SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

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DRAFT MINUTES

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The Scientific and Statistical Committee of the South Atlantic Fishery Management Council convened at the Hutchinson Island Marriott, Stuart, Florida, Sunday afternoon, June 7, 2009, and was called to order at 1:30 o'clock p.m. by Chairman Carolyn Belcher.

Dr. Belcher: Welcome to the June 2009 Science and Statistical Committee meeting. As you can tell, we have a full agenda. There's basically two main action items. Today, we're going to take the time to go over some of our general housekeeping and get updates from staff on where FMPs are and talk about the SEDAR Steering Committee reports and the SSC Selection Committee report and we'll just get started on all of that.

We'll skip voice identification and we will start out with the Approval of the Agenda. Does anybody have any comments, questions, or suggestions as far as edits to the agenda as currently written? No objections and the agenda will pass as is.

The next item is the Approval of the March 2009 Meeting Minutes. Does anybody have any additions, edits, corrections that they would like to see made to the minutes from the March 2009 meeting in Jekyll? Seeing no objections, the March minutes will pass. We immediately go at this point into John's presentation relative to SEDAR Steering Committee Report, which is Attachment 2 in your briefing book.

Mr. Carmichael: The Steering Committee met May 18, their annual meeting, essentially, in conjunction with the Council Chair's Committee. It's more of a convenience to meet then in May and it works out pretty good. The primary order of business was to talk about the SEDAR schedule and to talk about means of improving SEDAR, procedural changes that would reduce confusion in some parts of the process and increase the kind of comments we're getting on the assessments and increase the total assessment output without adding a whole bunch more expense, time, and money of additional workshops.

SEDAR staff working with the various principles from the Science Center and other labs that do most of the actual analytical work and looking back over a lot of the comments that were made put together a proposal for the Steering Committee about some ways of modifying the process, which then the Science Center worked on amongst their internal process to try and come up with sort of their opinions on it and what they think can be done and how we think we can work the process better to get more information, more timely information, coming through for stock assessments.

You have a rather in-depth report really for a Steering Committee meeting, because we lay out the details of these changes in the process. The Steering Committee has endorsed these changes. There will be essentially a roll-out to the councils at this meeting and then next week at the Gulf Council meeting, which are the two principle players in terms of getting regular assessments out of SEDAR.

I guess I would just like to take a moment and highlight some of the changes, since they do affect how the SSCs operate and certainly how SSC members will function within the SEDAR process. This, first of all, is a different approach to the scheduling, as you can see in the table that comes at the end of that report.

Basically, this is becoming a two-year scheduling outlook for each lab. As you know, we have the Miami Lab and the Beaufort Lab are kind of the primary Science Center teams that work on these SEDAR assessments. A given lab would one year work on benchmark assessments and the next year work on updates and the two labs would functionally essentially on a phase, so that when the Beaufort team is working on a benchmark cycle, the Miami team would be working on an update cycle.

Both of these would take place, SEDAR projects, instead of having several projects staggered through the year -- We normally would do two benchmark projects staggered through the year and a number of additional updates squeezed in along the way and there would be a regular scheduling, with data workshops starting in March and then concluding in usually near the end of January or early February with the review component.

The scheduling kind of goes hand-in-hand with these procedural changes, because the two allow us to come up with a process that could at least maintain the same productivity, if not increase the productivity, if we can get the analytical personnel and the support personnel, without adding to the workshops that have to be held and hopefully reducing the amount of travel that individuals will have to experience so that they can spend a little more time actually working and less time on the road.

Within this, the data workshop process is going to be essentially unchanged. The plan is the data workshops will be held in March. The data workshop would focus on identifying the data issues, discussing things like historical datasets and how you treat them and how you would evaluate surveys and what information seems reliable.

There would be less focus on trying to get to an actual complete dataset by the end of the data workshop. Instead, the complete dataset would be available -- It would be scheduled for submission and available to the assessment workshop by June 1st and that will essentially give a period between say mid-March or so and June 1 when the recommendations of the data workshop can be addressed, which is one of the issues we have, where ideas come at the data workshop, but there isn't always adequate time to get those fleshed out.

The assessment workshop is where some of the more significant changes are coming in and instead of the current approach, which is a single workshop over a week, where we go in and really try to walk in the door with a pretty clean slate and walk out with a completed model, which we've all experienced how difficult that can be, the assessment workshop is going to become an extended process with similar participants to what there are now, but rather than meeting in face-to-face meetings for a solid week, it would be a number of regularly-scheduled webinar meetings.

We're looking at webinar services where anyone can log in and see on their computer screen the same information and a person can make a presentation and rather than sitting in this room looking at this screen, you would be in your office looking at your computer screen and individuals can talk. Those of you who are appointed participants can log in and type things on the screen and it would also be publicly viewable. We have the ability that just members of the public could know about the information and they could log in and watch and observe, just as

they can in the regular workshops.

The idea would then be that these meetings would be scheduled in advance and posted in the Federal Register. It's just another way of going about the meetings and it would spread the assessment workshop process out so that participants have time to come up with ideas and see how they work out and get them to an endpoint and then actually, at the end of the assessment workshop and extended period, have a model that everyone supports, hopefully, and has estimates of stock status and things of that nature actually in it.

I think all of you guys know only too well how often it is that we work on several assessments in the assessment workshop and get to one that someone has a great idea, but it's simply going to take more than the three days that are left in the workshop to get it fleshed out and so you have to kind of know that you're going to go into this and wrap the work up kind of through conference calls and informally later. This is going to remove a lot of that and really respect the nature of the assessment development process and that it takes more time and that we expect you at the workshop level to come up with ideas that then you go back and work on and try to flesh them out.

The Steering Committee thinks this is really going to help to improve the product and better respect the way an assessment really needs to be put together. The next part of this is a completely new phase of the process and it would be essentially a pre-review.

The idea is to put the assessment model out there and the report out there for public comment for inquiry amongst the council, all members of the SSC, advisory panel members, anyone else who may hold an interest in it. This would be handled through publishing in the Federal Register that the report is available. Essentially it would be like a pre-review.

We'll have an assessment report with the suggested status, based on the assessment workshop. It goes out and is posted and has a thirty to forty-five to sixty day, depending on the legal information we get, but a review period, specified review period. We would do a webinar to unveil it, let people log in and watch the analysts give a presentation on what was done. It will be openly and publicly viewable to anybody that wants to log in and watch it.

Then you would open up this written comment period very much similar to what's done for proposed rules and everything of that nature, following the same process. The results will be tabulated and then we would have a second assessment workshop, where the assessment panel gets back together and goes over the comments that were received and really develops a plan of work for what's going to be addressed and what new sensitivities might need to be done and how the model might change.

We'll give you several weeks to get that work done and then come back together and have a final assessment workshop webinar to finalize the results and the final report and say, okay, it's ready for the final peer review part. I'm thinking that this will be happening by late October to early November, depending on the review time.

Then that brings us into the final part, which is the peer review. As all of you at the SSC

certainly know, the peer review has essentially become a two-step process. We have the independent panel peer review convened by SEDAR and then the assessment comes back to you as an SSC, where you get another opportunity to add another layer of peer review.

There's always been confusion over what these two peer reviews actually consist of. How does the SSC's peer review differ from what the peer review panel did and what leeway do you have to make changes and things of that nature? It was suggested that we essentially combine these and we have the SEDAR peer review panel meet as part of an SSC meeting. There's some details to be worked out, like, for example, would the entire SSC -- Would you all be a member of this review panel or would it be a subset, as it is now, who serve as the official reviewers and the actual lead and the other members of the SSC are more in an observatory role?

The idea would be that there's one peer review and it would consist of the review panel, much as we have now, along with the full SSC, who is there, at the very least, to see everything. I think a good example is in the case of the Atlantic red snapper, where the assessment was completed in January and the next SSC meeting was in June.

The assessment review was done and nearly six months go by before the SSC actually picks it up. You raised some questions and asked for some sensitivities and some more projections, as you're allowed to and expected to do, and then your next meeting is December. A year goes by really before the SSC is in position to have everything that they felt they wanted to look at for this.

This is going to immediately reduce up to six months of delay from these assessments, because we'll have both things going on at one time. It will also remove this idea of there not being enough local knowledge represented by the types of international experts who are appointed through the CIE and the people who come in without information about the assessment itself. It was always said that we have this SSC backdrop for that local knowledge and it will put both groups together and I think greatly reduce some of that confusion about what the nature of each review is.

That's it in a rather rapid nutshell. It's a lot of information. The Steering Committee supports this and unless there's major objections raised by the councils, this will be something that we'll start implementing say in 2010, the next round of SEDARs that start in there, which I think will be Gulf yellowedge and tilefish. They look to be the next ones that will go in there and then the South Atlantic will start in 2010 with some updates, which will run somewhat similarly, to try and make use of webinars and things to get through more updates in a year and considering perhaps coming together with a workshop of SSC members and others to finalize maybe four or five updates, three or four updates, depending on the workload.

The final part of this then, of course, is the schedule for the coming years and that's the final part that's in this report and I think I'll go down to -- This is the schedule that's in the Steering Committee summary and I want to point out this is a draft schedule at this point, because the Science Center has not endorsed the full workload, because there's concerns about the number of people that are available and potential overlap in assessments that might not be manageable.

This is what the Steering Committee has proposed. For 2010, it's asking the Beaufort team to do four updates, sea bass, snowy grouper, tilefish, and red snapper. The Gulf team will do yellowedge, tilefish benchmarks, and to do an update of Gulf amberjack. The Caribbean is going to be treated slightly differently in the future SEDAR, the next coming years. As quite a few of you are probably aware, we've had a lot of trouble getting an acceptable assessment through the Caribbean, because of the lack of data and the lack of basic monitoring that's gone on down there and the difficulty in applying such data-poor situations to most of our normal assessment models.

What the Science Center has done is convene a team of individuals. They've got some analysts working on this and others and they're working closely down in the Caribbean region to try and develop monitoring programs and try and develop assessment techniques that will work with the data they have. For the time being, they're kind of held off to the side as a separate team.

We're also addressing the other issues that come up in SEDARs such as sharks, with a benchmark coming up in 2010. Florida, there's discussion of an update of Florida spiny lobster in 2010. Florida, as you know, is one of our close partners and they have certain things that their staff is able to do and we bring it for reviews and other things when they're council-managed species, such as spiny lobster or yellowtail snapper.

Then, of course, the long-term horizon for the South Atlantic component is in 2011, as you can see, this two-year cycle of the schedule you're working through. You do updates in 2010 and benchmarks in 2011, with speckled hind, warsaw grouper, and Florida yellowtail scheduled and potentially to deal with some of the things that were scheduled -- We may squeeze in an update or two in the first couple of years. The request is to do gag in 2011.

Then in 2012, it comes in with an update year. You can see we're doing four updates in that year scheduled. 2013 is a benchmark year. The idea is to do white grunt, scamp, hogfish, potentially, wreckfish, all things that were on the long-term schedule. In 2014, black grouper, red grouper, red snapper and trying to keep the lag between assessments around three years in a cycle like this that's going to be two to four years -- A group of species that gets hooked up together is probably going to stay in step as we move through this in the future years.

I think the final thing to comment on that is I think long term it would be very effective to get intelligent groupings of species. We have the Coastal Migratory Pelagic Plan with a number of stocks and it's suggested in 2012 to deal with all of those stocks through the Gulf labs and so do cobia, which has been brought up by both councils, little tunny and see what can be done there, cero, and also do Gulf Spanish, which hasn't been done, and do an update in king mackerel.

Then in say two to four years, probably four years, look at doing an update of all these, including Atlantic and Gulf Spanish mackerel, perhaps. Ideally, it would be nice to get to a time where you do the coastal migratory stocks one year and the next year maybe you do the dolphin wahoo plan and maybe then you do, over a couple of years, do different components of the snapper grouper plan. That would all go toward this idea of combining species in a way that lets us increase the efficiency.

There are a couple of other issues they talked about procedural-wise. A lot of issues that were brought up over the years are kind of addressed by this overall comprehensive approach to scheduling. I think there was just one issue that came up from the South Atlantic was your request about devoting effort in say late 2009 and 2010 to the unassessed stocks.

As you can see from the schedule and as was commented in the report, the Steering Committee did not support that and the idea being that preventing current assessments from getting too old should be the key focus of SEDAR and the Science Center is continuing to look at other ways of trying to get a swat team or additional analysts to come down into the region and try to do the kind of work that you suggested about this triage production models on stocks that can be done. That's where that stands and I guess we'll hear more from the Science Center on that and how successful they are for getting additional resources to do that, but for now, your request has not gone any farther than just a request. That concludes the report of the Steering Committee.

Dr. Cooper: Where to start? First, the big question, given we've had this headache over and again, it looks like for a couple of species you've got the South Atlantic doing a benchmark at the same time you've got the Gulf doing an update for the same species. We had three-day meetings about why is the Gulf assessment model doing one thing and the South Atlantic doing another and we're setting that up to actually purposely happen on a regular basis.

Given the consistency of this, it looks like basically right across the board, red grouper in 2009 and tilefish in 2010 and yellowtail -- Actually, those are both benchmarks, but throughout, I keep seeing one is doing an update and one is doing a benchmark. One is turning the crank and the other one is redesigning a whole new machine.

If that new machine says guess what, the turning-the-crank approach was going the wrong way, that's going to create a huge headache and so I would at least be interested in hearing why someone thought that was a good idea, because I can't think of one.

Mr. Carmichael: Certainly 2009 you all are aware of the situation and that's already water under the bridge and so that's how that comes out. I think part of it is that the stocks are separate stocks and the Gulf tilefish is different from the Atlantic tilefish. The Atlantic had requested the update of tilefish done with snowy grouper and those two are together and it just so happens that the Gulf at the same time has requested tilefish for a number of years and that was scheduled for the benchmark in 2010. Yes, in that case, we're definitely doing that.

I think the yellowtail, that's really denoting that Florida will be leading on that and it will involve both labs a little bit. In yellowtail, we won't have that situation. The Spanish mackerel brings up the question -- I think my thought is that we're doing these coastal migratory stocks and that should include an update of South Atlantic Spanish, which could mean some Beaufort people working over there sort of in that box.

I think it is an intriguing question though of long term should they somehow be combined even more, so that if we're doing a benchmark of red snapper in the Gulf of Mexico in 2014 would we want to do an update of red snapper along with that in the South Atlantic together? Maybe in some cases that would work, but I think in a lot of cases we've tried to make the case that they're

the same species in completely different areas and so maybe we shouldn't, but it's worth considering.

Dr. Cooper: So long as the Regional Administrator agrees not to call extra meetings every single time we've got two species assessed two different ways and he needs us to hash it out for four days, because that is bad enough doing it once and having that ripple through for a couple more meetings.

I have another question. This joint SSC/CIE peer review, usually an assessment -- What do they spend, a day or a day-and-a-half per species on the review? Does that mean we're going to be adding in a year, in say 2010, four times a day or a day-and-a-half to SSC meetings, so we can sit at -- A certain subset of us, either all of us or -- What kind of workload are we actually adding to SSC meetings by having them sit through multiday long stock assessment peer reviews?

Mr. Carmichael: The idea is that this peer review would be shorter than the current SEDAR peer review that goes on and they would have maybe a half-a-day per species to discuss it, because we would already have gone through the initial pre-review of most of the information and it would already have been available for a longer period of time and there would have been more time for people to digest and to get right into the meat.

There should be more of a -- If the peer review panel agrees with the methods there will be hopefully less need to identify something new and do some work, which tends to occupy a lot of the time. I think we all know from peer reviews they tend to take the amount of time that's allotted.

The model is that a lot of the peer review panels don't devote nearly as much time to an individual species as we have in SEDAR and they seem to function pretty well. I think it would add an SSC meeting, however, because it would be a meeting where maybe it takes two to three days to get through maybe the number of stocks that are being proposed. You may have to meet say -- The timing of this is not a time when we were considering a regular SSC meeting. I think of this as being like right at the end of January.

The SSC may have to move into a three meeting per year cycle, but getting the meetings away, as we've discussed, from the council meetings is going to give us a little more flexibility in scheduling and get you guys out of the business of meeting on the weekends and stuff. Maybe that will help offset it a little bit.

Dr. Williams: I think the other part of this whole plan is I think we're still going to have a CIE person involved at the assessment process, too. The whole idea behind this plan is to get more involvement at the assessment workshop level, to a point where we have really good confidence that going into a review this thing is going to pass. In the past, we've gone into reviews with not really knowing whether it's going to pass or not, but hopefully with this drawn-out assessment process and more involvement in the assessment process we'll go into the review pretty much -- I don't want to say rubber-stamp mode, but it will be -- We'll have a good idea that it's going to have a good probability of passing.

Dr. Cooper: I assume someone is going to dedicate time to assimilating the public comment, given the general trend of now us getting twenty or thirty-page manuscripts on certain aspects of each of our stock assessments? There's going to be a lot of other things we're going to have to now sort through in that public comment and to get a 400-page binder from eight different specialists complaining about different things -- It's going to be hard to incorporate all that and do a full review in half a day.

Mr. Carmichael: They will. There will be a staff person dedicated toward assimilating these comments and tabulating them and getting a list of things that are worthy of further consideration and these clumped together in a certain way. It will be all aggregated, essentially, into a package that then goes to the assessment workshop for the follow up and develop the scope of work is what we'll address.

Dr. Barbieri: We may want to consider, like you mentioned, to take care of that something we had discussed at times before and the issue of just having a subset of the SSC, which is now pretty much the way that the updates are handled, that the SSC chairs the update assessment workshop and the whole process and you have, I guess, two or three other SSC members participate.

That would give us the opportunity of having a little bit of rotation, instead of having everybody involved in every single review. This may not be ideal, in terms of perception of having the SSC review and approve the assessments, but it might be the only realistic option to be considered.

Mr. Carmichael: One of the questions that I know has often come up when the SSC reviewed it is what did the reviewers say about this. That's where I think we could still have a number of SSC members who really participate as reviewers and the rest of you here to watch and see what issues are asked and if you don't see an issue you have being raised, then certainly you're here to ask it and it will reduce some of that delay.

My thought is it adds one more meeting a year to the SSC, but we're hoping that's a little more manageable by removing the assessment workshop from being a week-long meeting obligation for SSC members and maybe all of the SSC members can then participate in a webinar, which would actually be ideal, that the entire SSC participates in these -- Weekly is our thought, that every Wednesday there would be a three-hour webinar assessment workshop meeting and who can be there that week is there and certain ones are going to commit to be there every time and hopefully most of you can stay in and keep up and it won't be so much new information and all this helps make the review work a little better.

Dr. Belcher: Any other comments or questions for John?

Mr. Geiger: I'm not on your SSC, obviously. John, I think this was really a very creative approach to solving a very real problem we have with our SEDARs. The only question I have is was there any discussions about testing the webinar process before we cast off the last line to determine if there are any warts or blemishes that might surface and be stumbling blocks in this process?

It would be terrible to discard what we have already established and come up with a new schedule and then find out we've got problems in this webinar business that may not be as feasible as we thought they were when we looked at them on paper.

Mr. Carmichael: We've used the webinar some. We used a similar approach in dealing with some of the king mackerel assessments and one of the criticisms was not so much of sort of the logistics in the process of the webinar, but it was people felt I got some information at the last minute and I wasn't able to keep up.

We're thinking that in this approach the work is going to be regularly ongoing and so you're going to talk about whatever has happened, but you've gotten a chance to talk every week by having a number of them pre-scheduled and spaced out. We'll reduce that and that was the primary concern that people raised with king mackerel. It was like, well, it was difficult in that format because I didn't have time to review the document. I think that's going to become a critical part of it, as we know, when people have to deal with this.

Our intention is to test it with larger audiences. King mackerel was a group of twenty-five or thirty people who were logged on. We're looking into signing up with one of the providers and testing this out and we may call on a lot of you to try and get a really big group of people some day to see how it works. We definitely intend to test it before we get going. That's why this will be happening beginning with probably March of 2010 and so almost a year from now, rather than trying to start with the next assessment that's underway.

Ms. Lange: John, is it the intention that all of these will be going on simultaneously? Like in 2010 you'll have all four species with a data workshop and then you'll move on to all four species having an assessment workshop and then the review workshop?

Mr. Carmichael: The idea is that yes, the species are done essentially simultaneously. It will be a little easier to describe from the benchmark process, because that's the one that's always been a bit more specified and the update has been more flexible. Let's take 2011 with the South Atlantic.

In March of 2011, there would be a data workshop and you would go through the data for speckled hind, warsaw grouper, and probably yellowtail snapper. You do that in March and then on June 1, all of the data would have to be in, the final data, for the previous year. You would have data through 2010 that you're starting on to do the assessment model in 2011 and then you'll have the assessment workshop process extending through mid-June to July and say on Wednesday mornings, we'll have a webinar.

We may start off the first Wednesday morning with this is the data, this is what we have, these are the models we talked about doing and everybody can get with that and we'll go back the next week and start working on them.

Then you'll get regular email distributions amongst all the participants and the next Wednesday comes along and you start off another webinar and it might be the person doing a production model of speckled hind and say all right, I've gotten the first production models done and here

they are and they're up on your screen and you can watch it and talk about it. Then you'll move into warsaw grouper and during the course of that call, you'll cover all the progress over that week and you'll make recommendations for what to do next week and go on like that. The species will be together.

There won't be say a data workshop for speckled hind and a data workshop for warsaw grouper. Where it's hairy in the first couple of years is dealing with like the updates. Our thought is that say in 2010 we continue to do the data scoping, as we've done for updates, and then let different teams work on each of these updates through webinars again.

Then the discussion is to then consider maybe having a workshop devoted to have at least one face-to-face. We would like to have one face-to-face workshop in every process and so maybe once the baseline models are done and the group that's working on each of these updates thinks they have their final product done, we could come in and hold a pre-review meeting, in that sense, of the SSC members. It gets some other eyes on it to go through all of those species and make sure that everyone agrees with the final results and what's being recommended before then it goes forward to the SSC for the final peer review.

The idea is that yes, they would all be together. We wouldn't try to run four different completely separate update procedures through the year, because of the cost and the time of trying to get everybody in there to do that.

Ms. Lange: Is the data workshop still going to be a week? Is there going to be enough time to compile all the data for that many species in one week?

Mr. Carmichael: The data workshop will be a week and the idea is that the data workshop is no longer expected to come up with a complete and final dataset at the end. The data workshop is going to focus on the issues that need to be addressed and how the data should be tabulated and work on what you have available at that time, but knowing that you're then going to have a number of weeks to implement your recommendations and see how they pan out.

Ms. Lange: My other question is in the past, we've had an SSC member that's been assigned to a particular SEDAR and so now, because we have so many more species, are we going to still have that, only maybe three or four SSC members responsible for writing the discussion reports?

Mr. Carmichael: Actually, because of this webinar approach and everything, so all the SSC members could participate in the assessment workshop, and that's where the assignments really came in, and then the analytical team will be responsible for handling the documentation. That's another change, is to improve the documentation and get it in the people who are working on this every day.

As we've seen far too often, one of the biggest problems is that we get issues brought before us about things that weren't discussed or perhaps weren't written up in the report as well as they should have been and that tends to be a bigger vulnerability than decisions that were made and are criticized for their lack of justification or what have you. It tends to be the things that are dropped out.

The idea is that no, you wouldn't have to have an SSC member assigned to every individual species through that, necessarily. That wouldn't preclude -- We always have this idea of an analytical team within the assessment workshop panel that kind of leads the analysis for each individual species. An SSC member could certainly participate on that and is always encouraged to say yes, I've got the time and the knowledge to be more involved in speckled hind and count me in on the analytical team along with the lead analyst from the Science Center and the data person and others of that nature.

Ms. Lange: An SSC member is not going to be required to document the discussion and decisions that are made and write that up as a report like had been done in the past?

Mr. Carmichael: Not to the extent of the past.

Ms. Lange: I kind of like that a little bit more. It gives the SSC member more of an opportunity to participate in the process, rather than worry about taking notes.

Dr. Belcher: Any other further comment or questions for John? Anything else from you?

Mr. Carmichael: No, but I would just say I appreciate you all digging into this. It is a pretty big change in some ways. In other ways, it kind of builds on a lot of what we've been doing and a lot of what we've been learning about SEDAR and I look forward to you all's patience as we work through this and get the bugs worked out of the system, which is always inevitable with anything new. I think we can, in the end, up with a better product and better documentation of what we're getting.

Ms. Lange: Just another question. Have you gotten any feedback from the public on this, just that everything is moving towards a web-based, webinar type situation and maybe there's people who are older and are technophobes and don't use computers.

Mr. Carmichael: We discussed that quite a bit at the Steering Committee, that potential perception. Our thought really in going forward with this is that in a way the idea of doing the webinars is to make it more accessible and not to make it less accessible, because what we've run into issues with is people who are like, I would really like to participate, but I can't take a week off. We always run into that with the fishermen.

We get fishermen who agree to participate and it takes a lot of effort to even get say four or five fishermen often who agree to come and participate in a data and assessment workshop and we would ideally like them at both, because then they learn and they're familiar with what's going on and so they're not walking in cold. They're much more able to participate in the process when they've seen say the data and assessment and the review. Then they really know the background that's necessary, but what we've seen is they try to participate and they might be interested nine months ago when we were planning and then something comes up that they can't make it.

With this webinar thing and an extended assessment workshop, if they're at sea for a given week, they don't miss out on the whole process. They miss one day's workshop, but transcripts will be

available and my understanding is that, depending upon the webinar process, they could actually download essentially a video of what was up on the screen and what was said and watch the screen and the recording and all at the same time when they're able to do it and then keep up.

There's also individuals who maybe are interested in participating, but they weren't appointed by the council, because there's a limited number of people that can be appointed. It would be no cost to them now to come in and participate, so more people could watch it.

We actually think though it might be perceived as saying you're taking away this workshop, the workshop, in a lot of ways, is kind an impediment to getting the kind of participation we need, because it costs time and money. We're hoping that that perception won't overwhelm the reality of this being more accessible.

Dr. Belcher: Any further comments or questions? Okay. John, you can do the SSC Selection Report now.

Mr. Carmichael: The SSC Selection Committee met in March and I know some of the information that came out of there trickled back during the SSC meeting in March, but we just want to take a moment and go over some of the issues, the key issues, that were raised. I guess we discussed conduct of business at the SSC and the request was made that the SSC move more towards census building and less reliance on voting, motions and voting, but especially voting.

We recognize that at one time the SSC didn't do motions or voting of any way and it was often difficult to look back and see what the SSC actually recommended, but what the council desires is to get from you more of the full flavor of what it is you discussed and the council is recognizing that if you should come down to a tight vote on something, say seven to six, they're really interested in what the six believed as well as what the seven believed, even though the seven were the majority.

By moving to a consensus position, the idea is to focus and achieve consensus like a lot of scientific bodies like you operate and when they're reporting to groups like the council is to make sure that you agree with how the entire issue is presented. Maybe you make a number of statements, bulleted issues perhaps, that then you say yes, we consent that this represents the full range of opinions and we believe that this represents the best scientific advice.

The council just is a little dissatisfied with things that come down to a motion and it's like we discussed this and here's the motion we passed and they're going, well how many supported it and how many didn't and was there another opinion or was this unanimous? We really want you at this meeting to try and move toward this idea of consensus and giving statements that reflect the full range of opinion of the SSC, toward the idea of giving the council the best scientific advice it can have. Probably these issues we'll take questions one at a time. If there's any questions, raise your hand up. If not, I'll move on to the next one.

We discussed the meeting times, near and dear to everybody's heart. The idea is that the council has tried having the SSC meet in conjunction with the council every time and as you know, there was a while when the SSC met once outside of council meetings and once with council meetings

and the council is kind of determining that it's not necessarily practicable to meet this way, because often you're forced to start very early in the week and the council has agenda items that have to wait until late in the week, so that your report can get to the committee with it all happening kind of simultaneously.

We would be better served by giving you time to come up with reasonable advice and to develop your report, which is the other big issue. You hustle a lot of times to get just some talking points down so your chair can run over to a committee and give a report, because they're acting on something right then.

Your written report that comes out after a committee has already met is not as effective as if the committee had it to read and review. We would like to get to the SSC meeting between council meetings, to give you time to act on the issues and develop a good report and to reflect all of the sides of an opinion, as it were.

Dr. Williams: I don't know if we can discuss the meeting time issue again within our committee, but my concern is that having our schedule be off from the council's schedule may be a convenience for us, but it's probably an inconvenience for anybody who wants to participate in the system of fisheries management. In other words, it's a lot easier for people to come to one meeting where they could sit in on an SSC meeting and the council meeting at the same time.

My other concern is that this is now counter to what the standard operating procedures in the Federal Register says, which recommends that you hold SSC meetings in conjunction with council meetings.

Mr. Carmichael: The council is aware of that and they are discussing this more, because they will have to make the appropriate SOPPs changes. That aspect of it will be discussed more. Those comments should be part of your advice in considering this. The Selection Committee also discussed length of appointments. As you know, the SSC members here, you've never had official terms.

Some members expressed to me along the way that it sort of created this situation where members feel like the council seems to want to look at appointments and consider appointments and who is on the SSC when maybe we do something they don't necessarily like and I can understand that when there's no set terms and as an SSC member you kind of go, well what compelled the council this year to want to look at membership and go seeking new members?

