we'll just carry it through because this is a hypothetical – and the chair picked one.

Then you have the chair voted one way and was the tiebreaker, and based it on whatever, so then you have a big group of the committee that says I think it's X; the other group of committee says I think it's Y, they write a minority report. Then you have this real division. Well, what is the council going to do? Well, I guess I go with the majority, but yet I had – you know, so close.

If you did it by consensus and you didn't actually have the vote, would it be something where it is presented as, you know, the committee discussed this and the committee was torn with a large group thinking use this, another group thinking use that and they could not reach any strong consensus, but here is what we think the issues are and the concerns and how could proceed, that maybe none of them actually tell council here is what you use for your reference point, but here is how you could resolve this issue at some point in the future, the council is still faced with sort of two pieces of advice that it has to make some choice.

That is as problematic I guess as the minority report approach, but it doesn't bring it down to necessarily counting heads. The question, though, is that you've got to make sure both opinions get in there somehow and that is clear what it is you agreed to. I'm not really sure how it's all going to pan out. I think we all know it is problematic. It is problematic to vote on science and I think that is what bothers people.

It is problematic to have the council faced with having to fill in blanks and you feel like the scientists can't give them the numbers that they need to say, you know, okay, this is what MFMT should be, this is the number. The system doesn't have two MFMTs; we want the SSC to give us one. I'm not sure how it is all going to pan out. Maybe Carolyn is kind of right, we need to play it by ear and go through these things and see where it settles out.

Dr. Belcher: To that point, too, one of the things that came up as we were making these discussions in the national meeting was it seemed to me that the reason why most folks were going to consensus is safety in numbers. Their concern was with the voting aspect of it, then it turns out, well, we had five people for and four people against. Well, they can ask further down who those people were.

Their thing was with Robert's Rules and the fact you start parsing that down to a certain level, it starts pointing and people not wanting to be identified as individuals on certain things because they don't know how that is being perceived later on. So it's almost like in that situation, if you can parse it down – just like with the minutes, if there are certain things that can be parsed down to the individual, it is shaking people's abilities to sit and talk on the record about the science and getting those debates going that we need to have debating about the issues of how sound is the science, what would help make it better, what are the limitations to it.

So that was where I really feel that a lot of the groups that have gone to consensus have done that because it is a safety in numbers situation. There isn't that ability for you to get backed in the corner by any one person and say why did you particularly make the statement or vote this particular way. I think that is the onus is to me, and, Luiz, I don't know if that's what your view was, but that was kind of where my take was, and I'm like, well, I can understand that, especially in light of recent events.

Dr. Barbieri: And I agree, but I think Andy made some good points. I mean, this is one of those difficult decisions to make because you have advantages in using either one of the methods and disadvantages. I'm sure if we're ready to really make a decision at this meeting. I'm sure if it is wise for us to make a decision at this meeting.

Maybe we should flag this issue to be an agenda item for our next meeting and give ourselves a little more time. Maybe we can do a little more research on how the other council SSCs actually do it before we bring this issue for discussion. Another interesting point at the meeting there is that the other SSCs made it sound very much like there was lots of discussion but not a whole lot of contention. It wasn't difficult to reach consensus.

We know from experience that hasn't necessarily been the case here. It would be interesting to consider how the consensus approach would work with us. I'm not saying that this means anything positive or negative. I'm not passing judgment on that. I think it would be a difficult issue to resolve.

Dr. Belcher: And as the chair, my one concern is I don't want people to feel that they are hindered in talking because of certain things that are happening along the way, with minutes being scrutinized differently or our reports standing in such a way that people really feel pressure.

I don't want us to hinder. I feel we had really good discussions in June. I think we need to continue on that track. I just don't want people to feel not compelled to talk because they're afraid of how their views or comments or whatever is going to be said. Again, I mean, hesitating to say safety in number, if a consensus prevents that from happening, I'm all in moving towards that.

I just want to make sure that, again, when we make that leap we're not leaving behind something that we're going really to kick ourselves later because we decided to do away with formal records or how the report is written or how we're forming our motions. If we can get to where that bridge makes everybody happy, again, I'm all about making sure that our dialogue doesn't stop or people don't feel hindered in giving their opinions. That's my concern. Andy.

Dr. Cooper: And since we are still taking verbatim minutes and my head nodding would be recorded, I say that makes perfect sense to me and I'm looking forward to it.

Mr. Carmichael: Another place to look is ASMFC has talked about this five years ago in their technical committees, which are in a way similar to an SSC, all work on a consensus, and I think there may be a guidance document somewhere. I'll look and see, but the general rule of thumb

was whether or not members could live with it. It might not be your first choice, but can you live with it?

Like the SEDAR Review Panels, we ask for those to come up with some consensus position. Now the concern is that you have these independently functioning reviewers and how they provide a consensus and what we said as well. You know, part of consenting is agreeing to just how it is presented, and they have the flexibility of perhaps presenting two positions and we want the whole group to consent as to how it is presented and that the uncertainties are fully reflected and both positions are accurately and clearly reflected even if the three or four members or however many can't all agree unanimously on just one position, that, you know, consensus could be a little more broad, and that is how we have treated it.

So there may be some more we could provide in terms of how it is viewed that may help you think about it. Unfortunately, it is one thing for a review panel to put forward two assessments, which plenty have done in the past, but this is kind of the place where we view the buck stopping. The council kind of views it as like when the scientific number gets kicked up to the council, this is the place where they really want that buck to stop.

Everybody else can sort of roll on through an assessment and the SEDAR process. We're saying – well, you know, it's like yellowtail snapper was a good example. We have a single-fleet model and we have a mixed-fleet model and those kind of got rolled around and the review panel said, "They both look good; we can't pick".

It came to the SSC. It was like you need to pick. I think the group back then took an average of the two values because they were pretty close, and they were both equally plausible, but the SSC had that stopping point where it was like you need to provide one. And when the SSC can't, we're not sure what happens from that point.

Dr. Belcher: So with all this round-table banter, is everybody clear on what we will be doing then as far as the report writing? Again, focus on those things for right now that you have assigned as tasks. Like I said, Amendment 17 we will all be responsible for maintaining as much as possible since that – even though we have already had this discussion, we really need to make sure that this is flushed out enough that we don't have it revisited again.

Like I said, we'll just proceed forward with baby steps and see how it goes and work towards trying to see how we can flesh these reports out to best suit our needs in the future. Any other questions or comments about upcoming agenda items or anything? Seeing none, we can recess for today and we will be starting back up at 8:00 o'clock tomorrow morning.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Cape Fear B Room of the Hilton Wilmington Riverside Hotel, Wilmington, North Carolina, Monday morning, December 1, 2008, and was called to order at 8:00 o'clock a.m. by Chairman Carolyn Belcher.

Dr. Belcher: Good morning, everybody, I'd like to go ahead and get started. We're going to start off today's business with a presentation on SEDAR 16, the King Mackerel Assessment. Shannon is going to go ahead and give us a presentation on that.

Dr. Restrepo: Actually I wanted to introduce the presentation, just to say a few words about it. This is a very complex assessment because it involves two stocks, two migratory groups in the Gulf of Mexico and in the Southeast Atlantic U.S. It has been about a year of work. This assessment started last November. There are two things that you will not hear that consumed a lot of time and a lot of effort in this assessment, and you won't hear a lot about them in the presentation.

One of them is detailed results of the so-called Stock Synthesis 3 Model, which was in response to SEDAR 5's recommendations to come up with a more realistic way of modeling the mixing between the two stocks. It turns out that some of the data that are needed to drive such a comprehensive model and such a complex model were just not there.

Also, we had difficulties in coming up with management benchmarks as required by the terms of reference from that assessment. So, anyway, there is the SEDAR document available on the SEDAR Website that you can access to read about the results of that Stock Synthesis 3 Model. The other thing that you won't hear a lot about is the results for the Gulf of Mexico Migratory Unit, but if you're interested we can perhaps during the question session answer some of your questions. The presentation will be devoted almost exclusively to the base case and some of the sensitivity runs for the South Atlantic stock.

This is just to acknowledge the people that were primarily involved in this stock assessment from the point of view of the Southeast Fishery Science Center. Shannon and Mauricio Ortiz were the lead analysts involved in this from the beginning until the end. Then I would also like to acknowledge that there are many people not mentioned in this slide that were, of course, involved from other institutions outside the Southeast Fishery Science Center. So, with that, Shannon, please.

Dr. Cass-Calay: I just wanted to start off by saying that if you cannot hear me or if I am talking too fast, please let me know because I will be happy to slow down and talk louder. This is an overview of the presentation. I will start with a brief introduction. I'll discuss the data sources, particularly what was revised or updated for this model, the assessment models, the results, stock projections and conclusions and recommendations.

King mackerel is Scombridae. It's found from New England to Brazil and typically found in tropical and sub-tropical waters. The species have the preference for the 20^{th} degree thermo cline, and it is defined as a coastal migratory species. It is a schooling and predatory fish, fast swimming. It also grows very quickly and it is dimorphic in its growth, meaning that the females are larger at age.

In U.S. waters there are two different stocks identified. The Atlantic stock is found from New England to the Florida east coast. The Gulf of Mexico stock is found from Texas to the Florida

Keys and also on the Florida east coast as well. These are the current management definitions of the stock, and these were defined in 1982, Amendment 1.

From November 1st to March 31st the Atlantic Group extends essentially from New England waters to the Volusia/Flagler County Border. Then the Gulf Migratory Group extends south from that border throughout the Gulf of Mexico. From April 1st to October 31st the Atlantic Group is found from New England through the Collier/Monroe County Line; and the Gulf of Mexico Group is limited to the Gulf without the mixing zone.

This mixing zone, which is found from the Florida east coast to the Collier and Monroe Border, there obviously are animals from both Atlantic and Gulf of Mexico stocks in this mixing area, in the wintertime particularly. Evidence of that stock ID is found from micro-satellite work – these are some micro-satellite sites around the coast of Florida – also from otolith-shape analyses and from tagging data.

This is the tagging data, so you can see there is also some mixing in the Mexican waters, which will be discussed during the Gulf of Mexico presentation. The data sources that were used for this model – I'm going to try to stick with the ones that were updated based on recommendations of SEDAR 5.

Biological data, we updated information on growth, natural mortality, fecundity, stock composition. Fisheries data, we have directed fisheries, including commercial and recreational catches, as well as non-targeted fisheries, shrimp bycatch, discards. Indices of abundance were updated, and we have both fishery-dependent and fishery-independent information in the stock assessment.

For the growth information we updated Von Bertalanffy size-at-age functions. We only used observations found outside of the mixing area, and this was done because we cannot determine the stock ID of those animals within the mixing area. The algorithms take into account minimum size restrictions for age samples collected from fishery-dependent sources, so the algorithms could fit Von Bert equations and take those minimum size restrictions into account.

Otolith samples are available since 1985 and there are over 47,000 aged fish. They're aged from standardized protocols developed and used by the Panama City Laboratories as well as other laboratories. These are the updated Von Bert functions. In the black are the functions for female fish. The dashed black line is the previous relationship developed by Collins and used in SEDAR 5.

The black solid line is the new function used during SEDAR 16. In red are the relationships for male fish. The dashed line again is the Collins or SEDAR 5, and the solid line is the SEDAR 16. You can see in both cases that the new Von Bert functions predict faster growth. The size/weight relationships were also updated, but as you can see the results are quite similar in this case with what was developed for SEDAR 5.

They do all overlay each other fairly well. There is actually a green line here, which is the Atlantic; a red line for the Gulf and a dotted line for the previous relationship. The plots here on

your left are the whole weight relationship with size and on the right is gutted weight. When you combine these updated sets of information to produce weight-at-age functions, what you will see – and I've put it only for combined sex, but on the top left-hand panel you can see the size-at-age functions, and the red is the SEDAR 16 function. The blue is the previous analysis.

You can see that in the Atlantic there is quite a change in the weight-at-age functions. When you see the mean weight-at-age relationships on this plot that was used, what we actually used are these open diamonds. These are the actual observations rather than a fitted function. The red solid line is the fitted function through those observations.

These green open circles, that is SEDAR 5, essentially, so there is quite a difference in the weight-at-age function that was used for the previous assessment and the SEDAR 16 assessment. It is an important difference. Natural mortality at age was also updated, and we used an estimation procedure that was based on Hoenig's maximum age formulation.

The maximum age in the South Atlantic is 26 years, which corresponds to a natural mortality of 0.16 if you used the constant. That 0.16 was used within a Lorenzen formulation to produce a natural mortality at age function, which is this green dashed line. That is the Lorenzen function that was produced.

Now we further adjusted that for the average age of the age zero class, which is not age zero in this model. They're substantially older so that it experienced more natural mortality. That is why this red line has been adjusted, and you see now that at age zero we have assumed a different value than predicted by the Lorenzen function.

The previous stock assessment, SEDAR 5, used a constant of 0.2, which is this solid black line, also an important difference. The fecundity at size was updated and now the new recommendation is to use the hydrated oocyte counts whereas previously we had just used female eggs.

King mackerel are a serial spawner and they have an extended spawning period. Thus, fecundity estimates would be improved by having information on spawning frequency. That information is not available currently. We also did not have updated information on maturity, but the fecundity at age was updated based on millions of oocytes, and these are the Gulf and Atlantic fecundity relationships that were developed through SEDAR 16. The Atlantic is in the red.

Stock composition information has not been collected or provided to SEDAR 16, I should say, except during 2001 and 2002. The information suggests that the mixing fractions are roughly 50 percent a year. The second set of tables show that in 2001 the percentage that belonged to the Gulf was roughly 45 percent and 55 percent in the Atlantic; 2002, we're looking at 53 percent in the Gulf and 46 percent in the Atlantic.

Otolith-shape analysis is the second set of plots, which also show inter-annual variation, so in one year you have 32 percent and 68 and in the second year, 56/43, so the information we have suggested that a 50/50 ratio would probably be appropriate given that there is inter-annual variation, but only two years of data are available.

SEDAR 5 also requested that we update information on sex ratio at size, and this was accomplished. We used a GAM Model fit, and the purple line shows you that fit through the data. The point really is that as these animals are larger and larger, the fraction that is male declines to near zero.

There are two types of directed fisheries on king mackerel. The commercial fisheries began in the 1880's off of Chesapeake Bay, and over time they moved southward. Currently the main areas are off North Carolina, Louisiana, the Florida Keys and the Florida east coast. The main gears pursued by that fishery are handlines, rod and reel, trolling, gill net, purse seine and otter trawls.

The recreational fisheries began in the 1930's and were well established by the 1950's. They consider king mackerel to be a very popular and highly valued target species for sportfishing. There are a large number of tournaments and directed recreational operations that target king mackerel.

This is what the total commercial catches look like. Commercial catch statistics are available to the National Marine Fisheries Service after 1960. The ALS records catch statistics after 1980. Catch at age is not available until 1980 and 1981. We did estimate catches through an interpolation procedure, which is described in some of the SEDAR documents from 1930 to 1960, but these estimated catches were not used for the VPA because the VPA requires that catch at age be known exactly.

So the VPA was restricted to the time period where catch at age was available, which is 1981 through 2006. In the green you have the catches from the Atlantic No-Mix Zone; red is from the mix zone; and blue is from the Gulf of Mexico. Again, the catches were only used from '81 forward. These are the total recreational catches. Catch statistics are available through our MRFSS Program or the Headboat Survey from '81, roughly, forward. Catch at age is available from roughly '81 forward.

Information prior to that point was interpolated and also that description is available through the SEDAR documents, but, again, that data was not used for the VPA. This decline here is World War II. That is why there is a big chunk out of that. You can see again that catches in the Atlantic mix and Gulf are roughly equally distributed in these areas. They are all important.

This is the total landings in weight, assuming that in the wintertime in the mixed area 50 percent of those landings are allocated to the Gulf and 50 percent to the Atlantic. This just shows you the fraction of recreational and commercial landings; they're roughly equal. The scale on this is 40 and 500 tons. These are metric tons.

I also want to point out that this assessment used fishing years rather than calendar years. The fishing year in the Atlantic is April 1st through March 31st. There are some landings from other non-directed fisheries. Shrimp bycatch in the South Atlantic is a very small component. It is here in the red. In the Gulf of Mexico it is a very large component. That's the blue line you see.

This is millions of fish, so these are roughly one to three million fish in the Gulf of Mexico, but only a few thousand fish a year in the Atlantic. Other sources of fishing mortality include releases from the recreational fisheries. We estimated this from the B2 estimates provided by MRFSS, and we used release mortality percentages that were recommended by SEDAR; 20 percent mortality for private boats and charterboats and 33 percent mortality for the headboat fraction.

The SEDAR 16 Data Workshop considered the discards from the commercial fisheries to be quite negligible, so these were not included in the stock assessment. They were roughly 10 to 15 thousand fish a year. This just demonstrates the fraction of animals that are discarded or released alive in the recreational sector.

In the blue are the landings. These include the landed animals and the B1 or dead discards – animals recorded discarded dead. The yellow is the released alive. You can see that the component of animals released alive is not huge, as it is in some of the groupers, but it has increased in recent years. The scale here is in thousands of fish so you might be talking about a hundred thousand fish.

We have both fishery-dependent and fishery-independent indices. The fishery-dependent indices come from the commercial trip ticket records from Florida and North Carolina and from the commercial logbooks. The logbooks have mandatory reporting of king mackerel after 1998, but they have better information about effort than the trip ticket. The trip ticket in Florida is available prior to 1998.

The recreational indices, we have MRFSS. I wanted to point out that the indices are derived from the interview and intercept information of recreational fishers by port samplers. This is not the telephone survey that we use to estimate recreational landings. The MFRSS contains information about fish that were retained by the fishery, as well as fish that were discarded dead or released alive.

Headboat logbooks were used to produce indices of abundance, and these are for the for-hire vessels. They're, in some cases, charterboats but more properly described maybe as headboats. They have large numbers of fishermen on board. These records only include information on the retained catch. There are no estimates that were available at the time of SEDAR 16 of fish discarded or released alive.

The fishery-independent index is available for the Atlantic, and that is the Shallow Water Trawl Survey, sometimes referred to as the SEAMAP Survey in our documentation. This survey was used to index animals aged zero only. The fishery-dependent indices were used to index animals ages one through eleven-plus or the plus group.

The assessment models used, as Victor stated we did attempt two types of analyses. The first was actually an SS3 approach for mixing of stocks, and this was Stock Synthesis 3. It addressed the mixing of stocks through no-mix areas and a mixing area. It used size and age composition data that allowed an extended timeframe when catches couldn't be aged or assumed to be known exactly.

It also enabled us to look at stock migration and fishery-specific areas. Unfortunately, it was not ultimately possible to use this model at this time because the terms of reference dictated that we have management reference points for the South Atlantic and the Gulf of Mexico, and this couldn't really be accommodated in the framework of that model, which would have assumed a single stock with migration.

Ultimately we used the VPA. We used separate stocks, so Atlantic and Gulf. The VPA is an age-structured model. We used it for both base and continuity cases. The continuity case was intended to replicate SEDAR 5 assumptions with updated data. We used independent evaluations of each of these stocks, and the mixing zone allocations had to be done prior to the VPA fit, so they were actually done during the construction of the catch at age.

The base model recommendation, through the Assessment Workshop, was a 50/50 mix in the winter in the mixing zone, so 50 percent allocation to the Gulf and 50 percent allocation to the Atlantic of those animals. The VPA; we used VPA-2 box software, which is based on the same framework as F-ADAPT, which had been used earlier. The VPA-2 box simply has more options than F-ADAPT and is also available in the NMFS toolbox.

The VPA requires information about catch at age. It requires indices of abundance, information about natural mortality, maturity, fecundity by age and also a way to estimate selectivities. In this case we used partial catches at age, which is just fleet-specific catch at age; again, based on the use of that 50/50 assumption and the model structure data and parameter settings recommended by SEDAR 16 assessment panelists.

We used fishing years '81 through 2006; always fishing year and not calendar year. Like I stated earlier, in the Atlantic that fishing year is April 1st through March 31st of the next calendar year. This model used ages zero through eleven-plus, and four indices were used in the base case; the North Carolina trip ticket, MRFSS Atlantic, Headboat Atlantic and the SEAMAP Trawl Survey which was applied to age zero in the fall. These are the total removals assumed to be known exactly within the VPA.

I think the main point out of this slide is that the landed animals are in blue. The dead discards are in red, and you can see they're quite insubstantial. The shrimp bycatch is in green; again, it is a very small fraction in the Atlantic. This is the catch at age by fishing year, and basically the animals are mostly – and the red is age two, and this dark blue color is five, so most of the animals are between two and five years of age.

The indices of abundance that were developed, these are the fisheries-dependent indices. In blue is the MRFSS Atlantic and red is the trip ticket for North Carolina and in green is the Headboat Atlantic. These were all scaled to the mean value of the series to be directly comparable. You can see that there is not a one-to-one correspondence of these indices.

Now when you add the fishery-independent index, the SEAMAP Atlantic, now you are starting to see some conflict in the indices, particularly in the recent years. It is not uncommon but it is a fact. These are the fit to the indices for the Atlantic Base Model. It red is the predicted fit, and in blue are the observations, the actual index observations.

These are the selectivity functions estimated by the VPA, by fleet on the left. The North Carolina trip ticket selectivity is in blue and red is the MRFSS. Green is headboat and blue is the shrimp bycatch in the South Atlantic Trawl Survey, so you can see that there is only full selection at age zero and no fish of any other age.

Now on the right you have the selectivity estimated in the current recent years, the most recent years, three, I believe, from the VPA. So you can it is a dome-shaped selectivity, which does make some sense given that the market is limited, from what understand, of the largest animals. These are the base results. The top left is the total biomass in millions of pounds. It was roughly 100 million pounds in '81. It has since declined to roughly 55 million pounds.

The spawning stock biomass, recall that this is now in eggs, hydrated oocytes, really. It has also declined during the time series. The yield – there are no confidence intervals because the VPA assumes yield to be know exactly. This has ranged from roughly 13 million pounds in 1981, declining somewhat to 10 million pounds in 2006.

Recruitment is on the lower right-hand side. These are millions of age zero animals, and it has basically been quite variable and largely without trend, I would say. Now, this is the spawning stock biomass over the management benchmarks, MSST. In 1981 that ratio was roughly 2.5; it has declined throughout the time series, but still remains about one, so the current value is roughly I believe 1.4. I'll tell you what it is in a moment.

The important thing is that there is no indication that the stock is overfished at this time. The fishing mortality, there are actually two series here. In red, this series was an MFMT estimate that was calculated each year. The blue series is the more classic or often produced from the VPA, which assumes the selectivity of 2006 throughout the historic time series. You can see that in 2006 those values are identical, which they should be.

Both series would indicate that at this time we are essentially MFMT. Basically what the review panel determined from this is that it was possible that overfishing was not occurring; and that if it was occurring, that it was occurring at a very low level. That was the conclusion of the review panel.

These are the proposed benchmarks and reference points. Perhaps they have been accepted already, but MSST is one minus M times BMSY or 0.5 times BMSY, whichever is greater. MFMT is F at MSY. MSY is yield at FMSY. Optimal yield is yield at FOY, which can be defined at 65, 75 or 85 percent of F at MSY.

We used an M value of 0.16 for that MSST definition, which is the base mortality of the Lorenzen function. Because there is no clear evidence of a stock-recruitment relationship for king mackerel, it was recommended that we use SPR-based proxies rather than MSY, so MSY was estimated by the proxy as F-SPR 30 percent. BMSY is the equilibrium SSB resulting from fishing at F-SPR 30 percent and an equilibrium stock-recruitment function, and MSY is the equilibrium yield resulting from fishing at F-SPR of 30 percent and that equilibrium stock-recruitment function.

Some additional things that I should describe; the current fishing mortality or Fcurrent was estimated as follows: FC is a vector at age estimated as the geometric mean of the age-specific F values for the three most recent years, 2004 through 2006. Fcurrent is simply the maximum of that vector, that age-based vector.

Current selectivity was estimated by rescaling that FC vector to a maximum value of one, so essentially it is just a rescaling. SSB is computed as the numbers at age times the maturity at age times the fecundity at age. The SSB units, as I mentioned, are not strictly – they are biomass, but they're a biomass of hydrated oocytes.

This is the phase plot, we call it, showing the stock status in 2006, or current, and you can see that we're at 1.34. The SSB in 2006 over MSST was 1.34; not overfished. And Fcurrent over the threshold MFMT is 1.01. These ranges here are the 80 percent confidence intervals. These are the conclusions of the review panel; not overfished and it is at the threshold; so if overfishing is occurring, it is occurring at a low level was the conclusion of the review panel.

I should say in this phase plot that these are the results of 1,000 bootstraps of the variance in the indices of abundance. Sensitivity runs were run, and throughout some of the documentation it is clear and we discussed at great length these model results are quite sensitive to the weighting of the indices of abundance, particularly, perhaps, because these indices show conflicting information about trends, particularly in the most recent years.

Several different alternative weighting schemes were used or scenarios. One is an equal weighting of all observations so that by year all CVs were assumed to be one for all indices. One is equal weighting of the indices while preserving the inter-annual variation of the index. Another is an iterative reweighting procedure or maximum likelihood estimation. Another method, which can used, is to use expert advice to give more credence to a particular series, but this was not used during SEDAR 16.

Other sensitivity runs used a status quo or SEDAR 5 assumptions that 100 percent of the fish in the mixing zone in the winter were assigned to the Gulf of Mexico. That's another set of sensitivity runs. Then at the review panel they recommended we use an additional index for a sensitivity run, which was the Atlantic Commercial Logbook during the summer in the mixing area, I believe.

These are the base results of the sensitivity runs or the deterministic results. The base run that I showed you just a few moments ago is this large pinkish dot. This smaller circle contained within the dot is equally weighting the indices. Now that is just equally weighting the indices but preserving the inter-annual variability.

The blue diamond is the status quo or 100 percent of animals in the mixing zone assigned to the Gulf. The yellow triangle is the new index. This purple asterisk is the estimating variance scaler's method, which we did have some issues with convergence, so that was not fully entertained at the review workshop because we did feel that model was not entirely convergent.

Then this green is the maximum likelihood estimation approach that the review panel recommended we attempt. Now the review panel talks about states of nature, and what they wanted to do is address the uncertainty of the model by looking at a set of sensitivity runs that they felt had some probability of reflecting the status of the stock, so they chose the base model, the next index sensitivity run, and the maximum likelihood estimation to represent possible states of nature of the Atlantic King Mackerel Stock. These are three sensitivity runs that the review panel suggested we emphasize.

Stock projections were also accomplished. They were run from fishing year 2007-2008 to fishing year 2016-2017. The stock-recruitment relationship, as you probably can see from this scatter plot, was not directly estimable. These are the observations available from a time period where recruitment is observed through the SEAMAP South Atlantic Trawl Survey, and there is not really any way to fit a stock-recruitment relationship or any particular one, anyway, to that scatter of plots.

So what we did instead was assumed a Beverton-Holt relationship with a fixed steepness of 0.95 and a maximum recruitment estimated as the geometric mean of the observed recruitment from 1989 through 2004. Essentially what this did is put a constant recruitment through these points that would decline at very small spawning stock masses so you wouldn't be put into the position where you're always getting recruitment even when the stock has gone extinct or to very low levels.

SEDAR 5 used a constant recruitment scenario, so it is quite similar to what SEDAR 5 used. The stock projections also assumed the average selectivity of the three most recent years. Several scenarios were run, Fcurrent, F at SPR 30, F at SPR 40 and F at OY, which was estimated by 65, 75 and 85 percent of F-SPR 30. This is the resulting projected recruitment in the Atlantic, and you can see that it is essentially a constant recruitment that is estimated.

This is actually the last observed recruitment, and then the constant recruitment is estimated from 2007 forward. There was some variability allowed within the model, so we applied a certain level of uncertainty to allow for bootstrapping the projections. These are the resulting projections of total biomass on the left in millions of pounds. So at F-SPR 30, here in the blue is the most optimistic outcome, showing the fastest increase in total biomass. And F at current levels is the least optimistic outcome in green.

These are the yield removals that can be expected from the various levels that we projected. The lowest removals would result from fishing at F-SPR 30. These are management ratios for the SSB over MSST at the various levels of fishing mortality and F over MFMT. In this case, one is right here at the bottom of the Y-axis, so you can see that all of these scenarios SSB remains over the overfished threshold.

Fishing mortality, the one is right here, so in every case these scenarios the fishing mortality during the projection interval is at less than the overfishing threshold. Okay, in the terms of reference it was requested that we provide information for acceptable biological catches by a management scenario, and these are all available in Annex 2, and this is Table A2.4.1.

I'm only going to show you the Atlantic results. These are for the projection years 2007 through 2016, and here are the projected Fs, F 30 percent, F 40, F 85 percent, et cetera, et cetera, Fcurrent. This is the current management scenario, so these are what we would expect under the current management definitions. You can see that these are – well, maybe you don't know, but these are in millions of pounds.

These are all available. I don't know if you want me to go through the numbers. It is probably not a very effective use of our time. Okay, these are the projections adjusted for management boundary of the Dade/Monroe Line. You can see these numbers are slightly larger, which you would expect because the management unit has now been adjusted southward, so it allows slightly more catch in the South Atlantic.

This is the projection adjusted for the council boundary management unit. Finally, these are the projections if you assume that 100 percent of the animals in the mixing zone in the winter would be assigned to the Gulf of Mexico, so you can see these projections show lower acceptable biological catches because those animals in the mixing zone in the winter have all been allocated to the Gulf in this case.

All right, the second product that was recommended by the review panel, which is probably a new product for most of us, are the decision tables. These are available in Annex 3, and these tables are the probability of overfishing by year for constant catch projections ranging from 6 million pounds to 14 million pounds on the bottom. They were run for the years 2008-2016.

These columns represent the states of nature as described by the review panel; so for the Atlantic you're talking about the base model, the model incorporating the new index of abundance and the model which used the maximum likelihood estimation to weight the indices of abundance. I'm only showing, in this case, two years because these tables are quite long, but they're all available in Annex 3.

So in 2008 fishing at a TAC of 6 million pounds, the base model predicts that 32 percent of the time that would indicate an overfishing condition, that you would be overfishing at that TAC. The model with the new index of abundance at that same TAC shows that none of the bootstraps indicate overfishing, and the maximum likelihood also indicates that none of the bootstraps have indicated overfishing at that TAC.

Then an increasing TAC, say a TAC of 10 million pounds now, the base model would indicate that in 2008 67.5 percent of your bootstraps indicate an overfishing condition; whereas, only 2 percent of the bootstraps incorporating the new index indicate overfishing and none of the bootstraps using the maximum likelihood estimation. These are available for each year, and they can used to look at the risk of overfishing based on the various states of nature that the review panel thought was possible for king mackerel.

So, in conclusion, this assessment was conducted consistently with the recommendations of the SEDAR 5 Review Panel, but unfortunately could not accommodate mixing as SS3 would have. SS3 runs did give support to the 50/50 mixing zone hypothesis, which was then used to develop the catch at age used for the VPA, so in that way it is consistent.

Biomass, we are relatively assured is above MFMT, which indicates the stock is not overfished in the Atlantic; and if overfishing is occurring, it is likely occurring at a low level. That is the conclusion of the review panel. There were major changes to the life history parameters, including growth, fecundity and weight particularly in the Atlantic, and this didn't have a substantial effect on the results of the stock assessment. The indices do have conflicting trends, and the weighting is very influential in this model. That's all that I had prepared to say.

Dr. Belcher: Thank you, Shannon. Any questions for Shannon from the group?

Dr. Williams: I was wondering if you could – you breezed over it in the presentation – is go over the equilibrium stock-recruit function that was used for determining BMSY.

Dr. Cass-Calay: If I can. This is the one you're referring to?

Dr. Williams: Well, is that the same one that used for computing BMSY or is that just used in the projections? You had mentioned an equilibrium stock-recruit function that was used for converting the F-30 percent to an SSB 30 percent.

Dr. Restrepo: Maybe I can clarify that. It's the same stock-recruitment relationship used both for the projections and for BMSY, but BMSY was not computed in the way it often is by combining the stock-recruitment relationship and spawner-per-recruit and yield-per-recruit calculations, but rather it was approximated by the intersection of the F-30 percent replacement lines with that equilibrium stock-recruit relationship.

So, BMSY is approximated by so-called B-30 percent, and the review panel, in fact, expressed some concern about this because it can lead to results that are not intuitive when you compare BMSY estimated with the other approach, with the Sissenwine/Shepherd approach. One of the recommendations of the review panel is to actually carry out some simulations to evaluate the performance of B-30 percent as a proxy for BMSY.

Dr. Barbieri: Shannon, you mentioned that the model choice was VPA; why was that instead of a statistical catch-at-age model?

Dr. Cass-Calay: Well, the real initial attempt was SS3. When we wrote the terms of reference or when the terms of reference were written, the intention was to use SS3, which would have allowed variation in the catches, would have allowed catches to be estimated. We did actually produce SS3 runs for the assessment panel and even for the review panel, but the difficulty was at the time of the assessment panel we were unclear whether the model was converging, whether SS3 was converging or not. Ultimately I believe it turned out that it had been, but it was not possible to know that at the time.

Furthermore, it was very emphasized that we produce terms of reference and benchmarks for South Atlantic and for the Gulf of Mexico stock separately, and SS3 is really set up to model a single stock with mixing – well, it is models of two stocks with a mixing, but you manage the stocks as a single unit, and that was not really what the terms of reference were written to do.

That was not accommodating what the terms of reference asked us to produce. At that time we had VPA runs because VPA had been used for SEDAR 5, so we had a VPA continuity case and we had model runs that attempted to emulate SS3. We had so-called base VPA runs. Because this was at the assessment workshop level, they recommended that we continue to use VPA because it had been used in the past and it was consistent with SEDAR 5 type of results. They did recommend that we not use the SS3 results as base advice. They did not recommend that we attempt a new statistical catch-at-age model at that time.

Dr. Barbieri: Well, in one of the questions you mentioned that the updated growth estimates indicate faster growth than before, so there were differences, therefore, that carried through the weight at age, right?

Dr. Cass-Calay: That's right.

Dr. Barbieri: Now just out of curiosity do you know if this was due to aging factors? I mean, was the difference in the age composition between before and after or was this due to fitting methods?

Dr. Cass-Calay: Will, I think one thing that definitely influenced it is the procedure we used for minimum size regulations to accommodate the fact that our samples come from fisheries-dependent sampling, and there are minimum size regulations that influence the selectivity for our fishery-dependent sampling procedure, so we have a new methodology of producing Von Bert functions that accommodate those minimum size regulations. That is one thing that happened. That procedure was not available for SEDAR 5. Now, as far as what else has changed, what other changes are possible I'm not entirely sure.

Mr. Gregory: What about the exclusion of the otoliths from the mixing zone? You said there were 47,000 otoliths collected. How many were actually used and how many of those were in the mixing zone?

Dr. Cass-Calay: Yes, that is a very good point and I forgot to mention it. There are many samples that are available that were from that mixing zone because the catches are quite large in that area. Those were not used for this analysis and they had been for SEDAR 5, so that is another source of difference. I think the larger difference is that we are accommodating the minimum size regulations now.

Mr. Gregory: Can you tell me how many otoliths were excluded from analysis?

Dr. Cass-Calay: I think I would have to look that up. I don't know that by heart. I can write that down as something to get back to you with.

Dr. Williams: In trying to understand the bootstrap procedure, if you could explain it a little more, perhaps, or let me just state my understanding of it and then you can correct me if I'm wrong. Is it just bootstrapping the index residuals only and no other –

Dr. Restrepo: As far as the fitting of the model is concerned, you are right, it's bootstrapping of the index residuals, but in the projections – and Shannon can correct me if I'm wrong – there is an added variation added on top of future recruitment, and that is like a process error.

Dr. Cass-Calay: Quite correct.

Dr. Williams: And since we're on the subject of projections, could you pull up the slide that shows the recruitment series plus the projected recruitment? Yes, that's the one. Now, since the sort of statement was made that there wasn't a reliable stock-recruit curve, basically you ended up using the geometric mean of the historical recruitment to project into the future. Now, if I look at that I see a slight downward trend in the estimated recruitment, so would you characterize the projected recruitment as being perhaps a little optimistic?

Dr. Cass-Calay: Well, I would characterize the projected recruitment as being potentially pessimistic, actually. It is true because the most recent three years that we used are actually relatively low. In the Gulf of Mexico the opposite was true; they were relatively high. The geometric mean recruitment that we're carrying through is slightly lower than, say, the average of the whole time series to reduce that instead.

Dr. Buckel: I have a question about the shrimp trawl bycatch in the South Atlantic. Those numbers are really low. I think you mentioned in the thousands; is that right?

Dr. Cass-Calay: I believe they were in the thousands, and a few years might have been as high as 10 or 13,000. I could look it up.

Dr. Buckel: Okay, if that is the case I'm just curious if Pat and Marcel could address – it seems like you're using the SEAMAP Trawl to get an index of age zeroes, so is it really low numbers that you're getting in the SEAMAP because it is a similar gear to – it is a trawl, correct?

Dr. Harris: As far as I can remember, the SEAMAP Trawl is low numbers of age zero king mackerel. When I rode on the shrimp boats in the mid-nineties, it was also low number of king mackerel in the shrimp trawls. I think that is a reasonable approximation for what you might see in a commercial harvest. That was all pre-TED and pre-BRD, though.

Dr. Buckel: Thanks. It just seemed like there could be a discrepancy there given if we're using a trawl program to index age zeroes, but then the commercial trawls aren't catching these really low numbers when you extrapolate out to the number of boats.

Mr. Waugh: Shannon, a question about the decision tables. I know the review panel recommended looking at that new index and the MLE index, but if you look at the outputs, compared to the base model those two indices basically say that if you set the TAC up as high as 14 million pounds, under the new index you have a 13.8 percent chance of overfishing; the MLE a 1.2 percent chance. It just seems to me what that is telling me is those two indices don't really supply any useful information, and we're just to look basically at the base model.

Dr. Cass-Calay: What is clear is that those two sensitivity runs that were recommended by the review panel are much more optimistic than the base case. The review panel document does not recommend a weighting of the probability of these states of nature being true. It doesn't recommend any particular weighting, so I suppose that would be something the SSC would consider is how likely are each of these scenarios and how precautionary do you want to be.

Mr. Waugh: And I agree, they were optimistic, and they seemed to be more optimistic than anything we've seen in the data thus far, as well.

Dr. Cass-Calay: I think they were more optimistic than the runs we had provided after the assessment panel with the exception of that one that estimated the variance scalers, which we felt the convergence was doubtful. If you look at the sensitivity-run plot, the ones that we actually brought into the review panel workshop were the base case, the one that overlays the base case very closely and the equal weighting, which is right here, so they all fell in a clump, closer to the base run.

These two that are more optimistic that the review panel chose as states of nature are more optimistic outcomes. They show a much lower probability of overfishing. That's something for the SSC to consider.

Dr. Barbieri: And to that point, Shannon, can you explain – to be perfectly honest I wasn't able to finish the whole assessment workshop document in time, so I'm a little unsure about what you mean by the new index; how was that estimated?

Dr. Cass-Calay: I'm writing this down as a note to myself so I check that what I'm saying is true. My recollection is this not a new index; it was not constructed at the review panel. This is the index that was constructed for the mixing zone during the summer months off of the Florida east coast. So when those animals are meant to be entirely Atlantic, that's the theory, they're meant to be only Atlantic animals, and it was always available.

It is from the commercial logbook program. They felt that we were not indexing Atlantic animals in the mixing zone in the summertime, so they asked that we add that index to a sensitivity run, but it is not a new index. It's the same index that was presented during the data or assessment workshop; I don't recall. I believe it would have been the assessment workshop.

It would have been revised to incorporate the management regulations and presented to the assessment workshop. That is something I didn't mention and should. The fishery-dependent indices were examined at great length to determine the importance of the management regulations on those indices and to exclude those effects, if necessary.

The commercial indices in general were impacted by management regulations, and we went to great lengths and described in the documents and at the assessment workshop how we removed the effect of the management regulations. The recreational indices we looked – in the case of the MFRSS index, it did not look like there was any compliance with the fishing regulations. We saw plenty of trips that fished in excess of the management regulations.

But, remember, that includes B2 animals, so some of those animals are released. I don't think we did the analysis strictly on landings. And the headboat, headboats were very unlikely to approach the bag limit for the entire boat, so we did not adjust to the recreational indices based on the management regulations. We did not deem it necessary to do so. But to answer your question, it is not a new index. It was available, but they felt we should include it because it indexed animals in the mixing zone in the summertime.

Dr. Jiao: I have three questions. My first question, your yield per recruitment models were used to give out those biological reference points, so I just wonder for those observed life history information; did you look at the temporal changes of them, actually fecundity at age, you know, maturity with age relationship?

Dr. Cass-Calay: No, and the number of samples that we actually have to do, the fecundity in particular are very small, and it was not attempted to do temporal variation of those functions.

Dr. Jiao: I ask these questions because sometimes it can influence those biological reference points dramatically. My second question; based on the decision table that you provided, it seems like the scenario that used the MLE, you marked as F-MLE, it seems like during the reweighting algorithm – or maybe some of the index dominate the weighting system, and that is why it is very different from the base model. I just wonder whether you diagnosed which index or which indices actually dominate the results.

Dr. Cass-Calay: Yes, I can't recall, but we produced some graphics that we could examine that show the index fits. I can prepare a slide. Maybe Victor recalls.

Dr. Restrepo: Not particularly for this case, but the MLE usually favors the indices that are smooth in their temporal trends over time compared to those that have jagged behavior.

Dr. Jiao: Right, I wonder what we know about this algorithm, whether you have a further statement about the appropriateness about using this weighting strategy.

Dr. Cass-Calay: Okay, I'll look into that.

Dr. Jiao: My last concern is actually the uncertainty of the catch. It seems like both, you know, the catch statistics from the recreational and commercial and also the 50/50 percent, the mixing assumption, obviously will influence the results, and based on the mixing weight provided from 2001 the mixing ratio varied widely over time. In this situation I wonder whether it can compute some algorithm to see those uncertainties.

As you remember, Victor, it is a combination or hybrid Monte Carlo algorithm several years ago, so just do further Monte Carlo by incorporating the SMG of the mixing ratio, it might be worthwhile to look at it in the future.

Dr. Restrepo: One of the difficulties we had in parameterizing the Stock Synthesis 3 models was that we really only had mixing ratio information for two very recent years. It would have been informative to that model to have mixing ratios from the 1980's, from the 1990's and so on

because if there were any temporal changes on those, that sort of information can really help those models. If we had included uncertainty in mixing ratios in terms of the catch composition for the VPA models that we ended up using for the base case, we would have no idea about whether there any temporal trends because we have no such data.

So, if we did a Monte Carlo bootstrap type of analysis like you're suggesting, it would have to be something without trends. I think it would just add to the variability but not necessarily give you information about biases.

Dr. Cooper: Two questions just for clarification. So the reason why an SS3 Model was not fit to the same data used in the VPA Model was simply because you ran out of time?

Dr. Cass-Calay: Can you be more specific on what you mean by that question?

Dr. Cooper: Yes, my understanding is the reason why SS3 was not used was because you wanted to do benchmarks by region, but you could have taken the data you used for the VPA and put it into an SS3, because you've got regional data assuming a unit stock, and you can get, then, the regional estimates of the benchmark. I'm assuming that was not done just because you ran out of time or am I missing something?

Dr. Restrepo: No, in fact, we could not use the same dataset that was developed for the VPA and just plug it into the SS3 models or vice versa. They were two separate efforts done in parallel. The data compilation for the stock assessment was really, really a complex and complicated process.

For the VPA, as Shannon explained, the data are put together by fishing year for two migratory groups whose boundaries move. For a Stock Synthesis 3 that is not the case. There are essentially three separate areas at all times of the year, at different quarters of the year. There is the purely Atlantic, the purely Gulf and the mix zone. Preparing all of the catch statistics for these two approaches, the VPA and SS3, are quite different exercises.

Nevertheless, we had prepared the data in advance of the assessment workshop, and both datasets were ready. The reason SS3 was not used for the base case assessment has nothing to do with data preparation because the data were prepared for either model. The reasons, as Shannon explained, were initially a concern with convergence, which turned out to be a non-concern; and, secondarily, the inability to prepare management benchmarks that were in conformity with the terms of reference; in particular Term of Reference Number 8 in the Assessment Workshop Terms of Reference.

We were not able to do that in Stock Synthesis 3 because Stock Synthesis 3 assumed a single stock-recruitment relationship for the entire region between the Gulf of Mexico and the South Atlantic and then recruitment being split following a certain algorithm into the purely Gulf and the purely Atlantic and then a mixing in between.

But still it was a single stock-recruitment relationship; and given that single stock-recruitment relationship we could not compute separate MSY-related benchmarks for the two areas, but the

reason has nothing to do with having data ready or not ready because all of the datasets were ready. I don't know if that is clear.

Dr. Cooper: I guess my point of confusion is that the VPA Model is actually both the South Atlantic and the Gulf data. It's not just the South Atlantic Model; is that where I am confused? Because if it is just the South Atlantic, you could do SS3 on just the South Atlantic.

Dr. Restrepo: For the VPAs, the two migratory units are modeled separately. Using a similar modeling approach, but there is a VPA for the Atlantic and there is a VPA for the Gulf, and there is no information that connects the two. In Stock Synthesis 3 there was information that connected the two.

Dr. Cooper: Okay, then I'm quadrupely confused. If you've got data for a South Atlantic VPA Model, you should be able to fit a Stock Synthesis 3 to that data; correct? I mean, they do that all the time to compare a forward-projecting statistical catch at age to VPA. You've got the same data, and so my question is if you have data that is supposedly representative of the South Atlantic stock, the reason why a separate SS3 was not constructed to compare an SS3 result to a VPA result for solely the South Atlantic was because I'm assuming lack of time, because of the complexity of the issues.

Dr. Restrepo: Yes, I think if you phrase it like that, you are correct, but similarly we could have taken the VPA data input for the South Atlantic and a created a number of other models, a multitude of models; maybe, I don't know, 50 different kinds of models. I don't know why exactly Stock Synthesis 3.

The reason why we parameterized Stock Synthesis 3 the way we did was because that was exactly the recommendation from SEDAR 5. They wanted a so-called more realistic way of modeling the mixing between the two stocks. It wasn't to run Stock Synthesis 3 separately for the Gulf and the Atlantic stocks just because it was a statistical catch-at-age model. No, the reason was to better model the mixing between the two stocks. And as Shannon said, the VPA has been the continuity sort of model, so it was the default to fall back to.

Dr. Cooper: One thing I may have missed; was it a retrospective bias patterns in the VPA Model?

Dr. Cass-Calay: We ran retrospective analyses and I could put – the slides are prepared. They're in another presentation so I would have to look through it, but I could show you that in the near future.

Dr. Cooper: Final question, then, just to clarify the new index that isn't new; it was constructed in the data workshop, but it was decided not to use in the assessment workshop, and it is to assess the Atlantic stock in the mixing zone in the summer, and it is based on what, again?

Dr. Cass-Calay: It is from the commercial logbook data, the reef fish logbook. Yes, my recollection is that – and, again, this is something that I really ought to verify, but my

recollection is that it was one of the indices that were initially produced for SS3 and it wasn't carried forward.

What happened is there were trip ticket indices and there were commercial logbook indices, but they're both based on the same data, so you had to carry one or the other. Furthermore, in SS3 you couldn't have more than one index that referenced the same fishery and fishing area. So, that index was not carried through for SS3 for those reasons. Then when we set up the VPA we set it up to replicate the decisions made for SS3, so that is how it kind of fell through the cracks and was reintroduced in the review workshop.

Dr. Cooper: So to follow up on that, do you all think that an index for the summer in the mixing zone is representative of the total Atlantic population or how did you account for the potential fact it is a regional and time-specific index?

Ms. Jensen: Wasn't the reason that we threw out the commercial logbook index was because there was a report issue?

Dr. Cass-Calay: Well, the commercial logbook index has mandatory reporting that begins in 1998. Initially we had attempted to construct those indices beginning in 1993. The truth is that we just couldn't do that to the satisfaction of the panelists because we couldn't accommodate – there was always a group of vessels that consistently reported, but it was unclear whether those vessels were more likely to be targeting king mackerel or not.

It was just not possible to extend that time series backwards, and that is one reason that the commercial logbook indices were rejected in favor of some of the trip ticket indices which were possible to – they had started earlier in Florida than 1998. The trip ticket indices, of course, had difficult information regarding effort. The effort was unclear on the trip ticket. It was better on the logbook.

I think that is the reason the commercial indices weren't favored initially because they began in 1998 rather than 1993 or earlier. Now, I still dropped a question, though. Somebody asked a question which I haven't answered. I can't remember.

Dr. Cooper: Well, I just was wondering about the geographic and temporal specificity of the "new index" relative to the total Atlantic stock and if it is actually representative of the overall stock abundance relative to just whatever might be happening in that region in that time.

Dr. Restrepo: Yes, I think when you look at the base case results or the final results of any SEDAR stock assessment they are the cumulative set of decisions by many, many people. It so happens that in the current system the review panelists don't always attend the assessment workshop, and you end up with decisions that are not the same between the different SEDAR meetings.

I believe that the inclusion of this index during the review workshop was something initiated by a question by an observer in the review meeting. To me it seems like the review panelists said,

"Yes, why don't you make the sensitivity run"? That decision wasn't necessarily consistent with what the assessment workshop panelists had decided, but it was just another run.

Dr. Barbieri: Shannon, back to the decision tables and somewhat to that same point that we were just discussion, looking at this I feel that now we are faced with considering different ABC scenarios not just based on fishing level changes in ABC but also on these different sensitivity runs. I wonder if it wouldn't be sensible to reconsider what we call the base model.

What we are considering here the base model doesn't incorporate some of the indices that we may feel improve the model to a point that we may decide that it was new base model. That's basically the kind of consideration I was expecting from the review panel, that they would look at all these different scenarios and say, "Well, we need to now come up with a new and improved base model that incorporates something that we feel improved the model."

Because the way that this is presented to us, it is difficult for us to make a choice, and I'm not sure if the results are really fully comparable the way they are because the scaling is somewhat different depending on how the base model actually incorporated some of this information or not. I wonder if it wouldn't be advisable for us to discuss here the possibility of revising the base model to incorporate some of these indices based then, in our judgment, on the value of these different indices or the weighing for improving the model.

Dr. Cass-Calay: I mean that's at your discretion, I suppose, and certainly we do have the results that we presented to the review panel. If we had a list of what you would like to see, we could probably accommodate at least part of that list. Now, the only thing I do want to say – and maybe Victor disagrees, but having been involved in several SEDARs, this is the first review workshop I have attended where they did not seem to have that philosophy. They were not going to revise the base case. Their idea was we presented the base case; they could suggest some sensitivity runs, but they were not going to suggest modifying the base case. It was a different approach than other SEDAR workshops I have been involved with.

Dr. Williams: To that point, I would suggest that coming up with an alternate base model is outside of the purview of the SEDAR process, outside of the purview of what we're charged with. I mean, those are both just to review what is presented to them in a sense. If we start going down that path of altering models, we don't want to go there, I think.

Dr. Barbieri: Erik, the issue here is do we accept the base model as presented here? I mean, that doesn't reflect the quality of the assessment, in my opinion, in any way. I think that you guys did a terrific job in conducting the assessment. It is just a judgment call, and I think Victor presented it very well.

The inputs from the data workshop onward in the SEDAR process are a cumulative number of suggestions and revisions and improvements. To me it comes to a point that at the review workshop that would be one of the suggestions either by the review workshop panel or by us here. If we don't think that the base model represents the best model to characterize the stock, dynamics of this stock, then I think it is well within our purview to suggest that the base model be reviewed.

I mean, having too many choices to make considering not just the base model outputs here in the decision tables but all the outputs that are coming out of the new index and MLE indices weighting, I would like to hear what you think in terms of – you know, as an assessment analyst, do you feel – because you know the model configuration better than anybody, do you feel that the base model could be improved by changing some of these indices?

Dr. Williams: To that point, you're getting to the distinction between best available information and best possible information. There is a clear distinction between the two, and at some point you have to stop questioning everything because new information is always becoming available because of the time nature of what we're dealing with. At some point you have to deal with what is best available versus the best possible, and I think that distinction needs to be sort of clear in everybody's head.

Dr. Barbieri: Erik, I understand that as far as information. Here we are not talking about new information at all. All this information has been available since the data workshop. It is just a matter of different decisions on what we will include or not, right, into the base model. Now, I guess the new index was introduced at the review workshop.

I guess that is your point, that the new index was introduced at the review workshop. However, I would still like to hear from the assessment team how you feel about that new information improving the model, and it will give us a feeling for how to compare the columns here on these decision tables.

Dr. Restrepo: I think that you are asking a difficult question, Luiz, because what you are seeing here is the final product of the SEDAR process, and that is the process we're in and we're not going to change it. That is the information that you have. Now, I cannot tell you whether the SSC should do its business this way or that way. That is not my job. That is your job to decide.

I can tell you that if I were in your role, I would actually appreciate receiving information in decision tables like this. The first column, called the base case, has some probabilities of something happening. It is like the chance that it will rain tomorrow, and that column is the National Weather Service forecast.

But in addition the review panel said, "Well, we want two other forecasts in there. We want the North Carolina Weather Bureau, and that is the second column, and that is AccuWeather, and that us the third column." Whether you want to use those two forecasts or not is your business. I personally would feel, if I had to make those decisions, that this could be handy information.

Now, in the case of the Atlantic assessment it so happens that those two other runs encompass uncertainty only going in one direction, in the more optimistic direction. If you look at the Gulf results they encompass both sides, so it is a little bit easier to fall towards the base case assessment.

But, the base case assessment that you see there is basically what the assessment workshop ended up submitting to the review workshop, and the reviewers in the review workshop said, "Yes, maybe I could have done things a little bit differently here or there. I'm not going to argue

that this is a plausible base case, but give some other information to the SSC." That other information is encompassed in that table. How you use it or ignore it I believe it is entirely your business.

Dr. Cooper: Just to clarify the two points that you all made, the base case was the preferred model going into the review workshop. The reviewers reviewed that model, accepted that model and said, "By the way, here are some ways you can tweak it that you might want to look at." Is that a correct interpretation of what the review panel said?

Mr. Gregory: If I may to everybody's point, going back to Victor's comment three times ago, if I need to say something right away, I'll just say "to that point", right and then you can ignore everybody else. I was the one that requested the new index – I was a member of the review panel, not an observer – and it was an exploratory request,

It was done out of a sense of frustration that only one index was used per fishery, which was unlike any VPA-type analysis we had done in the past. That was a carryover from the restraint of the SS3 model. I don't recall the exact problem, but there was some problem with the North Carolina Trip Ticket Index, but apparently it was used in preference to the logbook because I guess that problem was – the logbook problem might have been worse.

So we're sitting there looking at this, and the North Carolina Index clearly was just one reason as well. So in the discussion it kind of dawned us or me that when the summertime off the east coast of Florida we had this consistent logbook – and I think Ben Hartig is going to present stuff later in a similar vein – that we were all pretty confident is Atlantic fish, and over a ten-year time period or whatever, so let's look at that index; that index was not used; what does that show?

That is how that came about. It wasn't proposed as a new base model or anything. What the review panel did, Andy, was they did not accept the base case. When they looked at how each index would change the trajectory of the population, they concluded that none of the models were preferred, that there was so much uncertainty you couldn't just take the base case, tweak some parameters and develop a probability distribution and say, well, this is the direction we're going.

So we came up with this idea of an analogy of the hurricane forecasting system. Like Victor said, there are lots of models that can be used, and I know that the state of Florida, at least Bob Muller, when he does a stock assessment, you end up looking at six or seven different models and not just six or seven different runs of one VPA but different model analyses.

That's similar to the Hurricane Center where you different model analyses that show completely different trajectories, much like in this assessment each index would take the population off in a different trajectory. Then the Hurricane Center develops a consensus model based on all those, and says this is our best guess as to what the hurricane is going to do.

Their analysis of this approach shows that their consensus model, which is a subjective decision by a group of experts, is a much better forecaster of hurricane direction and strength than any

single model that they use. So what the review panel is presenting to the SSC, which is radically different than the past, is that there is no preferred model.

This is what the range of data seems to indicate; now the SSC come up with your consensus direction of where this population is going or what the status of this population is, and it is a big challenge. We may not have enough data here to do it thoroughly, but I think this is a new direction for a stock assessment if you think about it.

We're challenged with this new Magnuson Act stuff to talk about uncertainties, and what the review panel is saying is the uncertainty within a model, with various parameters adjusted, don't capture the true uncertainty in our knowledge of the stock. That is the dilemma that we're faced here is we don't have a preferred model to work from.

Dr. Stephens: My recollection from the review panel is not so much that they rejected the base case as that they wanted the other information included in the report for completeness, which may come down to the same thing that you just said, anyway.

Mr. Gregory: No rejection; no acceptance.

Dr. Stephens: No rejection; no acceptance.

Mr. Gregory: No endorsement.

Dr. Cooper: The problem with your analogy – and this goes to what Erik is saying – combining results from multiple models is not a trivial task and it is not something the SSC should be tasked in figuring out how to do. If the review panel wanted us to combine models, they had a lot of more work they needed to do. I don't think we should take the naïve approach of saying, "Well, three models, divide each by three, take the average, we're good enough."

That is an incredibly naïve approach and is often wrong. For hurricane forecasting they don't just average all the models. There is a whole field of how do you average multiple models, incorporate uncertainty, propagate uncertainty, and that the average of the outputs is not the same as the average of the models.

So I am with Erick in saying, no, fine and dandy, that is a new approach to take for assessments, but just like to council doesn't like us giving them, you know, here are 35 options, we're not going to tell you which is the better one and expecting them to take apriori weights and decide. The SSC is not the – it is not our purview to design how you actually integrate uncertainty across models to come up with a formal definition. I would fight against trying to do that in an ad hoc fashion at this meeting.

Dr. Barbieri: Just to that point, Andy, the issue here is that we're not talking about really different modeling approaches. It is just runs of the same model incorporating different abundance indices or different weighting factors, so we're talking about averaging anything. We're talking about do we accept the base model as satisfactory as our best choice of models and

how do they compare with these other scenarios. I mean, that is the point; I'm not asking for an average.

Dr. Restrepo: First of all, my apologies, Doug, because now I recall what happened in the meeting, and it wasn't an observer that suggests these runs with the new index. I want to read a paragraph from the review workshop report because I have heard very different statements about what they accepted and what they rejected, so just make clear from Page 22, Section 3 of the report, it said:

"The review panel accepted the base cases provided by the assessment workshop for the Gulf of Mexico and Atlantic stocks as providing one of several plausible estimates of stock abundance, biomass and exploitation. However, the base cases alone do not provide sufficient information about the uncertainty of these estimates."

And just to add to the discussion on the decision tables, very often a decision table like this contains another row, and that row is the probability that each one of the states of nature is correct, and that row is missing from these decision tables. The review workshop had an extensive discussion about this. They didn't want to put 33 percent probability in each one of those columns, and they didn't want to put 50 percent probability and 25 and 25 in the other two. Maybe, Andy, they were thinking about the same difficulties that you all are.

Dr. Cass-Calay: I wanted to make one clarification. In reviewing adding the index run, there is a second thing which I neglected to mention. We did add that commercial index from the mix zone in the summer months, but we also replaced the MRFSS Index that had been used. The MRFSS Index that had been used in the base model only reflected the stock north of the Florida east coast.

We replaced that index with an index that had been constructed for the MRFSS Index for the Atlantic Migratory Group, which has been constructed for SS3 initially. So there were two things; the Atlantic MRFSS Index was changed with another Atlantic MRFSS Index that had been constructed for SS3, and we added the commercial logbook index; two things.

Mr. Gregory: There are other major considerations here than just this – this is major, but – and that is the exclusion of data from the mixing zone. 60 to 75 percent of the data, the otolith data and the other data may have been excluded. The review workshop basically said, "Look, if you've got a fishery and you've got an area where 75 percent of the total harvest is coming from and you can't divide it into two different stocks, you shouldn't be trying to analyze two separate stocks.".

So, the strong recommendation from the review workshop is that the science should analyze this as one fishery and then leave it up to the managers to figure out how to allocate those fish, but this is essentially a stock in the way it is being prosecuted. The loss of that mixing data, which we have never lost before because it was always assumed to be a hundred percent Gulf fish, I think is a serious problem going forward.

So, hopefully, in the next assessment one of the things that will be looked at will be entire fishery as a single stock of fish, as it is prosecuted, and then try to work out ways to allocate that fish among the different jurisdictions.

Dr. Belcher: Any further comments or questions for Shannon or Victor? Okay, thank you for your presentation. With that, we'll ask Ben Hartig to come forward and give his presentation. Also, just to make sure everybody is aware there was an additional piece of information relative to king mackerel that mailed to us. It didn't come in the briefing book. This was a letter from Shark Fisheries Directed. Like I said, it had come to us as an e-mail so it was not included in the briefing book, but just to let you know that document is there for you to consider.

Mr. Hartig: Good morning, Madam Chairman and members of the SSC. I'd like to thank you very much for the opportunity to address you this morning. It is rare that a presentation like mine will actually shed some light onto the discussions that were just occurring about the stock assessment, and it will. I will go ahead and get into it.

My name is Ben Hartig. I have been Atlantic King Mackerel fishing for over 40 years. I'm the current chairman of the Mackerel Advisory Panel, and I have also been chair and a member of the council How I got into this situation, I attended SEDAR 16 as being chair of the council and representing the council in the commercial seat, so I was able to attend SEDAR 16. I also attended SEDAR 17 for Spanish mackerel.

It is quite a lot to try and do in the timeframe as most of those came within fisheries that I prosecute, king mackerel in the spring and summer, which caused some significant problems for me not being able to catch some of the fish that I usually do. But having said that, it was a fascinating process to be able to sit down in two of these back to back and see the different ways in which the data were presented, the different ways the models were used.

It really shed a lot of light, and I learned so much from these processes. The other side of it is I actually started liking it by the end of it, if you can believe it, in dealing with all those data. I actually understand some of the assessments now, the inputs and how they impact the assessments. Having said that, I will get back into the presentation.

The initial part of the presentation, which I gave at the review workshop – and essentially what happened there was the second run of the model gave a result that the Atlantic Group was overfishing, and that was in contrast to the first run of the model where it wasn't. I asked – I think it was Gregg who I was talking to at the time – what was causing that.

He said, well, it looks like recruitment is probably causing that effect. So it just happened to be at the time when I fish in the Atlantic Fishery where I am catching my smallest fish. So I went out and started measuring fish. I measured six trips, all fish on each trip, and then I measured an additional – that was between July 9th and August 1st – and I measured some additional fish from fishermen's catch on August 1st just to make sure that my measurements were somehow related to the other fishermen's catches.

There were 630 king mackerel measured between those dates. You'll see in the figure right there, Figure 1 shows how those lengths correspond to each other. The red lines are males; the black lines are females. You will see that the size range is pretty tight overall. You have much more variability in the females, which you may expect since they have dimorphic growth, they grow faster.

But the reproductive information from Fernuken and Bumridge, they found that size at first maturity; Bumridge was 88 millimeters standard length for females, 77 standard length for males; Fernuken, 100 percent mature in the length interval of females at 70 to 75 centimeters fork length; and in the most current work that was done for the data workshop, Fitzhugh et al, 2008, first maturity they saw at 60.2 centimeters fork length, and most were ripe at 70 centimeters and greater. So, that general trend falls right into those lengths.