What we suggested was that there should just be a regular appointment period and it's a service to the council, who gets to reconsider their membership and whether or not the committee membership is meeting their needs as well as the members, who know that I served a term and do I want to go on for another set term?

The idea was that we would set the terms at three years and a third of the membership would be eligible each year, so that there would never be a complete turnover of 100 percent and so we've staggered them in by taking those who have served the longest and making them the first third. About five or six of you were asked to resubmit your membership materials and at this meeting

here this week, the SSC Selection Committee will be reviewing those and deciding who are the new appointees and who is already on the committee would they like to reappoint.

Expect that you'll serve a three-year term and the next block of you will about this time next year be hearing from me, three months from now next year, to submit your résumé and the cover letter saying that yes, you still want to serve on the SSC and we'll submit it to the council and they'll decide who to reappoint and who new to bring in and things of that nature.

They also supported creating a socioeconomic sub-panel and with the changes in the SOPPs and different wording of "panel" versus "committee" and all of that, the SOPPs Committee is going to have to work out just what we call it, but the idea is that it will be an advisory body on socioeconomic information that will report to the SSC.

Members who serve on that may be SSC members, but they aren't obligated. An SSC member can serve on that and serve on the SSC and so it's kind of an open situation and it's to focus on the socioeconomic needs and to be able to create a bigger workforce and get more of a critical mass of people devoted to the socioeconomic situation.

We have a good group of people who agreed and who are interested in serving on this and so hopefully we'll have -- By the end of the week, once the SSC Selection Committee meets, we'll let you know who has been appointed to that, but all those who are interested, I appreciate that and I think it's going to work out to be pretty good. We've got some things in mind for some tasks for this committee to do right off the bat, so that everybody can come together soon and it doesn't just wither away on the vine by sitting around and not acting.

The SSC discussed taking a role in reviewing applicants for SSC seats and the Selection Committee decided not to make any changes to the policy at this time. That's that, I guess, unless there are any comments on there.

The other final item is public input at the SSC and the question has been raised with the new Magnuson and things that are going on, will there be a need for more formal public comment at SSC meetings. Right now, the SOPPs are that the chair may call on members of the public who are here during the discussions at the time that seems most appropriate to try and get the public comment in.

Right now, the policy is to continue to give the chair that discretion, but I think there's going to be increasing interest in trying to make sure that the policies are formal and stated and in writing in part of the SOPPs. I think this is another issue in which we may see some changes as the SOPPs get developed in response to changes in the Magnuson Act and how the SSCs are going to function. With that, we advertised for applicants and the committee agreed that they'll review members who want to be on the SSC at this meeting here and so we'll know about that this week.

Dr. Cooper: Regarding the public input part, the one thing I wanted to make sure that is communicated to those who wish to give public input is hopefully they will be fairly restricted as to talking to the point of whatever we're trying to discuss and that this is a Science and Statistical

Committee, so we don't end up having lots of talk about things that we really have no control over, and also to that point somehow communicating -- This is slightly tangent regarding public input to the SSC and I don't know about anybody else, but I'm getting about weekly emails from various fishermen about various topics directly to me.

I personally hit "delete" and I don't even bother reading them. I don't know if we want the council to make a formal statement as to the appropriateness of contacting individual SSC members regarding topics that the SSC is deciding about and what our role is when we're not at meetings to be addressing these individual emails.

I know I certainly don't -- There's a reason why I don't post to a lot of the fish folk list serves either. There's a time and place for certain things and if we're going to start allowing more and more public comment, also channel it to appropriate venues, so they're not expecting answers and getting upset when the SSC isn't answering them and at the same time, not wasting our time.

Mr. Carmichael: I think that is one of the things the council is aware of it and is a fine line between allowing people the opportunity to comment and making sure they do stay on the topics and the issues that are germane to you that you're discussing and are things that are within your realm of influence, because there are issues that come up that are legitimate issues that you're just simply not the appropriate place for those to be aired and I think you're aware of that and this is going to be why it's probably going to take some careful consideration in trying to manage the public comment process to make sure that what you get is appropriate.

I think your concerns about what comes to you in between meetings and as an individual are certainly valid and I wonder how others perhaps feel about that. It might be something you want to make a statement to the Selection Committee when they talk about this, so we can vet it through them and consider in the SOPPs and the SOPPs Committee.

Ms. Lange: I agree with Andy that I think it's inappropriate for the SSC members to get requests or whatever the summaries are in the email directly. They should come through the council or through council staff, it's appropriate. Otherwise, you get someone who is a little more bold than others trying to influence the deliberations of this group.

Whether or not that happens, it could still be perceived that so and so sent in an email and everybody is voting the way that that email -- The decisions of the SSC are the same as what that email said and it might be perceived as undue influence in the decision process.

Dr. Cooper: Also, the point of public opinion isn't just for us to hear things, but for the public to feel like they are being heard and when people come here and talk off point, they can probably see it in our faces that we're not listening and it probably does more harm than good. They probably walk out of here more frustrated than when they walked in and so keeping the public from getting all ticked off because the SSC isn't listening to them and educating them as to here's why we're not listening to those arguments, because it's not in our purview.

It's not just not wasting our time, but making sure when they give public comment that they walk away having felt like they've contributed and weren't ticked off because we were twiddling our

thumbs or not paying attention.

Mr. Carmichael: Some of the other councils have very detailed public comment guidelines. I'm thinking of some of the ones out on the Pacific, I mean four or five pages about this is how you can submit comment and this is what the SSC can comment on and this is what you should do and encouraging more written comment and if you wish to come to speak, you'll be limited to this amount of time and directly to an agenda item and things of that nature. We haven't been that specific at the South Atlantic, but we may have to consider it, I suppose, especially with regard to the SSC and respecting you all.

Dr. Crosson: I actually responded to a few of those emails and not in any kind of policy way, but just redirecting their efforts towards either the South Atlantic Council staff or towards the NMFS office in St. Petersburg, but I do think that there has to be, especially because of the new requirements in Magnuson and the setting of the ABC levels and the other requirements for the SSC, there has to be some method for public input, to allow people to have their voices heard. I know the red snapper is the thing that's ticked everybody off right now, but I'm sure other issues will come down the pike.

Dr. Belcher: Here's a question that I have. As we've started -- I say we, but, i.e., me and Luiz, have started getting involved in the agenda process, are we -- Is there going to be something written in that we will actually have the ability to veto or is it something that you all be up line basically saying this is what we feel you need to listen to or how it needs to be brought forward?

I guess the only example I can give is like with Hester. We didn't know about that, but it's been presented to us for Tuesday. It came in after the fact. Is it something that we'll have the ability to put some sort of parameter or box around what we're willing to take with the public comment? We kind of did that with the December meeting as well and most of us, I think, kind of felt it was an informational exchange at best, but there was nothing that we received that we could have acted on or changed anything that we had already done relative to that presentation.

Mr. Carmichael: There may be. It will depend on the nature of the item. The opinion is that all science that's going to come before the council should be peer reviewed through the SSC and so when an issue comes in such as the Hester report and it's received at the staff level, it's forwarded up to the council leadership and is said this was received and here's the SSC's next meeting and is this something that you believe is worthy of going to the SSC and does it deserve further scrutiny at that level?

In this case, they said yes, this was a scientifically-oriented report and it raises concerns. If the answers aren't already available in existing information that can address every question raised, then that makes more of a reason for it maybe to come to the SSC and allow you to comment on it. Right now, it's the discretion of the council, the chairs, the committee chairs, and the council management, to say yes, this needs to go to the SSC and the committee is perhaps interested in hearing more and having the questions answered and so we try to bring it to the SSC.

Now, if it came in -- That just happened to come in at -- It was very close to the last minute. Time was able to be added to the agenda and get it in the final Federal Register notice and get the

information to you to get it on there. Now, if it had come in much later, then that wouldn't have been an opportunity and it would have gone through to the next meeting.

I think a good example of that was the report that came out of the Gulf last summer about natural mortality and the gag groupers and the other groupers, which came in the day before the meeting and we said the SSC may want to look at that and there's simply not time at this meeting and that rolled over to your December meeting and you got the report and a chance to comment on it.

I think on some level you do have an opportunity to say this is not something that we want to look at, but when it's a report that's come to the council and is generating interest and the council needs it settled and there's certainly things that are going to come to you that you're just going to have to accept or reject or deal with in whatever way you see fit.

Dr. Belcher: I guess my question more comes down to will there be an -- How do I want to say that? Is there an intent as we review Hester's report on Friday -- Is there something that is expected of us relative to that information? If there was for some reason a question that came into place and we've already approved the stock assessment and we're on that teetering edge of what's going on with the emergency interim rule and Amendment 17 and by hearing that report, is it really calling anything into question and that all those wheels are going to stop, halt, because there happens to be something in there that we feel needs to be addressed at this point in time? Does that change -- In that sense, is there something that we're expected to do? Getting that information, are we going to be altering something or is there an expectation of something coming out of that?

Mr. Carmichael: There's an expectation that you'll review the report and you'll have to decide if the issues deserve further assessment work, analyses, additional sensitivities, or would it change your opinion of the assessment? That report kind of makes the case to change the opinion of the assessment and so it's your opportunity to decide, does your opinion change or do you think further sensitivities are warranted or do you think the issues lead you to say yes, that's good and I would like that examined? That's what is coming to you to say.

Dr. Barbieri: In that case, I agree, John. I would feel a little uncomfortable with a scientific review of some kind of scientific opinion on an assessment that was reviewed and approved by this committee to go straight to the council without us having the opportunity to review this additional review and provide comments as well and perhaps play that role of advising the council and serving as that scientific advisory board to the council and presenting them our opinion on the validity of those statements. To me, it's something that we've got to do. I feel more comfortable doing this than knowing that that went straight to the council without us being consulted.

Dr. Belcher: I'm not saying it from that standpoint. It's just I think some if it is it's -- We do a lot more reactive approaches to this. We do our review and we do our review in a -- I hate using the term "a vacuum" because it sounds so negative, but we were edicted to look at these things as stand-alone documents and don't compare and contrast to previous assessments or concurrent assessments or other regions. Read it and assess it based on the science that's at hand.

We make those statements and we make those discussions and we get questions that come up after the fact that most of us can go back to the document and answer that question, but as we've stated two or three different times now with the red snapper, we've addressed some of these issues. These issues have been addressed on multiple platforms by multiple people and with some of that's coming through -- I hate to keep picking on this Hester example, but it just happens to be the one that's in front of us.

There was lengthy discussion about those three recreational years, but we're going to review that again and are we giving them any additional information they haven't already heard at that point? I guess my thing is I would rather see these things either as we're in the process of reviewing the document, getting ready to review the document, so that as we're going through and getting ready to make those determinations then we can turn around and say yes, we're still pushing this forward as the best available science and we've addressed those concerns. Us doing the endorsement and then being asked to review the questions that are questioning that validity after the fact kind of makes it harder for us, I think.

Mr. Carmichael: Part of this is the reason for doing that peer review in the SEDAR process, to try and get these reports out to a broader audience. That's another reason why we want the assessment workshop draft to say stock status, because we all know the reality. We did two assessments when we did red snapper. We did greater amberjack and we did red snapper. The methods were very similar.

Greater amberjack was not overfished and not overfishing. You don't get the scrutiny for stocks that are not overfished and not overfishing. Red snapper is overfished and overfishing and it has not come to a lot of people's attention until much longer after you guys have already dispensed with it. It's getting a lot of scrutiny and when you get a lot of scrutiny and a lot of eyes on something, things are going to come up that maybe aren't clearly documented.

It may very well be that in a lot of instances you'll get a report and you'll go through it and you'll say this report raises five main issues and four of them are clearly documented in the report and this is what it says and we stick by the conclusions of this issue. If there is some uncertainty in what was meant, you may be able to clarify what you discussed or what maybe was in your SSC reports, to provide that back to the council, or it may be an issue that you say, you know what, this actually was not addressed and it's a legitimate question and we would like to see a sensitivity of it.

It may be as simple as that and you can recommend it. There's no guarantee that it's actually going to be done, but the council will know that it has that and you may say that based on looking at other similar sensitivities and this and that and the other and three or four other things, we don't believe the conclusion will change, but this is a legitimate question that deserves sensitivity.

Dr. Belcher: Maybe then with what you're proposing under the new change in SEDAR that addresses the concern that I have, because to me, it just seems like we do a lot of this on the backend, when we should be doing it on the frontend.

Mr. Carmichael: We would definitely like more on the frontend, to the extent we can make it happen. I think the reality is there's always going to be some of this on the backend in a fisheries assessment, because it's always going to get that attention and somebody is going to say, wait a minute, what about -- There's always another assessment which happened two years later which came up with another way, which is one of the reasons we allow our updates to kind of take the technological advances and implement them, because we know that will happen as well.

Dr. Cooper: I thought we were pretty unequivocal when the Kenchington report came through that we simply said hey, the stock assessment has been reviewed and the book is closed and bring it up at the next assessment. Now here we are with the Hester report and it's no different. I don't know why our answer would be any different. I don't know why the point didn't come across that it's been reviewed and we're not going to keep -- I sure as heck hope that any time someone comes up with a report that we're going to have to review it, because, again, we will get swamped.

So far we've got, the last two meetings -- Two out of the last three we've had requests. One was denied and one appears to have been accepted, where someone wrote the report and we're going to have to sit and listen through it. I thought we were pretty clear that a peer-reviewed assessment has been peer reviewed. If there was a mistake, that's why we have this multilayer process. Mistakes will happen and that's why everyone is welcome to attend all those meetings and submit whatever documents there.

The other question it raises is are we the translation mechanism for the council or are we the peer review process for the council? I read Hester and everything could be answered by going through the stock assessment report. There's not a single thing he raises that isn't directly addressed in the stock assessment report.

Why we need to peer review it versus why someone didn't simply go through and say, okay, here's the question and here's the answer from the report. I actually went through and pulled quotes while talking with people about this and so is it our job with anyone, whether it be industry or the environmental groups that produce a report on anything, that we have to peer review the validity of it versus just here's a report and take it on what it is and then our job is if the managers want to act on that, then we determine whether it's best available science.

It's almost defining what's the role of the SSC. Is our job now to take everything anyone sends the council and review it for its validity, i.e., every single email we've gotten here on red snapper to our individual inboxes? The council could have said answer this, answer this, answer this, answer this and are those comments valid? Is that our job? As we increase this public comment, those are the type of things we're going to be getting and clearly defining are we supposed to be explaining things, peer reviewing them, redefining them or are we reviewing the science upon which actions are based? I don't know.

Mr. Carmichael: Part of that I would say -- You weren't asked to review every email and so there is a line. It's not every piece of information that comes in and as I said, the current policy is that that line is determined by the council chair, committee chair and the Executive Director of

the council. Any kind of thing that comes in like that, it comes in and then they have the authority to say, John, send this to the SSC and we would like this and that's exactly what happened in the case of this report.

I think if you would like more clarification or you think in some cases you're being asked to review things that you don't think are worthy than we need to consider how can we bring the SSC leadership in there without seeming like the SSC is potentially closing a door and not being open to criticism that might arise after the fact. While maintaining an open and transparent process, how do we filter that workload out to those things that need the further scrutiny?

It may very well be that you decide to look at this and say everything that's in here has been addressed and maybe one of the solutions to this is to have -- Let you see a report and then decide if you as the SSC would like a further presentation and do you think there's something in there and maybe that's part of the problem, is going immediately to let the individual come and present it before you get a chance to review the document and decide if you would like that further information.

Dr. Cooper: I'm just thinking so far we've talked a couple of different ways on how SSC workload is increasing and this public comment is a potential floodgate for a whole lot of work coming our way and someone is going to have to decide our priorities.

Dr. Barbieri: Andy, I completely understand your concerns and I share them. At the same time, I think we're going to have to trust, and I guess that's the balancing act there, how much the council and council staff are going to be willing to accept certain kinds of public input or questions.

We need some kind of a filter there, which in this case, by the way, in the case of the Hester report, I think that this was fine. We do have the option to not read it and not comment as individual members if we are busy. We do, from time to time, have differences in workload and sometimes in a case you may not be able to review it and I just don't and I trust that somebody else on the committee will and the comments will be made to that effect.

The reality is the council will have to be responsive, to some extent, and it's not a black and white the way that they have to address these issues. They are going to have to be responsive to some of this public input and questions on issues and I still feel more comfortable if we are included in this process than being completely bypassed. When they go straight -- It ends up bothering more when they go straight to the council and we are not even allowed the opportunity to provide some input on the validity of those issues.

Dr. Belcher: To the same point that Andy brought up earlier, it's understanding the pain on both sides of this. We want to do what we can to make sure that we do look at the science of everything and if someone does have something that comes up contrary, we should be able to afford that to them, but for me, where it's frustrating is so far where we've had these it's been information that's been useful, but it's been after the fact and we can't do anything with it.

Here's an individual who has taken the time to prepare this presentation and bring it before us as

a group and we're like yes, thank you very much and next person in line. For me, it's kind of like are we being more efficient or less efficient doing it that way, where, again, if what's happening with SEDAR right now does allow for us to be more proactive and less reactive in that situation, then, again, this little complaint is pretty much moot.

For the way it's been right now, it is one of those frustrating things and it's difficult to have a fisherman come who has put a lot of time and effort in looking at his log data to show it to you and we can't do anything about it. Instead of us looking like we're supportive, we look indifferent, which can be very frustrating for them and it's frustrating for us, because, again, how do you reconcile between the two?

Dr. Williams: I think I've brought this up in one fashion or another either just to the chair and the vice chair or to this committee at pretty much every meeting and that is why we do not have some control over our agenda is beyond me. Every committee that meets, the chair sets the agenda, yet in this case the council sets our agenda.

Now, I agree that we serve at the behest of the council and we're serving the council, but we should have a voice on the setting of that agenda and I highly recommend that people consider putting either the chair or vice chair or both on that committee that sets the SSC's agenda. That would be one good layer of filtering that might prevent some of this stuff.

Dr. Belcher: We did do that this go-round. We had some concerns come up and Luiz and I both put comments to paper and sent it up the line. That is happening. It's just that sometimes things, I know, come up at the last minute as well and we don't always get that ability to see the reconciled draft agenda before it becomes the final agenda, a lot of it. Again, this is the first time through, but Luiz and I did both put comments to a few items that had been on there that are not on there. Any other further comments or questions relative to the SSC?

Dr. Buckel: I think when John was outlining the changes to the data workshops and the assessment workshops that that -- This type of information, if the fishermen are able to take part in it, if it's easier for fishermen to take part, because it's webinar or others to take part and bring these data in at the beginning, that will solve, hopefully, some of these issues. I just wanted to make that point.

Dr. Belcher: Any other further commentary? Moving on to the next item on the agenda, which is FMP and Amendment Updates. This is from council staff and I'm not sure who is really starting. I'll defer to Gregg for now and we'll go forward from there.

Mr. Waugh: What we were going to do is I'll give an overview of where we are with these amendments and just bring you up to date on a couple of others that you all finished with before and then briefly talk about where we are with -- I'll come back to Amendment 16 and 18 and Kate is here if you want some more details on 18. We'll just give you an update and I can send this presentation -- I didn't realize it was going to be so small up on the screen, but I can send this and the other table around to you like we did our presentations this morning.

If we start, Spiny Lobster Amendment 4 and 8, which prohibited imports, that was submitted to

NMFS on October 1, 2008 and got through the process fairly quickly, regulations effective on February 11, 2009. That was very precedent setting, in that the council prohibited imports that don't meet the legal size into the continental U.S. and into the Caribbean. Previously, we had been told that we could not regulate imports and so that's a significant action and that moved quickly through the process.

Snapper Grouper Amendment 14, MPAs, some of you may remember that. We finished that in 2007 and submitted it to NMFS on July 18, 2007. Regulations became effective February 24, 2009. We've got the start of our MPAs in place.

Amendment 15B, which deals with a prohibition on the sale of recreationally-caught fish as well as the sale of fish caught by non-permitted fishermen, you remember that we had some relatively large proportions of the catch in some species, particularly in North Carolina, are landed by non-federally permitted dealers. It was all legal under the bag limit, but still significant landings.

That amendment also deals with some data collection reporting requirements, some permit issues, snowy grouper and red porgy allocations and status determination criteria. That has started to move through the process now. The Notice of Availability was published on June 4, 2009. Hopefully that's going to be implemented some time soon.

Unfortunately, it does carry over into Amendment 16, which deals with gag and vermilion. That was sent to NMFS on October 21, 2008. It was approved. All of it was approved except the venting portion on March 25 of 2009. We're still waiting for a final rule and then there will be a thirty-day cooling off period and we're concerned here that perhaps some of the quotas may be either met or closed upon implementation. That will pick up the quotas for gag and vermilion starting back in January of this year and, again, some of those recreationally-sold fish are going to count towards those quotas and so that's giving the fishermen some concern.

Shrimp Amendment 7 was submitted in November of 2008. The Notice of Availability was published on June 1 and so that's starting to move through. Something that you've dealt with more was the Fishery Ecosystem Plan and the Comprehensive Ecosystem-Based Amendment 1. The council conducted two rounds of public hearings on these. The council approved the Fishery Ecosystem Plan at the March 2009 meeting.

We have conducted two rounds of public hearing on the Comprehensive Ecosystem-Based Amendment and this does, among other things, protect the deepwater coral area, approximately 23,000 square miles. NMFS was unable to get the Draft EIS filed in time for us to take action at the March meeting. The DEIS still has not been filed. We're still resolving some issues and we've got some discussions that will take place at this meeting.

In the opinion of a NOAA GC attorney, we have too many waypoints specifying the 23,000 square mile area and you'll remember that was done in order to define the area where the golden crab fishermen and the royal red fishermen were fishing and to protect the maximum amount of area. Hopefully we'll get those issues resolved here this week.

Comprehensive Ecosystem-Based Amendment 2, there's an options paper in here and we're still

just trying to lay out what exactly is going to go into that amendment. Snapper Grouper Amendment 18 is the one that we have some measures that address the species in Snapper Grouper Amendment 17, extending the management unit north and some further monitoring requirements.

We're, again, making the suggestion that those measures be put back into Amendment 17 and that then Amendment 18 will look at catch share issues and various limited entry type approaches to golden tilefish and Kate can give you some more detail once I get finished if you want some more detail on exactly what's in those items. Hopefully we will get guidance from the committee and council to make Amendment 18 a comprehensive LAPP-type amendment looking at golden tilefish, wreckfish, golden crab, and perhaps a limitation on effort in the black sea bass pot fishery.

Mackerel Amendment 18 and we have a joint spiny lobster amendment with the Gulf Council, those aren't shown on the table. Those will be done as joint amendments between the two councils. The Gulf Council is taking the staff lead on 18 and we will be taking the staff lead on the spiny lobster amendment and as was mentioned earlier, the State of Florida is going to do an update to the assessment and those will -- The timeline for those are to meet the 2011 fishing year deadline.

Then the Comprehensive ACL Amendment, we have that on track to meet the 2011 deadline and we're hoping to get some guidance out of you all at this meeting and your next meeting for some of those ABCs and OFLs and then we'll flesh that document out more. We're actually hoping to try and get finished with Amendment 17 and red snapper so that we can start focusing in on the Comprehensive ACL Amendment.

That's an overview. I've got one other item just to raise with you and I don't know if this is the appropriate time to do it on 16, but I'll put that up in a second and decide. Again, Kate can give you more detail on what's in Amendment 18 if you want more detail at this stage.

Dr. Belcher: Anything from anyone as far as what your pleasure is relative to that request? That would be fine, Gregg. Luiz says that sure, that would be fine.

Dr. Barbieri: Does she have a presentation on it?

Mr. Waugh: On more detail on what's in 18? Yes.

Ms. Quigley: Amendment 18 has nine different actions within it and so I'm just going to go through them quickly and I won't go into lots of detail, unless you want me to, but I've got the rationale, the action, and then the alternatives. The first action is northward expansion of several snapper grouper species. There's a concern, and the Snapper Grouper AP brought this to the council's attention, that there are increasing catches of blueline tilefish and snowy grouper occurring off of Virginia, possibly due to increasing water temperatures.

Virginia has gone ahead and implemented regulations for grouper and for tilefish, but there are some species that we don't have regulations for up there. These actions do not include black sea

bass, golden tilefish, and scup, because those are considered separate stocks and they're already covered by the Mid-Atlantic FMP.

Some of the alternatives that are being suggested is to go ahead and extend the management boundaries up and through the Mid-Atlantic Council jurisdiction. Another alternative is let's go all the way up through the New England Council's jurisdiction. This is something that Rick DeVictor has been working on with Mid-Atlantic Council staff.

Another action is there's concern about potential for effort increases in the golden tilefish fishery. Current regulations, there's a 4,000-pound trip limit until 75 percent of the commercial quota is caught and a 300-pound trip limit thereafter and with these amendments, new amendments, coming down, Amendment 16 and 17, there's expected to be an effort shift to the golden tilefish fishery. It's one of the relatively plentiful fisheries and doing fairly well currently, but there's concern by the fishermen that this will deteriorate profits and it will increase the race to fish.

This year, the fishery didn't close, but it reached 75 percent and the trip limit went down in April of this year and that's the shortest amount of time it's been open since implementation of this trip limit and so there's this race to fish and the primary participants are the Florida longline vessels. There's about twenty vessels in all participating in the fishery and down in Florida, there's about four or five vessels and they are going ahead and they're able to fish very early in the year.

Now, the North Carolina and South Carolina guys have to wait until a little bit later in the year, until the weather clears up, and so they don't get to fish until April or May of each year. As a result of this race to fish, we've got the Florida longline guys going fishing and by the time the weather clears up and South Carolina guys can go out, there's no longer any North Carolina longline vessels.

By the time they can go out, the fishery has already reached 75 percent and the 4,000-pound trip limit is no longer allowed and longliners cannot go out with a 300-pound trip limit. It's just too low and it's not profitable and so that's one problem, South Carolina guys are being somewhat shut out of the fishery unless they go down to Florida, which they are considering doing next year.

The second problem is that you've got hook and line guys down in Florida that have traditionally fished this fishery in September of each year and now they can no longer do that. They've got to do it earlier in the year or not at all and so you've got a pretty intense race to fish going on. As a result, there is considerations for an LAP-type program and a Golden Tilefish LAP Workgroup has met. They had one meeting and they came out with some suggestions.

They wanted to look at a LAP, but they also really wanted to look at a gear-specific endorsement. They wanted to have a longline endorsement and they wanted to have a hook and line endorsement and they want to have some sort of quota allocated to longline guys based on historical trends, which is about 91 percent of the commercial quota, and then they wanted to have this hook and line commercial quota of about 9 percent. That's being considered and there's details that go along with that. There's details here with regards to what would the initial

allocation be.

Dr. Crosson: Right now, Kate, you just need a snapper grouper permit to participate in this fishery?

Ms. Quigley: That's right, because it's covered by the Snapper Grouper FMP. Almost anybody can enter that has a snapper grouper permit. However, the people actively fishing, it's twenty people. Like I said, six or seven of those are longline vessels and they're the ones that take the majority of the catch, 91 percent, historically. Of course, there's eligibility requirements and so there was some negotiation that did occur between longline people and hook and line people of what they would like to see.

The third action is potential effort increase in the black sea bass pot fishery. Again, there's this fear that Amendments 13C, 16, and 17 could create an incentive to fish more pots among black sea bass fishermen, but also from outside the fishery that people are going to enter the black sea bass pot fishery. Currently, there's no limit on the number of pots that a vessel can carry and so the fear is deteriorating profits for current participants and the fact that there is no limit on the number of pots and that this could lead to an increase in ghost fishing of those pots.

There's a number of different alternatives. Basically, they limit the number of pots that can be carried per vessel and so per permit and not per permit holder. Alternative 2 suggests 100 and then another alternative is fifty and another alternative is twenty-five per vessel. Another alternative is that in year one it should be 100 and in year two, fifty and in year three, twenty-five and onwards until modified.

Then there's kind of a general alternative, Alternative 6, that says 100 per year in year one and fifty in year two and onwards until modified and it doesn't specify year three. Then there's Alternative 7, that black sea bass pots must be brought back to shore at the conclusion of each trip. Right now, that is not required. Then there's a sub-alternative that would allow fishermen to leave pots in the water for no more than seventy-two hours.

Action 4, there's concern that there's an unfair fishing advantage for snowy grouper in the southern states. There's the situation where you've got a very small commercial quota and recreational quota and the winter weather clears up in Florida and they're able to go fishing and the North Carolina/South Carolina are not able to do so until later on in the year and therefore, that gives the advantage to Florida.

There's also this concern that catch of snowy grouper could increase with effort shift to the deepwater fishery and so as people say we can no longer fish for gag during January through April, they'll start fishing for tilefish. If they do it a little in shallower waters, where golden tilefish exist, but they're shallower, you do hit snowy grouper. A little bit deeper, you don't. You might hit a speckled hind or warsaw, from what the fishermen have told me, but you don't hit snowy grouper until you go a little bit inshore. There's this concern that snowy grouper are going to reach the ACL very quickly and that the Florida fishermen are going to be the ones to do it. Just two different alternatives, separate the snowy grouper commercial quota into regions and separate snowy grouper commercial quota by state.

Again, the same situation with gag or a similar situation. Amendment 17 proposes ACLs and ACTs as well as accountability measures that could shut down the fishery or reduce the length of the season, giving some regions an advantage over other regions. Again, we've got the same type of alternatives, except this one refers to recreational. Gag in this amendment, the alternatives deal with recreational allocation, whereas snowy grouper it's commercial and recreational and so separate gag recreational allocation into regions and separate them by state.

Then there's this other action where the fishermen would like to see a change in the golden tilefish fishing year and so instead of doing an LAP or an endorsement-type program, some of the fishermen say we just need to change the fishing year and so instead of starting in January, when the northern states have rather poor weather, instead let's start later on in the year and then that allows for different people to participate.

What's been proposed is January 1 to September 1 and so instead of January 1, have September 1 and that favors most heavily the hook and line people down in Florida. Another proposal has been August 1, because some hook and line people like to get in a little earlier. Then another proposal, Alternative 4, is May 1, which would be perfect for the South Carolina longline fishermen.

Under each of these, there's the sub-alternative to remove the 300-pound trip limit when 75 percent of the quota is taken and so instead, just leave it open to the 4,000-pound trip limit and that favors the northern longliners.

Alternative 5 is, again, just to close the longline fishery when the 300-pound trip limit for golden tilefish goes into effect and have that as a stand-alone alternative. There are a number of different things being considered. However, there are discussions that really this action, change the golden tilefish fishing year, needs to happen in conjunction with an LAP or with an endorsement-type program. They don't think that this is going to solve the problem entirely. You're still going to have a race to fish. It just starts later on in the year and there's more participants. It could be a problem.

Another action is improvements to fisheries statistics and so the goal of this action is to improve the accuracy, timing, and quantity of fishery statistics collected by the current data collection programs and so it's expected to improve various data elements, landings, discards, effort, biological sampling, fishery independent information, economic and social characterization of the fisheries.

The alternatives are split up into commercial, for-hire, and private recreational. For the commercial fisheries, the alternatives are require federally permitted snapper grouper dealers, if selected, to report electronically; require all permitted snapper grouper dealers to report electronically, make it a mandate; require all vessels with a federal snapper grouper commercial permit to have an electronic logbook tied to the vessel's GPS; require vessels with a federal snapper grouper commercial permit, if selected, to have a NMFS-approved observer onboard while fishing for snapper grouper in the South Atlantic EEZ. That's for the commercial fishery.

Then for the for-hire fishery, the alternatives are require all vessels with a federal for-hire permit

to report electronically, require selected vessels with a federal for-hire permit to report electronically, and require vessels operating with a federal for-hire permit to maintain a logbook for discard characteristics as well as size and reason for discarding, if selected. Then we have one alternative for private recreational and that is to implement a voluntary logbook for discard characteristics for vessels with a state recreational fishing license.

We've got two more actions to go. The wreckfish program, as you heard earlier this morning, is outdated and it does not comply with the reauthorized MSA. A couple of things are missing, a cost recovery program and a program review every five years and a cap on ownership shares. The program review every five years is probably not something that needs an alternative and so I don't think that's been included in the alternatives, but the other two are going to need some discussion by the council.

Another thing the council is considering is if, of course, the ACL for wreckfish is lower than current landings, then the fishermen will likely have to buy coupons and shares to harvest current landings and so the council may consider a change in distribution of shares to support active fishermen.

Alternatives are eliminate the current wreckfish ITQ program and replace it with alternate effort-limiting criteria for participation, eliminate the current ITQ program and do not replace it, and Preferred Alternative 4 is modify the wreckfish ITQ program to keep the wreckfish ITQ program and update it to meet the new requirements of the MSA and this is the preferred alternative. This is the only preferred in Amendment 18 at this point in time. Basically that was done so that we could move forward with analysis and with conversations with the National Marine Fisheries Service.

Then we have the last action with regards to EFH and this is another one of those actions that might be moved to the Comprehensive Ecosystem-Based Amendment 2 and so EFH for snapper grouper in areas covered by the northward jurisdictional expansion. The first action that we had was northward expansion and now, if that occurs, then EFH will have to be identified and just two alternatives, designate EFH and EFH HAPCs for snapper grouper in the northern areas encompassed in Action 1 and the second alternative is track the Mid-Atlantic Council's EFH and EFH HAPC designations. I know that was a whirlwind of information, but you all have got the document and this is straight out of the document and so hopefully that just was a heads up.

Dr. Belcher: Thanks, Kate. Does anybody have any questions for Kate or comments? Thank you. It's a little after three. We'll go ahead and take a ten-minute break at this point.

(Whereupon, a brief recess was taken.)

Dr. Belcher: We're going to go ahead and get started. We are currently up to the council's monitoring plan, which will be presented by John.

Mr. Waugh: Let me just mention one other thing. I sent around that table that I went through and I included another one that we'll talk about when we get into Amendment 17, but I wanted you all to have it, just so you could look at it and it will give some filler for John to get up there.

It's looking at what we see happening with all the quotas that are in place now and the regulations that are coming.

The fishermen are going to have windows when they all target a species and so we see sequential filling of these quotas much faster than is being projected by some of the trip analyses. If you can take a look at that table between now and Tuesday and then we'll talk about it when we get together on Tuesday. If you have any questions before that, let me know, because it may be hard to interpret some of it, but I would be glad to go over it one-on-one with you before then.

Dr. Belcher: Be looking for that in your email. John, are you together yet?

Mr. Carmichael: Together as I'll ever be, Madam Chairman. The next item is the annual monitoring plan and the Reauthorized Magnuson Act directs the councils to prepare an annual monitoring plan, long-term and short-term priorities, and forward it to NMFS, in which case they use it in their planning process to try and decide what type of information they should provide back to the councils.

You received a plan along these lines last June, I suppose. You may have received one even earlier than that. The general timing at the South Atlantic is to ask the SSC to review it in June and the council will receive your comments and we'll modify it and get a copy of it in September and approve it in September and forward it to National Marine Fisheries Service Headquarters and it goes into Science & Technology in October.

You were provided with a draft plan. It's extremely similar to the plan that you were provided last year and it lists the priorities for 2009. The general approach is to identify fisheries structured around gear and practices and to basically request coverage of sampling for lengths and ages by species, total landings and effort information, to help support indices.

Perhaps one of the important things is to identify primary data collection species and secondary data collection species, with primary being those for which we desire statistical catch/age type models and secondary being those for which we might desire things like production models and these species are really the primary candidates to form a universe of species to be regularly assessed through SEDAR. With that, I'll open it up for questions and see if there's comment and get your comments down so that we can edit the report and make changes, as necessary, before we send it off to the council.

Dr. Williams: My only comment is that it doesn't seem to distinguish between fishery independent and fishery dependent data sources and it might be better to highlight that fishery independent is a better source.

Dr. Cooper: Just a minor comment. On the bottom of page 1, bullet 2, the very last thing, I believe you mean to support quantitative stock assessment and not qualitative stock assessment.

Mr. Carmichael: I believe that's correct, quantitative stock assessment. In that case, definitely the intent is quantitative. Thank you very much.

Ms. Jensen: I have a question and I don't know if it's pertinent here, but if we are -- If there's a possibility of essentially shutting down some of these fisheries, like red snapper for instance, how in the heck are we going to monitor these fisheries after it's essentially been closed? Is there any plan for that, for increasing or supplementing MARMAP, which doesn't capture red snapper well?

Mr. Carmichael: There is a plan being proposed and it's one of the items we will discuss, I think, when we get to Amendment 17 on Tuesday. There's a presentation perhaps or at least you have a report on what's being proposed. We'll open it up for discussion and think about what advice you will give to the council in terms of how to monitor these stocks, in light of potential closures of this nature. I would say that would be a little bit separate than this plan. This is sort of the overall priorities. That would be single species directed or multispecies directed in a particular area.

Dr. Buckel: Just to reiterate Erik's point, I think fishery independent monitoring is the answer to Christine's question and Erik mentioned that already and I think that should be at the top of this report, instead of buried. Fishery independent monitoring is in here, but it's under a category for secondary species or something like that. It should be at the very top that that would be the preferred monitoring approach for U.S. South Atlantic reef fish.

Mr. Waugh: John, presumably something is laid out in the Magnuson Act for what happens with this monitoring plan when it's submitted to NMFS. I think last year was the first time we did this and we submitted it. Do we have any feedback as to what has transpired since we sent the first one?

Mr. Carmichael: I've not heard any feedback. I've not received anything since we submitted it last October. I don't know if other council representatives have. I take it nothing has come across your way either and so I'm not exactly sure what becomes of these, but it might be just sort of the first year and getting some legs under them.

My impression is that this will sort of go into the overall data monitoring research planning process and sometimes it gets hard for us to see. I'm optimistic that when our Science Center Director goes to the Headquarters and says you know I really need this information that documentation like this will eventually start to create enough critical mass that they'll say, wow, these guys have brought this up for five years that they need these surveys and now you're telling us it's reaching critical status and we really better start putting some more money into it. Maybe it takes a while.

Dr. Belcher: Any other further comments or questions? Okay. Seeing none, we can move on to the ABC Control Rule. This is basically Attachments 10 through 13 in the briefing book. What I was hoping to do this afternoon was for those folks who were not at the March meeting, which I guess there's only actually a couple -- I hope that everybody has had a chance to review it. If there's questions you had or anything that you would like some clarification on, now would be the time to do it, because the main thing I would like to avoid as we try to work towards finalizing this is not reinventing the wheel.

I don't want to revisit how we've gotten to where we are. Everybody felt pretty comfortable with it when we left in March and I know folks have had a chance to review it. There was some discussions that went around via email that I thought were pretty good and hopefully we can continue on with the dialogue and finish out the draft, so that hopefully we can apply it later this week. With that, I'll look to everybody to determine how best to start the dialogue back up again. Like I said, obviously this is a dialogue that got put to bed a couple of months back and now we're waking it up again, but let's just look for a good start point.

Mr. Carmichael: We're a little farther along than I had expected and certainly farther along than I thought when we started talking about changes in SEDAR and so you just never know how the time is going to play out in these situations. We talked a lot about this and most of the people were here. The thought for this afternoon was to have some kind of general discussion, now that you've had time to sort of vegetate on this.

We've had a number of email exchanges about some issues and what should be addressed. One of the things, more technical things, which we recognized needed more thought was the idea of incorporating the probability/susceptibility components. We discussed in March that there were really two approaches being put forth at the higher level, one coming through the Pew/Lenfest group and one coming through the National Marine Fisheries Service, with one of their key differences, at least based on what we discussed in March and what people knew about those approaches at that time, was in how they treated missing information.

What we have lined up for beginning tomorrow is a presentation by Bob O'Boyle on behalf of Pew on their approach and a presentation by Wes Patrick to talk about the NMFS approach and then for the SSC then to kind of decide how you want to go about scoring that critical component and what approach you want to take.

This afternoon, I thought some time just devoted to everybody catching up and maybe having a general open discussion about some of the issues that were raised over email but weren't quite settled as to how you want to proceed. One of the biggest issues that was discussed, and I guess looking back generated the most discussion in the emails, was the idea of do you incorporate stock status as one of your scoring criteria?

Do you increase the size of a buffer just by virtue of the particular status determination? Does a stock that's overfishing deserve a bigger buffer, all things being equal, than a stock that's not overfishing or does the fact that the buffer accounts for the uncertainty and the fact that it's overfishing and it will be addressed in other ways and you don't necessarily need more inherent buffering? It seemed like there was some division amongst the committee and I think maybe that would be a place to start the discussion, if you would like. Our draft rule includes stock status as one of the tiers that will be considered. Maybe we should go there.

Dr. Belcher: John has put the dimensions of the tiers up on the board so we all can look at the table and so stock status, you can see, is the third column over towards the right there and how we're looking at the buffer percentages.

Dr. Barbieri: If I remember correctly, I guess Christine was the one who first brought it up and

got this whole thing started, but thinking about this now, after she brought it up, I think there's a difference here, perhaps, in how we look at the stock status. One would be more in the line of a risk assessment and what is the cost associated with making the wrong decision for stocks that are a different status, overfished or undergoing overfishing, versus stocks that are healthy.

I'm not sure that we can fold this under scientific uncertainty, which is the basic framework under NS-1 for us to create that buffer between MSY and ABC. I thought about evaluating stock status really based on our ability to determine on whether -- Just create a little difference classification system here with different scores that would help us incorporate our knowledge on the status of the stock or the status of the fishery.

Several assessments, and we had some at the last couple of meetings, we are not able to determine what the status of the stock was, for example, in terms of biomass for data limitations or other issues that had come up during the assessment process and so the status of the stock is unknown and to me, that represents truly scientific uncertainty that would warrant a bigger buffer versus a stock for which we know the biomass and the fishing level.

I saw the stock status playing a role and I agree with Christine's, I guess, first assessment that perhaps the actual status of the stock as a risk assessment may or may not include it into the -- Accept it as inclusive of this scientific uncertainty, but I am proposing using the stock status a little differently, as a way to continue incorporating stock status into our framework.

Dr. Belcher: In what you're saying -- The way I just looked at it, is it really the fact that you have a distinction of the stock status or the fact that you're looking to see, do we have the ability to look at the ratio of current fishing to FMSY and current biomass to biomass at MSY? It's not necessarily that distinction of it's overfished or overfishing, but it's the presence of having estimates for F and estimates for B that both have utility.

Ms. Jensen: And how certain are you in those estimates.

Dr. Belcher: That's what I think we were getting at, where we have the unknown status, where we know one or the other we have that 5 percent weight.

Mr. Jenson: Even when you know one of those point estimates, what if the variability around that point estimate could go one way or the other or some of the inputs that you put into your model maybe caused that ultimate estimate of biomass or fishing mortality to be off.

Dr. Barbieri: That's correct, but when you think about the last couple of examples, the reasons that I remember the review panel came up with recommendations for not accepting stock status determination for some of those species was based on lack of data or their perception that there was an unacceptable level of uncertainty that they said that we can't really accept this as something that we know and we're going to move forward with.

In that case, to be on a relative scale, if we have stocks for which we don't actually know where the biomass level is, to me, that's a big piece of scientific uncertainty and the same thing with the fishing level.

Dr. Cooper: The way I look at it, and I probably just put this very clumsily in that email, but OFL is FMSY times current abundance. ABC is buffered based to uncertainties in that. The way the current tiered system is, there's a constant baseline acceptable probability of overfishing that if we are absolutely certain of everything, which we never will be, but right now the baseline is 50 percent probability.

My idea is that the council -- Even if we know everything, that baseline should be different depending on the status of the stock. If the stock is overfished, you should have a lower probability of overfishing than if a stock is not overfished and so it's where do we start the buffering from that should be shifting based on status.

The uncertainty about which we know those numbers is the scientific uncertainty. My argument would be that under the reauthorization you can't have a constant fixed starting point. The council can try, I guess, and NMFS can accept it or not, but the idea that you would have the same acceptable probability of overfishing, given all levels of uncertainty for an overfished stock and a not overfished stock, just doesn't make sense. It would be hard pressed for NMFS to be able to pass that in court, to have an equal buffer given equal uncertainty for an overfished or not overfished stock.

I think that starting point from which we buffer has to shift based on the status of the stock. Now, my suggestion in the email is we as SSC say, council, here's how we think you should shift that baseline based on status. The council could then say no, but we can put it out there and that way it's at least in the same framework.

We're at least then comparing apples to apples and that way, we're not double counting and one is assessing how risk prone or how risk averse are you willing to be, and that should change based on status of the stock, versus how certain you are about what you know, which is our job. I don't think that's double counting, but that's what I tried to put in the email and I don't know if it makes any more sense when I say it out loud or not.

Dr. Barbieri: Andy, I don't disagree that should be taken into account. I just wonder if you should be taking into account for determining ABC here, because the mandate to us is to take into account the scientific uncertainty. The management uncertainty should generate an additional discount in the way that they set ACL from our ABC recommendation.

I think that the risk assessment basically is saying the council is looking at the risk of a stock that is in good shape actually having removals that exceed the recommendations -- I don't understand what you're saying.

Dr. Cooper: Let's say perfect knowledge and perfect implementation. You want to be more risk prone with a stock that is overfished than not. I'm thinking like the P-star approach. In the P-star approach, the council sets an acceptable probability of overfishing, not including any management uncertainty and any implementation uncertainty, but if that exact amount of catch is landed.

The council says we're willing to accept that if we land exactly that that 40 percent of the time

we will be overfishing. Well, I personally think that the council should have a different number depending on the status of the stock. If it's an overfished stock, you shouldn't be willing to say we would be happy with 40 percent. Under this current approach though, we're always starting from 50 percent. The buffer always starts from 50 percent probability and how do you then increase it.

That starting point is essentially the thing that should be shifting based on the council's perceived acceptance of risk. It has nothing to do with implementation uncertainty. It's given your current level of scientific uncertainty about OFL and your current scientific uncertainty about FMSY and abundance. That's fixed. Let's say we could actually estimate that.

Then the council should have a lower acceptable probability of risk for an overfished stock than otherwise. The current way this is set up, that is not -- You can't even incorporate it, if we take out overfishing status. We'll always start from 50 percent and it needs to be done in a consistent way. That's why I'm saying you make it a tier and the distance of that tier is a council decision, but it's not implementation error. It is really how risk prone are you willing to be or risk averse?

Keep it in this tier and that way, we at least have a common framework with which we're talking and we can start talking about when a stock goes from overfished to not overfished, here's our risk aversion will shift, consistently across stocks over time.

Dr. Williams: To that point, I think it is included in the ABC control rule and so it is accounted for as we have it in there now and I think you can make the argument that there is implementation error that does occur when a stock is overfished or overfishing and that is that the dynamics of that stock become more uncertain. We have case evidence for that.

The recovery of species, or lack of recovery for many species, suggests that our modeling did not accurately predict the recovery of those species and so there is an uncertainty or process error that occurs when stocks get to these depleted conditions. I think that's the reason you could actually just leave this in here as it is, I think.

Ms. Lange: I guess the question, Andy, to your comment was -- What you're suggesting is that there be a separate recommendation, I think, that it's not part of the buffer that we apply based on scientific uncertainty. It's an additional recommendation to the council that because of the status of the stock they should move that 50 percent to something more conservative, to reduce their risk. Is that --

Dr. Cooper: That was my point until Erik just made his point, which I agree with, in that there is the additional level of uncertainty that is a scientific uncertainty. Yes, the way you put it is as I was phrasing it before Erik just brought up a very good point. Either way, my main point is that stock status needs to be in these tiers somehow. What the buffers are and who controls them I guess is debatable, but I would not agree of taking stock status out completely and then moving forward with this unchanged.

Mr. Carmichael: Does everyone around the table agree that stock status needs to be incorporated in here somehow?

Dr. Barbieri: I agree, but I still don't understand Erik's point about why there will be additional process error associated with an overfished stock.

Dr. Williams: That's a good question. I think we're just now starting to realize that our predictions of stock dynamics on the way down, as a population is fished down, is not the same as it starts to recover. We don't have adequate recovery models necessary at this point in time would be my sort of overall view of the state of fisheries stock assessment science. We have too many cases now where stocks have gotten so low and they have essentially not recovered that it suggests there's an error in our modeling. There's something wrong. We're not predicting that these things are not recovering at the rate that they should be.

Mr. Chester: This kind of comes to some of the information that Andy provided in his email and it seems we're going to this absolutely almost quantitative assessment of uncertainty on one hand, but there is the risk aspect of things and two of these tiers seem to be more focused on uncertainty and two of them seem to be focused more on risk or consequence when we're looking at stock status, but I think this also applies to PSA, where we're looking at productivity and susceptibility.

In fact, it looks to me like when we have a stock that is overfished or undergoing overfishing that's pretty graphic evidence that the PSA numbers one would expect to be pretty gloomy as well.

The council has given us this job to develop an ABC rule. I'm not sure that -- We as scientists are looking at the uncertainty aspect of things, but the councils have the responsibility to look at the risk as well and so we are trying to put together -- I think by trying to put together an ABC rule that only used uncertainty that we're leaving out a part that the council needs for their flexibility and for them to do their job as well. For that reason, as well as what Erik just said, I'm pretty strongly in favor of maintaining stock status in some form in these tiers.

Dr. Belcher: Further comments and discussion?

Ms. Jensen: I can support that. I just don't know about -- I can see it from that perspective and as we get towards species experiencing overfishing or being overfished and if there is indeed increased uncertainty, then that leads to leaving this in there, but if we're talking about if a species is doing fine and okay that we can be more risk prone with that species, to try and land a little more, that's where I kind of get a little -- I'm not certain about that.

Mr. Carmichael: That's where the categories come in. If it's not overfished and not overfishing, then no additional buffer is needed and then you decide how you work out how much the buffer is and what's the magnitude and what are the criteria that trigger different magnitudes of buffers.

Mr. Jensen: I will say though that I'm still uncertain as far as the point estimates go, how certain are we in those point estimates and where exactly is that accounted for in here?

Dr. Barbieri: What point estimates, Christine?

Ms. Jensen: F, FMSY, B, and BMSY. I know we account for the characterization of uncertainty, but where -- What if we have a wide margin of error around F or B or whatever or -- How is that accounted for, ultimately? Doesn't the P-star actually only account for FMSY, the uncertainty there?

Mr. Carmichael: I would think you could calculate a P-star type thing for other parameters, but my expectation is that when you have a very broad confidence interval than your P-star range is going to be much greater and for any equivalent reduction in the P-star critical value you're going to see a greater change in the actual poundage that would be allowed to achieve that.

Ms. Jensen: That's just in the probability of overfishing. What about like probability of rebuilding a stock and that kind of thing?

Mr. Carmichael: It should come in there as well. The same type of information is going into given the probability of rebuilding by a particular year, given a particular removal strategy. That should be in there as well. What it comes down to is how did you calculate the confidence intervals and how many things do you account for in establishing it? That kicks back into the other criteria that we maybe allow more buffer for.

The idea of the control rule is it specifies essentially the critical value and then you just apply that to the analysis which comes out of the assessment and you're trusting that that reflects the overall confidence in each parameter.

Dr. Williams: I think it does get confusing when you start thinking about all this potential uncertainty that could be in a model, because there certainly is plenty of it, but one thing to keep in mind is for this thing it's just the ABC control rule and so we're trying to set an ABC which is more or less based on MSY.

Really what we really need to focus on is the uncertainty in that MSY estimate. You can conceive of a model where you had historical landings that were extremely uncertain, but if you ran the model with all sorts of sensitivities and you still got a narrow range of MSY, then you have some confidence in that MSY, even though you have a potentially huge source of uncertainty in another part of it, but that part of the uncertainty doesn't ultimately affect your MSY and so you wouldn't want it to ultimately affect your buffer on MSY, because you have some degree of certainty in it. That's sort of -- Trying to keep that in mind, that there are going to be other sources of uncertainty, but really, we want to be concerned with the sources of uncertainty that are going to affect MSY and our predictions about MSY and the future of the stock and that sort of stuff.

Ms. Jensen: What about uncertainty estimates in stuff like M, some of the input parameters that go into the model? How in the world do you account for that sort of uncertainty?

Dr. Williams: Right and that's where I think this one dimension that we have in here that is for the uncertainty characterization itself and in other words, how well did we characterize uncertainty and did we do sensitivity analysis on M or did we have a Bayesian prior on M or something like that? If we totally ignored that, then it would probably bump it down another tier

as far as how well we characterized uncertainty. I think that's taken care of in this one dimension.

Dr. Belcher: Additional comments to that? Okay. Other unfinished discussions that we need to have relative to how we got to where we are right now?

Ms. Jensen: The point that I made in the email about if you have a cutoff point and drop below 10 percent SPR then you automatically end overfishing, that sort of bypasses this whole control rule process. What about some of the stuff that went into the assessment that came up with that? For example, with snowy grouper, is the data representative of the entire geographic range? That may be up for debate.

Dr. Belcher: Comments to this? The discussion was -- Christine, reiterate it, because I remember us talking about it in March, too. It's that endangered status, that going below 10 percent.

Ms. Jensen: Yes, when we drop right below 10 percent, but it kind of essentially bypasses this whole system of looking at how certain we are in that 10 percent for whatever the SPR resulting in the assessment is.

Dr. Williams: I think the only reason that was brought up is that was actually specifically mentioned in the NS-1 Guidelines, is that an SSC could potentially consider a threshold biomass below which fishing would be shut down, essentially. I brought up the 10 percent because that is what they use on the west coast with their 40/10 rule, but we don't have to adopt that. It's just something that the NS-1 Guidelines recommended we consider.

Ms. Jensen: I don't necessarily disagree with that. I just think that there should be some sort of check as far as if something comes out with 8 or 9 percent SPR in an assessment, how certain are you in that SPR? You're going to essentially shut down fishing and so it needs to be -- The uncertainty needs to be taken into account as far as how that number came about.

Dr. Williams: In that case, a simple thing would be you could specify, instead of an actual just 10 percent, a probability of being below 10 percent or something, stipulate that it has to be at least 50 percent probability that it's below 10 percent or something like that.

Dr. Cooper: Kind of like how we're treating stock status, stock status is based on the point estimate and then the uncertainty is dealt with somewhat separately and so if our point estimate, which is usually the median, says this, then that's what you base the decision on and the uncertainty can be incorporated through the uncertainty tiers or whatever.

Dr. Belcher: Any other further comments or concerns or questions or clarification points as to how we've gotten to where we are?

Dr. Cooper: What did we decide on incorporating PSA?

Dr. Belcher: We haven't yet. My understanding is the purpose -- We had the discussion that

there were the two methodologies out there and understanding what some of the differences are, but we decided to go ahead and let folks give presentations as to how each of them are done and then we can compare and contrast and discuss and that's what the presentations are for tomorrow.

Dr. Williams: One other topic that I think came up during some of the email exchange that we should consider is whether all of these dimensions should be essentially weighted equal, as they sort of are now, or whether we want to weight one dimension more than another.

Dr. Belcher: We kind of talked about that in March, I thought, and the big thing was trying to figure out how do you get away from equal weighting, because you don't know if the relationship is linear for each of the steps away or is it exponential or how do you figure -- How do you determine best to step away from equal steps?

Dr. Cooper: As we often tend to do, equal is one assumption and no more or less valid than doubling one, than doing a weighted average or something like that. You weight them and then divide by the weights or something like that. There are methods to actually elicit opinion and get scale and weight of these things, but, just like with what we're going to be talking about with red snapper, there are competing assumptions. You can pick one or the other.

Right now, we're saying no, these are equal. If we don't think they're equal, then we start discussing, okay, which ones do we think are more important and just like how you guys figured out the steps of two-and-a-half percent going to 10, it's the same type of concept. We could do it just by figuring out what do think is most important and does it equal or we could fund some research and actually do opinion elicitation and actually have some real fun with that.

Dr. Belcher: Comments and discussion to this point?

Dr. Cooper: Do we think they're equal?

Dr. Belcher: Do you have support that they're not?

Dr. Cooper: We have now entered the realm of expert opinion.

Dr. Belcher: Expert qualitative opinion. We've already documented that.

Dr. Cooper: Do I have documentation? Well, I personally am far more concerned about stock status. I can document that based on my public opinion record through here, that I tend to get more upset about stock status than proxies.

Dr. Belcher: We're going to down-weight your opinion and so at that point -- That was an off-color joke, but the point being that the more qualitative we get in this -- If we start shifting things around in a quantitative manner, people are going to want just like what we had happen and why did you say a 5 percent discount and why did you say 10 percent discount and what's your basis for using those particular numbers?

That's where in some ways I get kind of nervous about that, because we did have that discussion about how you generally weight these things, but without anything to support non-equal, I think our evidence to support heavier weightings is going to be based on who puts that assumption forward.

Dr. Cooper: Your choice of null hypothesis being equal weight is completely arbitrary. Once you accept that -- The assumption that all things are equal should be our null hypothesis and we now must disprove that. That has a completely subjective determination. Someone else could put forward that no, the null hypothesis is a 4/3/2/1 weight and now prove to me it isn't.

Without doing a formal survey approach where we actually present scenarios and have people rate and score and things like max-min conjoint and things like that, we're not going to get a statistically defensible argument. It is going to have to be that our collective knowledge of this body feels that no, these numbers aren't exact, just like a step-down of 2.5 is not exact, but we were comfortable with this.

I think if we want to open that can of worms that's where we go, but no, we're not going to be able to prove that we picked the right numbers. What we are going to be able to do is document through our notes and say yes, we talked about this a lot and the consensus among here, which actually has quite a bit of experience in fisheries management, is this. A different group of scientists will come up with a different group of answers, but as the SSC, we are the determinants of best available science and so what we as a group says is best available science, that's how it goes.

It's just like when in a stock assessment increasing efficiency by 2 percent per year. Another group of scientists said no and we can't define where the break is and we don't think it's continuous and we're doing nothing. Neither of those was less valid. It's the same exact situation and it's just the group opinion of this body as to whether or not we stick with equal or throw in a subjective weight that we, based on our collective experience, feel is appropriate.