If we go to the next slide, that shows you a summary of length for males. It is fairly tight. It is right at the size of first maturity or just past. These are the smallest fish we see in the spawning area off East Central Florida that I fish in. I should talk to you somewhat about this spawning area. It is not referenced in the literature. That I hope will change.

I am trying to put a CPR together to elucidate the spawning that does take place in this area, hopefully next year with – and I am going to try and hold of Mr. Fitzhugh and put together a proposal to really delineate the spawning that occurs and how much of the stock actually comes to this area to spawn.

But it is a sequential spawning. It starts in April. In April the largest fish that we encounter come and spawn first. Those fish are in about a 20-pound average range for the first 12 to 18 days; and after that, those fish finish on a lunar phase, whether it is the new or the full moon; and most of that group will start to migrate back to the north; followed by another group, which is about a 14-pound average fish, which takes you all the way down to the latest part of the summer, in July and August, where you have the smallest fish of the stock spawning. So you have got a size sequential spawning occurring in this area, and it has been consistent throughout the time that I've fished stock, since about the late sixties.

So it is very apparent to the fishermen who fish there. I pay a lot of attention to gonads and – well, I've done some work on mutton snappers. I worked on a thesis on mutton snapper, age, growth and reproduction of mutton snapper when I was in college. I have done histology of gonads. I am familiar with what the different stages are, and I pay close attention to those.

So, after I measured the fish, I also decided to finally get my catch history together. I've been trying to do for a couple of assessments. There have been some problems. I couldn't find some of my logbooks, but I did get it together for this assessment. But it just happened to be that the timeframe that I had the best data for pretty much fixed into the assessment time period, which is pretty much by luck.

It goes from 1980 to 2008. I mean, you get right to the last current update, you're right to this year, which may be unfair to the assessment scientists, but it is updated right to the last catches

that I had in this year. What you see in the early years, you see landings are relatively high and catches per trips are also high.

As you go through the landings' timeframe into the later seasons you see landings reflective of the earlier time series in levels of catch, but you see it takes more trips to catch the same amount of fish. That catch per trip is actually smaller in the later time series. That's because in the early timeframe we fished without any regulations or there were no trip limits, there wasn't anything that constrained the catches in the early timeframe.

Then you have catches in the later timeframe where you have – you know, a 50-fish trip limit we operated on for a number of years. In 1999 they increased it to 75 fish, so in the later time series we have been operating on a 75-fish trip limit, which you can't catch as many fish on a trip. I break my trips up probably finer than anybody else does.

I have certain days where I'll make two trips, one by myself where I actually troll for fish in morning. In the afternoon I will pick up another fisherman and we will go out and live-bait fish in the afternoon. So if you put the two trips together, in one day I will two separate trips, so there are probably more trips in my data than probably anyone else's because I took the time to separate that out.

The other thing I will mention is that these catches are all reflective, to the best of my ability, of Atlantic stock fish. In April there are sometimes fish left over from the winter fishery that occurs where they were actually designated as Gulf fish. Now these fish are very separable from the catches of Atlantic fish because the fish at the very end of the winter season are the smallest fish that we see in the winter, so they are diametrically opposed to the very large fish that come initially in April. So I have separated that out in all of this and it is, to best of my ability, all Atlantic catch.

The next slide just shows the number of trips, and you can see that it takes less trips over the timeframe in the early in the years than it does to produce the same catch in the later years. The important thing is that the fish are there now. I haven't mentioned this middle part of the graph yet, but we'll get into it.

The catch rivals abundance of the earlier timeframe, and the fish are as abundant and available as they were in the earliest years, and that is an important consideration. Now, the middle point of the graph where you see this significant decline was caused primarily by the introduction of drift gill nets in 1985. Initially this gear was introduced and had limited catches initially and then as time went by the gear was becoming more effective, more gear was being fished, and the fishery was suffering severely because of it.

In a very contentious decision the council, in 1990, banned drift gill nets. It was a tough fight. We had to go to NMFS a couple of different times to be able to finally get the gear out of the water, but we actually were successful. Recreational and commercial hook-and-line fishermen banded together to get this gear removed.

During the controversy, at the NMFS level one of the letters that came back to me was that it's a competition issue, you all are arguing it is a gear type, they're more efficient that you are at producing the fish. Well, okay, in 1990 the gear banned. If that was true, in 1990 I would have been able to go back to some semblance of my catches from the earlier timeframe with the elimination of this gear.

As you can see the fishery continued to decline after the gear was banned to its lowest levels in 1993. There were significant problems with the gear. Cryptic mortality was probably a very serious element of this gear and probably caused landings in excess of a hundred percent of what they caught, so they probably killed twice the fish or as many fish as they caught, at least, using this gear, which caused some problems.

You can get a little bit of an idea of the size of the fish that left the fishery first. This is the same catch data broken down into two-month intervals, April-May, June-July, August-September. The blue represents April-May; the red, June-July; and the white, August-September. It is a little bit artificial breakdown and there is some bleed-in from different groups of fish coming into the area, but it really does, in whole, represent different groups of fish coming in and out of the timeframe and out of the fishery.

As you can see, what is very apparent is after that gill net gear was introduced in the early eighties, about 1986 you saw a very strong August-September catch. This disappeared almost entirely by 1987. These are the smallest fish; you removed your smallest cohorts from the fishery right away; I mean, they're gone. It continued to decline to very, very low levels on through 1992, several years after the gear had been banned.

So, that caused a real problem in the fishery and caused some time delay when the fishery came back. But you can see, over time we're starting to approach – you know, August is getting better; May is getting better. Actually May is staying kind of constant. The real change occurs in 2007-2008 – actually some of it in 2004 and 2003 – in that mid-time size range. In that red area you see big increases.

That is in the smallest fish of the stock, and it is a fishery change which represents some significant recruitment differences that we have seen in the stock especially the last four or five years. Those are the smallest fish that enter the spawning stock where I am. We're not going to see fish smaller than about age four, smaller than the sizes you've in the graph and before, because those fish aren't going to expend the energy to come to South Florida in the middle of the summer if they're not going to spawn.

This is pretty much mediated by spawning fish, these size classes, and that's a real change in the fishery and a real increase in that part of the fishery in that time, and those smaller fish. It is very indicative of a strong, very strong – in fact, those year classes in the latest time series are the strongest year classes that we have experienced in over 20 years.

Basically, if you look back on king mackerel – the science of king mackerel, when I used to talk to Roy Williams, who was assistant deputy director for the state of Florida and their management, we used to talk a lot about how king mackerel, you know, the spawning frequency

and what happened. So basically you have strong year classes about every six or seven years that seem to move through the fishery over time.

That data becomes apparent in this slide. These are slides that actually occurred after the review workshop. These were when I started having questions like – well, I made a presentation to the review workshop, and it was kind of hastily put together. Actually, one of the CIE reviewers stated, he said, "I really couldn't see how it really fit into what we were trying to do," and I understand that.

I understand it very well. That's why the process works because this should have been in the data workshop and we could have taken it through. But, you know, in my frustration, trying to go ahead and trying to show something to the review workshop that may alter their perception of the Atlantic stock that is what I came up with.

But subsequent to that, I said, well, how does my data relate to the commercial catch, is it indicative of what is happening in the commercial fishery as a whole? And if you look at the data in the early years, the drift gill net data is just starting to come in, catches are still relatively high – although in this data you have the drift gill net catch, so they are going to be kind of high, still, in those early years.

But, the commercial catch does reflect the same sorts of declines that were in my data. You see the exact same kinds of declines. You see further declines after the gear was banned, which are very evident in my data, also. You also see a strong year class entering the fishery in '96 and '97, which we fished on for about six years, and now you see another strong year class entering in 2004, which is bolstered by another one in 2006, which doesn't normally happen in king mackerel.

You usually don't get two good year classes back to back, but we are, we do have, and that is why landings are considerably higher in the latest year on Atlantic king mackerel. Now, these data were collected within a 20-mile radius of Jupiter Inlet on the east coast of Florida. It is a fairly tight area of catch. It also is reflective of that new sensitivity run.

Those same landings are also reflective of my landings in that general area, so you have another cooberative time series of data that you can look at with that new index to try and get some sense of where you want to go with this fishery. Basically, the blue line is the ABC midpoint calculated for the commercial fishery from what the stock assessment says was the best available midpoint of their ABC range.

It is different than TAC; it's different than the council TAC. The point of putting that in there was that catches, for the most part, are significantly below the best management advice for the time series. That is a consideration that we need to take into account. In retrospect it is easy to do this retrospectively, but if you look at the beginning of the time series they're thinking the productivity was probably very close to where it actually probably was.

And then as they're chasing a declining fishery, they're still at the productivity levels – they're trying to get there, but they don't quite make it. All right, there is a knee jerk reaction in 1996

which happens to come in when a strong year class enters the fishery, and that becomes problematic.

In the next slide, if you use the same kind of commercial landings and the same blue line but change the last three years to reflect SEDAR 5's results – now SEDAR 5 had a significant reduction in productivity. MSY was reduced from 10.4 to 5.9 million pounds in the 2005 SEDAR assessment. If the best management advice would have been used, the commercial fishery would have lost about 3.5 million pounds worth over $6.5 million based on that assessment.

But the key here is that the assessment scientists were thwarted by the strong recruitment classes coming in right after that assessment. It wasn't their fault. It is just that significant recruitment is occurring and the stock is getting back to the productivity levels of the past. But unfortunately when they had to make their assessment advice in the assessment in '95 and then in 2003, they were thwarted by giant year classes entering the fishery.

That's the problem with king mackerel. In order to be able to set your TACs you going to have to need to take into consideration some of these large size classes that enter the fishery. In Figure 8 it illustrates some of the things I talked to you about before. The blue line is the best management advice. The orange line is TAC implemented by the council, and the pink line is total catch. It is not commercial catch; it's total catch.

And you can see from the total catch line you have a rather flat trajectory. It doesn't show much contrast, and that's a tough one for assessment scientists in trying to analyze a fishery when there aren't any trends in catch abundance. But as you have seen in the commercial landings there were significant trends; if you look at my data there were significant trends. In the next assessment, if we can pinpoint these, I think we can get a better result coming out of the assessment.

Some of the things to look at were the council actually set TAC below the midpoint of the ABC for a number of years, and the best management advice only intersects landings in two spots. This one actually intersected at the last spot because this one is different than Figure 7. This one actually shows where if you use the best management advice of SEDAR 5, then you get that significant decline with reduction in MSY.

One of the things that I try and do in analyzing data is try to use the history of the stock, as you can see history of catches, history of stock assessments, so they tell a story. Basically the way we do stock assessments now is like reading the last chapter of a book and going, yes, that was great, that was the information we received and that's how the whole story went.

But it's really not the way I think it should be done. I think the assessment should build on past ways in which the stock has been assessed and knowledge gained in the process should be pushed forward so it tells a story about how the stock has responded to management. One of the CIE reviewers, Paul A. Medley from the UK, a panel member in SEDAR 16, made a clear and concise statement concerning this subject.

In his SEDAR 16 Consultant Report he states, "It is important to review past management actions and give their effect on the stock. This forms part of the management cycle giving feedback on the effectiveness of the control and whether relevant management objectives are being met. These results were not included in either the king of Spanish stock assessment."

I think that is telling, and I think the history of the fishery should be incorporated in this. At least fishermen will have a better idea of the things that are affecting them and looking at long-term trends. The other thing is we've got this contrasting advice where your advice from the stock assessment panel is very, very high and your landings are relatively significantly lower, so how did we get to the point where we actually rebuilt the stock in the end; how do we get to the same levels of catch that we had in the eighties, that we have in the current timeframe?

Well, basically it was the beauty of Magnuson-Stevens Act when it was first put together. I think that they had envisioned a process that worked with stock assessments, the council, the advisory panels and the public input. In this stock it did work. In the nineties when we had the low levels of catches in the commercial sector, and basically what my data and the commercial data show, those high levels of recreational catch in 1992 are probably not real. It is probably a pretty flat pattern in that timeframe.

But the council management process worked. Fishermen came to the table, advisory panels, recreational fishermen, after the gear was banned came to the tables with restrictive trip limits, restrictive bag limits, and you went from a fishery that had no trip limits at all in the commercial sector in the area where we live to a 50-fish trip limit. That was significant decline in catch for that area. As you saw in the catch per trip, it was significantly higher in the early years.

So, we brought these things to the table and we were able to convince the council that they needed to be done, and NMFS, and we were able to rebuild the fishery with those restrictive trip and bag limits. The other thing that needs to be taken into consideration is the long-term productivity of the stock.

I have quoted the productivity issues, and I'm not going to read them, that were voiced in SEDAR 5 by the assessment analysts. All I will add to this is my sense of the productivity and where we're going with that. There are a number of factors which potentially increase Atlantic king mackerel productivity in the future.

The prohibition of all gill nets in the Atlantic King Mackerel Fishery in federal waters, combined with the gill net prohibition in the mixing zone off Southeast Florida in the winter, are significant factors affecting productivity. The way in which the runaround gill nets operated where essentially the bottom of the net was pulled together in the same way a purse seine operated made this gear very effective.

Gill netting of this magnitude was accompanied by a large loss of resources, which no longer occurs. The Florida gill net prohibition in 1995 also had an effect in increasing productivity due to the significant decline in catches of juvenile king mackerel which occurred in the Spanish mackerel fishery. The Florida gill net prohibition also limited shrimp trawling within one mile of the beach, reducing mortality on juvenile king mackerel; and not the least of which is shrimp

trawl bycatch which has substantially diminished with the decrease in shrimp trawl effort, which is approaching 50 percent over the last ten years.

And also restricted bag limits and trip limits have helped increase the productivity of the stock. Based on year class strength in the recent past the stock is not near equilibrium yet as we see from the strong year classes entering the fishery. It will be interesting to observe this stock in the near future as productivity may increase to the levels not observed in my lifetime.

So, there are a number of productivity issues which we see and we have observed over the timeframe that we have been involved in the fisheries that are coming to fruition during this time and will continue to have an impact on the stock in the future.

Another thing I will say about king mackerel, when you take the real significant gears out of the fishery that remove large numbers of migrating fish out of the population at any one time and you take the fishery and make it use the most inefficient gear at hook and line, basically the fishery takes care of itself, I'll put it that way.

In the early years of the Atlantic King Mackerel Fishery the numbers of fish we witnessed continued to come without any quaver – I mean, certainly, there are weather events, cold water events that affect catches, but the same general abundance trends were observed from the seventies through the early eighties; large numbers of fish arriving from that spawning stock where I am every year.

It was only after the introduction of that drift gill net gear – and I must mention in concert with our effort, also, it wasn't just drift gill nets but in my opinion if the fishery had remained just a hook-and-line fishery we would not have had any of those significant declines that we have witnessed, that that was a real problem in the fishery.

I am going to say one thing about recruitment and some of that which drove some the decisions that I made. In SEDAR 5 decline in recruitment is mentioned, and again in this assessment lack of recruitment is noted as part of the Atlantic stock. Well, basically, we couldn't have got to where we are without some significant recruitment occurring in the stock.

We couldn't have catch levels approaching the historical time series without significant recruitment occurring. That is a problem in the assessment. Maybe the SEAMAP fishery independent isn't the best way to estimate recruitment in the stock. That is certainly a possibility, but I don't quite know how to get there in the future.

I asked Shannon about this during the review workshop, and certainly one of the things that came out of that was that certainly in a VPA it is going to take you several years before you see that strong recruitment classes, so you're not going to see it initially in the assessment. Certainly by what we have seen in my data in the most recent years, that has not been included in the assessment, so that recruitment is still to be seen in the next assessment.

But, basically, the fishery has recovered to its historical levels of catch. We see abundance – the size classes are well represented through the fishery from the largest all the way to the smallest

fish. A significant increase in the smaller numbers of fish in the most recent years show very significant year classes again moving through the fishery, which should carry us through for the next six or eight seasons without any major problems. I think I'll leave it there.

I could give you some numbers but if you look at the early time series, your average is about 8.3 to 8.7 million pounds in the average historical time series that I felt was sustainable over the long term. Fishing over that 20-year period, it seems like that level of harvest was probably sustainable.

So if you set your TAC with that range currently, although we're not quite to that level, I think with the increases in sizes that we see – in the size classes we see now, I think we will probably be getting there in the near future. Somewhere around that vicinity was what I felt the TAC should be set at, but I have to couch this that it is only for Atlantic stock. It does not include any of the 50/50 mixing.

So the actual TAC, when you deliberate these, this will probably have to be set considerably higher because you're going to have to use the mixing zone catch to be able to set your TAC. The catches from the recreational and the commercial quotas from the mixing zone will have to be incorporated into those deliberations.

So your actual catch at the 50/50 scenario will be significantly higher than the 8.4 to 8.7 million pounds. I wasn't able to use the numbers in the assessment to get to there. I had a problem with that, and I'm going to talk to the analyst about it later, but that is my best guess of what the Atlantic can probably contribute at this time. So, thank you.

Dr. Belcher: Thank you, Ben. Any questions or comments for Ben relative to his presentation? Rusty, is it quick and to the point?

Mr. Hudson: As you mentioned earlier, my company, Directed Shark Fisheries, is a consulting company that had been hired by the East Coast Hook-and-Line King Mackerel and the North Carolina King Mackerel Fishermen to be able to try to present some of our concerns. We attended all three workshops and worked very closely with Ben in the entire process.

In the three-page position paper that we submitted via Gregg Waugh that didn't quite make it to the briefing book, basically I just want to quickly bring you to three points. The recruitment angle that Ben brings up is exactly what the executive summary of the review panel brought up, and they said that it would take two to three years for these fish to enter the fishery at which point an update should be conducted. Now, I have that underlined in my comment.

Second off, we're requesting a status quo position with regards to the total allowable catch; in particular the hard quota that is monitored for the commercial as opposed to the MRFFS with the recreational. I cannot sit here and debate that in view of the fact that the ACLs and ACTs are going to start affecting the way management decisions are made.

The final point I wish to make, on the evaluation of the SEDAR process, which is on my last page of my three-page comment, was that there was some time constraints. There needs to be

more flexibility. I've been attending these SEDAR workshops for the sharks, small coastal, large coastal, as well as the mackerel now, and sometimes the data isn't right where you want it when you get to the data workshop.

But because you have this three-month hard schedule between each of the workshops, if you look at the assessment workshop's final report for the king mackerel, you will see that there are a lot of entries that we ran out of time. They couldn't do the runs, all types of things. There was even talk of canceling the review workshop and doing another assessment workshop because the SS3 was breaking down.

And back to the mixing zone, back to the otoliths, I quoted the nine points that were recommended by the review panel, which included getting that work done on those otoliths that are sitting on the shelf, if I'm correct on that, Ben. That's pretty much the summation of our position paper. We would just like the SSC to take that into consideration when they make their recommendations to the Mackerel Committee. Thank you very much.

Dr. Belcher: Thank you for that, Rusty. We will go ahead and do a ten-minute break.

Dr. Belcher: We're going to pick back up with the discussion on the king mackerel assessment. Basically, the action items that we have relative to this item is to further discuss and determine the approval of the assessment and then also provide guidance to the council regarding research recommendations and ways to address critical needs, especially as outlined from the assessment review. I'm opening the floor to further discussion.

I know we had quite a bit of discussion relative to Shannon's presentation, and I would like to at least hear some of our collective insight as to what all this means relative to the assessment and what we're planning to tell the council relative to its use. Anyone care to start?

Dr. Barbieri: Well, in terms of guidance for the council regarding research recommendations and ways to address critical needs, I think some of those topics were very well documented in the review workshop report and the consensus report. We need, obviously, a stronger fishery-independent monitoring program or a way to better monitor this fishery from a fishery-independent perspective.

From the Gulf I think the issue of getting more input about the Mexican catches and the connectivities between the Gulf of Mexico stock and Mexican waters I think is the way to go. Both of those I'm basically just repeating what has already has been very well discussed by the review workshop panel.

Mr. Gregory: Do we want to recommend the whole group to go forward or are you looking for specific comments? The only thing I would add is there are some comments in the review workshop document itself that is not in the research recommendations, and some of that is more for future SEDAR assessment considerations. Do you want me to identify those?

I think one of the e-mails that came from John or Gregg said that, and I didn't go through and try to find all those that are not specifically in the research recommendations. Should we try to do that?

Dr. Belcher: I'm kind of trying to read in between the lines on it. It is my understanding it is just relative to research recommendations and how to address critical needs. The other things that are within the document probably would be better suited for when the next SEDAR comes up in terms of reference to make sure that as we review the terms of reference for the next document, that those in particular will be flagged and hopefully addressed within the next SEDAR.

If it is SEDAR-specific, I think that is probably the better way to go. It would probably behoove us, if there is something in particular, to go ahead and send an e-mail to John to make sure that for the SEDAR portion of it, that it goes into that cache for him, but I think this is specifically relative to the research needs for the council as far as funding and how that is going to be directed or suggestions for future funding and where that effort needs to be directed.

Mr. Gregory: Well, there is one thing that is in the document on Page 23 that I would like to discuss at least briefly given the NMFS people are here and the stock assessment people in this group, and that is the difficult this assessment had with determining the current F, and they ended up averaging the last three years age vectors and taking the apical F of that three-year average as the current F.

In the review workshop that struck me as, well, a roundabout way of getting at current F. Historically what we have done is taken the apical F of all the ages in a year and assign that F to that population for that year. It is biased upwards as an estimate of total F for that population. So I was trying to come up with a way of taking an average F over the ages of fully selected ages in a year.

There are some difficulties with that in assigning selectivity, but it seems clear that taking the apical F – and the problem this year was it would change from age to age and from year to year, so in one year it would be age two would have the apical F, the next year age three or age four, and so it seems like we need a more consistent way of estimating F for the population.

That is very important now given that we are focusing on addressing overfishing in an immediate way, and overfishing is directly related to the F estimates you have; and if you take the average over the ages of fully selected ages, you definitely get a smaller F than if you take the apical F of whatever age the estimate happened to be. I'd like to move that to the research recommendations if we could.

Dr. Restrepo: I want to explain something to expand on Doug's point, which I think may cause some misunderstanding. There can be a difference between the way things are calculated and things are expressed. For the review panel members it was very clear that we should continue calculating current F in some apical sense.

In an age-structured model you have age structure, and there will be a given age that is fished harder than other ages, and that is a fact, and that changes from year to year unless you have a

completely separable model. But in a VPA context that age at the highest selectivity, that is changed from year to year. The review panel didn't recommend that we change the way in which that is calculated.

They did recommend, however, that it be expressed in terms of an average over several ages, so they recommended not to report in the tables the apical F, the absolute value of the apical F because that would change from age to age, from year to year, but to instead express it as some average – I believe over ages two to nine or something like that – and that is what we did, but they didn't suggest that we change the way of calculating it. Thank you.

Mr. Gregory: It could be my misunderstanding. Let me read this paragraph that is on Page 355 of the PDF file, called "A-18, Draft SAR", and it is Page 23 of the review part of the report, but 355 in the whole report. It says, "The current selectivity pattern used for yield-per-recruit calculations was derived from a normalization of the current F factor.

"Current F was calculated from the geometric mean of the age-specific F values from the VPA. The review panel recommends that in the future referenced F values be calculated by averaging across ages rather than using apical F. Average F values are easier to understand." So I get a different interpretation of that than what Victor said, and that is why I wanted to raise it for the rest of the panel that are stock assessment people.

Dr. Restrepo: I don't think this is an accurate – this text that you have read is there in the report, and I don't believe that it is an accurate reflection of the discussions that took place during the review workshop because we had a very extensive discussion. I remember very clearly the discussion with Ken Patterson where he stated – and perhaps we could go back to the recordings of that meeting where he stated very clearly that he was not suggesting a change in the way the numbers are calculated but rather a change in the way they are expressed in the tables, because by averaging over time you would avoid essentially jumping from age to age.

Mr. Gregory: But conceptually the point is we're managing based on F, the fishing mortality rate, and we're trying to prevent overfishing. Does it make sense to take an F value – and each age has a different F value from age zero to age eleven-plus. Does it make sense to take the highest F value of that entire age range and assign that as the fishing mortality in the population that year? I know there are methodological difficulties in trying to do something different than that, but does that make sense to take the highest F value and assign that to the whole population for that year?

Dr. Restrepo: No, a single age-specific value of fishing mortality is not assigned to the whole population. There is a value for age zero, there is a different value for age one, a different value for age two, a different value for age three and so on and so forth. It's not a single-age value.

Mr. Gregory: But to that point, but when you're looking at F versus MFMT, the F that is used, the current F is the apical F. That's the concern.

Dr. Restrepo: No, it is an entire age-specific pattern, and there is an age-specific pattern of selectivity that is used to compute the MSY-related benchmarks or the proxies, you know, the F-

30 percent kind of proxy. That comes out of an age-specific pattern. Then current F is also exactly the same age-specific pattern of selectivity, and that apical F is a scaler of that selectivity pattern at age. The equations are explained in the assessment workshop document.

Dr. Williams: I think Victor just said it pretty well, but the point is as long as the MFMT is calculated in the same way, it doesn't matter what F you use. Whether you use apical F, you use age two-plus F, you use whatever, as long as it is the same calculation that you're using for the benchmarks, and in this case it is.

Dr. Cooper: I don't need to repeat what they both just said, but, yes, what they are doing makes sense to me.

Mr. Gregory: Then I must admit I didn't understand what was being done.

Dr. Cooper: If you think about it in sort of like forward-projecting models, Doug, think of it as tracking F for the fully recruited F and tracking that over time, and then the selectivity essentially scales that; so when we track the Fs, we're just tracking F-full. It doesn't mean we're applying F-full everywhere.

So essentially in a VPA model what we're doing is we're not holding selectivity to be constant over time, but you could be tracking F-full, allowing selectivity to change year after year. That's one of the advantages of VPAs; you don't have to assume it is constant. So essentially tracking apical F is just like tracking F-full but allowing selectivity to change year by year. It is analogous.

Mr. Gregory: I was ready to accept defeat. I see the problem with a lot of our species is we have dome-shaped selectivity so we've got older fish that have less fishing mortality than younger ages, and it just seemed like tracking that apical F or that full F is not really representative of the overall F from all the ages in that particular year.

I didn't know that you can calculate MFMT with a similar selectivity and do the F ratio that way. I thought the F ratio was simply two numbers. If the stock assessment people on this panel are comfortable the way it is done and think that is the right approach to tracking F over time for the whole population or all ages in the population that are fully selected and not counting the younger ages that are not fully selected, then I'm comfortable with it, too. Maybe it will dawn on me and I will figure it out later.

Dr. Restrepo: I assure you that dome-shaped selectivity pattern is used exactly in the calculation of F 30 percent. It is just scaled up or down for the whole age-specific selectivity pattern is used.

Dr. Belcher: Further comments on fishing mortality? Okay, further discussion from the group? What is the pleasure of the group as far as forming a motion relative to our acceptance of the stock assessment? Andy.

Dr. Cooper: As it appears to become my role I put forward motions and then people can shoot them down at their will, I put forward the motion that we accept the stock assessment

as the best available science and that the base run be considered the one used for management.

Dr. Barbieri: I'll second that.

Dr. Belcher: Further discussion and comment from the group? Seeing none, we will put it to a vote. John, do we need to show the motion up on the board or not? We have been doing that in the past.

Mr. Carmichael: I think normally we should. This is a fairly simple motion so as long as you read it clearly that it gets into the record, it will be okay. The chair should read it clearly once we have the motion and make sure we know who made it and seconded. Andi should type it in at least even if it is not on the screen and read it back to you so you know exactly what she has typed in the record of motions.

Dr. Belcher: Okay, the current motion reads as we move to accept the assessment as best available science and management be based on the base run. All those in favor, raise your hand; all those opposed. We have one abstaining so the motion passes.

So, again, recommendations, we have already gone over the research recommendations, so at this point we will move on to the Project FishSmart Report on King Mackerel, which is being presented by Mike Wilberg.

Mr. Carmichael: What is the ABC for king mackerel, then; do we know, just for my curiosity, what exactly that comes out at? No one knows. So, from the SSC, the motion you approved, what does that mean the ABC is for king mackerel?

Dr. Barbieri: I don't think that we have considered that issue yet, John. I think that the motion was really regarding our acceptance of the stock assessment as a whole, and I think that dealing with the ABC recommendations will be a separate discussion and a separate motion.

Mr. Carmichael: Very well, then, that is the clarification.

Dr. Belcher: A question to you, John, is when should that dialogue occur? That was not outlined for us. I'm not deferring that off to you, but it wasn't outlined under the roadmap, but is that something we should be doing at this meeting or is this something that could wait until a future meeting. What is the necessity for those numbers now?

Mr. Carmichael: My tendency is to believe that is part of the whole discussion of the assessment and making recommendations. Now, it is something, I suppose, that could come up with regard to a particular amendment when the council gets there, and I look to Gregg to see – I mean, king mackerel is not in Amendment 17, so it is potentially something that certainly would have to be addressed in time for the council's next mackerel amendment. I think that is something we probably should get now and dispense with it.

Mr. Waugh: Well, remember, we have the ability to adjust to new ABC values via our framework. One of the things that the committee is going to have to determine is what is our plan timeline for dealing with these changes to mackerel. Do we go forward under the framework or do we wait and pick this up in our Comprehensive ACL Amendment where we would be meeting the new requirement by the 2011 deadline.

My understanding of your motion, by accepting the stock assessment and the base run, that gives the council a range of ABC looking at that decision table, so I don't know how much more discussion you want to have here. We need your recommendations for OFL and ABCs to feed into our Comprehensive ACL amendment. We don't need those at this meeting. But my understanding of your motion, how I would present that to the Mackerel Committee is looking at that decision table, using the base run, that gives you an ABC range.

Dr. Belcher: Thanks for that, Gregg? Okay, so with that, Mike, we'll let you give your presentation.

Dr. Wilberg: Thank you very much, everybody, for allowing us to present to the SSC. What I'm going to talk about today is a decision analysis type project that we took a group of stakeholders through to try and see how they could develop recommendations for management for the King Mackerel Fishery.

So briefly I'm going to go through a background on our project, the process we have for the decision analysis model development, go through the description of the model and the recommendations and results that our panel came up with. Our project was funded by the Gordon and Betty Moore Foundation to try to improve the conservation of recreational fisheries in the United States.

What we ended up doing with this was developing a process where we took a group of stakeholders through a decision analysis so that they could both look at what the effects of their own actions in the fishery were on the resource so they could potentially alter those if they thought there were benefits, as well as to help inform them about how management might be changed that would meet their objectives.

The fishery we ended up choosing for this was the King Mackerel Fishery, obviously. The reasons that we chose this fishery were because it was recreationally and commercially important. Based on some previous discussions in the council, we believed that management changes were likely to be necessary coming up; and also in our discussions with people before we started, that our stakeholders and managers were welcoming of our input and seemed to be interested in what this sort of process would lead to.

The way we went through this decision analysis is we used a series of workshops where we built a simulation model during these workshops that we could use to evaluate different management options. During that process we identified shared vision and goals of the stakeholders, developed the model, explored alternatives and then used the final workshop to develop recommendations based off that.

The whole purpose of going through this was develop these recommendations that the angling community could adopt on their own voluntarily or that they could recommend as management options. The group of stakeholders, we had, I believe, 13 stakeholders that were with us through most of process.

They included recreational anglers, for-hire operators, Ben Hartig was involved as a commercial fisherman on the panel, environmental/NGO representatives. We had a fishery manager from Florida, Bill Sharp; and Randy Gregory as a biologist from North Carolina. We had a tackle shop owner involved and chairmen organizers and participants.

The goals that the stakeholders came up with were largely ones that you might expect in terms of promoting sustainability of the population, of the fishery itself, as well as of the ecosystem. One of things that they thought was most important was being able to maximize access to the fishery. In terms of this they wanted to be able to have access to the fishery round and in all areas.

They wanted to reduce the potential or wanted to not have to use spatial or seasonal closures in order to manage the fishery, and also they wanted reduce and simply regulations. So in the decision analysis what we used is a simulation model that would weigh the performance of different options that they came up with and relative to objectives and to see how well they achieved goal.

The way we parameterized our model that we developed is we drew largely on the base model from the stock assessment, as well as we used some information from the stakeholders directly that they hand, we used some external information that I'll go through in a bit. One interesting part of this is that the stakeholder groups themselves were integral in the model development.

By that I mean we needed to develop a model that was able to address all the performance measures they we were interested in, it was able to address the options that they wanted to consider, as well as it needed to be something that they thought was a plausible depiction of what might be happening or at least a depiction of best available science.

So as we went through this all of the parts of the model were agreed upon by consensus individually as we went through, and so all the different building blocks, all the different functions that went into this model were agreed upon by the group. We had long discussions about what information was available to base these on, what information should go in and how should it be represented.

The model structure that we used is we had a model that was fairly complex. It is an age, length, sex and spatially structured model. It operates on a seasonal time step. It includes growth, migration, stock and recruitment, fishing and natural mortality. We have males and females being modeled separately because as Shannon showed before they have different growth patterns.

We used ages one through nineteen-plus where the nineteen was a plus group. We had a wide range of lengths included in the model that pretty much encompassed a span of lengths of fish

that are seen in the fishery. We had the mixing zone and Atlantic non-mixing zone explicitly modeled with migration between them on this season time step.

The seasons were January through March, April through June, July through September and October through December. The model structure is a pretty familiar one for those who are familiar with age-structured models. For abundance in a given area at a given time for the age and sex we had just the numbers at that place the previous year times the mortality rate and then "P" is the migration rate between the different ones.

For the mortality we have the sum of natural and fishing mortality, and then the catch we just have the Baranov Catch Equation. Growth in the model, we used the Von Bertalanffy Growth Function from the stock assessment along with uncertainty about the parameter estimates of the growth function from the stock assessment.

For weight at age we have a power function with also a distribution – well, this model, mean length at age, we also had the distribution of length at age where we used the normal distribution with a constant coefficient of variation about mean length at age. For weight at length we also had the black line here that was the median weight at length – or I guess the mean weight at length for the normal distribution of weight at length about that.

For female maturity we used information from Finucane, et al, from the study in the eighties, and so this was from Northwest Florida. There is not a whole lot of information on maturity for the Atlantic side, especially of these smaller sizes, to base this curve on, so the model uses the fitted line here of this logistic function of maturity versus length.

Stock-recruitment was one of the places where we really made a different decision than what went on in the assessment model; and for that, as we saw before, there is not a lot of contrast in these data and there doesn't seem to any clear pattern in the stock-recruitment relationship. What we ended up relying on was doing a meta-analysis of different mackerel stocks that we could find, and so we ended up finding information on seven different mackerel stocks from other stock assessment reports as well as Ran Myers' Stock-Recruitment Database.

Based on that we estimated a steepness of about – I think it was 0.34 was the steepness parameter on average for mackerel stocks, and that is this solid line where we used a steepness of 0.34 and fit it through the median recruitment and mean spawning stock biomass. The dashed lines represent approximate curves that would be seen about 95 percent of the time, so we're stochastically drawing the parameters of the stock-recruitment relationship.

These are the different outcomes so this would be one with a higher steepness and this one would be one at the lower steepness. The interesting thing that this brings about that is different is if steepness is actually lower that means there is a potential to have substantially more recruitment in the stock if the stock rebuilds; whereas, if there is a higher steepness, that means that with increased spawning stock you're not going to get much of a return in terms of higher recruitment.

The model that we put together is actually more similar to the synthesis model than it is to the VPA stock assessment. We ended up taking the migration rates at age from the stock synthesis estimates that were available because the stock synthesis model actually estimated those parameters. These are the migration rates from that model.

The dashed line here is the fall migration so this is from north to south, and so this is the proportion of individuals that age that migrate from north to south. The solid line is the proportion of individuals that migrate from south to north in the spring. We used the same natural mortality rates at age as the stock assessment did, using this scaled Lorenzen function where the Hoenig natural mortality rate estimate on average is achieved by scaling this.

We modeled the fishery in three sectors. We had a commercial fishery; a general recreational fishery, which included private boats, charterboats and headboats; and then the tournament fishery separately. The reason we chose these is because these really represented the stakeholder groups that we had involved. In one way it is different than the assessment.

The assessment had – well, headboats are in this category as well – headboats separate from the rest of the recreational fishery. We had them included with the recreational fishery. In the model we implemented quotas. The way that we implemented these was we had fishing stop for the year when the quota was reached both the recreational and commercial.

We divided the overall quota up into the recreational and commercial sectors overall, using the current allocation. This is a bit extreme in the way we have implemented it because there currently aren't mechanisms to monitor the recreational fishery mid-season to be able to close it down, but it seems that management is trying to move towards that so that is the way we ended up actually implementing this.

One of the holes that we had when we tried to do this was that the data on the tournament fishery aren't terribly good. The way MRFSS works it actively avoids tournaments. Some of the information from tournaments does show up because fish that are sold commercially from the tournaments ends up being in the commercial portion, but a majority of the tournaments don't sell their catch and so they don't show up.

That left us trying to figure out what is the overall magnitude of the tournament fishery in this, and so what we did is we went through and asked several of our members who are active in the tournaments to provide some estimates on how many people fish in these tournaments, how many fish they brought in and what were the sizes of those fish that they brought in.

Based on that information we estimated that over the last two years the average annual catch for Florida was about 9,000 fish and then about 9,000 more for Georgia to North Carolina for a total of about 17,000 fish. I think this ended up being then of about similar magnitude as the headboat fishery in terms of its size – in terms of numbers of fish. In terms of total weight, though, it is substantially more because the tournaments are catching bigger fish than the headboats do.

The way we modeled fishing mortality is somewhat complicated because of the different kinds of regulations that people wanted to be able to see modeled in the model, so there are lots of

different steps to go through here. We start off with catch which is determined by selectivity, overall fishing mortality rate and population size. What is up here is for the recreational fishery. It also works the same for the commercial fishery except we don't really have some of these other steps involved in it.

Of the catch, about 15-1/2 percent of the recreational catch as estimated by MRFSS is discarded dead, so B-1 category; 84-1/2 percent are retained or are alive when they're caught. They could either be retained or thrown back, and so we have a retention function in the model that decides given that a fish is alive, is it thrown back alive or is it harvested?

When we went through and when we were tuning the model, what we did is we would play with what the retention rate was overall to try and get the proportion of B-2's in the catch to about match what the model was giving, and we found that about 26 percent overall are releases, and so about 74 percent of fish that were caught were harvested; 26 percent were released. Of those ones that were released, some of those lived, some of those died.

There is also not a lot of good information on what the release mortality is for these fish. We ended up using an expert judgment method to go through and polled the members of our workgroup to say what is the likely amount of release mortality that you think actually happens when you release a fish alive? We came up with an average of about 12-1/2 percent.

This estimate is a bit lower than the one study that we could find information on that estimated release mortality, and so there was one telemetry study that estimated a 20 percent release mortality, but that might be a slightly high estimate because they actually implanted internal telemetry tags, so we decided to go with this average estimate from our stakeholder group. The catch-and-release mortality and this mortality, the released dead were stochastic parameters of the simulation.

The release mortality we had a 20 percent coefficient of variation on and the released dead mortality we had a 10 percent coefficient of variation on. Those are relatively arbitrary numbers, but we wanted to include some amount of uncertainty in some of these. The selectivity functions – our selectivity function is at length, and so this is a completely separable model where the selectivity functions of lengths are constant over time.

They're taken as averages of the length-based selectivity functions from the Stock Synthesis 3 assessment. We have different selectivity functions for the recreational and commercial fishery, but they end up looking quite similar to one another. For the tournament fishery we kind of again had to use expert opinion on what would be a reasonable selectivity function for the tournament fishery because that fishery wasn't included in the assessment as a separate fishery, anyway.

We ended up using an asymptotic selectivity function that shifted somewhat more to the right than the other selectivity functions. We did this largely because there is at least a substantial amount of anecdotal evidence that tournament fishermen are pretty good at targeting larger fish, and so that they will be less likely to catch the smaller size fish.

For the retention probabilities, we modeled these with the size limits for the commercial and recreational fishery, and so the current size limit is 24 inches, and so we just have a knife-edge selectivity at 24 inches for both of those, and that would change based off changes in size limits that we would put in the model.

For the tournament fishery, a lot of the tournaments use a minimum size of about ten pounds for a fish, and so this is about, what, 34 inches is on average about a ten-pound fish we found. The folks who run the tournaments think that most people still won't keep a ten-pound fish in tournaments because they're not likely to win a tournament with that size fish, and so we had this increasing function up to about – I'm thinking this was 25 pounds, and so all fish greater than 25 pounds that are caught would be retained.

We also modeled bag limits and we did this by looking at catch per trip from MRFSS. And as Shannon had mentioned before, the bag limit changes that have been done in the past don't seem to have had a large effect on catch per trip. What we ended up doing was modeling catch per trip as a negative binomial distribution. This is shown here for our predicted one for 2007; where here it is data for 2008 per trips where there were two anglers in the boat, so the bag limit would have been six fish. This is for Georgia and north where the bag limit is three fish per angler.

Then what we would do is we would have this distribution in the model and we would truncate it at different points depending on what the bag limit was. If the bag limit was one fish per angler that we included, this distribution would be truncated at two and all the probability mass above here would be piled on to two. We would take the overall difference in catch between the distribution without truncation and the distribution with truncation and scale fishing mortality by that difference based on some work that Clay Porch had done back for his master's thesis on modeling bag limit effects.

The other thing about this is you might typically think that catch per trip would change with abundance, but we didn't find any evidence of that in the MRFSS data themselves, and so we had a function of catch per trip that was independent of abundance. For the starting abundance we used the estimated abundance from the base assessment model for the Atlantic Migratory Group; so the base numbers at age where we just split out 50/50 numbers at age into males and females.

For the fishing mortality rate, because we parameterized fishing mortality different in this model than is parameterized in the VPA, we couldn't just take the fishing mortality estimates directly from the VPA and plug them into this. So the way we determined what the starting fishing mortality rates were was to tune the model by changing fishing mortality rates until the catches we were getting in the first year of the model were approximately the same as the catches from the last year of the assessment.

For the pattern of fishing mortality into the future, this is one of the things we had considerable discussions in the workshop. What we ended up doing was a bit of a hand-fisted approach to try and get at the uncertainty in this, because this is really one of the things of how people will respond to changes in regulations or changes in abundance or changes in other fisheries is a tough thing to grapple with.

What we ended up doing is just saying that the commercial and tournament fisheries would be constant over time at their current levels, the fishing mortality rates would be constant over time with annual lognormal variability of 10 percent, or what they call fishing to variation of 10 percent.

For the recreational fishery, because this is really what we were trying to focus on with this decision analysis, we used three different patterns and weighted them equally in the simulations. We had one that increased at half a percent a year for the first 25 years and was level after that. We had one that was constant and one that decreased a half a percent per year for the first 25 years and then was constant at that with a random lognormal error of 10 percent, with a coefficient of variation of 10 percent that was applied to that.

Then, like I said, we just averaged across those, saying that each of those were equally likely. Based off of patterns that our stakeholders were also seeing this year, we ran a sensitivity analysis that just had these same patterns but with the starting fishing mortality rates substantially reduced.

The idea behind that was that over the summer fuel prices were so high, they estimated that recreational fishing effort was only about half of what it was in other years, and so they wanted to see what the effects of that would be as well, and so we ran a sensitivity analysis with that, but basically if recreational fishing effort goes down by 50 percent it doesn't seem like there is much to worry about in terms of regulations, so we didn't run with those very much.

The stakeholders came up with 22 performance measures to try and judge how the different options that we're going to look at would actually perform. In the end we ended up only using the top three. The first one was spawning stock biomass relative to the SSB at F 30 percent from the base model in the assessment. The second one was the fishing mortality rate relative to F 30 percent.

The thinking behind these two was that given the way management currently works, the stakeholders really wanted to avoid cases where they would be classified as overfished or overfishing. Then the third one that they primarily used was the proportion of the year that the fishery is closed, being that one of their overall goals was to maintain as much access to this fishery as possible.

Other ones that we looked at that ended up not being quite as important in the final recommendations were proportions of the old fish in the population; fish older than 15 years; aggregate to spawners; harvesting catch in numbers for each sector; the overall yield in pounds; the harvesting catch and preferred size categories so each different fishery had its own preferred size categories for the fish they would like to catch; the average size of fish in each sector or average size of fish harvested in each sector; and the number of dead fish due to release mortality.

The options that the stakeholders considered, these were the things that could be changed in the fishery to evaluate how well they performed relative to the objectives. The ones that were specifically for management, we had size limits, bag limits, season limits overall, and these

limits were determined by quotas when they were in effect, and we had different constant quota strategies.

We also had voluntary changes they could do such as what would happen if there was an increased catch-and-release ethics that was adopted by this fishery; also, if there were different handling techniques or education movements that could be made to try and reduce the amount of catch-and-release mortality of the fish.

When we modeled these, we modeled the size and bag limits assuming 100 percent compliance, and so that is an important thing to consider the results along the way. We end up with these kinds of graphs here. These are all box plots of the results of the options that our panel wanted to recommend at the end.

We passed out earlier at least among the SSC members a report that has a bit more description of all the results of all the options – or not all the results but all of the options that we had looked at, but here we're just showing the ones that come from the recommendations. What we have are box plots of spawning stock biomass or average spawning stock biomass over the spawning stock biomass at F 30 percent, average fishing mortality over fishing mortality – or F 30 percent and a proportion of years where the quota was reached before the end of the season for the recreational fishery.

The dark line in the boxes is the median. The box is the inter-quartile range. These vast lines here are the extremes of the range, and so they're the minimum and the maximum, so you're seeing here the results of the full sets of simulations. We did 300 simulations for each one and these are summarized over the first 15 years of the simulations. In the report we did summaries of five years, fifteen years and fifty years, and in the end our group decided that they thought a 15-year time horizon was a reasonable one to look at to try and balance short-term and long-term consequences for these different actions.

So the four different options that we have in the x-axis here are with – the three new options are with an 8 million pound overall quota, and then we have one here with a two-fish recreational bag limit in all areas and a 28-inch minimum size limit; just a two-fish bag limit on its own with this 24-inch minimum size limit; and the status quo bag limits with a 32-inch minimum size limit; and then the status quo is a 10 million pound overall quota with a 24-inch minimum size limit; three-fish bag limit in the north and a two-fish bag limit in Florida.

For each of these different options, the average over the first 15 years, they maintained spawning stock biomass above the overfishing threshold if the spawning stock biomass at F 30 percent is used as the overfishing threshold more than 50 percent of the time, so the median of the runs is above this; whereas, the status quo did not do that in simulations.

The status quo predicts – well, the model predicts that if the status quo is pursued there will be a long-term decrease in stock size over time pretty much the same as the assessment model results show. For the fishing mortality rates these three options all have more than – well, in our runs they had more than a 75 percent chance of staying below the fishing mortality rate threshold; whereas, the status quo did not.

For the proportion in years where the quota was reached all of these had a pretty low proportion of years where the quota was reached overall, and so these were the big three that they wanted to look at. Their recommendations overall was that they would like the council to consider that two-fish bag limit be potentially implemented.

All of these recommendations were made as individuals of our process. They shouldn't be construed as representing the institutional views of groups that they might belong to; only the individual views having gone through this process, and they give these without any priority order but as potential suggestions of things that they think would be helpful.

So, two-fish bag limit; two-fish bag limit with a 28-inch minimum size limit; and a 32-inch minimum size limit. And the 8 million pound quota, where that came from is that I believe that was the estimate of yield under 40 percent. With that, I would just like to thank all the people who went through this process with us over the last nine months or so, especially our stakeholder workgroup.

They were excellent and put a lot of effort into this and were amazingly engaged throughout it. We had a steering committee for the project that helped us with this. We had facilitation through the Florida Conflict Resolution Consortium. Mike Nussman from the American Sportfishing Association and Dave Loewensteiner from the Chesapeake Biological Lab helped in different respects.

We got data from the assessment group, for NOAA and the MRFSS Program. Also, we got data from the Southern Kingfish Association and from some of our other workgroup members and then the funding sources here. Thank you.

Dr. Belcher: Any questions or discussion relative to this? Andy.

Dr. Cooper: Well, the main question is they hit their quota, but they seemed to overfish about maybe 20 percent of the time; and so if they caught the quota they would actually overfish significantly more than that, and so therefore the recommendation of an 8 million pound quota will not achieve – it will have a very different effect than actually the results – if they actually catch the quota is far more risk prone than what your results show for your simulation. They never actually catch that, right?

Dr. Wilberg: Yes, and their goal was to avoid catching the quota because they didn't want to have that season potentially shortened. This is where one of the things that come in terms of differences between the results of our simulation model we put together and the assessment results and per recruit reference points that were developed.

Because of the pretty conservative parameters that we chose for the stock-recruitment function, if those parameters were true, then MSY and FMSY would be lower than is currently estimated under the per recruit estimates that are presented as potential benchmarks by the current assessment, and so that is where this discrepancy comes in.

Dr. Barbieri: Thank you, Mike, and I think that was going to my question. You mentioned a steepness of 0.34. I mean, that is quite different than the steepness value that they used for the assessment; and when you look at the stock-recruitment relationship, I have to say that I think that their estimate is more realistic and in line with the episodic recruitment that you see with king mackerel over long periods of time and perhaps a little more independence between spawning stock biomass and in the magnitude of recruitment events.

So, I wonder if you shouldn't consider different scenarios of steepness. You're right, the productivity in the long term, you're going to achieve a recruitment level that is much higher, but that is way into spawning stock biomass levels that are very, very high, and the productivity of the stock at these lower levels is much, much lower because that curve goes sharp in the very beginning.

Dr. Wilberg: Yes, absolutely, I agree entirely. Andi, could we please go back to the stock recruitment curve? One of the things that we have here is we know it is hard to estimate the stock-recruitment function when you have a pretty narrow range of spawning stock biomass, and in this stock there is not a wide range of spawning stock biomass that has been estimated over the last 20 some odd years from the assessment.

The way we build this is by going forward – we tried to also draw in formation from other pelagic species that might be similar but were unable to come up with stock-recruitment information for those to be able to include more stocks, but it seems like for at least the smaller mackerels and all the mackerels that were included in this meta-analysis are smaller than the king mackerel; that there does seem to be evidence of a substantially lower steepness for them.

That being said, what these dashed lines represent is kind of the – what they represent is the 95 percent intervals on the steepness values that are being used in our simulations, and so we have uncertainty in the steepness values that is drawn from the distribution of steepness from the meta-analysis that we did. One of the things that we didn't do because of time constraints is a full Basian Analysis of the stock-recruitment function using the meta-analysis or prior.

I would have preferred to have done that, but we just didn't end up having the time to do it because that might then pull this part up slightly more. But, I agree with you entirely that this is a very conservative picture for what the stock-recruitment might look like for the species.

Dr. Jiao: I think during the talk I missed something. First, let me ask some questions for clarification. The simulation model, all the parameters are actually based on the information from the stock assessment committee or is it based on your own stock assessment model?

Dr. Wilberg: No, we did not run our own stock assessment. We didn't want to develop any sort of competing stock assessment in this. What we ended up doing is we combined estimates from the VPA assessment, from the stock synthesis assessment that never went fully forward, and in both those cases, depending on which parameters that we wanted, and so things like the abundance at age in the first year of the simulation, those came from the VPA assessment, and we used those.

For the length-based selectivity and the migration rates, those came from the stock synthesis assessment. For the stock-recruitment function we did our own meta-analysis for that. For the retention rates we assumed that there would be compliance with the regulations for the recreational and commercial fisheries.

In that we had other alternative – or the other retention function we decided on by expert judgment for the way the tournament fisheries operated, and so this is really kind of a hybrid Frankenstein of the different sources of information that we could try to pull together to bear on the different aspects of things. But to the extent possible we tried to make choices that were consistent with the stock assessment.

Dr. Jiao: Well, based on Shannon's presentation, the biological reference point for MSY is actually based on the proxy of per recruitment analysis. In your analysis is it based on Shepherd 1982 as a combination of stock-recruitment curve and yield per recruit?

Dr. Wilberg: No.

Dr. Jiao: No. Is it also based on 30 percent of egg per recruit?

Dr. Wilberg: What we did in this, we have – there are two different components to this. For the performance measures that we did, we compared the spawning stock biomass in the model to the spawning stock biomass at F 30 percent from the assessment, and so there is that component where we are comparing notes to numbers.

The other part is that because this is a stochastic simulation model that has all the aspects of stock-recruitments and the age-structured components to maturity, it generates its own estimate of what MSY is based on those sorts of things. We never went through and did the deterministic calculations of what our assumptions in this would result in for an estimate of MSY.

Dr. Jiao: For the figure that you showed, for example, in the simulation for five years, fifteen years and fifty years, do you think why you observed those patterns because after five years basically the percent of fishing mortality that is above your reference point and also the SSB that is below your reference point is much lower than the fifteen years and the fifty years later; do you think why?

Dr. Wilberg: I'm trying to remember; I don't have a copy of my report, actually. For the various things that we looked at – and I'm having trouble jogging my memory because I've just looked through so many of these results for the specifics. Because of the way the stock-recruitment model or the steepness that we used in the stock-recruitment model was put in, it predicts substantially lower productivity, and so what you see in this case under most of the fishing mortality scenarios that we put in here is a steady decline over the course of fifty years in this particular simulation model given the way it is parameterized.

That's why the results that you're seeing kind of show the somewhat decline over time in spawning stock biomass and the fishing mortality is somewhat different than that, but the fishing

mortality rates are constrained by the way we have parameterized the fishing mortality rate and the way it was implemented as well.

The years where the quota was reached is a bit different because that is an interaction of two different things. For years where the quota is reached, there have to be enough fish out there to be caught because for most of the fisheries we're essentially modeling it as a constant fishing mortality rate.

If abundance goes down fewer fish are going to be caught and it is going to be less likely that the quota is going to be reached. Because of that you see a low probability of reaching the quota for the fifty-year simulations because of that decline over time that the model is predicting in abundance.

Dr. Jiao: These results also sort of indicate that the usual situation of your simulation actually is the situation that the population is high and we are estimating the population?

Dr. Wilberg: No.

Dr. Jiao: I'm sorry, the harvest, the usual status.

Dr. Wilberg: I'm not quite sure. It is not suggesting that fishing mortality – right now what this model in particular is suggesting is that fishing mortality is too high. I would say the fishing mortality rates that are being projected in this model under the status quo conditions lead to a long-term average decline.

Dr. Jiao: Well, the five-year simulation thinks the population will be healthy in five years but not after fifty years. That's why I think the usual status means the population size is high, so it can't bear the harvest, but you may think of this question. I'm very interested in your management goals. Can you show me that slide again; the goals for management? Are those goals actually goals from all of the stakeholders?

Dr. Wilberg: Yes, these are actually a subset of the goals that they had. They had more than these but everything that I have showed you are from consensus in the panel. We defined consensus as 75 percent agreement, whether it was the goals or whether it was the performance measures or whether it was the recommendations, although in all cases I think we got – well, in almost all of the cases we had a hundred percent agreement on things, and these goals were one of the things we had I believe a hundred percent agreement on.

Dr. Cooper: Just to make sure I heard you correctly, your estimate of SSB at F 30 percent, you took that number from the assessment, and your estimate of F 30 percent was from the assessment?

Dr. Wilberg: Yes.

Dr. Cooper: Okay, the problem is those F 30s and that SSB is a function of selectivity, right?

Dr. Wilberg: Yes.

Dr. Cooper: But you have a different selectivity function here than in the assessment?

Dr. Wilberg: Somewhat.

Dr. Cooper: Somewhat?

Dr. Wilberg: Yes.

Dr. Cooper: Okay, in order for your plot to say whether or not they're overfishing or whether or not they're sustainable, you have to compare apples and apples. You would have to be very clear in your definition of "somewhat" because your model fishing at F-30 will not result in an SSB at F-30. You will get a different answer.

Dr. Wilberg: That's true.

Dr. Cooper: And so right now we don't know if you're underestimating or overestimating the goals relative to the numbers in the assessment, so I would be leery about making – I like the approach but matching it to reality and as a formal decision-making tool there is going to have to be some work to make sure that the targets and thresholds are actually what you're using and that they're behaving the same way as in the management and assessment model as in your simulation model.

Dr. Wilberg: I agree with that. You're correct that because of the way we're modeling fishing mortality in this, given that it is a length-based approach really for it, is different in that you will get a different F or basically SSB per recruit at F 30 percent than you will from the other one. I haven't actually gone through the calculations to see based off of our – I haven't plugged the age-based selectivities that we get out of this into a per-recruit analysis to see how different they come out.

The idea behind this was that the fishing mortality – the benchmarks that are going to be used in managing the fishery are the ones from the assessment. Because of that, those are the ones that we included rather than developing our separate ones that are consistent with the simulation model. It becomes difficult especially in terms of once we start changing the fishing patterns, as soon as we start changing things like retention in the fishery because of the size limit, you're going to change what F 30 percent is and what SSB at F 30 percent is as well.

While I agree with you that we're not necessarily comparing exactly the same things in these, it becomes a tricky concept to try and figure out exactly how you would do some of those consistent across all the different options that we wanted to consider. It is not quite as easy as just going through and plugging the same selectivity functions.

Dr. Belcher: Any further comments or discussion on this item? Okay, seeing none, we're 30 minutes behind, but given our assignments at five o'clock this evening, as long as people who

are presenting don't have an issue with that, we'll just come back from lunch and be off by about half an hour. We will do our best to make it up at that point. John.

Mr. Carmichael: Gregg said we could either skip or hold off until when the time becomes more free for the FEP Report and the Comprehensive Ecosystem Amendment Report.

Mr. Waugh: Yes, we can do that when and if you all have time. What we're doing is those are going out for a second round of public hearings, so they're not critical. I think it would be better to stay on schedule with our other items. I do have one more question on mackerel that doesn't need to be answered now, but I'd just like to surface it to get some guidance. I can do after lunch or now, however you please.

Dr. Belcher: Now is fine.

Mr. Waugh: Okay, and Shannon and Victor may be able to provide some guidance on this or in the SSC. In terms of how the council would use that decision table, something I neglected to raise earlier, where it starts in '08 and '09, we can't affect '08 and '09 catches. The earliest we can change would be 2009-2010; so what do we do in that table; do we just use the values for '09 on?

Dr. Restrepo: I don't think that we will be in a good position to carry out new projections at this time because we have to make some assumption about the initial catch in the first year.

Dr. Williams: Just for clarification, Victor or Shannon, you guys used Fcurrent in that projection analysis?

Dr. Cass-Calay: Yes, in the first year of the projection we went ahead and projected that level of fishing mortality that I described, so that's the way it was done.

Dr. Belcher: Any further questions or comments? Okay, we will go ahead and break for lunch.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Cape Fear B Room of the Hilton Wilmington Riverside Hotel, Wilmington, North Carolina, Monday afternoon, December 1, 2008, and was called to order at 1:30 o'clock p.m. by Chairman Carolyn Belcher.

Dr. Belcher: We're going to start this afternoon's session with discussion on the Red Snapper Addendum, and we're going to be given a presentation by Kyle Shertzer from the Beaufort Lab.

Dr. Shertzer: Well, if you have a very long memory you might recall that red snapper was reviewed at the last SSC meeting in June. Since then, there has been a bit of work done that needs to be reviewed by the SSC. In particular there is an addendum to the assessment and also some projection alternatives that are on the schedule.

It says two different items, but I am going to combine them into a single presentation. John Carmichael was instrumental in the projection part of this so he may jump in at any time. Okay,

so just a quick review of SEDAR 15, the original assessment. It was a statistical catch-age model that was done in the AD Model Builder with data starting in 1945 and ending in 2006 with sector-specific landings and discards and age and length compositions.

Then there were three indices of abundance that were all fishery-dependent indices of abundance. There was a Lorenzen age-dependent natural mortality that was applied that was scaled to the Hoenig estimate of the constant natural mortality of 0.8 and then a Beverton-Holt Spawner Recruit Model was used with the first order of auto-correlation estimated.

The estimates of stock status from that model were that the terminal F over FMSY was at 7.5, so overfishing; and that the terminal SSB over the MSST was at .04, so very much overfished. Across a large number of sensitivity runs from the assessment workshop and from the review workshop, there was no variation in those qualitative results.

The Red Snapper Addendum occurred for a couple of reasons, the first of which was there was an error recognized in the early recreational landings that were applied in the SEDAR 15 assessment. The error was that the values from the saltwater angling reports that were applied for recreational landings had been transposed in two of the years.

Because of interpolation that was done in other years, there was only three years of data, 1960, 1965 and 1970, with other years filled in by interpolation, so this error affected the entire time stream of the early recreational landings. This was corrected in the addendum. The second reason was to compute new estimates of biomass benchmarks and projections.

Now in the SEDAR 15 review, originally MSY-based benchmarks were estimated. The review panel thought that in the estimated spawner-recruit curve that the estimate of steepness was unrealistically high, and they also had some issues with the estimate of virgin recruitment. They recommended applying the F 40 proxy for FMSY.

For consistency with that recommendation, the council later requested that new estimates of the biomass benchmarks be computed that would correspond to the F 40 proxy rather than the MSY benchmarks and to recompute the projections that would be dependent on those benchmarks. To do this, the approach that was taken in the addendum was to apply the spawner-recruit curve with a steepness that was fixed at 0.68, which is the value that is implied by F 40 percent being a proxy for FMSY, and I will explain that a little bit more clearly later.

But in the actual assessment the steepness value was still estimated and it was still approaching its upper bound or hitting its upper bound at 0.95, so the steepness was fixed just in computing benchmarks and in the projections so that the projections would be consistent with the benchmarks. By consistent I mean that if you fish at FMSY you get back to your MSY levels and biomass.

Okay, so just a little bit more on this error in the landings; this just shows the effect of the correction and the time series. The difference is in these two points in 1965 and 1970, but you can see that by switching those two points, it affects the whole time series. These are the results when you run the model with the corrected landings.

The top panel is recruitment over time, and you can see that it does have affect, especially in the earlier years with the corrected landings, but that the time series converge a little after 1980; and that there is an effect on the estimated fishing mortality rate, which is the middle panel. In the terminal years they are very close; and in both cases, in the bottom panel, the estimates of spawning biomass decline and are almost indistinguishable at the end. It is just a matter of when the decline.

So if you were to take that result from the assessment and then compute the steepness that would correspond to different levels of percent SPR, then you can – well, there is a one-to-one relationship; and so if F 40 is, indeed, a good proxy or equal to FMSY, then you can compute what the steepness value would be.

This plot is just showing how we arrived at the steepness of 0.68 that was then used for computing benchmarks and projections. This plot is the estimated time series of relative F, so F over F 40, and it shows overfishing occurring since the late 1960s and staying very high since the 1980s. These are time series of relative biomass.

The top one is total biomass over B 40, and the bottom one is spawning biomass over the corresponding spawning biomass B 40, so they're both showing the same trend of decline. This just shows the comparison of the estimates of stock status, so in the original assessment F over FMSY in the terminal year was 7.5. In this addendum it was 7.7 with using F 40 here.

And then the spawning biomass over MSST in the original assessment was 0.04 and in the addendum it is 0.03, so transposing those earlier recreational landings didn't have a large effect in the estimates of stock status. Then there is an update to the projections. The updates are using the parameters that were estimated from the run with the revised or corrected recreational landings.