Dr. Williams: Andy is technically correct and I think it is somewhat arbitrary at this point, but, again, we have no response to the system and that's what time will tell and that's when we actually will have some information upon which to possibly re-weight the system and maybe we need to put that somewhere in the ABC control rule, that until we get a response to the system and how we use it that we're not going to know for sure whether we've dialed in the right numbers.

Dr. Belcher: Following on that, kind of where I was basing it was thinking back to -- Again, we keep kicking up those bad things that we've run into, but king mackerel and the mixing rate. Anytime you've worked with a proportion in the past that's unknown, you try to basically say if there's two options you give them equal weight until you have reason to determine to go one extreme or the other.

That was where with my logic, not having enough to look at these four categories to say which one has the most weight within a general tier division, just give them equal weight in the hope that as you gain more knowledge, as Erik said, that we have it built in and that we can revisit and

reweight as we see that in this situation this really does need to have more weight than it currently has, but without that information in front of us, you almost feel like you have to equal weight things until you have the information to suggest otherwise.

That was kind of where I was trying to go with it, but yes, you're correct, it's one of many possible solutions to it, but just, to me, it gives you the least amount of fall off of your preliminary starting point.

Ms. Lange: Didn't we have that general discussion and consensus at the last meeting, that barring having real numbers or analysis that the best way to do it would be equal weight? I thought we did cover that.

Dr. Barbieri: But since we opened up that can of worms again and if we look at the four dimensions, one is intrinsically more important to this whole process and we say so in the document, that characterization of uncertainty, which is at the core of how we want to modulate that buffer between MSY and ABC, and that's explicit in NS-1, we might to give this one -- If we want to adopt some kind of a weighting system a few months after we put together this draft and having read other things and the discussion that has ensued from all of these things, I would say at this point, based on all the issues associated with producing an ABC estimate, I would say we could weigh a little more the characterization of uncertainty and actually weigh the PSA less, since it actually involves more of a risk analysis instead of uncertainty. It could just turn out to be exactly the same in terms of how these things are applied, but formally, that would make the most sense to me, if we were to consider the weight.

Mr. Carmichael: If we were in the future, that would be one to consider, but not suggestion necessarily at this point to change that.

Dr. Barbieri: No, sir.

Mr. Carmichael: As I was putting this together, I felt like I didn't have clear distinction in the first tier that addresses the information that's available from the assessment or in the first characteristic, dimension we call them. What was the distinction between Tier 2 and Tier 3?

Tier 2 says you have a quantitative assessment and you get reliable estimates of either exploitation or biomass. I was struck with the thought of would we have biomass and not exploitation, where it seems that normally we have exploitation and questions about biomass? I suppose in something driven by an independent survey that perhaps you would -- If you had area and great habitat quantification, maybe there is a possibility you could have biomass and not trust exploitation, but then you also then compare that with 3, which says you have reliable estimates of exploitation, so acknowledging you have F, and then you have proxy reference points.

Isn't that essentially the same as 2, just saying you have proxy reference points, or maybe 2 and 3 need to be distinguished by the availability of reference points, but yet if you don't have biomass or F, you don't have estimated MSY-based reference points. Maybe I could get some clarification on this and we should maybe reconsider these tiers slightly.

I think we do have the good kind of range there. I have reliable catch history and I have no or scarce or unreliable catch records and I have the full assessment with MSY benchmarks and the question really seems to be there in 2 and 3. It is in the control rule document, A-10. It's page 3, right at the bottom of page 3.

Dr. Williams: I think John is on to something here, because I guess what we're asking is what really lies in between the area of having all of our F, FMSY, B, BMSY, and then having to rely on proxies, essentially? What's in between that? There's something there, but yes, you're right. I think the way we have that put down now, I'm not sure if that's the right thing.

Dr. Cooper: The other difference between 2 and 3 is 2 is a full quantitative assessment and 3 is just a quantitative assessment. I'm not sure what the difference between those are or is that just a -- Does that difference not actually exist?

Mr. Carmichael: I think that's a typographic difference at best, yes. I don't remember our distinguishing between a full quantitative assessment versus quantitative.

Dr. Barbieri: You see in this case here it still doesn't include those stocks for which we just end up not having any estimate of stock biomass and did we actually accept -- I'm trying to remember. I think that was the case for Spanish mackerel, right?

Dr. Williams: I think Spanish would have fallen into the third tier, because we had an F and an F proxy, but that was it. It would have fallen into that just above a catch history.

Dr. Barbieri: You see when it says "and proxy reference" points and just F proxy reference points then?

Mr. Carmichael: Proxy reference points was open and 2 doesn't address reference points, but I think it's implied that 2 includes proxies, because if I only have F or B, then I don't have MSY derived benchmarks and Spanish mackerel was very interesting, because they kind of rejected the assessment, but accepted the conclusions. There's no real baseline we can point to, but it looks like it's not overfished and not overfishing. I'm not sure where I would put Spanish in this.

Dr. Cooper: For 2, you have to have, the way it looks like, F and FMSY or B and BMSY. You need at least a current F and a benchmark F or a current B and a benchmark B, where 3 is vague. It's exploitation or is it just F and then proxies for FMSY and BMSY?

Mr. Carmichael: That's the way we described it and that was part of the confusion. I said can you have F and FMSY if you don't also have B? Can you get F at FMSY without having the associated B, which helps you determine just where FMSY lies? We did kind of have some discussion along these lines and felt that you would have to have kind of the combination. That's the reference point part. Now I'm remembering.

You have to have the F and the F reference or the B and the B reference as true estimates. That would be two. Then when I wrote this up, it was like, is that possible? Can we think of a case

where you have F and FMSY but not B or you had B and BMSY but not F? That one seems even harder to get than the first one or is it a little simpler? You either have full derived benchmarks based on estimates and MSY and you trust your stock recruitment and you have the whole suite or you have some estimates and you're relying on proxies.

Dr. Williams: I think I'm leaning towards that second category ought to just be removed and we ought to drop down to just four tiers for that.

Dr. Barbieri: John, looking here at the Spanish mackerel, isn't that the situation we ended up having? It was concluded that overfishing is not occurring and overfished status could not be determined from the assessment, due to model uncertainty sensitivity.

Mr. Carmichael: They didn't have FMSY benchmarks, right, that were accepted, because they really didn't accept the baseline, but they drew a conclusion about status based on the suite of situations. They said we can't really pick one, but given the suite that we've looked at, it looks like this is probably the status situation. I think that falls down into you argue is it a 3?

You have to decide if you have reliable estimates of exploitation and then I think well, they didn't really say any individual estimate was necessarily reliable. Maybe collectively I have a reliable conclusion, because that would almost get me to a 4. You would hate to think you went through a full assessment and got to a 4, but look at the review panel comment, that we don't endorse any of these specific runs.

Dr. Barbieri: It says right here that no annual estimates of fishing mortality were accepted.

Mr. Carmichael: So now reliable estimates of exploitation and the next tier is 4, reliable catch history.

Dr. Cooper: Would we be in a situation where we know F relative to FMSY and maybe B relative to BMSY but not actually be able to peg those actual numbers, just the relative?

Dr. Williams: Yes, you could easily get that from the production model result.

Dr. Cooper: Maybe that could be a new 3 and 3 becomes 2 and the new 3 is we know relative, but we can't actually peg any of those, which is better than just having reliable catch history.

Mr. Carmichael: I think back with vermilion we had a situation where there was confidence in the relative status, but there wasn't confidence in the absolute magnitude. One sort of gets to you having the magnitude and everything and 2 and 3 get you to you have proxies and 4 and 5 are clear and so the new 3 becomes you have confidence in the relative status, maybe something like that.

Dr. Cooper: The question is if the only thing we have confidence in -- I'm totally talking circles now, but if the only thing we have confidence in is the relative, can we actually estimate an OFL? I guess we know what the current landings are and we know how they need to be adjusted and so we could get an OFL then. We would just then be buffering it based on that.

Mr. Carmichael: That question triggers another question. If all you have is reliable catch history, you will not have a P-star analysis and so where the P-star is kind of where you're heading, I think you understand that you can apply this rule and come up with a buffer and you won't have the benefit of the P-star to tell you the value for that buffer. That buffer is going to have to come from somewhere else, but that's sort of the data poor stock discussion that we need to have probably in greater detail at this meeting.

Dr. Cooper: I think the point is that -- Whoever came up with this at the March meeting, I love it, the whole concept, but it sets a framework that we can plug pieces in as we figure out, okay, if we're at a catch history -- If all we have is a catch history and we know, okay, here's how to handle this in the basis that's consistent with the way we've been dealing with -- Even though we will never get to a Level 4 and have an OFL, we at least now know this is where we can plug those in if we could define an OFL but only have catch history, so a proxy for OFL. This is then how we then buffer it to get the ABC from the OFL. It's the whole miracle happens here kind of thing and we'll get to that later.

Dr. Williams: Just on the subject of catch histories, I think there's ways around that. One way to ensure that we're sort of internally consistent is one way we could come with an uncertainty level for an average catch is to look at the uncertainty distributions from all of our known situations and come up with some prior uncertainty curve that we then apply to an average catch and that's our starting point for the uncertainty associated with that average catch and it's consistent then with what we've done in the past, so we know that we're at least as conservative as with the stocks where we actually characterized uncertainty, in a sense, and then we will be reducing the buffer, because it is only a catch history, even further than what we did in the previous stock assessments. I think this idea of being internally consistent is going to be very important and we've got to try and keep track of that.

Dr. Cooper: It's not just the uncertainty about the average catches, but how do average catches relate to a proxy for OFL? It's not just buffering around average catches, but reduced by so much or increased by so much, which Alec has looked at a way where if you can assume how much depletion has occurred, you can then back-calculate things, which, again, is purely subjective and expert opinion-based, but there's a way to do it that we could figure out how to get from a catch history to an OFL and then buffer based on what we do know about these other things and in a consistent manner, buffer appropriately for the fact that that's how we did it.

Dr. Barbieri: Changing subjects a little bit, I'm thinking about handling those data-poor situations and what we had thought was our kind of fall-back plan was to have some kind of not a sophisticated and not to call it cursory analysis done on some of those species and try to generate some ballpark idea of where MSY could be, based on some kind of static-type analysis, but it's better, perhaps, than just looking, especially for these fisheries that have been consistently overfished, to look at catch history, because we may have a catch history that already reflects the fact that it has been overfished for ten years.

Now, with the decision of the steering committee not to dedicate Science Center resources to generating those estimates, I think we're going to need to discuss where we'll go next, because otherwise, we're not going to be able to really provide those estimates at all.

Dr. Cooper: This control rule document does explicitly state that the method, as outlined here, assumes that we can get an estimate for OFL and its uncertainty and so we're not saying that we're there. We're saying we've made these steps and let's make sure we -- These are the steps we want to take so far and we're on the right path and then deal with the really tricky issue of what happens with just catch history or a ten-year-old stock assessment that we may no longer believe or something like that.

Dr. Belcher: John is working on the verbiage for the rewrite of the tiers.

Dr. Barbieri: In the meantime, would we be able somehow to conduct some kind of analysis for some of those stocks for which we have perhaps a little more biological information and we can plug into something like a YPR type analysis, something that we wouldn't choose to use nowadays as a way to obtain an estimate of FMSY, but in the absence of our ability to do this other analysis -- I still think that that might be our best way to get at least a starting point. It would put us in a position where don't have to really be relying on those catch histories.

Dr. Williams: Remember our role is primarily a review body and not a body that's going to be doing original work and so I don't imagine that we're going to be sitting around computing per recruit type analyses for some of these species or anything even close to that.

Dr. Barbieri: Right and I completely agree and embrace that comment, but I just don't want to be in the situation and pretty much that's where we were, I guess, last June when we were provided all that information and no, I don't want to be doing YPR here on the fly. At the same time, I don't want to be estimating average catches from landing streams and because that doesn't put an MSY estimate in front of us either. We may be in a situation that we're just stuck for a while.

Dr. Belcher: Alex, did you still have a question or a comment relative to the discussion that's currently --

Mr. Chester: It's more operational. I was just wondering what our plan is for delivering a final answer to the council on the ABC control rule, if that's this time and whether that meets the council staff requirements for developing the ACL amendment.

Mr. Carmichael: Our intention is that your approved draft would go to the council at this meeting and they can talk about it or perhaps the September meeting and I think both are along the lines of meeting the plan for the comprehensive amendment and getting it in there. The bigger question is going to be getting the quantitative information to support it, it seems at this point. If we can wrap this up at this meeting, we'll be fine. If we have to push it to December, that creates potentially a problem.

Dr. Cooper: I seem to remember reading somewhere, and I don't know where, but maybe Erik knows, but isn't NMFS doing a working group on estimating OFL from catch history data or something like that? I seem to remember along with their PSA working group there's another one working on ways of calculating OFL.

Dr. Williams: I think you're right and I think they're working on that. That's my best guess. I don't know of anybody who is actually -- I think Alec Maccall was one of the people certainly on that committee and I forget who else is on there. Rick Methot I'm sure is leading the charge.

One issue to think about is -- Again, this always puts me in a bad position, being the agency rep, but how are we going to get those average catches? We shouldn't even be computing that, really, as an SSC. Certainly I wouldn't want anybody to do that, because there are species ID issues certainly with a lot of these.

In a sense, even just an average catch is probably going to have to be run through some kind of SEDAR-like process just to even determine what is the appropriate average catch or even catch history for some of these species. The question is how are we going to get all that information to the floor of the SSC so we can apply our ABC control rule?

Dr. Cooper: That's an excellent point, because right now, the only data that goes into a stock assessment is data that has gone through a data workshop and so if it's not good enough for an assessment, it's questionable whether it be considered good enough for a control rule application. Yikes.

Mr. Carmichael: Déjà vu over discussion the SSC had back when the council was putting forth the SFA Amendment in about 1998, when I looked back at some of the history before this meeting. The SSC raised the same questions about the need to draw proxy values for MSYs and such and to recommend the catch fishing level recommendations, as they were called then, and it was like, get a group together to go through each individual species and figure out which data are reliable and which ones have issues with species ID and how can you tabulate a reliable landings stream.

We've talked about this for a year here, troubles with the landings stream. It's clear you don't just take it straight out of the dataset for many of these species, because of the reporting problems and the issues with the data. Somehow or another, it's going to have to be vetted through an open process with the experts who understand the datasets. We haven't identified the way.

You all put a motion on the table, put a motion out there, and it hasn't gone anywhere. The council supported it, but for other reasons, the Steering Committee didn't move forward with it, but I think you're going to have to continue to push that issue, perhaps. You've made it clear that you're not going to take just landings and start averaging them yourselves. It falls back to the agency, who then probably turns to something like a SEDAR approach to get robust information and here we sit again, because we all have the extra time to go and spend about three months doing this. We have a lot of species to deal with. It's got to be an efficient approach.

Dr. Barbieri: Right, but we have already made a motion to that effect that perhaps we should pull up and look at that motion, because we did make that motion and I think that stands as our position. It was December or March that we made that motion, but we did.

While that comes up, I wonder here about that same list of tiers on page 3, the bottom of page 3

of the ABC control rule, if Tiers 4 and 5 may be misinterpreted. The reliable catch history available or scarce or unreliable catch records may be misinterpreted by some people that in these cases we are ready to proceed even with not presented with an MSY estimate or an OFL estimate. I think we need to be clear about this, that in this case here that's not the case.

Mr. Carmichael: That's how I've portrayed it throughout, is that this is all geared toward how you would respond to an MSY that you were provided, and that there's nothing in here that addresses how you would derive MSY when you're given nothing. I think that's clear in the text, but if not, we should look back to make sure that that is crystal clear, that this isn't intended to give you an MSY from which you get ABC. This is purely intended to how do you get the ABC given MSY, which is the charge directly to you in the Act.

Dr. Cooper: The first full paragraph of page 2, just bold it and underline it and highlight it, put stars around it.

Mr. Carmichael: Here's my stab at trying to recast our Dimension 1 tiers. Number 1 is quantitative assessment estimates of exploitation and biomass and you get MSY-derived benchmarks. I think that one is clear. 4 and 5 deal with level of catch history and the question was in 2 and 3.

2 is rewritten slightly that it says you have an assessment and you have estimates of exploitation or biomass, but not MSY benchmarks and you probably have a proxy. The distinguishing characteristic between 1 and 2 is whether or not you actually have the MSY benchmark or you're relying on a proxy.

3 takes it down a step from 2. You have exploitation or biomass, but you have relative measures of exploitation or biomass status and absolute measures are unavailable and references may be based on proxies. I think that's getting at the idea of the production model perhaps, where maybe you don't know MSY, but you think you can trust the F over FMSY. Let's just make sure we get the wording right to keep them straight.

Dr. Cooper: The first, provide estimates of exploitation or biomass, I think it's just striking that first "exploitation and biomass". It's when you only have the relative, because if you have one of those and the relative, then you've got the benchmark, too.

Mr. Carmichael: I expect that's right, because you may not necessarily trust your magnitude of point estimates for any given year of F, say, but you do have confidence in your F relative to your benchmark. You really don't know where each fall on the graph, but you have confidence in that shape relative to each other.

Dr. Belcher: Is everyone comfortable with the change to the tiers? Is there objection or modification?

Dr. Barbieri: This is acceptable. I like Andy's suggestion that we should perhaps revisit and just make sure that we're perfectly happy with that second full paragraph on page 2, so it's clear to everybody how this is supposed to work and that we're going to always be provided some

estimate of MSY or OFL and from there we apply the buffers.

Dr. Cooper: I, for one, move that we don't refer to it as buffer from MSY, because MSY assumes BMSY and so it's really a buffer from OFL. I think there was somewhere else where I was reading where we were talking about things relative to MSY earlier and it was like, well, no, it's FMSY -- Stocks lacking OFL. We may have an assessment, but it doesn't give us OFL.

Mr. Carmichael: It seems that that bolded part which is the paragraph, the two sentences in that paragraph, seems to capture that.

Dr. Cooper: You could highlight it by "as applicable" or no, because it eventually be applicable -- It's applicable only when, with a big capital "only" or something like that, if we wanted to reemphasize.

Mr. Carmichael: Certainly the discussion on the record is clear. I think we've got it. The question that was tossed out a little bit was this relation of the buffering, the critical value. If you go below a potential say 10 percent biomass, will you just say that there's no directed fishing allowed and not have to go through the full process? Is that the intent that's in there now, the critical level? Is that something we want to retain? Depletion threshold, as we call it. Keep this concept and leave it at 10 percent?

Ms. Jensen: I don't have a problem with the 10 percent. It's just addressing the certainty in the SPR that comes out of the assessment. For example, snowy grouper with data may or may not be representative of the entire geographic range.

Dr. Barbieri: I think that another comment that Andy had made earlier today about if we go through that assessment of uncertainty and evaluate during that step how much we trust the SPR estimate or how complete the information is, I think we'll be able to exercise the best judgment on how to address it, you know for situations where we feel now in this case it's not applicable. I don't know if the language now gives us that flexibility. Perhaps that's what you're referring to.

Ms. Jensen: Yes, basically. If the resulting SPR falls below 10 percent, then boom, you end overfishing, but it doesn't say anything about taking into account the certainty or uncertainty of that SPR estimate.

Dr. Williams: One thing to clarify is this is not an SPR rule, I don't think. The way this is worded is a 10 percent of virgin, which is different from SPR, slightly different.

Mr. Carmichael: Do we intend to say fishing is not allowed or do we need to say directed fishing is not allowed and does saying ABC equals zero open up a can of worms because there's always the potential for discarding and does that put us that other trigger that says you discarded one fish and it died and so you're over your ABC? I'm thinking maybe it should end with directed fishing is not allowed.

Dr. Barbieri: Yes, that's a good point.

Dr. Cooper: Christine, as I'm hearing your question, it's not so much the statistical uncertainty about that estimate as it is the applicability of that estimate to actually represent the stock? Your snowy grouper example, you're not talking about an uncertainty around -- Granted, you were using SPR 10 percent, but either way. Is more your concern that if we get a point estimate or an estimate whose median is below that, but we're worried, for instance, say like with the golden crab, where the last stock assessment was only on a small part of its range and how do we apply those results to the whole stock?

Ms. Jensen: Yes.

Dr. Cooper: It's not just statistical uncertainty with the point estimate. It's what happens -- How do we incorporate the fact that it might not be representing the whole picture?

Ms. Jensen: Right. I suppose it could be the statistical uncertainty with your point estimate as well, if you had considerable uncertainty in that and you were right on that edge. Do you shut down fishing or not?

Dr. Cooper: Usually with statistical uncertainty, if the median is below the mark, that's the -- It doesn't matter if it's 49 percent instead of 51 percent, but I don't know how in the past with a stock -- Usually with a stock assessment it's applicable to the fishable biomass and the fact that there might be this reserve that no survey has seen and no fisherman has caught, we tend to -- I believe the determination would be based on the fishable biomass and so if that's the fishable biomass, that's how we go with it. I think that's how we've done it in the past. Someone might be able to correct me.

Mr. Carmichael: I guess in the worst case scenario, if you really believed there was a lot of biomass that you weren't accounting for, or even a substantial portion, you would probably affect your Dimension 1 criteria and decide you only have a relative measure, but if you don't have the full biomass in your model and in your catches, then you don't have the full magnitude and so that would be bringing in another level and you would be addressing for that sort of going through your process.

Dr. Cooper: I think the point is specifically to the control rule, where the cutoff is a 10 percent below biomass. Then we're not even worrying about buffers anymore. Once you get that below 10 percent, we're not doing tiers or anything and so what happens if you're below that 10 percent but you're only looking at a small portion of the potential total stock?

I believe usually our overfishing definitions and overfished has been applied to the fished biomass and so I think we're just kind of still in that same box when the fished biomass gets below 10 percent. I don't know if we've come up with another way around it in the past.

Mr. Carmichael: If you're not looking at the whole stock, then maybe your argument becomes you don't have the biomass estimate to make this determination. It's kind of open if biomass is estimated. You say well, biomass of this little portion was estimated, but I believe there's 90 percent of the biomass out there and let's take it to a much bigger example, maybe the wreckfish situation that we talked about.

If we're truly only looking at a very small proportion of the stock and if we estimated our biomass at 10 percent of what we estimate our biomass could be, but we're only looking at a very small corner of the range, then we may say having no fishing here doesn't make sense because we're a very small corner. Then I think we would decide that we don't really trust those biomass estimates, in which case we would be loath to pull this trigger, because we don't believe we have the reliable biomass estimate of the stock as a whole.

Dr. Barbieri: Which, by the way, I thought is what Andy was saying before. As we go through this process and we kind of slide through the tiers, we would make that determination and that would cancel the 10 percent, because we already determined in a previous earlier step where we don't trust that. Right?

Dr. Cooper: I believe that the depletion threshold trumps all. If you trigger the depletion threshold, you don't do the tiers, but I believe in the past, say like with wreckfish, if the assessment says the stock is overfished but we're only looking at this small portion and NMFS still declares it overfished and it's treated as overfished, even though there may be this huge amount of biomass.

I think, based on precedent, you pull the trigger when your assessment falls below 10 percent regardless of the fact that you may be looking at a small portion, which is in line with, I believe, the way NMFS treats an overfished status as well, isn't it? Someone can correct me if I'm wrong.

Dr. Barbieri: In that case, we will have that assessment in front of us before we make the determination. Everything is going to have to come through this filter. We're going to have a chance to look. You're right that that 10 percent trumps all the tiers and well then we don't plug them into these tiers, but we're going to still have access to the document and make some judgment there.

Dr. Cooper: We've never thrown out an -- I'm talking half out of my ear, but I don't believe we've ever thrown out an assessment because it only covered a portion of the species range. It might be something someone could look up, is there's not adequate coverage of the range, but I believe, like with wreckfish --

Dr. Belcher: They actually did a regional assessment for wreckfish that incorporated that Caribbean and so that was a full range assessment, which has been where part of the criticism has come in relative to wreckfish now, is that we're not encompassing the entire stock.

Dr. Cooper: The wreckfish example is out, but I do wonder, do we have -- I think it was the red drum assessment, the big hubbub there is you're not surveying offshore and there's gobs of red drum offshore and so you should throw out the stock assessment and I don't think we did. I could be making that up.

Dr. Barbieri: It was the same thing with king mackerel and the Mexican fisheries and the stock down there, right?

Mr. Carmichael: Yes and doesn't the whole virgin thing get in here to play, because you're also implying here that you know what the virgin level is desired to be. If I have all these assessment problems, maybe I can't pull this trigger because I don't have the virgin level that I have any confidence in and so I don't know what I am relative to virgin. There's almost an implied that you'll have a certain quality of the assessment to be able to determine both what you have now and what the virgin level would be.

Ms. Lange: I think either way. If the assumption is that you don't have an adequate biomass estimate, you're going to wind up adding an additional buffer. You're sort of like double jeopardy or something. You're going to be increasing the buffer and therefore reducing the catch, the ABC, because you know that there's a lot of the stock out there that hasn't been assessed and is not being fished on, based on what you said, John, that you would have to look at it as being the -- You have an unreliable estimate of biomass. I'm not sure if this is a good thing or not.

Ms. Jensen: I'm comfortable with this as long as we have that caveat in there where we can look at the quality of the assessment and evaluate things like does it account for the entire range and then take that with a grain of salt when we decide whether or not to implement this.

Dr. Cooper: Have we -- Again, someone with a much better memory than mine, but have we been able to get estimates of B zero for stock assessments which we know don't cover the full historic range? By virgin, we mean B zero coming out of the stock assessment. Do we have stock assessments that calculate a B zero that have been accepted that don't necessarily cover the whole range of the species? That's where we're going to run into a problem, if a stock assessment is accepted and it calculates B zero. We don't want to start throwing out assessments because it doesn't cover the full range.

We can't survey everywhere. We don't have information everywhere. There's always going to be the mysterious spawning stock that's all offshore and that's really what's keeping everything afloat argument and so I just want to make sure with this trigger will we be in cases -- What I don't want to do is have an acceptable stock assessment, but then all of a sudden we throw it out because we're worried about the trigger and all of a sudden say well, no, this accepted stock assessment is different from this accepted stock assessment.

The whole point of the control rule is that it should specify -- There shouldn't be a subjective decision in applying the control rule. Once the control rule is up, if it's an accepted stock assessment and you have B zero and you're below 10 percent, you pull the trigger. You don't then say well, but this stock assessment was done on Thursday and we all know stock assessment scientists are thinking about the weekend on Thursday and so it doesn't really apply.

We need to make sure that the trigger is specific enough, one, that it's still usable, but also that we then don't have a problem down the road, but I think this may go into the and we reserve the right to change this control rule after we realize all the problems it creates.

Ms. Jensen: The one species -- I keep bringing it up, but it just brings to mind snowy grouper. I'm not intimately familiar with the snowy grouper assessment. That was kind of before my time

here, but from what I understand in recent years, there's been a pocket of snowies that's been found, essentially, off of Virginia and North Carolina and they go fish for these snowies and they're big and they're able to catch quite a few of them and the surveys like MARMAP don't cover up there, especially with enough samples to get some decent sample size up there.

Mr. Carmichael: Is it thought somehow that that's a very large potential biomass and the assessment is completely out of scale because of that? I would think the emphasis maybe should be more on "fished on", because if they're following the path of the several examples cited in the assessment of discovering pods of large fish, they're quickly removed and there's a couple examples shown in the landings record where like they discovered the Snowy Wreck and in a few years they were gone. It will be interesting to see in two or three years whether they're continuing to catch record snowy grouper up there. Maybe with some restrictions they will maintain them.

Ms. Jensen: I'm just using it as an example.

Mr. Carmichael: I don't know if that's a great example. I think in general if this depletion threshold starts carrying too many caveats than we just need to get rid of it and go through the full process for every stock, because we're going to end up with it's never going to be applied.

If we really want to go through the full tier process and evaluate the full data, then that's just what we should do. The idea was that if it gets to a point where you look at it and go, man, this biomass is so low and it is an accepted assessment and do we need to go through all this buffering or just say there should be no directed fishing?

The idea was that it becomes a work saver and not a work creator and if it's going to create so much additional work and have to be clarified to such it an extent that it maybe never happens, then maybe the truth is we don't need it and we need to go through the full buffering discussion.

Dr. Belcher: I'm only asking this just because I know obviously wreckfish is on the list of things, but has there ever been another species -- I know Doug was saying when they did that wreckfish assessment that they incorporated the three -- It was for three general areas that made up the entire stock and I knew he was saying that he did not recommend that it be run just on the South Atlantic. Do we have any other species that that happens for? Is that the only problem child or is there actually some others that we need to --

Dr. Williams: I think that's it. Red drum would be the other, but that's not really our concern anymore, because the EEZ has been shut down and so it's a state issue.

Dr. Belcher: It's been handed back to ASMFC.

Mr. Carmichael: In red drum, it was all very relative. You didn't have B zero and you didn't have any MSY-based benchmarks. It was all based on escapement and so you wouldn't be able to pull any of this trigger for the red drum as it existed in the past, because you didn't have any information about that adult stock. You just tried to manage how many reached the adult size and so it wouldn't fall into here. I modified this slightly and we would say if stock biomass and

B zero are estimated reliably and blah, blah, blah. Maybe that's all we really need to do.

Dr. Williams: Yes, we'll leave it at that. That can be debated at a later time.