In this steepness was fixed at 0.68, and this was for consistency with the recommendation of F 40 percent. In this sense these projections are internally consistent so that when you fish at FMSY you get back MSY from a stock size of SSB MSY. But, what was noticed by John Carmichael is that this produces this funny result between the terminal year of the assessment and the first year of the projection in that when you switch from a high steepness to a low steepness, then the estimate of projected recruitment has this big drop, which I will show you in a moment.

Another difference here is that we based the rebuilding timeframe on a 50 percent probability of stock recovery. In the SEDAR 15 benchmark projection it was based on an expected value projection so a deterministic projection of spawning biomass reaching SSB MSY. Here it is based on a probability of Monte Carlo runs.

In these projections the rebuilding timeframe extends from 34 years to 49 years, and mostly this is the effect of the lower steepness value that was used. The projection scenarios that were considered were fishing at F equals zero to compute the rebuilding timeframe and then F 40 percent, the proxy for FMSY; 65, 75 and 85 percent of that value; and then there were several

discard-only projections that were also considered in which all fish caught were thrown back and had a survival rate that was the same as what was used in the assessment.

But first I wanted to show this projected recruitment that has this initial drop, so the first year the projected recruitment is the outcome of the terminal year of the assessment, so you can see that in this first year the recruitment is quite a bit higher than what you get from the next year in the projection where the steepness of 0.68 has an effect.

This led to exploring some more ideas on how to approach this. Part of the briefing book I think contained John Carmichael's issue paper, which is called "Estimation of Red Snapper Recruitment". In that he suggested four alternatives to this problem, and the first one was to retain projections as estimated in the addendum, so what I just showed is one possible approach that could be taken.

A second approach would be to retain the model estimates of steepness for both periods, and that was the approach taken in the SEDAR 15 benchmark assessment. A third approach would be to apply the projection period steepness to the assessment period, and a fourth approach would be a hybrid approach in which you compute benchmarks and rebuilding timeframe using the lower steepness value, but then use short-term projections based on the recent average recruitment.

So, Alternatives 1 and two were already done and Alternatives 3 and 4 were done in preparation for this meeting, and those are in another report that should have been part of the briefing book. That one is called "Red Snapper Estimation of Biomass Benchmarks and Projections". I'll just describe Alternatives 3 and 4 a little bit more since they have not been seen yet.

In Alternative 3, in this one you apply the projection steepness to the assessment. So, just going back to Alternative 1, which was the addendum, in that one the assessment still estimated steepness and it was estimated at its upper bound of 0.95, but the benchmarks and projections had a steepness of 0.68.

In Alternative 3 it would apply the benchmark projection steepness to the assessment, but in this case it requires an iterative approach to solve for steepness; so once you fix steepness and then you run the assessment you might get a slightly different estimate of selectivity curves, so then you have to go back and recompute F 40 and the implied steepness from that. It only took a couple of iterations. In this case the steepness was 0.67 instead of 0.68 and then it settled at 0.67 and converged.

So, other than that of fixing steepness at 0.67, Alternative 3 was applied with no other changes from the addendum, so it does have the corrected recreational landings. This shows some results from that model run with fixing steepness at 0.67 compared to the addendum run. On this top panel is the estimated recruitment time series, so the bottom line here or the one with the solid squares is when steepness is fixed at 0.67.

One thing you can see is that in this early period recruitment residuals are not estimated. They're fixed to the spawner-recruit curve because there is no information to estimate recruitment residuals; but as soon as they are allowed to free up, then they drop down to a lower value, so

you get a big jump rather than at – going between the assessment to the projection you get a big drop earlier in the time series.

Another thing to notice is that at the end of the time series the estimated recruitment is quite a bit lower. Again, there is not information to estimate recruitment residuals at the end of the series so these are constrained to follow the spawner-recruit curve closely; and because biomass was very low at the end of the time series, then recruitment is predicted to be low at the end of the time series.

As I'll show in a moment it has an effect on the estimate of full F, so in this next middle plot you can see that the F at the end of the time series, when steepness is 0.67, increases very quickly. The reason for that is it is tied to these recruitment residuals. At the end of this time series the recruitment is low. There are very few younger fish which composes most of the discards, and so what you're seeing here is an effect of the discard F increasing dramatically to match the level of discards. The time series of spawning biomass is very similar.

So, just a little bit more on the recruitment, this top left panel is the one we just saw for the time series of recruitment with the drop here. The panel below that just shows the recruitment residuals, and you can see the auto-correlation here, it is low and then increasing. The spawner-recruit curve on the right, one thing you can see is that there is a large difference between the estimated Beverton-Holt curves and the bias-corrected curve.

The reason for this is because of much larger residuals in recruitment. So you can see that the recruitment follows the spawner-recruit curve, and this is a constraint in the models when there is no information to estimate that. As the time series moves along, it is moving along to the left here, so starting off high, and biomass is decreasing; and then as soon as recruitment residuals are freed up, then there is a big drop here, so this drop corresponds to this drop in the time series in this left panel.

So just a little bit more on how the low terminal recruitment affects the estimates of F; this plot shows the distribution of the fishing mortality rate across the different fisheries and the discard F, so the thing to notice here is that at the end of the time series the discard Fs are much higher than they were in the earlier part of the time series. Again, that is because of these low recruitments with the smaller steepness at the end of the time series.

So then this puts a higher emphasis on discards when we're computing the F-weighted average selectivity, which then feeds into how we're estimating benchmarks and also used in projections. The panel shows the F relative to F 40, so overfishing throughout the end of the time series here. Then these two panels show the biomass and the spawning biomass relative to their benchmarks; again, the same pattern between the two.

This is a projected recruitment from one of the scenarios, and I just wanted to show this to demonstrate that you do get recruitment doesn't have any type of big jump between the end of the assessment and the beginning of the projections, which was part of the reason for taking this approach, but you do get a lot higher variation in projected recruitment.

That was Alternative 3 and this next part is Alternative 4. In this case the assessment was not rerun. The estimates are coming from the addendum, and that includes the benchmarks and the rebuilding timeframe. But, the shorter-term projections, the ten-year projections were run. In this case the projection was fixed at the mean recruitment from the last ten years of the assessment.

The short-term projections are consistent with at least one of the recommendations from the review panel, which said, "The panel discussed the value of projections made beyond five to ten years. Clearly, the uncertainty increases rapidly with time as the currently measured stock is replaced by model values into the future.

"Realistically, the projections beyond the range of the predominant age groups in the stock are highly uncertain. In this assessment the best that can be concluded is that rebuilding time will be very long." So these short-term projections are intended to acknowledge this statement. This is a projected recruitment time series from Alternative 4 just to show that you do get – by definition recruitment is similar.

I think the challenge here is which to choose and ideally it would be nice to choose something that is internally consistent in terms of benchmarks and projections and recruitment and also consistent with this statement from the review panel, which is part of the reason that I think some of the confusion has arose, which says, "One of the principal difficulties with the SCA Model estimate of the stock-recruitment parameters is that the steepness estimate appears unrealistically high," and this was because the steepness estimate was reaching its upper bound of 0.95.

"In addition, there are no data in the assessment to adequately define the asymptote of the Beverton-Holt function and hence estimates of MSY indicators cannot be considered reliable. It may be preferable, as indicated above, to use the ratio indicators to evaluate stock status or use SPR proxies. The panel suggested that F 40 percent and SSB 40 percent proxies may be used as limit indicators."

Okay, so part of what they are saying here seems to suggest that the spawner-recruit curve cannot be estimated, but it is not clear how you would get at SSB 40 proxies, the biomass benchmarks without a spawner-recruit curve. There is no problem getting the F benchmarks without a spawner-recruit curve; it is the biomass benchmarks that are difficult.

I am not advocating any of these approaches. I think it's something the SSC needs to decide, but these are some pros and cons that I have come up with off the top of my head, and surely this list isn't complete, but just some ideas. Alternative 1, which is in the addendum, the pros of this approach are that it is consistent – the benchmarks and the projections are internally consistent. You fish at MSY you get back MSY from a stock of SSB MSY. It has little modification of the accepted base run.

Of course, a con is this drop in recruitment, which was the whole reason for examining these different alternatives. The SEDAR 15 approach, which the estimate of steepness went to its upper bound of 0.95, and the projections used that value, so you still have consistent benchmarks

and projections – you still have a consistent assessment and projected recruitment, and there is little modification of the accepted base run.

If the SSC decides on this approach one thing that would need to be rerun is running the model with the corrected saltwater angling report values. But, it seems that the review panel did not really like this approach because of the unrealistically high values of steepness.

In Alternative 3, which used the same steepness in the assessment and the projections, it has the pros of being consistent with the benchmarks and the projections and you also get consistent assessment and projected recruitment. The con that I think appears here is that there is increased modification of the previously reviewed base run.

Then Alternative 4, the hybrid approach, in this case it is consistent with the assessment and short-term projected recruitment and the short-term projections are likely more reliable than the long-term projections. You do get inconsistent benchmarks and projections. Also, the short-term projected recruitment, they're taking a mean but these means are still conditional on the estimated recruitment that came from a spawner-recruit curve with a steepness of 0.95, which appears to have been rejected by the review panel.

I'll just add a fifth possibility, and surely there are others, but one interpretation of the reviewers' comments is that maybe the spawner-recruit relationship cannot be estimated at all; and in that case, then, no biomass benchmarks would be estimated to gauge the overfished status. I'll just point out that the status of overfished is one conclusion the review panel did find to be robust based on 50 or so sensitivity runs.

But if you can't estimate the biomass benchmarks, then you can't gauge the overfished status and also cannot estimate a rebuilding timeframe, but you could still use the F 40 percent to gauge the overfishing status, and the projections that we have in hand could still be used to guide management. Maybe some people will have other approaches or other ideas, but these are the approaches that we have looked at so far, and we put them forward for the SSC to consider.

Dr. Belcher: Thanks, Kyle. I'll open the floor for discussion, comments or questions. John.

Mr. Carmichael: First I definitely want to thank Kyle for the same time working on the addendum another SEDAR assessment and getting this done in response to that paper. I appreciate his willingness to fold this right into one presentation so we have a good flow here to this. I think he laid out the concerns pretty well and has addressed the questions and carried it to a certain point. I definitely appreciate him going on to Option 5.

When I read these four alternatives, I kind of think, yes, these all kind of have a tragic flaw that sort of points you in that direction of can you address that stock-recruitment relationship and can you estimate it and can we get anything informative out of that? There have a lot heads beating against the wall trying to get through this, and maybe that is where you end up, but it is great to have this addendum.

We have some new numbers on red snapper. I think we have certainly an issue that raised my attention with that change in recruitment addressed. Through talking with these guys and seeing this all the way through, there is no simple answer. High steepness just reflects a lot of uncertainty in what is going on with that population and what this stock's dynamics are doing.

These fish are just proving to be very resilient despite their long life span and the expectation that they should have a long time of reproductive behavior, and, shoot, the suckers are spawning at age one, and persisting despite this greatly truncated age structure is probably torqueing around that steepness, and the 0.95 kind of tells you, I guess basically by definition, you don't know much about that stock-recruitment relationship. But you guys have done a great job here and I really appreciate that. I hope the SSC has enough information to make some recommendations and move us ahead on red snapper.

Dr. Barbieri: Kyle, it is not really a question, but if we explore your last question there, other alternatives that we could look at, right, I think one that we should consider is the validity of the suggestion by the review panel that we use the 40 percent SPR as a proxy for F in this light. I think that brings two points that I could help us.

One is the council has pre-established FMSY proxies that have already been defined by the Comprehensive SMA Amendment; so for the Snapper Grouper Complex for non-hermaphroditic species they adopted F 30 percent SPR as a proxy for FMSY. I think the other benefit of us considering that possibility is that if we find a corresponding steepness that would go with an F 30 percent SPR, I think we find steepness ranges that will be more within the range that we would expect for red snapper than either 0.95 and 0.68.

I looked at some of the steepness values that we have used for yellowtail snapper, for mutton snapper, for red snapper in the Gulf, and they fluctuate between 0.75, 0.8, 0.85. So I will be curious to see what value we would get when you look at that relationship between steepness and F at SPR levels. You know, at 30 percent, yes, that would put us close to 0.9, which we can all discuss here about how realistic that is relative to the biology of red snapper.

I think it is sensible. I don't think it is unrealistic when you think about potential compensatory mechanisms I think within red snapper and considering the low level of spawning stock biomass and how this stock has been persisting at a sustainably overfished status since the late seventies and still has episodic recruitment pulses that to me fall very much within the periodic strategists.

I went back and looked at that paper by Kenny Rose and Cowan, et al, that considers all the steepness values in relation to the biology and compensatory potential for species. You see that those periodic strategists would be in the upper range of steepness values, and to me that is consistent with the biology of red snapper. The benefits to me were perhaps threefold. One, we have benchmarks that are consistent with the council's already adopted estimates of MSY proxies.

Two, we get a steepness value that is more consistent with the expected biology of red snapper; and, three, we have, getting the higher steepness, a higher productivity value in your recruitment. You know, when you do your projected recruitment, it is not going to be as low as we are now at

0.68. That changes our rebuilding schedule and that changes really the bar of where we need to rebuild the stock in terms of MSY.

Dr. Williams: To that point, I have given this speech many times at many assessment workshops, and I'll give it again. There is no strong empirical evidence that links steepness to the biology of the critter. I have yet to see it. I understand the Kenny Rose you're quoting, but, I'm sorry, that relationship does not exist.

And if you think it does, really, red snapper does not fit into – I mean, it is a long-lived species. If there is such a relationship it seems like red snapper would actually be at the opposite end. It lives to 53 years. Until I see the evidence that there is some relationship between steepness and biology, it is not appropriate. Steepness is a function of the recruitment dynamics.

Recruitment dynamics, as all of us should realize, are not driven by biology as much as they are the environment and fishing. The environmental conditions and the ecosystem conditions, the biology is a tertiary factor, in my mind, when it comes to determining recruitment levels, for potential recruitment levels for fishes at various stock sizes.

I think that is a bogus argument, to some degree. As far as the choice of proxy, that is always up for debate in every SEDAR, is my understanding, is when a benchmark assessment is conducted there is a re-evaluation of what is an appropriate benchmark. Just because there is an F 30 percent on the record books as a default value for all snapper groupers, it does not mean that we have to stick with that.

If a review panel suggested that F 40 percent is more appropriate, then I think we need to seriously consider that. That is one of the reasons we go through the SEDAR process is to re-evaluate that benchmark. It is one of the terms of references in the SEDAR process is re-evaluate the benchmarks.

Dr. Barbieri: Erik, first of all, I disagree completely with you, and I will explain why. Number one, the biology of the species is very much related to the stock-recruitment pattern that you are supposed to get. Otherwise, perhaps we should do away with incorporating a steepness value and having to have a stock-recruitment relationship for our assessments.

Based on what you're saying, that is a non-parameter that has no value into this process, and I disagree. That is number one. Number two, the fact that the council has a pre-adopted FMSY proxy – I'm not saying that we should not consider a F 40 percent SPR as an alternative proxy, but I think to adopt it at the assessment level without giving the council the possibility of evaluating that, that is not an assessment decision, in my opinion.

I mean, the management benchmark is a management decision, and I would rather give two scenarios to the council to consider – here is the expected scenario using your F 30 percent SPR proxy. Now here is an alternative scenario using 40 percent as suggested by the review panel. I think that we as an SCC need to bring the review panel's recommendations within the context of the management policy that is established and utilized by the council that we actually serve.

So, our job here is to actually incorporate that management perspective into our decision-making. To me, not presenting to council these two alternatives is having the SSC or the assessment process take up a management decision role that I feel very uncomfortable with. If the council decides to make that change from an F 30 percent or at 40 percent as a benchmark for evaluating the status of red snapper in the South Atlantic, I'm okay with that, that is their decision and prerogative.

In my case I'm going to look at what makes sense biologically and scientifically, and I don't agree at this case – look at the episodic recruitment. We still have strong year classes coming by. To me that is a clear pattern of a periodic strategist, and a higher steepness value to me is justified. When you guys actually ran the model, this is before the review panel, you came up with the upper bound.

So, to me it is very – and I hate to use that word – arbitrary for the review panel to make a suggestion – if you can explain to me what is the scientific basis for that 40 percent from a scientific perspective, not from a management perspective because that is the council's job, I will live with that, but at this point I think that F 30 percent especially – there is this issue also about SEDAR inconsistency in our parameter choices.

I mean, this SSC has just endorsed an assessment for mutton snapper fairly recently that considered a steepness value of 0.75 and an F 30 percent as a proxy for MSY. How can we reconciliate the two? We're talking about red snapper matures very early. Yes, they live very long. They have like this complicated life history pattern, but the maximum age estimated for mutton snapper now is 41 years old. So to me it begs the question of why should we stick with an F 40 percent SPR as a proxy for MSY when it is giving us what I believe is an unrealistic steepness value by association?

Dr. Williams: First off, the choice of a proxy is not the council decision because it is a proxy for FMSY. FMSY is a science-based decision. Unless you're suggesting that the council be estimating FMSY, let's dispense with that notion right now. We are looking at a proxy for FMSY, and we're suggesting that F 40 percent is a better proxy – actually not we but the review panel is.

Now let's look at the scientific literature. What does the scientific literature support? The scientific literature supports in several articles – there is a laundry list of proxy papers that have come out most recently that are all pointing to the fact that F 30 percent is not a good proxy. F 35 percent is still not even sufficient. All the other regions are suggesting that F 40 is a better proxy if not even F 45 or even F 50 percent.

So the literature is pointing us in that direction. Now let's look at the literature that is point us to an appropriate steepness value for red snapper. There is none, none of it. They have done many meta-analyses, including Ram Myers and many others, that have attempted to come up with these relationships between steepness and some biological parameter such as age at maturity, such as longevity, such as many of these other factors, and the relationship doesn't bear out. It just doesn't exist.

So when we want to fall back on sort of what is the scientific justification for what we're doing, we have very little scientific justification for suggesting that steepness is 0.95 for red snapper without any other information, but we have a body of literature that does suggest that a better proxy for FMSY is F 40 percent.

Dr. Barbieri: I will read here from the assessment document: "Some studies have found that F 40 percent is too high across many life history strategies (Williams and Shertzer 2003) and can lead to undesirably low levels of biomass and recruitment."

Dr. Williams: That is exactly the argument I am making, it is too high so it should be even at 45 percent or F 50 percent.

Dr. Barbieri: But you're saying that F 40 percent is too high.

Dr. Williams: Right, a higher percentage means a lower F, so if we're saying F 40 percent –

Dr. Barbieri: And F 30 percent –

Dr. Williams: Is an even higher F than F 40 percent. F 30 percent is a higher F rate than F 40 percent, and our paper actually suggested that F 40 percent may even be too high, which means that what we were suggesting is something even higher in the percent range, F 45 or F 50 percent meaning a lower F is probably more appropriate.

Dr. Barbieri: Erik, I'm sorry but I'm not convinced. I haven't seen – and I think this is an interesting discussion because it is going to pretty much frame the way this SSC is going to look at a lot of these assessments and those benchmarks. We know that we're going to have poor stock-recruitment relationships out there and their steepness values are going to be unrealistically high in many cases, and then we're going to end up having to use proxies. I think unless there is stronger evidence suggesting that F 40 percent – I mean, what you're doing here, using the F 40 percent, is actually –

Dr. Williams: Look at the scientific literature.

Dr. Barbieri: With some of the scientific literature, Eric, are you telling me that F 30 percent, keeping that F 30 percent SPR value for these species is not sustainable?

Dr. Williams: What I am suggesting is that's not the maximum sustainable yield. Of course, any one of those levels is sustainable, but is it at the maximum level that we would like it to be at? No.

Dr. Barbieri: I have not seen an explicit relationship here that will show me that F maximum sustainable yield corresponds to F 40 percent SPR.

Dr. Williams: Reduce it to F 30.

Dr. Barbieri: To me, when you use the two – I mean, here are two indicators to me. One is that F 40 percent is a new standard, really, that is being introduced. I don't disagree that having the discussion is actually desirable and healthy for us to have. But, when you look at the values of steepness – and if you're going to reference the literature, I'm going to reference the work that Kenny Rose and others did, which to me is the only explicit relationship between the biology and the compensatory mechanisms in different species by fishery patterns and use a life history theory in making some decisions when you have to make these judgment calls and expert advice on picking steepness values.

I'm not disagreeing with the assessment. I'm not disagreeing with us considering this F 40 percent SPR, but I just think that it is inconsistent with the way that we have looked at other snapper species that have similar life history patterns. To me it is not convincing that we need to have 40 percent SPR to reach maximum sustainable yield.

Dr. Harris: At the Red Snapper Assessment Workshop there obviously was a great deal of concern about the level of steepness because that is one of the reasons why a sensitivity run was run at a steepness of 0.6, and yet the decision was made by the assessment workshop to go with the F constraint of 0.95.

If the review panel didn't like that for – it is unclear as to exactly why they didn't like it. I don't necessarily think we should be thinking about overriding what the assessment workshop decided to do when they recognized the initial problem in response to what the review panel had issues with. They recognized it as an issue. The decision was made at the assessment workshop that this was what everybody was not necessarily comfortable with but was willing to accept. For me, I think we should just leave it at that.

Dr. Cooper: Unless my brain has completely misfired, I believe not two hours ago or three hours ago we just approved the stock assessment based on a VPA model that couldn't see the stock-recruit curve very well and basically used a very steep stock-recruit curve to project forward and estimate all the benchmarks.

It's the same problem as we're facing right now. We just approved it. As Pat just said, it was the best they could do at the time there; so while I definitely commend the efforts of trying to figure out a better solution, I don't really see a problem with sticking with things as they were.

Dr. Belcher: We also approved this same document in June with that steepness factor as well. The main concern I guess is just the fact there are two values that have been assigned through the addendum and how best to – we didn't keep a consistent steepness I guess is the question in front of us, as John pointed out through his paper. That is more the issue, I think. Pat.

Dr. Harris: Perhaps the best approach is for a steepness procedural workshop.

Mr. Carmichael: You approved the assessment but you didn't have the addendum; and then when you approved the – at the time you approved the F 40 percent SPR recommended. You endorsed that recommended by the review panel, which then triggered this need to redo the

benchmarks and brought up this question with the change in steepness between the two periods, so you do have some actions to do there.

It just seems like it is a question where Luiz seems to be saying – we don't know where MSY occurs. Luiz is saying F 30 percent seems reasonable. F 40 percent is more conservative. The justification of the review panel was F 40 percent is a more conservative choice. Erik is saying the literature more supports F 40 percent and F 30 percent is acceptably risky and that the SSC should stick with saying F 40 percent and say both are plausible and let the council make a decision. That is sort of where we are standing?

Dr. Williams: With one correction that the review panel never used the word "conservative". They just said that this was a more appropriate proxy.

Dr. Barbieri: And I understand that, but they provided very little justification, Eric. If you look at John's paper, he is trying to interpret, really, what the review panel was trying to convey in that language. There is no justification whatsoever, no scientific basis for suggesting that F 40 percent not explicitly at all in that document. I would say, then, why not 45 percent, why not 38 percent?

To me it is a matter of if we have – for addressing the status of the stock, if the council has adopted as a management – because this is actually giving you the status of the stock and a rebuilding target they're aiming for. So, the value of steepness here is going to change the productivity levels, which is going to change your timeframe for rebuilding, and it is going to change the ceiling you're trying to reach as you rebuild the stock.

To me, if we want to go forward with F 40 percent – and I don't disagree that we should present the council with that option as well – we should give them two options. We should give them F 40 percent SPR and an F 30 percent SPR scenario and then ask them to choose how conservative they want to be in managing the red snapper stock. But I don't have a scientific basis as this point to tell them – I cannot stand on my two legs and tell them that I have a good reason to say that F 40 percent is better than 30, and that is where my problem lies.

Dr. Shertzer: While this discussion of F 40 versus F 30 is both fascinating and entertaining, it really doesn't matter here whether you use F 40 or F 30 in terms of having this consistency between benchmarks and projections. All the issues with F 30 would be exactly the same as they are with F 40.

Other than that, your steepness might be a little higher so when you see this drop in recruitment, it might not be quite as extensive. I think you're talking about two separate issues here; what is a proxy that should be used; and then more specifically to red snapper, how should we go forward with computing benchmarks and projections. I have heard a couple of ideas floated that maybe the estimated value of steepness of 0.95 was maybe that is okay, and so that was Alternative 2, I think, so that is up here as well.

Dr. Barbieri: Right, and I brought it up just because of this correspondence between steepness and the SPR value that we're shooting for, you know, and the fact that now we are looking at

those different scenarios of what are considered for the assessment steepness value versus the projection steepness value, so that choice is really – because the way you guys explained it very well in the text; I mean, you went from the F 40 percent backwards and worked the steepness value from that. In that case it is having a major impact on what steepness we end up with so that is why I brought it up.

My suggestion is that we add maybe Alternative 5 or Alternative 6, because you did actually consider Alternative 5 after that, that we would use a steepness value for the assessment and the projections, the same value corresponding to an F 30 percent SPR.

Dr. Jiao: I want to ask Kyle what is the difference for F 30 percent and F 40 percent – I mean, values, their difference, F 30 percent and F 40 percent?

Dr. Shertzer: I don't know.

Dr. Jiao: Basically those proxies, they are proxies; they don't actually tell us what is the maximum sustainable yield, they don't, so I usually suggest in these situations, when the proxies of the biological reference points are largely different and when the population steepness is bad, it is heavily overfished, we go to a proxy that is conservative. That is sort of my suggestion. Again, here in this example, I am not sure what is the difference between F 30 percent and F 40 percent. For example, if it were 50 percent different, I would suggest to move from 30 percent to 40 percent because, you know, because that is a big difference there.

Dr. Shertzer: I didn't recompute those, but in the original benchmark F 30 percent was 0.1 and F 40 percent was 0.07.

Dr. Jiao: The differences are huge in this situation, and I think those are very good reasons to move from 30 percent to 40 percent. I also have a suggestion about the benchmark of SSB at FMSY, the proxy; because there is no relationship between stock-recruitment and we have no idea about the steepness.

In this situation and not for just this species, we may consider a proxy based on historical estimated population abundance. For example, a medium size of the estimated abundance in the last 50 years, treat that as, you know, a proxy for the next 10 or 15 years and over time we may be able to estimate a better stock-recruitment relationship because of further data added to that situation. Just a suggestion; I don't really want to move too far.

Dr. Belcher: I'm going to pose a question just because I'm probably going to show my ignorance to the process, but any other time that we have offered a proxy have we ever adjusted projections because of that adjustment with a changeover in a proxy? It seems like the assessment went forward, we had projections, and the suggestion was made we needed to use a value other than what we were looking for because the data didn't support that, so we threw a proxy in there to fill in that space.

Nothing really changed in the projection at that point, so now we're coming into this recognizing there is a proxy and we have adjusted for the proxy. Have we ever done that before with a

projection; have projections ever been changed to accommodate for proxy? Do you understand what I'm saying?

The question to me is we get projections and we talk about what we're using to fill in for our values for management purposes, and we use proxies to fill in because we don't know that number. Have we ever adjusted projections because we have not used the real number; we have used a proxy?

Mr. Carmichael: I'm not sure. I guess the question is more have we ever adjusted steepness, which we have tended to adjusted steepness to keep consistent. It is something about this one with it being so high and then going so low that has really made this huge difference in just where the stock just happens to be falling must be having some role in this.

I don't think it is out of the ordinary that the panel said, well, use F 30 percent and F 40 percent and you have constructed it to be consistent over the long term, which was what was initially done. It is just the way the pieces fall out in this one that has just created this disconnect that is requiring more attention to settle. I don't think we're completely out of bounds in what we have done given what we have traditionally done.

Dr. Cooper: Well, a technical question, under Addendum 1 I assume you incorporated the autocorrelation in the recruitment in going from the final year to the first year of projection so that huge jump is still accounting for the autocorrelation; is that correct? Okay, so the jump would be even worse if we didn't have autocorrelation in the there?

Dr. Shertzer: The projections have autocorrelation, but it is not in between the assessment and the projection.

Dr. Cooper: Then if you incorporated the autocorrelation essentially from your last recruitment in the assessment to your first projection, then we wouldn't see as big a jump, right, assuming they're positively correlated?

Dr. Shertzer: Yes, but those are in the residuals as well so you would still see a big jump because you're changing stock-recruit curves.

Dr. Cooper: Okay, so it wouldn't dampen that jump at all? I would think it would try and shrink that jump when you switched stock-recruit curves because your recruitment will be correlated with the previous recruitment regardless of what curve it is based on, right?

Dr. Shertzer: Yes, but the end of the assessment period it is really tightly constrained to the spawner-recruit curve, so it is not going to be much of a jump, if there is some.

Dr. Cooper: You mean nothing much of a change in the jump?

Dr. Shertzer: Not much of an effect.

Dr. Cooper: Well, I'll just go back to my question before. The reason why the steepness is coming up is because we're estimating the spawner-recruit curve internally as opposed to estimating recruitment and then trying to fit the spawner-recruit curve. Basically what this is saying is we don't have a good stock-recruit relationship.

The solution to that in the past is not to try and change the steepness and project forward with the stock-recruit curve but rather to essentially bootstrap previous recruitments into the future just like we did with the stock assessment we just passed, which I believe again is the same as essentially putting a very high steepness to it that mathematically they're basically equivalent, I think, which is essentially then Option Number 2, if I'm not mistaken.

So, it seems like we have a process for dealing with this situation in the past. We have it already done. We have it already approved, in fact, including the F 40 percent, so I guess I raise the issue given that is how we used to operate – again, I think it is wonderful to try and solve this. You guys have done a huge amount of work, but personally I kind of like Option Number 2 because it is kind of how we have done it in the past, it seems to make sense in the past.

I mean, I like the idea of us to figure out something better. I'm not sure as a universal approach we can determine from this trying to find a different steepness and project forward and then try and figure out ways to marry the two concepts together. I think it is a great thing we should work on, but from the point of moving forward Option 2 is kind of how we have done it. It is consistent. We agreed with it before. I just kind of throw that out there for people to mull over and throw stones at.

Dr. Barbieri: And I agree with that as well. I agree that is a good option there that we can follow, and it goes with what Pat just mentioned. After the assessment workshop that is what the panels had decided was acceptable. Maybe they're not completely comfortable with that steepness hitting that upper bound, but they're willing to live with that, just like the previous assessment on king mackerel we just saw.

I'm not sure for this species if there isn't really a very high independence between spawning stock biomass and subsequent recruitment, so a high steepness, in my opinion, would not be unrealistic. My only point is that looking across a number of species of snappers and if we have sometimes to make these choices not based on model estimates, but make choices, I would rather look at the biology of the species, stay consistent with some of the choices that we have made in the past or very recently for other snappers than to accept a suggestion or recommendation from the review panel that I don't think reflects well for a species that we deal with here in the Southeast United States.

I mean, it goes back to the discussion that we had yesterday about us here at the SSC bringing those review workshop results and recommendations into the context of managing the species that we work with here in Southeast United States.

Mr. Gregory: I must have missed the red snapper discussion in June, but the Gulf people have been working on red snapper for almost 20 years now. What steepness are they using and why

would the South Atlantic population necessarily have a different steepness? I'm sure they have looked at this ad nauseam and we're just starting.

Dr. Barbieri: Well, first of all, they use an FMSY proxy for red snapper in the Gulf of F 30 percent SPR, and they have steepness fixed at three values, 0.81, 0.9 and 0.95. I think that their base run – and I have to confirm this, but I think their base run was at 0.9, and they used 0.81 and 0.95 as sort of sensitivity runs.

Again, all we're suggesting here is what are we going to consider the run? It doesn't mean that we cannot present the council potential alternatives that would consider an F 40 percent SPR as a proxy for FMSY and the equivalent steepness value as possibilities and alternatives, but what we consider the base run that we use for the assessment results and for the projections I think will be consistent biologically.

Mr. Gregory: Yes, you woke me up when you said "consistency", Luiz, and that is something we should strive for, consistency within a region or a species group and consistency even between the two councils where we have the same species, groupers or snappers. I would think whichever stock assessment is done first and the work that has gone into that sets a precedent and any subsequent assessment, either in the same region or in a different region on the same species, would seem to me to have onus to document and justify why you would go off on a different trajectory of any assumed parameters or anything than what has previously been decided.

I daresay the species biology and life history is not going to differ between the east coat of Florida or Southeast United States versus the Gulf of Mexico. They're going to be very similar. Was there documentation as to why a steepness of 0.68 or 0.95 was rejected when that is within the realm of previous stock assessments on red snapper? To me that is where the onus should have been, but in one sense I'm a dollar short and a day late on this discussion. We should have had this in June.

Dr. Barbieri: Well, I think this is a question for Kyle and Erik. Why did we reject the 0.95 steepness value when it was discussed at the review workshop?

Dr. Shertzer: The wording was that it was unrealistically high, so you can interpret that. I think part if it, too, was that the estimate was hitting the upper bound of what was allowed. So it wasn't just estimated at 0.95, it was actually hitting its upper bound, which sometimes can mean that you have trouble in estimation.

I think there really just wasn't a lot of good information to estimate what steepness it was. I would also just add that if you're willing to accept a steepness of 0.95, that's fine, but then I don't think you can accept the proxy of F 40; because once you define steepness, there is this relationship with the proxy. If you have steepness, you can estimate MSY benchmarks, so that would make those proxies irrelevant.

Dr. Barbieri: To that point, Kyle, very good points. This is why I started this discussion really based on the F 30 percent proxy; because if you look at that relationship they have put there, if

we choose a 0.95 steepness, you know, Pat, you end up actually with a corresponding – because you end up then with a FMSY proxy that is even lower than 30 percent SPR.

As a compromise, perhaps, between an F 40 percent SPR proxy and what I believe is a low value of steepness corresponding, I suggest we use a 30 percent SPR proxy; and then the equivalent steepness is going to put us almost exactly in the range that was already used for red snapper in the Gulf, was used for mutton snapper and other assessment that was SSC approved back in June; for yellowtail snapper and some other species that are with that same biology pattern.

Dr. Cooper: Kyle, I would actually disagree with you to some extent in that if you accept the steepness of 0.95 as representing an accurate stock-recruit curve, then you can do an MSY base. If you interpret the steepness as we can't fit the stock-recruit curve, then you can still do an F 40 percent and then do what we have done in the past in bootstrap recruitments over some time period and project forward and still be internally consistent on saying we don't believe the stock-recruit dynamics as truly this.

And so rather than fix that, we are going to do what we have in the past and bootstrap and not call it FMSY but call it a proxy. I think that is still internally consistent. I think the difference is the steepness is – mathematically you end up at the same place, but the difference is interpreting the steepness as an accurate stock-recruit curve as opposed to the statistical models getting flat because it can't fit anything and so just accepting that as no known stock-recruit curve and so just using the observed recruitment.

I am very willing to be corrected on this by anyone who cares to weigh in, but I don't think holding the steepness at 0.95 and using an F 40 percent proxy is necessarily inconsistent. I could be wrong.

Dr. Shertzer: If you defined your spawner-recruit curve with a steepness of 0.95 and if you compute FMSY, by inconsistent I mean that FMSY won't necessarily equal F 40 or whatever proxy you want to use. Now, if you're saying you just can't define a spawner-recruit curve and then use estimated average recruitment with some variation around that, then that is fine, but that is more like a steepness of 1. Your point is the same, I think.

Mr. Carmichael: Some clarification, thanks to Andi, from the regional office on where the Gulf stood. What happened with the situation in the Gulf was the SEDAR Review Panel put forward sort of the options to them to, well, you could use stock-recruitment relationships or you could use an SPR-based approach; and, if you're going to scale either one up to true MSY, you're going to have to have stock-recruitment, anyway.

Where it all ultimately settled out was the Gulf using an FMSY approach with translating to a steepness of 26 percent – I mean, to an SPR of 26 percent in their case and a steepness of 0.97. So going to 0.97 I guess that model had a little bit higher bound, but I think we probably all can look at 0.97 versus 0.95 versus 1 and understand that there is not necessarily a lot of information about the stock-recruitment relationship there.

I just kind of wonder if you kind of buy that there is no stock-recruitment relationship, you're kind of putting yourself into in a sense Kyle's Option 5 that we really don't know. And is that where we're more heading that we don't know what the ultimate biomass of this population will be MSST, what its rebuilding point is.

We do have the relative references about clearly the stock is overfishing and the biomass is not where you want it to be, but we have all these uncertainties and is it more realistic to admit that we don't know where it is ultimately going to end up because we have this great uncertainty about stock-recruitment – just to ponder as we go through this.

Dr. Cooper: I have a question. If we didn't have that big jump in recruitment, would we even be having this discussion or was it that drop in recruitment that is causing all these machinations; that as you've done the F 40 percent and recruitment was nice and smooth, would we be having these discussions or would we just have an addendum and be moving on?

Mr. Carmichael: Certainly, it is the drop in recruitment which is related to the change in the steepness and thus a different stock-recruitment relationship between the model estimated period and the model projection period, so, yes, certainly, if it weren't for whether it is the change in recruitment or the change in the stock-recruitment relationship, they are both completely tied together, we probably wouldn't be having these options.

And a lot of time maybe the norm has been more to just fix the steepness throughout, like we said either 0.95, 0.68 or something somewhat in between, and that is where we're kind of in a different territory, and that wasn't explicitly what the review panel did.

Dr. Belcher: Wasn't the whole goal of the addendum just to fix data points and rerun the model with the fix of the data points?

Mr. Carmichael: That and to account for the recommendation of the review panel, which was endorsed by this committee to use F 40 percent as a proxy for FMSY. So because of either way, both of them required an update and a re-evaluation of the model runs to get you projections.

Dr. Barbieri: Right, John, and, yes, we did look at this back in June, and, yes, we accepted the assessment then. However, I think it was looking at these new projections, looking at the addendum, that we really could have a full evaluation of the impact of that recommendation. In reading the issue paper that you put together, to me it is clear that we're trying to interpret what the review panel was trying to convey there with the F 40 percent.

And, yes, it is very explicit in recommending F 40 percent, but there is no direction on what to use for the projections, and there is no clear justification on why that benchmark will be more appropriate for this stock than any other from a scientific basis.

To me, instead of sticking with the 0.95, just because that will be a little more risky, it will put us in an SPR range lower than 30 percent, I think that a good compromise would be to adopt the F 30 percent proxy as approved and adopted by the council. You just work the same way they worked for this addendum. If you generate a steepness value from that, it is going to come

around 0.85 to 0.9 or thereabouts, and that we use both for the assessment estimates as well as the projections.

Mr. Gregory: In the review workshop I see the statement where it says that – basically it says this leads to a low estimate of age-specific natural mortality, yet the assessment seems to suggest the stock is highly productive and contributes to a very high estimate of the steepness of the stock-recruitment function. The panel felt the steepness estimate was unreliable. That is the discussion.

There is no discussion of the Rose and Cowan paper. There is no discussion of any of the stock assessments done in the Gulf. I think for future stock assessments – and most of them are conducted by the Southeast Fishery Center scientists – that there should be some continuity of information that is available on the species even if it is in a different region.

I think if they had known about the number of stock assessments done in the Gulf, the steepness estimates on the Gulf, they may not have concluded that it was an unreliably high estimate. I think that was done out of context. I would ask that the SEDAR people, in particular, and the National Marine Fisheries Service to try to bring more information together here from adjacent regions and other stock assessments.

Dr. Williams: Just to clarify, I think that it is an unreliable estimate because it is hitting a bound. If it was hitting the lower bound, we would have this same discussion. Whether it is hitting an upper or lower bound, the fact is in any statistical model if your parameter is hitting a bound, it is telling you it is reliable, and it doesn't matter which bound it happens to be hitting.

Dr. Belcher: Any further comment or discussion points?

Mr. Carmichael: Anyone care to make a motion or put something out there?

Dr. Belcher: Seeing none, we have to decide what we want to do relative to this addendum for red snapper. John.

Mr. Carmichael: I think at this point my understanding is that you have recommended F 40 percent. You have that in the addendum. The remaining question then is how do we deal with recruitment for the projections and do you go with the 0.95 or one of the other approaches? Clearly, there is a problem with the change in stock-recruitment relationships between the estimates and the recruitment, so we're back to that question unless someone has some other idea.

I think Luiz has kind of proposed, well, Option 6, which is you use 30 percent SPR and the steepness that comes from that, and you fix it in the model and you go from there, which then necessitates going down another path and do some more runs, but that is just where it stands. We would have to wait and see how that panned out.

Dr. Barbieri: And I think that the advantage of that is that we then present the council with an FMSY proxy that they have already approved and accepted. Maybe I don't understand, Erik,

really how that works, but in my opinion if the council has accepted what they consider to be a proxy for FMSY from a management benchmark perspective that will be used there in the denominator, well, then, in that case we should give them at least that as one of the options for them to consider.

And if they wanted to be more conservative than that, that is their prerogative. If they want to be less conservative, they ask for additional runs. But, I just feel uncomfortable, really, from a scientific basis just presenting them with the F 40 percent SPR as a proxy for FMSY.

Dr. Williams: All right, come on, Luiz, I mean you're telling us from a scientific perspective that in June you endorsed the F 40 percent. When you saw the outcomes of the F 40 percent, suddenly you're reconsidering that now F 30 percent may seem more appropriate. Come on!

Dr. Barbieri: I'm sorry, Erik, come on what?

Dr. Williams: We endorsed that 40 percent in June. It is in the SEDAR document. It was approved by the review panel. Why are we reconsidering it? What we're talking about here is projection.

Dr. Barbieri: And that is fine. My fault by not looking at this issue as carefully back in June as I should have undoubtedly – there is no doubt about that. I should have looked at this more carefully especially when we had a mutton snapper assessment that was presented concurrently and used an F 30 percent SPR as a proxy for FMSY because it is part of the SEDAR process to have a table of the existing management benchmarks as adopted by the council.

So because we approved this back in June, I don't want to give the council bad advice if I had a chance to reconsider and admit my fault for not looking at this more carefully in June, but I really feel uncomfortable putting forth the F 40 percent SPR as a proxy for FMSY without having a strong scientific basis for it.

Dr. Cooper: Okay, here is a strong scientific basis for it; a citation you read into the record, Williams and Shertzer, peer-reviewed, published literature saying F 40 percent is probably the smallest you want to get. You yourself quoted that. Okay, you want scientific evidence. There is a peer-reviewed publication that you yourself quoted.

Dr. Barbieri: And that's fine, Andy. I'm just making a point here about us having to be careful about consistency among species and about making recommendations to the council that are based on a scientific basis and that are non-arbitrary and that will give them the opportunity to choose how conservative they want to be.

Dr. Cooper: As Erik as said, the choice of proxy that best approximates FMSY is not a management decision. That is not a precautionary versus what is a precautionary decision. Where you set ACL or ACT, ya da ya da, ya da, that is management, but the choice of proxy that best represents FMSY is science and not management. The choice of do you manage at FMSY, that is management.

Dr. Barbieri: However, when you determine the status of the stock and you do the plots of Fcurrent over FMSY, where you are, the status of the stock and your rebuilding target is going to be based on that, Andy.

Dr. Cooper: Yes, exactly, and it is up to the council to say whether or not they want FMSY or its proxy as a definition of overfishing or BMSY or 50 percent BMSY as its definition of overfished. The choice of which proxy to use that best represents the targets and thresholds chosen by management is science. The manager sets the targets and thresholds; we figure out how to best estimate them.

Okay, if they want to do something different than FMSY or its proxy, that is their prerogative, but given FMSY or its proxy is what needs to be plotted on there. We need to base the proxy based on best scientific knowledge and consistency over time, as we have talked about in stock assessments, is a minor consideration.

We don't do it just because that is how we have always done it, which is different from saying, okay, let's take a meta-analytic perspective on snapper grouper and try and encompass all this other knowledge from other areas, and let's not also do it in an ad hoc fashion and just say, well, because the Gulf used F 30 we should use F 30.

Excuse me, you know, you want it based on science, give me the science that says F 30 is the appropriate one. Right now we have got a publication on the table that says F 40 is the best. Give me a citation that says F 30 is the best.

Dr. Barbieri: That's fine, I'll just make my recommendation for the committee to consider. I don't mean to argue with you guys. I'm just saying looking at consistency across time and across species, looking at a lot of solid scientific evidence out there in terms of the range of steepness values and the biology of the species, I think the steepness of 0.68 is too high – I mean is too low. I really think so, so I'm just presenting my opinion, and in that case I'll vote for Option Number 2, and we might as well stick with the recommendation that came out of the assessment workshop.

Dr. Belcher: Do I have that as a motion?

Dr. Barbieri: Yes, I will move that the SSC accepts Option Number 2 of a steepness of 0.95 to be used in assessment estimates and projection estimates for red snapper in the South Atlantic.

Dr. Cooper: I know I'm the one who advocated that at first, but clarification. Going back to John's point, in the past when we haven't been able to estimate a stock-recruit curve, have we actually done what John called Option 5 with saying, well, we can't estimate the BMSY proxy or have we – I'm saying I thought we did, but as everyone knows here my retention is rather limited, so I think we then do geometric mean and estimate BMSY based on that. Is that in fact what we have done; am I stating things correctly?

Mr. Carmichael: I think you have kind of done both. You have done ones where you picked a steepness and fixed the steepness and went through with it, and you have also done ones where you say we have no idea what it is so we can't give you biomass values. Both have been done depending on the feeling of the group and which way they felt they could run.

If they could go with the steepness, then at times they have. If they just felt like – you know, the best example probably is vermilion snapper where the original assessment said there is just no information about that so we reject that outright. It seems in this case maybe there is a little more feeling.

I think gag between the Gulf and Atlantic kind of went both ways. One they said there is none and the other said, well, there is some and we can go with it. So, two and five are both certainly within the realm of what you have done historically.

Dr. Cooper: Well, I'd certainly support number two because it seems to make sense given the stock-recruit relationship at very low abundance, seems to be relatively flat. We're not seeing huge increases over the time period.

Dr. Barbieri: Do you second it?

Dr. Cooper: Yes, I'll second it. I didn't mean to debate before it was seconded, so, sure, I'll second the motion.

Dr. Belcher: Any further discussion or comment? Kyle.

Dr. Shertzer: Well, if we're going to use the steepness of 0.95, can we just go with the MSY benchmarks that fall out of that, then, rather than any proxy which might not be consistent with the MSY benchmarks?

Dr. Williams: My understanding was we would still stick with the F 40 percent proxy basically and kind of ignore the biomass benchmark for now since we're talking about five- and ten-year projections, anyway, and we're going to be reassessing this thing in the near future, I'm sure.

Mr. Carmichael: I was going to go something along those same lines as well and say I think by doing this you're kind of saying that biomass is fairly uncertain when I get to that high stock, because I think it is important, as Andy said, at this low stock size and what we're seeing about its stock-recruitment relationship just kind of infers that 20 years, when this population is at a better status, you may have more information to get a stock-recruitment relationship that sheds light on steepness, and we're out of this problem.

So it's kind of incumbent upon this that you're really talking about for short term and are you willing to make sure that the caveat is added that there is a lot of uncertainty in overall rebuilding times and in the rebuilding point.

Dr. Williams: And I will add that is more consistent with the review panel's findings, too, because if you read what they say, they say that long-term projections cannot be used or can't be

trustworthy. I forget the terminology but they say only short-term projections should be relied on, so this is more consistent. With the F 40 percent short-term projections, it is very consistent with what the review panel sort of suggested.

Dr. Cooper: Does not setting a biomass target; what does that do to the declaration of overfished status?

Mr. Carmichael: It means that you probably can't quantify it, but you could probably give some general qualitative advice that says clearly it is overfished. We just don't know where this population would exactly reach the rebuilt and what the optimal desirable level is and what optimal desirable yield will be at that point, but we know we have to solve these problems first and make some progress. I think language along those lines would solve that problem.

Dr. Belcher: We had done that with vermilion. Yan.

Dr. Jiao: I want to make sure that I understand Alternative 2. If we use Alternative 2, that means that we still use F 40 percent as the proxy for FMSY, but we use 0.95 for projection? Okay.

Dr. Shertzer: I think I had a very different understanding of what you guys are saying, which is sort of a double hybrid approach here between Alternative 4 and Alternative 5 where Alternative 5 means we can't really estimate any biomass benchmarks or rebuilding timeframe. We're just going to rely on the short-term projections, is that correct? Then that is not really Alternative 2. So then the short-term projections would be the ones from this hybrid approach which don't really assume steepness of 0.95 but use the mean recruitment from the end of the time periods.

Mr. Carmichael: Or is it Alternative 2 with significant caveats on those long-term benchmarks; saying, yes, when you do this, you get them, but given what the review panel said, you don't have confidence in them at this point, but you think it is informative for the short term, to try and keep it a little simpler.

Dr. Belcher: Any further comments or discussion? Okay, with that, we have a motion on the table with a second.

Mr. Carmichael: Which you will read.

Dr. Belcher: Which I will read, yes. The motion is that SSC accept the 95 percent steepness value to be used in both assessment and projection estimates for red snapper in the South Atlantic. Comments or discussion? Andy.

Dr. Cooper: Given the way in which we're moving our operations, do we need to have language in the motion regarding our lack of confidence in the specific values of the long-term projections or when we summarize this in the report that will come out?

Dr. Barbieri: Right.

Mr. Carmichael: As long as you summarize it in the report and that will come out, that will be fine, yes, as long as it is there. Who is in charge for this part of the meeting?

Dr. Belcher: I am one of them.

Dr. Barbieri: Yes, I'm one of them, too; Jeff Buckel.

Dr. Shertzer: I just wanted to point out for this Alternative 2 the projections have not been run yet. They were run in SEDAR 15 but they haven't been run based on the corrected recreational landings time stream. The assessment was rerun, that is the addendum, but the projections with fixing steepness at 0.95 haven't been done yet.

Dr. Belcher: Okay, comments to that point? Okay, continuing on with the motion, I'll put it to the vote. All those in favor of the motion as it stands, raise your hand; all those opposed. Okay, how many people abstain? The motion passes. With that, we will take a 15-minute break.

Dr. Belcher: We're going to get started on the next agenda item, which is the SEDAR 17 review and recommendations.

Dr. Shertzer: Okay, vermilion snapper, and this is the first time the SSC has seen this assessment. This was through SEDAR 17, which just went through the review workshop a little over a month ago. What I will be presenting is the assessment data, stock definition and life history, the landings composition data and the indices of abundance and then the various assessment models that were run, catch-curve analysis, surplus production, catch reduction analysis and then the base model, which was a statistical catch-age model which is really the one that I will focus on for the presentation, and a little bit on projections.

Okay, to start the data, in this case the stock definition here is defined from east of the Florida Keys to the North Carolina/Virginia line, just as most of the snapper groupers are defined in the South Atlantic. The natural mortality rate, as before, was based on the Lorenzen Age-Specific Curve and was scaled to the Hoenig estimate. In this case the Hoenig estimate was 0.22.

The sensitivity runs of the model, we used a lower value of 0.16 and a higher value 0.28. This is a plot of size at age, length at age; and along with it – well, the central values were treated as input to the assessment through a von Bertalanffy curve. What is shown here are estimates of the variation in grown from the model with an estimated CV of 0.21 constant across ages.

You can see from this that there is a lot of variation in size at age in vermilion snapper. And if you were just to take a slice, say, at the current size limit of 12 inches, that size could easily be any age, and this was used in the assessment from 1 through 12. In terms of reproduction it is a gonacharistic species. The spawning is from April through November with peak spawning in July. The assessment assumed that spawning occurred at the midpoint of the year.

Almost all females were treated as mature; 80 percent of the age one females were mature and all of the rest of the females were considered mature. Fecundity was estimated based on fork

length; and from that the total population fecundity was computed and is what was used as the independent variable in the spawner-recruit model, which was assumed Beverton-Holt.

This next part is on the landings and discards. The regulatory history here is quite a bit shorter than it is for king mackerel or Spanish mackerel. In the commercial fishery it has been a 12-inch limit since 1992, and in 2007 there was a 1.1 million quota that was not reached. The recreational fishery has had changes in the size limit from 10 inches to 11 inches to 12 inches over time with ten fish per person per day possession limit.

Recreational landings were in units of thousands of fish. The data went from 1946 through 2007. MRFSS sampling was 1981 through 2007. The headboat sampling was 1972 through 2007. Both the headboat and the MRFSS were sampled by the Saltwater Angler Survey. Again, these were three data points, 1960, 1965 and 1970.

In this assessment, to account for possible recall bias in those saltwater angling surveys, the values were discounted either to 50 or 75 percent of what was reported in the saltwater angler reports. Those values were used – 75 percent was what was used in the base model, but we also examined a hundred percent, so just as reported or even greater, 125 percent in sensitivity runs.

The headboat landings in the earlier time period were smoothed, so these were the years 1946 to 1971, and the MRFSS landings were smoothed over the entire time series because the reported landings were quite noisy. I will show you what the smoothed looked like. These are the headboat landings in blue, and the red curve is this line smoother. The data were used as reported in the later period, but the smooth version was used in the earlier time period.

For MRFSS data reported as in blue, but the red smoothed version was used in the assessment for the whole time period. Commercial landings were reported in units of thousands of pounds. The commercial data were from 1958 through 2007; and prior to 1958 no commercial landings were reported, and so they were assumed to be zero through 1957. This is a plot of the commercial landings in whole weight. That's in thousands of pounds.

In the assessment they were broken up into three different sectors. The handline, which you can see, is the bulk of the fishery. There was also a couple of years of this early trawl that occurred that was treated separately from a combined category, which included the later trawl, so most of the snapper grouper trawl fishery would be included in this combined category, but in the recent years there is not much of the combined either, so it is mostly handline.

Just to give you a perspective of how the commercial compared to recreational, this is whole weight of landings with commercial and then headboat and MRFSS, so it is majority commercial but there is still a substantial amount of MRFSS and headboat landings. Discards – in the recreational there is a size limit going from 10 inches to 11 inches to 12 inches, so the MRFSS discards were available for 1981 through 2007, and there was indication that discards occurred prior to the size limit being implemented in 1992.

So the MRFSS discards were extended back in time to the beginning of the recreational time series in 1946, as were the headboat discards were extended back as well. There were headboat

discards for 2004 through 2007, and then those extended back using ratio estimators. In the commercial fishery there were estimates of handline discards from the logbooks, and those went back to 1992 when the size limit was implemented. Prior to that, it was assumed that there were no discards from the commercial.

Release mortality rates were set at 0.38 for the recreational; a little bit higher for the commercial to account for fish that were kept as bait; and then a range was examined for the recreational and commercial discards. These values come from a Rudershausen publication in 2007. Just to give you an idea of scale of discards versus landings, this shows the commercial and recreational landings.

This is in numbers so landings in numbers between commercial and recreational is closer to 50/50 than it is when you look at it in weight, but the scale of the discards here is not very high relative to the scale of the landings. That scale of discards to landings is even smaller if you look at it in weight, of course, because the discards are mostly the younger, smaller fish.

Length composition data, just to give you feel for the data sources, the recreational length compositions we had available were from 1981 to 2007; recreational headboard, 1976 through 2007; and then we had some recreational headboat discards available from 2003 to 2007. Commercial handline discards, we just had one year of commercial handline discards.

Then there were length compositions available from commercial trawl, from MARMAP, Florida traps and MARMAP Chevron traps. These were not used in the assessment because they were mostly very small fish, and so it was assumed that the selectivity – the selectivity in the assessment model was assumed to be on the young fish, which was the best match that we could get to those size composition data.

Then a minimum sample size criterion was used of 400 fish for the landings and 170 for the discards. Age compositions were available from the recreational sectors from MRFSS and from headboat; commercial handline, and then there were age compositions from MARMAP Chevron Trap. These also had a minimum size criterion; in this case 45 because there were fewer ages in length fins. We did apply an aging error matrix to account for imprecision in estimates of age.

Indices of abundance, there were five indices of abundance that were used in the catch-age model. Three of them were fishery-dependent, commercial handline, headboat and MRFSS. Two of them were from the fishery-independent MARMAP program, so a short time series of the Florida trap, just five years; and then the longer Chevron trip.

I also wanted to mention there was a combined index, an index that combined the other five, and this was used not in the catch-age model but was used in the production model and in the stock-reduction analysis. I apologize that these numbers are small, but this just shows the correlation between indices of abundance, so you can that there is a high correlation between the commercial and the headboat, and that the Chevron trap is negatively correlated with the headboat and the commercial.

It is mostly because it is decreasing at the end of the time series versus increasing at the end of the time series. The combined index, which again was not used in catch-age model but was used in some of the supporting models, you can see from the correlation values that it was driven highly by the headboat and the commercial indices because of the high correlation.

I realize I am going fast so if you have questions feel free to stop me. This is onto to the catch-age model. The catch-age model is the same basic formulation that was used in the previous SEDAR assessments. It is a forward-projecting model like stock synthesis. We used AD Model Builder, and it has likelihood components that are multinomial for the composition data and lognormal for the landings and index data, plus it has some penalty terms under recruitment deviation.

The stock was initialized as virgin in 1946 for the stable age structure. That would coincide with just natural mortality. We used the age-dependent natural mortality rate that I showed earlier, the Lorenzen Curve that was scaled to the Hoenig estimate. There is an age-length conversion matrix that was a probability matrix that assumes a normal distribution of length at age with the CV estimated.

In this case, for matching landings data it was a truncated normal distribution whenever a size limit would apply. That was true for discards as well, assuming that most of them would be undersized fish. We applied the Baranov Catch Equation to compute catch landings and then applied the 2 percent annual rate – this is a linear increase in catchability for the fishery-dependent indices, as we have done in some of the previous assessment and did sensitivity runs on that using zero percent and 4 percent.

The Beverton-Holt Spawner-Recruit Model was estimated again with the first order autocorrelation. The spawning biomass is based on population fecundity, so total egg production. The residuals on recruitment were tightly constrained in the early years when we did not have any composition data to estimate what the recruitment residuals might be, and then they were loosely conditioned in years with the composition data with assumed lognormal error.

Then MSY benchmarks come from a bias-corrected curve to account for the lognormal error in recruitment. We ran into a similar issue here in vermilion as we've seen before with the red snapper in that attempts to estimate steepness in some of the earlier runs were all hitting an upper bound, so at the assessment workshop it was concluded that we really didn't have good information to estimate steepness.

So steepness was fixed; and when fixing steepness, we took the same approach that was used with red snapper with fixing it to the value implied by F 40 percent and did compute it as well for F 30 percent and F 35 percent and F 45 percent and F 50 percent, but the base that I will be showing is based on the F 40 percent, which implied a low steepness or it seemed relatively low of 0.56. Like I said, we examined a range of values in the sensitivity runs.

This is model output-predicted biomass at age over time where the colors represent different ages, and the basic trend here is decreased from virgin because there is no other direction really to go; and when recruitment residuals start, then you can see a steeper decrease; and at the end of

the time series its trend has decreased as well. There is some truncation in the age structure, which is what you would expect after fishing has occurred, but there is not any big decrease of some of the younger ages.

These are a time series of predicted recruitment, so quite variable. I don't know if there is much to say here other than it is quite variable in that the autocorrelation in this case was close to zero. This is the estimated spawner-recruit curve with the scatter plot of predictions around that, and again this is tightly constrained to the spawner-recruit curve at the beginning of the time series until the recruitment residuals could be estimated and then they're freed up and allowed to vary around the curve.

To estimate variation in benchmarks or uncertainty in the benchmarks, a bootstrap was applied to the spawner-recruit curve, so this plot, I am going to go through quickly, but it just shows the estimates of uncertainty in the parameters estimated in the spawner-recruit curve. The purpose for doing this was to estimate uncertainty in the benchmarks, so these are conditional on the base run.

The one of most interest here that I have highlighted with a blue frame is FMSY, so this distribution of uncertainty around FMSY would be input into any P-star analysis that we have done. That was asked for and that was done, but I just wanted to point out that this output from the assessment is input into the P-star analysis.

This is predicted spawning biomass over time with the SSB MSY overlaid and also the MSST so it is a trend of decrease, but in the terminal years it is below the SSB MSY but it is not below MSST; so from this base run the stock status would not be overfished; the estimate of F over FMSY here, some spikes here and some variability, but in the terminal year it is an estimate of overfishing, but if you took a mean of the last three years it would be right at FMSY, so that is the estimate.

From this table I just wanted to pointed out what I just said is in yellow here, the estimate of F over FMSY in the terminal is 1.27, so that is an indication of overfishing in the terminal year, and then the estimate of SSB in the terminal year over MSST is 1.1, so that is an indication that it is not overfished.

This is a plot from sensitivity analyses that were done at the assessment workshop. This is F over FMSY in the X-axis and SSB over MSST in the Y-axis; so from this, anything to the right of this line at 1 would be overfishing and anything below the horizontal line at 1 would be overfished, so this is showing a lot of variability in the results.

These are the same runs from the assessment workshop but looking at it relative to the F 40 proxy and also to an SSB 40 percent, a virgin proxy, and this was requested at the review workshop, so I did the same plot for the assessment workshop sensitivity runs, but this shows a tighter cluster of points from the same runs and indicates that overfishing is occurring in most of these cases, but in most of these case it is not indicating that the stock is overfished.

These are more sensitivity runs. These were requested at the review workshop and similar results here with looking at F over FMSY versus SSB over MSST, that you get a wide range of results across the different runs. And when you look at these versus the proxies, you get a tighter cluster, so again from these runs it was overfishing in most of the cases and not overfished in most of the cases.

So it was primarily this plot from the review workshop that led the review panel to come to their conclusions that the assessment base run as presented by the assessment workshop is accepted. They thought that the conclusion was robust, that the stock is not overfished but that overfishing had a lot of uncertainty around that estimate. So that is the catch-age model.

I have just a few slides on some of the supporting models. The stock-reduction analysis is an age-structured model. In this case the life history parameters were from the data workshop. The selectivity at age was estimated by the catch-age model; assumed a Beverton-Holt Spawner-Recruit Model with, in this case, three estimated parameters. They are zero, the steepness and the deviation of recruitment.

There was a single time stream of removal so all landings were lumped together. Then the combined index was used, and we assumed the standard deviation around that index – around the first differences of the index or the changes from year to year of 0.05, 0.2 and 0.35. I have highlighted 0.2 because I am going to show results from that run.

This is the estimate of the stock trajectory in the top panel, the spawning biomass relative to the unfished level, so a lot of variation and a lot of noise, but a general trend of decrease over time. This bottom panel just shows the fit. These are selected just 30 – 30 of the runs or thousands of them run. This is choosing 30 at random just to show the fits.

The bottom panel is the fit to the population growth rate, so the change from year to year in the index. These are distributions of the results from all of the thousands of runs; the posterior probabilities of F in the terminal year relative to FMSY, so across these runs in general overfishing was the pattern, and that's the top panel.

I'm going to skip down to the very bottom panel, which is indicating whether the stock is overfished, so SSB over MSST, and in this case there is lot more uncertainty so there is a lot more spread around 1, but probably the bulk of the distribution is greater than 1, but certainly a lot of uncertainty there.

Then on to the production model; and this one there is no age structure so it is a very different type of model. We used the non-equilibrium logistic model, which was conditioned on effort, so estimating yield. Again, we used the combined index in this one and used Mike Prager's ASPIC software with uncertainty estimated from a bootstrap.

There were four different runs of this model. One was B1 over K as estimated, so the initial biomass relative to carrying capacity, and that was considered to be the base model. Then it was fixed at 0.9 and also fixed at 0.5 in two different sensitivity runs. Then a different objective

function was used to fit the data for a fourth sensitivity run which used the least absolute values of squares rather least squares.

These are fits to the index from the four different model runs, so they are all similar across the different production model runs. From the bootstrap runs, these are the distribution of results. In this case, as before in the other models, the distribution is mostly saying that overfishing is occurring. The bulk of the distribution of F over FMSY is greater than 1. In terms of biomass over MSST in this bottom panel, it is saying that the bulk of the distribution is not overfished.

Okay, that is it for the assessment models and the results, and then I was going to say a little bit about projections that were done. There was an age-based projection model. It has the same structure as the assessment model where Full F is the portions among the fisheries according to recent estimates in the assessment.

The initial N at age is based on the terminal year of the assessment, and then initial recruits come from the spawner-recruit model. The current F was applied in 2008 to get to the year 2009, which is when any new management would take place. Two different types of projections were used here; deterministic projections with a bias-corrected spawner-recruit curve, and then the uncertainty around that was estimated with Monte Carlo simulations, which have a stochastic recruitment and also variability in the initial number at age.

There were really two distinct types of projections here. We tried to apply the P-star approach to compute ABCs, so these were short-term, five-year projections with a P-star that had an allowable probability of overfishing at one of six levels. I should say that in these it was assumed that fishing would occur at the ABC level rather than at something that might be below the ABC level, let's say of ACT.

And then the other type of projections that were run are the typical ones that we run with constant F scenarios, and these were done as eleven-year projections, and the five different scenarios were considered Fcurrent and then four different levels of FMSY. I'm just going to show a couple of samples from the different projections.

This is a P-star projection where the P-star was fixed at 0.25, so this top panel just shows that the probability of overfishing – in the first year it was computed and in the next years it was constrained, so solving for the Fs that would give this probability. I'll just jump down to the bottom-right panel which would show what the corresponding catch would be or ABC, and in this case it does include discards, so it is landings plus discards in the ABC.

Here is a projection with a constant F scenario, so in this case it is F at 75 percent FMSY. The thick horizontal lines are the benchmarks that would correspond to spawning biomass, so in this the projection shows spawning biomass increasing a little bit, but right around SSB MSY. The bottom-right panel shows how landings would increase as the spawning biomass increased.

So that is mostly what was reviewed at the review workshop. I did want to mention to the SSC that after the review workshop, so just within the last few weeks Gary Shepherd, who was the

RW Chair, asked about commercial fish that were sampled from market categories, so they're sometimes put into bins, small, medium or large, before a port agent would sample them.

It turned out that about 25 percent of the commercial samples of lengths came from market categories, so this is a possible source of bias in the length-and-age frequencies. We did investigate this a little bit further. I know these are difficult to read, but the blue that you're looking at – this is across years – the blue is with market categories, and then there is a red dashed line on each of these plots that is without market categories, so any fish that was sampled by market category is removed from the distribution.

This is going backwards in time, so the top-left is 2007, 2006 is below that, then 2005, 2004 in the middle, 2003 in the very middle panel, but the bottom line from this is that in most years there was not a big difference between length distributions when market categories were included or when they were not, but there were a couple of years where there were some differences; in particular, 2003 here in the middle, and there was a little bit of a difference in 2002.

So we did rerun the assessment model to see what effect this would have if these fish were not included in the assessment model. This is comparing the base run to the same model run but with fish removed if they were sampled from market categories. The blue is without the fish that were sampled by market categories.

The top panel here is showing the estimate of Full F over time, and the bottom panel is showing the spawning biomass over time, so there is not a major effect, there were some small effects on these estimates. That was on the absolute scale; this is the relative scale relative to FMSY, so it does affect some year estimates. It does not affect the terminal year estimates and in general the time series were similar. That was the slide I had.

Dr. Belcher: Thanks, Kyle. Questions or comments for Kyle? Yan.

Dr. Jiao: I have some questions. I just need some further clarification. For the stock-recruitment relationship, based on your presentation I thought it is building the statistical catch-at-age model, correct? It is part of the statistical catch-at-age model, right?

Dr. Shertzer: Yes, it is estimated internal.

Dr. Jiao: Right, okay, and then when you projected the population to the future, you mentioned a bootstrap in the stock-recruitment relationship, so I'm not sure you bootstrapped the stock statistical catch-at-age model?

Dr. Shertzer: Not in projections; in projections I wouldn't call it a bootstrap. I would call it a Monte Carlo simulation drawing from the lognormal residuals on recruitment and also with variation in the initial number at age, but the assessment model was not refit for each projection.

Dr. Jiao: I'm just wondering why not go ahead and use the first order all through the aggressive stock-recruitment model and project it in the future because you have the error term in that stock-recruitment model. Are there reasons for re-analyzing the stock-recruitment model?

Dr. Shertzer: No, it was used for the projections. The spawner-recruit curve was used in projections. What I meant when I said it wasn't applied in the assessment was that we did not refit the assessment model on bootstrap -- bootstrapping on data and then refit the assessment model, but we did take the estimated spawner-recruit curve from the base run and that was the basis of the projections.

Dr. Jiao: Well, my concern is in the statistical catch-at-age model the stock-recruitment relationship, actually you have a likelihood term there, so you should be able to estimate the uncertainty of the stock-recruitment model, so that is why I have this concern, but I'm fine.

I have another concern, but page 364 in the SEDAR 7 minutes of snapper grouper, actually that is a stock-recruitment, your estimated stock-recruitment, and I have found for stock-recruitment estimates also, that in some years the stock-recruitment fit perfectly well. This sort of concerned me because it is very hard to have stock-recruitment fit perfectly well. I just wonder whether you have an explanation or comment on that.

Dr. Shertzer: Well, back to the previous point, this panel here on the right shows the projection with uncertainty that is coming from the lognormal error that was estimated in the assessment, so the projection carried forward that uncertainty in the –

Dr. Jiao: From the statistical catch at age, okay –

Dr. Shertzer: Right.

Dr. Jiao: -- I think I understand.

Dr. Shertzer: And I think your other point was about these values and the spawner-recruit curve, yes, I think that really shows how well estimated the spawner-recruitment curve is. No, I'm kidding! In the earlier part of the assessment model there is no information to estimate recruitment, and so it is a constraint in the assessment model that recruitment follows the estimated spawner-recruit curve exactly.

Dr. Jiao: The figure is based on your estimated – the best estimate for the spawning stock size and the recruitment in the history, right?

Dr. Shertzer: Right.

Dr. Jiao: And from that point I feel it is a bit hard to explain that you actually have stock-recruitment fit perfectly well for those years, and they are the years that actually you have a high spawning stock size. There might be something behind it. Frankly, I think this a problem. When you have random terms in your model, sometimes it happens, but I think it is worthwhile

to look at it later since the stock-recruitment relationship has heavily influenced your projection and also influenced the biological reference point.

This is just my suggestion. If I am wrong, just go ahead. I actually have another concern about your bias correction. I understand when you use lognormal we do a bias correction because we assume the log confirms the data for normal distribution, but in your model I feel you used the recruitment for lognormal distribution. If that is the case, again, maybe I misunderstand the model.

Dr. Shertzer: I think there are different ways to approach the bias correction, but the way this was applied is that the lower curve here is the one around which lognormal error is applied. So if that is the case, then average recruitment would be higher than that, and so we wanted to base or compute benchmarks and projections around what we thought would be average recruitment, arithmetically.

Dr. Jiao: So the high line is based on the assumption that log transformed the recruitment follow on normal distribution, correct?

Dr. Shertzer: Right.

Dr. Barbieri: Well, Kyle, I hate to restart that discussion, but I –

Dr. Shertzer: I would be disappointed if you didn't.

Dr. Barbieri: Well, I just would like to hear your comments about a steepness fix at 0.56 for a species that reaches sexual maturity at age one and that by age two 80 percent of the population of mature fish are already sexually mature; has a longevity in the low 20s, or thereabouts. I can't help but feel uncomfortable.

As a base run it doesn't mean that we couldn't present this as an alternative, but I think, again, not to overextend that discussion, but, again, going from that F 40 percent, which in this case is an extrapolation from the red snapper review workshop suggestion, you know, that caused the steepness to be fixed at 0.56. Do you feel comfortable with this estimate?

Dr. Shertzer: You're right, that is where it came from was from the red snapper; so for consistency with that, we chose to come up with a steepness that was implied by the F 40 percent. This did come up at the assessment workshop and again at the review workshop. My first impression was that it did look low, and my second impression was that I don't know why it looks low because I don't know what you base that on.

I think rather than looking at it as they mature early so steepness might be high, I think a better interpretation of steepness is how is recruitment affected by density dependence, and I don't know that we have good information to say one way or the other whether our estimate –

Dr. Barbieri: Right, and to that point, then, why not stick with the estimate that came out of your stock-recruitment relationship? I know that was again hitting an upper bound, but it is just

difficult for me to understand. We compare across species and we look at consistency. Again, I feel that the F 40 percent SPR, if we're going to use this as a proxy, now it is going to be the determinate factor in the steepness values that we're going to end up using for a lot of these species.

If we decide that is the best way to go, that's fine, but I feel that really impacts productivity of the stock at least in the first few years and it will cause low recruitment and will cause longer timeframes for rebuilding the stock. Again, I would suggest a different value of steepness for the base run and keep this run, in my opinion, as a sensitivity run.

Dr. Williams: Well, since you mentioned consistency with past assessments, why don't we look at red porgy, which is probably arguably one of our best sampled fisheries in the South Atlantic? We probably have the best data for that one, and we actually had a pretty decent stock-recruit curve.

There the estimate of steepness, which I can't find but I know it is around the 0.5 range, and the corresponding SPR proxy is about F 55 percent. I would consider the life history of red porgy more comparable to vermilion snapper than red snapper possibly as far as longevity at least.
Mr. Gregory: What steepness has been used in the Gulf of Mexico stock assessments, and red porgies, you know, a lot different life history, too. That is kind of a stretch.

Dr. Barbieri: Well, I'm looking here for a comment. The consensus report does point out that it was agreed that a range of steepness value should be used in sensitivity runs, which you did, but the fact that the sensitivity runs also show that the conclusion from the assessment workshop base model that overfishing was occurring was not robust to key model assumptions.

You know, I think this is an interesting point of discussion. It looks like if we're going to adopt – you know, this is a decision for us to discuss and perhaps make here collectively – if we're going to adopt now F 40 percent as a proxy for FMSY across species, I think this is a discussion that the SSC needs to have because it defines the steepness values that are used and then impacts our projection estimates and the recruitment values we expect from those.

To me, again, in the discussion of what is a scientific recommendation from this panel or perhaps alongside a management decision, I feel if the council decides to supersede the F 30 percent decision as a proxy for FMSY I will live with that and we're going to have to deal with the consequences, but at this point it seems to me to be somewhat of a risk-aversive management decision that I would rather be made at the council level.

Dr. Shertzer: This comes up again and again that we really have trouble estimating steepness in the assessments, so if the SSC wishes to provide some guidance on that we would really appreciate it, actually, at the assessment workshops. We either take the approach of fixing steepness at some value that we think is reasonable or we take this approach that we have tried, which is choosing a proxy for FMSY and then using the implied steepness or maybe there are some other ideas out there, but I think so far those are the two approaches that have been done.

Dr. Cooper: I guess I'm curious. I can possibly predict your answer but given the difficulty of estimating steepness, why not just estimate recruitment explicitly rather than estimate the spawner-recruit curve internally; in other words, fit recruitment as a random walk kind of component or bias, other correlated random walk and not force it to conform to a spawner-recruit curve that we don't necessarily know apriori what it is and it can't really estimate it?

Dr. Shertzer: Okay, two points on that. One is that at least for where we do have information to estimate recruitment the penalty is very, very light, so it really can deviate quite a lot from the spawner-recruit curve that is imposed. That's not true in the earlier time period where we constrain it, obviously, or at the end of the time series where we have to constrain it again. I'll also just point out that what you're suggesting is I think functionally equivalent to applying a steepness of 1 where you have just a mean recruitment around which you estimate deviations.

Dr. Cooper: Possibly except if you allow just an autocorrelated random walk, in theory you could have a continuous trend over the whole time series, so it won't necessarily be stochastic about a mean, so it could result in – essentially emergent property could be a spawner-recruit relationship or not.

I think it is slightly more free in that it doesn't have to conform to a stock-recruit relationship, but it might that you could then fit afterwards. But, yes, it would be interesting to see and it would certainly then get away from the argument of, well, you didn't pick the right steepness, because then you just let the model tell you what – you know, you're not constraining it to any particular steepness.

You're letting it wander to wherever it needs to wander, and then in the post fitting of the spawner-recruit relationship you can then say, well, we don't have a good estimate of spawner-recruit, but you should then still be able to estimate your fishing mortality rate, I think. Maybe not, I could be totally wrong.

Dr. Harris: I was just going to comment that we're talking about steepness and issues of steepness here, but it strikes me it is only an issue if it bumps into a bound. Otherwise, we just let the model fit it and leave it at that. It is only an issue when steepness is bumping into an upper or lower bound when we have to make these decisions, so we shouldn't treat this as something that occurs in every stock assessment. It is just we just have two in a two where it has been an issue.

Dr. Williams: Yes, Pat is right. I was going to say something similar to that. The other thing I was going to add is what Andy just described would be nice to do it that way except we don't have that kind of age data. We don't have that consistent year-to-year age data. We have to fill in these gaps and we have to go back in time with some sort of structure for the stock-recruit relationship. I don't think we'd have the data to get anywhere with what Andy is proposing; maybe ten years from now, yes.

Dr. Cooper: Well, I think it is a tradeoff between lengths of the time series. I mean, you don't have to go that far back in time. We're choosing to. An idea; again, I'm not saying that this is the way to go, but it would be interesting, and I don't know if anyone has done simulation

models to see how this works of a shorter time series, but allowing recruitment to vary openly as opposed to a longer time series where you're forcing a stock-recruit curve that you don't necessarily know very well. I'm not sure which is the best way to go, but it would be interesting to those with free time to explore.

Dr. Barbieri: Back to the biology of the species, on Page 12 of the review workshop report, when the review workshop panel was looking at the terms of reference of the data workshop, they say, "The data workshop should provide guidance for an analyst regarding the steepness parameter for stock-recruitment based on their knowledge of the biology of the species."

So, in this case my interpretation of what the review workshop is saying is whenever – and Pat is right, there will be several examples where we do have steepness estimates that are good enough coming out of the stock-recruitment relationship, that we can work with that. But when we hit that upper bound and we have problems, in this case my interpretation from the review workshop panel is that we should use some biological basis for coming up with this value.

And, again, looking across species, I mean, the same thing that we do in terms of looking at natural mortality values, and, yes, we have some methods that we use preferentially from others, but we also apply our expert knowledge, experience and we use information from similar species to make that judgment call. So, to me this reinforces the discomfort from the review workshop with that steepness value of 0.56 as the base model.

Dr. Williams: I was going to see if Kyle wanted to answer this one because that comment you're reading right out of the review workshop was directly from one particular reviewer who seemed to suggest that there was clear evidence to point us to a steepness value based on the biology, but when we actually explored what he was discussing further, it was a very – I don't know how you've described the report he was referencing, but it was a Chris Francis report that wasn't even published material, and it basically said fix it at 0.75 in all cases. So, take what you're reading out of that review workshop report with a big grain of salt with respect to that particular issue.

Dr. Barbieri: And just one more point, I think the discussion this morning over king mackerel, and I asked Shannon and Victor to give me their impression, I think the assessment analysts that build the model and work through all the workshops and assess several species, I think you have a general feeling about how realistic parameter inputs in the model are, and that is why I am asking you are you comfortable with the steepness of 0.56 compared to what we used for red snapper to be used for vermilion snapper. That would be, as the lead analyst for this, your recommendation as well.

Dr. Shertzer: I don't know what I would base this on to say I'm not comfortable with it. I mean, if I had some other information, then I could say one way or other, but I don't, so this is the value that corresponds to F 40. I think the better question is, is that the right proxy to use for FMSY; and if it is, then this is output that corresponds to that.

Dr. Barbieri: Right, and you led us back into the F 40 percent, and again, you know, I'm not making a judgment call here, but I think this is a point of discussion because it is a decision for this species complex and something that I think we need to discuss carefully with the council. In

the past the council has made a decision as far as the Snapper Grouper FMP to adopt an F 30 percent as a proxy.

Now maybe that is outdated and it needs to be updated, and that's fine, but I would like to hear a little more, perhaps, about the requirements from the newly reauthorized Magnuson-Stevens Act and what guidance there is in terms of estimating FMSY proxies. Now if this was coming out of the model I agree, but if we're going to be using proxies and we're going to make those qualitative choices that are really deciding how conservative we want to be as far as benchmarks.

Mr. Gregory: Did the data push the estimate of steepness to 0.95, which was the upper limit? If the upper limit had been 1, I probably would have gone to 1. But, given that the data was pushing it that way, why come back and use a method that brings it so far away from it?

You know, I hear what Luiz is saying and that seems like it would be good to say we're not going to go beyond a steepness equivalent to F at 30 percent because that is the policy or that is the bottom line, and let that F 30 percent level be the limit that is acceptable. And if the data drive it beyond that, you step back to that, but if the data comes below that, you use what the data tells you to use. That seems to somewhat of a conservative approach to it but if the data is pushing you in one direction, why go in a different direction?

Dr. Williams: Well, in fact the data is not pushing you in that direction. When you're hitting a bound like that, it is pretty much inestimable. In fact, you're hitting on a paper that is lurking in our group in Beaufort right now that is waiting to be published. We already have run simulation analyses.

Basically what you find is when you throw a whole bunch of stock-recruit noise at a stock-recruit relationship and you're estimating using the steepness parameterization, it tends to both bounds, but it tends to the upper bound a little more than the lower bound for some reason. I don't know why, so when there is no information there it just goes to the upper bound or it goes to the lower bound, but it goes nowhere in between when there is no information there.

So when you see it hitting a bound, it doesn't mean that – you can't even infer directionality really from that. It just means it is inestimable, and that is really the way to interpret that when it is hitting that bound.

Mr. Gregory: Then that begs the question we need a different paradigm. We need a different way of doing this completely instead of just throwing darts at something.

Mr. Carmichael: In the interesting of making sure all of the information is on the table, the Gulf did do a vermilion snapper assessment. It was an assessment on the Gulf stock. The review workshop recommended an SPR of 30 percent. For a comparison the SPR at MSY from the base case was 0.29. They had a steepness of 0.8. Their FMSY estimate was 0.81 and their SPR at 30 percent estimate was 0.79.

That is what the Gulf had, just so we are not in the position of wondering what the Gulf had. Now, I think if the committee is leaning towards F 40 percent over F 30 percent – and this is part

of what Luiz was bringing up this question again, but it probably deserves discussion. The council has picked the SPR at 30 percent, so if the body believes that is no longer appropriate, that certainly is something that should be discussed because it will play into potentially how we craft, say, ABC control rules when we don't have like a probabilistic analysis and how we go about calculating that.

If the council is looking at a number of amendments, if we think that rule of thumb that was put in place of using F 30 percent for proportion of stocks is no longer appropriate, that would be good. I wouldn't want to see us sort stumble into that by virtue of using F 40 percent for one stock, which was a little bit controversial, and then using it again for another stock because they used it for the previous stock, which kind of tends to give things sort of this false sense of support and consistency.

Let's make sure that we keep in mind the big picture of how this is viewed in light of what the council has previously recommended. It is well within this body's right to say new evidence and recent publications continue to drive that SPR level, that minimum SPR level up, and you think the 30 percent is no longer appropriate, but let's make sure we have the discussion about that and we don't get us in kind of a inconsistency or a challenge where we don't need it.

Dr. Williams: One quick question for you, John; when was the F 30 percent established by the council?

Mr. Carmichael: I think it goes back to one of the early SFC amendments, and I'm looking back to Rick to see if he has any reference or Gregg probably has them on the tip of this tongue.

Mr. Waugh: That was '96, and that was to respond to the '96 SFA Amendments. It may have been '98 when we finished it. But, again, that was to meet the requirements that were in place at that time. What the council has done subsequent to that is indicate that their MFMT that they are recommending is FMSY and then leaving it up to SEDAR and the SSC to give us what the best estimate of FMSY is.

Dr. Shertzer: I guess we're several statements past this, but I was just going to comment on the assessment pushing the estimate of steepness to the upper bound. We did a likelihood profile on steepness. In addition to what Erik said that you lose the ability to estimate steepness with this noise, in this case there was really almost no difference in the fit to the data across the range of steepness from 0.45 to 0.95.

Dr. Barbieri: Well, back to the comments that John made, my point is to basically force us to revisit this proxy choice. If we're going to have to make a recommendation to the council, the proxy is somewhat a choice matter. That's why we're picking that as a proxy because we cannot estimate FMSY. To me it is a slippery slope into how that relates to the real FMSY value.

It is something that I think we need to discuss but I feel that if we don't we are going to end up in a situation where later on we're going to have questions coming up about how consistent we were when we assess different species and what is the biological basis for some of the choices across species.

From what Erik discussed before, I get the impression that he is saying, well, more recently what we get out of the literature, the recommendation is that F 40 percent is a better proxy for FMSY than F 30 percent. If that is the case I think it is a valid point for discussion, but by default not to discuss this issue we are going to end up with very different steepness values because we end up using steepness in projections. And, basically, everytime that we don't have a stock-recruitment relationship that gives us a good steepness estimate we're going to use F 40 percent and whatever steepness comes with that.

Mr. Carmichael: Or any other reference that you could choose; there are lots of Fs out there to look at, Fmax, F 0.1. Consider Fmax, does that have any value in this? I think you guys know all these things; you can pick whatever you think is appropriate.

Dr. Williams: If we want to repeat what almost every region has done in the past ten years, which is to have a huge workshop on what is the appropriate benchmark – New England has done it, the West Coast has done it, the North Pacific has done it – instead I would suggest just go look at their reports – they're out there – and go ahead and draw your own conclusions, but I guarantee it is going to be somewhere around SPR of 40 percent because that's what they all tended toward. In fact, the West Coast Groundfish tended to as high as 50 percent.

Dr. Barbieri: Erik, that is a very good point. I think we're going to be on much better ground if we do have our own regional workshop. Using these proxies that we extrapolate from other regions with species that have mature, late in life, or have determinant fecundity; even when they're bad spawners, they have determinant fecundity; they don't have this episodic recruitment; they don't have these extended spawning seasons because they are actually in much more temperate regions, it is going to be a different discussion and we may end up, by choice going with the F 40 percent, which I agree is a value that is very worth considering.

I just don't want to accept that by default at this point. If we're going to have a catchability workshop, if we had the indices workshop; why not have a workshop that discusses our FMSY proxies, choices and steepness values that come with that? That way I think we're going to be able to have better documentation also on the choices that we make and how we evaluate those assessment results.

Mr. Gregory: How do we direct that request; who do we direct it to suggest a workshop like that by SEDAR? I agree with Luiz because the other areas are cold water species. Whether that makes a different or not, I don't know, but ours are sub-tropical and that could make a difference, so it is probably worth looking at it independently. I agree that would be a great workshop to have.

Dr. Barbieri: And just one more point to that, and it is not just because of the South Atlantic, but I think that we have similar species or sometimes the same species between the South Atlantic and the Gulf and we are doing these assessments that come out of the same science center. I think that us having this discussion, including all the assessment groups, the entire assessment group plus all the other people that get involved; I mean, at the very least it would be very fun to do and it would better document our reasoning and rationale for some of those choices.

Dr. Cooper: Okay, before I make my comment I really want to make, I just want to out for those who haven't seen it, on Page 9 of the Review Panel Summary Report they explicitly state the panel supports the estimates from the AW base model. Estimates for 2007 are given below, and they give F relative to MSY, B, B to be unfished, all the management things, so that is the base model that the assessment workshop put forward.

The review panel, while they beat the tar out of this model and criticized it left and right, in the end came to a consensus saying, you know, we support these estimates. There are all kinds of uncertainties, there are all kinds of other ways to do it, the review panel, despite all that said, "We support these numbers."

So, therefore, I am of the opinion in general that it is the best available, let us go forward with those numbers. However, I think this may be a record because I am about to agree with Doug Gregory here on something. It makes me nervous when a parameter is inestimable; that rather than changing methods, we try and find a way to pick that number for the parameter.

I am not at all recommending that we redo anything for this, but in the future – again, I don't know if there has been research on this on which is better to do, but just the idea of, well, once again in cases where we can't estimate the parameter, to therefore pick a number makes me a little nervous.

I think the chances are this a good enough number, good enough for now, best available science, it has been peer reviewed, it has been accepted, but in the future I would like to see some work on what are other ways to do it besides picking a number. I would be interested at some point – I haven't seen the whole process of if you need to find a steepness to figure out the one that is related to an F 40 percent or where the proxy then determines the steepness, I haven't seen that done before.

I would be interested to see a citation or other places that have used it just because it is kind of a neat way to look at it, and I would be interested to see how it has been done and where that came from. I think it is a very creative approach. But, again, in general the review panel accepted the assessment workshop results. They have put the exact numbers right there. They've put all kinds of caveats. It works for me.

Dr. Barbieri: And by the way, let me emphasize here again that I'm not passing judgment on the quality of the assessment. I think that we have here a very solid stock assessment. We have a very well put together statistical catch-at-age model. We have the other model runs for comparison.

Some of them did not turn out – you know, the outcomes are not exactly the same as the statistical catch at age but give us an idea of how different models would handle this data and the parameter inputs. I am really satisfied with the quality of the assessment. I am not discussing that by any means. My only discussion here is what we consider the base model and the range of sensitivities.

You did look at runs that used F 30 percent SPR and maybe 45 and 50, so you have a whole bunch of sensitivities there, and I think that's fine. Just as a point of discussion, my issue about steepness and the F 40 percent proxy is we need to find a rationale for using this and documenting this for our region. I think we will be in better shape than accepting just this number and then the equivalent steepness. That's all.

Dr. Cooper: Since our dictated record is being so meticulously watched, I just want to point out that we're not just blindly accepting 40 percent because that is what the reviewers did. We have the Williams and Shertzer paper that demonstrates that. We have what goes on in many other regions that says there is a wide range and that F 40 percent is a good proxy for FMSY.

It may not be the best, but I certainly don't want the impression to be given that we are saying, well, that is what they chose; we don't really know anything despite the fact that we have been working in this field for a while. So, no, we are picking a number based on our collective knowledge and based on the published literature. There may be better numbers, but I want to be very clear that we're not just picking a number ad hoc.

Mr. Carmichael: Well, I'm looking at what they say about stock status and what do you say about stock status for vermilion snapper? This stock is subject to overfishing; is overfishing occurring or not? I'm subject to moments of clarity but I wouldn't classify myself as normally having a very clear vision on what the heck is going on, so what does subject to overfishing mean necessarily?

Does this panel believe that overfishing is occurring? Is that what that says because they also follow that with this conclusion of highly uncertain due to the lack of robustness to key model assumptions, so I'm not clear of whether or not I would classify this stock as overfishing or not.

Dr. Cooper: Yes, as I said, they beat this thing up quite well and throw in all kind all kinds of uncertainties, but on Page 9, in their table, F 2207 to relative to FMSY is 1.27. And they say they support those estimates; therefore, despite all the caveats, caveats, caveats, they have a number. They wrote it down; it's from the AW.

They say they support this and give their caveats as to why there may be problems with this, but in the end that's the number the review panel came up with, which is the same number that the assessment workshop came up with. So, I would say, yes, it is highly uncertain, but the estimate of F 2007 relative to FMSY, based on independent peer-reviewed research, is 1.27, which indicates overfishing was occurring in 2007.

Mr. Carmichael: Thank you for the clarification.

Dr. Cooper: But that is just my opinion; I don't see a motion on the floor.

Dr. Barbieri: Well, one of the comments is, you know, the choice of the F at MSY proxy influences the outcome of the P-star ABC ranges, right, Kyle? So, in that case, yes, we have a range based on that probability of overfishing, and that assumes that FMSY is best estimated by the F 40 percent SPR. That is one concern that I have. The other concern is with the projections;

the fact that F 40 percent then gives us that steepness value that is used in the projections. I wonder if 0.56 is not a low productivity value for recruitment of vermilion snapper.

Dr. Shertzer: I'll just repeat what I said earlier, I don't know. There isn't any information one way or the other.

Dr. Cooper: And to just quote from Page 10 of the review workshop, this sounds very familiar, "The projection method uses estimated numbers at age as a starting point", ya de ya de – "however, this is an adequate approach for short-term projections, one to three years. However, any projection results should be treated with caution because of the uncertainty in base model results." So it sounds like we're in a similar boat to where we were a few hours ago where the method is fine for short-term projections; don't hang your hat on it predicting 20 years down the road.

Dr. Shertzer: Yes, and I'll add to that this is a little different from the last case because the stock is not estimated to be overfished, so there is not a formal rebuilding plan trying to rebuild to an estimated biomass benchmark.

Dr. McGovern: Before you're done talking about steepness, I have a question about the projections. This is something I talked to Erik and Kyle about. This has to do with how we're calculating the reduction in Amendment 16, the reduction in harvest. Gregg can help me out with this, but what we're doing there is using the average landings from 2004 to 2006.

During those years average landings were about 1.67 million pounds. During those years overfishing was not occurring. Effort over FMSY was about 0.8 to 0.9. If you compare those average landings to the yield at FMSY in 2009, you need about a 18 percent reduction. That is kind of confusing that you would not be overfishing in '04 an d'06 and then you compare it to a higher fishing mortality you need a reduction in harvest.

What we want to do is compare it to the yield at 75 percent of FMSY, so in that case you're looking at a 36 percent reduction in overall harvest. The question is comparing '04 to '06 landings to the yield at 75 percent of FMSY in 2009; is that the appropriate method or should we have another projection or something like that?

Dr. Williams: One thing to consider is that F is bouncing around a little bit partly because the population seems to be in decline as well; and so just because you're comparing landings from when overfishing wasn't occurring to that last year when overfishing is occurring, it doesn't mean that they're not comparable; they still are. Essentially what it is saying is those landings, if removed from the current age-structure population, is overfishing. It may not have been two or three years ago because there were sufficient fish out there, so in that sense there is not really that inconsistency necessarily.

Dr. McGovern: The projections are based on '05 to '07 and the average F is 0.3 and 0.4, and so it is not overfishing when you average those last three years. It is just very confusing that we're not overfishing and if we compare it to the yield at FMSY we need a reduction. It seems like something is amiss there, to me.

One other comment, if you use the Baranov Equation and look at the 75 percent of FMSY for those last three years and compare it to current F, it is about a 22 or 23 percent reduction to get to the yield at 75 percent of FMSY. If you compared 2008 and 2009 projected landings, it is about the same reduction in harvest as opposed to a 36 percent reduction comparing '04 and '06 to 2009.

Mr. Carmichael: Did we have a motion for this? We had a consensus statement, but I don't think we actually had a motion, so let's not forget to do that. Andy threw it out and nobody argued with him too much.

Dr. Belcher: We do not have a motion.

Mr. Carmichael: No, just a reminder. We will, hopefully, have a motion to make sure it is clear which run you endorse.

Dr. Belcher: Okay, so to the group what is your pleasure relative to the vermilion assessment?

Dr. Barbieri: Well, I'll make the motion. I am fully confident that this assessment is solid. I really don't have any questions on the assessment itself. I think it was very well done and very carefully conducted. In terms of accepting the current assessment as best available science, I will make the motion. **I move that the South Atlantic Vermilion Snapper Assessment be accepted as best available science, but I would like to add to that that the issue of F 40 percent versus F 30 percent as benchmarks should be considered in the future for other assessments.**

Yes, it is part of the motion because I want explicitly to voice the fact – you know, in my opinion this is an issue that – I mean, unless we have reached some resolution to that effect, I just feel somewhat uncomfortable not an accepting assessment that is so carefully conducted. My inclusion of the F 40 percent versus F 30 percent will give the council some indication that they should look at the sensitivity runs as they make their assessment on how they interpret the assessment and the status of the stock.

Mr. Carmichael: We should probably put that motion on the board.

Mr. Gregory: Does anybody recall what other species have steepness as a 0.6 or thereabouts?

Mr. Carmichael: Erik's recollection was red porgy was in that ballpark. I could look up red porgy if you're curious.

Dr. Barbieri: But red porgy is hermaphroditic, right, or is it gonacharistic – hermaphroditic and I think that the issue of how we're going to consider benchmarks based on – if we are treating those things related to their resiliency to fishing, gonacharistic species should be considered perhaps separately from hermaphroditic species, and to me how early they mature so they can engage in reproduction early versus later should also be taken into account.

Mr. Carmichael: This is potentially a topic that should be discussed on Wednesday in our open discussion about how we set up control rules and make recommendations. This really gets at even the OFL part of it, which I think up until a couple of hours ago we thought we were fairly well cut and dried and in agreement on, but it brings up a lot of questions. It's something we should probably talk about some more and maybe that is what your motion is getting at, make sure we keep this as a hot topic. Has there been a second?

Dr. Reichert: I have got a question. Luiz, just to make sure, the second part of this motion is relative to the vermilion snapper assessment or is this a much more general part of the – in other words, should this be part of this motion or maybe we should make a separate motion?

Dr. Barbieri: To me, in this motion, this reflects our uncertainty or the lack of consensus among the SSC about the FMSY proxy.

Dr. Reichert: But, again, is this specific to this vermilion –

Dr. Barbieri: Yes.

Dr. Reichert: Okay.

Dr. Belcher: So, again, the motion that is put forward is move that the South Atlantic Vermilion Snapper Assessment be accepted as best available science, but the issue of F 40 percent versus F 30 percent as benchmarks should be considered in the future for other assessments. Is there a second for this?

Ms. Jensen: I will second that.

Dr. Cooper: The problem I have is that if your goal is to talk about the uncertainty in the results, I have a feeling there is a lot of other things driving that uncertainty than F 30 percent versus F 40 percent, and I think that narrowly defines a huge amount of uncertainties that are in the results. I would much rather see the motion worded to basically – I don't know if we want to use the term "support" the comments made by the review panel addressing the large degree of uncertainty in whether the stock is experiencing overfishing, and make it much more broad and then have a much more narrowly defined motion addressing the need to talk about appropriate benchmarks and proxies down the road.

Dr. Barbieri: And I will accept that as a friendly amendment to – Christine, would you accept this as a friendly amendment to that motion?

Ms. Jensen: Yes.

Dr. Belcher: What is our process for a substitute motion? **The motion now is move that the South Atlantic Vermilion Snapper Assessment be accepted as best available science and supports the comments made by the review panel with regard to the large degree of uncertainty as to whether the stock is currently experiencing overfishing.** This is a substitute motion made by Andy Cooper; seconded by Marcel.

Further comments or discussion? Okay, all those in favor of the substitute motion, raise your hand; all those opposed; all those abstaining. The motion carries. So now to vote on this as the main motion, all those in favor raise your hand; all those opposed; abstaining. The motion carries.

Okay, the last item on the agenda for today is review our actions and our report assignments. With our actions, basically we have three motions which basically we accepted the king mackerel assessment, the addendum to the red snapper assessment and accepted the South Atlantic vermilion stock assessment. Those are our three main items that we have done. As far as report assignments, again hoping to work towards perfecting – Andy.

Dr. Cooper: I believe Luiz originally had a plan of putting up a motion that specifically addressed the need to discuss appropriate proxies and benchmarks.

Dr. Barbieri: That is correct, but I thought based on the very appropriate comments made by John Carmichael that we would reconsider that motion on Wednesday as we discuss that issue again.

Dr. Belcher: Okay, back to report assignments, everybody should have received an e-mail that had your excel spreadsheet of what you are assigned to. What we had discussed yesterday, for those of you who came in late or weren't here, was we're going to try to go back to this idea of working towards a report that will stand as a consensus report from us or an SSC report that hopefully we can morph into a consensus report.

We were thinking about having rapporteurs yesterday but decided the better thing to do was just those folks who were assigned to those tasks get together and write up your synopsis of the discussions relative to those sections, so it is working together to get that section for the report written. Then we will bring them all together in the morning, collate them and let people look at them. We could probably get them printed out, is that correct, John? We will get them printed out so everybody can look at them.

Mr. Carmichael: Print them and e-mail them; we can handle something to get them to everybody.

Dr. Belcher: It would be nice if we could have them for tomorrow morning, because, again, we're going to have to – by the way that the agenda is following, we have to have our report finalized by the end of the meeting tomorrow. I don't think there is a lot time. Erik.

Dr. Williams: One other thing that might help, I know we were each assigned to a particular topic, but a lot of us commented on topics that we weren't assigned to and it would help if those that remember what they commented on or could jot notes about their comments, then give it to those people that are assigned that topic.

Mr. Carmichael: I'd also like to draw everybody's attention to tomorrow when we deal with Snapper Grouper Amendment 17 and remember that vermilion snapper is overfishing, it is going to be in Amendment 17 so you will have to make fishing level recommendations. Remember to

take a look at the outputs that you have for vermilion snapper and be advised that we will have to make fishing level recommendations for this stock tomorrow.

And the same for red snapper because red snapper we have the addendum and made some actions, and that brings up perhaps a bit of a situation because we don't actually have projections that are consistent with the recommendations that were made. Do we have some idea of how long those take to run; at least, you know, F-0, FMSY of 75 percent MSY. I mean, obviously making tables is very time consuming, but just to get the runs and look at it, but that's something that could happen here or is it something that will have to happen later?

Dr. Williams: I think it is going to have to happen later. I don't think we could do it.

Mr. Carmichael: Too much error involved in trying to rush and do it tonight. Very well, then.

Dr. Belcher: So is it somewhat clear what the task is as far as the report writing? Again, it is just to capture the essence of the discussions that happened today. Again, especially for people who were involved in it, your recall on your key points of the discussion would be helpful to those folks who are trying to pull everything together.

Again, if we can try to have some of these rough drafts for tomorrow morning so that kind of puts us ahead of it relative to the agenda items we still have. We have another SEDAR review to look at and then we're looking at Snapper Grouper Amendment 17, which I'm hoping we can keep our focus on and that shouldn't take what it has taken us in the past to do it. Are there any questions? With that, we will recess for today.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Cape Fear B Room of the Hilton Wilmington Riverside Hotel, Wilmington, North Carolina, Tuesday morning, December 2, 2008, and was called to order at 8:10 o'clock a.m. by Chairman Carolyn Belcher.

Dr. Belcher: Good morning, everyone. This morning we are going to start out with the results from SEDAR 17, and we're getting a presentation on the Spanish Mackerel Assessment Report by Dr. Conn.

Dr. Conn: Okay, this is going to look pretty similar in form to what Kyle showed yesterday. I am going to start out talking about the data used in the Spanish assessment; talk about the primary model, the primary catch-at-age model used; go over some model results; some sensitivity analyses; and then mention a few supporting models and analyses.

So in contrast to vermilion the regulation history for Spanish is somewhat complex. I'll just give a few highlights here. In 1985 the size limit was initiated at 12 inches FL; in 1987, established an emergency rule that gave the first serious catch quotas and bag limits. Then in 1995 there was a gill net ban in Florida state waters which changed the dynamics of the fishery quite substantially. Other than that, there was pretty much a lot of annual changes and trip limits, closures, et cetera.

The stock definition was specified as the Dade/Monroe County Line in Southern Florida, so we're looking at a stock definition that occurs from that point north, so all the way up into the northeast. Natural and discard mortality assumed some values there. They were based on a few studies but also sort of perceptions of fishermen. Then I will show some age and growth maturity plots later.

One thing that the life history group recommended at the data workshop was that where possible we assume differential growth for males and females. What we ended up doing in the assessment model is to assume a one-to-one sex ratio at birth and that the sex ratio could change after that point based on differences in harvesting.

This is sort of the plot again. I am not sure if you can see the Dade/Monroe County Line here. Like vermilion, we used these Lorenzen estimates of age-specific natural mortality which were rescaled based on a Hoenig estimate of natural mortality using maximum age. The green line would be the one that was used in this assessment.

Again, there is pretty clear dimorphic growth for males and females. The red line here is a growth curve that was assumed for males. The green line was the growth curve assumed for females. Maturity at age; Spanish mature very quickly. There are actually some age zeroes that were thought to be mature, but that sort of induces the chicken and the egg sort of dynamic into modeling, so those were actually assumed zero.

I think it was something like 3 percent of age zeroes were detected to be mature, and then by age one it is something like 93 percent are mature. Going in a little bit more to the data, this is a little complex. We get into this issue of these three data points, sort of contentious data points. The Fish and Wildlife Service and the early NMFS surveys, those occurred in 1960, 1965 and 1970.

Our approach was to initialize the model in 1950, which I'll talk about a little bit later, and to have the historic recreational landings in 1950, set that equal to the average of the data points in 1960, 1965 and 1970. After a lot of discussion at the assessment workshop, we discussed telescoping and recall bias that might have affected the early recreational landings, so these figures all represent a 0.75 multiplier on the early recreational landings in an attempt to account for recall bias in these surveys.

Another issue that came up right prior to the review workshop, the dashed line here represents the landings stream that was used in the assessment workshop. Immediately prior to the review workshop we found an error in the recreational landings data point in 1960. In particular, the survey in question had a category called "mackerel, Spanish", and in 1960 it included data from king mackerel.

So we attempted to correct that data point going into the review workshop, and that is what is shown in the solid line. There has been a lot of contention about these early recreational landings. We had a similar issue with red snapper. The counts from the 1970s do suggest that recreational fishing for Spanish drew large numbers of visitors to the coastal areas in Florida.

This picture shows a – I'll read the caption. It's from 1957, but it is a string of Spanish mackerel such as this is a common sight on the docks of most any Florida seaside community. They run in schools in countless numbers and will strike a trolled metal spoon. Sometimes croaker and whiting are picked up with the troll lures such as these fishermen are displaying over their mackerel string.

So the landings were substantial; if they were quite to the level that we're seeing here, I think that point could definitely be argued. This is a plot of commercial landings from 1950 to present by gear. The dominant gear for many years was gill net. This is the polka-dotted area. Then in recent years, since the Florida net ban, you see sort of an increase in this purple, which is handline, and this blue stripe, which is cast nets. That is predominantly in Florida waters.

This is combined landings from 1981 to present for recreational and commercial fisheries. Recreational is in blue; commercial is in the dotted. Discards were relatively minor for Spanish. When they did happen, they were assumed to occur because the fish were below the size limit.

Shrimp bycatch is another possibly contentious issue in this assessment. There was eight years where there was observer data on shrimp vessels. Kate Andrews at Panama City did an analysis to standardize over some variable and come up with bycatch estimates for those eight years. Basically what we decided to do was to try to extrapolate a relationship between shrimp landings and Spanish bycatch based on eight years of observer data and to sort of extrapolate that back to 1950, sort of what they tell you not to do in statistics class.

The other alternatives all had their own problems such as assuming a constant level, assuming that shrimp bycatch didn't occur at all, et cetera. I think anything that could be done here would be met with some level of criticism. This was actually the model that we applied. We got log of shrimp landings on the x-axis in the left panel and young-of-the-year bycatch in millions – that's numbers of fish – on the y-axis.

For the eight data points that we had, the two years where we observed the highest shrimp bycatch also were in years where they had the highest shrimp landings. We decided to try to account for that by employing this sort of hockey stick model to extrapolate bycatch. Another thing that was done in this model was we assumed that BRDs, which came into wide use in the late 1990s, resulted in a decrease in Spanish bycatch in the shrimp fishery. That is why estimates of bycatch are less in recent years.

For length compositions we had a number of sources for these; recreational through MRFSS survey, gill net, cast net, handline and pound net from the commercial fisheries. For both length and age compositions we assumed we had to have at least 20 samples to be able to use a given year's data.

After the review workshop, Gary Shepherd – we kind of went over this yesterday – raised an issue associated with market categories and how sampling was done for both length and age compositions. The same issue applied here and there were some slight differences between – if you plotted length and age compositions for data including market categories and not including market categories, there were some slight differences. However, the revised age and length

compositions were not rerun prior to this meeting. So, again, the same sources for age composition.

Indices were kind of all over the place. There was one fishery-independent survey that was considered or actually used, and that was a SEAMAP Survey which caught mainly younger fish and there was sort of a clear bimodal distribution separating young of year from one year olds, so there were two indices developed from that fishery-independent index and then a total of seven commercial and recreational CPUE indices.

They were kind of all over the place. Then if you look at a correlation plot, the highest correlation on this table is 0.44. How useful any of these indices are by themselves is sort of questionable. One thing that we tried to do to get a better sense of what was going on was to run a Bayesian Hierarchical Analysis where we tried to combine indices.

This combined MCMC Index from commercial data and recreational data we used in the stock assessment did meet some criticism from one of our reviewers as far as the functional form that was chosen for residuals. It just assumed normal error instead of lognormal error. It did come under some criticism, but the alternative was to try to fit all of our commercial and recreational landings, in which case there was a substantial lack of fit with one or more of them.

I will get in the stock assessment model itself now, the statistical catch-at-age model. It is sort of a variation on the Beaufort model, which is a forward-projecting, maximum likelihood approach with some penalties. It models landings as lognormal. Age and length compositions are assumed to follow multinomial distribution. Indices are assumed to be lognormal.

Differences between predicted and observed observations are minimized, and there is an underlying discrete population model. The Baranov Catch Equation is used to predict landings, and likelihood weights, which are externally set, are used to control aspects of model fit. We implemented an AD Model Builder Software, which is better described elsewhere. As I mentioned before, two sexes were modeled to account for differential growth.

The sex ratio was assumed to be 50/50 at the time of recruitment. The model was initialized assuming a historical fishing mortality and historical selectivity vector with a stable age distribution, using those assumptions. This was successfully tested on an expected value data with one fishery, and also the code was looked at by several analysts to try to assure that things were working out the way they were supposed to.

I showed the age-varying natural mortality curves. Those were input as constants. The constant relationship was the von Bert growth curves. Maturity at age and length and weight were estimated at the data workshop. The age-length conversion matrix, assuming normal distribution of length at age, centered on the von Bert prediction was used. The CV of that relationship was estimated in the assessment model.

For recruitment, the Beverton-Holt Spawner-Recruit Model was used. Spawning stock biomass was computed at midyear as the product of numbers, weight and proportion of females mature. The first year of recruitment deviations was treated as model input. Following that point,

lognormal recruitment deviations are estimated. Prior to that year recruitment follows the spawner-recruit curve exactly or is assumed to, so you get this funny thing with the dots – the point estimates being exactly on the stock-recruit curve.

The maximum sustainable yield benchmarks were computed from the bias-corrected stock-recruit model. Age classes were considered from zero all the way up to 10-plus. Very few individuals were sampled greater than that age, and most of the life history characteristics saturated by age five or six.

We used a minimum sample size on the composition data of 20. If a given year and gear type did not meet these criteria, we didn't try to model age or length compositions in that year. For selectivities, shrimp bycatch we assumed we were only catching age zero individuals, which was borne out by looking at the length compositions from those surveys.

For commercial we assumed that all fisheries had logistic selectivities with the exception of gill net after the Florida net ban, at which point there was a large switch from runaround nets to set nets, so at that point we assumed that the selectivity changed from logistic to dome shaped. For recreational landings compositions we were getting some lack of fit using any sort of parametric model.

In particular it looked like age ones were the most heavily caught sector, so we fixed the age one selectivity to 1.0, and the selectivity for the other ages were estimated. The next few slides get to how I accounted for sex-specific selectivity. It had to do with growth. For discards a separate fishing mortality was estimated, so that required setting what discard selectivities were. There weren't any age or length compositions for discards, so I had to make some assumptions there.

Then just for a historical selectivity vector, which had to be specified to initialize the model, we chose something that looked similar to what we were getting from estimated selectivity, which is sort of a low selectivity of age zeroes, age ones somewhere in the middle and then pretty much all age two and higher are selected. This is how discard selectivities were done. We assumed a normal distribution for length at age and drew a line where the minimum size limit was, 12 inches, and then calculated the area under this curve where the limits of integration were given by the minimum length ever observed for a given gear type as the lower limit and the size limit as the upper limit of integration.

We calculated those for each age and then rescaled them so that it had a maximum selectivity of 1.0. For the sex specificity and selectivity we had two growth curves, so males grew slower and reached a lower asymptotic size than females. But what we ended up doing here was finding a constant that minimized the difference between the two estimated growth curves, and that constant was estimated at 0.2, the sort of interpretation being that the size of an age one female is the size of an age 1.2 male. We used that relationship to come up with a difference in selectivity for the two sexes.

For initialization landings data were spotty before about 1950. The fishery probably goes back in the 1600s. In the 1800s the center of the fishery was the Chesapeake Bay. Actually there are records that they were catching a million to two million fish in certain years back then.

Certainly, it has gone back quite a while, but how to model that was challenging, to say the least, so we ended up starting the model in 1950 and assuming a historic fishing mortality of 0.2 to sort of initialize the model.

Before I show any results from this model, I wanted to show the findings of the SEDAR 17 Review Panel to place the results to sort of how they should be interpreted. The assessment base run as presented by the AW was partially accepted. It concluded that overfishing is not occurring. That is pretty much all they tell you as the SSC to go on.

It says that due to model uncertainty no fishing mortality point estimates were accepted. Overfished status could not be determined by the model results. Fishery-dependent data suggests there is an increasing biomass trend, but that the model results are not appropriate for projection. So with that caveat, I am going to show you everything they said not to use.

This is a plot of fully selected fishing mortality by year and gear type. We've also got shrimp bycatch on there from that extrapolated relationship. The yellow bars represent commercial gill net, which was the highest in the sort of mid-seventies, mid-to-late seventies. Many people think that at that point into the early eighties the stock was being overfished. Blue gives the MRFSS, so that again is higher in the earlier years when we had the Fish and Wildlife Service survey data.

This is a plot of biomass at age over time and the height of the bar giving the total estimate of biomass in a given year. This is a very typical picture from any of the runs that were made. I think the basic idea of the trend is something that is robust, and that's a decrease somewhere in the early-to-mid 1980s, followed by an increase.

What I think should be treated with caution here is, first, the height of the end of the time series, how far rebuilt the stock has become and then scale of the y-axis. As far as what the ultimate target of rebuilding or the potential of the stock, that is some that I think should be treated with a lot of caution.

Estimates of recruitment from the stock-recruit relationship, the steepness in this case was estimated at 0.64, and it actually did have a well-defined minimum as far as a likelihood profile is concerned. Some indication from the model that recruitment in recent years has been a little bit less. We did the same thing as Kyle with bootstrapping the stock-recruit residuals to get estimates of uncertainty in certain parameters.

In an estimate from the base model, which was partially accepted not for this reason or not for this plot, this particular one showing that the stock is overfished, but, again, the review workshop wants you to disregard this plot. Then this is sort of a typical plot coming from a lot of the runs of current F – that's F in 2007 – in relation to FMSY, most runs suggested that overfishing was occurring up until recently and that in recent years the F over FMSY was sort of oscillating around the 1.0 line.

The spawning potential ratios, the function of time – here are some per-recruit estimates. In this case FMSY basically falls on the F 40 line, and FMSY is reasonably well estimated in this case

if you're comfortable with the model assumptions. And some point estimates – one thing that does come out of this base model that was sort of questioned was that the yield at FMSY does correspond to the sorts of yields that were coming out of the 1970s when the stock was thought to be overfished.

That likely has to do with changes in selectivity that occurred in recent years as well as a drop off or assumed drop off in shrimp bycatch due to BRDs. The review workshop asked for its own suite of sensitivity runs, so I'm going to show first. This is the same sort of plot that Kyle showed yesterday where we have got F over FMSY on the x-axis and SSB over SSB MSST on the y-axis; so the interpretation would be anything to the left of the vertical line would indicate that overfishing is not occurring in the terminal year, and anything above the dotted line would indicate that the stock is not overfished; anything below is overfished.

Because this group of points was all to the left of the vertical line, the review workshop was comfortable saying that overfishing is not occurring in the terminal year; however, because it did span both sides, they weren't comfortable saying anything about the overfished status. I will point out that two of these points, the two highest points are with steepness set to 0.9, which is sort of out of the range of where it was estimated, but I think what really gave them pause was that depending on the external weight given to the indices, that weight has increased the estimate of stock status changes.

The review workshop wasn't really interested in sensitivities run at the assessment workshop, but I thought that I would put this up just for comparison. Now this does use the uncorrected data point in 1960. I didn't go back and rerun all these sensitivities analyses, but at the assessment workshop you can see we did sort of get into this base where overfishing in the terminal year was occurring.

Projections which the review workshop said not to pay any attention to, I've got F equals zero here and is expected it recovers very quickly. At F equals Fcurrent – and by the way if it was suggested that the stock was overfished, the recovery time period would be by 2019. So fishing at current levels these projections would suggest that you would get up to sort of MSY levels over time but not by 2019.

I did a probabilistic analysis based on these projections actually for various levels of fishing mortality, calculating the probability of recovering by 2019 and then levels of 2009 landings that would be associated with each of those choices. The 2009 landings are given in thousands of pounds here.

As opposed to the vermilion snapper where the stochastic stock reduction analysis yielded regional results, we had some issues with particle depletion in this case, which is sort of a numerical issue that you can get into sometimes with sequential important sampling, so they don't really recommend use of this particular model for Spanish mackerel. There are some estimates, however, in some of the reports.

We also ran a surplus production model, which assumes no age structure, non-equilibrium logistic formulation. I ran an ASPIC and in this case I only ran it prior to correcting the 1960

data point, and it sort of fits to the data. Estimates in this case were a bit more rosy with ASPIC, suggesting that the stock is not overfished and that overfishing is not occurring. In fact, it suggests that the stock was never overfished although overfishing was occurring at some point.

Just for comparison's sake we computed catch-curve estimates of fishing mortality and plotted those alongside the estimates coming out of the statistical catch-at-age model. In black is the statistical catch-at-age model and then all the other little colored points are from different gear types. This gave us some confidence that the estimates of F coming out were sort of in the right realm, but again the review workshop wasn't comfortable in the point estimates of F coming out from the statistical catch-at-age model. That's all I had.

Dr. Belcher: Thank you for that. Any questions or discussion relative to the presentation?

Dr. Buckel: Paul, did the review panel get to see that last graph?

Dr. Conn: The one with the catch curve? Yes.

Dr. Belcher: Any other questions? Okay, relative to the group, what do we want to do with the Spanish Mackerel Assessment? What are our recommendations to the council? Doug.

Mr. Gregory: Well, not a motion specifically but I'm concerned that in these three assessments the estimates of recreational landings, those high estimates in the 50s and 60s, seem to be driving the trends in the stock. If I recall correctly, none of the previous assessments used that Fish and Wildlife Service data, and my impression is not much confidence was put into it.

In my mind does it make sense that recreational landings would be so much higher than commercial landings when both sectors were unfettered, so to speak, with the exception that there were probably fewer older men due to World War II in the 1950s, and in the 60s a lot of the younger men went to Viet Nam. It is hard for me to imagine that great increase in that big recreational harvest in the 50s and the 60s.

The other thing about going back to using newspaper clippings is that they always put the biggest catches in the newspaper. You don't hear about the other catches so it is not really an indication of what was going on in the fishery. The last assessment for Spanish mackerel concluded there was less than a 1 percent probability that they were overfished in 2003.

I think that was the last mackerel assessment. No continuity runs were done so to speak. There is one in the document that is listed as a continuity, but I don't know if it is or not, per se, to the previous way. I know that SEDAR is supposed to look at everything fresh, so I'm not saying that you need to do it the old way, but even the ASPIC model shows a difference and conclusion from the AD Model Builder approach.

I'm just concerned about whether we're even in the right ballpark with this. Again, like king mackerel, how do you reconcile the differences among models? I think it is going to come down to where either the review workshop or the SSC is going to have to make some subjective decisions and put forward a strong argument why one model is probably superior to another as

far as indicating the status of the stock or we come up with some way of developing a consensus model out of the data we have. I think that is the way that it is going to go in the future, and I think we're seeing the beginnings of it now. I have little confidence in this stock assessment because of what I just said.

Dr. Belcher: Anyone else? So, again, back to the group, what is our recommendation for the use of the assessment?

Dr. Barbieri: Well, I think a point for discussion would be where to go from here. You know, not accepting the assessment as best available science at this point, how would that move us forward? Perhaps we should discuss what the data limitations are with this and I think discuss a little bit this issue on whether the data treatment during the analysis should be redone versus data limitations that we may not be able to address in the short term and that we might have to live with the uncertainties that we get with this assessment. I think we should discuss this a little bit.

Dr. Cooper: Two points. One is in regard to what Doug said about using historical data from newspaper clippings, et cetera, et cetera, et cetera. While trends in that may not represent trends in the fishery, if we have documentation of astronomically high landings, that does still tell us something.

It may not be representative of the overall trend, and they didn't actually use newspaper clippings in this data set, but just for the record, since these are being scrutinized, there is information in such reports and they just have to be carefully used, and not necessarily just summed up and that equals total catch or anything.

But if we have confirmed records of very, very high recreational landings in certain time periods, that can be used. It wasn't in here, but just it can be used to inform that, wow, in the past there really were some high landings that we just don't see anymore, and that is important for informing the assessment down the road.

Mr. Gregory: If we have that, yes, and I would argue the Fish and Wildlife estimates are not that documentation. I would ask you to define "astronomically high catches".

Dr. Cooper: I was simply just responding to your comment on how newspaper catches are not useful information and stating on the record that they can be useful in some situations, depending on what they are and how they are used. Since they weren't used in this assessment, I see no need to debate whether or not there were such landings for Spanish mackerel or what I mean by "astronomically high".

But if you've got reports in the newspaper that are orders of magnitude higher than what we're seeing today, that may be astronomical, but that is important information that they used to be able to catch them at those rates. That is all I'm saying. I would argue that the Fish and Wildlife Service data is valid data that needs to be taken into context, and they did a sensitivity analysis in trying to account for recall bias and telescoping.

Whether or not they did it appropriately or completely, that is discussed in the document. But to out of hand throw out scientifically collected data I don't think is appropriate. I think it is better to figure out how it should be used and to test the sensitivities, which is what they did.

Mr. Gregory: Yes, some sensitivities, but you can sensitize the wrong information all the time and not really get in the right ballpark. I think the bigger question is why haven't previous stock assessments used that data and it hasn't been looked at? You know that you can't take stuff out of context.

We don't know what the fishing effort was back then, and we don't know what the relative sectors were doing. We don't know how they were targeting. I know there was in one of the assessments some look at Florida fishing vessel license trends, and it was just trajectoring upward nonstop even after landings went down. That it was just an attempt or measure of trying to get at what kind of effort was going on in that period of time.

I mean, it is so speculative; it's dangerous to be using it. Because it has apparently such a big influence on the stock assessment by suggesting that the population was so much higher at that time period, that forces this idea of it is overfished and it has been overfished for 30 years or whatever. That concerns me. That aspect seems to be driving some of the results of the stock assessment.

Dr. Williams: I'll jump into the point. Doug, you are getting off base. Unless you actually look at those Fish and Wildlife reports and read and them through, you can't just offhand toss them out because it is old data. You look at those reports and there is nothing in there to suggest that there was any bias induced by their sampling method other than it was based on a year's recall of interviewees, but they had a very large sample size.

We have compared their estimates of anglers in the state of Florida to some of the independent estimates that the state of Florida did back in the 50s and 60s and they compare very well. In this case Spanish mackerel, the landings appear high, but we have used it in other assessments in the past and it hasn't been that high.

Vermilion snapper, it was right in line with the estimates that we have currently. It has been used all the way back to the Black Sea Bass SEDAR Assessment. We looked at those in that SEDAR; so to say that this hasn't been used in past assessments is also incorrect.

Mr. Gregory: I won't make anymore comments because I don't want to get into this one-upmanship stuff. Maybe Beaufort is using them and Miami is not in their assessments. I think similar to what Luiz said yesterday about looking at benchmarks, maybe this is something that should be looked at in detail of if we're going to use this let's flesh it out. And if you've done that in one of these documents and I missed it, please point me to it. If it is in another document somewhere, I would like to see it. This is the first time I remember being exposed to these being in assessments, and we have had three this week.

Dr. Barbieri: Just a comment to that point; Doug, in this case I had been uncomfortable, too, you know, going back to the red snapper assessment, especially because at that point the data

workshop, the recreational working group had rejected that index to go into the assessment, and it was reintroduced, I think, at the assessment level.

However, because of that concern, since I am new to the South Atlantic SSC and I work next door to Bob Muller, and he has a long experience working with South Atlantic stocks and reviewing these assessments, I sat down with him and spent an afternoon going over the procedures in the review of those data that had been actually used.

I didn't know they had been used in other assessments, but they had been. After going through that, I am actually more comfortable now with the use of that data than I was before. The issue here is are those data for that period really have that strong of an influence on the outcome of the assessments.

Dr. Cooper: And that is one of the questions that – I mean, again, I would have to read more thoroughly to figure out what exactly the sensitivities are to those three years of catch data; that if you started it in 1980 instead, would that help anything, and I honestly don't know the answer to that.

I do take intention of the apriori assumptions that these are driving the model. I don't think that has been demonstrated. It may very well be the case, but just to assume out of hand – the fact that we don't know effort doesn't really matter because we're not using it as an index of abundance.

You're just saying, hey, in these three time points here are three estimates of removal, and I have a hard time dismissing those out of hand, especially when, as Erik said, these were based on standard sampling protocols. They have been validated relative to local estimates of independent studies.

The reason why you don't see them used all that often is because the ability to use a discontinuous time series of catch is a very new thing. Prior to using AD Model Builder software, in VPA you need catch every year broken out by ages. If you don't have it you can't use it.

With these more sophisticated programs, you can have just an estimate of total catch way in the past and let the model just kind of figure out what it needs to do to get close to that estimate. We used to not be able to do that, and so that is why you're starting to see these other forms of data coming online because our models can start addressing them where we couldn't in the past.

Ms. Jensen: Well, sort of my question is how sensitive is this historical data to what the estimates are in recent years? Was there any attempt at a sensitivity run and cutting it off for years when we did have data that is not being debated here?

Dr. Conn: Yes, two points; the first having to do with the sensitivity runs that were run at the assessment workshop. We kind of anticipated that the early recreational landings, the magnitude of those in concert with the shrimp bycatch would be sort of the two things that would be

questioned the most, so we ran sort of a factorial analysis where we either multiplied or divided – multiplied by 0.25 for each of those sources of data.

There was some sensitivity to the early recreational landings, but only in concert with changes in shrimp bycatch at the same time. So if you were just to multiply early recreational landings by 0.25, it wasn't too sensitive to that. That is one point. The second point has to do with the year of initialization of the model.

I think for reasons that Andy was talking about, probably also having to do with concern about those early data points, the last assessment that was run was started substantially later than ours; I think in the early 1980s. It seems like a reasonable thing to do, but in our mind you are missing the period of the most heavy exploitation on the stock by commercial fisheries in the 1970s, a time period where everyone sort of agrees that the stock was being – when overfishing was occurring.

To our mind, starting the model in the 1980s would be sort of like starting a model for North Atlantic cod in the 1990s or something. You know, you kind of miss that perspective on those 1970s commercial landings. So then the question comes, well, what do we do with those early recreational landings, so we tried to do the best job we could.