Dr. Cooper: Given we could sometimes get B relative to BMSY, but not know either, could we know the biomass relative to B zero reliably without knowing absolute biomass? Do we want to put in if stock biomass and B zero or stock relative to B zero are estimated reliably?

Dr. Belcher: Anyone?

Dr. Williams: I'm sure we could come up with other ways, too. Maybe we just ought to reword that if there's a reliable indication that the biomass is 10 percent or less of the virgin condition and just leave it at that. The other one you could envision is what if all we had was SPR, but it was coming out at 1 percent. That would be pretty alarming.

Ms. Jensen: What do we do in the case where an assessment is done and you come up with some really low -- You have to shut the fishery down, but then it's not reassessed for ten years and you just keep it closed for ten years? Look at something like the kitty mitchell. There's been restrictions on them for twenty years or so, but we don't have any information on how much the stock has recovered. No one has assessed it and I don't know that we have the data to do it, but at what point do you say things might be okay and start allowing some fishing to get some data on it?

Mr. Carmichael: Therein lies the problems of implementing regulations that destroy your data series. We rely on catch records and we put in a moratorium and we never get the catch records. That's why we're looking at this red snapper and having to have monitoring, because the advice that's come to the council from this body is you're going to do the same thing. You'll never be able to lift it. NMFS needs an assessment to change the status and until we get surveys, you're not going to have that. If you get surveys years after you put the regulations in, it's hard to compare, because we know none of our surveys are absolute.

Ms. Jensen: That's why I bring it up again, because I think it's really important that we get some sort of better fishery independent monitoring going on.

Mr. Carmichael: Keep that in mind when we talk about Amendment 17.

Dr. Williams: Christine, are you suggesting we not go forward with shutting down a fishery because of the data implications?

Ms. Jensen: No, definitely not. I'm just bringing up the point that there's a need to continue to collect this data so that we can continue to get information on the stock and to know when it has recovered. We can't just keep things closed indefinitely.

Dr. Williams: I don't think anybody here disagrees with that, but the reality is it could happen. Speckled hind is one where it seems to have happened.

Dr. Belcher: Any further discussion or comments relative to what we've done so far and relative to the depletion threshold?

Mr. Waugh: Do you just want to address directed fishing or are you going to pick up bycatch mortality somewhere else or -- We're getting some suggestion that the approach to take with some species is just to prohibit directed harvest and not monitor the discards and your job is done. I'm just wondering. This is part of the equation, but it doesn't address getting the Fs down where they need to be.

Dr. Williams: I don't think that this depletion threshold is suggesting that this is the only management action that would have to be taken. It's just saying that if it's that low that you should, first, not be having any directed fishery. Beyond that, then whatever the other assessment indications are and yes, you may have to manage bycatch.

Dr. Belcher: Any other comments or questions? I think we're at a pretty good breaking point, since it's five after five. We'll start back tomorrow morning with the PSA presentations. It starts at 8:30.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened at the Hutchinson Island Marriott, Stuart, Florida, Monday morning, June 8, 2009, and was called to order at 8:30 o'clock a.m. by Chairman Carolyn Belcher.

Dr. Belcher: We're going to go ahead and get started. We're going to start off with continuing on with the ABC Control Rules, the general overarching theme, but we're going to have a presentation this morning on the PSA approaches. This one specifically is the Pew and Lenfest approach and Robert O'Boyle is going to give us that presentation this morning and so, Robert, thank you.

Mr. O'Boyle: Thank you very much for inviting me here to your SSC. As background, I have been involved in a working group that MRAG has been running since 2007 and what I'm going to be presenting here is going to give a little bit of background to where it came from and the results of a workshop, the modest results of a workshop, that we had in March of this last year.

There are reports at the front of the table. There's three reports. There is the 2007 workshop report and then there's an overview of the most recent workshop, plus a more detailed review of the most workshop, all at the front of the room here and so that's what we've got here. You might have seen some of this before, but if you have, that's fine.

As I said, in 2007 was the first workshop, Rosenberg et al., and that's when we sort of raised this idea that it was all in support of the ACL determination and higher risk equals a bigger buffer. This is the buffer you set off the OFL and going to the ABCs. At that workshop, we did say how the ACL should account for uncertainty in stock status and risk of overfishing for each stock and so this whole concept of risk -- It was the risk assessment and that's when we first started talking about it and so associate your buffer with a measure of the risk to the resource.

This consideration of risk should include some evaluation of the vulnerability of the stock and

it's the definition of vulnerability here that's important and we'll get to that in a second. That particular workshop we looked at -- We really focused in on the ecological risk assessment methodology that has been developed in Australia, Alistair Hobday et al. and gang, Tony Smith and Dave Smith et al., all those people down there.

We took that approach and we looked at it and we said, could this approach work for the ACL determination, the buffers on the ACLs? I think the philosophy was that what has happened in Australia was what they had done is they wanted to come up with a methodology that could be used on all resources, be them data rich or data poor or whatever. We went to the semi-quantitative PSA, productivity sensitivity analysis, because it could be used on a wide range of resources.

I do emphasize though that in the Australian situation there is in fact -- The PSA is Level 2 of a continuum and so they are leveled. There's actually a scoping exercise and then they have a Level 1, which is a qualitative methodology, a Level 2, which is a semi-quantitative, which is this PSA methodology, and a Level 3, which is a full-blown quantitative assessment methodology.

The purpose of the PSA in that context is more of a scoping tool to determine those resources on which you must put the most emphasis, what you do need to do a quantitative analysis. In the context that we've looked at it here, and the working group back in 2007 looked at it, we looked at it and said could we in fact use this methodology to actually come up with the buffer sizes for all resources, all stocks, in support of this ACL determination.

The PSA working group, they were convened since 2007 because the first meeting really came up with the methodology and concept and since then, there was analysis undertaken and that's what I'll be reporting on here and so that's under this PSA working group.

I just put this in here to emphasize that the purpose of this is really to sort of come up with these buffers, buffer sizes, and to incorporate -- Take into account the risk and, of course, in association with uncertainties. The uncertainties that we've categorized here are the scientific uncertainties and that's to go from the OFL to the ABC on the left-hand side, and that really is the purview of the SSCs, and then go from then -- On the other side, you go from the ACL to the ACT and that's where you get your management uncertainty in.

As we generally agreed, I think, at this workshop that the PSA methodology we're going to be talking about would inform the scientific uncertainty aspect of this, but not necessarily the management uncertainty aspect. This is something we can get into during the discussion.

Risk-based assessments, all fisheries assessment methodologies do have risk and uncertainty. I think that's hopefully a truism and the distinction really is the level of risk and uncertainty that you really have to take into account and what we feel, anyway, the PSA does extend the set of tools that are available.

What is the productivity susceptibility analysis? You look at the productivity of a stock and that, what we're saying is it defines the rate at which the stock can recover after potential depletion or

damage by fishing. It's somewhat related to the old concept of resilience. When you push an object, how fast will it bounce back? When you put your finger on a balloon, how fast will it move back? That kind of a thing.

That's what we're talking about here when we talk about the productivity. The susceptibility describes the extent of the impact due to the fishing activity. It's really how much impact one might expect to a particular biological unit, a stock unit. The quantitative basis with this is really sort of the standard logistic equation here. You have your rate of the biomass change is some function of your R, your intrinsic rate of growth, times the biomass minus some function of the effort on the population, implied on the population.

What I wanted to say here is that your productivity -- That's the red box. That's where your R is. That's your intrinsic rate of growth and your susceptibility is your Q, which is on the left-hand side there. That's the green box. Productivity and susceptibility, that's how they come into the equation. When you look at the Hobday document, the very beginning, this equation is in there and they emphasize that what this whole PSA is getting at is trying to understand the rates of change and not the states, but the rates. You've got the rate of productivity and the rate of susceptibility and hence, the balance of these two things.

Where the scientific uncertainty comes into this really is through the --Obviously the interpretation of your R value, but also your biomass level and the K, of course, which the K is like basically your virgin biomass. The scientific uncertainty is really on the state and the rate, of course, and the management uncertainties, they come through over, what I would argue, over on the effort side of the house, basically how much -- When you say you're trying to regulate the effort, the amount of impact, it's that E there, how well you have that E determined, so to speak.

In the Level 3 I mentioned in the Australian situation, the quantitative, full-meal deal, quantitative assessment, that's the Level 3 and in fact, you know is you have data-rich situations and you do want to do the full quantitative you can solve that equation or even age-based versions of it, that sort of thing like this.

As we know, we can't do this for all species. We have time and money constraints and the idea with the PSA is to come up with proxies for R and Q that can allows us to qualitatively or semi-quantitatively resolve this equation and not in mathematical terms, but certainly tease apart the productivity axis and the susceptibility axis. That's what this is all about.

I say here at the bottom that the B can be units in species, habitats, community component, whatever you want. I think that is a strength in the method that in fact, in principle, you can look at any ecological unit, ecosystem component, and with this methodology come up with some estimate of its productivity and some estimates of its susceptibility and thus, through what I'm going to be showing you, some estimate of the risk of impact on that particular ecosystem component. In current context, we're talking fish stocks, but, of course, it could be habitat or it could be bycatch species or non-target species. You name it and we can do that.

The PSA on the stock level, you score for the productivity and you score for the susceptibility, and I'll show you that in a second, and you plot the individual stocks onto a PSA plot and you

rank overall risk for each stock and as I say, here you can do this for habitats and ecological communities as well.

How do we score the productivity? Productivity is based on inherent biological characteristics of the resource you're looking at. In this case, we're looking at you get attribute information collected from stock assessments, from research reports, et cetera, every source of information you can get it. If you're in a data-poor situation, I would argue you'll probably take it from every source you can get and review it externally by experts. This is an important point here.

This was a process here where we went through and the results were vetted through expects. You need to go through some sort of Delphic process to vet these results. It's interesting that the PSA of Hobday et al. utilizes several attributes that are most highly correlated with your productivity, the R.

We agreed in the working group to continue to use these attributes, but we adjusted the cutoff scores to more accurately reflect U.S. fisheries. The scores, by the way, are in the report. The cutoffs and those categories are in the report on the table in the back of the room. At the workshop, we in fact did modify these scores, these thresholds, to be more complementary and in fact, our scores are basically identical to the scores given by the vulnerability evaluation working group that I guess, Wes, you're going to be talking about.

The scores that I talk about -- I don't show it in this slide here, but they're in the report and the cutoffs that we've said for attributes are age at maturity, size at maturity, maximum age, maximum size, fecundity, reproductive strategy, and trophic level. Those categories and how we did those categories -- We say what scores they are, low, medium, and high productivity, and they're identical to what Wes has in his report or pretty close anyway.

On the susceptibility side of the house, these, of course, influence the vulnerability of a unit to impacts of fishing, as I said at the very beginning. Hobday, he identified four aspects of susceptibility, composed of various attributes. We agreed to maintain these. The four aspects are availability, encounterability, selectivity, and post-capture mortality.

You can see the availability is the overlap of fishing effort to the species distribution and so basically it's where your fishing effort and your species distribution is. Encounterability and so the likelihood of a species will encounter the fishing gear that is employed within a geographic area and so it's based on the adult habitat and the bathymetry and so where they are in the water column and whether or not they hide within rocks and that sort of thing. That's your encounterability.

The selectivity, the potential of gear to capture or retain a species. We're all very well aware of that and the last one here is the post-capture mortality, the conditions of subsequent survival of a species that is captured and released.

At the workshop, in fact, we did add another one called desirability. I believe the NOAA and NMFS working group has desirability in there and what we've done here is we've added in desirability under the selectivity aspect and so these are the four aspects we used and under each

one of these -- Again, in the report, there's subheadings to each one of these and like under availability we have global distribution, behavioral characteristics that would impact susceptibility. Under encounterability, we have habitat and bathymetry and selectivity is size at maturity, maximum size, and desirability and then under post-capture mortality, there's just the one attribute.

We've used a hierarchical system. Most of these, of course, as you can see, really do influence the idea of the capture of the animals. I think, Wes, when you get into your stuff you'll be talking about also the management side, because you've actually got a whole set of attributes that are more management related and that's a difference between the two and we can talk to that. These ones are primarily capture related and I think, as you'll see with Wes's, he's got capture and management in his, but we just use the capture ones, primarily.

The susceptibility scores are additive of the four aspects. The Australians use them as multiplicative and the rationale behind that is because when they first went into it, they saw these as being probabilities and they just made them multiplicative. We've turned these around so they're additive and the aspect scores are averaged based on composite attributes. That's the susceptibility.

You plot them up and you have your susceptibility on the Y-axis. That's the left-hand side there and going from low susceptibility to high susceptibility and the productivity along the bottom, going from high productivity to low productivity or in other words, from low risk to high risk. Your estimate of risk, your value of risk, is basically the Euclidian distance -- It's basically the distance from the origin there, the bottom left-hand corner. That is how you measure your risk.

As I said, the productivity and susceptibility rankings determine the relative vulnerability of the unit of analysis and I say here 1 to 3 scoring for the high to low productivity and 1 to 3 scoring for the low to high susceptibility. You do the math and come up and bang, there you go. That's what you come up with and so your rank your productivities and you rank your susceptibilities and you multiply them together and bang, you've got your estimate of risk.

The MRAG working group -- I personally didn't do them, but they were done by the MRAG team for the South Atlantic. They conducted PSA in seventy-three species managed by the council down here, seventy-one of which are managed under the Snapper Grouper FMP, plus pink shrimp and red drum.

The challenge, of course, down here, as you're well aware of, more than I am, I'm sure, is how do you manage a large, mixed species complex? To cut a long story short though, the scoring -- There was four scored as low overall risk and twenty-five as moderate overall risk and forty-four as high overall risk.

This was an example of the red snapper, South Atlantic snapper, results of susceptibility along the left-hand side there and you have your productivity along the bottom and there's seven species in there and you can sort of see how they all rate and generally for this group of species they ranked so that you have pretty high risk. There are ones at the top and side there and you can sort of see them there.

Here's the overall rankings. Again, the details are in the report. You can see certainly from the low overall risk right up through the high overall risk and these are all the various species you get and that's how they all rank out. This is the only graph I have on that. We'll obviously come back to that and I think in Wes's report -- Wes, you have a lot of details in your report of the comparable analysis to this and so you can sort of see where everybody ranks on this.

I think the whole point of this analysis is when you look at this say, well, the next step is -- Now you've got this, what do you do about it? I think the philosophy here is to say all right, these stocks over on this side -- There's a couple of things. First of all, these ones over on the right-hand side here, if it is judged to be at high risk to impact, which is what you're basically saying, then these ones should be managed on a more precautionary perspective than the ones over on the left-hand side.

The philosophy that originally we developed in the PSA working group was to say that if you have a buffer between your OFL and your ABC that buffers, in general, should be increasing from low to high up here. That was the general concept and so if you have no buffer here or a small buffer here, you would have a high buffer here. That was the general philosophy.

I will say that since the first working group and we had the second working group, there has been some simulation testing being done in various groups to find out how -- Coming up with some control rules to say, all right, if your risk is this high and your scientific uncertainty is this high, your buffer will be set at X is the general idea. We've tried this in New England. In fact, we just went through results in April, at the April meeting of the SSC in New England, and we got fairly mixed results and perhaps during the discussion we can get into some of that.

I know there's been some other simulation work. I think Rob Wakeford is trying to do some simulation work on this to find out if you take a data-rich situation and you try different buffer sizes, different levels of uncertainty, how does this methodology work, in principle? All this is to say that I don't think that -- I know those particular exercises have not come completely to fruition. We're still learning.

I think from the PSA methodology that I've seen anyway is this is -- I think we're sort of focusing in on -- We're getting relatively sure we can quantify the risk, but it's how we use this risk to inform buffer sizes I think is the issue and I think that's obviously discussion to have.

The other thing we did at the first workshop was to come up with a methodology that maybe could be used that just relies on the catch series and this was the Alec Maccall Depletion-Adjusted Average Catch methodology. If you were so inclined, I do have some slides on that. It's rather interesting. Andy, you were at that workshop and I went through the math on the plane and said, okay, there's a little bit of circular logic here, but it's interesting.

All you need is a catch series and you need some belief, so to speak, in natural mortality and things like where you think you are in relation to B sub 0 and believe it or not, you can come up with some estimates of what your catch should be. That's what we did come up with. Notwithstanding that, that's about as far as we went there, but, of course, if you do not have a

time series of catches, things become very problematical, as you well know, and that's basically it.

This is a pretty short presentation. I just wanted to really give you a context to -- It's going to be hopefully a useful context for the discussions for the rest of the morning. Maybe I could take some clarification comments now, but I would advocate just clarifications and then maybe do Wes's and then talk about it as an assembly, so to speak, because there's a fair amount of commonality between the two approaches.

Dr. Belcher: Robert, we're going to ask, could you provide us a copy of the presentation? Email it to John or some council staff. Thanks. Any general comments or questions relative to this for now or anything that you can hold until after we get the second presentation? That may be beneficial as well, but if there's any points of clarification you would like from Robert.

Dr. Williams: One issue is the productivity stuff, using things like at age at maturity, maximum age, fecundity, all that sort of stuff. When you start to actually look at empirical estimates of productivity that might come from say steepness estimates, because steepness is more or less correlated with R, and you look at some of Myer's work and some of those others, you don't see any relationship between steepness and these factors.

My concern is that biologists have really latched on to this idea that somehow these things are related to productivity, yet the empirical data doesn't ever seem to bear that out, in my mind, and I'm just -- I just throw that out there. I don't think there's a question there, but it's just an observation that I've made over the last few years that it doesn't seem to exist. All of us seem to think it exists, but when you actually look at the empirical data, it doesn't seem to exist.

Part of that may be that actually measuring productivity is a very difficult thing in fisheries, but the other piece of evidence I would add to that is you look at some of the stocks that just haven't recovered, that have been overfished and just simply have not recovered, and you look at some of those and some of those do fit into this sort of -- You would classify them as low productivity, but some others you might even classify as high productivity, but for whatever reason they still haven't recovered. It's just this productivity thing is a tough one for me to wrap my head around.

Mr. O'Boyle: In response, really you can say that this R term, if you go through the math, the R basically should be like twice your MSY if you go through the math. When the New England SSC -- When we were talking about this methodology, I was doing it on my computer and I went through the nineteen stocks and took the FMSY and multiplied them by two and correlated with the R that we were getting out of here and there was somewhat of a relationship, but it wasn't great. I think this bears to what you're basically saying.

I think the big issue here though, Erik and everybody here, is that's what we're trying to develop here is some intuitive, based on first principles or our idea of what the productivity of these resources should be, in principle. I think there's a lot of interaction among these variables, how they're all twisting and how they all interact and yet, there's a lot of correlation among them as well, you would think. Your K and your M, there should be a relationship there.

I think that when you come up with a plot like this and you look at it, based on this biology, if this doesn't make sense, then you have to burrow into the details and say this just doesn't make sense, because ultimately, it basically is an expert judgment system. Basically this is an expert judgment system. It's a way of sort of helping people to categorize their thoughts and lead discussion, but I take your point. I think it's something that we always have to keep in the back of our brain.

Dr. Belcher: Any other points of clarification? Thanks, Robert. Whenever you're ready, Wes.

Mr. Patrick: Thank you for the invitation to come down here today to talk about the NOAA Fisheries Vulnerability Evaluation Workgroup. Our workgroup was formed back in January of 2008 and it has twelve members on it. Paul Spencer and I were the co-leaders of the group and the other members were representatives from each of our Science Centers and from the Southeast here, we had Todd Gedamke and Enric Cortés.

Some of this will be a little bit similar to Bob's. Basically, you all know that in the NS-1 Guidelines we give a definition for vulnerability. It defines a stocks vulnerability as the combination of its productivity, which depends upon its life history characteristics, and it's susceptibility to the fishery, where productivity is the capacity of the stock to produce MSY and to recover the population if depleted and then susceptibility is the potential for the stock to be impacted directly or indirectly by the fishery.

Within the NS-1 Guidelines, we really reference or can apply vulnerability to really three main sections that we talk about and the first section is in differentiating between fisheries and ecosystem component stocks.

We had some criteria for what an ecosystem component stock was and the one that applies to vulnerability, or could be applied, is it's unlikely to become subject to overfishing or overfished according to the best available information. It's how do you determine if a stock is likely to become subject to overfishing if it's data poor and you don't have a stock assessment for it.

The second section is dealing with assembling and managing fish stocks and so we're talking about stock complexes and the NS-1 Guidelines state that vulnerability should be considered when creating, adding, or reorganizing stock complexes. Then the third portion we talk about is modifying control rules.

Our vulnerability team believes that it can be used in either the ABC control rule or the ACT control rule, but not in both places. Otherwise, you might be double counting for this buffer, but within the ABC control rule, the NS-1 Guidelines state that you must articulate how ABC will be set compared to the OFL, based on the scientific knowledge about the stock. If we knew the vulnerability of the stock, you could use it here or whenever you're talking about the ACT control rule. That's the annual catch target control rule.

A stock that is particularly vulnerable to the effects of overfishing, you may want to use a more conservative performance measure and the default that we had in the NS-1 Guidelines is that you wouldn't want to exceed your ACL more than one in four years and so if you have a particularly

vulnerable species, you might want to set that threshold to say one in five years or one in six years, as an example.

The goal of our vulnerability workgroup was to provide a tool for determining the vulnerability of the stock that was flexibility and had the ability to have a high resolution for those stock complex situations and also mainly be able to examine data-poor stocks and so we concentrated on a semi-quantitative approach whenever we were looking for this methodology.

We started off and we did a literature review and, as you know, we came with the PSA approach as the best one. I'll talk more about the Milton and Stobutzki approach, because that's what we really based ours off of. This was the first version of the PSA and then later on, in 2004, Hobday and also Stobutzki was on that group with Hobday et al.

They started modifying it and adding in additional components to it and so that's when they kind of started their risk assessment and had the three components. You start off with the qualitative that Bob talked about and then you went to semi-quantitative and then you went to quantitative and at that point, they added in a whole lot of attributes that dealt with management and habitat and things like that. It was more of an ecosystem-based type of risk assessment.

The attributes that were useful from the PSA was that it's flexible and you can use it at multiple levels of data availability. It's very simple to apply. You just have the X-Y scatter plot. It has a history of uses in the Australian fisheries and we have Lenfest and MRAG also recommending its use.

Now, there's been a lot of different variations of how PSA has been applied since 2001 and overall, the approach goes along with what Bob described. You start off with determining which portion of the fishery you're going to be evaluating, because when you're looking at the susceptibility of a stock, you're going to have to be looking at the actual type of gear that you're fishing with.

You can apply the PSA to say just the longline fishery or the gillnet portions of the fishery or you can be looking at this all the same gear. You can look at recreational versus commercial gear or something like that, so that you know the nuances within each type of gear type.

Then once you've identified what you're going to be scoring, you go through and you assign weights to the productivity and susceptibility indicators and this is where some of the things kind of change between mine and MRAG's version. I don't think that you guys weight anymore. They do multiply their susceptibility scores and that's sort of the same thing as providing weights.

Then once you've done that, you gather your data and your rank your productivity and susceptibility indicators and you compute the overall score and plot it on the X-Y plot and then you use your distance. Our X-Y scatter plot in our report is a little bit different, because of the way that we apply the scores. In MRAG's methodology, they have -- I believe it's kind of reversed for the productivity score, where a score of 1 is low productivity and 3 -- I think what we did was we reversed our axis, so that you always have high productivity is a 3 and high

susceptibility is always a 3 and that was to keep the evaluators from mixing up what is high and what is low between the two different attributes.

Because of that, we had to kind of reverse our X-axis down there, so that it begins with 3 and goes off to 1 and that allows you to still keep everything kind of similar between all the PSA categories, because up in your top right-hand corner, you still have your highest vulnerability category in that plot.

As I told you, this really started out in the Australian fisheries and in 2004, Hobday kind of created this larger, more complex analysis and the original PSA analysis started out with thirteen attributes and when Hobday came out with his more comprehensive type of approach, he came out with seventy-five indicators and then I think Rosenberg et al. in 2007 maybe even added some additional ones related to habitat and some other things.

One of the first things that our group did was we went through and evaluated all these indicators and wanted to determine which ones we felt were most applicable and useful for the U.S. fisheries and so what we ended up doing is through a systematic approach is reducing that number down to twenty-two indicators and we also added in some new ones that weren't previously listed and so we had ten productivity and twelve susceptibility attributes. The reason we have twenty-two is because we do have this management component in it that I'll talk more about in a second.

Then we also modified the scoring bins, because previously the scoring bins that had been used were all for Australian fisheries. We also put in a weighting system that could be modified for evaluators and so for each fishery, you'll want to maybe customize your analysis for that fishery and so we put in this weighting system that's kind of easy to understand. It's zero if the attribute isn't useful and 4 if it's very useful and then we start off with the default at 2. Then we provided an example of how you could do the overall vulnerability for the fishery for a multi-sector fishery.

Here is the list of the ten productivity indicators. They're pretty similar to the ones that Bob talked about and we might have a couple more here, but essentially, we went with the approach of this is an index of productivity and so even though we have a couple more -- If you don't have data for one of these individuals, you might have it for another attribute.

With our susceptibility indicators, we kind of broke ours up into two categories and so we have catchability, which are these first seven attributes, and then 8 through 12 is our management-related attributes and so the reason we did this is because without these management attributes in here -- What we believe the PSA does is gives you the potential risk for a fishery.

Without this management strategy in here, you can say that Stock A has a high vulnerability overall, but if you have good management regulations in place, you're looking at the management strategy and you have good annual catch limits and AMs in place and you're able to close the fishery the same week that it reaches its limit, then you have more control over the fishery and that stock may not be as vulnerable as you thought it was. This gives you a way to downgrade the vulnerability from potential risk and it kind of brings it down related to your

fishery.

The scoring bins, the way that we went through and identified the -- The way that we identify a score of 1, 2, or 3 in the scoring mechanism is that we did some life history correlation modeling and also we evaluated around 150 stocks from the U.S., about twenty-five per region. Then we did some statistical analysis to figure out which bins provided significantly different groupings between these 150 stocks that we had, so that we knew that we each one, if you had low productivity, moderate, or high. It kind of gave us a better idea for U.S. fisheries and that's the same thing that Bob used in his analysis.

Something also kind of unique to our analysis is that we have a data quality index. With the approach that MRAG has, and really all other PSA analysis, is that they don't really tell you how good the data is related to that PSA score and so the way that normally PSA is done is that when you don't have data for an attribute or an indicator, you give the highest score. You're being proactive and you're precautionary and basically what happens is the more data you don't know about a stock, the more inflated your risk score becomes. This is kind of demonstrating this.

This is a model exercise that Hobday did in 2004 that shows on the left-hand axis is the number of attributes missing in an analysis and then on the bottom X-axis is the overall risk value and so as the number of attributes that are missing or you give the highest score to -- As that increases, your overall risk value also increases.

Our vulnerability workgroup preferred to not use that approach and so whenever you have a lack of data, you don't give it the highest risk score. Instead, you don't give it a score, but you highlight it by this data quality index and so basically, if we have twenty-two attributes and we only had data for fifteen of them, you're going to have sort of a moderate -- We have two different scoring systems I'll show you here in a second, but you can identify within your X-Y plot that it was based off of poor or moderate data. You can also plot it on a data quality index that I'll show you here in a minute, but it's basically using the data you have rather than inflating the score.

The data quality index we used was 1 was the best data that you can use. It's recent data for a stock of interest and then 5 was there's no data and so when you have no data, you don't give it a productivity or susceptibility score for that whatever attribute you're looking at, but you do give it a data quality score of a 5 and that's what helps identify plots or points that are based on little data. In the middle here is where you use similar genus or species type of data to make your estimate.

Here's some plots that we have. This is from the Hawaii longline fishery, one of our example applications. The axis or the plot on the left is our general PSA plot and so on the bottom you have your productivity and on your Y-axis you have susceptibility scores and what this does is we divided our data quality index into three categories and that's what the bottom shows, is that data quality low is a red triangle and data quality medium is a yellow circle and then data quality high is the green boxes.

Whenever you look at your vulnerability plot, you can kind of immediately see which ones were

based off of high, medium, and low data. A different way of looking at your data quality is to simply just plot your productivity data quality score versus your susceptibility data quality score and so that's a category from 1 to 5 instead of 1 to 3 and then we identify those that had twenty attributes or more with the big green circles and as you have less and less quality in your vulnerability plot or score, you get the little red dots that shows that there's only ten attributes available for scoring that species.

Here's an example of how we thought about handling multi-sector fisheries. Previously all the PSA analyses have been applied to a single sector and so when it was first used, it was looking at the prawn fishery in Australia and it was all for trawling and they didn't really give any examples of what do you do whenever you have multiple sectors in a fishery.

Our simple approach was just using a weighted average and the weighted you average you have and you base that off of -- You have a vulnerability score for Stock A in some sector and it has an average landings of 100 metric tons and then you have the same stock in a different sector, such as the gillnet, and you catch 200 metric tons a year there and what you do is you just take the weighted average and you come out with an average vulnerability score of 2.3.

The vulnerability workgroup, we looked at 166 stocks around the U.S. and we tried to get one from each region and we looked at the Northeast groundfish multispecies fishery. Of all of these here, the ones that's really in your region here are the highly migratory Atlantic shark complexes. We had thirty-seven there.

Anyway, this next slide shows all of our 166 stocks here and out of those seven different categories or seven fisheries that we looked at, I can show you how they fell out. Here we have the Northeast groundfish fishery and here's the Atlantic sharks. They were the most vulnerable stocks that we evaluated.

Here's the California near-shore groundfish fishery and this is the California coastal pelagics and so these are like your mackerel and herring and anchovies and things like that and so they have a high productivity, but because you can target them very well, they also have kind of a moderate to high susceptibility score, too.

We have Alaska skates here and here, the largest group is really the Hawaii longline fishery, because they just catch a wide variety of different -- They have sharks and they have mackerels, tunas, and billfish and things like that. It's kind of a broad area.

Then lastly, we have sort of a post-hoc test that we did with the South Atlantic and Gulf of Mexico longline fishery for snapper and groupers and this is really sand tilefish and some type of sea bass and I can't remember the other two, but these were stocks that we selected as a group as potentially being an ecosystem component species, because what we saw here from this is that when we first did this analysis, we didn't have the South Atlantic -- We didn't have the snapper grouper complex in here and we saw that all the stocks that we selected were already listed in a fishery management plan as being in need of management measures.

We saw, in general, that almost all of these stocks were above the susceptibility and productivity

line of 2.0. If you guys can see the dotted line there, everything is above 2.0 and that's actually a vulnerability score of 1, because you're taking it from the origin of this axis here. What we did was we did this additional analysis with these potential ecosystem component species from the South Atlantic and we did that based off of their average landings was less than five metric tons a year and their value was low in the fishery.

That's why we wanted to kind of test out does an ecosystem component species fall out in this lower portion of the PSA plot and it does, but some of them, like the sand tilefish, also falls right on that 2.0 line. It gives us a little bit of data. This is based off of four stocks and so we didn't put a lot of faith in this. We need to do a lot more analysis for looking at potential ecosystem component species.

What we could do is we looked at the stock status. Of the 166 stocks that we looked at, fifty of those had stock assessments done for them between 2000 and 2009 and we were able to determine which ones have been overfished or undergoing overfishing between those periods and so if in just one year between 2000 and 2009 they were overfished or overfishing, we highlighted them as a red circle and if not, they got a blue triangle.

This was trying to show that those that are more in the upper right-hand corner of the plot that are more vulnerable, according to our analysis, tend to are more likely to have been overfished in the last nine years. It's trying to groundtruth some of our analysis to make sure that it correlates well with our analysis.

One of the things that we didn't see though was that the susceptibility was significantly different between these, but the productivity wasn't and I think that might be due to just the number of species that we had down in the bottom right. We didn't have a lot of species across the whole PSA plot here, but anyway, let me go back here.

We also looked at the emphasis between target and non-target stocks and we didn't see a trend there. It kind of varies between the fisheries, depending on how it's managed. In the Hawaii longline fishery, the productivities were different, but the susceptibilities weren't different between target and non-target species and vice versa for Atlantic sharks. The susceptibility was different.

Overall, we were happy with what we came up with. We also have some correlation analysis that went along with our report that you can look at, but overall, some recommendations are that you need to -- Because the PSA is somewhat subjective on the way that you do the scoring, it should be conducted by a panel to fully consider the variety of views and reduce the influence of any one person on the team.

We recommend the Delphi method, where you first do a scoring of the attributes and then you talk about it in an open discussion, and then also whenever you're looking at our analysis at least, take into consideration the data quality of each of the points, so that if you have something that's really high vulnerability, but is based off of little data, you need to dig into it some more.

Lastly, our report was published last month and you can find it on our website. Basically, when

you go to this address here, you'll scroll down to the bottom of the webpage. That's the one on the left-hand side and we have some tools and resources there for you. We have like a short summary paper that I also printed off over here and it's on the table for you. It's like ten-pages and it gives a brief overview and some plots.

We also have the report that you can download there. It has an Excel spreadsheet there that our team used. Basically, it has all the attributes already in there and all you have to do is type in how you want to change your weightings for each of the attributes, if you want to. You can leave it default if you like, but type in your numbers and it automatically summarizes your productivity, susceptibility, and your vulnerability scores for you. We've got the equations already in there and it also plots it for you.

That makes Excel plots and if you want to make the plots like I've been showing you in here, one of our team members, Don Kobayashi from the Pacific Islands, has put together a tutorial of how to make those. It's basically just a couple of short applications you have to download and then type in some code and I think that's it.

Dr. Belcher: Thanks, Wes. Any comments or questions from the group specific to Wes's presentation?

Dr. Cooper: In our discussions, we've been looking at the PSA is basically a way to keep internally consistent ways of comparing across fisheries. With the removal -- By the way you're treating the data quality, it's like as a separate index and does the report give any suggestions on how to incorporate data quality if we wanted to overall rank species? Do all of a sudden we start looking at Euclidian distance and three-dimensional space or how should we be using that data quality score if we're wanting to just produce an overall ranking based on the PSE when we -- The other way, by explicitly scoring is risky, then we do get into explicit lists, based on the overall score or the recommendations on what to do with data quality.

Mr. Patrick: In our report, we didn't talk about how you should handle it across fisheries, but the way that we did it was that rather than having the precautionary approach with the scoring and having the inflated scores when you have data lacking is that we thought that once you summarize it for a fishery that's what you base the vulnerability on with the available data you have.

If you wanted to, you could rank them across the fisheries and I guess you could use the data quality index as another attribute that you would consider in that analysis, but no, we didn't combine them into a three-dimensional type of score so that you could rank them across fisheries. I'm sure there's something you guys could figure out to do though with that.

Mr. O'Boyle: I would like to respond to that. A couple of things, first. I should have mentioned this earlier. Actually, the same sorts of information, Wes, that you mentioned and your website is also on the Lenfest -- I should have mentioned that earlier. I just wanted to show you here that we did a comparison between the NOAA Fisheries scoring for Atlantic sharks, doing groundfish -- You can see the South Atlantic and Gulf of Mexico snapper and the Pacific tunas type thing between ours, the MRAGs, in the fisheries and the NOAA classifications.

I think there was thirty-eight stocks that you could actually do the comparison on and you can see in this that the sharks agreed. Everybody agreed that it was high risk and as you showed in your plot, they're all to the right-hand side there and we can come to agreement on that.

When you look at some of the others, MRAG's, in the case of the New England fish, there was twelve stocks that were common and we ranked seven as medium risk and five as high. The NOAA, Wes's, working group looked at them all as basically medium risk and you can sort of see the differences there.

My suspicion is it's how data quality is being handled here. That's my suspicion. Overall in ours, as Wes has pointed out, we've said if you don't know, you plunk it into the highest risk category and so overall what the MRAG's and, as you mentioned earlier, everybody else has been doing, is that will tend to push the risk up. If you took that out of that and what happens is you do drop some of the risks down. How you handle data quality is a big issue.

There's a couple of other ways you can go here. I was thinking of this actually on the plane on the way up. Also I think in your working group -- We didn't do any weighting of the attributes and so you have all of these individual attributes and you say, okay, how do you weight these together and we did discuss this, but we couldn't come up with any what I would call quote, unquote, objective methodology to come up with the weights.

What I think your data, as you said, is it's basically an expert judgment type of a thing. You say, okay, this one and put the weights here. My suspicion and it might be wrong, and correct me if I'm wrong, Wes, is that data quality got into that discussion. In other words, sometimes they said we have better information on this attribute than this attribute and that attribute and did that actually happen in your attributes?

Mr. Patrick: Basically, whenever you have the group discussion on what the attribute score should be, they're saying we're going to base R off of this stock assessment that we did last year and the panel then agrees that yes, that is a data quality score of 1, because it's based on the best available data that we have and it's a high quality report and so we're going to give it a data quality score of 1.

Basically, you get a PSA score for the productivity susceptibility analysis and then kind of linked to that is that data quality score of 1 and so that also gets applied through that weighted average type of scenario. Whenever you look at all twenty-two attributes or actually for each productivity and susceptibility, you go through and that just has a related data quality type of category with it. Either it's the three categories that I talked about that we had low, medium, high or you can look at it on that larger five-scale plot.

Mr. O'Boyle: I guess what I'm trying to get at here is that my -- I might be wrong, but my suspicion is you could use the data quality not as calculated by the group used to do the weighting, but in the discussion to people to take data quality --

Mr. Patrick: No. The data quality, it was regardless of what kind of information you have for that stock. You set the weights for the entire fishery and so you don't change the weights for

each individual stock. You decide at the fishery level of these twenty-two attributes which ones are the most important to our fishery and so an example would be if you don't have a highly migratory species, then one of the attributes was I think migration pattern or something. Does the migration pattern bring it into the fishing grounds at a certain period when it's susceptible, like a spawning period or something. If that doesn't relate to you, you might give that susceptibility attribute a weighting of zero, because it doesn't have any relation to your fishery.

That's actually something we found in our analysis when we did our correlation analysis, was that migration pattern was one of the attributes that wasn't very useful in most of our case studies and so you might want to give that a zero weighting in most cases.

Mr. O'Boyle: Fair enough.

Dr. Cooper: About the customizable weightings, again, what we're looking for is an objective method mostly to deal with fixing these buffers. It sounds like you guys haven't provided an objective method to figure out how to reweight. If you reweight each fishery each time, then, again, without a formal methodology to choose the weights, you essentially -- There's no consistency between them. You're comparing apples and oranges, because now here you're saying productivity is very important and here you're saying it's less important because this is migratory.

It really seems to, without a consistent methodology, break down the internal consistency that is what we're really looking for, unless you give us some guidance as to how to systematically reweight.

All of a sudden it becomes basically we've got these scores, but now we can completely fiddle with them and now you can't necessarily compare, because here we're saying productivity is very important, but now, because we've included twelve more attributes here that are important for this species, the relative importance of R, it's now less important. All of a sudden the relative importance of these attributes is going to change for each fishery and as an SSC, we need a way to make sure we're doing it consistently.

Mr. Patrick: Our vulnerability group talked about this. We started off with a discussion about having a consistent approach, but when it came down to it, all of our scientists felt that it was more important to have the flexibility for each fishery to customize it rather than being able to compare fisheries across the region.

I think if you really wanted to, because we already have the spreadsheets up, everybody could be having different weighting systems for it, but if you had everybody's spreadsheet, you simply go in there and give them all the default weighting of 2 and then you have everything on the same level. That's on approach, is just making sure you can go back through and change all the weights to the same thing and it will be equal.

You still have the data quality issue, but I think you have the same issue if you do the precautionary approach, because you have inflated scores versus those based off of the available data, and our team just felt like it was more important to have it customized for a fishery. That

was something we discussed for a long time, but that's how we came out with it.

Dr. Cooper: If you can't compare across fisheries, because they're all customized weighted, then I could see -- If a high means different things for different fisheries, then what's the score actually telling us?

Mr. Patrick: It's giving you the vulnerability for that particularly fishery. The main purpose for our vulnerability scores or vulnerability approach isn't for comparison across fisheries, but it's to inform you of the vulnerability for that fishery. Whenever you're creating an ABC or ACT or whatever you're doing for creating the complexes, any of those three categories that I talked about at the beginning, that's what it's useful for. It's not so much as useful -- It is useful, but not as much for comparing across fisheries.

Dr. Cooper: How do you calculate an ACT if the meaning of high differs for each fishery?

Mr. Patrick: I'm not sure how across fisheries -- How it is the vulnerability for a stock to -- Any fishery you're talking about, I guess I don't understand how comparing across fisheries helps you inform the ACL control rule either. If you're looking at the ACT control rule and you're trying to figure out for my particular fishery I want to know how conservative I need to be for setting ACT below ACL and you look at that fishery to determine the management uncertainty in there and you happen to have stocks that are in your fishery that are highly vulnerable to overfishing or becoming overfished and you might want to use a higher buffer, but because that same stock is not as vulnerable in some other fishery, it shouldn't relate to how you set your ACT for the one you're interested in.

Dr. Cooper: Right, but if you reweighted the scores, the vulnerabilities are no longer comparable.

Mr. Patrick: What I'm saying is you don't need to compare across fisheries for your ACT. It's basically customized for each of your fisheries. Vulnerability for say in your ACT or ABC control rule shouldn't depend on what the vulnerability is for the other fishery.

Mr. O'Boyle: I tend to agree with Andy on this one. I think that there is a benefit here. We went into this, the philosophy was to try to identify our high risk versus our medium risk versus our low risk animals and the idea was to say okay, in the high risk these ones we've got to be careful of and these could inform our buffer sizes and you are making comparisons across species, you are in general terms.

You might be talking -- I think you're almost talking the same thing here. I think philosophically you're saying within that one animal it's relatively vulnerable. I think you are comparing across, myself. The only thing is it's the weighting, I think, that is -- We stayed away from the weighting just because we felt that it was very difficult to come up with objective criteria and it would be like giving -- It's like basically doing a Bayesian analysis and two to three different teams coming up with different weights and they can really very much influence the endpoint here, so to speak.

I think weighting is one thing, but I guess -- I might be wrong on this, but you showed relationships of productivity scores and how they relate amongst each other and for the most part, I think the productivity scores did, as a group, they actually operate pretty well together, did they not? I thought that it was more on the susceptibility side you got more issues. I might be wrong on that.

Mr. Patrick: I guess so. I believe the correlations that we did -- Are you talking about our comparisons to the other types of risk analysis that are out there?

Mr. O'Boyle: Yes.

Mr. Patrick: Most of the risk analysis that are already out there only deal with productivity and so our correlations with our productivity scores, compared to AFS's version, were very similar, but because they don't have a susceptibility portion to their analysis, that's when we don't have a correlation with their analysis anymore.

I also wanted to point out that where I think that vulnerability is most useful for looking across fisheries is like when you're interested in trying to identify the risk of one species and where it is most vulnerable across multiple species. Yes, you can have some nuances in the way that it's been customized for each of your fisheries, but essentially, if you're worried about red snapper and why is it not doing well and you look at it across fisheries and to use an example that I'm pulling out of the air and I don't know if it's true or not, but where you're catching it in a trawl fishery as a juvenile.

You may identify that as a high-risk fishery and therefore, it identifies it through this risk analysis as this is one of the ten fisheries that it's captured in and therefore, you need to go and provide better management measures or find a way to produce this vulnerability in that particularly fishery, but within the NS-1 Guidelines, we were more interested in providing a methodology for stock complexes, for ABC and ACT control rules for an individual fishery, and then also for identifying ecosystem component species versus in the fishery stocks.

Dr. Cooper: This also I think goes into the MRAG question, but for setting ABC control rules using the PSA as defined here, you've explicitly got management in there and essentially implementation error. You said do you have very good control of the catches or is it a quota or -- That's not supposed to be in the difference between ABC and OFL.

ABC and OFL is uncertainty in FMSY and abundance. Is NMFS making recommendations about dropping that component when using PSA to set an ABC control rule or are we doing something different now where we can incorporate implementation error or I'm just interpreting your management categories incorrectly?

Mr. Patrick: This is what happens whenever you have a workgroup put together. They sometimes stray away from what the NS-1 Guidelines say, but yes, we do have some management portions within the PSA and the way that our workgroup looked at it was that we wanted to know what is the likelihood of a stock becoming overfished or undergoing overfishing.

Whenever you're putting together your ABC control rule, our PSA analysis, though it looks at management of the fishery, it's basically trying to tell you how likely is it that stock is going to become overfished. That's just a different way of looking at how you can look at vulnerability. I also agree that if you dropped off all the management attributes that our productivity portion -- The PSA would be very similar and it already is, basically, with Bob's approach here.

If you want to be strictly no management portion in your PSA, you could basically zero out the weighting for those management related susceptibility scores and you would have a very comparable approach to what MRAG is doing, but if you are interested in trying to look at the likelihood of becoming overfished or undergoing overfishing, then you might want to leave them in and NOAA Fisheries doesn't have a suggestion for that right now, but Rick Methot's group on the ABC working group may be having something out for us soon on that approach.

Mr. O'Boyle: On that point, one of the things I am concerned with in relation to some of your management criteria is you have two of them there, F in relation to M and then you've got fair and then you've got the other one, B in relation to B sub 0. I guess in the case of the B and the B sub 0, that is more of a state versus a rate and that is getting into obviously the stock status.

When you showed the plot of the susceptibility and you said you have overfishing -- You had a relationship to susceptibility and not productivity, I was wondering if part of that might have been driven by the fact that you've actually got stock status in some of your criteria, in one of your criteria. Stock status is basically B versus B sub 0. It is stock status. That variable is there and somewhat also in F versus M. That's somewhat status as well type of thing.

I think that what we tried to do in the PSA is more keep the status out of there, but just more focus in on the rates, the productivity versus the susceptibility, the R and the Q. Even though you have a resource that might be at risk, it doesn't mean it's going to be overfished. When you look at a relationship between your risks versus your actual overfishing versus -- I might not necessarily expect there would be a relationship. Maybe not, because you might have a very high risk situation, but they're not being fished that hard or that sort of thing like that. That just means they're risky, so to speak.

When I saw that, I thought why is that there and my suspicion, and it would have to be checked out, is that you actually have status indicators in the management side of the house and that might be creating some of your correlation.

Mr. Patrick: I'm sure it does have some correlation, since those are the status determination criteria for being overfished or overfishing. I'm not sure how much it helps those scores, because there's twenty-two attributes there, but yes, I think it all goes back to our goal of trying to determine how likely is the stock to become overfished or overfishing and we believe for that to occur or to determine you need to think about the management of that fishery with some of these generic indicators here.

Mr. Carmichael: I had a question, going back to the weightings by fishery and stuff, because it's interesting, but I'm thinking of the example. If you have some generic blue snapper and it shows up in multiple fisheries in different life stages and maybe at some point it's exploited by the hook

and line fishery and maybe another point by a hypothetical trawl fishery, which doesn't exist in this region, and maybe at another point it's a bycatch.

If you did weightings, would that mean you address say the trawl fishery -- You look at all the species and do weighting for all of those and then I would look at the hook and line fishery and go through all of those species and I could have species that exist in both and in the end, on a fishery basis, have different vulnerability scores for the same species for maybe two or three different fisheries.

Mr. Patrick: Right.

Mr. Carmichael: That's interesting, because the intent we've taken is to try and establish a buffer for an individual species and I think the idea of not making comparisons of the bottom line across species is a bit problematic because we know good and well that comparisons will be made, because there's a perception out there that perhaps a crustacean fishery and species should have lower vulnerability than a shark species.

Now, you could go through this and by using weighting end up with your most vulnerable crustacean having very high vulnerability and your most vulnerable shark having very high vulnerability and the comparison being made of saying oh my God, this guy thinks that this crab and this shark have the same vulnerability and that's preposterous. I think that's kind of why people here are talking about we do need to make the comparisons kind of across the board and have a system that will address all of our species and allow us to rank them all on one scale.

Mr. Patrick: I was trying to address that earlier and I think the Australian approach Hobday has in his 2007 report is a very good graph of looking at individuals. You have each fishery and you have a stock that's say across ten fisheries and in each one of those fisheries it has a different vulnerability score because it's susceptibly different, like if it's not one that's captured on a longline fishery, but it's very susceptible to a gillnet fishery.

Basically what they did was they went through and they looked at all ten fisheries and they could identify in what fishery is this stock most vulnerable and then they kind of used that through a risk analysis type approach, saying this is where we need to address most of our management measures to address this concern.

Now, if you wanted to say what is the overall vulnerability for a fishery, for this stock, to all of the fisheries we have, you could take a weighted approach there, too. Even though they were calculated differently, they're customized for each of those scenarios, but then you could just average them together and say overall this catch may be -- With a modifier of landings or something like that, you could come up with what is its overall vulnerability across these ten fisheries, just like we do overall vulnerability for one fishery that has multiple sectors.

Mr. Carmichael: That may end up working out. It's a little different than the way we've thought it about it, but intriguing.

Ms. Jensen: This is probably going to step back a couple of points. I was intrigued when you

mentioned the management uncertainty or the part of the management measures that are in there and whether or not they should be in there at this point, I don't know, because I would sort of reiterate concern over having so many attributes and how you end up comparing them.

My concern about those management attributes is I guess I would define them differently. When I heard that management uncertainty was coming in through the effort, I thought, okay, now we're getting somewhere, because we're talking about fishing behavior and rates of change of numbers of vessels and what it means when we move from single stocks to multiple stocks and single sector to multi-sector, but those management measures, to me, seem like biological measures.

The first one on the list was biomass of spawners and I don't see anything in there that actually ties fishing behavior and I don't know if it comes in there or maybe just a clarification on what the management measures are supposed to capture.

Mr. Patrick: I think biomass of spawners might have actually -- When you go back and you look at the history of the PSA, it goes back and forth depending on how people interpret biomass of spawners. I think at one point it might have been in the productivity category and I think it's also listed in Hobday et al. 2004 as a possible susceptibility attribute and whenever we met as a group and trying to reduce those seventy-five attributes down to what we felt was most important, we went back and forth with biomass also.

Overall, whenever we determined it, I think it fit better with our susceptibility, because of the -- If your biomass is below your MSY, then you are more susceptible to overfishing or you're more susceptible to being overfished and overfishing. It's just an indicator that we use and so we put it in here with our management attributes. That's just the way it fell out after all of our discussions.

Ms. Jensen: Do any of these attributes capture anything related to changing fishing effort?

Mr. Patrick: Are you talking about like fishing rate to natural mortality?

Ms. Jensen: I guess I'm thinking more about changing fleet size.

Mr. Patrick: No.

Dr. Cooper: A question on the averaging across the fisheries based on landings. Are you averaging the susceptibility score and then doing the Euclidian distance with the productivity score or are you averaging the overall vulnerability score?

Mr. Patrick: The vulnerability score.

Dr. Cooper: Okay. That comes -- The weighted average becomes very different then, because you're using squared distances on the productivity multiple times, where really it's only the susceptibility that's changing, right? I would have thought you would want average susceptibility with a productivity. Otherwise, you're averaging the square distance and so the

productivity -- The square distance is going to change for the same vulnerability, same productivity, and you're going to get very different answers, because Euclidian distance is a function of both.

Mr. Patrick: I'm not sure how different it would be, but I think if you had the analysis, I think you could do that approach, too. Ours was the recommended approach and if it has flaws, we're more than willing to change our approach and provide better examples.

Dr. Cooper: A follow-up on that. Just using weight of landings to average across things, I'm thinking of what happens if we've got one fishery that's targeting immature females or happens to be bycatch of immature females weighted with another one that's only targeting mature males. The landings of that could be very disproportional to the actual effect and I don't know how the fact that one fishery is targeting immature females or bycatch or whatever -- Again, it's purely theoretical.

The productivity score will be the same and the vulnerability doesn't really account for the fact that you're really hitting a very important component of the stock and then when you're just averaging by landings, you're really losing the fact that you really, really don't want to be hitting that portion of the stock. Have you guys looked at what happens in those type situations?

Mr. Patrick: We didn't get into those type of details, because I think we would still be working on this workgroup if we were. I totally agree that this vulnerability approach is not the end-all-b-all decider of how you set a buffer. I think you need to look at a lot of different things in your fishery, such as what you were talking about, but this is a methodology. It's just an index of indexes, basically. It's the best we've got with something that can be used across all the regions and I think you need to look deeper than just looking at vulnerability and you look at everything in your fishery that you know about it.

Dr. Cooper: I'm curious -- I can't remember how the Lenfest MRAG approach, when you've got multiple sectors -- I believe you looked at worst case scenario or what did we do with different fisheries, different sectors, if they were targeting different aspects of the biomass?

Mr. O'Boyle: Actually, I don't think, Andy, we really got into that. That came up at the workshop, the March workshop, and it was recognized that because of these things that Wes is talking about that when you get a susceptibility -- Susceptibility is a very fisheries sector-related issue and you're going to have to get into individual susceptibility on a fisheries sector basis.

It was mentioned at the workshop, but we actually didn't get into that or any way, shape, or form. I think the issue you do raise -- That was another thing I wanted to raise, is how do you actually -- If you've got two or three sectors exploiting a resource, how do you in fact weight the susceptibilities or the vulnerability? That's an issue, because of exactly what you're talking about.

I think the weighting is going to be -- I think one can't really say let's use average catch in one case overall. I think that's what you're saying, is that you used average catch, but in other cases, it might be the average number of effort units in the fishery or something of that nature, number

of days fishing or something, some metric, that would more capture more faithfully what the impact is going to be. I think that's a fair statement.

I just want to show you something and I think it comes back to what indicators you use in your analysis and the attributes. This here is the original equation I put up earlier and we tried to do -- This is just for comparison. The productivities, what we were trying to get at is the R and the susceptibilities were at the Q.

I think what I tried to emphasize here is -- Wes, I think what you've got in yours, you've actually got estimates of the B and the E in there, I would argue. The B versus B sub 0 is an estimate of your -- Basically, it's the B over K type of thing. That's more of a status issue and the M over F I would argue is more related to the effort, really E term type of thing. Again, it's some idea of where your overall effort is.

It actually comes back to what you were talking about in relation to do we have estimates in the attributes there of fishing effort type of thing. In fact, if the group comes up and says we think that fishing mortality is two times natural mortality, that's basically what that is. It's rescaled to M, but that's what that is.

I think that understanding where the various attributes fit on that equation is important. The other thing too is that we've got to make sure that we don't confound what I call uncertainty in the B versus what the B is. The idea is you can have a very high or a low B, but you've got a lot of uncertainty in it or you don't have a lot of uncertainty in it.

We've got to be careful. It's the error that we think in the -- The scientific uncertainty is the error in those terms and not what we think the status is. It's the error in the status. That's the issue here. I was thinking maybe the data quality attribute that you have there, that is interesting. During the first workshop we had, we talked a lot about the information uncertainty and there may be a way of using the data quality indicator as a way of setting how much scientific uncertainty you have.

Your data quality indicator is really an estimate of, I would argue, in a bigger picture, is an estimator of your scientific uncertainty really, when you think about it. It's how much information do you have versus not and your overall knowledge and certainly we the first time around were thinking on the scientific uncertainty is that that would be some estimate of say how well do we know things or not and you set your buffer, your scientific uncertainty buffer, depending on that.

It's interesting that you can -- I was wondering if you could somehow use the data quality in some way, shape, or form to set a buffer size based on scientific uncertainty. I thought that all the way through.

Dr. Barbieri: Actually, a follow-up to what you're saying, Robert. To me, the take-home message in comparing the two is it looks like what the NMFS working group was trying to establish was to capture perhaps the application of the PSA to not just development of ABCs, but ACLs as well. It was trying to give some guidance to SSCs while at the same time trying to

accomplish some guidance to councils and integrate the scientific uncertainty with the management uncertainty.

I'm not sure at this point the two can be that integrated in a way, if we are really treating those creation of those buffers separately. In my opinion -- I understand the motives, but it confounds, in a way, I think, the process, because we are trying to keep them separate and from that unique PSA there. Because it integrates, we cannot tease that apart in using it for one or the other. To me, that would be the trouble in having that management uncertainty.

My suggestion at this point is perhaps that the group would revisit this and try to create two separate protocols or procedures, one specifically to address development of the buffers from OFL to ABC and another one that's more focused on providing guidance on how to integrate management uncertainty into the process for going from ABCs to ACLs or ACTs.

Mr. Patrick: I believe -- I'll try to go back with our vulnerability workgroup. Our main goal was looking at the vulnerability of overfishing or becoming overfished and I recognize that the ABC control rule -- You all are trying to not include any type of management indicators and I think that's a valid point, but I also think you don't have to be so strict as to say we cannot look at any type of management indicators when we're looking at the general vulnerability of a stock and the same thing with ACT control rules.

We talk about management uncertainty and you might look at a retrospective analysis of how well you've been able to hit your target in the past and you may or may not want to be more precautionary about how often you exceed your ACL by looking at the vulnerability of a stock, but I agree that there's a lot of different ways of how you can use this vulnerability tool.

If you want to be strict, I think that you can leave off the management portion of our susceptibility things and I think the two approaches are very similar and you can concentrate on that and then maybe vice versa or something with the ACT control rule.

As for following up with that, we already have a workgroup working on that. That's Rick Methot's group. They're working on both the ABC and the ACT control rule and I know that from looking at a draft of the report -- It's not totally complete and I have one or two chapters of it, but I know that vulnerability is just one thing that you can look at.

There was a long table that I saw in their draft report of multiple things to consider when creating the buffers for ABC and ACT control rule. I think we should wait and see what their group comes out with too and then come back and see if we need to follow up more or have more workshops.

Mr. Waugh: Just a question about trying to understand how the two approaches deal with data availability and data quality. It seems in the NMFS approach you're down-weighting the data quality. You're not?

Mr. Patrick: No, we're not. Data quality doesn't affect the weight of an attribute. What it does is for weighting issues, just in general, because the weight is applied equally to the productivity,

susceptibility, and the data quality indexes. As a group, when you first look at the fishery and you say, all right, we're going to look at Sector A.

As a group, you guys decide what is the most important attributes for this particular fishery that we need to score and then they set the weights and then, regardless of if you have good data or not, that's the weight that's applied to all the stocks within that fishery and so the data quality score doesn't change or doesn't affect how an individual attribute is scored. That's standard across all the stocks you're looking at within that fishery.