Mr. Gregory: So then there is no way to really do a continuity run? You can't do a VPA that goes back that far basically, so the VPA that were done in the past stopped at 1981 because that is where you had continuous data; and that is where MRFSS started, right? That is hard to reconcile. But then you have got ASPIC which used different data sets or a different configuration of data. What is the confidence between the two because they give different results and how do we handle that, not just today but in the future as well?

Dr. Barbieri: I think everybody – and I'm sure Paul does, too – has concerns about this assessment. There are some data issues. There are some challenges here that I think the assessment team has tried to meet but hasn't been able to. I think this doesn't reflect on the quality of the assessment methods used or the depths of analysis.

It is really something that I think we're going to have to face that sometimes we're going to have data problems that are going to give us unsatisfactory assessments. In this case we are facing one of those where we cannot really assess the status of the stock in terms of biomass. The comment here – I guess this is from the summary report – special concerns expressed by the review panel:

"In light of the uncertainty in the assessment results, the review panel suggests" – and this doesn't have page numbers – "suggests that the Spanish Mackerel Assessment be re-evaluated within a timeframe which allows for necessary management advice. The focus of the re-evaluation should be revised input data, principally catch estimates and fishery-independent indices, as well as changes in the assessment methods as suggested in the review workshop consensus report."

So, the bottom line is sending this assessment back to the shop I don't think would get us anywhere if we don't have necessary data to get a more conclusive assessment. My feeling is that we should accept this assessment as is with the concerns and limitations expressed by the review workshop and advise the council that we can only assess the overfishing versus not overfishing status and cannot make an assessment at this point on the biomass status of the stock.

Dr. Cooper: I would just be careful of the wording as far as accepting the assessment as opposed to accepting the recommendations of the review panel because the review panel rejected many parts of the assessment. So just as far as wording goes, I think that is more what you meant, but just to make sure that is in fact what you meant.

Dr. Barbieri: And to that point the stock assessment as presented – and Paul had the slide there – by the assessment workshop was partially accepted, so this is not an assessment that in my interpretation – I wasn't there so correct me if I'm wrong, but it was not rejected by the review workshop. It was concluded that overfishing is not occurring.

That conclusion is objectively stated by the review workshop, so it is in that context, Andy, that I'm saying that we are going to have to accept that this assessment has limitations. The limitations, in my opinion, are primarily due to data issues that we're not going to be able to address in the short term. I think the issue is do we accept this as best available science, and my suggestion is yes, having read it.

I didn't print the whole assessment report but I read the whole thing, and I think that this is a solid assessment given the data limitations that it faces. I will put this in the form of a motion, Madam Chair. **I move that the SSC accept the SEDAR 17 Spanish Mackerel Stock Assessment as best available science. This acceptance refers to the overfishing condition but not on the biomass status of the stock, something like that.** My intent in accepting the stock assessment is very clearly presented.

Dr. Belcher: Okay, the motion as stated is that the SSC accept the SEDAR 17 Spanish Mackerel Stock Assessment as best available science. The acceptance refers to the overfishing condition and not the biomass status of the stock. Do we have a second for this motion?

Mr. Buckel: I am willing to second it. I would like to have a little bit more discussion or maybe clarification for myself. I guess I'm worried that what we approved yesterday for king mackerel, you know, Spanish mackerel having some parallels, I could see council saying, well, how could you provide the biomass targets and use an assessment that went from '81 forward that was the VPA model, and here a different model was used earlier than 1981 or whatever it was and we're not able to give the biomass reference points.

The issue came up yesterday about being consistent and here is an inconsistency, so I think we need to be prepared or maybe even put that in the motion or least discuss it why – I would like to hear why two different models were used and – yes.

Dr. Barbieri: Jeff, that's why my first question to Shannon yesterday was why did they pick VPA as their base model instead of using the statistical catch-at-age model because there are

limitations, I think, with VPA that can be overcome here, as Andy explained, with statistical catch-at-age models, so this would my preference.

I do have some concerns with the choice of the base model for king mackerel, but I think that after discussion we as a group were willing to live with that choice as representing something that reflected the status of the stock. In my opinion this issue here is different. I think that this model choice is actually better than the king mackerel model choice for the best run. I think that even if we leave the motion as is we can document our concerns or we can document the parallels with king mackerel perhaps during our report to the council.

Dr. Williams: To that point, I said this yesterday and I will say it again, we need to make sure we're clear on the distinction between best available science and best possible science. We're not always going to get the best possible, so we're going to have to accept sometimes just best available.

Mr. Chester: I'm not sure that motion captures exactly what you intend in the sense that when we say our acceptance does not refer to the biomass status of the stock, it seems to imply to me that somehow that part of the assessment was not based on the best available science. I think perhaps maybe all we need to say in the second sentence is that the SSC accepts that the stock is not currently undergoing overfishing, but that the uncertainty and the model is such that no determination can be made with respect to biomass.

Dr. Barbieri: I am willing to live with that if that is a friendly amendment to the motion. I don't think the way that is phrased there, Alex, reflects on the fact that the biomass is not best available science. I mean, the fact is the review panel rejected that part of the assessment in their conclusion. I think we should be careful.

Accepting the limitations of best possible and best available science, I think we should be careful in giving our stamp of approval to assessments that we have concerns about. In this case, to me, in terms of considering best available science, the review panel did not think that the biomass estimates coming out of the model were acceptable, and my motion just reflects agreement with that. We can rephrase that if you think that will be better expressed some other way.

Dr. Reichert: I feel this goes back to the point Andy made that what we are basically doing is accepting the conclusions of the review panel, correct?

Dr. Barbieri: Correct.

Dr. Jiao: I just feel not very comfortable to accept half of the conclusions and reject another half of it from the same model.

Dr. Cooper: I think I am in line with what Alex was saying is that the biomass status of the stock, it is not that is not based on best available science. It is that the best available science doesn't give us information as to the status of the stock, which is a very different way of saying that the biomass estimates aren't based on best available science. It is that given our best

available science, the stock status is inconclusive according to the review panel, which I think is a very different take than what the motion says.

Dr. Barbieri: To that point, as I previously stated I am more than willing to accept wordsmithing of the motion to reflect what the panel thinks are our concerns about accepting the stock assessment. Basically, I just wanted to make it clear in the motion that we do – and perhaps that addresses some of Yan's issues here that she brought up, is that the SSC is accepting the assessment.

I'm trying to be explicit. The only part of the assessment as approved by the review panel is being accepted. Alex, you provided some good language there that perhaps we can add to that motion to make it a little clearer.

Dr. Jiao: Based on the review report and also what Paul presented and what we discussed, I feel like most of the questions about the data and not the assessment – In this situation I would suggest that probably we can postpone the stock assessment until a later date and discuss whether we – I just feel not very comfortable to really vote at this moment. If we have to get a conclusion, ignore my suggestion.

Dr. Barbieri: Yan, just to make sure that I understand you correctly, what you are saying is you don't believe that we can accept just part of it. We either accept it or we don't or we reject it as a valid assessment and that way it would go back to the SEDAR cycle and whenever it is to be assessed is to be assessed?

Dr. Jiao: It really depends on what part that we're going to accept and reject, but the conclusion for overfishing and overfished with SEDAR are really connected together in the model; so if we only accept part of the conclusions that it is overfishing but we don't accept the conclusion of overfished, this is really not comfortable to me.

Dr. Cooper: In reading the review it sounded like whether or not overfishing was occurring was robust to model assumptions; whereas, the overfished status was not. Now what was shown here is that in the assessment workshop that robustness may not have actually held, but based on the sensitivity runs that the review panel looked at it was; is that correct: The review panel's assessment of the overfishing status being robust to sensitivity runs is limited only to their sensitivity runs and not the ones that the full assessment workshop looked at; is that correct?

Dr. Conn: Correct.

Dr. Buckel: But, Paul, the ones that were done at the assessment workshop didn't have the revised data. Do you think that if you had the revised data when you did those sensitivity runs at the workshop you would have had similar results with that?

Dr. Conn: Yes, that change to the 1960 data point, it pretty affected 1950 through 1964 for recreational, and it didn't really change any of the conclusions. I imagine that the sensitivity runs, if they had used the revised landings, would have come out similarly.

Dr. Cooper: My problem is I'm in a situation where a lot of the comments that the review panel made I just flat don't agree with. That is what happens when you get three people making a scientific opinion, you get three other people who may disagree with it, but that's the scientific process.

But similar to what was said before, one of the big problems the reviewers had was looking at discards in the shrimp fishery. Well, we have to set it at some number. Setting it at zero is just as weak an assumption as using some statistical extrapolation, and the fact is we have to figure out an assumption as to what those were, and there will always be uncertainty and I doubt we will ever get, as Luiz said, any better data on historical discards in the shrimp fishery. The question is given that uncertainty what do we do?

One approach is, well, let's use only modern data, but then as was said we're ignoring a lot of large landings in the past that will bias our conclusion relative to recovery. These are all tradeoffs we have to make, and I think the review panel was a little cavalier in saying that, well, there is a lot of uncertainty; therefore, we can't use it.

It is more like, well, no, given there is uncertainty, what do we do, and I don't think that the review panel gave adequate suggestions on how to deal with this problem given that there are explicit tradeoffs. If you're going to include that time period you have to make an assumption. If you don't include that time period, well, then, you have to make assumptions as to how depleted you are when you're starting at the time where you are.

Either way we're having to make assumptions that we can't get around based on increased data collection, and so what do we do? And as Erik said, as best available science that may be highly uncertain. Where do we go? It is a tough situation to be in, but at the same time this is what our independent review said, and it is a double-edged sword.

Sometime you agree with the reviewers; sometimes you don't. Sometimes I submit a manuscript and it gets rejected even though I think I'm right, and that is just how the game goes. So here we are with a review panel that accepted some things and not others because they think it is robust to some assumptions but not others. I'm not quite sure what to do.

Dr. Barbieri: Well, I think Yan brought up a very good point. It is problematic, to say the least, to accept just part of the assessment because, of course, the two issues there are intrinsically connected. I think they are intrinsically connected. And in terms of the biomass of the stock and the fishing mortality over time, I am not saying that you cannot estimate them separately, but as the model is configured the two are intrinsically connected.

However, if you look at the range of sensitivities that you have here, I have to agree with the review panel that there is a very, very small probability the stock is undergoing overfishing. I mean, basically, you're faced with that situation that we need to send this assessment back to the shop, but I don't think that would solve the problem until we get some data issues corrected.

That is going to take some time. I don't think this was an actual stock assessment issue. That was some data limitation issues that need to be overcome. Looking at the what we have now, the

product that we have right now, we can actually tell the council that we have a fair degree of confidence that overfishing is not occurring, but we have a very low degree of confidence on the status of the stock as far as biomass is concerned. To me that is what the motion reflects.

Dr. Cooper: I will disagree with you that the determination of biomass status relative to biomass target and fishing mortality rate relative to the targets and thresholds are intrinsically linked. Our estimate of F in the final year is incredibly uncertain and the review panel rejects the point estimates. They say we can't estimate F in the final year, but that the ratio of Fs relative to FMSY or its proxy is robust to, again, the sensitivities they ran. Now they didn't run all the ones that the workshop ran. I think you need to be careful about saying they're intrinsically linked because the ratios may or may not be.

Dr. Barbieri: And I wasn't referring to the ratios specifically. What I thought I was interpreting was what Yan had expressed as a concern is the fact that they came out of the same model that is looking at removals from that population. The effect of mortality on the biomass of the stock over time is what we're looking at.

So when you say, well, I accept just part of the model, that is not what we're saying. We're saying that as an assessment, even though there is only one model there that is providing us with those estimates, we're accepting part of the conclusions of the assessment that have to do with the fishing mortality. That is to clarify what my point was.

Dr. Harris: It just strikes me that I don't think there is any way – the big issues here are the early recreational landings and the estimates of shrimp bycatch, and you're not going to get any better data to be able to better estimate those things. We either make a decision now or we punt it forever. Those data points are not going to get better.

Dr. Belcher: In the past we have put forward that it has been unknown as to the overfished status. We did that originally with vermilion, so it is not out of our purview to put forward that we can at least say with some confidence about the status of the overfishing, and we have done that. I don't think that we're walking a funny line in putting that forward.

It is just a question of making sure that the language in the motion reflects that. I am going to direct this back to the motion, and again what is in our best interest as far as either reworking the motion or finding a second for it as it? I'm putting it back to the group; how do you want to amend the motion or what changes should we see made to the motion that the group is going to be happier with supporting it?

Mr. Chester: Well, let me just go back to repeating what I said earlier about the second sentence. I'll just suggest to the group that perhaps we substitute the following: "The SSC concurs that the stock is not currently undergoing overfishing, but that the model and underlying data are insufficient to make biomass-based determinations."

Dr. Belcher: Okay, I'm assuming this is still a friendly amendment and not a substitute motion, correct. The motion currently reads that the SSC accepts the SEDAR 17 Spanish Mackerel Stock Assessment as best available science. The SSC concurs that the stock is not undergoing

overfishing, but that the model and underlying data are insufficient to make biomass-based determinations. Luiz, do you agree with that change?

Dr. Barbieri: Yes, but make a modification, "The SSC concurs with the review panel conclusion". Yes, I concur.

Dr. Belcher: **Again, the motion now reads that the SSC accepts the SEDAR 17 Spanish Mackerel Stock Assessment as best available science. The SSC concurs with the SEDAR 17 Review Panel's conclusion that the stock is not undergoing overfishing but that the model and underlying data are insufficient to make biomass-based determinations.** Do I have a second?

Mr. Gregory: I will second it. I have a question. What is best available science in this context? I get the impression that some people are thinking anything that comes out of the SEDAR review process is going to be considered best available science. Am I reading that wrong?

Dr. Barbieri: Well, in my opinion, yes. This is why we get all the documentation that comes out of this assessment or any other analysis. We are given the opportunity to see all the documentation, to review the whole thing. I have not been shy in presenting my comments, suggestions, points of agreement and disagreement.

In this case I think we looked at the review workshop conclusions and we make our own judgment and we weigh the two and then we discuss as a panel. In some case we will agree with the review workshop recommendations and sometimes we will not. As Andy pointed out, there will be differences. In this case, having gone through the assessment workshop document and then reading the summary report and the consensus report, I feel that their conclusions are sensible and I agree with them.

Dr. Cooper: I kind of look at it as if the review panel says everything is good, then we can turn around and say either it is good or bad. We can say, you know, the review panel messed up because they missed this crucial point, which we have before. If the review panel's consensus report is it is not good for this, I would be hard pressed to turn around and say, yes, it is good enough.

So at some level it is kind of a one-way street. If they say it is good enough, we can disagree with that; and if they say if it is not good enough, I would be hard pressed in an hour and a half discussion to turn around and say, yes, these independent scientists who spent multiple days working on this are wrong and go ahead and implement above their objections.

So, no, I don't think everything they say is immediately best available science. One of the ways I look at it as the problems that were pointed out, were they errors or were they assumptions that we don't agree with, and is it something that can be fixed in the near term. These problems, I don't think they can be fixed in a month or two months, even.

As far as what is available to make to make management decisions, this isn't something that we can turn around and easily improve upon. There are going to be some tough choices and I don't

quite know how to do it. So, I do think, yes, best available, but all the caveats as to how it is appropriately applied; does that help at all, my interpretation?

Mr. Gregory: Well, then, what do we mean by stock assessment; is that the stock assessment itself that the review panel is commenting on or do we mean the best available science is the result of the SEDAR process? It seems like we did the opposite with king mackerel yesterday. We kind of ignored what the review panel was saying and accepted a base case. I am confused what is meant here.

Dr. Cooper: Well, no, the review panel did not reject a base case. The review panel said "This is the base case and here are some sensitivities." And we said, "Thank you very much for those sensitivities. We agree that they are sensitive, and we're going to go forward with the base case." I don't think we were going against the recommendation of the review panel there because they did not say that there was anything inappropriate about the base case. They just added a few more sensitivity runs.

Mr. Gregory: To that point, I think they said that the base case was no better than, quote, the sensitivity runs. They didn't reject it, you're right, but there was so much uncertainty about it they couldn't choose a recommended scenario or recommended run, and that would include the base case.

Dr. Barbieri: Doug, I think this is a very important discussion for us to have. Going back to Sunday afternoon when we started the meeting and we were discussing the role of the SSC and peer review and the upcoming National Standard 2 in Magnuson-Stevens – and I think that we should all get a copy of that document, you know, the –

Dr. Williams: ANPR?

Dr. Barbieri: Yes, to read and make an assessment of what our role is. I had put some thoughts together that I presented Sunday afternoon. This is in discussions with Carolyn and John when we were at the National SSC Workshop. We feel that the role of the SSC is not to always agree with the SEDAR Panel; not always disagree, either.

It is to review the documents and accept the fact that we will not be able to do a review as thorough and detailed and having all the data available to us to review all the data tables and everything as the review panel does. That is their role and we accept this when we accept that there is an independent review from SEDAR, but we will review here – as a scientific committee we will review all the documents that come out of SEDAR and that very carefully we will review all of those documents and we will apply our best judgment, also, in incorporating the review panel comments into the management context of the council, the biology of species that we are familiar with, working in the Southeast United States, and we make a determination currently.

Mr. Gregory: So in that second line where it says "stock assessment", you mean the Spanish mackerel stock assessment conclusions as presented by all three workshops? You don't mean

the stock assessment results that came out of the assessment workshop? You mean the process is the best available science, the final report? Okay.

Dr. Cooper: Well, somewhat off topic but just for those who didn't actually read – well, it is about steepness. Well, no, what was very interesting, this model actually had an estimate of steepness. The model didn't pop out at a limit, and yet the review workshop was saying, "Well, we don't like it because there is uncertainty."

So they actually didn't like the fact that the model was actually estimating steepness. So, again, going into how these review workshops go, the same group didn't like it when it topped out and they also didn't like it when it was estimated with uncertainty. So just keep that in the back of your mind as we're talking about things down the road.

Mr. Gregory: Isn't that because it tends to go against the general thought of how steepness works? Here we've got an animal that probably has a generation time of five or six years – I know the longevity is ten, but generation time – and highly productive; matures at age zero to one. You know, you would think it would have a high steepness. This is the one that should have hit the limit similar to vermilion.

Dr. Belcher: Okay, so back to the motion at hand, then; any other comment or discussion? Pat.

Dr. Harris: I would just like to ask Paul if he thinks the model is adequate to make biomass-based determinations?

Dr. Conn: No. I mean, I think maybe I would have a little more confidence the review workshop gave, but you've got different models telling you different things. ASPIC would suggest no overfishing as well as the statistical catch-at-age model. That one seems to be a little bit better grounded, but, yes, biomass absolute values, certainly, I wouldn't trust. The ratios seem to point to the stock being overfished, but there is uncertainty there, for sure.

Dr. Harris: Just to follow up on that, if you look at the F over FMSY plot, out of the 37 years you have data points where only two years was the F ratio less than one, and yet we're quite willing to accept, given uncertainty of the model, that overfishing is not occurring. Yet 35 out of 37 years overfishing was occurring according to the output of the base run. So if this is an uncertain model, are we categorically willing to state that overfishing is not occurring?

Dr. Barbieri: Well, Pat, those are the issues that we should be discussing here. After having gone through the assessment workshop document and the review panel's reports, I feel confident in making that statement there, but it may not reflect the feelings from everybody.

Dr. Harris: One last thing; the SPR is current around 40 percent; could use that as a proxy for a biomass-based indication of status indicator? We used to manage on the basis of SPRs.

Dr. Conn: Pat, just to go back to the biomass-based thing, I think the one thing that is very certain from all these model runs is the biomass is increasing. That is the one thing I would be absolutely confident in.

Dr. Reichert: Well, we can do this after the motion, but so what do we do as the SSC? Do we have any suggestions that maybe not in two or three months but in two or three years of what can we do to increase the likelihood that we can actually make biomass-based determinations in the future?

Dr. Barbieri: Well, my feeling here, Marcel, is that we are telling the council that we cannot at this point reach a conclusion on the biomass status of the stock, so we are going to have to wait until the stock is assessed again. There are some research recommendations and some data limitation issues that I think came out of this report that we've got make sure they're taken seriously.

You know, there was this issue also about fishery-independent indices. I think if we had better fishery-independent indices to reflect the population status of Spanish mackerel, that could have reinforced the model conclusions by quite a bit. Perhaps there are some issues that we wouldn't be able to address but others that we would. Maybe in a few years we're going to be able to go back and do a reassessment of the stock and perhaps reach a conclusion at that point we can accept the conclusions both on the fishing and biomass status.

Dr. Cooper: I just wanted to go back to Pat's point because I think it is a good one. If you look at the graph of F versus FMSY, which is like Page 40 of the introduction summary document, basically since 2002 it has been bouncing around a ratio of one. It just so happens the last two years fall below, and that with sensitivity runs we pretty much always get the last year being overfishing not occurring.

But over the long history a lot of overfishing has occurred, and right now we're kind of bouncing around that. Had we done the stock assessment next year, it might be overfishing occurring given the dynamics of what is going on right here had we done it two years ago. So, I think the conclusion of overfishing – how did we phrase it – is not undergoing overfishing; I mean, that is limited to the 2007 fishing season.

We're not necessarily making comments as to overall nor do we make comments as to whether or not the current management measures are going to prevent overfishing. It just so happens that right now we're bouncing around that ratio of one; and if that is really where we're doing it, then, as we have talked before, when your targets and your limits are the same, you're going to be over it 50 percent of the time if you're lucky. I think Pat has a very good point that it just so happens these last two years are both below one, and it may bounce up due to stochastisity or not, and it is just something that I think we have to accept. That is just my opinion.

Dr. Jiao: In this analysis the FMSY is based on stock-recruitment in the per-recruit analysis, and the fishing mortality is estimated from the statistical catch at age. If you look at the reviewers' comments, if fishing mortality estimates are acceptable, then how can F divided by FMSY be acceptable? That is my question. Then on the other side the F value is definitely highly correlative of the population size. Again, I'm really not comfortable about the conclusions.

Dr. Barbieri: And to that point, I think that the review panel looked at the stock-recruitment relationship and accepted that was reflective of what the relationship would be and accepted the

value of steepness. However, it asked for a number of sensitivity runs, which they did run, over a range of steepness values, and that did not change the conclusion.

I think that this is why the review panel felt comfortable with the overfishing conclusion. The main source of uncertainty in that estimate or FMSY there would be our confidence on the stock-recruitment relationship as estimated. In that case over a range of steepness values, the final outcome was still the same and they chose to accept it.

Dr. Jiao: I don't really know why the reviewer accepted the conclusion of overfishing, but I doubt – as Paul mentioned, maybe because the model concluded that overfishing is not happening. I doubt that is the major reason and not because of the robustness from the statistical catch-at-age model.

Dr. Belcher: Then with no further discussion we're going to go ahead and put this to vote. All those in favor of the motion raise your hand; all those opposed; abstaining. The motion passes. Okay, we are going to go ahead and take a break. When we come back we will look at a presentation about the National Standard 1 Guideline.

Dr. Belcher: Let's get started back up again. We're going to start with a presentation on National Standard 1 Guidelines by Dr. Strelcheck

Dr. Strelcheck: I haven't had a chance to meet all of you. I am Andy Strelcheck; I work for the Southeast Regional Office in St. Petersburg, Florida. In preparing for this meeting we thought it would be good to kind of have a regional perspective on the annual catch limit guidance. I am sure for some of you this is going to be a review. I know I have presented this to several members of this SSC at the Gulf Council meeting.

To the extent that I can I will move quickly through some just introductory material and go through kind of the main crux of the guidance. I am going to be presenting on the proposed rule which was published back in June. The comment period ended in September. Right now I believe the final rule has been sent to the Office of Management and Budget for review.

Unfortunately, I can't really comment on any of the major changes at this point, but I will at least allude to one major revision to the guidance. With that, as everyone is well aware, Magnuson was reauthorized in January of 2007. The Reauthorized Act specified that a mechanism for annual catch limits should be included in fishery management plans and that this annual catch limit is to be set at a level such that overfishing does not occur; and in association with this catch limit accountability measures should be established.

One of the main questions I guess that arose was, well, does it mean to have a level such that overfishing does not occur. Essentially overfishing could occur if fishing is allowed, so the only way to truly prevent overfishing might be to stop fishing entirely. Our agency is interpreting this as the intent is to prevent chronic long-term overfishing and also to decrease the risk of future overfishing.

Essentially from year to year overfishing might occur, but the system of annual catch limits and accountability measures would be in place to address the overfishing and get catch levels back on track where they need to be. I would like to provide the definitions because there is often confusion about especially annual catch limits.

Oftentimes people believe annual catch limit is essentially the level at which overfishing does or does not occur. If it is exceeded there is an interpretation that, oh, well, that means that overfishing is occurring, and that is certainly one instance in which the catch limit could represent your overfishing threshold.

However, as defined, essentially the annual catch limit is the catch of a stock or stock complex that if met or exceeded triggers accountability measures. Accountability measures are simply management measures that are intended to prevent catch limits from being exceeded; or, if the catch limits are exceeded, correct or mitigate the landings' overages if they occur. I will talk about this in much more detail later.

The Magnuson Act provides for a couple of exceptions where annual catch limits wouldn't be required. One is for a species with annual life cycles unless that species has been identified as undergoing overfishing. The other is for stocks managed under international agreement, which doesn't apply to any of the South Atlantic Council species.

The guidance itself also adds to this and provides a couple of specific statutory exceptions that weren't identified in the Magnuson Act. Some examples would be ESA, Protected Species or, for instance, in the Gulf of Mexico they're developing an Aquaculture Fishery Management Plan, so ACLs aren't necessarily well suited for aquaculture.

However, the proposed guidance does indicate that the councils would still have to explain and provide some rationale in terms of these exceptions and how annual catch limits wouldn't relate to these particular examples. In this instance for the species that you're addressing at least for 2010 that are undergoing overfishing, I don't think there would be any exceptions that would apply for the South Atlantic.

Then the Magnuson Act goes on to indicate that for 2010 you must have annual catch limits and accountability measures in place for all species that are currently identified as undergoing overfishing and for all remaining species by 2011. The council is obviously considering ACLs for those species undergoing overfishing in Amendment 17 so you're on track to obviously meet that 2010 deadline.

There isn't any specific information in the Magnuson Act about what should be done for species that might be declared undergoing overfishing next year, and so the guidance speaks to essentially trying to get ACLs in place by 2010 if you have an assessment that indicates overfishing is occurring next year, but if you can't do that, then at minimum those should be in place by 2011.

I wanted to throw this in. It doesn't necessarily specifically relate to setting limits and targets, but one of the other major changes is that as of July 2009, within two years an overfished or

approaching overfished determination councils must prepare management measures to immediately end overfishing, so there is no longer going to be an option to phase out overfishing over time.

The actions that will be taken have to immediately end it, but it does extend the timeframe. Previously it was supposed to be one year; now we're looking at two years, but once that two-year timeframe is up for submitting a plan or plan amendment, the plan must immediately end overfishing; and then rebuilding affected stocks as quickly as possible, and the guidance still pertains to not exceeding ten years unless biological and environmental circumstance dictate otherwise.

These are the species in Amendment 17 that are currently in front of you for consideration in terms of establishing the system of limits and targets. These have to be addressed and completed for the 2010 fishing year. Before I talk about the actual system of limits and targets and how you specify them, I wanted to kind of take a step back and talk about what Magnuson says with regard to which species or species grouping these catch limits would apply to.

Magnuson requires councils to develop ACLs for each of its managed fisheries. The guidance essentially proposes distinguishing between a managed fishery and stocks included essentially in a plan for ecosystem consideration. The Magnuson Act also talks about species should be included in federal fishery management plans if they are in need of federal management. One of the considerations, as you move forward, would be the stocks that have been identified in your fishery plan in particular for snapper grouper, why are they in there and are all of them in need of federal management and are there reasons to potentially remove some of those species or move some of those to what are considered ecosystem component stocks.

The bottom line is the annual catch limits would apply only to stocks that you would define as in the fishery and not to any ecosystem component stocks that you identified. The rule talks about essentially what are believed to be stocks in a fishery. These include target stocks caught for sale or for personal use, non-target stocks that are retained for sale or personal use, and then non-target stocks that are not retained but could become subject to overfishing or overfished due to bycatch reasons or other potential impacts associated with fishing.

As I mentioned, there is then ecosystem component stocks that the proposed rule discusses. Essentially these are not retained or retained in limited quantities. There is not really any strong guidance on how you go about defining an ecosystem component species, but it is something that the council and SSC would need to consider in terms of defining their management units and species and species groupings.

Another consideration is essentially stock complexes. You can certainly manage your species with a series of limits and controls on a single-species basis; however, there are obviously a lot of species where little information is known. You don't have stock assessments or other scientific data and information to make decisions. You might only have limited information such as landings' data or catch rate information.

In those instances you could group stocks based on similar geographic distribution, life history, vulnerability to the fishery. There is essentially three different ways that you could comprise a stock complex. You could have essentially one or more indicator stocks. Essentially these are the major species and each of these with individual status determination criteria and annual catch limits; or, you could have several stocks without an indicator stock, so you just have a group of species and the status determination criteria and annual catch limit will apply to the complex as a whole.

The last scenario would be one or more indicator stocks, each with status determination criteria, but instead of having annual catch limits for each one of those indicator stocks, the annual catch limit would actually apply to the whole complex. There are multiple options there that could be considered.

In defining stock complexes, the proposed rule also goes on to talk about the importance of grouping species based on similar vulnerabilities. This graphic on the right is part of the LENFEST findings, which I believe, Andy, you were a part of, and essentially is one potential option for the council to look at in terms of defining the vulnerability and susceptibility of a particular species or group of species.

The bottom line is that this should be assessed in establishing or modifying existing stock complexes and that management measures, when you establish these stock complexes, should protect for the most vulnerable stock within a complex. If there is an indicator stock identified that isn't necessarily the most vulnerable stock, the guidance speaks to managing for that most vulnerable stock, so you should take that into consideration when setting catch limits and accountability measures for the complex as a whole.

I have a series of four consecutive slides that essentially show the series of limits and controls, and I will go through each one of these. The first step essentially is defining your overfishing limit. This overfishing limit as defined in the rule corresponds with the yield at MFMT, maximum fishing mortality threshold; or, if a stock is overfished would correspond with the fishing mortality associated with rebuilding.

This is essentially your limit that if exceeded overfishing would be occurring. Typically, from my experience working primarily in the Gulf of Mexico, this overfishing limit has a 50 percent probability of overfishing occurring or not occurring, depending on how you want to look at it.

The next reference point that would be established would be the acceptable biological catch. This is your role in the process. This is something that would be set by the SSC. The guidance indicates that the ABC for the fishery can be set less than or equal to the overfishing limit. It also talks about the ABC accounting for scientific uncertainty in terms of being set and that the council, in conjunction with working with the SSC, should establish an ABC control rule for setting ABC in the fishery.

The key is that once this ABC recommendation is set by the SSC and provided to the council that the council's role is then establishing the annual catch limit, and the annual catch limit cannot

exceed the ABC recommendation of the SSC. The next level is the annual catch limit, as I mentioned is set by the council. It can't exceed ABC.

And as I defined earlier, this is where your accountability measures are triggered so you can exceed your annual catch limit; however, if there is a buffer between your annual catch limit and your overfishing limit, you aren't necessarily overfishing at least on a 50 percent probability. This is essentially the step where accountability measures would be implemented. It could be done either in season through such things as quota closures or after season through post season adjustments in management measures.

Another, I guess, component to this which we felt was important in the southeast was the ability to set annual catch limits based on multi-year averages, so you wouldn't necessarily have to look at your landings compared to your catch limit on a single-year basis. You could set up a moving average of multiple years in order to gauge how you're performing relative to the annual catch limit.

This was a consideration based on variable recruitment that we often see with our grouper species and variable landings that we see in our recreational catch and has already been employed with setting annual catch limits for several Gulf of Mexico species. Then the last layer is the annual catch target.

As I mentioned with the final rule that has gone to Office of Management and Budget, this is one of the components that is not included in the Magnuson Act. It was specified as part of the proposed rule guidance, but now will likely be just a recommendation so it wouldn't be something that the council would necessarily be required to establish but would be recommended that they establish.

The catch target, essentially the objective is to achieve the yield at FOY. It is essentially your optimum yield level. This catch target should account for management uncertainty and be based on an annual catch target control rule. Once again, that would be something that would be established by the council but would be recommended and you would provide input to the council on.

Management uncertainty could be numerous things in terms of your ability to monitor landings in season or your confidence in terms of the overall landings data or the management measures that might be imposed and their ability to constrain the harvest to a particular level. The guidance goes on to recommend that if there is no in-season monitoring for the fishery, that the catch target may need to be set further below the annual catch limit, so essentially there would be a bigger buffer specified, depending on the level of monitoring you might have for a particular fishery.

We felt it was important to include a performance standard for catch limits so that if overages were continually occurring with an annual catch limit, that the councils would go in an revisit that catch limit and where it has been set and the management measures that are being used to constrain harvest and re-evaluate them and essentially re-specify them.

The recommendation in the guidance is one out of every four years if the ACL is exceeded, then the council and the SSC would come in and re-evaluate the ACLs and ACTs and accountability measures in order to improve their performance. This certainly isn't limiting the council in choosing a higher performance standard, but at minimum one out of every four years was selected as a reasonable performance standard.

Essentially putting all this on to one slide, the overfishing limits as viewed by the guidance is something that would largely come out of a stock assessment. If a stock assessment isn't available, it would come out of advice from the SSC or other peer-reviewed process based on the data considered for setting that overfishing limit.

The allowable biological catch could be set equal to or less than the overfishing limit and should account for scientific uncertainty where applicable. Throughout that whole process of setting your overfishing limit and your acceptable biological catch, there is this scientific and management feedback loop where you are interacting with the managers, the managers are providing input back to you in helping to establish these levels.

And then the annual catch limit, that becomes the council's role in the process, and that level can be set, once again, equal to or less than your acceptable biological catch, but essentially the council is bound by whatever ABC recommendation that you provide them. Then the annual catch target, to the extent you can quantify management uncertainty, you would set that below the annual catch limit, and once again that would be hopefully the interaction between the SSC peer-review process and any other scientific body, as well as the managers in helping to define those levels and roles.

With both the ABC and annual catch target, the recommendation is to establish control rules so that there is guidance provided for making these decisions. What happens if you exceed an annual catch limit? Well, accountability measures are triggered. There are essentially two types of accountability measures. There are in-season measures that prevent reaching the catch limit, and there are post-season measures that would be done after the fishing season.

Once again, that depends on your monitoring program, your confidence in data collection in season or post season, and what might be most appropriate for a particular fishery. They are intended to address an overage of the annual catch limit. They don't necessarily have to make up for the overage, although there certainly can be deductions in a following season based on overages.

The accountability measures would be established by the council as they're establishing their annual catch limits. I believe you have already discussed this and are dealing with this in Amendment 17, but there are certainly options to subdivide a stock's catch limit into sector-specific catch limits.

In this instance the most common has been separating out the commercial sector from the recreational sector, establishing separate ACLs for each and then having each one of those sectors have accountability measures that are unique to those particular sectors. This can be

further divided if you wanted to look at particular gear types within a fishery or between the charter/headboat, private recreational anglers within the recreational sector.

Also if there are differences in state versus federal management of a particular species, ACLs could be set up where you have a state ACL and a federal ACL with federal ACLs having specific accountability measures that we could implement and enforce. That is all I had and I have some examples of what the Gulf Council has done. If you have questions now, I can respond to those; if you want me to go through a few examples, I could show you essentially what the Gulf Council has done already, just to give you an idea of some of the things that have been completed thus far, but I will leave that up to the Chair.

Dr. Belcher: I will leave it to the pleasure of the group. Doug.

Mr. Gregory: Andy, in Slide 5 you talk about when the stock is overfished and nearing being overfished, overfishing has to end immediately. The implication is that if a stock is not overfished, overfishing doesn't have to end immediately. It could be phased out; is that true and is there any guidance as to how to go about – or what kind of phasing is acceptable?

Dr. Strelcheck: To be honest, I noticed that this morning as I was reviewing the presentation as something that I had overlooked I guess for quite some time. I need to go back to the proposed rule and see how it is actually addressed in the proposed rule. But based on your comment, that would certainly be my interpretation as well, but it is specific to overfished or approaching overfished status but not necessarily species that would be undergoing overfishing but not overfished. I will check and get back with the group in terms of whether there is any guidance in terms of just species undergoing overfishing.

Dr. Cooper: Well, isn't that where the accountability measures come in, that if it is undergoing overfishing, you're going to have to start instituting buffers to prevent it, whether or not it is overfished, so it is not necessarily a phase out. It is whatever the accountability measures are to – and if they start making it more often, then you have to change the accountability measures to make it even work.

Dr. Crabtree: Doug, to your question, there is no phase-out anymore. Overfishing has to end within one year.

Dr. Cooper: I've got the same question I had at the last meeting that wasn't addressed. If you could go to your Slide 16, the ACT is supposed to be yield at FOY, but it is supposed to include a management buffer. So if we move from, say, bag limits to in-season monitoring, your management implementation uncertainty should decrease; that buffer should decrease.

So if we set ACT now equal to FOY given our current management measures, but then tighten up the buffer, we're then saying, okay, catch more than FOY, but the whole point is FOY is that is your optimum yield, taking into all the economics, that in theory you shouldn't want to harvest more than FOY. So it gets me very confused when you start comparing the ACT to yield at FOY given how we've usually defined FOY.

I mean, FOY is what you should be doing under optimal conditions and you shouldn't be then increasing FOY based on management uncertainty; should you? Is it just that I'm using old terms now and that you don't mean FOY as we traditionally mean it or how do I reconcile that in my head? Where is my logic going astray?

Dr. Strelcheck: Well, based on how OY has been classically defined, it didn't truly account for management uncertainty. It was supposed to account for social, economic and biological considerations. With that said, we have typically just defined it as 75 percent of the MSY level or fishing mortality level.

I think the key here is that in incorporating management uncertainty you would potentially be looking at how you would redefine OY. Certainly, you wouldn't want to incorporate management uncertainty so you're not achieving OY. You want them to match because that is your target, that is the target catch level that you're trying to accomplish, so the OY definition in that instance seems to be appropriate to incorporate management uncertainty as part of that OY definition.

Dr. Cooper: Okay, so essentially you are changing the definition of FOY, then? That FOY used to not care about management uncertainty. It was, as you said, strictly economic and biological uncertainty; whereas, now FOY is a moving target that also incorporates management uncertainty; and that as you eliminate management uncertainty, your FOY is going to change. Am I interpreting your statements correctly?

Dr. Strelcheck: Roy, do you recall the guidance in terms of how we define the OY?

Dr. Crabtree: Let me disagree with part of your premise. I think that OY would and always should have incorporated management uncertainty because one of the premises of OY is that it has to be and done in a way that it would prevent overfishing. If you don't somehow factor in management uncertainty in your specification of it, it is hard for me to see how you could say that fishing at OY is going to prevent overfishing from taking place.

But I think what you need to keep in mind here, optimum yield is the basic foundation of the Magnuson Act, and essentially all the other things we do need to come from how the council specifies optimum yield. Now, in the long term it would seem to make sense that annual catch targets should equal the optimum yield since the two are what you're trying to achieve.

In the case you're talking about, if you reached a conclusion that you could greatly reduce the management uncertainty and more precisely manage our fisheries, then that would be something the council would need to take into consideration, and they might decide to respecify OY because they might decide, well, there would be more benefit to the nation if we fished a little bit harder and we can control the risk.

But I think that would have to be a decision the council would then have to make and figure out, so there is a complicated interplay with all these things, but remember in part of the specification of optimum yield is it ought to be done in a way that prevents overfishing from occurring. To me that means you somehow have to factor in these different types of uncertainty.

Dr. Cooper: But then that raises the question of if we're setting FOY at 75 percent FMSY across all species independent of the management we're using, then we have not traditionally explicitly accounted for management uncertainty. We have assumed that FOY, that reduction is the same regardless of how we're managing the species, which runs counter to the assumption that is an inherent buffer for management uncertainty because we've got different management uncertainty for different species. So, to lump it all in there and say we have been accounting for it all along, I don't think that is really true.

Dr. Crabtree: Well, I think you've made a case that the council probably ought to come through and take another look at how it specified optimum yield for these fisheries, but I think there is going to have to be some sequence in terms of what the council does. One, they're going to have to at some point deal with the issue of how much risk is acceptable in terms of overfishing.

That is likely going to vary from species to species depending on the productivity of the stock and the consequences of short-term overfishing. I think when they resolve all of those issues and then the uncertainty can be factored in some meaningful way, they may at that point need to come in and say, "You know, we need to revisit the optimum yield for this stock because we may be giving up harvesting opportunities needlessly"; or, we may decide that what we have set as optimum yield is too aggressive and entails too much risk.

I don't think you can iron all those things out until you make some decisions about how much risk of overfishing is acceptable to the council, and I suspect that decision will be different from one species. It seems to me that the consequence of overfishing dolphin or black sea bass, which are high productivity and relatively short-lived, is much less than the consequence of overfishing snowy grouper or goliath grouper, and so there probably are going to be different levels of risk.

I think you're going to have to see a lot of analyses that will come through you and go to the council so that they look at the tradeoffs between fishing opportunities and risk, and they are going to have balance those some, and I suspect that is a difficult decision, but I don't think they've ever had the information presented to them in a way to allow them to come in and make specific decisions about optimum yield for a specific stock that focus all those in.

Dr. Cooper: Unrelated question on ecosystem components; if there are management measures in place to restrict harvest is it therefore by definition not an ecosystem component? In order to be an ecosystem component does it by definition have to be that there are no management restrictions on it?

Dr. Strelcheck: I guess as an example it is like a species in an aggregate bag limit that doesn't have really any other management associated with it?

Dr. Cooper: Yes, I mean, then that would fall that into a group. If it is still in the group, then I guess – yes, I mean, to define something as an ecosystem component sounds like we can't be managing it at all, and I just wanted to make sure if it is part of a group that is managed; therefore, it is not an ecosystem component; it's now part of a species grouping; and so in order

to be an ecosystem component there has to be – does there have to be no management measures because it is so rarely encountered?

Dr. Strelcheck: The ecosystem component, as I mentioned, it is species that aren't regularly targeted and obviously not substantially impacted by fishing activities. In terms of your role or the council's role in making decisions about what constitutes an ecosystem component species or not, I think the decision needs to be based on the existing management, whether or not that is affording protection to that species at the federal level.

If essentially it is a species that is lumped into regulations that really aren't benefiting the species overall, then it might be a consideration to move it out of that regulatory framework and into an ecosystem component context. In the same light there might be species that there aren't a substantial harvest or that aren't regularly targeted but they do occur, and it might be just as easy to include them as part of a stock complex and leave them as part of the managed fishery.

In terms of the ecosystem component species, the key in terms of defining ecosystem component species is it wouldn't have to have the status determination criteria and annual catch limits. I don't really have a good answer in terms of the management measures and whether it would have to have management measures or not.

To me if you're saying it needs to be included as part of a management scheme, then it is probably a species that is in the fishery and should be included as part of the managed fishery. But to the extent that you're going to look at an ecosystem perspective for managing a resource and that is going to be part of the ecosystem, what you're managing, then it might be excluded and incorporated as part of that ecosystem component.

You might have a marine protected area, a large-scale marine protected area, that is the only regulations that might apply to that species, but that's important habitat for that species. Is it a managed part of the fishery? Yes, because it is within an MPA, but is it truly a target or non-target species? Maybe not, it just might occur there, and that is the only management you have for that species.

There isn't any guidance in terms of what constitutes an ecosystem component species or not, and that will be a key discussion I think the SSC will have to have in terms of how do you define an ecosystem component species? Are these species that are in the 73 snapper grouper that are included in your plan; are they all in need of federal management?

Why were they included in the first place? What decisions were arrived at to include those species? Is there justification to move those species either out of the plan entirely or as part of the ecosystem component that might just be for data collection purposes or for other purposes?

Dr. Cooper: So I guess what I was wondering is there have been, I believe if my memory serves me correctly, times where the council has decided, well, we don't necessarily want a fishery to develop on this, and so, therefore, we're going to go and put in some regulations to do that. Can you manage something to keep it in an ecosystem component?

Because by definition if you're starting to manage it, then it is a fishery, but then you have to have ACLs and ACTs, so can you put in conservative measures because you think it is an ecosystem component and you want it to stay that way, but then not have to go all the way and be either lumping into a group and/or keeping it on its own and do ACTs and ACLs? Can you manage something to keep it in an ecosystem component or is that by definition contradictory?

Dr. Strelcheck: I would argue that it is contradictory to at least the guidance in the sense that if you're managing it to prevent a fishery from developing, then ultimately it constitutes a fishery whether it is developed or not. It is a target or non-target stock at that point. It just might not have been an exploited target or non-target stock.

Ms. Jensen: Is bycatch considered part of the catch in these limits?

Dr. Strelcheck: You can specify it in multiple ways. The guidance speaks to catch limits that would include all sources of mortality, but the catch limits could also specify based on just landings after having accounted for bycatch and other sources of mortality.

Ms. Jensen: What about those species where we have no reported estimates of bycatch.

Dr. Strelcheck: Well, I think in that instance that is certainly the challenge of the peer review and SSC in terms of determining what the appropriate levels will be need to be set at given the uncertainties in terms of the data and what information you have available and in front of you for making those decisions.

Dr. Cooper: To clarify, regarding ACTs and ACLs, I understand that bycatch may or may not be included, but the SSC has to set ABCs. Is there guidance as to whether the ABCs have to include bycatch?

Dr. Strelcheck: Well, the way pretty much all of our stock assessments in the southeast work is that we're accounting for all sources of mortality as part of the assessment, and then the ABC calculation or the OFL calculation is backed out of the assessment as just landings, but the overall mortality on the fishery needs to accounted for in establishing those fishing level recommendations. If you don't have a stock assessment it is going to be a lot more challenging to accomplish that, but certainly it needs to be accounted for where you can.

Dr. Crabtree: One of the things that we have struggled with in the guidelines is the need to give enough guidance so folks knew what to do without being so prescriptive that we tied everyone's hands, so it is a delicate line to walk. Based on the gazillion comments we have gotten, a lot of people don't think we have walked it very well.

But what we have tried to recognize in this bycatch issue is that regionally there are going to be different situations we face, and you need to give the SSCs and the councils flexibility to deal with bycatch in a way that works for them. If you're in Alaska, you could potentially set a quota up that were total removals if you had 200 percent observer coverage and accounted for all bycatch, and that may work there.

But down here if you have a quota and you're trying to do in-season monitoring of it, it has got be landed catch or can't do it because you don't have the bycatch estimates in any way that would be meaningful there. So, I think the guidance is that somehow all sources of mortality have to be accounted for, but that you have got flexibility in how you set these things up that work with the data collection schemes that you have.

But the bottom line is it has to work; and if you're going to set a catch limit we have to be able to monitor it and tell whether we're over it or not. There may be some cases where it could be a total removals catch limit, but I suspect down here if you want to monitor it in any sort of thing approaching real time, it is probably going to have to be landed catch and you're going to have to figure out a way to factor in the mortality of the discards.

Dr. Cooper: But isn't that where the ABC comes in as opposed to the ACL?

Dr. Crabtree: I think you have flexibility on the ABC. You could give an ABC that is total removals and then say of that this is how much we expect would be landed. I think the councils will need that one way or another, or I think you could say the ABC is here, this is how many fish you can land, we have accounted for the discards in this fashion.

I think you have flexibility to work out with the council as to what is the best way. I know that I've had requests from folks that when we get ABCs now, they would like to see an ABC of here is how much should be landed, here is how much we think that the discards would amount to, so that at some point we could take a look back and see, okay, how close are we coming on the discards?

I think with things like red snapper you're seeing the discards take on a lot of significance, but we all know that we have a great deal of uncertainty in our estimates of the discards. And if we set up, for example, a discard quota, you create an incentive for people no longer to report discards. I think you've got to factor all those things in, and there is no clear one-size-fits-all solution you're going to find.

Dr. Belcher: Any other comments or questions? Thank you, Andy. The next item on our agenda, we have a presentation from Erik relative to characterizing uncertainty for ABCs. Erik, I am going to leave this to you to see if this ties in with Amendment 17 enough that we really need to use this to help answer – let me pause to say that we have been handed out a sheet that has questions for the SSC consideration during Amendment 17 discussions today.

Based on the fact that one of the questions is actually asking about those risk levels, I kind of feel – I know you're willing to put this off, but I almost feel like it is a pertinent thing for discussion in 17; do you agree?

Dr. Williams: Well, let tell you what I had planned, because I will be giving a presentation on a P-star example, basically going through the probability method. What this other presentation was – it may or may not fit in here and I don't care either way. This was our attempt at the Center and particularly at the Beaufort Lab to get some feed back from the SSC on how they view characterizing uncertainty in stock assessments.

Because this is going to be a very important issue in the future for us now that uncertainty is going to be explicitly accounted for in our stock assessments, we would like to know what direction the SSC wants to go with uncertainty estimates in stock assessment, what are the best methods for estimating uncertainty, how are we going to handle assessments where we haven't fully characterized uncertainty?

There are a lot of questions lingering and we don't want to be stuck making those all by ourselves at the Beaufort Lab and then having to bring them to you and then have you guys say, "Oh, well, that is no good; you should have done this, this and this."

Dr. Belcher: So would this be better suited for our meeting on Wednesday?

Dr. Williams: It might be, actually.

Mr. Carmichael: And along those lines, in your CD of materials for that you do have all the other assessments so we can spend some time looking at how the other assessments treated uncertainty. Those of you who have been around here long enough to remember back that far and can remember, you know that we have taken quite a number of different approaches to presenting uncertainties.

It is not just if you compared, say, one done primarily through Miami versus one through Beaufort, but within Beaufort we have taken quite a different tact to how we present these uncertainties as this process has evolved. That could be a good thing to talk about on Wednesday, and that may perhaps be most appropriate.

Dr. Belcher: Okay, with that suggestion, then, we will discuss this further during our Wednesday meeting, and we will move on to discussion on Snapper Amendment 17. John.

Mr. Carmichael: If you would like to comment on the questions that were passed around, we have brought this up several times during this meeting, and the SSC agreed that you recognized the need for some clarification of the report; and that if there were specific questions provided in writing you would be willing to address those.

We've tried to do that and get a list of specific questions. It is a whole page just because they tried to put it in some context and to help you develop a good answer for those and let you know where they're coming from. Hopefully, this will address the things that have caused the issues with us over the last several months and through the council meetings.

I would also point out, say, Number 4 which addresses this Magnuson Act requirement about developing an ABC control rule and sort of doing it by the council but with feedback from the SSC. To follow up on that, you know, the SSC had discussed that in June and it was a huge issue.

The council did make a motion in September. We've presented some options on control rules, and the next step is to kind of give, again, an opportunity for guidance to Erik and the Science Center as to, well, what things would you like to see in order to make the next step in really

evaluating these risk levels and how we deal with the control rules? The other ones are really along the lines of trying to clarify the things that have caused some questions and really getting a firm foundation for the recommendations that you've made.

Then we will, of course, end up with having to get some recommendations for those stocks that we have new information here before us. We have new information on vermilion snapper and red snapper in particular. Kyle has provided some new projections on red snapper so we could probably e-mail those out to the committee as well.

It is ten-year projections based on your recommendations from yesterday, which may also help us get to the recommendations for ABC on that species. Are there any questions about the questions? I wanted to get them to you now so you have sort of a chance to ponder them over lunch and you're not hit totally cold and have to start answering stuff right off the bat.

Dr. Belcher: I will give you a couple of minutes to look them over. Anybody have any questions or comments relative to the questions? Okay, seeing none, Rick, go ahead and start your presentation.

Mr. DeVictor: I am going to give an overview of where Amendment 17 is at the moment. I'd just like to say that this has not been taken out to public hearing yet, and there are still some discussions to go on this week with the Snapper Grouper Committee. We went back and forth at staff as should we present this now or should we just let you deal with OFLs and ABCs. We decided to provide what is currently in Amendment 17.

What I would like to go through are the actions and alternatives. Then we outline the SSC tasks. Now, certainly, they are provided in this sheet, number one through six, so I would refer to that for the specific questions that we have. Then I will briefly go through the timeline. Before we start on this, I would just point out again, like I said, as far as the timing, we haven't gone to public hearings yet, which is scheduled to go out late January and early February to public hearings.

Amendment 17, of course, is to comply with certain requirements of the Magnuson-Stevens Act for ten species that are currently undergoing overfishing. It would specify ACLs, annual catch limits; the targets; accountability measures; and measures to limit the mortality below to ACT. Now, again, the deadline for this is January 1, 2010, so the current timeline allows us to meet this deadline.

And, again, this amendment for the ACLs and ACTs would focus on these ten species. What are these ten species? Well, on the left-hand side you have what we consider deepwater species, so that is golden tilefish, snowy grouper, speckled hind and warsaw grouper. On the right-hand side are species that we refer to as mid-shelf species or shallow water species, black grouper, black sea bass, gag, red grouper, vermilion snapper and red snapper.

The one with the asterisk, of course, has gone through the SEDAR process. So, again, these are ten species currently undergoing overfishing. As Andy Strelcheck covered a lot of this, I'll just

breeze through this, but, again, this is from the National Standard 1 Guideline Proposed Rule. This is what we are following with Amendment 17.

Again, OFL and the ABC come from this group right here; the council using the ABC as the upper limit and specifying the ACL and the ACT. I will go through the ACL and the ACT alternatives that the council has currently talked about. Again, I will briefly go through this since Andy has covered this.

Again, the role here is to put in buffers to ensure that overfishing is not occurring, so there is a buffer for scientific uncertainty. That is the scientific uncertainty around your estimate of OFL. Then the ACT is stepped down to deal with management uncertainty; how well do you believe the catch is coming in and how well can you put in in-season to limit catch to your ACT. That is management uncertainty. That is what the council has to deal with in setting their ACT.

Again, you all have provided, as you know, OFL and ABC recommendations in June. We do have an agenda item for you guys to review those. Now I will go through the alternatives that the council currently has in the amendment. The first one is to deal with ACLs. There is going to be a lot of talk this week amongst the Snapper Grouper Committee on Alternative 1. We have a table in the document showing what is currently in place as far as limits and quotas.

The question will be asked do we already have ACLs for some species, but I don't think that is something you necessarily here have to concern yourselves with. I am just showing you what alternatives the council is thinking about. Alternative 1, of course, is required by the National Environmental Policy Act. They always have to look at the no-action alternative and look at the effects of it.

Alternative 2 is to specify the ACL at the ABC level. Alternative 3 is to specify the ACL equal to 90 percent of the ABC. Alternative 4 is to specify the ACL at 80 percent of ABC. Again, what I have here up top is the PDF number and the page number where you can go in the document. I would just like to point that is the document that was sent in the second briefing book mailout. If you want to go and look at the alternatives, the actual wording, it is on Page 218 for the ACLs.

Now, looking at catch targets, there are catch target alternatives in the document, and, again, these are set for the commercial sector and set for the recreational sector. For the commercial sector, Alternative 1, again, is the no-action alternative, do not specify commercial sector ACTs. Alternative 2 is to set the ACT at the ACL level. Alternative 3 is to set the ACT at 90 percent of the ACL level. Alternative 4 is to set it at the 80 percent ACL. That is the commercial sector alternatives for ACTs.

And, again, what the council is doing is they're taking the ABC, of course, and setting the ACL. Then they're using allocation alternatives to separate that into two sectors and then stepping those down for ACTs. Alternative 1 is do not specify recreational sector ACTs. Alternative 2 is to set it at 85 percent of ACL. Alternative 3 is to set it 75 percent of ACL.

What Alternative 4 does here is it looks at the scientific uncertainty around the catch estimates, so it is really a variation on the MSST, one minus M times BMSY, so this is actually incorporating the PSEs, so it would be ACL times one minus PSE or 0.5, whichever is greater. I would point out the council does not have preferred alternatives at this time. So those are ACT alternatives.

This is something that you have all talked about a bit. As we saw the tasks, it was to review your OFL/ABC recommendations from when you met in June. I point out vermilion snapper and red snapper at this time because we do have new scientific information for these two species. Vermilion snapper, you do have the assessment; and red snapper, you do have the addendum.

Then, of course, the question that we have been grappling with as staff is what is ABC? Is it total fish killed, landings and discard mortality or just landings; so if you could please provide clarification on that, I think John has outlined that here. If it is just landings, how is the mortality accounted in the ABC of discards?

And, again, this has particular relevance to speckled hind and warsaw grouper where ABC was set at zero based upon your recommendation from June. There are more questions outlined here, but this is just the starting point. While I will do is go through the rest of the actions in Amendment 17 at this time.

I should point that there are 19 actions and a hundred alternatives so my intention wasn't to go through each and every action at this point. I just sort of picked the actions I thought that you guys would have comments on, but, of course, you're free to comment on any actions in the amendment.

There have been reports from our Snapper Grouper AP, as one group, of increasing catches of snapper grouper northward, so the council is considering extending the range of the FMU northward. This would not apply to golden tilefish, scup or black sea bass as the Mid-Atlantic Council already has regulations for those species. The no-action alternative would keep the current boundaries of the FMU.

Alternative 2 would extend it northward and include the Mid-Atlantic's region and jurisdiction, and that boundary is at New York and Connecticut. Alternative 3 would extend it even further and include the region off of the New England Council. Again, the justification here is to provide biological protection to those species where there has have been increasing catches of blueline tilefish, snowy groupers and such.

Then an important component of this is not only to set the ACLs and the ACTs, but it is also to keep mortality at that ACT. Again, that gets to question is it to keep landings at the ACT or total fish killed at the ACT, and that is going to make changes to your management regulations definitely on which one that is.

The goal right now, as it stands, is ABC equals zero for speckled hind and warsaw grouper, so, of course, that would mean the ACT equals zero, also. The council has alternatives in the

document to change the regulations. Alternative 1 would retain the existing regulations for speckled hind and warsaw grouper.

Alternative 2 would prohibit all commercial and recreational harvest, possession and retention of speckled hind and warsaw grouper. The council is going to have to ask themselves will that alternative get you ABC or ACT equals zero. There is probably still going to be bycatch mortality of that species under that alternative. Alternative 3 is to prohibit all commercial and recreational possession and retention of all deepwater species.

I had a list of what constitutes deepwater species. I think you all are pretty much aware it is snowy grouper, golden tilefish, blueline tilefish, yellowedge grouper, warsaw grouper, speckled hind, misty grouper, queen snapper and silk snapper. That would prohibit all commercial and recreational harvest year round of all deepwater species.

Alternative 4 is the same as Alternative 3 but it would allow some harvest of golden tilefish in certain locations. The council has not specified those locations. If they intend on keeping this alternative in the document they will have to specify where. The justification for that is looking at the data they're showing not a lot of bycatch of speckled hind and warsaw grouper with the golden tilefish fishery.

You can fish tilefish in the mud bottom, not necessarily the rock hard bottom in which snowy grouper is found – I mean where warsaw and speckled hind are found. That could possibly be a way to alleviate some of the social and economic impacts. Those are the actions pertaining to speckled hind and warsaw grouper.

Now moving on to red snapper, the current ABC for red snapper is 42,000 pounds, so, of course, based on the new scientific information that could be revised this week. That is what the council is operating at is a 42,000 pound ABC. Looking at the ACL and ACT alternatives, that is certainly a step down. The council is faced with how do you limit fish kill to the ACT?

Alternative 1 is to retain the existing regulations for red snapper, so that is the 20-inch size limit which applies to the commercial and recreational sector and the two-fish recreational bag limit. Alternative 2 is to prohibit the commercial and recreational harvest, possession and retention of red snapper year round. Again, the council will have to ask themselves will Alternative 2 achieve the ACT goal?

I would like to point out at this time that the council could choose more than one preferred alternative. They're not limited to just one of these alternatives. Here is where we get into spatial closures for red snapper. Alternative 3 and 4 actually would prohibit all harvest, commercial and recreational, for all snapper grouper species.

What the council has done is, again, looked at that ABC and stepped it down to account for management uncertainty and looked at the total fish kill. These are the logbook grids. This zone right here would limit the fish kill to the goal. Alternative 3 prohibit all snapper grouper harvest in that zone year round. Alternative 4 is the same, but it would allow the black sea bass pot

harvest or harvest through the pot fishery and allow the golden tilefish harvest; again as those two fisheries have lower landings of red snapper, bycatch of red snapper.

Alternative 5 would prohibit all snapper grouper harvest, commercial and recreational, but that boundary is 30 meters to 50; and, again, that is the zone where red snapper mostly are, so, again, that alternative could alleviate some of the social and economic impacts by making a smaller area. It wouldn't shut down so much of the shallow water or inshore area. So those are the current alternatives for spatial management.

Alternative 6A would remove the 20-inch commercial and recreational size limit for red snapper and Alternative 6B would reduce the bag limit to one from two. So, again, the council could choose more than one preferred alternative with this action such as prohibit all harvest of red snapper and put in a closure and take the size limit off. They could choose a combination. Those are the alternatives for red snapper.

Another action in the amendment is to improve data reporting. The council sees a need to improve the data collection process and what they can do. Specific alternatives are laid out on PDF Page 320. The first two deal with increasing the speed of getting the landings' information to NMFS from either the fishermen or from the dealer.

Alternative 1 would require electronic dealer reporting similar to SAFIS. I don't know how many people know about SAFIS, but it would incorporate the SAFIS requirements that they use in the northeast. Alternative 2 would require electronic logbooks on a certain percentage of vessels. The third bullet and the fourth one get to discards, getting more information on bycatch. Alternative 3 would require observers on a certain amount of commercial vessels. Alternative 4 is to require video monitoring. Again, the details are outlined in the document itself.

Red snapper is overfished so the council would be required by law to put in a rebuilding plan. The alternatives could change based on the information that we receive from you guys this week. Alternative 1 would not put in a rebuilding plan for red snapper. There was a 15-year rebuilding plan that was put into place for 1992 for red snapper but has since expired.

Alternative 2 would set a 26-year rebuilding plan with 2010 as Year One. Alternative 3 would use the midpoint of Alternative 2 and 4, which is 36 years. Alternative 4 would have a rebuilding plan which is the maximum allowed by law, which is 46 years.

Accountability measures are in the document as required by the Magnuson-Stevens Act. I didn't plan on going through the details of those alternatives. The council will discuss those this week. I think I presented this in June, but this is just a diagram of how this process would work. This is the example with the commercial sector where you have your ACL and your ACT, and your sector ACT is basically your commercial quota.

Year 1 you're below your ACT. You don't have to take action under the accountability alternative. Year 2 you exceed your ACT; so as soon as you exceed your ACT, you prohibit harvest and retention of that species, but you do not take off the overage of the ACL. That is Year 3 where you have exceeded your ACT, you have closed the fishery after exceeding your

ACT, but you have also exceeded your ACL. What you would do is you would take off that amount that you have gone over your ACL off of the ACT. This is just one example of one accountability measure alternative for the commercial fishery.

ABC control rule, I won't go through this in detail. I think you have an agenda item for this action, and you're going to talk about this some more later on in the week. The current alternatives in the document are do not specify an ABC control rule for the ten species undergoing overfishing.