Mr. O'Boyle: On that point, I think -- As I said earlier, and I would have to look at your data quality a little bit closer, but the weight is -- We just said if you don't know a lot you assume higher risk and so if you turn that around a little bit and if your scientific uncertainty is high, we assumed high risk and we just take that as a statement and we can debate it.

Then you set your buffer and you've got a buffer and in your approach, you say, okay, let's set our risk lower, but then look at the scientific uncertainty through your data quality indicator and then add a buffer on. If the data quality was used as a proxy for scientific uncertainty, you might end up at the same point at the end of the day. It's just where the buffer is included versus not and I would have to go through the jigs and reels in this, but there could be something there, but I'm not sure.

Dr. Cooper: That's pretty much how I understood it, that you base the PSA on only things you know and then you give the data quality score and then the report, as I understand it, is moot as to what you do with that data quality score to influence your buffer. Your PSA score I'll argue -- They say base it only on what you know and I believe the PSA score actually contains less information, because when you look at that -- You can't look at the PSA score without the data score right next to it. It's a meaningless answer without that data score and someone will have to come up with a formal way of integrating those two.

Mr. Patrick: I think it's all in the way you look at it. My group was very adamant about basing the vulnerability score off of what available data we had, rather than having an inflated score. It's either kind of two ways. You can look at it from this is what data we have and we'll highlight the uncertainty we have about that data point, because of the information we used in it, or you can have an inflated score and say is that score really true? It's based off of the fact that we don't have data on it.

I think that's just on the way that you guys want to take your approach. If you don't have data and you want to be more precautionary, then your score is set and you're all ready to go, but if you have this secondary review process and we have a very high risk score because we don't have a lot of data for it, are you going to go to the next level and say well, what else do we know about this stock? Are we just going to leave it high risk or are we going to look at it further and determine if it should be considered lower risk than what we have it now?

Mr. Waugh: When you look at your rankings that come out at the end, yours are ranked more moderate and low risk rather than high risk and that's why my interpretation was you're sort of down-weighting the data. Your approach, you come out with perhaps managing not as

conservatively when you lack data versus the MRAG approach, based on how you categorize them in terms of risk.

Mr. Patrick: I think it would come back down to you have a -- We didn't really have very many low -- We didn't even use really a category of low, medium, high, but what we did show was that most occur across that isopleth of where it goes from 2 to 2 and basically I think it comes down to you have a data point and you see what type of data was missing and maybe you go in and evaluate further if you can figure out a way to get that data.

Maybe the analysis wasn't thorough enough or if those attributes you felt were really important to consider in the analysis and you may be fine with the analysis or not, but the data quality index was basically trying to identify data points that were based off of little data or that were based off of information that wasn't up to date or based off another genus. It's just a way of highlighting areas that you need to look at further.

Dr. Cooper: The problem I see is, according to this report, if you don't have data on that particular species in that fishery, you can use data from related species and related fisheries. In theory, you could actually have something that ranks low even though you actually know nothing about that particular species in that fishery but it's related to this and related to this and related to this and we use all those, but then give it a data score of horrible data and communicating that to the public and figuring out how to use it -- The PSA score says it's low, but we know nothing and for communicating messages, the more ifs, ands, and buts you throw in there, the harder it's going to be.

As we can see even when we have clear messages, it's hard to get it across and if all of a sudden we're having to say our PSA score says this, but don't believe it because there's this other score over here that says this, that's going to make at least the communication department's life absolutely miserable and being able to say here is the score and we are done, which may mean figuring out a formal to multiply by your data quality index and then you're done and maybe you get to the same place, but keeping those things separate is going to make life miserable for dealing with the public, because you're sending two messages and they can go in conflicting ways, neither of which are clearly defined.

I'm going to advocate strongly that either we come up with a formal way of applying that data quality index so we come up with a single index for that PSA or we just -- If we don't know, say we don't know and include it in the score, because keeping them separate, there are too many ways for the message to get lost.

Mr. Patrick: You bring up a good point and you may have already said this, but I think that's why we felt that identifying it with this data quality index, like highlighting it with the different category variable and your plot or whatever is important, because with the MRAG approach and really all other PSA approaches -- They've used the precautionary approach and they've used this analysis of you start off with do you have data for the fish. That's the way they've always done it and then followed by if you don't have data for that fish, then you use the genus and if you don't have it for the genus, then you give it the highest risk score possible.

By not having this data quality index in it, basically you're going to have a high risk score for a stock, using the MRAG approach, and it is based off of other genus and I guess that's useful, but with the data quality index, at least you highlight that that score was based off of that type of information.

Ms. Lange: I probably am missing the mark here, but when we were talking about data quality -- I realize it's relative to these indices of productivity and susceptibility, but we do incorporate in our other attributes, our other dimensions, data quality. I'm not sure if -- I may be talking apples and oranges, but do we need to have it included separately for the PSA if that's one of our separate dimensions? Again, I think I'm off the mark here.

Dr. Belcher: I think that's actually a good talking point for us after we take a break, because that's -- Again, as we compare and contrast the two methodologies, that's kind of those things I think we need to resolve within our discussions on how we're building that ABC control rule, because that is basically some of the questions that are coming up, is that in the sense of -- Again, my gut response to this is in what we're seeing from the NMFS one, it's giving good utility at a management level that's encompassing a lot of the things.

It's almost like assuming we haven't put in an ABC control rule. Our ABC control rule has a lot of these things already built into it. The PSA is a small component in the sense of what is the productivity susceptibility of the species. That's what we're looking at and you're taking it one step further with the management, which is what they need, but there's a little bit of a build over with how we're building ours relative to the PSA relative to the fish. We'll pick that up, I think. We'll go ahead and take a break, unless anybody has any other points.

Dr. Cooper: Again, with this data quality, do you give it one score for the data quality or each of the attributes has a data quality score?

Mr. Patrick: Each attribute.

Dr. Cooper: Each of the lines that gets a score also has a data quality score?

Mr. Patrick: Right. The data quality score is -- Each attribute, as you give it a score, you give it a score of 1 and you say my score was based off of a stock assessment and so I'm giving it, right next to it, a data quality score of 1 and then all those get a weighted average also. You get the data quality score with each stock.

Dr. Cooper: Can you apply separate weights to the separate data quality scores that are different from the weights that you apply to the scores of the attribute?

Mr. Patrick: No.

Dr. Cooper: If you care about uncertainty in something more than you care about the actual level of it, you can't do that? If you're uncertainty about say B relative to B zero, you may really want -- You may care a whole lot about the value and not so much about the uncertainty, or vice versa, but you have to apply the same weight to both the value and the data quality score?

Mr. Patrick: Correct.

Dr. Belcher: At this point it's quarter after ten. Let's go ahead and take a fifteen-minute break and come back at 10:30 and we'll pick up with the discussion relative to our ABC control rule.

Dr. Belcher: Where we're going to pick up then is continuing from where we were yesterday afternoon. We had some general discussions about basically redefining a couple of the tiers and making things a little more clear. Obviously after our presentation this morning on the PSA approaches we have some discussion there as to the information that's in front of us and how best it will fit into the ABC control rule and so let's go ahead and continue dialogues. Who is going to start? Is everybody happy with the tiers that we came up with yesterday so far? Any concerns with the rewrites? That's good.

Dr. Barbieri: If we want to integrate some of the presentations and discussion from this morning, if we want to integrate this into our own discussion, to kind of finalize and wrap up the composition of our structure of our ABC control rule, maybe we can put that up there.

Dr. Belcher: John has got it. For those of you who haven't heard, the access through the portal, we're at Conference 5 and the user is "south" and the password is "fishing". John had sent it around yesterday afternoon, our updated version.

Dr. Cooper: For Bob and Wes, just so they know where we're at, since they probably haven't seen this document and so they can help us in our discussion, what essentially we've done is we've got PSA is one of the criteria we're using in our control rule and so we've actually got multiple tiers based on -- I can't even remember them all. One of them is the type of information we have and one of them --

Dr. Barbieri: This is where it would be helpful to put that table up there, so we would have --

Mr. Carmichael: Everyone should look at Attachment 10. It will be easier for you. Let's put it up there. There's the overall summary.

Dr. Cooper: Essentially, for Wes and Bob, what we're doing is increasing the buffer size based on a quality score for assessment info, uncertainty characterization, stock status, and then the PSA and the size of the buffer that's being shifted is based on those scores. You can see with no catch record, given we have an OFL and a parametric uncertainty about OFL, here's how we then shift away from the median estimate of OFL, based on these different things.

You can see as assessment info decrease that uncertainty increases and stock status gets worse and PSA gets worse and we get farther and farther away from the median estimate and so PSA is one of these criteria and part of the question is what do we mean by that? Did I characterize that correctly?

Dr. Williams: One of the things that was discussed during the PSA presentations was stock status was one of the things that went into it and clearly that would be, given our ABC control rule, would be double counting, essentially.

Dr. Barbieri: I think this is part of what Anne was referring to, something that you were bringing up before, that you were seeing already elements of what Wes was presenting that have been integrated into their PSA construction that we already were trying to take into account into our ABC control rule by those dimensions or tiers, right, that you're seeing those things that could generate that double counting effect?

Mr. Patrick: Now I know what you guys were talking about. I think, depending on which PSA you want to go with -- Since mine does already have stock assessment in there, I think if you still wanted to use it that all you would do is you would zero out the weighting for that, so that it's not considered in the PSA analysis, or any other variables that you think have already been computed in the score.

Dr. Cooper: Just, again, to bring you guys up to speed, this uncertainty characterization, and this is always a tricky one for me, it is how well the stock assessment incorporates uncertainty and so in other words, do we use a point estimate for M or do we use a prior for M, things like that. It's essentially you get the parametric uncertainty about OFL and how well does that truly encapsulate the uncertainty, based on the stock assessment.

Mr. O'Boyle: When you talk about the buffer size at reductions, these are in the context of a quantitative assessment or all assessments or like how are you doing this? I know you have the P, the probability, the 50 percent probability, of being less than FMSY or the BMSY or whatever like this. Is that the probability we're talking about? What is that reduction in the buffer here?

Dr. Cooper: I wasn't here when they came up with this and so I can't take any credit for it, but basically, you do a stock assessment and you get the parametric uncertainty about OFL and rather than inflating the uncertainty, the buffer is how much do you shift away from 50 percent probability and so rather than inflating the uncertainty, we're shifting away from the median to figure out that probability.

Dr. Barbieri: We start from that zero buffer, which we align then with that 50 percent probability default value that comes from that FMSY estimate, but then the size of the buffers were directly related to a range in uncertainty that the council had given us as guidance from what they wanted to consider. In terms of risk, they wanted to assume a 25 percent probability of overfishing on these ABC determinations, but then ranging from 10 to 50 percent.

Mr. O'Boyle: These are actually the percentiles and a probability distribution and so 50 percentile is the mean and in some of these, you're talking two-and-a-half percentile, 5 percentile, seven-and-a-half and 10 percentile. You're getting into the --

Dr. Barbieri: Of course, this would be all related to us getting the P-star values that would come -- Those tables would be coming standard with the stock assessments.

Mr. Patrick: What do you do whenever you don't have a stock assessment that gives you a probability distribution? Do you take it off of the overfishing limit? Is it like a two-and-a-half percent reduction from your landings of overfishing harvest amount?

Dr. Barbieri: The limitation of this, and this is where I guess we left off yesterday, is that this was really put together with the assumption that we would be starting from some OFL, that we would receive with the stock assessment some OFL. We still have not really resolved how we would handle stocks that are unassessed, data poor. That bridge we haven't crossed yet.

Dr. Cooper: Part of this was our goal is no matter what the situation, we have a way to buffer from whatever we think OFL is with the uncertainty and do it in a consistent manner. Our hope is that the Methot group is going to come up with here are the thirty-five ways you can estimate OFL and their uncertainty and then that could be added in as an additional layer.

Mr. O'Boyle: I guess the elephant in the room, to a certain extent, is how you actually do the stock assessment, which gives you the OFL. In data-poor situations, like the situation we had in -- Now I'm going to take my MRAG hat off and put my New England SSC hat on. The situation they had in the New England groundfish was they had nineteen stocks and obviously some of them are data poor, but a number of them are actually data rich.

They went through some simulations where they took these data-rich situations and say let's go back and do this kind of a matrix, metric, and say okay, if your risk is this level and your uncertainty is this level and you go to a 10 percentile or 25 percentile -- They went through that simulation and they were coming up with pretty -- They had some surprises compared to the GARM II and the GARM III. They were saying that wait a minute, maybe this didn't work as well as we had expected.

Part of the confusion was this whole how you adjust for the retrospective problems, because the GARM II didn't adjust for retrospectives, whereas the GARM III did. It was comparing a little bit of apples to oranges. They did go through the simulation exercise, the PDT, the groundfish PDT. They went through the simulation exercise. All I can say basically is that there's more work to do through simulation to find out what exactly -- I'm not convinced the simulations were done correctly, myself. In principle, you think yes, it should work, but it didn't work as well as they expected, that's for sure.

Dr. Williams: Just to follow up on that, I think some of the stuff that's been coming out of Rick Methot's shop has suggested that one of the dimensions should be a measure of retrospective pattern for adjustment, but I think that does actually -- It seems to be a little more specific to the New England case, because they rely on these VPA-type models that tend to have these heavy retrospective patterns.

Not to suggest that statistical catch at age never has these, but my experience is those retrospective patterns don't exist to the extreme that they do with VPA models and statistical catch at age models and so that's why we sort of ignored that dimension, in a sense. In some sense, that can be wrapped up in our uncertainty characterization, too. If we believe there's some process error in the models we're using, we can wrap that into that that dimension.

Dr. Cooper: It also would come into the assessment info category, that if there were strong retrospective patterns we wouldn't have reliable estimates of F, FMSY, B, and BMSY, that the retrospective patterns would make it such that we're very uncertain and so it would automatically

knock it down a tier. Those things would come in not explicitly, but implicitly at different levels.

Mr. O'Boyle: Actually, Erik, it's interesting that we had retrospective problems with statistical catch at age models that were as significant as the VPAs. In fact, if you make the same assumptions in the statistical catch at age as you make in the VPAs, whatever assumptions you make, then you will get the same.

If you say it's the catch at age is the issue, well, not really, because what would happen is you do a statistical catch at age with basically negligible error in the catch at age -- These were all simulations. Then you basically start looking at the survey catchabilities and some of the other things going on and we were getting retrospective problems just like the other ones. Mathematically, they should be equivalent.

Dr. Cooper: Wasn't that in one of the GARMs? There was a whole session on retrospective patterns. Legault I think did a bunch of simulations and basically realizing that you can often detect retrospective patterns but you can't tell why and when you're trying to fix them, if you fix it for the wrong reason you might make things worse.

Mr. O'Boyle: This came as a little bit of the SSC and the Doug Butterworth's of the meeting, because it was like holy cow, it actually was the same. It should be. Mathematically, if you compute it in the same way, you should. If you don't, then you've got a problem with the code.

Dr. Williams: There's an inherent problem with New England's data then.

Dr. Belcher: Further discussion on progress?

Mr. O'Boyle: On this, is there -- You've got your -- I think it's commendable that you've got your matrix set up here of like, okay, if your situation is this, this is the size of the buffer and have you actually undertaken or planned to undertake some simulation exercises to see how this would work, take some old data and see what would happen?

Dr. Belcher: I think we're planning to take current data and apply it, actually. Amendment 17, that's our understanding of how we were planning to look at that, is to apply it to those species in 17.

Mr. Patrick: Whenever you come up with this overall buffer -- I'm starting to realize now what you all were talking about with across the fisheries now. When you come up with this tier system, does that mean that you'll apply the same -- I guess I'm just not familiar enough with how you're going to divvy up your ACLs and stuff, but if you just have one buffer for a stock -- Is that right, from this tier system? When you start allocating it to maybe different sector within your region, they all get the same buffer?

Dr. Belcher: We can all speak to this, but the thing is basically, because of being at the SSC level, we're focused on the species and the stock. Where the split-out comes for the fishery portion of it is at the management level. We don't look at it at the fishery level. We look at it as

the overall. We provide the ABC and from there, it goes over to the council and the council is the one that adjusts relative to the fisheries.

Dr. Cooper: It's the ACL that's split out and not the ABC. I'm going to stir the pot a bit. In general, with PSA, regardless of which method we use, the susceptibility portion of the PSA, things like the overlap of the fishery with the habitat and things like that, I think we need to talk about how that relates to our uncertainty in FMSY times abundance, because I believe in the NS-1 Guidelines it's if they caught the amount in the ABC what's the probability of overfishing. I think we need to talk about -- I can understand how the productivity portion comes in, but the susceptibility and how do we translate that to our uncertainty in FMSY times abundance?

Dr. Barbieri: To me, this is part of the issue as well. In a way, the PSA, the way that it's being applied and even the MRAG and the Lenfest versions, which are not so explicitly incorporating those management factors into it, still -- It's an intersection between the uncertainty and the risk, which you brought up in that email very clearly. It's associated with the cost. You're evaluating what the cost of making the wrong decision and being wrong about something and how that cost would impact the stock or the management of that stock.

In a way, even in these other previous versions of the PSA, it kind of sort of, to me, integrates a little bit by risk and cost of management decisions, something that transcends, goes a little beyond, just assessing uncertainty. I've been comfortable with it to this extent, up to this point, to the extent that it is in these other versions of PSA, but it's undeniable that it's -- To me, in my opinion, it's there. What was your question again?

Dr. Cooper: I think this is kind of what you were getting at and this is what Wes, I think, was talking about explicitly, is that the PSA is really good for going as a holistic approach to go from OFL to ACL. We're trying to figure out what part of that gets us to the ABC and so I was just raising the issue and I think we need to just talk about how does the susceptibility axis of the PSA relate to the buffer for ABC.

I think one way I think I threw out in our first round, when we were forced to pick numbers that we later retracted, was let's assume ACL equals ABC and so we'll stick that in there, because they shouldn't equal, but if they're going to, then let's just shift ABC and take care of it ourselves.

I'm just thinking that we need to flesh out -- I don't know if anybody has opinions or what on how if it's more susceptible, then we are less certain of what's going on. I don't know, but I think it's important for us to talk about it.

Mr. Patrick: Are you all suggesting potentially just totally dropping the susceptibility portion from the PSA?

Dr. Cooper: No, this is me raising an issue just because I think it's important that we talk about it, given that this would be a control rule that we're going to be moving forward. It's not a motion or anything, but it is something -- Whether we keep the susceptibility or the whole thing or the baby and the bathwater or whatever. I just think it's something we should discuss.

Dr. Barbieri: I think now it's a matter of us having discussed this enough and having seen enough of these different versions and iterations of this PSA process to kind of decide what's our tolerance level for integrating components of uncertainty. Assessment information and uncertainty characterization in our control rule are more directly related to uncertainty, scientific uncertainty, while even stock status -- Christine had brought this up earlier, but even stock status and the PSA are leaning more towards the risk assessment, which intersects with uncertainty, to some extent, but it's not necessarily exactly the same thing.

To us, I think that up to this point we've had a level of tolerance to say we want to integrate this. We discussed this yesterday and to me, the take-home message was that the group was comfortable in integrating -- Keeping this too, even though we know that it involves some risk, and I think the difference is that what NMFS, the working group, your presentation today, just went one step beyond and integrated so many more of those other management components that, to me, that went beyond that tolerance level.

I'm not saying that this PSA is not a good method, but it's just not applicable to what we had discussed here, to me, in terms of trying to keep the minimum amount of risk assessment and this management flavor into the way that we've constructed our framework.

Dr. Williams: I guess to Andy's point about whether we should include susceptibility or not, I think it goes back to a comment I made earlier about including stock status. I think the same principles apply when, for instance, one measure of susceptibility might be that a fishery is beginning to catch immature fish instead of mature fish.

I think we get more uncertainty, scientific uncertainty, in the stock dynamics when you start to harvest immature fish, so that as a stock becomes more susceptible there is some inherent uncertainty there. Again, I point to what some could call largely the failure of some of our stock assessment models to capture the dynamics when we start to get into these heavily exploited or highly susceptible situations. The models just don't predict the behavior that well and so I think in that sense susceptibility is scientific uncertainty and should be included and productivity then is also the same principle there.

Dr. Cooper: That's exactly -- I couldn't come up with the reasons, but yes, that sounds like -- As long as we have reasons, it sounds good to me, but I just wanted us to discuss.

Dr. Barbieri: Another point you had brought up earlier, and we know this, but we just we haven't a found out of it, is how to account explicitly for those density independent factors that are causing a lot of the variability in the stock recruitment relationship.

We continue hanging our hats on the reproductive potential of species and looking at spawning stock biomass and some reproductive measures and recently, there has been some work that's trying to refine some of that and identify what the reproductive parameters -- How should we measure them to be able to have less uncertainty in the way that they are taken into account in these assessments, but we can't get away, really, from that completely and I agree with Erik.

It's not really a good measure of productivity and it was incomplete, perhaps, and so there was

uncertainty built into that as well and another reason for us to stick with the structure that we have put together.

Mr. Patrick: I think the more I think about it is looking at the tier system that you have right now, the way that my workgroup looked at the vulnerability evaluation was that what you were coming out with is basically in data-poor cases what is the likelihood that a stock will be overfished or overfishing, which is basically the same thing as -- If you do know the stock is overfished or overfishing, you know the stock status and there's not really much of a need to do a vulnerability analysis if you know it's already overfished or has been in the past and vulnerable.

In your tier system, it may be duplicative to use both the stock status, if you know the stock status is overfished, and then do a vulnerability assessment on top of that and you know that it's a high vulnerability. You might be considered double counting there.

If you don't have a stock assessment, instead of giving it negative ten points for not having a stock assessment, maybe you say I'll give it a negative five plus some little buffer for what we know about the vulnerability of the stock, because vulnerability could be considered a proxy for the stock status.

Dr. Williams: I disagree. I think they're distinct concepts. In a sense, you're implying then that all vulnerable stocks will ultimately become overfished and that's not the case. Yes, there's some inherent correlation there now because of some lack of proper management or inadequate data or whatever, but if the system is implemented properly, those things will become separated and should not correlate, ultimately, in the end. I think they are very distinct concepts.

Dr. Barbieri: I agree. I think they are, too. One is really, even though not exclusively, but it's more directly related to the inherent biological productivity. We want to take into account those biological factors that may modulate productivity while the other one is really based on the fisheries impacts and some history of how management may have responded to those fisheries impacts.

I think they're separate. I don't think they're completed associated, necessarily, just exclusively with uncertainty, but the way that it's structured here -- Again, it's within the tolerance level to say we want to include some of this in our thinking and the group was comfortable with doing it that way.

Mr. O'Boyle: I think that you have to be careful how you bend the concepts here, because I've always looked at like the productivity side of the house as being more related to the R in that equation I mentioned, which is more related to reference points. It's not the stock status, per se. Status is the status, but it's the inherent productivity of the resource -- The productivity of the resource, it's more related to basically more the reference points type of thing, like whether or not they get high turnover or low turnover.

I think the issue of scientific uncertainty does cut across whatever you understand about the resource and productivity, but also like what is the stock status. It cuts across all those issues,

but it's how certain or you are not of stock status and productivity and impacts and that sort of stuff.

On the management side, management uncertainty, I know certainly my perspective of that is management uncertainty is more related to, I would have thought, implementation error, like what's the enforceability of a particular measure and what's the compliance, levels of compliance and enforceability and that sort of thing. If you have a management regulation put in place, what's the expected -- How certain or you are not of that having actually the impact that you want to have, that sort of thing, on that side of the house. That's the way I've sort of bended it in my own brain.

Dr. Barbieri: Right and that's why -- Maybe I didn't explain it properly. Yes, you're right that R being that intrinsic rate of growth, productivity of the stock. We could associate that with steepness, the biological productivity. That, to me, is integrated into the PSA and this for us is something that we want to keep into our -- Even though it's generating an ABC estimate, we want to keep it into our thinking.

The other one is it's not a matter of being management error. It's that the stock status, whether we consider that it has to do with management uncertainty or not, the stock status is a result of previous either management -- Improper or lack thereof of management that resulted from the impacts of the fishery causing the stock to be at this status.

If the stock was completely unfished, the stock status would be completely based just on those biological productivities and how it responds to -- It would be just the dynamics of the population by itself without taking fishing mortality into account. Since management is actually modulating, regulating, the amount of fishing mortality, it influences how those stocks actually turn out to be in terms of stock status.

Dr. Belcher: Further comments and discussion? Bringing us back around to a point then, relative to that particular area with the PSA approaches, what are we recommending? We have two approaches sitting in front of us. What's going to be our procedure in how to count them into the process?

Dr. Williams: Do we have to make that decision now? What we're essentially being -- What I saw as our step at this point is to finalize our ABC control rule that still has to go to the council for their look-over and approval and we have in there a PSA element. Do we actually have to get into the specifics and choose what method we're going to use for the PSA at this point or is that --

Mr. Carmichael: That was kind of my expectation of part of saying this is our control rule. I think part of that is acknowledging how you're going to deal with PSA. What are your criteria going to be and where are you going to get the scores? That's sort of where we left it hanging in March, is let's find out more about these two methods and try to settle that. That was hopefully going to be the discussion for today, settling the PSA.

Dr. Williams: Then the other question is we can choose a method, but then there's still the issue

of how we're going to get the scores. I don't think the SSC is going to be computing those and so the question is where are those scores ultimately going to come from? If we're given the choice between the methods that are currently on the table, MRAG has done seventy-three species for us and so we have numbers there. Again, we're still missing scores for a whole suite of species and who is going to ultimately do that?

Mr. Carmichael: That would be the other component of it, how will the scores be derived and what will the SSC's role be in deriving those scores? Does the SSC recommend a working group being convened of the experts who can actually do the kind of work that MRAG has done for snapper grouper?

I think in terms of if you were to adopt that method, it's helpful that those species are done, because those are the species that need to be addressed in Amendment 17 and as part of approving this plan, you could say and here's how it would be applied and these would be the recommendations for species that are in Amendment 17 that don't have a recommendation yet and here's what the outcome would be. I think the council would like to have ABC recommendations for Amendment 17 species at this meeting if you could carry it through that far.

Dr. Williams: To that point, I guess the issue then is it boils down to the best available data versus best method. Do we have estimates in hand, which is best available, or is that we prefer a better method but we don't have estimates from it yet? What are we stuck with here?

Mr. Carmichael: I would say first the latter and then the former. First decide what your preferred method is and if it turns out that you have numbers for that method, then great. If it turns out that you don't, then you decide how to get those numbers. Is it something that you have enough information at hand to get those numbers at this meeting? If so, then carry through and if not, then develop a process through which to get those numbers.

Dr. Cooper: That was precisely what I was going to say. The goal is to have a control rule and if we decide the best way to go is not a way that we have data for -- For instance, we may also not have B relative to BMSY.

There's a whole bunch of categories we may not have and so I would say let's figure out the method and if we happen to have something that's either good enough -- If we choose a method and it happens to be close enough to the MRAG approach, we can say if our method produces similar scores and then we can actually give draft temporary to be finalized by the Science Center, who will provide this data, et cetera. I would say let's figure out the method and if we can apply it today, great. If not --

Mr. Carmichael: One thought that I had along these lines is it might work out -- Considering you need a workgroup type of thing to come up with these scores and you're calling on a lot of disciplines, different levels of information, it might turn out that you may come up with numbers initially and then with an acknowledgement that as groups of species go through SEDAR -- You may want one of the outputs from that, perhaps, to be PSA values.

You would be trusting on whether or not you want that group of people to do that type of work and make those calls, but I think certainly guidance, which you could develop and build from so that you make sure that what they're doing is consistent with what's done across all your stocks, which would be the one concern of having a different group of people do it over time.

Maybe it would take five years before they got through all the stocks. You would want to make sure that uncertainties are treated consistently and opinions are reflected consistently in the scoring, so that you don't end up with funny outcomes because we decided that if fecundity were over this level we would say it's high and then another group would say it's just medium to us, because we were looking at a whole different group of fish.

I think you would have to make sure that you retain the authority to make tweaks to it, based on their input, and part of it would be they would need to provide you the justification and the information and maybe you do the absolute final scoring to preserve consistency.

That's my thought and SEDAR is kind of looking down the road toward getting into a situation, as we mentioned yesterday, where we do groups of species that make sense together in our blocks, like the coastal migratory pelagics coming up and maybe doing deepwater snapper grouper together as a unit and going forward. There's a lot of value to that both in the -- Sometimes those groupings are influential with regards to the timing of assessments and how they're being managed and everything, but that would fit into this, where you would get a PSA score for a group of species or an entire FMP.

For a lot of them, we will do the entire FMP species at one time. Snapper grouper, of course, we might spread it out over a couple of years, with seventy-three species. I think all of this sort of comes together into a way of getting at these PSA scores that makes sense, once we get over the initial hurdle.

Dr. Cooper: As far as consistency, I believe -- I think both the NMFS approach and the MRAG approach have done this, is that you don't change the high, medium, and low bins by species. Those are set based on pseudo quantitative things, if you have them. Potentially, that should minimize the likelihood of two groups giving one a high and one a medium, because we'll hopefully have outlined ahead of time what we mean by high and medium, or used the definitions that are written up in either of the two documents.