Alternative 2 would base ABC on a proportion of exploitation at FMSY; so whether you look at 60 percent, 75 percent or 85 percent of FMSY. Alternative 3 would be a proportion of OFL; so 2A would set it at 90 percent of OFL or 75 percent of OFL. Then Alternative 4, there are a lot more details in the document, using the assessment uncertainty, looking at data levels which the council has looked at in the past where you classified it – I think we currently have five different levels of uncertainty. If you just limit it to landings' data, for an example, X would happen; if you have landings and something else, Y would happen. That's an overview of the current ABC control rule in the document.

Those are just some of the actions in the amendment. Like I said, it has not gone out to public hearing. The council will talk about it more this week. The timeline currently to meet the January 1, 2010, deadline is for the SSC to review this again this week and for the council to approve it for public hearings; in late January and February, to go out to public hearings.

Whether or not you all come back in March is still up for question, but you would get a shot at this in March or June. Then the schedule for the council to approve this amendment is in June 2009 and submit it to the Secretary of Commerce with the regulations coming in place six months later.

Dr. Belcher: Any questions for Rick? Erik.

Dr. Williams: The alternative for setting ACL had some reductions in ABC or setting it equal to ABC. What would be the reason for reducing ABC for ACL.

Mr. DeVictor: That has been asked before and there is really not a strong justification. The council has talked about it, and I think a case could be made to have your ACL equal to your ABC, certainly. I think the proposed rule speaks on if you want to set aside some of the catch due to prey incorporation or something like that, you can have the buffer, but it is not as clear a buffer as with the scientific uncertainty and having one for the management uncertainty.

Mr. Carmichael: That was a point of discussion at the national meeting, too, and it didn't seem like around the country and other SSCs or the NMFS people there really felt that there was a direction to point to or analysis or any type of tangible information to say this is how much you should reduce and this is why you should reduce. Everyone seems to be leaning toward ACL equaling ABC unless some particular circumstance should arise.

Dr. Williams: Yes, I agree with a lot of that. The reduction from ACL to ACT is meant to incorporate management uncertainty. As Roy mentioned to us earlier, he thought the concept of scientific uncertainty and the probability of overfishing that would be acceptable ought to done on a species-by-species basis.

Yet the alternatives in here for reducing ACT are just flat percentages. Other than the one recreational alternative, it doesn't seem to be based on a species-by-species basis or even reflect some measured uncertainty for management implementation. I guess where I'm going with that is if we're ever asked is this amendment based on best available science, that could be a potential stumbling block right there.

Dr. Cooper: To Erik's final point, I think without actually quantifying implementation uncertainty we're going to be put in the exact situation we are now where it is going to be based on truly best available science, what we have in front of us, which without analysis is our best judgment based on our years of experience, which is exactly what is being railed against in our assessment of ABC relative to OFL.

We're going to have to say is 75 percent – if we don't have any analyses, is it based on best available science? Yes, we could do some science to actually estimate implementation uncertainty. There are ways to estimate that based on what was the target, what did we actually catch, how good have we been in the past, do some retrospective analyses.

But as with stock assessments, yes, those improvements could be done. If they aren't done, we're going to be sitting here exactly like we are now on ABC relative to OFL, trying to say, well, is 75 percent good enough; is 80 percent good enough, and it's going to be based on our best judgment as scientists, which right now we're being told, "Hey, we don't like that; you can't do that." You're setting up for a train wreck again if we don't get very clear guidance on some of this.

Mr. DeVictor: The council has grappled with this on do you set 90 percent, 80 percent, 75 percent; what can you hang it on? I think the council would look to you if this isn't best available science as we currently have it now, well, what do we use if there are ways to quantify the implementation uncertainty. So far the council has just looked at it.

With the commercial sector you have a quota, you close down the fishery, so you could set the ACT close to 90 percent, what have you. But the recreational side where you don't have in-season management you're probably going to have to put a bigger buffer in place to account for that. Now, it is not tied to any specific thing. It is just a smaller and a bigger one. Now if you have more information, that would certainly help the council.

Dr. Cooper: Well, again, that is what we did with the ABCs. That is exactly what we did with ABCs. They said, "Okay, what percentage do you think is close enough?" Well, okay, we picked them, and they said, "Oh, we don't like this. We went through your minutes and you said the word 'arbitrary" too many times; therefore, you need to redo it."

Well, guess what, if we don't have information in front of us, the council is going to say, "Well, is 75 percent good enough?" We're going to talk amongst ourselves because we won't have any data analyses in front of us and decide yes or no. Then you just said, well, then the council asked us to pick a number; what do we think?

Well, guess how that is done? That's based on consensus based on a scientific background of what we think is probably good enough. So, we're going to be back to these exact same discussions and, yes, we may or may not be able to pick a number depending on the opinions around the room. Some people may not want to do that.

Yes, be prepared that if the default council decision is, well, let's go to the SSC and ask them for a number; well, you can't keep doing that and say, "Well, we didn't like that number, try a different number. You didn't justify that enough. Where are your analyses to prove that?" Well, that's the whole point, we don't have them. If we don't get them, it is based on best scientific opinion.

Dr. Barbieri: Rick, if I understand correctly, Amendment 17, those options and scenarios that you're presenting here, these are all still in draft form. They're preliminary and being considered by the council. We will be actually asked to consider, as an SSC, and review all those options, the same way that we have reviewed all the other amendments, right?

Mr. DeVictor: Yes, that is correct, we will ask your opinion is this based upon the best available science.

Dr. Barbieri: All right, so we're going to have the opportunity to have the iterative process, right, in discussions with the council in making recommendations, evaluating what is being presented or considered as the starting point, and we're going to be able to evaluate those and provide some feedback later on? Thank you.

Dr. Crabtree: Well, I guess I had voiced some concerns to John in talking about some of the issues that Andy just raised and touched on. If you would like, I can go ahead and make some comments on that. I asked Monica Smit-Brunello, who is our attorney, to come in and join us for this part of it. Andy touched on a lot of things.

Let me say, first off, that I know you guys have been put in a very difficult spot and asked to do some very difficult things. I know the guidelines – I think they had just come out in proposed form right before your June meeting, and so this has been a very difficult thing. I understand that you guys aren't getting paid for this and that you gave up your Sunday on your Thanksgiving weekend, and I apologize for that. We do appreciate what you're doing and understand the spot you're in.

I don't agree, Andy, that anyone is coming back to you saying we don't like the numbers you're giving us, but we are coming back with some questions about it. I think, really, we've gotten off on the wrong foot with this whole process of ACLs and AMs. I think that at least the perception is there that you were told you have to come with new numbers and whether you have a basis you've just got to come up with something.

I don't if that is really how it was portrayed or not, but I think there is some feeling that was there, and I don't think that really is correct. When you think about it, we already have ACLs and AMs for a lot of these stocks. I think where we need to come into this is look at, all right, we, for example, approved Amendment 16 which puts in place a number of management measures for grouper, and we did that at the last June meeting.

We have gone through Amendment 13C that many of you remember, another controversial amendment. Most of those put in place rebuilding plans, hard quotas and a lot of things. I think the way we need to come at the ACLs is from the perspective of, okay, this is what we have on the books, and these were all based on fishing level recommendations that you and your predecessors on this SSC all endorsed as sufficient to end overfishing and rebuild these stocks.

I think the question should have probably been put to you, okay, do you have an analysis or new science or new information to cause you to think we ought to come in and make some changes to some of those. I think, though, what happened is you kind of came in that, well, we need to change everything, and I think that is just fundamentally not correct.

I think a lot of what we have done we determined was good enough to end overfishing and ought to do that. Well, the goal of ACLs and all these things is to end overfishing and prevent overfishing. If we think Amendment 16 was sufficient to end overfishing of grouper, then probably it ought to be sufficient to put in place the ACLs we have. I think that we do get in trouble when we start talking about making judgment calls.

I really think you are largely a science body that makes scientific recommendations based on analysis and science. If we get in the situation where there is so much uncertainty there is just no way of knowing and someone has to make a judgment call, that is probably something that the council ought to do.

I personally don't have any problem with you as a group saying that we don't have any scientific basis to make a change to it. Now that may mean that we stand by status quo, which you could argue isn't perfect and maybe we could do better than that, but until we have the analysis to allow us to come in and make a meaningful change to it, we'd probably stand by status quo.

I think a lot of what you've struggled with is how to factor in uncertainty, but it is not clear to me how you factor in uncertainty until the council has come to you and said this is the level of risk we're willing to accept. Making a determination of how much risk is acceptable is a policy call, and it is the responsibility of the council.

Once they advise you of that, then your job is to look at the uncertainty about the assessment and the science and so, okay, given how we have characterized the uncertainty we have, this is the ABC that is consistent with the level of risk you have laid out. Well, the problem is, though, is the council hasn't come to any determination about how much risk is acceptable. They have asked for analyses to give them some basis to think about.

They have got to weigh the benefits of fishing opportunities versus the risk of overfishing, and that is a balancing act. I think it is going to be a tough decision for them to make. I think that

has kind of gotten us off into a tough spot, and I wish I could go back in time and do things a little bit differently, but I can't, and that is where we are.

We have had a number of discussions, and I don't want you to feel like we're coming in and picking apart things that are stated in your report and all of that, but we have got to make a decision about whether we have enough a defensible record that we can defend it, and that is kind of why Monica is here.

I did ask Monica to take a look at the SSC report and some of the things in the minutes the last time because it seems to me there are some inconsistencies in some of the things, and then in some cases there is not a whole lot of support for a decision. You were far from a consensus at your June meeting; and if any of you have looked back at the minutes from them, there was a lot of disagreement on how to go.

As you are all fully aware, especially if you were here last night, we have got some really controversial issues we're facing, and I fully expect we will be challenged on all of these. We're just trying to assure that when we end up in court or are challenged on these decisions that we can explain why things were done the way they were and how we came to some of these numbers.

So a lot of that resulted in this series of questions that I guess at some point we're going to go through, but I really think that your focus needs to be on science and scientific recommendations. I don't think it is your job to be making judgment calls about how conservative to be or how much risk we're going to accept. I think it will be difficult for you to resolve a lot of these issues until the council comes to you with some clear direction on some of these things.

In the meantime we do have fishing level recommendations that we have developed as we have gotten assessments over the past years. We have quotas for many of our fisheries, which are basically annual catch limits and things like that. I really think we ought to move away with what we have already approved and put in place only if we have a solid analysis that says we should lower it.

We probably do need to lower some of the things we have, but I really think we need to look through those very carefully, but what we're trying to do right now is just make sure that we can defend the record that we have because none of us want to be in a position where we have a rule thrown out or lose a lawsuit because we didn't have an adequate record to support the decisions that we're making.

We're just going to have to take the amount of time it takes to do that, and that is not easy chore when we don't have the final guidelines and things, but that is where we are right now and what we have to deal with. Monica, I don't know if you want to add something to that.

Ms. Smit-Brunello: Well, I think you have summed it up pretty well. I would like to thank you for spending all of your time with these unenviable tasks. To echo what Roy said, no one is asking you to change your scientific opinion about anything. I'm just looking at it from the perspective of do we have an adequate record to support the decision that was made so it is not

arbitrary and capricious. Those are the legal standards with which we're judged. I think it is the best approach to look at what is in place now and then determine whether you have a basis in which to change it.

Dr. Belcher: I have a question for you, Monica. When we were at the national meeting, we are one of few SSCs that have a transcribed record. As far as us as a group – and I'm speaking for everybody; and if I'm not whoever can kick me under the table later, but in viewing those documents, I look at that as our quasi-scratch sheet as we we're making the deliberations amongst ourselves, and we're using terminology around the table, and it is individuals speaking, why are terms like "arbitrary" coming back to the SSC and stated that the SSC has made the statement that it was an arbitrary call?

Again, it is paraphrasing based on what has been given secondhand, but how is that record going to allow us to continue to have dialogue? We need that terminology to be able to say are we being this, and then throwing around, well, if we were being arbitrary, this is where we would be, this is how we would be getting there.

If that record is going to continue to be thrown back at us, it is scaring us into the fact of how do you have open dialogue because everytime that you say a word someone is going to be looking for a specific word to say that you've made that statement. In a court of law, if we have that as an individual has said that terminology, but yet nothing within our written record as a report or as a motion from the SSC as the body said we made the statement it is arbitrary; how can an individual be held to that phrase and say that it relates back to the group?

Ms. Smit-Brunello: Well, I think the way you used the word "arbitrary" is probably a little different than what the legal standard of arbitrary and capricious is. You're right, it is not fair for someone to search a record and look at "arbitrary" and then said, "Oh, here they said it was arbitrary." I wouldn't want the fact that your minutes are being transcribed – you know, they're really verbatim minutes – I wouldn't want that to chill your scientific debate and the discussion and the dialogue that goes on.

At the end of the day, when you all reach consensus, if you reach consensus and whatever report comes out of that, the report should try to substantiate what the decision of the SSC was. The fact that someone may have said, "I think this is arbitrary" and someone else disagreed with it, well, that is fine. I think it is a healthy record to show that there are differences of opinion and people feel differently about different things.

So, it is at the end of day, though, where if you reach consensus, the rationale should be in the record. And hopefully in the report, too, you can summarize the rationale that you all reached in making the final decision. I didn't even realize this National SSC meeting was going on until after the fact, so it is kind of interesting to see how different SSCs operate across the country.

Believe me, councils operate differently across the country, too, and that is just the fact. I think it is great that you have transcribed minutes that I can look at and that other people can look at and you all can look at to see how you reached your opinion. From my perspective, it is just

fine. At the end of the day, though, like I say, if the report can summarize and explain how you reached a certain decision, that is good for the council, too.

Dr. Belcher: And I think that is part of what has been lost well. We also stayed more formalized with Robert's Rules. A lot of them are not acting that way; they're doing a consensus report. They don't have motions that carry forward. Our report tends to be more of the motions. We started doing summary documents, but we have really – and this is again after having been through two generations of the SSC changeover, we want to see movement more towards the consensus, but we just haven't had a really strong segue.

I agree that our report has been lacking in certain terminology because our report-writing skills are not where they need to be. I think that is where that breakdown is happening. We're trying to get to that point. Going back to the minutes, we have the same issue. Without the minutes I feel handicapped because I can't see what other people are reading and interpreting and then saying, well, I was there and I know where the dialogue went with this.

We're kind of in a really hard transition; and I think with trying to move towards a consensus, using that terminology and then looking at how we're set up right now, we're not a strong consensus body. We're operating off of you want a recommendation; we're putting a motion forward of what we're endorsing, but that doesn't carry all of the caveats of the discussion that went around that motion. I think that is where part of that record we really need to work better on that portion of it.

Ms. Smit-Brunello: And even in the summary report, if you want to build in some of the caveats or some of the scientific misgivings that you have that go into this, that is fine, too. I mean, that is in the record. Just because you don't put it in the report doesn't mean it doesn't exist because the record exists, so that is fine. We are kind of learning as we go on this. From my perspective, I want an ironclad, defensible record. That is not real world all the time, though, so I think that as best you can work through it, and I would be glad to attend your meetings if you think it is a good idea for me to do that at least to get us on our way.

Dr. Crabtree: There is nothing wrong if you come to a situation where you're just deeply divided on something and saying there is scientific disagreement over this issue; there are arguments on both sides of it, here they are, here are kind of the consequences of being wrong on either side and give that to the council as your scientific advice and they have to make some kind of call on it.

You are no different than council members, either, because I can assure you that council members regularly at council meetings talk about things being arbitrary. In fact, they often file minority reports. We had one on Amendment 16 and we have had them on a number of other occasions where the members who disagree with the decision write a lengthy report pointing out all the problems with it.

There is nothing inherently with that. You just have to make sure that as Monica said at the end of the day, when the decision is finally made, that all those points that were raised were duly

considered and dealt with. We are not held to a standard that we have to make perfect decisions. We just have to show that we considered all the facets of it and made a decision.

There are times when there is not a clear course of action, that it is clear to anybody, and reasonable people could make different decisions. We're not likely going to lose because we made a decision. We just have to be clear that we considered all those factors and made a reasoned judgment, but we don't have to always be right or always be perfect. You shouldn't get to where you're afraid to have open discussions with it, and you shouldn't get to a point where you don't feel like you can go to the council and say there are different schools of thought on this and we can't give you a clear science answer because there is not one.

Dr. Williams: I may be speaking a little bit for myself here, but I think some of the frustration with this particular amendment and the whole ACL and ABC stuff is that the sense is we're being pushed forward with this without having all the supporting science. What makes it a little extra frustrating is we know that science could be made available. It is just not here right now at this particular time.

So we're trying to balance – I mean, you guys do want this ironclad amendment or you want something that we can say, yes, this is scientifically defensible, but at the same time we're being pushing forward without having the full analysis to support it. We know what the full analysis would look like and we know what we need to do, but we're not getting it.

For instance, this whole ACT reduction from ACL; I mean, we would like to see an analysis of past history of management and how well it succeeded for each species. That would be a very critical analysis for that step, but we don't have that, so we're going to be stuck in this situation, well, we don't have the analysis in hand, but we're still being asked to come up with some ad hoc adjustment for management uncertainty.

Dr. Crabtree: Well, I think that is part of the problem. I think if you don't have the analysis you need to make a change, then you basically stand with what we have on the books for now. We move away from what we have already done and approved based on having a good analysis and a sound reason to do it. We're not going to get this perfect in the timeframe that we have, so we're going to do the best we can to comply and to make reasoned judgments on these things.

But, I fully expect that particularly with things like incorporating the uncertainty, both the scientific and the management, and the risk of overfishing, that we will have to come back and refine those as we get new assessments. That's just how it is so we do the best we can with what we think is a reasoned approach that will likely end the overfishing now and is the best we can do, but we understand that as we get new assessments we are going to have to come back and refine some of those things.

Mr. Gregory: I just want to express some thoughts. It is not arguing with you or anything like that. To me the ACLs and ACTs are derivatives of what congress passed. I purposely use that word as an analogy. The scientific community that is dealing with the ocean, which is extremely variable, and the animals that live in the ocean, and with limited data, the system is now asking us to make a decision based on our uncertainty.

I think that throws me off the cliff because we strive hard to try to learn what is certain because we have great uncertainty in lots of areas. So, basing a decision on uncertainty – and I think each one of us around the table probably has a different feel for that – my concern is that – and as it came out of the King Mackerel Assessment and as we have seen with a number of assessments, the uncertainty is not within the parameters of a model.

The uncertainty goes from one assessment to the next. One assessment can say it is overfished; the next assessment can say it is not overfished. With Spanish mackerel just now, we had two different models run; one that says it has been overfished forever and it has been undergoing overfishing for almost forever, but the other model says, no, everything has been fine.

So that is tremendous uncertainty, and I don't think we're going to easily come to grips with that. That is part of the problem of trying to make decisions on all this uncertainty, but obviously the logic is great conceptually. It all makes sense conceptually, but in putting it to practice I think we might reach clarity at some point, but there is going to be a lot of confusion and fog between now and then.

Dr. Cooper: I have got two points. One is the whole idea that if we have large uncertainty; therefore, we should just stick with status quo; no, because then as an SSC we say is status quo best available science and we reject that, too. If we are certain that the status quo isn't best available science, we reject the status quo and we can't put forward anything new, then where are we?

So, no, I don't think that the option of if there is large uncertainty go with the status quo; I think in fact flies in the face with the reauthorization. My other point is that so far we're talking about large uncertainty with full-blown, incredibly complicated stock assessments. We have got a tiered approach here on how we're going to set ABCs when all we have is landings; and to say that we have good scientific certainty on those numbers; no way!

I mean, we're talking apples and oranges here. You know, let's talk Pacific Management Council. They have this tiered system. They have been doing that. That is their status quo that they can actually set these things when all they have is landings. Well, if we're having this much trouble talking about uncertainty with a full-blown stock assessment; I mean, just wait until all we have is landings' data or just a CPUE Index with no assessment. And to say, well, then, you're even more uncertain there; let's just stick with status quo – I mean, come on, is that really what you're wanting us to do?

Dr. Crabtree: No, and no one is saying that.

Dr. Cooper: You just did, though.

Dr. Crabtree: No, what we said was we have things on the books that we have dealt with now. If you don't have an analysis or a rationale for making a change to it, we probably ought to stay with it. I'm not saying if it is very uncertain don't change it. I am saying you need to have some sound basis for making a change from it. We don't have to change it just to change it.

Dr. Cooper: But the definition of ABC has changed. The fact that we set ABC at a previous level is not how we're supposed to be setting ABC now. ABC now is OFL accounting for uncertainty. I don't believe when we set ABC in the past that that is what it was taking; and to say that our definitions that are on the books are therefore in compliance with the reauthorization, I don't think that is the case; or, especially when we start saying – you know, you just said that FOY accounts for management uncertainty.

Well, obviously, in the past, given we said equal across the board, it didn't, and that you just said that, you know, probably they're going to have to go back and fix that. Well, guess what, we're going to need estimates on that; and so to say that, well, FOY in the past probably didn't account for management uncertainty, but since we can't decide on it yet we're going to assume it did and stick with status quo since it is on the books.

No, just because we have numbers filling in blanks when the definitions are changed and the goal posts are changing, the factors we have to incorporate are changing, it doesn't mean that what is on the books satisfy the regulations at least to what we have to validate as to whether or not they satisfy the definition.

Dr. Crabtree: Well, I'm not sure there is any change in the definition of ABC. It has been rather loosely defined. Certainly, we should have been taking into account uncertainty all along. I am not defending the status quo because it is uncertainty. I am saying, though, let's don't change it unless we have some science or reason or a strong rationale to change. That is what I am saying. It's the starting point and we move away from it because we have some new information or an analysis that indicates we should.

Dr. Cooper: Except the problem is if you came to the SSC and said does the current level of ABC adequately account for uncertainty in the stock assessment, I would be willing to bet the resounding answer is going to be no. You know, if you asked us to validate status quo – I mean, it's one thing if we can't pick a different number, but then we should turn around and say, okay, does the current definition work?

In the end we're going to have to say does what we're doing; is that best available science? And just like in NEPA where it is a choice to stick with the status quo, you know, saying that, well, we can't pick a new number doesn't necessarily mean the current number is valid. And to determine whether that is best available science, again, we're in the same sticky wicket.

Dr. Belcher: The one thing, too, in talking about the 90 percent and the 95 percent or the 5 and 10 percent discounts we used for red and black grouper, under the tiered approach, which we talked about over the years going towards that approach relative to what type of data or how much data is available, what our confidence is with certain estimators, we have never built that tier.

We're kind of in that process. That is kind of what we started doing in June was laying out a strawman. It is not a very good one, but it is a starting point for us. When we went to the national meeting and saw the North Pacific's example of their tiered approach, they have where

you have a landings' stream. They set ABC/OFL based on averages of landings, like a five-year bracket, and OFL was a discount of 75 percent of that value.

Terry Quinn was at the table and that was a question I asked him directly; where did your 75 or 25 percent discount number come from? That was their collective scientific advice as to what that discount value they felt was good enough to make up for the uncertainty relative to the fact that all they had was landings.

Now that is coming from a region that has a stronger data collection protocol in place, and they were able to use their collective body to make that decision. We did that relative to 90 and 95 percent, but we kind of got the slap for that, so how are we supposed to come up with a discount? I mean, I'm just trying to feel from you guys if that was an issue, how do we best come up with that discount?

They were in an earlier era. They weren't kind of under the gun. This is a system that has been place for numerous years, so they were kind of riding the wave where we're right underneath the crashing point for it, so everything that we do is going to be scrutinized, so at what point are we allowed to use our scientific opinion to help us set those guidelines?

Dr. Crabtree: Well, I don't think there is any straightforward answer I can give you on that. I do believe, for example, the 75 percent of FMSY that we've been using for OY comes from that same sort of approach, and it was in the old Restrepo et al document that was produced way back in 1990 something.

But, let's look at it from this perspective relative to red grouper and black grouper. At your June SSC meeting you approved Amendment 16 as based on the best available science. Well, Amendment 16 reduces the catches of black and red grouper by something on the order of around 35 percent.

Now we've some issues as to why are we going for such large reductions in Amendment 16 and how were those catch levels based on the best available science when at the same meeting there were ABC recommendations made that factored in the uncertainty but called for much lower reductions than what were approved in Amendment 16.

At the last council meeting the council requested an interim rule to put in place the management measures on grouper, which includes the January, February, March, April seasonal closure. Now we have a court case that says in interim rules you can only regulate species that are undergoing overfishing. Black and red grouper are both listed in the status of stocks' report to congress as undergoing overfishing.

But then I look through the ABC recommendations for black and red grouper and the OFL was set at the average catch level for – I forget the specific years, but I think for the past five years you used that average catch as the OFL. Well, if the average catch is the OFL, then is that consistent with the argument that you're overfishing?

If you believe a stock is undergoing overfishing, then it seems to me the overfishing level can't really be the average of the past five years. So it appeared to me that we have some discrepancies in the record that create real problems for us. I think from just the broad perspective on how to approach red grouper and black grouper, the latest scientific information we had was the Potts and Brennan, I think, back in 2002 or so.

There have been some studies by folks at the University of Miami and some others along the way, but I don't think any of those have been through any sort of peer-review process, but the general feeling was – and I think this was in one of your own meetings a couple of years ago – in the absence of any new assessments, the status of the stocks remain undergoing overfishing.

So I think where the council was, okay, we can't really quantify what sort of reduction we need for black and red grouper because the nature of the science is such as it is and it is uncertain and it's not as timely as we would like, and so a spawning season closure that encompasses when these fish all spawn is a reasonable approach to try and to ensure that we're protecting these stocks when we don't have the information that is needed to quantify that.

But then if you look back at the recommendations you made, you appear to have quantified it, and you appear to have decided that a 5 percent reduction is needed to end overfishing of red grouper and a 10 percent reduction is needed to end overfishing of black grouper. That is the problem we have now.

We have got these inconsistencies in the record between Amendment 16 where nowhere in Amendment 16 does it really talk about these ABC recommendations, and then I've got a pretty controversial interim rule that we have to make a decision on; and whether to move forward that interim rule is really based on the record that these stocks are undergoing overfishing.

Yet when you look at these, it opens up a lot of the questions that I think you can see when you look at them. That is the predicament I am in, and I'm not coming to you telling you what the ABC should do. I don't know how to tell you to deal with the uncertainties and all on it, but we do have these inconsistencies in the record.

You know, I'm held accountable for these things ultimately, and I have got to be able to explain here is why we reached the decision we did; and when there are these inconsistencies in the record, that creates a great deal of problems for me in terms of moving forward on some of it, and so that is kind of why we're here today talking about some of these issues.

Dr. Belcher: And I'm looking at everybody who was there from June to help with this, but my collective memory was it was relative to how the overfished statuses were determined in the past. These two species were determined on a different – that is what I'm trying to remember. Everybody help fill me in – there was a difference in how these two species had been assessed, leading to the definitions as far as overfished/overfishing. There was an inconsistency; is that correct or not correct?

Mr. Carmichael: I don't recall any of that. I think their status determinations, their references for those go back to earlier trend reports. It goes back to the most recent, which leads you back

to the one before that and then back to one before that; and if you go back a couple of generations of biology, you end up at some sort of catch curves, which I remember from my time on the SSC were highly suspect, but that is what you have.

So, yes, there is a lot of uncertainty in those determinations. We looked back into this and you talked about those way back when, several years ago when you were dealing with these and basically the SSC declined to comment on the adequacy of those determinations. They are what they are and that's where you left it.

Dr. Belcher: So that was kind of where we were looking to the trends' reports and looking at the data that was in front of us to make those assessments, which is why we looked back to the landings. I think it was again because we recognized the need for having to have this new mechanism on how we're setting OFLs and ABCs based on the type of data that we have available, the models that are available, what we have confidence in for biomass versus fishing mortality estimates.

I mean, we have a couple that we have talked about recently that we were relatively confident with what was happening with the fishing, but the biomass we can't say anything about it, not with any kind of certainty or confidence. So, it is not that we can't move forward; it is just that it forces us to look at things a little bit differently. We can't use a P-star in certain situations.

So for those species where we're dealing with a landings' stream, this was kind of how we were looking at how can you get at this OFL/ABC relative to the data at hand? I am sure that is probably what happened is we get insulated into looking at a specific issue, and you do kind of forget about the continuity with something that was a previous assessment.

Again, mea culpa on that fact that we did not look closer to see what we had done for those species, but again because of recognizing the problems that are running with that, that was where our recommendation for black and red being moved forward and put into the SEDAR process, recognizing that now there is that data to put it through a more rigorous analysis and get us to the point where we can either fall back to what we have recommended or use the new numbers with a P-star analysis uncertainty incorporated, which is ideally where we want to get to.

And that was kind of our stressing, when we put these forward, is that this wasn't an end all be all. This was just a starting point; and based on what we were looking at, this was what we felt comfortable with moving forward with it.

Dr. Crabtree: And I guess the issue I raised has to do with the consistency of that with what is in Amendment 16. Then there was also a statement in the report that says because anecdotal evidence indicates that red are probably in a healthy state, which seemed to imply that the SSC had reviewed some sort of information and concluded that red grouper were healthy.

Well, that is fundamentally in conflict with their status of undergoing overfishing, and it raises really issues about where we're going in Amendment 16. But more pressing to me it raises issues with whether or not these species should be included in an interim rule. I don't know

where we resolve all this, but these inherent disparities are still there, and it is still not clear in my mind as to where we are on it.

Mr. Gregory: I heard "red grouper", and that is me. That was done because the recent stock assessment on the Gulf found that red grouper matured at 12 to 13 inches where all previous assessments and all general knowledge of red grouper was that they didn't mature until 18 or 19 inches. That change in maturity knowledge made a dramatic difference in the status of the stock.

Since it is the same species, I assumed that the red grouper on the Gulf side probably matured at that younger size and age as well. That is the reason for comfort with red grouper. The other thing is that there is overfishing criteria that were done in 2001 that was based on a catch curve. Now a catch curve integrates mortality over the life of the animal, and the fishery may be a ten-year life span.

So a catch curve done in 1999 would have incorporated all the fishing mortality that had been affected on that animal during the 1990s. Well, in 1998 the South Atlantic Council implemented a limited entry program, a two-for-one permit process, that has substantially reduced the number of fishing participants in the snapper grouper fishery.

So it is unlikely that the amount of fishing mortality that the groupers saw in the nineties are still being affected today. We don't know because there hasn't been a stock assessment done. Also, in 1998 or '99 the council implemented a size limit increase that went from 20 inches to 24 inches for black and a reduction in bag limit for blacks.

So, there were things done that suggests that those fisheries may not be overfishing at this point in time, and they probably were in the 1990s and that catch curve indicates that. So, I had confidence that red grouper in particular would probably come out looking pretty good in the next stock assessment. That is where that 95 percent came from; it was from my proposal.

Dr. Crabtree: Okay, and that's fine, but when it appears in the report it appears to be conclusion that this body reached rather than one member. The only problem I would point out with all of that logic, Doug, is we do have a very recent assessment for gag, and all of what you just said would apply to gag as well, but we're overfishing and approaching an overfished condition. All of those things, including the side limit, do not appear to have been sufficient to end the overfishing with gag.

Dr. Belcher: There was discussion yesterday relative to a paper for red grouper that suggested that they were healthy, and it is a peer-reviewed published paper, correct?

Dr. Buckel: I guess we talked about a couple of different papers, but I think the one you're referring to is Rudershausen et al that John sent around to the SSC. That was a comparison of catch-per-unit effort of several snapper grouper, but it included red grouper catch-per-unit effort data from hook-and-line sampling at three different sites in 2005 and 2006 that were compared to data collected by Chuck Manooch and others in the seventies that showed an increasing trend in catch-per-unit effort.

Dr. Belcher: I don't know if that helps or not, but I'm trying to at least let you know that the discussions have been going on, and I really, honestly feel that what we went through painfully in June and revisited twice within that time period, every one of us recognizes that it is not perfect. We really need the time to sit down and get this to where we're comfortable with it and have our outline of how best to proceed, but we needed a starting point.

I mean, given what we have been tasked with and the number of times that we have tried to say that we're not ready to go forward with this, and we have been asked and asked and asked and we finally took a step forward. That was our best foot forward, recognizing that there are probably flaws and it needs to be tightened up, but that is what we're hoping.

Again, as this progress goes on, I don't know how red and black will stack up relative to 17 and their timeliness of production, but the hope would be that those assessments would give us better indicators than what we were putting forward. That was just, again, based on collective comfort how best we felt to proceed. Anyone else?

All right, let's go ahead and take a break for lunch. Those folks who were tasked with mackerel, I have to go into the Mackerel Committee – this is both Spanish and king – with a report. I am kind of going to end up having to push back a little bit of our discussions because that report will have to be done when we come back from lunch.

Dr. Crabtree: Carolyn, after lunch will we go through the remaining questions that are here because we are going to need resolution on some of these.

Dr. Belcher: If it is in the best interest of everyone involved, we can go to every one of those questions and put forward some action item from the SSC that addresses those items specifically and basically leaves no questions as to why I'm looking at that.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Cape Fear B Room of the Hilton Wilmington Riverside Hotel, Wilmington, North Carolina, Tuesday afternoon, December 2, 2008, and was called to order at 2:00 o'clock p.m. by Chairman Carolyn Belcher.

Dr. Belcher: Okay, what we're going to do is Christine has e-mailed you a copy of Alex Chester's comments and Erik's input, Gregg's and Doug's input and her input relative to the king mackerel discussion. If you will review that for content, wordsmithing at this point I'm not interested in; I just want to make sure that everybody is happy with the dialogue being captured so I can take it in as our representative report. When Sherry is seeing if she has comments to add for Spanish mackerel, that document will follow right behind that for the same purpose.

When you guys are done, just e-mail it to the SSC and everybody can read the document on their computer. The main thing is I'm not interested in wordsmithing. Just read it for content and if there is a point that has been missed or something that we needed to capture that wasn't captured, that is where I need the interjections from. Okay, everybody had a chance to read over the king mackerel portion? Anybody have any major exceptions with the content that is in it, anything that should be added? Pat.

Dr. Harris: Do we want to include references – I don't recall ever discussing anything to do with the Gulf. I think any references to the Gulf king mackerel should be deleted from our report.

Dr. Belcher: What is your feeling? I mean, I understand where Pat is coming from on that, but I don't know relative to some of the earlier comments because they were considering that stock synthesis across the whole realm. What is your feeling, Christine?

Ms. Jensen: I asked Alex that exact same question, but the feeling was, I guess, is we're approving the whole assessment and not just the parts that go with just the Atlantic so that is why we included it. If we want to just keep it to the Atlantic, then I'm not against that because I had that exact same questions.

Dr. Harris: We didn't discuss any of the issues related to anything to do with the Gulf and making a statement that we agree with the review panel regarding the Gulf and Atlantic king mackerel stocks, I just don't agree with that. I don't disagree that we could include it, but then we need to explicitly go ahead and make reference to the fact that we approved the Gulf. We didn't discuss it and as far as I am concerned I was only thinking about the Atlantic portion of the analysis.

Dr. Belcher: Point taken.

Mr. Carmichael: It is really only one sentence and then two words in the other sentence. I think if you deleted those, you would be fine.

Ms. Jensen: I'll take care of that.

Dr. Belcher: Any other comments or points that should be added? Okay, the Spanish mackerel portion of the report, you should have that in your e-mail and we will go ahead and take another ten or fifteen minutes to read that.

Dr. Buckel: I think besides the sensitivity analysis within the catch-at-age model, there was also the discrepancy between ASPIC and the catch-at-age model in terms of biomass, and that was another reason, but the results for the graphs in the slide were similar between ASPIC and the catch at age. That was another reason that we felt confident with the F ratio.

Dr. Belcher: Anybody have any comments or direction on something that was excluded? Luiz.

Dr. Barbieri: I just wonder if we want to include something there about the data limitations and in an advisory capacity mention something about improving fishery-independent indices.

Dr. Belcher: Anyone else? Like I said, what we will do is once you make that direction, since nobody has other comments or additional information that they felt was missed, once you make those edits, Andy, if you will just e-mail it to everybody. Then that way you can have one more overall look at it. Is everybody okay with Christine's final? Lack of indication means consensus, right? Our first time that we can put on the record consensus.

Okay, just check the language from Andy again; and once that has been confirmed from you that is good to go, we'll go ahead and move on to Amendment 17. Everybody is good to go on what I will be presenting verbatim to the Mackerel Committee?

Okay, I guess the best way to proceed with Amendment 17 and what we discussed earlier is probably to just go ahead and run down the questions as outlined by John and provide our input as to what – again clarifying our intent with what we did in June. I'm hoping that we obviously shouldn't have to have too much discussion on this because, again, it is just more of a recapping of what we discussed in June and making sure that where it appeared our intentions weren't clear, that we provide language to clarify what our true meanings were.

The first question posed to us was relative to the discards. ABC was specified as zero for speckled hind and warsaw grouper and discards are not specifically addressed for other stocks. The first portion of that relative to discards is how were discards considered for speckled hind and warsaw grouper or does the ABC apply to directed landings alone?

Dr. Barbieri: To me it was clear that our intention was to handle just the directed landings. At that point we were not thinking about including discards. We were talking about the directed landings of those species, but that is my impression. Correct me I'm wrong.

Ms. Jensen: That was my understanding as well, and from what Andy apparently found and read in the minutes that was everybody's intent, and according to Gregg it would be up to the council to make the decision regarding the bycatch, on how to handle that.

Dr. Cooper: The question was not whether it was included or not, but how bycatch would be managed would be left up to the council, just so we're not misquoting ourselves. I think we have to be careful about precedent here; that the decision of whether or not ABC includes bycatch in general, which is kind of our next one.

When we want a zero-directed fishery, that is one thing, but I've always thought as ABC total fishing-related mortality. Now, it sounded like from Roy that we could include uncertainty of bycatch as a part of the buffer between OFL and ABC, but in general I usually think of ABC as total mortality related to fishing and not just landings.

Again, we are free I think to redefine it or to make it specific to this particular case when we think there should be zero-directed landings. I mean, we're going to have to talk about the next case, but my interpretation in general ABC doesn't necessarily only apply to landings, but with respect to warsaw and speckled hind perhaps it does.

Ms. Jensen: I think we should be consistent in whatever we do. Maybe you don't agree, but to avoid confusion when we're talking about ABCs, if for ABCs for one species we're talking about including discards; and ABCs for another fishery we're not talking about including discards, I think that gets confusing ultimately and is the council going to look to us for information on how to deal with discards.

Dr. Williams: I think Andy Strelcheck addressed that in his presentation. That basically said we can do it either way, and I think there are good reasons to do it both ways for various species because we don't have a good accounting of bycatch at all, but it is potentially an important source of mortality.

Others, we know that there is very little bycatch anyway, so it doesn't matter. It really is going to be a species-by-species because it is going to depend on the quality of the data. Let's say you have a fairly accurate accounting of landings, but you have almost no faith in the discard estimates.

Well, in that case we might want to set an ABC based on landed fish, but then include some buffer because of the uncertainty in discards or leave that up to the council to figure that one out. I can see the reasons for doing it both ways and it probably is a species-by-species case. I don't think we could make broad, sweeping, you know, we're always going to do it this way.

Ms. Jensen: Well, I guess I was just trying to say that we should be the ones to perhaps the inclusion of bycatch and not leave it up to the council. I guess that is where I was going with it. We just specify what we mean, whether we mean catch or landings or whether we're going to allow some certain percentage or whatever to deal with bycatch.

Dr. Belcher: I was going to say for those who are familiar with the historical portion of this, we have kind of done that along, haven't we? Some of the snapper groupers I thought we were able to get discard data which figured into the assessments. Then Jack McGovern has actually done some outside analyses that have provided PQBMs for other species, so some of those adjustments have come from that particular analysis which has been outside of our purview, and our numbers, I'm assuming, have been adjusted based on Jack's additional numbers. That kind of already has historically happened. Andy.

Dr. Cooper: I'm curious in our assessments, in determining whether overfishing is occurring – in our assessments, when we're determining whether overfishing is occurring based on fishing mortality rates, those fishing mortality rates include discards, though, correct? So traditionally overfishing has included discards, and now we're going to be essentially defining overfishing as just landings and then buffering for discards. So in the assessments we're going to have to start paying more attention to those kinds of things. I don't know what the ramifications of that would be.

Dr. Williams: In most assessments we always parse out landings from discards and even have a discard level at MSY and a landings' level at MSY, so that is usually not an issue. Just to reiterate, I think a key reason to keep them separate is that if we included discards in the ABC our discards, the way they're recorded now, is largely all self-reported data, and so there is a huge incentive there to start underreporting discards because now there is a cap or a quota associated with what they're reporting.

Dr. Cooper: I think we just have to be very clear, then, because as we make these changes and fishermen start interpreting what is going on, I'm fine putting discards in the buffer, but if ACL equals ABC and they overshoot that, it would still – because we're not including discards in that

determination of the AM, it draws on the accountability measures. If we include discards in the buffer and accountability doesn't measure it, it can't kick in, right, because the ACL will always be less so – I mean, I don't know how accountability measures for discards will work if we put discards in the buffer as opposed into the ABC. Again, that's a management question, I guess, and maybe that's not in our purview.

Dr. Williams: I don't think we're suggesting putting the discards directly into the buffer. What I was suggesting is that in determining the buffer, that the discards become a source of uncertainty that adds to that increase in buffer with increasing uncertainty. In other words, the ABC that we calculate is still going to be an ABC that includes discard mortality. It is just we're not telling managers to manage by landings and discards. We're telling them manage by landings, but we've already accounted – as long as you hit those landings, we have accounted for that discard mortality.

Dr. Cooper: But, wait, how can an ABC include discard mortality but not include discards?

Dr. Williams: Well, because you can compute a landed MSY from a total – it is not really a total MSY; it is a total kill. What you maximize then, when you're maximizing the function is you're maximizing the landed yield, but it still includes the discard mortality part. That is the way we have been doing it in our assessments. So, really when we talk about an MSY it is actually maximum sustainable landed yield, and it is fractioning out those fish that are actually landed versus those are killed due to discards.

Dr. Cooper: Okay, so then the OFL essentially includes discard mortality. The buffer will include the uncertainty in discard mortality. The ABC will just be landed. Okay, we have got that on record that to make it consistent with the way we have been doing things, discards are in our definition of OFL; the uncertainty in discards are in the buffer between OFL and ABC; and ABC is just for landed fish; and we will leave it up to the regional office to figure out how to manage discards given discards can increase, but there are no accountability measures that can kick in.

Dr. Barbieri: Any other comments on the first part of that first question? Christine.

Ms. Jensen: So, just to be clear, then, we're setting the ABC for speckled hind and warsaw grouper at zero or is that the OFL at zero? You know, if we're allowing for some discards, how are we doing that?

Mr. Carmichael: Discard is zero and OFL is unknown is what you specified before, and I assume that is still what you're saying.

Dr. Cooper: And to answer the question directly as stated, ABC applies to directed landings only, and we specified an ABC of zero.

Dr. Barbieri: Are you okay with that, Christine?

Ms. Jensen: Yes, I guess how do we account for discards as it may happen?

Dr. Barbieri: Well, in this case my interpretation is that we are not. In this case-by-case evaluation, this is not one that we're able really to handle that at that level of detail. In that case we're not really going to be – with just directed landings.

Ms. Jensen: Yes, I kind of agree with that. I guess it is setting a precedent for when we don't have any information on discards, then we kind of do the same thing, which I don't disagree with. I just want to make sure that we're clear on what we mean.

Dr. Jiao: I just wonder whether it's okay to – well, for this specific situation, can we just go ahead and say directed landing was zero instead of saying ABC was zero in this specific situation? You can interpret ABC in different ways, obviously. From the definitions that are presented this morning, ABC is including discarding.

I agree with Erik that when the science suggested a quota, we are already counting the discarding inside of it. But in this situation, and especially if it is a snapper grouper species, I personally think it is very hard to control discarding, so probably we can just go ahead and say directed landings is suggested to be zero instead of saying ABC is suggested to be zero.

Ms. Jensen: But in this case we can define ABC as directed landings.

Dr. Jiao: I don't want to say that, no. That is why I suggest to reword it as directed landings directly instead of saying ABC.

Dr. Cooper: What we have been asked to do is to clarify what we meant in previous motions, and the previous motion set ABC to zero. We have been asked does that ABC apply just to directed landings. I think what we're discussing here is clarifying what we have already done, and so the question is are you comfortable with that clarification?

Dr. Jiao: Well, that's fine. We can just say like in this specific situation, when we say ABC, we actually mean directed landings, but if we don't want to define ABC widely that it is directed landings for other species, we don't want to expand it. That is what I'm thinking.

Dr. Barbieri: You're right, Yan, at this point I think that all we're doing is clarifying on a species-by-species or case-by-case basis our decisions back from June, so all of this discussion and these decisions specific to the cases that we are evaluating today; I don't think we are, at this point, making any generalized definitions or defining procedures on how to handle this in general.

Mr. Carmichael: I think you are dealing with these specific questions in this specific situation and nothing that you do or say necessarily is setting a precedent for the future on how you're going to do it, because we all know we don't have guidelines. We have a lot more information coming before us. You're dealing with these individual instances and whatever you say here has bearing on these individual instances and that is it. It doesn't have bearing on other instances and occurrences unless you decide it should in the future.

Dr. Barbieri: Okay, perhaps we should move on to the next question or the second part of the first question regarding discards. The SSC made a general recommendation to set ABC equals 75 percent of FMSY for those stocks which have been assessed. Is the SSC's intent that discards are included in the MSY and ABC or that discards are addressed separately? I think to some extent we have already discussed this. I think we should come up with some clear statement of how we want to handle this in this case relative to our recommendations from back in June, so there is clear documentation of how we handled this situation.

Dr. Williams: Should we be addressing this 1B at the same time that we're addressing Number 3?

Dr. Barbieri: Well, that sounds like a good idea. Anybody disagree with that, that perhaps we wait to discuss this second part here when we address Question Number 3? Yan.

Dr. Jiao: I don't disagree, really, but I think there is benefit to discuss it first and then move to Item 3, because no matter we use 75 percent or some other number based on arbitrary values or based on risk assessment, we are going to consider the same question; that is, ABC is incorporating discarding or not. So that is why I think – so, beyond that specific 75 percent, probably we can discuss this one first and then move to that number.

Dr. Williams: Well, the only reason I bring that up is if we decide on Question 3, that we want to withdraw that recommendation that ABC be set to 75 percent MSY, then we don't even need to go on to Point 1B. Maybe we won't even consider that; I don't know.

Dr. Jiao: I just have a question. For example, if we recommend another number, doesn't that number include discarding already or not? This is the same question.

Dr. Williams: In general the assessments that are out there right now do include discards. That is almost all the SEDAR assessments; when we calculate FMSY, that includes discards as well.

Dr. Jiao: Right, when we calculate MSY or the MSY-based reference point, we count discarding there, but when we make recommendations like 75 percent, that's the directed landings plus discarding, right?

Dr. Williams: Yes, that would be correct, because what we're looking at is a reduction from FMSY, and so FMSY includes the discard mortality; and when you just do a 75 percent reduction, you're still doing just a 75 percent reduction on the total mortality.

Dr. Jiao: And then the number provided to the council, is that directed landings or discards included?

Dr. Williams: Right, well, at that stage you can break it into either one because we do have landings that come out of that specific F. We can break it down by sector if you need to, so you can break it out into discards, directed commercial, directed recreational. It can be broken out in many ways. It is kind of a moot point; we can report it any way we want at that point.

Dr. Jiao: But if it is in that way, it becomes the issue for the council how they are going to separate the recommended ABC, so we don't need to discuss this one. Again, a question comes out for the recommended – yes, some of the numbers may be even lower than discarding, then that question will come out. But I'm okay if we want to combine; if it is clear that ABC actually incorporates discarding when we make the recommendation.

Dr. Barbieri: Yan, if we're going to still stick to the questions instead of handling this from a generalized approach, to just handling the questions relative to the decisions we made back in June, this is really relative to black sea bass and gag, I guess, and we've got vermilion and red snapper as well.

Dr. Jiao: For 1B, based on what Erik just explained, I think the answer is yes, right, because he explained the ABC that the Science Center provided has already incorporated discarding. Forget the example of the groupers, but in general the recommended ABC from the Science Center incorporated discarding, correct?

Mr. Carmichael: Part of the problem is not always being explicitly clear in what the recommendation exactly is as applied to an individual species and its assessment. If you go out and say yield at 75 percent of FMSY, well, I look at the assessments and some of the earlier ones discards might have been included in FMSY and some of the later ones in that yield at FMSY, and some of the later ones discards were calculated in a separate tally, and there are two columns there.

So if the SSC doesn't actually look at those numbers and say this is what we did, yield at 75 percent of FMSY and it is 326,000 pounds, when we go back and look at it, it is not necessarily clear whether I used all of it, whether I used – you know, if the discards are in a separate tally, where do I count those discards? Do I add them in and make it ABC as a total? See, we're left with an uncertainty here.

That is why I think part of it would be, yes, deal with it in every individual situation and make it crystal clear and actually look at the numbers that you have, because that is what we didn't have from any of that report from June. We had a recommendation but no table that said this is what the ABC recommendation is for this species, and that is why this question is coming before you now.

So it could be okay to say it will depend on the assessment and how discards are treated in that assessment and what we know about discards and we will deal on a case-by-case basis. That could be fine just as long as I think we make sure that the numbers are tallied as they are in this table that you were given that shows what we have in place. Throughout these it is very helpful if you actually give tables that show what you're specifically recommending.

Mr. Chester: I agree with that, but I think it is also worth noting that in terms of accountability measures it is likely to be very much more difficult to provide in-season monitoring if we have to deal with bycatch.

Mr. Carmichael: In terms of what you can control and what you can directly manage, in most cases if ABCs that will become ACLs in all of that stuff are tied to directed landings, it is going to be a much more manageable system, but you just can't lose track of discards and let them go through the roof and become a problem.

Dr. Cooper: The thing is whatever timeframe we reassess ABCs, we will be adjusting the ABC relative to OFL, so if discards are going through the roof, either OFL will be lowered if OFL is only for landed or the ABC buffer will be going down, which will then force everything else, so it should be in there. It will just be a much more indirect accountability measure because there won't be a direct – it won't be like all of a sudden managers can say, well, what if we changed the season timing?

They can't do it through that, that we're going to have to deal with discards by changing OFL and ABC which are independent of the actual regulations, I believe, which all of a sudden makes it a very blunt instrument for dealing with a very big problem. That's one of the problems of not including it in the ABC is all of a sudden your ability to change that is basically by punitive changes in the ABC/OFL as discards change. Granted, as discards decrease OFL can then go up, but it is going to be hard to directly manage those things.

Mr. Gregory: Well, estimates of current F include bycatch mortality; and if you're going to calculate a yield or MSY or ABC based on an F, that yield calculation incorporates the bycatch. Erik, are you saying then after that is done you can then partition out that yield to bycatch so that then we have two levels of ABC; one we track and one we just have on the side?

Dr. Williams: That is exactly right.

Mr. Gregory: And that accommodates the size differential because bycatches are normally the smaller animals.

Dr. Williams: Yes, because typically what we do is we have separate selectivity curves not only by sector but also a discard selectivity, and so we sort of do an average of all those selectivities, a weighted average by the fishing mortality to compute an MSY. Then we can break that back out using those selectivities.

Dr. Cooper: Just for clarification, when we were making overfishing determinations, were we doing it on Fthreshold for landings compared to landed F or were we doing overall F versus the overall Fthreshold or the case by case?

Dr. Williams: Usually it is overall by overall, but we always make sure that the annual F is consistent with the benchmark F so they have the same selectivity patterns in the way they're being computed.

Dr. Cooper: Okay, so in the past discards directly assessed did the overfishing level; whereas, now based on discussions it sounds like we're thinking of overfishing level is now for landed that we are kind of doing – we're stepping away a little bit; that we will never actually directly

calculate an overfishing level total. We'll just calculate an overfishing level landed and then adjust ABC for uncertainty?

Dr. Williams: No, not exactly. The way I see this happening is we would still do like a P-star type analysis on total removals essentially, and so you could still do that buffer adjustment based on the total removals. Then when you go to make an ABC recommendation, you can parse it out at that point and say our landed ABC recommendation is such and such.

Dr. Cooper: And, granted, this is all contingent on having a stock assessment where we can actually estimate the Fthresholds and Ftargets, which as we have seen today sometimes we can't even do that, and so we may, as Yan was saying, ABC definitions are on a case-by-case basis depending on data availability and stock assessments. As to whether or not they directly include what an ABC is for landed or for total will depend on a myriad of things and we don't want to make a general rule.

And can we have a clear and concise answer to 1B? Is it that for 1B, inclusion of discards into ABC is made on a case-by-case basis, and we are not going to give specific numbers as this time for the specific stocks that we made recommendations for back in June; is that the answer to 1B?

Dr. Barbieri: Yes, that is my understanding. Does anybody disagree with the statement that Andy just made? Erik.

Dr. Williams: Just so I'm consistent with myself from the June meeting, I still think when we get to Question 3 that this whole issue becomes moot because I think the 75 percent FMSY being a scientifically sound justification for ABC, it is not. It is arbitrary and I don't think we can say that – excuse me, arbitrary, arbitrary, arbitrary – yes, I don't think there is scientific justification for it as ABC, as ABC has been defined to us, and that is the key. If we call it something else, then maybe we're okay.

Dr. Barbieri: I think we will have this discussion when we get to three. Doug.

Mr. Gregory: And again at Question 5. I don't disagree with what Andy said, but if you go to Question 5 it says, well, what about when a stock needs rebuilding? F at 75 percent may not be low enough for a rebuilding stock.

Dr. Barbieri: Right, and we will visit all of those questions and issues when we get there, so let's proceed to Question Number 2. ABC was specified as 95 percent for red grouper and 90 percent for black grouper. I am looking here at the table. I think it is 90 percent of OFL and 95 percent of OFL for those species, average landings.

The SSC stated in its June report, "Because anecdotal evidence indicates that red are probably in a healthy state" – this is in between quotes – the SSC is asked to clarify the meaning of "healthy state" given that both red grouper and black grouper are listed as overfishing and unknown with regard to overfished in the report to congress. I think it is something we discussed earlier today briefly, right, Doug, and I think that you brought up the fact that you had made that comment.

Mr. Gregory: Right. I'm searching our minutes for the word "healthy" right now. It is kind of interesting. You take words out of – I won't say out of context, but you take words and say, okay, what do you mean by "healthy", and that is a word we kind of throw around. The CPU Index had an increasing trend or no declining trend. I recounted the new stock assessment that says red grouper mature at 12-13 inches. So, the word "healthy" was used in that context. I don't think it has any greater meaning than that, and it is certainly not anecdotal evidence. I don't know where to go from there.

Mr. Carmichael: The concern is not that someone might have said the stock looks healthy in the minutes. It is because the written report that you prepared says that. It says, "Because anecdotal evidence indicates that red are probably in a healthy state, the group used average landings over five years as a proxy for the OFL" – your written report, so it is not anybody inferring or reading between the lines or anything.

You have called red in a healthy state; so if that is your intention, that has implications because the status of that population is not considered to be in a healthy state by all the evidence that has been gathered in the past. It would be a different and I'm not sure how that difference ends up getting expressed in various things, so we would like you to really think if "healthy" is the appropriate word or if it was the intent that compared to black it appears "healthier" or do you truly mean to imply that you don't believe overfishing is occurring red grouper and you don't believe the stock is overfished.

Mr. Gregory: Well, can I answer that because I was leading that discussion. I wasn't aware at that time that a paper – it wasn't even a published paper, just kind of a great paper report – did a catch-curve analysis in 1999 that said reds and blacks were exceeding F of 30 percent SPR, I think it was. I wasn't trying to refute that.

That came out later that, oh, we've got this report that says overfishing was occurring, which raises a different issue. A catch-curve analysis in 1999, is that something that carries weight today? If we were here to look at the stock knowing that catch-curve analysis was done, would we now as a group say that red grouper probably are not healthy? I don't think so. To me overfishing is like speeding.

If you were speeding last week, does that mean you're speeding now? Since that time we've had this dramatic reduction in permits and stuff. I do know that in a 2005 June SSC meeting comments were made and a motion was made that only SEDAR stock assessment data would be accepted as best available data, so does that refute that reds and blacks are still overfishing because a catch-curve analysis was done in 1999? I don't know. I mean, do we say it is not healthy now because of this information that we didn't know then?

Mr. Carmichael: In 2005 the discussion was about you were apt to review the trends report, and those go back to a number of years – that what we said earlier – and those catch curves go back even before that. That is the information that the agency cited in the stock status determinations. You were looking at that then and made a recommendation about, yes, those that are based on SEDAR are best available science.

The committee didn't say that only SEDAR provides the best available science and explicitly said we do not make any comment on those stocks that are not assessed through SEDAR and have not been coming to us right now to look at because there were a lot of other things. So, really, what the committee focused on was a couple a stocks that you had at that time that you had looked at and didn't say anything about those other reports.

So I mean those are what they are and that is the determination that has been made. The pertinent question now is, is it the opinion of this body to say that the population looked healthy. Who knows what to make of those old catch curves, but that is the information that is in place, and the policy of the agency is not to change those determinations until an assessment comes forward with new information.

That has worked in both directions at times, and it should be at least acknowledged that they have applied that rule consistently, whether it applied to something that people believed was overfishing or something that people believed was no longer overfishing. So you at least have to give credit there, but the bottom line is that is the information we have. That is the past.

For the present and for what you wrote in your report in June, how do we interpret that healthy stock, because as Roy said that has a lot of implications for how the management proceeds. If you all are going to stand by that and say, yes, we believe that population is healthy and it looks great, then that is fine, that is what we do, but we just wanted to point it out and give you an opportunity to clarify what you implied by "healthy" and whether it was an overall comment toward the population or was it made in some relative sense that didn't come through in the written report?

Mr. Gregory: It is referred to in the minutes as the CPUE trends indicates it is healthy, that sort of thing. The evidence for "healthiness" is the CPUE trend for red grouper and also the red grouper stock assessment in the Gulf that found a substantially smaller size of maturity. The question I think before us is how do we weight this against the catch-curve analysis done in '99?

Mr. Carmichael: I guess I would ask how you weigh a catch curve that was done that none of us have looked at and none us can evaluate because we don't have it before us against an assessment for the same species in a different environment that has nothing to do with the landings in this area against one paper on CPUE in a very small area off North Carolina, which compares, what, 1972 and 2008? So, what is more of a valid assessment? I don't know if that is any more of a valid assessment than a catch curve that we haven't looked it. That's kind of how I look at it. I think it is all kind of equally uncertain information.

Mr. Gregory: I wouldn't say any of them are assessments. I wouldn't go that far.

Dr. Cooper: Part of the problem is that we were never directed that current status definitions apply until we change them. Had that been said, then that makes our life easier; then, okay, well, the status is unknown and overfishing is occurring. I don't remember being told that was the case; and reading through at least part of the 250 pages of minutes, I don't see references being made to the trends report saying that overfishing was occurring and being told that we should, therefore, assume overfishing is occurring until otherwise notified.

Again, I can't remember what page this is, but I'm like around Page 142, where we were discussing the first time around. People are talking about, well, I don't see any indication that overfishing is occurring or that the stock is overfished. So, it is more a lack of evidence, and now whether a lack of evidence is, therefore, support for it being healthy, but I believe the term "healthy" was used intentionally to be vague as to whether or not it is overfished or overfishing.

But if is the regional center's intent that we should, as scientists, take the latest staff determination as being held constant until a new update, including definitions of overfishing, then we should be informed of that, so we can act in accordance with guidance.

Dr. Barbieri: Andy, to that point, this is why red grouper was included in this grouper species for us to come up with the ABC recommendations because back in June we were given the list and this was clearly stated in the roadmap document that the overfishing status species in the FMP were being considered for our ABC recommendations; you know, that we had to do those first.

Dr. Cooper: But there is a difference between it was determined back in 1990 or whatever that overfishing was occurring and we don't have an update and us being told overfishing is occurring currently. The latest status definition says overfishing is occurring, and that was ten years ago or five years ago or whenever, and us making the determination that in 2005, 6 and 7 overfishing was occurring; those are two very different assumptions.

And if we're supposed to assume the latest staff determination holds constant until we are told otherwise, then I think if everyone knew that, then I don't think we would have been saying that landings are relatively sustainable, which is what we do say. I mean, I don't think we're quite that stupid if we're told that overfishing is occurring to then turn around and say, well, and it is sustainable. I think the message needs to be clear as to what are we to assume for current data when all we have got is past assessments.

Dr. Barbieri: And I don't disagree with that, but I guess the clarification being asked is are you removing, then, red grouper based on our discussion in June from the list of species that are experiencing overfishing? I think that is the question.

Dr. Cooper: Well, we do not have the power to remove species from a certain status determination. The SSC, we can't in a hour-long discussion, without any analysis, go and say, yes, overfishing is not occurring.

Mr. Carmichael: The question is simple; do you believe the status of red grouper is healthy or not because it is not necessarily very vague. People read that you say the status is healthy; that implies it is not overfished and is not overfishing and there is no need for any regulations beyond what is already in place.

And if that is the position of this committee, that is very different to say the stock is healthier than to say we chose a 95 percent level for red and a 90 percent for black, and the reason we chose the higher level for red is because we believe the status of red looks more – looks better relative to that of black or if you believe comparatively speaking, but that is not what is said.

You have said the stock is healthy and that is what we're questioning. We're not asking you to make a determination and we didn't ask you to make a determination.

Dr. Cooper: Well, it is stated explicitly in the minutes that the reason why we went 90 percent for blacks relative to 95 percent for red is because we have less certainty on what is going on for black. I don't think that is a direct quote but it is a pretty damned good paraphrase, and it was basically, okay, how about a 5 percent decrease? It sounds good; I think they asked, okay, does the seconder agree; okay, the new motion on the floor was 90 percent; all in favor.

Now, do we think it is healthy if we're being asked to reassess whether "it" – for a loose definition of "it", whether it means red, black or whatever, but the difference between those, which is not Question 2A but rather 2B, is because we had less certainty in black, according to the minutes.

Mr. Carmichael: So I would take from this that you do have a need to clarify what you meant in your written report because what you're saying as being inferred from the minutes is subtly different than what you literally wrote in your written report, and therein lies the core problem. Because, when I saw that I thought that is not what they said; they meant healthier relative to and other things and weren't making a determination on the status of the stock.

Then I saw what was written in the report; and when I brought it up with Erik, he said the same thing I said. I said, "Well, that is what I thought, too," but then I look in the written report and that is the way it is written. So I think the point that we're trying to make here is write something right here and clarify what you mean because what is your written report does not exactly match your intent as stated in the minutes and as discussed here.

Dr. Belcher: Just for clarification on that, it wasn't our report. That was my report. I'm putting that on the record. I accepted responsibility when I presented that report, and I had recollection of a couple of people. So with that said, sorry.

Mr. Carmichael: Does that mean you can edit your report? If you're taking ownership of it, does that mean you can edit it?

Dr. Belcher: I have no idea.

Mr. Carmichael: Or is it too late?

Dr. Cooper: Rather, we could disavow the report because it is not being presented as the consensus of the SSC and it was never voted on. And I believe throughout the discussions it was always referred to as the chair's report, so the interpretation of that being the SSC consensus agreement –

Mr. Carmichael: It is the only report, though, so it becomes the report, but it doesn't seem like that will be a problem in the future.

Mr. Gregory: If I may, John, things like this are going to happen. When you have this much material presented to us on a 3-1/2 day session to go through, we could have spent all day on any one of these topics and not wasted our time. We could have spent more than one day. Then we're squeezing reports out. Clearly, better wordsmithing must be done, but maybe we shouldn't be meeting the same week the council is meeting. Maybe we should meet the week before the council is meeting or something like that to give us time to provide a better communication.

Mr. Carmichael: Yes, that is Item 3 for Other Business when we get through all this. Absolutely, I think that is the key thing. Your reports now in the future and this new climate we're in, clearly, they're going to be poured over. We have the explicit proof that all that is going to happen now, so I think having more time for you to carefully consider the wording may be a really good solution. We should talk about that, for sure. I can't disagree with you at all that this stuff is going to happen, definitely.

Dr. Barbieri: Well, this is a separate issue that perhaps we can discuss tomorrow at some point, and I think we should. I had the privilege of eating lunch with Madam Chair, Dr. Belcher, and we discussed this issue. You know, again going back to Sunday afternoon and some of the input that we received during the National SSC Workshop and seeing how other SSCs handle meeting frequency and task assignments, this is something that we need to revisit.

I guess our workload right now is the timeliness of our meetings with the issues that need to be addressed by the council, and perhaps we need to consider meeting either more often or not meeting concurrently with the council in a way that we have some more time to not just consider issues but also put our thoughts together more carefully, write our reports more carefully, because at this point I think we are rushing into our writing in a way that is not necessarily representing our consensus thoughts or our ideas.

Dr. Belcher: So did we adequately answer 2A? Obviously, I wasn't here so I'm asking to catch up.

Mr. Carmichael: I think you have in the sense that you're going to clarify what you intended to say about red grouper and that is relatively to black grouper; and it kind of crosses over into the other one, which is the basis for the difference in recommendations. It is the anecdotal evidence that was presented that suggests to you that red grouper is in a better state than black grouper.

I don't know that it addresses C, which gets into this other question about doing actual percentages when you don't know the degree of overfishing, but then that just gets into your judgment on what the appropriate buffer is. Perhaps you have some statements along that line as to why you believe that is an appropriate buffer.

Mr. Gregory: Well, if we have answered the question satisfactorily, that may be okay. If not, since we're going to have a SEDAR stock assessment in 2009 on reds and blacks, we could simply say – given how far in the past the catch-curve analysis was done, we could say we don't know the status of the stocks at this point in time and we defer until the stock assessments are completed.

Dr. Belcher: And I guess to me this ties back into once it has been stated it is an overfished state, does that carry on until proven otherwise or can we just say that we don't know based on – I'm sure I'm probably like 15 minutes behind everybody else.

Mr. Gregory: Well, it wasn't declared overfished. It was declared that overfishing was occurring in 1999. Overfishing is an act; it is not a state. Of course, this is all temporary, but now nine years later is it still overfishing? We really don't know.

Dr. Belcher: And I guess that is the question. Andi, is this is something that you might able to answer? How does that carry – if we established that almost ten years ago, how does that carry for overfishing?

Dr. Strelcheck: We annually produce a status of the stocks report which we provide to congress. As part of that report, in order to change the status of the species you have to have new scientific information as the basis for that change. The only way that it will drop off the overfishing list would be if there is new information available, whether it is in the form of a stock assessment or some other science that shows that overfishing is no longer occurring.

Now the current status for black grouper and red grouper in the South Atlantic for overfished is unknown, I believe, if I'm not mistaken. That's because we couldn't make a biomass determination based on the catch-curve analyses based on existing benchmarks. Until there is science available, you won't be able to make that change so we have to proceed forward as if the ACLs would have to be implemented in 2010 given the overfishing status unless new information arises between now and then.

Dr. Cooper: Well, just as a point of reference, I'm sitting here looking at the North Pacific Fishery Management Council's OFL/ABC tier system. Tier 6, "reliable catch history from 1978 through 1995, OFL is the average catch. Unless an alternative value is established by the SSC on the basis of the best available scientific knowledge, ABC is less than equal to 0.75 OFL. The next higher tier is the reliable point estimate of B and natural mortality."

So that is where the North Pacific has been on setting ABCs when all they have is a catch history. I don't if we can call an old estimate – well, we don't have an old estimate of B, do we? But I mean if we're trying to figure out numbers, that is how another council has been doing it for quite a while.

Mr. Carmichael: Okay. They said 75 percent, though, right?

Dr. Belcher: Which where, like I said in our discussion earlier, that question – well, you were there. I put that specifically to Terry Quinn where that number came from.

Mr. Carmichael: Your question for 2C? And, by the way, is someone on the committee writing these down to make sure you can provide written answers to these? I'm not on the committee, remember. I'm just making you answer the questions. So, where does that leave 2C?

Dr. Williams: The answer to 2C is there is no scientific basis for it.

Mr. Gregory: To that point, you're being a purist again. The first suggestion of this came from the Southeast Fishery Center, Jerry Scott, at the data-poor workshop in Seattle in the year 2000. He was suggesting that for all those species that we don't have any information on, let's take the average landings as MSY and that sort of thing, so that concept has been around. We're going to be facing this. I mean, what do you do in the face of no guidance? We're being asked to establish guidance, right?

Dr. Cooper: And I believe, according to our minutes, we said basically the stock appears healthy, catches have been relatively stable, so let's take 95 percent of the average catches. I believe that was our scientific basis at the last meeting. If the stock is relatively healthy and catches have been relatively stable; therefore, those catches are probably not overfishing – caveat, caveat, caveat – therefore, 95 percent as a buffer. I believe that was how the discussion went in the minutes.

Mr. Carmichael: And your North Pacific citation says 75 percent is a buffer. Erik said that is not scientific basis; that may be justification, but that is not scientific basis.

Dr. Williams: And I will file a minority report to that effect.

Dr. Buckel: I think one of the reasons it was that high is we talked about the option of just saying status quo, but we were worried that landings might increase with the new restrictions with Amendment 16 for gag grouper, for example, so we felt that we needed to get some break on the landings, to have something in place. But without any information on where to set that and some of the anecdotal information that things looked pretty good, just to what Andy just said, and with respect and red grouper and black grouper, that is why we were at higher levels than 75 percent of the OFL.

Mr. Carmichael: And, you know, it may suffice if you write something that says you do not believe that the average landings are high enough to cause overfishing of the population. If that is what you really think given what you have, then if you come out and say that explicitly, that is stating exactly what you think and leaving it for saying, well, why did they feel that, why did they make this recommendation? Did they think everything was hunky-dory?

What was going on? If you believe that the average landings are not likely to result in overfishing the population, then you should just come right out and say that and go on from there. It's that sort of clear, concise statement as to what you think that is lacking, that will help solve some of this confusion.

Dr. Jiao: It seems the discussion pushed me to think whether we should recommend any kind of status quo without a formal, comprehensive stock assessment. I don't think anybody is comfortable to say we are very certain that by using the average catch or a percent of average catch the fishery will still be healthy.

I don't think anybody would like to say that, so maybe without a formal stock assessment we just say we don't recommend anything. Like red grouper, the trend increased dramatically from the mid-1990s. There is no declining seen at all, and that is why we think that a percent of average

catch in the last five years is okay for short-term management, but again it is not based on a comprehensive stock assessment.

Mr. Carmichael: I agree with you; I don't think that everyone on the committee is comfortable making that state, either. That is why I made it explicitly to see what other people think, because by saying this, that is kind of what you're saying, and I don't think everyone is comfortable. We could probably find a lot of stocks that if we looked at ten years of landings, we could find them to be stable and we could look at it and say it's fine.

But looking at ten years of red snapper landings, you might say, "Oh, well, look, landings are trending upward; must be good." But I think we have learned from doing robust assessments and looking at much longer time series and much more complete information, that that is a very risky thing to say. So, hence, that is where we lie on red grouper and asking if that is a determination that you wish to make in a statement that this body wants to stand behind.

Dr. Jiao: No, I mean the index, the abundance index, but in general we only have an index there from maybe 1993 to 2004. You can imagine what we will say – if given a formal stock assessment, we probably would get the same answer. Because there is one index and it is showing increasing trend, but, again, it pushed me think whether we should recommend anything without a formal stock assessment.

Dr. Belcher: But wasn't that why we pushed to get those two species put on the SEDAR list was because we recognized that need, which is why it will be done.

Dr. Barbieri: And perhaps what we should do is look – you know, based on what Yan said perhaps we should go and look at what existing level of ABC that exists – I mean, is this sufficient to, in the near future – because we know that we have an assessment coming up in 2009, is this sufficient in the near future to prevent overfishing from occurring, and then we just stick with that one we don't have to struggle.

I am the first one – I told him here in private that I'm the first one to hate to admit this, but I'm beginning to feel that I should have listened to Erik back in June. I think that now, you know, 20/20 hindsight on some of these things, not just looking at the question but now the discussions; I think some of these discussions – what I'm hearing here is making me feel a little more uncomfortable.

Mr. Gregory: I agree with Luiz completely because in June reds were scheduled for 2012 and blacks were not even on the schedule. After we had that discussion about 95 percent, along these lines, I went on one of my temper tantrums and said, you know, this is ridiculous to have reds and blacks not being done in a timely manner.

Now they have been moved up; they're going to be done next year. I think for the next year we can stand by what we did in June, and we're going to change it all next year, which will be way before Amendment 17 is completed and submitted and everything will be fixed. I think we should move on.

Dr. Cooper: Hell is definitely freezing over because I'm agreeing with Doug twice in one meeting. Part of it is this is a huge can of worms. I think what we need to do is go through and answer the questions as to why we did what we did. We need to figure out what are we going to do when we don't have a stock assessment. In fact, I believe that is what we're talking on Wednesday.

Rather than rehashing here whether our revised opinion is some other number, let's answer the questions, move on, and then there is always an opportunity to make a new motion about anything you want. Let's focus on answering the questions as to why we did what we did and whether or not we currently agree with them or changing our minds or whatever. Then on Wednesday let's figure out what do we do; what are our tiers going to be. When all we have is catch data, how are we going to set ABCs?

Dr. Barbieri: I agree with that, Andy; however, specifically here in this case I think we need to think about the species in question as well. Tomorrow we're going to be discussing things perhaps in a more general way. I think we should revisit some of the decisions now that we have had more time to think about them. We have got more information, perhaps even more guidance or better guidance on how to handle these issues. I don't think that we should put it beside us to not reconsider some of these decisions.

Dr. Williams: If we're going to finally get to the stage where we're going to discuss an ABC control rule and a tiered structure, then it makes perfect sense to just withdraw what we did in June because now we're making the next logical step which is to start this process of developing a control rule and then have our recommendations flow from that rather than we're putting the cart before the horse. We're coming up with ad hoc rules and then we're going to turn around and come up with a control rule that is probably going to contradict what we just said.

Dr. Cooper: But we said at the last meeting these are preliminary. Do you want a number; here is our best scientific information for a number, and these will be revised as more information and more deliberation continues. The risk we run is we're going to have to come up with a control rule on Wednesday. What if we don't? The decision to withdraw our scientific recommendation, as much as we may not agree with all aspects of it, put us in the very situation if we don't come up with a control rule and then don't make decisions on Wednesday.

Dr. Williams: Don't forget Roy raised the issue that if we do nothing, red and blacks are covered under Amendment 16 already and they're going to be facing a reduction, anyway, so really, frankly, pulling these recommendations out is the best move at this point and just let status go because there is going to be a reduction from Amendment 16.

Dr. Barbieri: And, again, I agree with that. You know, it is hard to recognize that we took a misstep here back in June, and there are also changes in the SEDAR schedule, and also these things happen. I think that we fall back here under status quo for the species that are covered by existing amendments and protect ourselves from some of these issues that we may not be able to address properly.

Then tomorrow we have the benefit of starting on some of those issues for a tiered system from a clean slate, without having to think about how much they conflict with our decisions back in June. I really feel I agree with Erik. At this point, by the species that are covered under existing regulatory amendments that we have approved at that same meeting, that it would make sense for us to fall back to that status quo and revisit everything tomorrow in terms of a more generalized tiered approach.

Mr. Gregory: Let's just go do tomorrow. I mean, I think we should just start scheduling the first day of our meeting to go through a list of questions based on our previous meeting and just spend that whole first day answering questions. I mean, this is crazy to have to spend all this much time doing this.

What we did in June was in the context of what was offered to us in June. We were given a roadmap that said you have to provide overfishing limits and define ABC for these 12 species with the implication it is not explicitly today. That was six months ago so things are going to change even six months from now.

Dr. Barbieri: Doug, the reality is for a number of the decisions that we make here and for our discussions, we will be questioned and we have been repeatedly either by the council or by industry or other people, but we are constantly questioned about our decisions to accept stock assessments, to accept also as a recommendation, and by and large – and I'm saying the vast majority, in 99 percent of the cases, you know, we can't actually address – this is why we want to discuss issues at times as exhaustively as possible because we looked at both sides of that issue, we have explored the possibilities, we have looked at the range of possibilities.

Then by the time that we make a decision, we can stand behind it. So, to me, I think we're going to come out of this meeting with a much stronger report than we did the last time around. In this case here all of us or some of us are still feeling uncomfortable with some of the decisions that we made, and that is why I'm saying why not readdress those issues.

Dr. Williams: Not only do I get to say I told you so, but the SSC messed up in June. We deviated from our principles. We do not answer to the council. The council cannot tell us we need to fill in a box. We answer to science. That is the foundation of what we should be operating from on this committee.

If we're ever asked to deviate from science, we need to back as far away as possible. We let that principle get away from us at that last meeting. We let the system force us to write some numbers down that had no scientific basis whatsoever, and we're paying the price for it right now. That's why we cannot deviate from those principles, and that's why we have every right to go back and revisit it, and we should because we made a mistake.

Dr. Belcher: There is one problem that I have with this. Everytime that we push back, we're not offering any solution to the problem. For me, June – and we said this – it wasn't our best choices, but it at least got a dialogue going that we weren't having before then. I mean, it opened up – I'm not picking at Roy, but it kind of opened up Roy's eyes to the situation why we were in this boat we were in.

Here we put something forward and all of a sudden it is like, oh, you know what, you guys really do need a lot more to go on, and that to me said a lot. Now, granted, I'm not saying that we did correct thing, but I still feel it gave us a starting point. So to sit here and say that we did the wrong thing by doing that, I don't think we did.

The principle behind what we did was correct. The question is whether or not we can a hundred percent stand in the current against what we have put down for discounts, if you want to say that, relative to the one. I mean, I know Erik is obviously not agreeing with that, but where else is it going to come from?

Where else would these tiers and all these discussions we have relative to species groupings – we keep kicking these around; when are we ever going to sit down and hash those things out? It is very frustrating because I see a group of people who really want to see stuff go forward. We have abilities and we have the want to sit down and debate this, but we don't have the proper arena to do it. So, again, we start putting frameworks up and what happens; we disband. Then the framework gets kicked around and then all of a sudden we back up and we say, you know what, we need to revisit the framework again.

Dr. Barbieri: And to that point, Madam Chair, I don't think that back in June we actually pretended to have a well-defined or well thought out framework at all. We were looking at this on species by species, and this is why I feel comfortable in recognizing that it might be easier for us to step into a clean establishment of that framework.

Having gone to the National SSC meeting and seeing some of those different ways of handling this, I think in that sense starting from a clean slate – you know, we have been discussing having a chunk of tomorrow to start discussion on this framework. I do think that we need to consider a meeting in March. I know this will be very hard for some members, but I think that we need that time to have ample discussion.

We had discussed back June having a meeting in August, I think, three days as a working meeting, a workshop type of thing to discuss a framework and we couldn't really commit to that. To me, I think recognizing some of the pitfalls of these recommendations and focusing on establishing our tier system approach is the way to go.

Mr. Gregory: I agree, and when you develop that tier system, that replaces everything that has gone before, but if I remember right in June we didn't want to do any of this. We were saying there are no national standards. I think it got published the second day of our meeting or something. I said until we get some guidelines we don't want to do this, and we were told we have got to get started, we have got to do something. So I would just say move on and when we come up with something better, it replaces everything in the past.

Dr. Crosson: Half of the SSC was new in June. I think we're going to get better at this. It was like an avalanche and it was coming down on folks that hadn't really been involved in the process before. Yes, it was imperfect, but I don't think that is going to be the normal operation.

Dr. Belcher: And I hate to say, but I'm going to pull us all back in. The bottom line of what we're supposed to be talking about today was justification for what we did in June; putting it forward and explaining ourselves so it was clear what our intentions were and not kicking ourselves in the butt for having put things forward and making decisions relative to how we're going to either change it or not change it.

If we want to take something off the table, then, fine, but at least right now our motives were more of what the problem was than anything else. So we need to clarify our motives and keep focused on that or we're going to just keep spinning the same thing, which are discussions for tomorrow. So, back to questions.

Mr. Carmichael: Well, the last answer I heard for Question 2C there is none. That is what Erik said, there is none, there is no scientific basis. There may be logic behind it but there is no scientific basis, and that is the question that is before you, so someone read the scientific basis for that.

Dr. Belcher: So, again, this comes back to that question I posed to Monica earlier; when does scientific opinion or an offering give us an ability to put some number forward. Like I said, I don't know how to –

Mr. Carmichael: As I said, state what it is and what you think it should be and write it in your answer, and that is fine.

Dr. Belcher: It was a jumping-off point is the way I viewed the 90 and 95 percent. I don't know that we talked about it. It could be 65 percent. Yes, that 90 and 95 percent discount that we applied to landings for red and black. I mean, I thought we had actually said, well, we could do 65, but what is the justification for 65 over 90 or whatever?

Dr. Cooper: To that point, I totally agree that just because we don't have a stock assessment doesn't mean we can't make scientific recommendations. As was stated in the minutes, the general feeling was that we didn't have indications that these stocks were decreasing and landings had been relatively stable; and so for the short term it was our scientific opinion that setting ABC at 90 percent or 95 percent of some average was probably not going to result in overfishing in the short term.

Now, Erik's statement that there was no scientific information, it is a dead-end road. We have to set ABCs when all we have is a catch stream. That is going to happen down the road; it is going to happen in other places. And to say there is no scientific rationale behind doing it, well, guess what, it is best scientific information and if that is a Bayesian elicitation of experts, then so be it.

Dr. Williams: Except in this case what is happening is you're setting OFL equal to the average landings when the most recent stock assessment suggests that it is overfishing. That is a contradiction in the scientific understanding of stock management or fisheries science. That flies in the face of science. Granted, it is an old assessment that declares it overfishing – and it's not 1999; it was 2001. So, that's the big problem. Yes, if you guys want to come up with some

expert opinion on a percent reduction, go for it, but it goes deeper than that when what we've done is really flying in the face of standard fisheries science.

Mr. Gregory: Well, first off, Erik, that was not a stock assessment. I'm sure you're familiar with the paper. It is a whole series of catch curves of different species just trying to get some ballpark idea of what is going on with a whole range of species. It is not a stock assessment by any stretch of the imagination.

Dr. Williams: Define stock assessment for me, please.

Mr. Gregory: Well, my definition would be a deliberative process of a thorough evaluation of the information by a group of people and not by one or two people.

Dr. Williams: Have you seen assessments that are done in third world countries?

Mr. Gregory: I hope we're not equating ourselves to a third world country.

Dr. Williams: No, but I'm suggesting that a catch-curve analysis is a legitimate form of stock assessments.

Mr. Gregory: Yes, I did one in 1985 for the Gulf of Mexico reef fish or grouper fishery. You know, let's go back to Ricker and look at all the caveats of a catch curve; you know, constant recruitment, not changing environment and that sort of thing.

Dr. Williams: Yes, available science.

Mr. Gregory: So that is not a stock assessment. I mean, you could do a catch curve before six o'clock tonight, I'm sure, and that is not a stock assessment.

Ms. Jensen: I understand everybody's frustration here. I share that, but I think we all felt forced to make some sort of a decision, and that is why we made the decision we did. I don't think we had a real scientific basis. It was just the people that were in the room. It was the best that we could up with at the time to come up with something because we felt forced and that we could not leave without coming up with some sort of number.

So, does it really matter what the answer is? I mean, the answer is we had no scientific basis on C, really. So, can't we just retract – like we were just saying, the assessment is going to be accomplished in 2009, so we can just retract what we had submitted previously and just say wait until the assessment comes up because other than that we have nothing better to go on. That way we can quit chasing our tail and move on.

Dr. Belcher: Do you have something to the point, Alex?

Mr. Chester: Well, kind of. I mean, that makes me really nervous that we're sitting here saying that we don't have any scientific basis; and perhaps we don't, but the train is leaving the station

as we speak with respect to regulations. Just on the basis of defining the species that is undergoing overfishing, we're looking at some fairly significant reductions in catch.

How is this group going to be able to comment on best available science? I'm not sure what the timing is with respect to the SEDAR assessment that is coming up, but we surely are going to be looking to have that kind of information before we can comment scientifically on the amendment.

Dr. Buckel: You know, when we were discussing this, one of the reasons that we felt that we should, again, put something in was instead of staying status quo where landings might increase, we felt like we needed to put a brake in, and maybe that is our fault for not reading Amendment 16 carefully and figuring out – I think Roy mentioned that the management scenarios get a result in a 36 percent reduction.

I thought that was for gag; I didn't know it was for red grouper. If it is for red grouper, then the whole discussion that we had in June is moot based on the management that is coming out down the pike for Amendment 16. Erik mentioned that earlier as well. I don't know how we missed that in June or if this is new for red grouper and black grouper in terms of the management scenarios that they decided on in Amendment 16. The management scenario in Amendment 16, is that reduction for red grouper and black grouper?

Dr. Belcher: Rick, we have got a question for you. We have Table 1 from 17 and it has all that general information about OFLs, ABCs, the TACs, the allocations; and with each one of them, there is a reference to what amendment has established those levels. So, with black grouper and red grouper, why is there no designation if it is in 16?

Mr. DeVictor: Is this on Page 1-10; is that the one you're referring to?

Dr. Belcher: I have the catch table by itself.

Mr. DeVictor: Okay, hold on and let me find that.

Mr. Gregory: Amendment 16 is not designed to manage reds and blacks. It is designed to manage the catch of gags. The council and the regional office have decided that in order to manage gags they're going to manage the entire grouper fishery similarly. So reds and blacks are simply caught in the turbulence, you might say of gag grouper.

We're getting asked to address this from the management people because it has significant ramifications to their life. There have been petitions from the industry to not manage blacks and reds the same as gag, particularly black because they don't really co-occur. Blacks are South Florida species where gag is not prevalent, and particularly in the Keys the fishermen are saying, "Why close us? If it's not going to help the gag grouper at all, why close us to reds and blacks?"

And the regional office and council have chosen to want to manage them all as a group, I would surmise for simplicity sake. So our actions in June is confounding their desire to manage all the groupers as one, and so we're being pressured to rescind or reconsider this.

Mr. DeVictor: Just for some clarification, the council's justification for adding red grouper and black grouper to the shallow water closure was to protect them during their spawning season, so that was why since they are, according to the report to congress, undergoing overfishing. They were added a couple of months before we went out to public hearing to that shallow water grouper unit. Now, if you could repeat your question, I'm at the table.

Dr. Belcher: We were told that there are inconsistencies with the numbers we have put forward in 17 relative to what was in 16 for those two species, but in that table that we have where you have shown the TACs and all relative to other species and where they enter into relative to 15A, 15B, whatever. In looking to that we see gag is in 16.

Now if red grouper and black grouper were in 16 with similar numbers, why are those numbers not represented on this table? That is just, like I said, for us in terms of as we're looking at that and we're looking for that inconsistency, I would have thought looking at this table we would have been able to find that inconsistency because there would have been numbers relative to 16.

Mr. DeVictor: Well, looking at black and red grouper, the only numbers for those two species in the table is using the average landings over the last five years.

Dr. Belcher: But Roy had made the statement that we had numbers in 16 for black and red that we were being inconsistent with, so our question is where are those numbers?

Mr. DeVictor: The numbers that he was referring to, I think he mentioned a 35 percent reduction, that was looking at what effect a four-month closure would have on black grouper and red grouper, but maybe Jack can help me out.

Dr. McGovern: That is correct, the four-month closure is about a 40 percent reduction on black grouper and 30 percent reduction on red grouper, and that is just the effect of the four-month closure.

Mr. Gregory: So therein lies the problem. If we recommend an ABC that is 90 percent of historical catches and they're implementing something that is a 40 percent reduction, it seems to me technically or legally they're vulnerable.

Ms. Jensen: But their recommendations can be lower than ours, so maybe that is just accounting for management uncertainty, so to speak.

Dr. McGovern: Rick made the point that the rationale for Amendment 16 is to protect the groupers during their spawning season, and that includes black grouper, red grouper, scamp, coney, graysby and these other groupers, too. It is just not to get a certain reduction in harvest.

Mr. Gregory: I would like to point out black grouper have been found to spawn year round by a paper authored by Dr. Crabtree.

Dr. Belcher: Does this fall under that same category of what we had happen with – I'm assuming it was one of the – we had one species that there was a – and I hesitate to use the term

– it wasn't done by us – back-of-an-envelope level of – was it for mackerel, the TAC allowance – I'm trying to remember. It was from a couple of meetings back. There was a management decision for what the cap was going to be, and then we put a number forward that was different than that. We had the discussion back and forth. We came up with something that was contrary to what was put forward. Do you remember?

Mr. Carmichael: No, I'm not having any clarity on that description.

Dr. Belcher: I'm trying to remember; it was at the Key West meeting. I thought we had had a discussion about a number that went through in management – it might not have been mackerel. I'm sorry, I'm going to have to think back on what that was.

Mr. Carmichael: Are we just ready to move on? If you all have enough to craft your answer for this question, we should just move on. We don't seem to be making any progress here.

Dr. Belcher: We have an answer then to 2C is what you're saying. We said it is not based on scientific – there is no scientific basis for it; is that correct?

Dr. Cooper: I disagree. I believe expert opinion is a form of science. Now, did we make the right decision is completely different. I'm sorry, Erik, you didn't mention anything about the overfishing status. In fact, I believe you are on record saying things look pretty good, maybe. So you go laughing that, oh, well, we're doing this wrong thing.

Well, guess what, you were right there with us, and what we had on the table and what was presented to us, that no one else was jumping up and down saying it 's overfished, it's overfishing. I'm sorry, but we're going to be having to make these decisions in the absence of a stock assessment, okay, or in the absence of a P-star.

We just had a couple of assessments that can't estimate F. Okay, you can't do a P-star approach if you can't estimate F. Those are nice complicated assessments. We're going to have to start coming up with ways to estimate ABC in the absence of a full-blown stock assessment that can estimate every parameter we want.

And if you think any time we do that without a full-blown stock assessment is not science, we might as well go home. If you think the only form of science is a full-blown stock assessment with nice posterior distributions on all parameters, there is going to be a lot of work we're not going to have to do.

We're going to come up with a tiered approach where, you know, the next question is the same thing; how do we pick a reduction relative to some FMSY? It is going to be expert opinion if we don't have a full-blown stock assessment that accurately estimates F, MSY and all those things. We're going to have to figure out what do we mean by science and if science is all based on statistical posterior distributions, then there are a lot of us who probably don't even need to be here.

Dr. Belcher: I am going to ask that we all go ahead and take break at this point.

Dr. Belcher: Okay, I kind of feel like we have had lot of circular discussion on this. Basically what I'm asking for is relative to 2. What are we proposing to do for the 95 percent for red grouper and 90 percent for black grouper? We have provided answers to A, B and C. There is a lot of obvious disagreement over what obviously scientific basis means. It is still a question I would like to have answered from someone outside that at least defines what it is in realms of our opinions.

But, again, relative to this red grouper and black grouper, what are we planning to do with it? Have we answered the questions and can move on; is there some action; do people want to see us change things, leave things on the table as is? I have heard different conversations around the room.

Some people would like to see the whole thing canned, part of it canned, none of it canned. It would be nice to know what everybody – at least to see a motion of something that someone is suggesting, and then we can have some discussion about that, but I think some general focus of how we want to react to this. Luiz.

Dr. Barbieri: Well, I'm not sure if I'm ready to make a motion on this just yet, but having heard input from the committee and the discussions, I suggest that we consider withdrawing our recommendations on the shallow water groupers. I'm still comfortable with our recommendation for the speckled hind and the warsaw grouper, but for the other species it looks like our concerns discussed back in June about having some protection from overfishing until we have better assessment data is taken care of by Amendment 16 measures.

So, again, back to our discussion earlier, that doesn't mean that we're not going to revisit this issue in general. I think we should, if not today, tomorrow, at some point discuss a dedicated SSC meeting for us to come up with our tiered framework approach, and I am sure there will be a lot of discussion at that meeting, you know, agreements and disagreements on approaches to handle this. That's how I feel. I would like hear how other members feel and perhaps we can then think about a motion.

Dr. Williams: I am agreeing with Luiz. I think our best move right now would be to remove our recommendation for ABCs from the shallow water groupers that were made in June. I am sure each of us may have different reasons, but I think until we get the ABC control rule more established, I think that is the logical move.

Mr. Chester: Yes, I am okay with that. I think Luiz makes some good points, but I would like to just emphasize what he said, the second part of his thing. I think that I'm finding myself not agreeing with Erik with respect to absolutely – well, I'm hearing him saying that we actually have to have a firm full-blown assessment.

I think there has got to be some process, and Luiz hinted at it in terms of an SSC-developed framework or some sort of a process by which we can come up to a considered estimate of what these ABCs need to be under certain circumstances. I think that it is very unlikely that one number is going to fit all depending on the circumstances for these date-poor solutions. I'll follow with a question that we have all been asking for probably over a year, and that is when

can we expect to see the NMFS guidelines in this area, whether anyone knows the answer to that question?

Dr. Crosson: I just want to ask Erik this, but I don't know if this is proper place, but is that a fair characterization of your viewpoint, that without a formal stock assessment it is not proper for us to be setting catch levels for these different species and that we should just refuse to do so?

Dr. Williams: No, that is not a fair characterization on where I stand on this issue. I guess where I stand is on established methods, sort of standard methods that occur in the fishery science literature. You know, it sort of goes back to what are some of the basic techniques that have evolved in fishery science.

If you pick up an original copy of Ricker and start reading through it, one of the first things they do talk about is catch-curve analysis, and they even talk about looking at time series of landings' streams. There are methods for dealing with that. Where my concerns came from is the really ad hoc nature in which we approached this.

I mean, because given a landings' time series, I'm not saying we couldn't possibly compute an OFL from that, but there are a lot of factors that need to go into computing an OFL from a landings- time stream such as consideration of what timeframe might better represent sustainable yield.

For instance, we might have some idea of when effort was high or low and we should take landings from that particular time period and use in calculating some average landings. None of that was sort of done in this last go around, so in that sense it surpassed what I would consider justifiable science. That is where I'm coming from.

Dr. Jiao: Just a quick response for Erik's comments, but for red grouper and black grouper we do have a relative abundance indices there. That's not just the catch, not just a catch time series. We do have a relative abundance time series later there.

Dr. Williams: Except I would hesitate because that relative abundance time series that were computed for us, there was no documentation on them. It wasn't clear how they were computed, whether there was any subsetting of trips or any of that sort of information that you would normally do in computing a CPUE Index. As far as I understood, it was just nominal catch over nominal effort, which is never good for a fishery-dependent index.

Dr. Jiao: That may be true, but they were provided to us. Again, I think that is the best available information for us.

Mr. Gregory: I hate to keep trying to pick at things Erik says, but you say such strong things that are so black and white. You know, we didn't have the time, we didn't have the wherewithal to do that sort of landings' analysis in June. We were put in the corner and said we've got to do these 12 species today; and we don't have the guidelines, we can't wait for the guidelines. That was our instruction from staff.

I'll refer to the minutes without reading everything on Page 135. Somebody was asking you why did you vote against the red grouper motion; and you said, "Well, even though there's indications red grouper seem to be sort of okay, possibly sustainable, so using some average landings might not be that offensive. I don't want to go that far because there is enough information to do an assessment, and I don't think we should be doing interim measures until we have a stock assessment."

So, at that time you didn't say we need to do this elaborate analysis before we can do that, so we did the best we could with what we had at the time. What we did in June was get a stock assessment scheduled for 2009 instead of 2012, so we were highly successful. What we did had a great impact, a very positive impact, and we got black grouper on the schedule when it wasn't even on the schedule.

Dr. Williams: To that point, Doug, yes, you know, I form opinions and then I state them, and maybe that comes off as black and white, but where I'm coming from with a lot of this is – and this is a tough decision. It is not easy and maybe I don't express the hesitancy I have really in the back of my head sometimes; and that is if there is just that little bit of extra effort and analysis that could get us much better information, I feel like it should be done.

And if it's not done, I don't like always settling as, oh, well, it is just best available, it is best available because at some point we have got to create some feedback in the system to get these analyses done, and especially if they're just simple analyses and they're just not being done because nobody has been tasked with it or nobody thinks it is important. That is what sort of gives me pause.

We have got to at least have sort of level of analysis to depend on; and if I'm coming across as, yes, we need a full assessment everytime, ideally we would like that, but I realize that is not going to happen, but to have absolutely no analysis and just say, well, here is a landing stream – and they didn't even compute an average for us; we had to do that on the spot. I mean, that is ridiculous.

We shouldn't be having to do our own work. We should be being presented with analyses and picking alternatives from them and reviewing these analyses. We shouldn't be expected to do our own analysis, really, for that matter, and that is where I'm coming from.

Mr. Gregory: If I may, but at the same time you adamantly led us down the path of putting zero ABC for speckled hind and warsaw without any documentation whatsoever. To me that is a contradiction.

Dr. Williams: Do you need documentation to set something to zero? Isn't that the ultimate case of uncertainty?

Mr. Gregory: I think that is when you better have some documentation. Let's retract everything we did in June.

Mr. Chester: To what Doug said earlier, there may have been some benefits that came out of our June meeting; I won't deny that. What we came up with may have been minimally justifiable, but nonetheless we did that. I am very happy to hear Erik being given a chance to elaborate on his views because I see an avenue now of bringing some of this together as long as we can agree that we have to be able to come up with some situation where scientific judgment does play a role.

It may need to play a role in a more formalized way than just kind of off the top of the head kinds of analyses, but if we can develop some sort of framework together and bring these two viewpoints, you know, sort of a caricature on one side as an extreme and caricature on the other side as an extreme between a total assessment and a wing-it scientific judgment, that is where we need to start bringing these things together if we're going to make progress. From that perspective, then I agree very, very strongly with Luiz that this group needs to get together in a formal way and start building that framework.

Dr. Jiao: I kind of repeat Doug's question. I think Luiz suggested we relook at our discussion of this June on shallow water species. I think it might be not shallow water or deeper water instead of it should be non-SEDAR assessed species and then SEDAR assessed species. I think what he wanted to say is non-SEDAR assessed stocks instead of shallow water species.

Dr. Barbieri: To that point, I was specifically talking in general about black grouper, gag and red grouper. I was more comfortable with our recommendations for speckled hind and warsaw grouper than I was with the other ones.

Dr. Jiao: Right, because we didn't questioned about those two species, but I think the same question is here as Doug stated because we don't actually have a – at least I can't remember very strong scientific documents about the ABCs for speckled hind and warsaw grouper. I didn't remember to say that. Basically, I think our conclusion is based on Erik's suggestion.

Dr. Barbieri: And to that point, Yan, one of the reasons that we wanted to move forward with black grouper and red grouper was that we were afraid that if we didn't take some action or make some recommendations on ABC levels, that those species which at that time were not really on the SEDAR calendar for assessment, that they could get in worse shape and be further impacted by fishing due to our lack of action.

Now with the knowledge that we have now that those species are part of the SEDAR scheduled stock assessments upcoming, in that case I feel more comfortable in withdrawing our recommendations from back in June. The situation is different for speckled hind and warsaw grouper, and we have concerns.

We don't know the magnitude of uncertainty there, but we know it is probably high. We have concerns about the status of those stocks and the sensitivity of those stocks and resiliency of those species to harvest. That is why I'm separating – just again to explain my rationale – from separating the recommendations or my feelings about those two sets of species.

Dr. Jiao: Well, I sort of agree. That is why I agreed at the last June meeting in those discussions, but from the science point they are the same.

Dr. Cooper: I am comfortable withdrawing the shallow water species until we get a more formal control rule, but we have to keep in mind – let's look at Spanish mackerel, the assessment we just approved. We can't estimate biomass. We can't estimate fishing mortality. Overfishing is not occurring but you still need to set an ABC.

We can't set an ABC for Spanish mackerel right now based on the data in that stock assessment that we just approved. We probably can't set an ABC for any of the species that we just approved the assessment – let me finish, okay – based on what is contained in those stock assessments. So just because these species are going to be assessed, depending on the data stream and the data contained in those and our ability to estimate parameters, we may still have to rely on expert judgment to set ABC control rules.

We need to be prepared that just because it is assessed, we may still be in the Tier 3 situation where we can't estimate B, we don't have a good estimate of F, we don't have a good estimate of MSY or OY, and so let's not forget we still have some incredibly difficult discussions ahead; and just because we're pulling these off the table doesn't mean we're going to be able to answer them.

And, going back to Erik's point of we shouldn't be doing these assessments, well, guess what, even when we do a stock assessment that means somebody in one of the centers is going to have to run the analyses, and they're not going to know whether their assessment has been approved until the review.

In other words, let's look at the vermilion example. The assessment scientists would have gone through, done their stock assessments, calculated their benchmark, calculated an ABC, the review panel would come up and say, "unh-unh"; well, then, what do we do? If we don't set ABCs the fishery gets closed, so somehow SEDAR is going to have to come up with a process of if stock-assessment rejected, they're going to need, okay, if we are on Tier X, Y, Z, what are all the ABCs.

Otherwise, just like with Spanish mackerel, if we had told – okay, in Spanish mackerel, let's say we knew what the ABC definition was, put an estimate in with Spanish mackerel for ABC, the review panel says, "unh-unh". We know relative overfishing and that is it. Well, we're sitting here as an SSC going we can't define ABC, sorry. Then all of a sudden, guess what, we can't set an ABC, the council closes the fishery.

So we need a whole lot of contingency plans laid out before we go down the path of saying, okay, we're pulling these because an assessment is down the road. The assessment is down the road, but we need to make darned sure the ABC control rule is up and running and SEDAR is set up that if an assessment isn't fully approved, that they are able to crank out an ABC for us based on the tiers we set out. Otherwise, it is going to be an absolute train wreck.

Dr. Belcher: I'm pulling us in. Back to the question issues – I mean, this is all good dialogue and we definitely need it for tomorrow as we're laying this framework out, but I still have a question before the group of what we want to do relative to this impasse we're at with red grouper and black grouper? We need to move on to these other questions.

Dr. Barbieri: I'm going to actually make a formal motion, then. I move that the SSC withdraw its recommendation on OFL and ABC levels for black grouper, gag grouper and red grouper established at the SSC June 2008 meeting.

Ms. Jensen: Why gag?

Dr. Barbieri: Because it is already being addressed by Amendment 16.

Mr. Carmichael: I believe it has got these similar numbers because that is what you gave in December, which you repeated in June, so, sure, why not.

Dr. Barbieri: Right, so in that case there will be no impact and we don't have to then have this same discussion here about our choice on the ABC level and we stay consistent with a regulatory amendment that we actually, as a group, approved back in June. The rationale is that in that way we justify our decision back in June and stick with that recommendation.

Dr. Buckel: I guess if we're following the list of questions specific to black and red grouper, so we answer that question with this motion. Gag is going to fall into the 75 percent FMSY, I believe, so I would recommend that we deal with gag when we get to that next point.

Dr. Barbieri: And I understand that, Jeff, but for consistency, I guess, in the recommendation, you know, in the rationale that I'm using to make the motion, I would rather just go ahead and include that because that is the way I feel about it, anyway. It would be easier to make this motion now and include gag in the package than to have to withdraw it – I mean, put some other motion later on as we discuss our choice of ABC later.

Ms. Jensen: Since gag already has a SEDAR-approved stock assessment, why are we going to withdraw that, just because it doesn't match with what Amendment 16 is going to provide?

Dr. Belcher: It does match.

Dr. Barbieri: Well, my understanding is that – and I think this is preceding me, but this committee made recommendations to the council on an ABC range for gag that was based on the assessment done during SEDAR 10; is that correct, John?

Mr. Carmichael: You made recommendations a year ago, December.

Dr. Belcher: Any other comments or questions relative to the motion that is currently up on the board? Jeff.

Dr. Buckel: Should we add in the other species that are on the overfished – species that overfishing is occurring that have this 75 percent FMSY that are in addition to gag?

Dr. Barbieri: Well, I agree if that is the case for vermilion snapper, red snapper – I mean, if we have now projections and ABC ranges and P-star values that have been provided by the Center, then we have a much better footing and information to provide recommendations than this recommendation that we made back in June.

Dr. Williams: Just one distinction and that comes up in Point 5 on this question sheet, and that is that those stocks that are overfished fall into a different category and we shouldn't even be using the 75 percent FMSY rule anyway because the rebuilding plan sort of trumps it. In that sense the rebuilding plan takes over and that would be the case for black sea bass and red snapper.

The vermilion snapper, we just saw the latest assessment so, of course, we're going to be withdrawing what we recommended the last time anyway because we have a new assessment with a P-star analysis, I might add. So, in that sense I think Luiz' choice of three species is the right three that we really need to reconsider, so in that sense I second his motion.

Dr. Belcher: So with a second now, further comments or discussion? Seeing none, we will put it to the vote. All those in favor please raise your hand; all those opposed; abstaining. The motion carries.

Where does that leave us relative to Question 3? There has been considerable discussion regarding the scientific basis for the recommendation of ABC at 75 percent FMSY both during and since the June meeting. There is concern that the recommendation could be considered arbitrary and without scientific basis. The SSC is asked to provide justification and clarification for this recommendation to address these concerns.

Dr. Barbieri: So I guess the point now would be what species are we talking about now in terms of 75 percent? It wouldn't be vermilion. Yes, I guess it would be just golden tilefish.

Mr. Carmichael: So perhaps the net result of all these discussions, in a large way, answers that. You have just dealt with a numbers of those stocks. I guess you only have one species where this 75 percent FMSY would be coming into effect, presuming that you consider something along the lines of the rebuilding levels that are laid out for those stocks under a rebuilding plan, and you're going to look at vermilion snapper in light of the new information that is available. The only one that is falling under that fairly generic rule that is left is golden tilefish. How do you all feel about golden tilefish?

Dr. Belcher: It is kind of an unfair question given that this SSC, the majority of them didn't see 13C to know what to think of that.

Mr. Carmichael: I don't recall what you said about golden tilefish in 13C. You probably recommended an OY. I don't remember what the committee recommended for ABC for golden tilefish, but in a moment we probably could look it up. Rick may know what the committee

recommended for golden tilefish ABC. If we remember when we talked about it, I might find the report quicker.

Mr. DeVictor: I'm not sure when we talked about it, but, again, what was approved as based upon best available science was set the yield at FMSY. It is undergoing overfishing and not overfished.

Dr. Williams: I think we might want to consider folding golden tilefish into this motion as well, because it falls into that same category. I think we just declared that the yield is 75 percent FMSY as ABC because that was the old paradigm when we addressed that assessment, which was a couple of years back at least. I think we need to reconsider it after we have discussed this whole ABC control framework.

Dr. Jiao: I am comfortable with it if the Center has already done a full stock assessment and they have a probability-based risk assessment, but if you would like to recommend another percent number based on risk assessment, I am fine; instead of using the current management fishing mortality target and using another management fishing target, I'm fine.

Dr. Williams: That particular stock assessment actually has a really good estimate of uncertainty. I would say that of all of our stock assessments, golden tilefish and snowy grouper were our best attempts at characterizing full uncertainty in an assessment, so that could prove useful if we look at in more detail.

The other reason I would suggest we reconsider this is one of the things we might want to put into our control rule considerations is a time factor. If we're going to look at just straight-cut percentage cuts on things we might want to add a time component to that, such that as an assessment gets older and older the ABC cut gets larger and larger, which would fit with sort of the whole paradigm of increasing uncertainty with time.

Dr. Jiao: I am just curious before I can continue to discuss golden tilefish. I forgot what is the recommended level or the risk level that was used in the stock assessment, so what is the corresponding risk level that you would like to recommend from the Center? Also, what is the corresponding target fishing mortality?

Dr. Williams: There was no corresponding risk level. At that time we didn't consider risk levels. We just looked at a 75 percent FMSY. That was the rule that we used at that time. What I'm suggesting is we should go back and look at possible risk levels based on a probability-type analysis.

Dr. Jiao: So basically during this estimating we won't recommend it because there is no results provided. So, for golden tilefish we just discuss whether we are going to reject the time we used target fishing mortality before the results came out or what Erik is suggesting?

Dr. Williams: No, I think what is being suggested here is that we pull it out of Amendment 17. It is not going to change current management. Current management is operating under 75 percent FMSY. What we're suggesting is that we can't just blindly call that 75 percent FMSY

an ABC without putting it in the framework of our ABC control rule. That is why we're just saying take this off of the Amendment 17 list for now and we're going to readdress it after we have discussed an ACL framework. We may put it back in at 75 percent FMSY; I don't know.

Dr. Jiao: So why just this species and not to the other species?

Dr. Williams: All right, to go back through, what we're talking about is which species we consider to be somewhat arbitrary in the setting of their ABCs, and that includes black grouper, red grouper, gag grouper and golden tilefish. Gag and golden tilefish we're saying are sort of arbitrary in the sense that we just applied a 75 percent FMSY rule and didn't account for any uncertainty necessarily, and so that is why we're folding those in.

Snowy grouper, speckled hind, warsaw grouper, black sea bass and red snapper do not apply because they are under rebuilding plans, so we can't really apply the same probability of overfishing because they are already on a rebuilding schedule and the rebuilding schedule trumps any sort of ABC establishment in a sense. Vermilion snapper is going to get readdressed because we have a new assessment in hand that we haven't discussed ABCs for yet. That is the logic there.

Dr. Buckel: So maybe just to clarify, the text that is in Table 1 under the ABC and the OFL column will be deleted for those species that you just mentioned for black sea bass and the others that you mentioned. I think that is the issue. It sounds like that text was going to be deleted for some species, but then the ones that have their rebuilding plans already in place, that text would stay in place for an ABC value, and it is all going to be deleted.

Dr. Barbieri: That is correct. Rick, you had a point of clarification.

Mr. DeVictor: Yes, I just wanted to clarify one thing. For golden tilefish the commercial quota is currently set at FMSY. It is not 75 percent of FMSY. The rest of the species are FOY, but through 13C it was FMSY.

Dr. Williams: So even more reason to reconsider that one.

Dr. Belcher: So what is our formal answer, then, with Number 3? John.

Mr. Carmichael: With regard to tilefish, it seems like Erik mentioned there is the potential that this could be rolled over into a P-star analysis as well. We have got those for a couple of recent assessments while they were under the burden of an addendum to red snapper and completely those recent assessments. Perhaps by March if we were to make an inquiry into the Science Center, they could provide a P-star analysis for this golden tilefish and that would solve that next one on that list, and you could consider this in March.

Dr. Cooper: Well, just keep in mind that is continent on I believe, according to Erik, the council coming up with an acceptable level of risk. We just took gag grouper off the list, and that has a full P-star approach. In fact, it has a published P-star approach and we just decided that we're not going to use that because we don't have the formal risk from the council.

I mean, again, we're walking down this glory road of saying we're not going to do it until we have this information, we're not going to do it until we have this information. Eventually that is going to come home to roost, and so, yes, in March maybe we can have a P-star if the council can estimate risk, but otherwise it is in the same boat as gag grouper, which we just said we're not going to do.

Mr. Carmichael: You have a range of risk and you have advice from the council, which is the next question; 10 to 50 percent with an option at 25. Those are the analyses that were done for Spanish, so what I'm thinking is you would have the same thing that you would have for Spanish and for vermilion, I believe. Both of those assessments had those three levels. So at this point, given that the council hasn't made a decision on the appropriate risk level, those three options may be as far as you can go scientifically.

Dr. Belcher: So I guess at this point, then looking at the rest of these questions is probably going to end up being a moot point if we're basically punching back and dropping out some of these considerations, we're dropping out this 75 percent FMSY because we don't know if that is what we're going to be using, but I guess we have to make a motion specific to the other species that are on the list.

Mr. Carmichael: Something about the other species, Question 5 deals with the rebuilding species, which is several of them, and Question 6 deals with what are you going to say about the ones you've just received updated information on and what would you choose to do. One of those is vermilion, which includes those tables which lay out the risk level to the extent that the council has given you guidance on that.

Dr. Barbieri: And to that point, John, I wonder if we need to include those in a motion or just document in our report. Since there are rebuilding plans for some of the species, I think we think we need to amend the motion – and Erik just told me that he is comfortable with this as well – to include golden tilefish. But the species that are under rebuilding plans, perhaps all we have to do is document our decision through our report.

Mr. Carmichael: Yes, perhaps you could do another motion to get rid of gag. You could do a motion to say that ABC for stocks that under a rebuilding plan should be based on the projected landings in the rebuilding plan itself. Then you could say for vermilion snapper that you will put forward your base run based on the risk levels that the council has laid out in its motion.

Dr. Belcher: I'm going to be the stick in the mud on that. I hesitate to say the report should do that. The only reason I say that is if we're willing to capture it in a motion relative to three species – I mean, I'm not trying to make more work. It is just that for consistency sake I think if we're going to do it for some, we should do it for all.

Mr. Carmichael: I think you should do motions for all three of those items. It is probably far easier to make a motion on gag than to try and amend the previous motion and all that stuff.

Dr. Williams: Okay, so another motion is I move that the SSC withdraw the ABC and OFL levels for golden tilefish established at the June meeting.

Dr. Barbieri: Second that.

Dr. Buckel: That sounds great. We have talked about how we're going to move forward and should we add that to the motion to let the council know where we're planning to go. That not only goes for this motion but the previous one. Golden tilefish, there was discussion of new P-star analysis, for example.

Mr. Carmichael: Well, I have a note to request the Science Center prepare the probability analysis as was done for vermilion and for Spanish mackerel and give gag, to give us that within the council's recommendation of 10 to 50 and center to 25. I think that will be enough. We don't necessarily have to put it in the motion.

Dr. Jiao: Well, I think I said my concern this June for gag, for example, and also for red and black. I'm sorry I mentioned that again. I don't disagree with this motion, but my question is like if we postpone our recommendation of 75 percent FMSY, we're going to use FMSY as the limit of fishing mortality.

I mean, considering MSY with 75 percent FMSY, if we give up 75 percent we're going to move to FMSY so that is sort of my concern, and this species is undergoing overfishing. The same thing for red and black; we recommended 90 and 95, but if we don't recommend 90 and 95, it will go to 100 percent. It will use the previous management policy. That is my understanding from the last meeting.

Dr. Williams: In no way are we delaying management actions. We're just pulling back these numbers. This amendment is not going to go into effect for a while, but we have got time to fill in the numbers. All we're saying is don't bank on these numbers yet; we're going to reconsider a whole ACL/ABC framework, and then we're going to refill in the table in time for management.

I don't think anybody here is suggesting that we're not going to fill this table back in a timely manner. We're going to get it done. It is just what we're saying is we want to reconsider what we said in June and rethink an ABC control framework for doing that.

Dr. Jiao: So my understanding from the last meeting is that if we don't put a number there, the previous management policy will continue to be used or how the council will go without a recommendation from this SSC. The fishermen will continue fishing. I think they are still going to use the old policy. Is that true or am I wrong?

Dr. Barbieri: You're correct, Yan, but, remember, we are already discussing the possibility of having that meeting – a very strong possibility, I hope, to have that meeting in March. We have already presented our intent to request the Science Center that further analysis be done for some of these species, so we do have, then, the data needed to make those decisions while we build our tiered framework in March. So all we are asking is for some time for us to have that meeting and that discussion, which will have zero impact in terms of management of those species.

Dr. Jiao: As I mentioned, I don't disagree with it, but, again, the numbers for golden tilefish will come out this March probably and for some other species it won't. Well, this is my general concern from the last meeting and it will continue from this meeting, obviously.

Dr. Cooper: The timeline that I'm looking at for Amendment 17, it is supposed to go out to public hearing in January/February. It is not like we've got this, oh, plenty time to run two P-star analyses, develop methods for when we only have catch and maybe effort, and we need to get that data ready to actually analyze for the black and red groupers. I'm glad I'm not working at the Science Center.

It is supposed to go to public hearing in January and February, final review in December – I think that might be a typo – council final approval in March or June 2009. I mean, we don't have a whole lot of time and this is a big order we're putting in for data collection, data analysis and data review.

Dr. Barbieri: However, this was the nature of my question to Rick earlier today; that right now Amendment 17 is in draft form and is being considered by the council. They haven't even picked a preferred alternative. Amendment 17 will come before this committee for review like any other regulatory amendment comes before us for review, so we will have then the opportunity to provide our best scientific input in how we make our recommendation.

Dr. Belcher: I think Andy's point is, though, is that it is going to public comment and it won't have numbers in it, so how does the public comment on what you're proposing if you haven't put anything in it?

Dr. Williams: That is for the council to figure out.

Dr. Cooper: To be fair, maybe it is but at the same we have been saying, oh, look, we're not going to be impacting management. I certainly don't enough about NEPA, but my guess is putting out a public document where there are no numbers probably doesn't qualify as adequate public input because there are going to a lot of things, well, we can't comment on these three alternatives because you haven't given us numbers. So, again, I don't know if this going to set back the public input period or what, but as far as fishing goes things may be fine, but as far as the process of Amendment 17, I don't know how serious of a blow this is.

Dr. Barbieri: Let me add to that question. If we do not make these recommendations that are on this table, do we have ABC values or ABC ranges existing for those species here that will be able to be provided to the council for Amendment 17 until we revise them through our framework process?

Mr. DeVictor: What we would have is – like for golden tilefish we would have FMSY from the assessment, but we wouldn't have the SSC's acceptable biological catch. This would push back the schedule of 17, certainly. There is no sense in going out to public hearing without having ABCs and stepping that down for ACLs and ACTs. I think this would delay 17, but that is for the council to decide. It is hard to see how this would play out.

Mr. Carmichael: Wouldn't we have an ABC from golden tilefish from before? I know we have one for gag because we discussed that from last December. There is a motion for ABC for gag. Golden tilefish, I don't know.

Dr. Cooper: But, as we have just demonstrated, given our removal of our definition of ABC for gag as not based on best available science according the SSC, and so they will be putting forth a recommendation to the public that has not been validated as best available science. Usually that is our role, I believe, is before it goes out to public comment it has been determined that these options or the preferred alternatives or whatever I thought were based on best available science. I could be wrong. Yes, they may have a formal ABC, but as I believe even this record shows that was based on an old definition of ABC and doesn't adequately account for ya da ya da.

Mr. Carmichael: I guess that will be your question when you're asked to approve Amendment 17.

Mr. DeVictor: And, John, we have yield at FMSY and yield at 75 of FMSY. It just was never called an ABC, as I recall, for golden tilefish.

Mr. Carmichael: That's right. Yes, I don't know if it was ever formally called ABC by the committee.

Dr. Belcher: Okay, any further discussion or questions? Let's put the motion to the vote. The motion as it reads is the SSC withdraw the ABC and OFL levels for golden tilefish established at the June meeting. All those in favor raise your hand; all those opposed; abstaining. The motion carries. Okay, the next motion.

Dr. Barbieri: I move that the SSC withdraw the ABC and OFL levels for snowy grouper, black sea bass and red snapper given the fact that those species have rebuilding plans in place.

Mr. Carmichael: That sort of gives the reasoning. That doesn't say what ABC would be based on – or ABC based on the rebuilding projections.

Dr. Williams: I second the motion.

Dr. Cooper: Isn't it in the proposed M-S guidelines that the ABC be set to the values in the rebuilding plan and not that they don't exist?

Dr. Williams: No, and that is why we need to discuss that because one of the issues there is the way the rebuilding plans are set up now, there is only a 50 percent probability of success; and given this whole climate and atmosphere of adjusting things below 50 percent, we might want to reset those rebuilding plans in such a way that there is a higher success of rebuilding to account for uncertainty and in the true sense of allowing a buffer for scientific uncertainty, because at 50 percent we're not allowing really any buffer for scientific uncertainty.

Dr. Cooper: Okay, what is the language regarding OFL and ABC for stocks under a rebuilding plan? I mean, I thought somehow those were tied together rather explicitly. For stocks under a rebuilding plan, what is the relationship between the fishing levels in the rebuilding plan and OFL and ABC? Are they directly tied?

Dr. McGovern: The rebuilding plans for the species we have, they are at least at FOY if not less. Most of them are constant catch like black sea bass, snowy grouper, and so they start out at the yield at FOY.

Dr. Cooper: I guess more specifically the question, then, for stocks under rebuilding plans, do we set ABC and how is it being recommended that we do so?

Dr. McGovern: I guess the overfishing level – we have an MSY and the target catch level, the TAC is the yield at FOY in the initial year for these species. Is that what you're asking?

Dr. Cooper: No, we have to set ABC. For stocks under a rebuilding plan we do something different than we do other stocks, and I'm trying to figure out do we have guidelines on how to set ABCs for stocks currently under a rebuilding plan?

Dr. McGovern: I guess I don't follow you there. I don't think we had specific guidelines for what the catch level has to be. We just have the rebuilding timeframe and then we have a rebuilding strategy. Our rebuilding strategy is typically the yield at FOY for these species.

Dr. Williams: The issue is that the rebuilding strategy is usually set such that we achieve rebuilding in the specified timeframe; and under a stochastic condition or where we are characterizing uncertainty it is the 50 percent level, and the question is should we adjust for scientific uncertainty in rebuilding schedules and perhaps allow for a higher probability of recovery instead of just the 50 percent is sort one of the arguments that I have heard floated around in discussing how rebuilding schedules fit into this ABC framework. I didn't know if there was anything in the guideline that you guys had seen.

Dr. McGovern: I haven't seen anything in the guidelines along those lines.

Dr. Strelcheck: I think what you need to keep in mind is it goes back to the overfishing limits first and foremost. The guidance is providing that the overfishing limit corresponds to yield at MFMT. However, in the case of an overfished stock they may not be the same and so you would want to set OFL equal to Frebuild.

Beyond that it is up to the council as well as the SSC to determine what uncertainty you want to then establish from that level to establish your ABC, to take into account scientific uncertainty which would then increase your probability of not only rebuilding but possibly the timeframe in which you rebuild within.

Dr. Cooper: Okay, so then my understanding is we can set OFL based on the guidelines because OFL is Frebuild as defined times the estimate of abundance in those years, but we probably aren't comfortable with choosing an ABC yet given our control rules, ya de ya de ya da. I am

directing this as Erik the ringleader over there to see if he agrees with can we set – because right now the motion is to drop the OFL recommendation and ABC, and I am just trying to keep as much that we're comfortable with in there. Are we comfortable with Frebuild times abundance, which is probably what – I don't know if those are what the actual numbers are that we currently put forward, but are we just yanking the whole thing?

Mr. Carmichael: Isn't OFL still OFL? You have the overfishing level that is independent of the rebuilding. I would think that Frebuild translates into giving you what your ABC is.

Dr. Cooper: I believe Andy just said OFL is Frebuild times abundance.

Dr. Barbieri: Andy, the question is do we have – in the rebuilding plans do we have established Frebuild, right, and, yes, we should. I mean, if we have rebuilding plan in place we should have an Frebuild in there, and all we are saying here is that we are going to be following that Frebuild, and that is why we don't want to set up here a level that trumps that one.

Mr. Carmichael: We all know that there are a lot of approaches. If you take a stock like red snapper that has a 40-year rebuilding plan, there is a fixed landings' level that rebuilds in 40 years that likely results in a short term, while the stock is at very low abundance, in the immediate few years of a fishing mortality that exceeds the fishing mortality at MSY.

The council could pick that strategy. That would by then this definition become Frebuild, and you could fish at that. You would not be exceeding Frebuild; you would not be overfishing. But in the context of MSY that got you into being overfishing and overfished in the first place, you would be overfishing.

I don't think that is an appropriate interpretation and I hope the guidelines get that straightened out before they go that far with that. What we have done and now doing rebuilding projections is carefully make sure that there is no rebuilding projections on the table that ever exceed FMSY. They all result in overfishing by the definition of FMSY ending immediately, and all of them look at something lower than that for moving out.

So I think that is a great definition from the terms of the fishery because we have got all kinds of things we can do with red snapper that could allow that F to get reduced over time; and if we classify overfishing on the terms of Frebuild and we pick Frebuild that rebuilds in 40 years, there is all kinds of flexibility there. I don't think that is the interpretation. I think the overfishing level has to be whatever the yield is at the overfishing definition, which is always going to be tied to MSY.

Dr. Cooper: Okay, I was just trying to preserve anything we could if there was a clean definition and we already had the numbers, but right now if that is the motion on the board, that is fine; and, yes, if there is uncertainty about it, great.

Dr. Buckel: Following Andy's comment about the schedule for Amendment 17, given the discussion here that these ABC values aren't going to be filled in time for the public hearings, is it possible to push that back until we can make a decision in March or June?

Mr. Carmichael: Rick probably knows that better. It probably is a possibility. Well, I'm kind of under the impression that at least for these stocks that have assessments and have rebuilding alternatives on the table, perhaps another motion will be coming that clarifies whether or not the council has information to proceed with ABCs tied to the rebuilding alternatives that have been presented or in some cases are already in place. Rick can comment on the scheduling. I don't know what we know about that right now.

Mr. DeVictor: And, again, it is going to be talked about tomorrow with the Snapper Grouper Committee, but the current schedule was set up so that we meet that January 1, 2010, deadline. Now, certainly, if it gets pushed back it will just mean the council won't make that deadline. Is the intent to discuss this in March and possibly have ABCs in March; is that the time we're shooting for? That would push the council back three months if we keep this type of schedule.

Dr. Cooper: But just to be clear, that is the intention here, but I would love to hear from the Science Center that if we don't get our – you know, that means tomorrow basically we figure out the whole hierarchy and tiers and approve it, such that in three months the Science Center can crank out all the data and in March we can review it and approve it. I think those are quite lofty goals every step of the way. So, not to get the council's hopes up, but I would be shocked if we actually have a full control rule and then have it implemented on all these species by March.

Dr. Williams: And I agree, but isn't that at least the logical steps we should take and at least make an attempt at those; and then if it breaks down at some point we will deal with it at that point, but it seems to me that is the logical steps we should be taking at this point. And how that gets done, that is a matter of resources and time.

Dr. Cooper: Oh, yes, I agree that is the logical step. I'm just making sure that staff and council and science center expectations are such that – you know, I certainly wouldn't want someone to go tell the council, "Oh, don't worry, we'll have it all figured out in March." Let's get our expectations set appropriately here; and given how quickly this committee has moved in the past, March is incredibly optimistic. June, again, what resources are available to actually go through and do all these – even once we get the tier set up to actually run them all, you know, for all the assessments and the non-assessments that are on this list, getting effort data for all these catch streams, getting the catch streams validated, seeing if we can calculate CUPEs, let alone figuring out the theory behind how to actually calculate the ABCs if we're given those tiers, it is a lot of work. So, no, I would be shocked if we're done by March.

Dr. Jiao: I don't know whether I'm suggesting something stupid or not, but I'm just wondering instead of using withdrawal, how about just say the SSC will discuss the ABC/OFL levels for those species. After we come up with the conclusions, then withdraw the old ones and replace the old ones. Again, my concern if we now withdraw those numbers, which numbers will we follow? We still follow the previous one and that is much higher than the ones you suggested from last June. That is my concern again.

Dr. Cooper: My understanding is if we don't have ABCs in place by the time the reauthorization kicks into effect, that is essentially saying an ABC is zero, which shuts down the fishery. We need to suggest an ABC; and in the absence of it I'm assuming that the default is zero.

Dr. Jiao: Well, based on my understanding, I think it will use the old management policy.

Mr. DeVictor: I haven't heard that it would default to ABC equals zero. Is that in the rule?

Dr. Cooper: Again, I'm just using logic here and it is probably faulty, but once the reauthorization kicks in they cannot set ACL above the ABC that comes out of here. If nothing comes of here, they set anything, they're violating M-SA and will probably get sued. If we don't have an approved ABC coming out of this committee, I would assume that there is no way to set an ACL below something that doesn't exist.

Mr. Gregory: So you're saying that would be a negative infinity level? I was thinking it would be a positive level.

Dr. Strelcheck: Well, the SCCs have been meeting for years. They have been choosing ABCs for an extended period of time, as long as we have been managing fisheries; so to the extent that ABCs are already chosen help to set quotas and catch levels for these fisheries, those will remain intact unless the SSC comes in and makes the decision that because we're not setting any ABCs we're going to go ahead and recommend that they all be zero, and that's a formal motion by this SSC, but I think the interpretation is that the status quo would remain given the decisions that have been made by SSCs in the past.

Dr. Cooper: And I would argue that if you look at the record here, we have made it pretty clear that past definitions of ABC don't, in our mind, conform to best available science under the new definition of an ABC, and so I think there are probably grounds, unless we come up with a formal motion, that we could be in deep water because it is made very clear that – by pulling all the previous ABCs right off, we have made it clear that we don't think those are appropriate ABCs based on best available science. I told you we're getting ourselves in deep here, and someone is going to have to figure it out, and I would hope it not be the courts.

Mr. Carmichael: I understand the concern about the workload, but those were previous motions. You all dispensed with those. This one has to do with fish that you have information before you, and my understanding was the 75 percent rule potentially conflicted with rebuilding plans that were in place. I, again, am expecting a second motion, hopefully, that will direct the ABC toward the rebuilding plans and the numbers that are all available right now. Hopefully, that motion should probably mention that you're withdrawing stuff from June, just for clarity.

Mr. Gregory: Can I call the question? It seems like we're just going around in a circle.

Dr. Belcher: So, the question, then, before the group is relative to the amendment – well, I guess the question is how we go about doing that, because of the lack of having established at the June meeting in this amendment?

Dr. Barbieri: Yes, just add there that the SSC withdraw the ABC and OFL levels recommended at the June 2008 meeting for snowy grouper and so on.

Dr. Belcher: So the motion as written is that the SSC withdraw the ABC and OFL levels recommended at the June 2008 meeting for snowy grouper, black sea bass and red snapper given that those species have rebuilding plans in place. Any further question or discussion? Christine.

Ms. Jensen: Should we substitute the levels under the rebuilding plan as the new ABCs? I suppose we have to finish with this motion first.

Dr. Belcher: Yes, we have to finish this one and then we will put that next one up. All those in favor of the motion as it stands please raise your hand; all those opposed; abstaining. The motion carries. Okay, so with this, Christine, if you want to put the next motion up.

Ms. Jensen: I'll move that the SSC replace ABC and OFL levels with those consistent under the rebuilding plans for snowy grouper, black sea bass and red snapper. I don't know what the actual numbers are.

Dr. Barbieri: I'll second the motion.

Dr. Belcher: Further discussion or comment? Rick.

Mr. DeVictor: There currently isn't a rebuilding plan in for red snapper.

Dr. Williams: Regarding the motion, one thing, before we get ahead of ourselves again, how are rebuilding plans going to fit into our overall OFL/ABC framework? I think this motion is just one step ahead of us again. I think we ought to back off on this one because, again, these rebuilding plans that are in the books or that are in the assessments are based on a 50 percent probability of recovery.

And if we're truly going to account for scientific uncertainty, we might want to back off from a 50 percent probability and maybe allow for a 75 percent probability of recovery, which would result in a recalculated rebuilding plan. Again, that should all be discussed in this whole OFL/ABC framework structure, so I think, again, we're getting just one step ahead of us here.

Dr. Barbieri: Well, that is a good question. My impression was that we're going to discuss species under rebuilding plans as part of a general framework between now and March. So this second motion was really to establish the fact that the ABC and OFL levels that exist now as part of those rebuilding plans would be maintained as interim values until we make our recommendations as part of the framework. So it is just to kind of help explain what the rationale is and has taken this additional few months to complete our structured tier framework.

Dr. Cooper: But what are the OFL and the ABCs outlined in the rebuilding plan? Again, I didn't think they were actually explicit OFL and ABC, and, again, as Erik said, if we're setting this whole tiered system to appropriately account for uncertainty, yada, yada, yada, well, guess what, we're going ahead and say, just as we have before, that the stuff that is out there may or may not conform; and we are going to use those in the interim.

We just ripped out everything we said we were going to use in the interim because it's arbitrary, we're not comfortable with it, it's not well thought out, we don't believe those numbers. Well, guess what, these numbers are in the rebuilding plans, how are they different than what we just completely removed? You know, you know you want to talk about consistency and consistent decisions, and now we're saying, "Well, in the rebuilding plan, that sounds like a good enough ABC."

Well, we were doing expert opinion before and we threw it out because of that very reason, and now we're just kind of willy-nilly throwing back out, well, but we like these numbers and they will conform for now, but it is just temporary. That sounds a lot like June.

Mr. Carmichael: Well, I don't know, maybe you can clarify this some by stating that ABC is that level consistent with the rebuilding harvest strategies that are in place. You have approved a number of rebuilding strategies, at least for sea bass and snowy grouper. You haven't called them ABCs. You could endorse what you have already endorsed and say, yes, we think for the time being it is adequate to set the ABC consistent with the rebuilding harvest levels that we already approved and acknowledge that down the road you wish to discuss OFL and you wish to discuss this in light of applying a different level of precision in addressing for the council's desired levels of risk when you establish future rebuilding strategies and consider revising some of the existing rebuilding strategies. I think that seems to be where you're headed without leaving it with nothing.

Dr. Barbieri: Christine, I suggest we just modify the language.

Ms. Jensen: I move that the SSC replace the ABC and OFL levels for snowy grouper, black sea bass and red snapper with those consistent with the rebuilding plans for those species until they can be further amended upon better scientific information.

Dr. Cooper: Again, I'll ask what numbers in the rebuilding plan will be the OFL and what numbers in the rebuilding plan will be the ABC? We need to clarify this because, guess what, we're going to get a sheet again saying, well, we don't quite understand what you meant by that. So, be specific.

Mr. Carmichael: Well, that is what I said. I said the ABC should be the level consistent with the rebuilding harvest, and I didn't comment on OFL. You may choose to leave OFL out and leave that as an unknown if you haven't resolved that issue.

Dr. Cooper: Okay, let the motion reflect that as opposed to saying in the motion OFL and ABC be taken from the rebuilding plans.

Mr. Carmichael: Yes, I was hoping to get there.

Ms. Jensen: Okay, delete "and OFL".

Mr. Carmichael: I would say "SSC recommend" and not "replace". There is nothing to replace; you have rescinded, "recommend that". I'm trying to get the words so they make some sense so we don't have to come back with another sheet.

Ms. Jensen: What about for red snapper if we don't actually have a rebuilding plan at this point?

Mr. Carmichael: You could look at that and say this addresses the red snapper once it has an approved rebuilding plan.

Ms. Jensen: Put in parenthesis after "red snapper", "after it gets set".

Dr. Buckel: What about gag for that?

Mr. Carmichael: Gag doesn't have a rebuilding plan; it was not overfished.

Dr. Reichert: Gag was in our previous motion.

Dr. Cooper: Do we have any idea of the probability of overfishing that is in these rebuilding plans?

Dr. Jiao: I am sort of answering Andy's question. Based on the table provided, for snowy grouper it is FMSY and it said it is transitioning to FOY, but I'm not sure whether it is transition or not. Then for black sea bass, the same thing, it is initially FMSY and is transitioning to FOY. So that means if we give up what we recommended last June, it will move to FMSY. That is the effect.

Mr. Carmichael: I know that there are Fs under these rebuilding plans are well below the 75 percent of FMSY level. I don't know the exact probabilities, but I do know that there is less chance of overfishing occurring under these rebuilding strategies that are in place than there is if you were to go to a 75 percent FMSY on these stocks that are overfished.

Dr. Jiao: We hope that is the effect, but based on the table provided, beside the June recommendations basing the 75 percent FMSY – if we give up this 75 MSY, the one that is right before that one is FMSY. So even though it is rebuilding, but that is the effect.

Dr. Belcher: Okay, further comment or discussion? Okay, the motion as stated is move that the SSC recommend that the ABC levels for snowy grouper, black sea bass and red snapper be set consistent with the rebuilding plans for those species until they can be further amended on better scientific information. Do we still have a second from Luiz on the language for that?

Dr. Barbieri: Yes.

Dr. Belcher: Okay, further comment or discussion. I'm putting it to the vote. All those in favor of the motion as written raise your hand; all those opposed; abstaining. The motion passes.

Mr. Gregory: Before we go on to something else, I want to bring something up that I think is very important. I've been reading your report to the council last June. I want to commend you for it; it was very good. And you had both Erik and Andy there to help you, but apparently you didn't need them.

This 2A, we were talking about healthy state, and I'm directing this I guess to the council staff that gave us this. You never said that. You never said that we had evidence that red grouper are in a healthy state. You said that they are in a healthier state. There is a big difference. This was presented to us as if we said they were healthy and they were not overfished and overfishing wasn't occurring.

Now you can ask the questions of healthier relative to what? The context is not clear if you're referring to warsaw and speckled hind, which is being discussed in the previous paragraph, or if it is referring to earlier time periods. I think that is an important distinction. The SSC never said that reds were in a healthy state in your report. Thank you.

Mr. Carmichael: Are you saying the sentence I read from the report is not in the report?

Mr. Gregory: Exactly.

Mr. Carmichael: The one that says, "Because anecdotal evidence indicates that red are probably in a healthy state," that sentence isn't there?

Mr. Gregory: Correct. I will read it to you on Page 38.

Mr. Carmichael: Page 38 of what?

Mr. Gregory: Of the June Snapper Grouper Committee minutes where Carolyn was giving the report.

Mr. Carmichael: So you're saying that what Carolyn read was not necessarily what was provided to the council for June 11, 2008, SSC Chairman Report.

Mr. Gregory: Right.

Mr. Carmichael: Which this committee did receive because you received the reports from all the committees, so –

Mr. Gregory: I reading the –

Mr. Carmichael: I understand, from the minutes of what is written.

Mr. Gregory: I'm reading the minutes of the meeting. I didn't know there was a written report.

Mr. Carmichael: Well, I don't know that Carolyn was necessarily reading it verbatim, but there was a written report, and that is where all this has come from, the written report, which we said hours ago.

Mr. Gregory: Well, a while ago you told us –

Mr. Carmichael: From the written report.

Mr. Gregory: A while ago you told me the problem was because we didn't have a written report.

Mr. Carmichael: Okay, let's go back. When we brought this up in the written report, a number of people said, "No, that is the chairman's report. We didn't consent to that; that is not our report." And then when we got into discussing of why we were over this stuff, that is why I said, "Well, I guess that is because you don't have a written report," because people seemed to want to disown Carolyn's report. That is why I said that. It was a bit tongue in cheek because people were disowning this chairman's report and claiming that the SSC did not review it and did not consent to it. That's the question.

Mr. Gregory: Okay, so you're saying the minutes are contrary to what is in Carolyn's written report?

Mr. Carmichael: I'm saying Carolyn may not have read this written report word for word; that is correct.

Mr. Gregory: Well, the minutes I guess are the official administrative record; I don't know.

Mr. Carmichael: Traditionally for this committee the written report that the SSC prepares is intended to represent your consensus on opinions and not necessarily every word as stated that can be picked and taken out of context through any minutes of any committee. I thought that was a lot of the discussion here, too, about the need for getting away from these verbatim minutes because people could pick and choose things and take it out of context.

Thus, if you were allowed to prepare a strong, written report that clearly stated your consensus, nobody could read between the lines on your deliberations. It is the written report that really does matter and it is the motions that you make that really do matter. That is what you would prefer, that people would consult when they're not clear as to what you said; not read the minutes, because if they read some of these minutes, which we have seen happen, then things can be taken at face value and not necessarily as they were meant.

Dr. Belcher: What do we have left to discuss? Do we need to say anything relative to vermilion and red snapper? Well, red snapper I guess we can't, but vermilion; is there anything that we can say relative to vermilion since we accepted the stock assessment and it's one of the species that's on there or is this something that needs to wait? We still have one specie outstanding that we haven't recommended what we're going to do with it; vermilion.

We have rescinded all of our stuff that we did back in June relative to every species but vermilion. Vermilion still has an OFL/ABC set at yield to MFMT and yield at 75 percent of FMSY.

Dr. Williams: By default it is going to get rescinded because we have a new assessment in hand with a new P-star analysis. We just haven't talked about it.

Dr. Belcher: But my point is until we supply that, how is that anymore correct than what we just took off the table? We just basically blanked out everything with the exception of speckled hind, warsaw grouper and vermilion standing by itself, and it currently stands at yield at MFMT, yield at 75 percent FMSY until we do something with it.

We haven't chosen to do anything with that one. That is what I'm asking is do we need to discuss the results to state those numbers or is that something that needs to wait and do we need to take what is currently in that table out? I'm just thinking for consistency. What I'm saying is we still haven't suggested anything.

Mr. Carmichael: The council has made a motion about what they believe the appropriate risk levels; 75 percent is tied to a lack of knowledge about the appropriate risk level. Since the council has given you a set of options for risk level, not one answer, you perhaps could put forward to the council the yield associated with those particular range of risk level values, and that could be your recommendation.

If you're not in a position to pick one of those risk levels, and many believe that it is the council's job to pick the risk level and not the SSC's job to pick the risk level, then maybe you can put forward the suite of tables that are available in the vermilion snapper assessment that encompass that range of risk levels until at such case we actually have finished this ABC control rule business and have an acceptable risk level from the council.

Dr. Barbieri: And to that point, as stated here, evaluate 25 percent probability of overfishing with a range to 10 to 50 percent, and that is exactly the table that we have with the vermilion snapper assessment, ranging from a P-star of 0.1 to a P-star of 0.5, including 0.25, so we have those values to provide –

Dr. Belcher: But my point is we have not given them any direction to that fact. It says current time period.

Mr. Carmichael: Any my expectation is that tomorrow you may have some direction on risk levels and carry us on to the next step and give the Science Center some insight into what you do to evaluate risk levels, whether or not you really like that. If you see other ways to go about it, there is a lot more we could do, but for vermilion that is what you have.

Dr. Belcher: Yes, but my point of clarity was just that right now it does not state that is what we're offering for those levels.

Mr. Carmichael: So it would be nice if you would state that.

Dr. Belcher: Exactly, so who wants to lead? Somebody is going to have to make the motion.

Dr. Cooper: Before we do down that road, the stock assessment review panel, "Methods used to characterize uncertainty were not considered entirely appropriate by the panel. However, some guidance on the level of uncertainty can be obtained from the confidence intervals in the AW base model. These results are likely to underestimate the true level of uncertainty."

So before we start pulling P-values out, you know, we have to peer review. Based on what the review panel says and given we approved a motion saying we agree with the review panel; do we agree with the P-stars that are included in here?

Dr. Barbieri: Andy, considering the fact that we discussed this assessment extensively yesterday and we have an approved motion that accepts the outcome of this assessment and the reference points therein as best available science, in this case I don't think it is inappropriate to accept – and especially when we are actually presenting a full range of P-star values ranging from 0.1 to 0.5, I don't think it is unreasonable for us to accept this. I don't know how we could best quantify that uncertainty or address the limitations as identified by the review panel with the way that uncertainty was quantified in the assessment.

Dr. Cooper: Again, we do say in the motion that we recognize the large uncertainties, and all I'm pointing out is we did not actually discuss the P-star explicitly. I would challenge you to go through the minutes and find us talking about the P-star and whether we agree or disagree with the review panel. Generally we have been saying we agree with the review panel in their decisions.

And all I'm pointing out is that according to the review panel uncertainty was not adequately addressed, and that is the main thing that is governing P-star. The table I referenced doesn't have P-stars or anything like that. FMSY, BMSY, things like that, there is no risk in the overfishing threshold or the biomass threshold.

And all I'm just pointing out, again, before we wanted to be so careful that we're putting forward best available science. Okay, I will pose the question, then; are the P-stars calculated in here considered best available science given the review panel has that statement in there? Now, if people want to make arguments as to why the review panel was wrong and we should move forward, that should be great, but we shouldn't just go pulling out those numbers without addressing the concerns of the review panel. I am open to hearing why those concerns are not valid.

Dr. Reichert: I am slightly confused here. Correct me if I'm wrong, but isn't this part of the whole conversation we were going to have tomorrow? In other words, what decisions do we need to make right now in terms of moving on and get us set up for the discussion tomorrow or explain where I missed something.

Ms. Jensen: Are we going to get a presentation on P-stars by Erik before we start discussing them?

Dr. Williams: I have a presentation on the probability method that includes vermilion snapper as an example.

Ms. Jensen: Can we wait until we see that before we start making some of these decisions?

Dr. Belcher: I don't think that is a bad thing, but, again, for consistency sake I still think something needs to be done for what we have put forward as OFL and ABC for vermilion. All I'm thinking is if there needs to be a motion that is phrased in the way it has been phrased for everything else just so those cells are put back to null, because right now, again for consistency, it has a value that we're saying wasn't good for anything else, but it is still a placeholder; and if we don't make a decision, that placeholder will be used and we're going to have to defend it.

Ms. Jensen: All right, I'll make a motion.

Dr. Reichert: We cannot do this tomorrow after we have gotten the additional information?

Dr. Belcher: Well, I guess it doesn't matter if it's today or tomorrow. The question is, first of all, how we're going to proceed because according to our agenda we adjourn today. Tomorrow was a workday. The meeting is not carrying over. John said that there should be a way that we can modify so that this technically could carry into tomorrow morning.

We still have reports that we have to deal with as well. The question is how we're going to deal with the carryover would be the question. Otherwise, my concern is that if we don't do something with it now and we don't reach consensus on something tomorrow, that thing is going to be stuck in limbo, and then, again, we're going to have that same, well, you wiped everybody else so why is vermilion still standing the way it was written?

Dr. Reichert: I have to admit I missed that procedural issue.

Dr. Belcher: No, that's fine, because it is kind of one those things I wasn't thinking about that either, that we adjourn and then re-adjourn in a different format on Wednesday.

Dr. Barbieri: Then to that point I suggest that we do not adjourn as of now. We recess this meeting and we make a decision that we're going to continue these discussions and the meeting is then not adjourned until we decide it is. We recess this evening, we revisit this issue when we reassemble in the morning.

Dr. Belcher: So my question to you is how important is it for us to have our discussions tomorrow relative to the other topic, because with every minute we spend focusing in on getting our business done takes away from your ability to focus on the work tomorrow. It's whatever the group wants, but I just want people to realize that as we extend one thing it takes away from the other.

Dr. Barbieri: And the other being discussion of our framework. In my opinion it makes sense for us to recess this evening. We're going to start our discussion – I really have no hopes or illusions that we are going to be able to completely address the issue of our framework just by

having this discussion tomorrow. I think we're going to come back in March and meet again and have a much more detailed discussion about our framework and all the caveats and possibilities that need to be discussed at that point.

Dr. Cooper: If I remember correctly, in June we specifically requested an extra day to iron out the framework. I believe that was the whole point of having an extra day was to talk about the framework. Now we say, well, yes, but there is no way we're going to finish it. This was the whole point I believe of taking a whole extra day here.

Dr. Barbieri: That is correct, but to that point I actually wanted to have another three-day meeting in August to discuss this issue with appropriate time for the discussions, but the committee did not feel or some members of that committee did not feel they could actually meet at that time and put the time to have those levels of discussion. I do not believe that we're going to be able to have the level of discussion that we need to have to put together an appropriate framework.

Dr. Cooper: Well, keep in mind no one has asked who is going to be able to be here in March.

Dr. Belcher: I will put it to the pleasure of the group. We either make the attempt to finish business this evening and have our workday tomorrow or we find a mechanism to extend our business part into tomorrow and then break from that and continue with our workday if we have time at the end.

Mr. Carmichael: You can extend your business into tomorrow. You can roll it over into tomorrow if you need to sleep on some of this stuff and you're not ready.

Dr. Belcher: Anybody in opposition to that?

Ms. Jensen: Is the last thing that we have to do is the vermilion? I move that the SSC withdraw the ABC and OFL levels recommended at the June 2008 meeting for vermilion snapper.

Dr. Williams: Second the motion.

Dr. Belcher: Further discussion or comments on this? All those in favor of the motion raise your hand; all those opposed; abstaining. The motion carried. I just felt better about us having everything set to zero so that if we didn't come back to it, it doesn't hang over our head.

There are two things on the agenda. Again, if you look at your roadmap, council actions update, we were going to get a report from Andi Stephens, but there is a write-up in the back of the roadmap that explains where we are relative to Snapper Grouper Amendment 15B, Amendment 16 and then SEDAR 18.

The last part of the agenda is relative to reviewing our actions and finalizing the report. Again, what we can do in the morning, the first thing is finalize the report. With that, we're going to recess but the report writing we need to finish the first thing in the morning.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the DeRossett Room of the Hilton Wilmington Riverside Hotel, Wilmington, North Carolina, Wednesday morning, December 2, 2008, and was called to order at 8:00 o'clock a.m. by Chairman Carolyn Belcher.

Dr. Belcher: The first thing this morning we need to do is the report. The red snapper addendum I already have. We just need to put that out to the group. We need vermilion snapper and then the Snapper Grouper Amendment 17. Has anybody started anything on Amendment 17 because that is the one that we really have to capture this morning.

Dr. Barbieri: We finished the red snapper addendum, right? I could get started perhaps from Andi's note.

Dr. Belcher: Well, why we don't do that. What I'll ask then is for those e-mails to go out relative to those other two items; and from now until about 8:45 we will go ahead and work on Amendment 17, capturing what you remember and putting in your important stuff. We just want to capture the motions and capture some of the discussions.

Dr. Barbieri: You want to do this as a joint effort?

Dr. Belcher: Unless you wanted to go ahead and take a stab at starting it first.

Dr. Barbieri: My suggestion would be that somebody would try a first draft, just like we did for the red snapper addendum. It's just easier to have a starting point, I think.

Dr. Belcher: Okay, the final version for the draft from Jeff and Andy relative to red snapper and vermilion, and we'll talk about those. So, Jeff, that last one you sent out, is that to stand? Once those come up, everybody read those and then we will go ahead and discuss them. Okay, has everybody had a chance to look at vermilion? Okay, anybody have any major points that need to be added or discussion on what is in there or isn't in there?

Dr. Cooper: I'll just go ahead. The point we added that was specifically discussed or debated in our discussion of the vermilion snapper is that the review panel – there is a paragraph in there that we quote, "The methods used to characterize uncertainty were not considered entirely appropriate; however, some guidance on the level of uncertainty can be obtained from the confidence intervals in the AW model and the range of estimates for sensitivity runs. The runs are likely to underestimate the true level uncertainty."

However, they then go and say, but when they approved target and thresholds, they also include the tables of the P-star values and saying that they accept those. So even though they don't think uncertainty was fully accounted for, which is a major component of the P-star, they still accept the P-star values, so there is a slight contradiction there.
We didn't discuss what we feel about it, but I felt it was important to point out, especially given our future discussions on P-star. I don't know if Scott or Marcel has more to say on that, and it is up to the pleasure of the SSC as to what they want to include in their final report, which is being designed to stand as the final record upon which we base decisions in the future.

Dr. Crosson: We had a lot of discussions during the review panel about the new demands that Magnuson places on the SSC. The review panel was pushed – this is the first time I've been through a SEDAR process so I haven't seen how review panels work in the past. I guess most of them were international, so they weren't familiar with U.S. Law.

But we explained to them how much of a demand there was going to be on this data and what the SSC was going to have to do with it, and so we pushed them hard to come to some sort of decision about what would be the preferred model to use. They weren't really happy with that and they were less happy – they were much less happy with doing it for vermilion than they were for Spanish.

The basic gist of this assessment, the way I perceived it, was that for Spanish – you know, if we had to set catch levels, we can look for Spanish and see that the stock is increasing, all the different age classes are increasing in size. It is a pretty robust model. Depending on how you choose to interpret the information from the pre-MRFSS catch history and the shrimp bycatch model, you're going to have a different opinion about what the original biological mass was, but we can definitely say right now for the past couple of decades the biological mass for that species has been increasing.

For vermilion it is much less certain, and I think with the original stuff that we have in here, the base run that listed these levels, whatever it is, and it says in 2007 it was overfished, I don't think that – well, I think it is going to be up to us to some degree to decide how much we wanted incorporate that uncertainty into whatever catch levels we recommend. I don't know, are we supposed to formalize some sort of ABC at this meeting for these based on these assessments, and we haven't done that, right, not yet? Okay, I'll just stop right there. I'm rambling and I don't know what Marcel would like to add to that.

Dr. Reichert: Yes, I agree. What we were discussing earlier is – and that is why I added that language under that first table, not to take that table as face value because of the uncertainty in the model and the parameter estimates.

Dr. Belcher: I have a quick question. The language for the motion; where did you all pull that from because I have –

Dr. Cooper: I pulled it directly from Andi's notes that she sent around.

Dr. Belcher: Because I have a different wording in front of me for that. I have a motion that the SSC accepts the South Atlantic Vermilion Stock Assessment as best available science; however, the issue of F 40 versus F 30 as benchmarks should be considered in the future for other assessments.

Dr. Cooper: There was a revised motion and Luiz said that he would bring up the 30 versus 40 as a separate motion later, so there is a revised motion further down in the notes.

Dr. Belcher: That was the last one that I had on that page. Thank you.

Dr. Barbieri: Well, I don't know if Erik can help us with this discussion since the other Beaufort assessment folks are no longer around, but our discussions over the last couple of days, I kind of got a different impression that what is reflected here, especially relative to the degree of confidence from the panel about the vermilion assessment and the Spanish mackerel assessment. If you're going to have a report on the Spanish mackerel as well –

Dr. Belcher: We already did that. We approved that yesterday.

Dr. Barbieri: Right, but I don't want to have discussions that are contradicting. But, anyway, my impression from reading this assessment – and when you read so many all together, you kind of forget which one you remember. Just to finish my point, Scott, I didn't feel by reading that assessment that the panel was very clear on what the issues with uncertainty had been.

My impression is that they approved that – they accepted the assessment. Of course, they had some comment, but had more confidence on that assessment than some of the other ones that we discussed this week. My impression from what you said is the other way around.

Dr. Crosson: Marcel, can correct me on this if I'm wrong, but from what I recollect from Savannah was that the review panel, for the first species, for Spanish – I mean, for both of them they wanted to partially accept the assessments. Do you remember this; this is how the motions were going, and we kind of had to discuss with them whether that was even possible.

For Spanish they were willing to accept the assessment model on the question of overfishing, but not on whether or not it was overfished; and for vermilion it was vice versa, it was the other way around. They were willing to accept the model for the question of being overfished or not but whether overfishing was currently occurring.

Dr. Reichert: I agree and I think that is what we are capturing here and what we have discussed relative to the Spanish mackerel assessment. I think what we put in here is correct. Also, in my notes relative to what Andy rewrote in the vermilion report here, in my notes it said that they recognized that discrepancy but they felt it was not their task to further comment on that because setting the ABCs was something that was going to be the SSC's task, so they recognized that discrepancy.

Dr. Barbieri: So they only partially accepted the vermilion snapper?

Dr. Reichert: No, they accepted the vermilion snapper assessment, and they said, as we said, that the conclusion that the stock was not overfished was robust; however, that the conclusion that the stock was experiencing overfishing was highly uncertain due to a local of robustness to the key model assumptions. It was the Spanish mackerel assessment that they partially accepted; not the vermilion snapper.

Dr. Cooper: Is an adequate summary with regard to vermilion saying if we have to pick point estimates, here are the point estimates in that table. However, they are incredibly uncertain, be careful, which is I think essentially what we said in our motion, and it sounds like that is what the review panel said, and hopefully that is what we captured in the summary. The question is

given the new information and the discrepancies between what they say about uncertainty and their acceptance of P-values, what is the pleasure of the SSC with regard to this final summary which should be standing as our final record at some point.

Dr. Crosson: Yes, I think that is pretty accurate; the gist of it being that if we chose to use a different starting point and a different base, they wouldn't hugely disagree with that. They wouldn't feel that we were somehow being unreasonable.

Dr. Harris: Is it worth including in this report what those key model assumptions might have been?

Dr. Cooper: The key model assumptions that they weren't comfortable with or to which the model is very sensitive?

Dr. Harris: If we're saying overfishing is uncertain because of the lack of robustness in key model assumptions, I think we should at least mention what those model assumptions were. They are the ones that they're uncomfortable with.

Dr. Cooper: Based on the summary report it is not very clear which particular assumptions they were uncomfortable with. I have not gone through each of the CIE individual reports to see if they talk about it there. Scott and Marcel were there and they might be able to summarize those arguments; or, if we just let it stand and for further details we cite the report, and we're basing our opinion on the consensus report. Yes, it is how much faith we want to put in the consensus report versus the details as to whether or not we agree with them.

Dr. Belcher: So what is the pleasure of the group, then, as far as leaving the report as is; is it sufficient or should we take the time to try to do that? Luiz.

Dr. Barbieri: Well, I don't know at this point which way to go, really, with this. My concern is that the council is going to read our motion and it is going to read a portion of the report, and I wonder if it is going to be clear to them how we felt. Obviously, we made a motion to accept the assessment as best available science, but I wonder if they won't need additional guidance on how we felt about the reviewer's comment and what those key model assumptions were. I think they're going to feel like perhaps that they're getting unclear guidance from us.

Dr. Cooper: We state quite explicitly as a result the stock is not overfished but was experiencing overfishing in 2007. However, the overfishing conclusion is highly uncertain. So we state very emphatically what we think was going on and then we say it is highly uncertain. We could elaborate on that uncertainty, maybe. I don't know if we have the information to actually get more specific, and I don't know if the council is going to want more specific.

Dr. Belcher: The other thing is I'm going to kind of try to put up a little bit of barrier. Remember this is a summary of what we have talked about, not a further discussion relative to that topic, so we kind of need to keep that in mind. Again, even though we're getting this down on record now, the inconsistency with the discussion, we talked about an agenda item, we reached a conclusion, we moved on.

Dr. Cooper: Except I will point out that in the last meeting I did quote that paragraph. When we were debating on using P-stars, I quoted the paragraph from the assessment report; and so if we're going to talk P-stars from this assessment, we're going to have to address the issue. And if we want to break it out, I think that is going to make it more confusing to actually say, okay, now all of a sudden on P-stars here are all these issues with the stock assessment that were voiced at some point during the previous meeting.

We can either ignore them or we can try and incorporate – what we tried to do is just basically put in the facts that they said this and then they said this. The way the motion puts it, the original motion is that it supports the comments made by the reviewers with regard to the large degree of uncertainty as to whether the stock is currently overfishing, so we mentioned the uncertainty in our motion.

I don't think we need to go and re-evaluate the whole thing, but I do want to make sure that in this summary report we address the issues that we may then turn back to the summary report as evidence of here is what we meant when we said something. I think it is dangerous not to bring it up in the summary report, but I agree that we don't necessarily need to go through a whole vetting process as to the very specific details about what we would change and what we would like. I just want to make sure that the summary report accurately reflects statements made in the previous meeting; not necessarily with regard to the motion but with regard to the stock assessment and its use in setting P-stars, which is going to be a major topic.

Dr. Reichert: So do we feel that this text reflects that or is this text lacking? I am personally comfortable with what we have here in light of the fact that we will have that discussion about P-star later, although I do realize your concern in that respect.

Dr. Williams: Just minor comment; the last sentence in the report, "Shertzer" does not have a "C" in it, and I would add just a few words at the end saying, "The consensus of the SSC was that F 40 percent was an appropriate proxy for FMSY based on Williams and Shertzer and scientific literature cited therein," because it wasn't just that report.

Dr. Belcher: So everybody is comfortable, then, with vermilion and we can go ahead and move on to the red snapper addendum; correct? Okay, so with, Yan has put an e-mail to everybody with the red snapper addendum in it, so if you will direct yourself to reading that, and then we will have a similar discussion on that item.

Dr. Williams: It looks like one of the comments I suggested wasn't entirely put in there. It's the second to the last sentence in the first paragraph, "The steepness of 0.95 was approved because it was similar to what was used in the Gulf of Mexico assessment" – that whole sentence just needs to be stripped out. I think that is incorrect.

Dr. Cooper: Do we then need to insert language as to why we chose 0.95?

Dr. Williams: Well, the original sentence had said that the steepness – it is at the assessment review the steepness is 0.95 or that the assessment workshop – I can't remember which one it said, the steepness of 0.95 was approved, and that was completely incorrect, so remove the

language that referred to assessment review or assessment workshop; I can't remember which it was, but then I don't know if what is left is still accurate either.

Dr. Belcher: My understanding was the use for the continuity was the question was did you carry what the steepness generated from the model and use that through on the projections or did we use the fact that we were using a proxy that corresponded with a different steepness and the projections were adjusted for that steepness. The question in front of us do you use that adjustment because of the proxy value or do you carry the steepness generated from the model forward into the projections. We decided that it needed to carry forward from what was estimated in the model. That was my understanding of that.

Dr. Cooper: That's my understanding, too, and, again, as we're learning how to do this, do we need to put in why we chose this? As in the questions that were presented to us yesterday, what is the scientific reasoning behind choosing between the options that were laid before us? I don't know if we need to include that or not, but right now the review basically lays out what the options were and what we did without saying why, and I don't know if we need to include that in these reports or not.

Dr. Belcher: I don't think it would hurt. That is an easier one I think to capture than some of the other ones we have discussed. I will leave that to the group. That is not a hard one if someone were to ask, well, why did you pick one over the other. It is an easy explanation, but if everyone feels it is needed, then we can easily accommodate that. Erik.

Dr. Williams: That sentence still needs to be stripped out, then, and just reword it.

Dr. Belcher: Yes, because it wasn't because of consistency with what was done at the Gulf. What does the group think; do we add that clause in there or not? Do we need to put the explanation in?

Dr. Cooper: If, as you said, it's an easy thing to say, then I say why not put it in. I am not exactly sure what I would say, but I would support anything you come up with.

Dr. Williams: I was going to say the opposite because it seems like what the council wants from us is – well, I mean, when we're making motions it is very concise statements with not much fluff around it, and I think we should keep our verbiage to a minimum, really, because otherwise it just seems to confuse issues more than help.

Dr. Belcher: And I think, too, if we have it thoroughly covered in our dialogue, that is the main thing, and we're having the discussion right now as well. If it is clear in our dialogue that was our intent, then I think that Erik is probably right in that particular case. We went around with that yesterday, too. As we were forming motions we decided do you put these caveats or non-caveats in there – yes, I mean, we're kind of in that transitional zone, too.

Dr. Stephens: If you're clear in your dialogue, then aren't you getting back to having transcribed minutes and people referring back to them and reading them, which I thought was something that you wanted to get away from.

Dr. Belcher: That's what I'm saying is right now we're in the transition. Until you go through and put the report forward and find out what people have issues with explanations – I think some of that is the problem is the transcript holds you to something that you should have put in the report. Without a transcript, they don't really know, with the exception of what is on the voice tape, they really don't know what the conversation was. You're capturing the high points. Like I said, I'm kind of caught between the two. I understand where the transcripts right now are being used for more evil than good. We're trying to capture logic and our thought processes are being held accountable.

Dr. Stephens: Right, I'm just suggesting that keeping the verbiage to a minimum shouldn't really be the goal since you are moving from one state to another, and you don't want to give them reasons to go back into the transcript.

Dr. Belcher: So, with Andi's point made – I mean, that's fine, if someone wants to give verbiage, we will go ahead and capture that in there. Any ideas? Andy.

Dr. Cooper: Well, I seem to remember I said something along the lines of in the past when we didn't have a spawner-recruit curve, we did our projections by resampling the historic recruits, which is similar to keeping the steepness at 0.95. I can't remember if I actually said that or someone else did or if that is even accurate, but there is one theory that someone could type up if they so choose, but I bet there is a better explanation, but since no one else is speaking up.

Dr. Belcher: My problem is when I talk I'm obviously not typing, so this is going to fall to someone to do something else with it. I would think something to the essence of in the past, when projections have been generated, it has been based – for those models that have similar structure that steepness has carried from the estimated value in the models through into the projections.

There hasn't been a shift because of the value that has been used for the benchmark, which is my understanding of what had happened where because we were using F of 40 percent there was a reason to believe steepness corresponded to a different value; and as such, projections were adjusted for that.

We did not feel comfortable with that switch given the precedent for projections being based on an estimated value. That is way too much information in that sentence. That is why I'm saying that it is the essence of it. Now the question is how do we best say that in a short sentence.

Dr. Cooper: In accordance with previous decisions, we keep the stock-recruit curve consistent between stock assessment and projection. In accordance with previous decisions, we chose to keep the stock-recruit relationship consistent between the stock assessment and the projection. I don't know if that's true or not, but that just summarized what you said. I think it is.

Dr. Williams: I wonder if we need to explain even further that the 0.95; we're not suggesting that reflects the underlying stock productivity, but that was just used as a convenience for projecting future recruitment. There is a distinction there between saying, yes, steepness is 0.95 versus just using 0.95 for projection purposes.

Dr. Belcher: Well, I guess in a way we're not really suggesting we're sticking with the estimate of steepness coming from the model. It is not necessarily locking it to 0.95. It is just what the model had generated for steepness, which happened to be – I think that is what the sentence says, but if I'm wrong I'm open to correction.

Dr. Barbieri: And I agree with that; I think the decision at the end was to go to the steepness that had been estimated by the model and then just keep it consistent with the projections. I guess the background from the SSC is that this is something that the committee has adopted in the past, the consistency in steepness as between the assessment value and the projection value.

Dr. Williams: But, again, we need to make the distinction – we can't say that it was the estimated steepness. That is going to be taken as that is the steepness value, and it wasn't really estimated. It hit a bound. I wouldn't even call it estimated. It is the same as fixing it. We need to be clear that what we're doing here is just using this for projections. We're not suggesting that this reflects stock productivity in any way, shape or form.

Dr. Cooper: And I think we can incorporate that in the last sentence where we talk about projections being only trusted for a few years – add, "because the stock-recruit relationship is not defined."

Dr. Belcher: Basically what it changes in that last sentence is "Although CIE reviewers requested F 40 percent be used as the FMSY proxy, they did not ask the corresponding steepness be used in the projections. They pointed out there was a large uncertainty in projections and recommended that projections only be trusted for the first few years, because the stock-recruit relationship was not defined." That is how it reads. Any further additions to this or comments that you feel were missed?

Dr. Jiao: It's just the first several sentences actually mention that the 0.95 is used in the assessment and that is the reason that we suggest to use it in the projections also. From that sentence, I would automatically assume that is an estimated value. Also, in the sentence we said F 30 percent should be considered because the corresponding value is approximately 0.95, which was close to the estimated value in the base estimation and I would assume that the estimated value is 0.95 based on our discussions. I think, based on my memory, 0.95 is estimated from the model, but I don't know why it hit the bound. If it is estimated, it shouldn't hit the bound, but I cannot remember. I think 0.68 is the bound. I may be wrong. Erik is in a better position to restate it.

Dr. Belcher: I think that puts us, as Luiz was just saying, back more towards a discussion point. The only reason I am hesitating to say this is I know that during the discussions we did talk about this hitting the bound. That is pretty much in the record. The main thing that I'm concerned with is, as Erik stated, if we incorrectly stated it or needed to have that clarification of what exactly that meant, then I think if Erik is happy with the language capturing that, I'm going to defer to his comfort with it.

Dr. Williams: I think the changes we just made reflect the situation accurately.

Dr. Belcher: So, is everyone happy with this section of the report? Okay, hearing nothing, I'm assuming we can move on. Jeff, how are you set for Amendment 17? We're going to recess for about an hour and then we'll come back on record to discuss Amendment 17.

Dr. Belcher: Okay, we're coming back from our recess to look at the e-mail that Jeff Buckel sent to everybody with Amendment 17 discussion in that. If everybody would take the next five to minutes to read that over, we will go ahead and discuss his capture of our discussions.

Dr. Barbieri: This is just a wordsmithing issue here, whether we need to give the whole list of motions or the language for the motions by wanting steepness like this, but just have sort of a comprehensive or general statement that explains what the general feeling was since they will get a list of motions from our meeting separately or we list the motions verbatim like we did for the vermilion snapper portion of the report. I think in a way listing the list of motions is better.

Dr. Belcher: I had actually planned to put the motions at the end of the report, anyway. Again, this is kind of these transitional phases, so we're going to have to reconcile as we go. In the future we won't have motions; therefore, the way that Jeff kind of has it stated is what we're heading towards in the sense of what were our actions. I think it is a good forward setup and following it with the list of motions, that just adds if everyone else is comfortable with that.

Dr. Williams: A minor thing; the sentence that says, "Given that Amendment 16 will likely reduce red and black grouper landings by approximately 35 percent," the 5/10 and it looks like 50 percent to me or five divided by ten so just change that to 5 to 10 percent.

Dr. Cooper: I have a couple of comments. I don't know if they're considered minor or not, but the first sentence, instead of "NMFS staff"; "NMFS regional staff", because I believe it was the regional office that was giving us a lot of this direction. The second sentence on "wait for a full analysis", what I would say is "for information and guidance" rather than a full analysis, since we haven't defined, given this tiered system, what do we mean by "full analysis or incomplete analysis," but we want more information and guidance. I think it is a more general approach that does potentially hamstring us down the road.

Then given we pulled gag, that last sentence that we would wait until a tiered system was in place for ABCs, period; that we're not just doing it for those with limited information. As I understood it, we wanted to set up our tiered system first and have some guidance before we set ABCs, period, and not just ABCs for those with limited information. Those are my minor comments, and I have got others but I will let other people speak.

Dr. Reichert: I was wondering if we need the questions or some of the questions added to the report or are the questions already part of the official record, because ultimately if people read this, I would imagine that they said "addressed what questions provided by the council".

Dr. Barbieri: Well, Carolyn has suggested at the very beginning, I thought, that she would add the list of questions to the report just so that they there for them to reference.

Dr. Belcher: Back to Andy's comment, because I have not captured any of that. Is there discussion on that, agreeance, disagreeance?

Dr. Williams: I agree.

Dr. Reichert: Relative to those questions, if I remember – and I haven't scrutinized Andi's notes yet – we did not address all the questions because we decided that some of them would be addressed later. Is that something we would need to capture in these notes?

Dr. Belcher: Some of the questions, my feeling was we kind of nullified having to answer by killing everything. The only ones we really had to provide justification for to me were the ones that were left in the table. By killing everything, it squashed all of those questions. We're not standing on our keeping them so, therefore, justification – well, we couldn't justify it so we removed them.

I don't know if that kind of what you meant or not. There are certain ones like discussing the justification for use of 75 percent of MSY. Well, we removed everything that had 75 percent of FMSY, so to me that would kind of infer that we really couldn't justify it to a means by which we were comfortable; therefore, we removed it. I don't know if maybe you're right; maybe that language should be in there to that fact, but if we do that then I think we need to answer each question pointedly.

Dr. Reichert: Yes, I realize the dilemma. I was just wondering what the general feeling was about if the add the list of questions to the official record.

Dr. Williams: I concur with Carolyn; I don't think it's necessary. I think what we've done here covers everything.

Dr. Belcher: And even if we had to, maybe just a statement that said the original intent was to address the questions as outlined, but once the discussion went on it quelled a lot of the need for point by point. I mean, we could easily adopt that language as well.

Dr. Reichert: I think that would be useful in terms of preventing some questions that may come up if people just read this report and not knowing what was going on in our deliberations.

Dr. Buckel: Now that I'm looking at what I've pasted together here from Andy's report, I think that second paragraph could be broken down into just two components. There are some questions that we addressed; specifically, speckled hind, warsaw grouper, the discards, but then the rest of the questions had to do with we basically nullified them by getting rid of the 75 percent FMSY. It could be broken into two components, so I'll work on that and send you the update.

Dr. Cooper: The sentence in that second paragraph that says we got rid of red and black grouper given that they're not in compliance with the definition of overfishing; again, we have to be careful because we haven't – it is more that we haven't thought through our guidance on the ABC tiered system in that the uncertainty of what do we do when all we have is a catch stream.

It's not that it wasn't in compliance with overfishing because we were doing ABCs and we actually don't know it, and so I would rather have something in there simply saying that given we haven't decided what we're going to do in general, that we didn't feel comfortable putting forward those specific numbers; again; trying to make it such that when people go back and look at this and then they come out with our tiered system and if all we have is catch streams, we're still setting ABCs somehow that is not in compliance within the definition of overfishing, well, we haven't created that definition, and so I would rather that sentence somehow just be reworded that due to potential conflicts with the developing tiered system we decided to remove these, which I think goes better in line that we didn't want to be doing something contradictory down the road.

Dr. Barbieri: I agree, Andy, and I think that at some point there in the verbatim notes that idea has been captured because this is exactly the nature of why we decided to change our recommendations. I am in complete agreement.

Dr. Larkin: This is really more for the record and not for this document because I was charged as one of the folks to look over Amendment 17. I looked at the economic information, which is not clear to me exactly when it would come up, but clearly not here. I have to leave in a few minutes, so for the record I wanted to say that I looked over that part and had some comments on what was in there.

It is my understanding another paper based on a different type of economic analysis was done and provided to the Snapper Grouper Committee but it didn't make it to us. I relayed my comments to Kate Quigley about what was in, I think it was Appendix E, and talked to Jim about what he is working on now that apparently we will see that later in future. It is not to this point; it is more to a general – if our discussion of Amendment 17 is going to end right here.

Dr. Belcher: Any other add-ins or things that need to be modified other than what Jeff and Andy and Erik have suggested thus far? When we see what those edits look like, we'll go ahead and wait for Jeff and Andy to get them caught up and we will look at those edits and see what we think. Okay, it is in your in box, so if you would, let's read the language and we can decide if we want to accept the changes as is.

Relative to what is in front of you, how does everybody feel about this section of the report? Does it capture everything; is there anything missing; is everybody happy with it.

Dr. Barbieri: Yes, I think it captures pretty well in a very summarized way, but that is the way it needs to be.

Dr. Williams: Satisfied but not elated.

Dr. Belcher: So with that said, the three parts that we have worked on this morning relative to vermilion, red snapper addendum and what we did for Amendment 17, everybody is happy with the language and I can take this forward to the Snapper Grouper Committee. I have the endorsement. That is what I want to make sure, everybody is endorsing what – sorry, do I have a

consensus from the SSC relative to those three parts we've produced today? Okay, so the report will go forward as it stands. With that, we can now adjourn.

(Whereupon, the meeting was adjourned at 11:20 o'clock a.m., December 3, 2008.)

Certified By: _____ Date: _____

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SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

Hilton Wilmington Riverside Hotel
Wilmington, NC

November 30-December 3, 2008

INDEX OF MOTIONS

PAGE 231: Move that the SSC withdraw the ABC and OFL levels for snowy grouper, black sea bass and red snapper given the fact that those species have rebuilding plans in place.

ABOVE MOTION REWORDED ON PAGE 236: Motion that the SSC withdraw the ABC and OFL levels recommended at the June 2008 meeting for snowy grouper, black sea bass and red snapper given that those species have rebuilding plans in place. Motion carried on Page 236.

PAGE 236: Move that the SSC replace ABC and OFL levels with those consistent under the rebuilding plans for snowy grouper, black sea bass and red snapper.

ABOVE MOTION REWORDED ON PAGE 238: Move that the SSC recommend that the ABC levels for snowy grouper, black sea bass and red snapper be set consistent with the rebuilding plans for those species until they can be further amended on better scientific information. Motion carried on Page 238.

PAGE 244: Move that the SSC withdraw the ABC and OFL levels recommended at the June 2008 meeting for vermilion snapper. Motion carried on Page 244.

Scientific and Statistical Committee Meeting Report

Hilton Wilmington Riverside

301 North Water Street

Wilmington, NC

November 30 – December 3, 2008

SSC SEDAR 16 Summary

The SSC approved the recent SEDAR 16 King Mackerel assessment as based on the best available science and advises that management measures be formulated in accordance with the base assessment model run. The SSC supports the conclusion of the review panel that the South Atlantic king mackerel stocks were not overfished. It is uncertain, however, whether overfishing is occurring in the South Atlantic stock or not, but if it is, it is occurring at a low level.

Discussion leading to this conclusion centered on three major topics that arose from the assessment and the SEDAR Review Panel report(s). First, the SSC focused on comments by the Review Panel where they concluded that the base model run was a plausible representation of the king mackerel population; however, the review panel also requested alternative model runs that were necessary to understand more fully the underlying uncertainty of the assessment. In particular, the model was very sensitive to specific fishery-dependent and independent abundance indices and their relative weighting schemes. For example, two alternative model runs were conducted with different treatments of the indices suggested by the Review Panel and resulted in substantially reduced probability of overfishing the stock at higher yields in comparison to the base run. The SSC believed that the base run provided more realistic results with respect to overfishing probabilities, and recommends that it be used as the basis for management. Second, and related to this point, the Review Panel recommended that decision tables be prepared to capture the uncertainty under various model scenarios. The SSC reviewed these tables (prepared by the assessment team) but commented that the Review Panel provided little guidance on how to compare alternative approaches to the base case. Third, the SSC discussed the failure of the Stock Synthesis 3 model to provide management benchmarks under the spatial constraints of the terms of reference. The Review Panel agreed that the Stock Synthesis 3 formulation allows both the Gulf and South Atlantic king mackerel stocks to be modeled while allowing mixing between the stocks during the winter. However, the SS3 model was ultimately not used because it was unclear whether the model was

converging and it was not possible to estimate stock-specific benchmarks as required by the terms of reference. Hence, the assessment proceeded using VPAs to independently model Gulf and South Atlantic migratory groups under a 50:50 mixing scenario. The SSC suggests that, in the future, if the two stocks are to be modeled separately, the SS3 model or another statistical

The SSC briefly discussed research recommendations arising from the SEDAR process and found them to be well-documented. In particular, the SSC believes that stronger fishery-independent abundance indices are needed to improve future assessments. In addition, the SSC agrees that a full assessment of king mackerel would benefit from better access to catch information from the Mexican fishery.

Motion to accept King Mackerel Assessment as based on best available science, and that the base model be used for management.

Fishery Ecosystem Plan and Comprehensive Ecosystem

Presentations were postponed as the SSC will have another chance to review these documents. Therefore, we did not have any discussion or recommendations relative to these items.

Red Snapper Addendum

An addendum to the red snapper stock assessment report was generated to address two issues. First, two values of annual recreational landings were transposed in the original assessment; these values were corrected with subsequent changes to landings in those and interpolated years. Secondly, the review panel requested that F40% be used as a proxy for Fmsy. The review panel requested this change because the estimate of steepness in the base assessment was not estimated with confidence because it was hitting the upper bound. With this change, it was determined that the steepness associated with projections (h=0.68 when using F40%) differed from the base assessment leading to an abrupt change in recruitment between assessment years and projection years. Several alternatives to handle this inconsistency were provided to the SSC. These included changing all steepness in assessment and projections to 0.68, leaving them both at 0.95, and a hybrid where 0.95 was used for the assessment and 0.68 was used for projections. In accordance with previous decisions, the SSC chose to keep the estimate of steepness consistent between the model and the projections. Discussions then focused on two options for %SPR. One argued for following the suggestion from the CIE reviewers (using F40%) and cited literature and examples that showed that F40% is more appropriate and F30% is too high. The other group argued that F30% should be considered because it was approved by the council for other species (approved by the Council in the Comprehensive SFA Amendment) and that its corresponding h value is approximately 0.90 which was close to the estimated valued in the base estimation model. Although the CIE reviewers requested F40% be used as the Fmsy proxy, they did not ask that the corresponding steepness be used in projections; they pointed out that there was large uncertainty in

projections and recommended that projections only be trusted for first few years because the stock-recruit relationship was not defined .

A motion was made to use F40% as the Fmsy proxy and retain the steepness of h=0.95 for short term projection. This motion was accepted by SSC. The assessment team provided the updated base model (h=0.95 in assessment and projections) with the new recreational landings to produce new projections.

SEDAR 17 – Vermilion Snapper Assessment

In its report the Review Panel supports the estimates from the AW base model. Estimates for 2007 are given below (*see* Table 3.6 of the AW report).

Year	F	F/F_{MSY}	B (mt)	$B/B_{unfished}$	SSB/SSB_{MSY}	$SSB/MSST$
2007	0.49	1.27	2966	0.283	0.861	1.10

The SSC discussed the Review Panels conclusions and agreed that the base run was based on the BAS. As a result, the stock was not overfished, but was experiencing overfishing in 2007. However, the overfishing conclusion is highly uncertain due to a lack of robustness to key model assumptions.

The SSC noted that the Review Panel concluded that: "The methods used to characterize uncertainty were not considered entirely appropriate by the Panel. However, some guidance on the level of uncertainty can be obtained from the confidence intervals in the AW base model (Table 3.16 in the AW report) and the range of estimates from sensitivity runs (see Table 2.2.1 of this report). These results are likely to under-estimate the true level of uncertainty."

This is despite the fact the Review Panel states that they "support[s] the estimates from the AW base model" including Tables 3.17–3.22 from the Assessment Workshop which give a range of ABC depending on the level of risk management wishes to adopt (Page 10 of the Review Workshop Summary Report).

The majority of the SSC's discussion focused on the fit of the spawner-recruit curve (in particular, the estimate of steepness) and on the appropriateness of F40% versus F30% as a proxy for Fmsy. The value of the steepness parameter in the stock-recruit curve was estimated at the boundary of allowable values indicating that the parameter, and therefore the stock-recruit curve, was not estimable. The solution to this problem was to fix steepness at the value that coincides with the assumption that F40% = Fmsy. The SSC questioned whether this was the best solution to the problem and encouraged the assessment team to explore a range of alternative solutions to the problem in the future. In addition to the general approach of fixing steepness, concern was voiced over the assumption that F40% was the best proxy for

Fmsy. The consensus of the SSC was that F40% was an appropriate proxy for Fmsy based on Williams and Shertzer (2003) and scientific literature therein.

Motion: Move that the South Atlantic Vermilion snapper assessment be accepted as BAS, and supports the comments made by the review panel with regards to the large degree of uncertainty as to whether the stock is currently experiencing overfishing. (Passed)

SEDAR 17 – Spanish Mackerel Assessment

There was significant discussion about the review of the Spanish mackerel. The two major sources of uncertainty in the assessment are the historical recreational catches and the amount of mackerel bycatch in the shrimp fishery. Unfortunately, the uncertainty in these data cannot be decreased with additional research. The models must simply deal with this uncertainty. One way to assess the impact of some of this uncertainty is to conduct sensitivity runs. The point estimates for fishing mortality, biomass, Fmsy, and Bmsy were quite sensitive to the assumptions being examined via the sensitivity runs. However, the ratio of current fishing mortality to Fmsy appeared to be robust to the sensitivity runs performed in the Review Workshop and was in agreement with the results of the ASPIC biomass dynamic model. As such, it was determined that the stock was not experiencing overfishing. There was some question as to whether this robustness would hold over a wider range of sensitivity runs. The ratio of current biomass to Bmsy, however, was quite sensitive to the various runs, and as such, the model could not reliably determine whether the stock was overfished or not. There was some discussion as to the overall robustness of the ratios, but the SSC consensus was to agree with the findings of the Review Panel.

It was noted the even though the model could estimate the steepness parameter for the stock-recruit curve, the Review Panel expressed concern over its uncertainty. The SSC noted that we will likely never have precise estimates of such parameters and must make decisions despite this uncertainty.

The SSC briefly discussed research recommendations arising from the SEDAR process and found them to be well-documented. In particular, the SSC believes that stronger fishery-independent abundance indices are needed to improve future assessments.

Snapper Grouper Amendment 17

After a presentation on Amendment 17 and discussion with NMFS Regional Office staff, the SSC discussed their ability to provide ABCs with limited data. Discussion focused on whether or not we should fill in boxes for ABCs or wait for more information and guidance. If there is not enough information to give scientifically sound ABC value then management might stay status quo; the worry with this approach is that status quo might lead to overfishing. The SSC decided that it would wait until a tiered system was in place for ABCs.

The council provided the SSC with a list of questions; some of these questions (#'s 1-2) were addressed specifically while others (#'s 3-6) were addressed by a series of motions that removed the ABC recommendations from June 2008. Question 1A - For speckled hind and Warsaw grouper, the SSC clarified that the value of ABC=0 was for directed landings only, not discards. Question 1B - There was discussion on whether or not discards should be included in ABC values for other species; the SSC concluded that discards would be handled on a case by case basis. Question 2 - Given that amendment 16 will likely reduce red and black grouper landings by ~35% we felt that these existing measures will likely provide adequate protection for black and red grouper. The SSC was concerned that the ABC values proposed in June 2008 for black and red grouper might be in conflict with the recommendations being developed under the tiered system. As such, the SSC withdraws the ABC and OFL levels for black and red grouper, and for similar reasons withdraws the ABC and OFL levels for gag grouper.

The conclusion that the SSC would wait until a tiered system was in place before providing ABC values for species with limited data influenced how questions 3 to 6 were addressed. There were several motions that addressed these questions. The SSC withdraws the ABC and OFL levels for golden tilefish established at the June meeting. The SSC withdraws the ABC and OFL levels recommended at the June, 2008 meeting for snowy grouper, black sea bass and red snapper, given that those species have rebuilding plans in place. The SSC recommends that the ABC levels for snowy grouper, black sea bass and red snapper be set consistent with the rebuilding plans for those species until they can be further amended on better scientific information. The SSC withdraws the ABC and OFL levels for vermilion snapper established at the June, 2008 meeting.

Questions for SSC Consideration regarding Amendment 17 fishing level recommendations

December 2008

1. Discards. ABC was specified as 0 for speckled hind and Warsaw grouper and discards are not specifically addressed for other stocks

   (A) How are discards considered for speckled hind and Warsaw grouper, or does the ABC apply to directed landings alone?

   (B) The SSC made a general recommendation to set ABC=75% Fmsy for those stocks which have been assessed. Is it the SSC's intent that discards are included in the MSY and ABC or that discards are addressed separately.

2. ABC was specified as 95% for red grouper and 90% for black grouper.

   (A) The SSC stated in its June report "Because anecdotal evidence indicates that red are probably in a healthy state…". The SSC is asked to clarify the meaning of 'healthy state' given that both red grouper and black grouper are listed as overfishing and unknown with regard to overfished in the report to congress.

   (B) What is the scientific basis for the difference in recommendations, given that both have the same status determinations?

   (C) What is the scientific basis for providing a specific percentage of landings for ABC (and thus for preventing overfishing) given that the degree of overfishing and overfished has not been quantified, and what is the basis for establishing OFL at the average landings level given current stock status determinations?

3. There has been considerable discussion regarding the scientific basis for the recommendation of ABC at 75% Fmsy, both during and since the June meeting. There is concern that the recommendation could be considered arbitrary and without scientific basis. The SSC is asked to provide justification and clarification for this recommendation to address these concerns.

4. The Council approved a motion in September 2008 requesting that the SSC, SEFSC, & Staff evaluate a 25% (range of 10-50%) probability of overfishing when setting the ABC with respect to overfishing. This is an important part of ABC control rule development, so the committee is asked to comment to continue iterative deliberations with the Council.

   (A) What is the next appropriate step in developing risk levels and an ABC control rul.e

   (B) What should SSC be provided to provide guidance at the next meeting (in March/June)?

   (C) Provide detailed guidance and instructions to SEFSC for appropriate analyses?

5. Stocks identified as overfished are managed through a rebuilding plan, therefore a general recommendation to set ABC = 75% Fmsy may not work in these instances. The SSC is asked to clarify ABC for those stocks managed under rebuilding plans – snowy grouper, black sea bass, and red snapper. This could include reviewing existing rebuilding plans.,

6. The SSC received an assessment for vermilion snapper and updated results for red snapper. The SSC is asked to provide fishing level recommendations and ABC for these stocks in light of this new information.

Motions

MOTION 1

Move to accept the king mackerel assessment as best available science, with management to be based on the base run of the model.

MOTION 2

Move that the SSC accepts option #2 of a steepness of .95 to be used in assessment and projection estimates for red snapper in the south Atlantic.

MOTION 3

Move that the South Atlantic Vermilion snapper assessment be accepted as best available science, and supports the comments made by the review panel with regards to the large degree of uncertainty as to whether the stock is currently experiencing overfishing.

MOTION 4

Move that the SSC accepts the SEDAR 17 Spanish Mackerel stock assessment as best available science. The SSC concurs with the SEDAR 17 review panel's conclusion that the stock is not undergoing overfishing but that the model and underlying data are insufficient to make biomass-based determinations.

MOTION 5

Move that the SSC withdraw the ABC and OFL levels for black grouper, red grouper and gag established at the June meeting.

MOTION 6

MOVE that the SSC withdraw the ABC and OFL levels for golden tilefish established at the June meeting.

MOTION 7

MOVE that the SSC withdraw the ABC and OFL levels recommended at the June, 2008 meeting for snowy grouper, black sea bass and red snapper, given that those species have rebuilding plans in place.

MOTION 8

Move that the SSC recommend that the ABC levels for snowy grouper, black sea bass and red snapper be set consistent with the rebuilding plans for those species until they can be further amended on better scientific information.

MOTION 9

Move that the SSC withdraw the ABC and OFL levels for vermilion snapper established at the June, 2008 meeting.

Questions for SSC Consideration regarding Amendment 17 fishing level recommendations

December 2008

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PLEASE SIGN IN

So that we will have a record of your attendance at each meeting and so that your name may be included in the minutes, we ask that you sign this sheet for the meeting shown below.

Scientific & Statistical Committee Meeting
Wilmington, NC
Sunday, November 30, 2008

NAME & ORGANIZATION	AREA CODE & PHONE NUMBER	P.O. BOX/STREET CITY, STATE & ZIP
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Darden Rice Oceana	727-560-2479	110 18th Ave S St. Pete FL 3370
Kyle Shertzer NOAA	252-728-8607	101 Pivers Island Rd Beaufort NC 28516
Sarah Hagedorn	919-881-2916	4000 Westchase Blvd. Raleigh, NC 27607

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Scientific & Statistical Committee Meeting
Wilmington, NC
Monday, December 1, 2008

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Scientific & Statistical Committee Meeting
Wilmington, NC
Monday, December 1, 2008

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Scientific & Statistical Committee Meeting
Wilmington, NC
Wednesday, December 3, 2008

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