Mr. O'Boyle: In relation to the methodologies, the differences between the MRAG and the NMFS approach and, Wes, you can pipe up here too, from what I see is on the attribute side, the productivity are basically are using the same suite. In fact, at the workshop in March I think it was we harmonized basically the binning type of thing.

There are minor differences in the number of -- I think you've got a couple of parameters that we don't have and that sort of thing, but productivity is basically the same. There are more issues on the susceptibility side. As I emphasized, MRAG looked at more of like the catch and there are some management related ones in there, but the capture, the catchability indicators, whereas Wes mentioned he's got the management indicators.

The management indicators would be a -- That's one point of discussion, where do you want to put those. The second thing is data quality and how do you handle that and the third thing is the weighting. Those are the three things that I saw are the key differences. Then you have to say which ones make the difference or not.

I can see -- Going backwards, I could see that the weighting could make a difference. If you have two different teams of experts looking at the same dataset, you might come up with different weighting and you might come up with different attributes, simply because you've got two different experts coming up with the same data. In the MRAG's, we basically said fix the weighting until you come up with an objective way of doing things. That's what we basically said and not that necessarily weighting is a bad thing, but come up with objective criteria.

Data quality, we talked a lot about here and I think there's a lot of linkage between the scientific uncertainty and the data quality and I haven't even sorted that out in my own brain exactly and it's one of the sorts of things that you might want to go through the data quality in the -- Data quality might be a useful indicator to inform your uncertainty on the scientific uncertainty somehow. I don't know, but it's interesting.

On the attributes, the management criteria, as I've said a couple of times, I would be concerned about including the stock status indicators in that, just because like the F over M and the B over B sub 0, because of stock status. That was my concern.

Dr. Barbieri: Right and I think that summarizes it pretty well and to that point, I mean my opinion is that I feel that at this point, because of the way that we've structured our ABC control rule, the MRAG PSA would be better for us, because it kind of separates -- It doesn't handle really more of those management issues and I think it's a little better suited to development of ABC recommendations, creation of the buffer from OFL to ABC.

It's not that the NMFS working group method is not good. It's just that it's already trying to integrate things that we had already thought about and put into our structure to begin with. In that case, my suggestion would be for us to adopt the MRAG one.

Mr. Patrick: I just wanted to add that I think really the main difference between our two approaches is that yes, our approach has the management portion in there, but I think those -- I can see where it's not going to be useful in your process here and I think that's easily resolved by just basically deleting those attributes or within our Excel spreadsheet you just put a zero weighting on those and it gets rid of those attributes and you don't have to worry about that any more.

I think the real question you need to ask is do you want to have the precautionary type of scoring process or do you want to have it based off of what data is available and highlighting it through the data quality index and I think that's the real main difference between the two.

Dr. Cooper: We could make the NMFS one work how the MRAG one works by zeroing out the management ones and setting all the weights except those that we zero out to 1 and then the question is what do we do with uncertainty? Do we ignore the manual with the NMFS one and

say no, set it to 4 if we don't know or do we follow the guidelines? The Excel spreadsheet, we could make it work either way.

I actually disagree that if you don't know that setting it to 4 or 3 or whatever the maximum score is is precautionary, because the question is how much uncertainty do you have? The whole point of this is relating it to uncertainty and if we don't know, that means we are more uncertain.

If we are having to rely on a proxy, we are more uncertain and so I don't -- I think if we did use the NMFS one and follow the NMFS manual of fill in the attributes based on whatever you know and then do a separate data one, we would have to somehow add another thing on how we apply the NMFS one to account for the fact that it's based all on proxies or all on assumptions, whereas putting it in the worst case scenario forces -- It basically does that for us already.

The other aspect of this is answering the question of how can we reduce uncertainty and how can we shrink those buffers and having a very clear guidance -- When the industry says how can we shrink the buffers, here are the things that are causing the buffer to increase and when you have the MRAG approach of scoring it as a 4, it's very clear that this one, this one, and this one are driving your PSA scores.

The fact that we're on Tier 2 of your assessment is driving the buffer and when we have a separate data quality score that we somehow still then have to figure out how to merge it, it's going to be more difficult to figure out when industry says, okay, we want to fund some research to shrink this buffer and what should we study?

In the MRAG approach, it's like here are your 4's because we don't know the answer. It becomes very clear and here's how it will shrink relative to funding a stock assessment. I think we need to include that, both for helping figuring out where to go and accounting for the fact that these buffers are for uncertainty and so if we don't know, it needs to be increased. You can't just say we base this all on related species from Europe and Patagonia and wherever. Either we need to combine the data quality score and the PSA score from NMFS or treat it as most uncertain.

Dr. Williams: I agree with everything Andy said 100 percent. He basically summed it up pretty well.

Dr. Belcher: Where to from here?

Dr. Barbieri: If we're going to start using John's suggestion to pick a method, my suggestion is that we use the MRAG one. This is not based on the fact that the NMFS one is not put together and well thought out and applicable in other situations, but it's just not as suitable, it doesn't seem to be, for our framework. That would be my suggestion. If you need me to put this in the form of a motion, if we need to go to that point -- If it's consensus, then that's my suggestion and I would like to hear from folks who disagree with that suggestion, because it would be a point of discussion.

Dr. Cooper: Just a technical point. MRAG approach versus NMFS approach is setting up somewhat of a false dichotomy because the NMFS approach setting the redundant or

management-oriented ones to zero and everything else having equal weight and then scoring uncertainties as the most extreme rather than -- Basically, changing three words of the manual in the NMFS approach and you've got the identical thing.

We may not want to be pitting these two things against each other, but rather saying more explicitly what it is we think we should do and it just so happens that NMFS has a nice spreadsheet already laid out that we can adapt and MRAG already has these scores we can use.

If these attributes really are the same, phrasing it that way -- I'm not sure how to do that as a motion, but the intent being that we can make these things the same and it's not like we're choosing someone's stock assessment over another one's stock assessment.

Dr. Belcher: I'm going to kind of throw a glitch out, I think. The one thing that now as we're saying that -- As Wes had pointed out, you can put the zero weights on the management component and is it worthwhile then as we're building this multi-staged control rule approach better to use that in the sense that as we go through our process we do it relative to what we need to do on the science aspect and then we hand it off to the management and at that point, management determines how to turn on those weights for management, to see how to weight that out to get at their ACTs or whatever components they're having to come up with at that point as to how they're delving it out amongst the fishery at that point? Is that worth a point of discussion, because it does build in that level, does it not?

Mr. Patrick: I think Bob might have the same type of spreadsheet in there, but whenever you talk about the management -- It would be useful to the council members if they did want to include it in their ACT control rule, as you were saying, but also for helping them determine what is an ecosystem component species and also whenever they're trying to formulate their stock complexes.

Dr. Barbieri: All of those things are valid. The point is right now we are focusing on really identifying the next steps, immediate next steps, for us to be able to proceed, today, for this meeting, with our ABC control rule. To me, having seen both presentations and heard the discussions, I think that at this point, where we are right now, the MRAG method actually takes care of our needs in terms of an assignment of a PSA value.

On top of that, we already have a report, at least for the snapper grouper complex, where they have already come up with some of those scores and we already have the analysis done. It's really not a matter of saying if we pick one we are picking between methods because we are recommending that the council considers this one better than the other.

Right now to resolve our ABC control rule at this meeting, if we're going to make this decision and move forward, I think at this point this is the one that's best applicable to our framework. That was my point.

Mr. O'Boyle: In relation to further what you're saying, Luiz, maybe a way to formulate this is that there was two presentations on formulations of the PSA method and one was a more specific implementation of a more general application and in the case of the South Atlantic right now, it

looks like the more specific -- You could say data quality handled this way and weights are fixed and management set to zero. That would be a way forward.

I agree with Andy. We're not giving MRAG versus NMFS. Basically, it goes back to the 2007 workshop and you guys took it and tried different things and the more I'm looking at it, it looks like in fact really what the NMFS group did is they looked more generally at a broader suite of things, obviously, because you've got all the councils to look at. As you say, in relation to the South Atlantic, the formulation we're looking at is fix this, this, and this. It's not one versus the other. It's more what are the features of the model that you would like to specify and right now, you're saying this A, B, and C. That's the way I would phrase it.

Dr. Cooper: To that end, remember this goes to a council and then becomes part of a public document and the last thing we need to do is unnecessarily provide ammo for people saying the SSC rejects the NMFS approach to PSA, because we're not. We're saying it's a valid approach modified this way.

I agree exactly with your intent, but it's simply the wording, because given the increased publicity of all this -- The NMFS approach, a lot of people put in a lot of time to come up with a very flexible approach and we're not rejecting it. We're saying this is how we would modify it and it just so happens that someone already has.

To Carolyn's point of simply turning on the weights for the PSA for the managers, I think they would need to come up with a control rule to figure out how that works in and simply turning on the weights and applying our control rule to then get the ACL, I don't think we're quite ready to recommend that.

Dr. Belcher: I was just thinking that it did have that quasi-build-in for it. Obviously you would need more to it. That wouldn't be the end-all-be-all as to how you would get to the ACL, but it just did seem kind of compelling that as we hand this off now they're going to be sitting there doing their deliberations on how to work with the ACL and if there was already a trigger in there, it might have an ability for them with the discussion.

You're right that we don't need to sit here and debate one method over the other, because, again, in the situation that we're looking at, what MRAG has put forward does encompass, again, like we said earlier, we focus at the species level or in terms of the stock level. We're not looking at the compartmental. We're looking at the overall, just as we look at an overall population assessment.

In that sense, it better dovetails into what we're doing if we're focusing on just the ABC. At that point -- Like I said, to me, the other flip of that was, well, but at some point it's going to be handed off and ACL is going to have its own little buffer that's going to go in and it's just an interesting point to think that there might be that ability to segue that relatively easy into management. Like I said, that was just kind of a thought that came to mind.

I'm still, again, feeling that what's been proposed through MRAG more fits into what we are doing. I don't have -- That was just, like I said, an alternate throw in terms of do you open that

door or not, because you don't want to make it look like you closed one.

Dr. Cooper: The question of using -- Given that we're taking the modified NMFS approach/MRAG approach and MRAG has already produced the numbers, do we know how MRAG actually accounted for the fact that the species are caught in multiple fisheries when calculating the susceptibility number? Do we care?

Again, if we're then going to use these numbers, we should know how that approach looked at multiple fisheries when examining susceptibility and so when we made recommendations on applying it, it's done in a consistent manner in the future.

Dr. Belcher: Further comments and discussion? Seeing none, John has put a summary of what he has viewed as the consensus. Does anyone have any objection to the support for the approach based on MRAG's -- Looking at his consensus statement then and his supporting points, does everyone agree with this being our recommendation relative to the PSA component?

Dr. Barbieri: Can you say that again?

Dr. Belcher: Do you agree with the consensus statement and the supporting points as a group is basically what I'm asking. Does anyone have exception with that as our standing statement?

Dr. Cooper: I personally would like it specifically in there that the NMFS approach could be modified to produce the identical results and it's not just the last point that one approach is more consistent. It's more that one approach we don't have to do any modification and the other one is built and we could modify it and we would get the same answer.

Mr. O'Boyle: I think rather than the NMFS approach and the MRAG approach, as I said earlier, it's the NMFS formulation of the PSA approach. Do you understand what I'm saying? It's like saying this statistical catch at age model is better than this statistical catch at age model. It's the details type of thing. The issue is what are the details of the formulation, as Wes mentioned. Data quality is the big one, of course, and how you actually handle that.

Mr. Carmichael: Is it the Lenfest -- Is that the expert working group or what do we officially call it? The MRAG?

Dr. Cooper: Wasn't it Lenfest/MRAG?

Dr. Belcher: We'll just call it the Rob O'Boyle approach.

Dr. Cooper: We can call it the PSA approach as described by the expert working group convened by Lenfest and MRAG.

Mr. Carmichael: The idea behind here is get more of a census building approach and to include a statement that summarizes your position, but then to provide more supporting details as to how you arrived at this position and what sort of caveats you would like to carry forward with it. I'm thinking somewhat of the report that Erik shared from the Northeast or Northwest where the

working group or part of an SSC or something that was doing that.

It had that list of numbered statements about everything they talked about and it seemed like that was a pretty concise, but yet clear way of getting across all the relevant points without having to dig through all the minutes, but it provided a lot more than just a motion. I was thinking perhaps something along those lines and this may work, to just have a statement and then follow up with maybe a series of bullets as the brief points that you want to make.

Dr. Barbieri: Right and, again, this is getting a lot of our report work kind of done ahead of time. I thought that we were discussing issues here and we would flesh out as we put together the consensus report -- That we could explain all those issues there, but this gets us ahead of the game and kind of starts laying out the reasoning behind it and it's good to have it.

Mr. Carmichael: Do you have more to add?

Dr. Cooper: Do we want to paraphrase Erik's comment in there specifically stating that for various susceptible and low productive stocks that we are less certain as to our estimates of FMSY and current abundance? Basically, that's why it's part of our ABC control rule, given we're putting our rationale in bullet points.

Mr. Carmichael: Should we add that when we adopt the ABC control rule? I'm seeing this is really getting at the PSA component of your ABC control rule.

Dr. Cooper: That's just one reason why we're including this particular component in the ABC control rule. Either way.

Mr. Carmichael: You all tell me. Add this here, something like that?

Dr. Cooper: Add it in both places and that way they see it twice.

Mr. Carmichael: What exactly is this statement?

Dr. Cooper: There's greater uncertainty in estimates of FMSY and abundance in low productive versus high productive stocks and high susceptible versus low susceptible stocks or something like that.

Mr. Carmichael: Does this capture Erik's point? I think it needs something a little more concluding.

Dr. Williams: Put a little smiley-face after it.

Mr. Carmichael: Because of this, this is incorporated in the MRAG approach? These parameters are incorporated, right?

Dr. Cooper: This is a general statement about PSA as applicable to uncertainty in OFL.

Ms. Lange: Back to my other question. Are these supporting points supporting the selection of the MRAG formulation over the NMFS formulation? If so, this last point should be a separate point.

Mr. Carmichael: That's what I asked and Andy said both and everyone said okay.

Dr. Cooper: Either way we go, it should be for high susceptibility versus low susceptibility stocks, the other way around.

Dr. Belcher: Any other points? Seeing none, is everyone comfortable with this as our consensus statement then, given the recent rewrite to make sure it didn't look like we were choosing competing procedures? I can go in and no one will say they didn't agree with it? Okay. Then we have our consensus statement relative to PSA.

Mr. Waugh: I presume this is going to be a part of your written report and so I don't see why it needs to be read into the record as well, because your written report will be part of the record. If you all want it included in your minutes and clearly stated, then it should be read.

Dr. Belcher: I think we're going to forego reading it in, just because it will be -- Basically, when I present it, I'll be reading it as is from that text. Seeing no objection and hearing no further comment, this stands as the consensus statement relative to the PSA. We're looking at quarter of twelve and so I'm going to say we'll go ahead and take a break for lunch and we'll come back between 1:00 and 1:30. We'll come back at 1:15.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened at the Hutchinson Island Marriott, Stuart, Florida, Monday afternoon, June 8, 2009, and was called to order at 1:30 o'clock p.m. by Chairman Carolyn Belcher.

Dr. Belcher: We are going to, by our agenda, be focusing on now that we have a draft in hand -- Actually, John pointed out that we might need to look at the MRAG score ranking criteria to make sure that that's --

Mr. Carmichael: Here's the situation. In the draft control rule, we included sort of a relative risk level, three tiers of low risk, moderate risk, high risk. We had also discussed quantifying the MRAG tiers into five levels between zero and four and above. What we have now from the report which is now available, which we were only thinking sort of second-hand about at that time, is this statement right here off of the figure where they talk about the overall risk and they classified overall risk as high, medium, and low, with over 3.18 high and 2.64 to 3.18 medium and below 2.64 low.

They used three classifications and we have five. We need to come up with some way of incorporating this MRAG-derived PSA scoring into our control rule, wherein each dimension in our control rule has a scale from zero to ten for buffering. We need to decide what are the categories and what distinguishes between the categories and what's the buffering effect for each category.

Dr. Belcher: By the table we only have three groupings.

Mr. Carmichael: But it's our table and we can have as many as we want. We have three generic and we had five at one point on MRAG or we could just simply adopt their three and plug it into our three generic and say retain those and use these as the MRAG ratings or come up with additional breakouts for the MRAG values if we so choose, if you so choose.

Dr. Buckel: Does anyone know how Hobday et al. came up with their breaks? Since those aren't discreet breaks, there was likely some statistical technique and so maybe we could go back to that just to check real quick to see if there's a way to easily do four or five or -- I'm fine I think with three. I think that would work, unless we want to split one more than they have to be consistent with what you developed in March.

Mr. Carmichael: All I see so far is this one sentence, where they give what the rankings are and cite Hobday, unless someone has a copy of Hobday, which I don't.

Dr Buckel: Wes, do you know Hobday broke out these groups into high, medium, and low, this 3.18 and greater than 3.18 or 2.64 to --

Mr. Patrick: The way he did that was he basically divided evenly the Euclidian distance that was available by three. The thing I'm not sure about is that Hobday -- Their origin starts from 0.0 instead of 1.1, like we presented with the MRAG approach. I'm not sure if it's zero to 4.2 is the maximum Euclidian distance and then you divide by three or if it's 1.4 to 4.2 divided equally by three is the way they did it. It's one of the two and I'm not sure what scale they have up there.

Dr. Belcher: Any thoughts from anybody?

Mr. Carmichael: Here's the plot. Does this roughly look like thirds to you? Medium doesn't look like a third to me, 2.64 to 3.18. That's only a range of 0.5 and I don't think this is straight up thirds of the Euclidian distance. Could it be thirds of the area of the box? I don't know. That's the information and so what's it going to be?

Dr. Belcher: Does anyone have any issues with adopting the Hobday approach? Our table kind of reflected that's what we did. The question is just answering the confliction with what was written up in the text part of it.

Ms. Lange: The five that you just erased, was that -- We had used three categories in our table. What was the five from? That was out of the MRAG document?

Mr. Carmichael: No, that was our just discussing how we could incorporate the MRAG scores. That's one of the options that's in the paper. The table reflects just the three generic categories, but we had the option to use MRAG and had put a ranking of MRAG scores, but at that time, we didn't have the document. We didn't know the details and so we didn't know how the scores would be classified or whether they were from zero to fifty or one to three or anything of that nature. They were just kind of preliminary, but we may want to use this sentence here and their rankings, since that fits in with three, and then we've got them broken out.

Ms. Lange: I guess I would say that since this is a precedent and they've got it set, what rationale do we have for doing something different?

Dr. Williams: The only rationale for doing something different might be we might want more categories or more tiers in that dimension. Maybe we want five instead of three and that would be more consistent with our other tiers in the other categories where we have five tiers, but I'll add that I'm fine with the MRAG. Just for the sake of discussion I brought that up.

Dr. Cooper: Right now with only three tiers, there's not going to be a whole lot of movement until there are major changes. The PSA score is going to be pretty well fixed until we get a pretty large change in the PSA, which means the PSA scores would be relatively insensitive to change in stock status and things like that, or at least susceptibility things, since those are the only things that actually would change.

Do we think the PSA score will actually change over time much, given the rankings, and if it isn't, since most of the productivity rankings are biological and those aren't going to change probably in my lifetime, at least not much -- Susceptibility, selectivities, is pretty much the only thing that's going to change, the actual selectivity scores. There's not a whole lot -- These scores aren't going to be able to move around a whole lot and so that may mean that we don't necessarily need a whole lot of resolution or we may want a whole lot of resolution, because then little changes will actually make a difference. As I usually do, I've raised more issues than I answer.

Dr. Barbieri: Just a question. For this application here, how many tiers did they use for this application, the South Atlantic?

Mr. Carmichael: Look at the picture there. This actually reflects both where the species fall and how their range falls. I think the low, the high, and then the area between the two boxes seems to fall within the medium. From this figure, I see the entire range of species is reflected in the value for spadefish through the value for cubera. Spadefish comes out with an overall risk of 2.41 and cubera come out with an overall risk of 3.92.

The entire range is about 1.5. That's where all the action is occurring and so I guess I'm taking it that this is roughly how things would break out if you pick their rankings. Spadefish, triggerfish, tomtate, and blue striped grunt would be in the low and then a whole bunch of stuff is in the medium to medium-high and a few things in the very, very high category.

Dr. Cooper: One of the things we may want to do before we jump ahead is actually figure out if we had three categories how would it look and if we had five categories, how would it look and actually see as you change the only thing that can change the PSA score, will things actually jump categories?

If we have five categories and going to the extremes on essentially selectivity or -- There's only a couple of things that move. If you go to the extremes and that's not going to change your overall score, then it doesn't matter and that this is a permanent feature of the stock. Added to that, before we jump in, just to point out, and I think is probably what Erik was scratching his

head about, is the methods in Attachment 11, which is what this is, and Attachment 12, which is the most recent MRAG version, actually have different scoring criteria.

Mr. Carmichael: This is Attachment 12.

Dr. Cooper: This is 12, I'm sorry. Attachment 11, if you look on page 10, has different scoring criteria. This is where they add that desirability thing in that they don't have on the previous one and I think the South Atlantic numbers are on the old version and not on the latest of the MRAG method.

Dr. Belcher: That's actually dollar amounts.

Dr. Cooper: Right, but that then comes in into a susceptibility score. The third one down is desirability and that's how they break out desirability into high, medium, and low. In other words, the MRAG method, there are actually two of them, an older one, which I believe is what the South Atlantic scoring uses, and the most recent version. I'm opening a can of worms.

If we're pulling scores from the older one, does that mean we prefer the older scoring method to the newer scoring method? That would then also determine how sensitive these things are to changes in management and status and all that kind of stuff. I almost hate to suggest it, but I think we really need to sit down and figure out which MRAG method we're using before we start picking numbers and why are we using an older version versus a newer version and then figuring out will these things change with changes in our situation or are these going to be static features of a system, in which case the decision of three tiers versus five is a very different question.

Dr. Belcher: John is suggesting we take a little bit of time and try to work through some of this.

Mr. Carmichael: We could break up into groups and do what you say, try to come up with the means and to actually just take some time and look at the numbers and categorize stuff. I think that's what I was taking from your suggestion or at least that's what we need to do and not necessarily when.

Dr. Cooper: The assumption is here we have the collective knowledge to answer all the scoring criteria?

Mr. Carmichael: I just thought we were trying to determine a range of scoring criteria to use in our scoring and to consider three categories versus five categories and look at where species fall and not getting into how they devised their actual specific value, but how we subdivide the values into our categories and turn that into a scale of zero to 10 for our ABC scoring.

Dr. Cooper: That is dependent on whether we use the old MRAG approach or the new MRAG approach. You'll get different scores because there are different criteria and we don't have these things filled out for the new MRAG scoring criteria I don't believe.

Mr. Carmichael: Are we obligated to use the old or are we dead in the water again?

Dr. Cooper: It comes down to Erik's question of do we choose the method and then figure out do we have the data available to apply it now or do we base it on what do we have data now for? Previously, we said we choose the method first. We could look at the old scoring criteria and see how sensitive it is and make some assumptions that the new scoring criteria will be approximately as sensitive and at least answer the question of three or five categories and then choose the criteria. I don't know. I'm getting tired of talking. Someone else can start bringing these things up.

Mr. Carmichael: A-12 includes desirability. Here it is. Desirability is in there and so maybe this is an updated version of their results file and hence, that's why these results that Carolyn and I just pulled out of this table differ from what we talked about in March by a slight amount. The problem is solved.

Dr. Cooper: I was confused, because that document is attached to the old version of -- When I open mine, I've got two documents in one PDF and it's the South Atlantic results are attached to the old method and so I was assuming that --

Mr. Carmichael: There were two results files on their website and it wasn't clear to me how they differed and what was what and so that's why there's both in this PDF and I think that's exactly what you're saying. This was the original results file that they had put out and then as they went through it -- It's not presented the same and it doesn't have the same information and I thought this was kind of the text of how they got there and then there was the second file, which was specific to the South Atlantic, which provided the full color and detail for all the groupings. I think that's where we are.

Mr. Patrick: I'm not totally sure -- Claudia, I think, is going to be sending an email out to MRAG in a second, but I don't remember when the publication date was for the two reports, but I know that when we met in January with MRAG -- They invited us over to compare our different reports and in January, the original analysis that they did, because they were providing us an overview with all the different fisheries they had examined, I think their original scoring mechanism was different, totally different.

They were basing their scoring bins off of the Australian fisheries type of scoring bins and also I think at that time they were doing susceptibility by multiplying the factors together rather than being additive and then after that meeting in January, they decided to change to be very similar to our approach and so they took away the multiplicative portion of susceptibility and made it additive and then changed the scoring bins, but I'm not sure when these two reports were published you're looking at. I think they might change -- I think they revised their scoring bins for the South Atlantic report here.

Dr. Cooper: I think John nailed in that the two attachments in the single PDF are the wrong two attachments to join together. It's the old scoring with the new report and that new report goes with a different file and that's why I was confused. Basically everything I said about the different scoring ones -- The South Atlantic stuff, in looking at their criteria and then the other A-11 document, match up, but it doesn't match up to the A-11 that's flagged up on that. It was my confusion and sorry for propagating that to the rest of the group.

Dr. Buckel: Unlike our other tiers, this is something close to a continuous variable and if one were so inclined and wanted to ruin the symmetry of our framework, we could rescale the numbers between zero and 10 and kind of finesse this where we break.

Mr. Carmichael: That's sort of what I was thinking. That's why I was interested in what their potential score range was and it looks like it's probably 1 to whatever the full distance is, if it's 3 and 3.

Mr. Patrick: Claudia looked this up too online. The way that they did this was the equal distance of the area up there.

Mr. Carmichael: It's not really the Euclidian distance broken into thirds. It's the area broken into thirds.

Mr. Patrick: It says that it's the Euclidian distance, but also the area.

Mr. Carmichael: If you multiply it by 2, it would become 2 versus almost 10 or 9, 2 to 9. Then part of that is everything sort of falls into, as we saw, the full range of 2.4 to 3.9. What you would be assigning then essentially for all snapper grouper species is minus 5 to minus 8 for your buffer.

Your fish that comes out the best will still get a buffer of minus 5, which is slightly different than how we've approached the others, in that we've said the fish that comes out with the best conditions does not receive an additional buffer.

Dr. Cooper: You're limiting that to snapper grouper. Wahoo or dolphin might come out very different.

Mr. Carmichael: My expectation is snapper grouper probably run enough of a gamut with the way unknowns and everything are treated that it didn't seem like anything in any of these ever came out much below 2. I'm thinking of all we saw this morning in the presentations and I didn't see any stocks that came out much below 2. Did many of yours? It seemed like a lot of the NMFS approaches still came out pretty high.

Mr. Patrick: For ours, we looked only at fish that were currently in FMPs and it was the 2 to 2 isopleth. It was basically was above that.

Dr. Cooper: Actually, looking at the table right now, if it's moderate productivity and moderate vulnerability and moderate susceptibility, it's a negative 5, which is pretty much, when you look at the rankings, where all the snapper grouper -- Nothing really falls into our zero category anyway, when you look at the rankings of the high, medium, and lows. Do we consider low relative to the stocks that we have looked at in -- Do we buffer that based on what we've seen as low or is low low and it just so happens we don't have very many lows in the South Atlantic so far?

Mr. Carmichael: I guess I'm thinking of it more as carrying it through to the scoring and if we

get a fish with the best possible score, do we want to assign a buffer of zero and do we want to put maybe a floor at which from the minimum possible until the score that you derived for a fish that we perceive as having very low risk and therefore not needing additional buffer includes zero?

Could spadefish fall into a category that overall we say that fish doesn't need additional buffer for PSA and so up that value should be a zero? Otherwise, that fish gets a 5 and 5, looking back at our other categories, that's a pretty good chunk of additional buffer. We've brought that in for some pretty severe deficiencies in other categories and here we have the best fish we can get in terms of PSA and we're giving it a 5. That's where I'm thinking of maybe needing to scale to fit with our overall logic.

Dr. Williams: Somewhere I got lost in the logic train. Wouldn't the low get a score of zero? Spadefish and gray triggerfish would both get a zero buffer for the PSA.

Mr. Carmichael: We were talking about just using the fact that these are continuous variables and just using that score straight up as opposed to establishing the rankings that they used.

Dr. Williams: I must have blanked out on that, but I think that's a bad idea.

Mr. Carmichael: Under just using the rankings that they have, then it's done and we can move on.

Dr. Williams: These PSA scores are so subjective that I don't think you can use them at that level of precision. I think you do have to just bin them into categories.

Mr. Carmichael: So we should use the ranking scale that they put forth and three categories, with above 3.18 being high, 2.64 to 3.18 medium, and below 2.64 being low and snapper grouper species falling out as shown in the figure of overall risk in the PSA South Atlantic results document?

Dr. Williams: The only caveat there is Andy brought up, appropriately, is then these categories are so broad that we're not going to get much movement between them and whether we expect movement between them or not, that's the only issue. We could parse this into five. We would have to get out somebody who is really good with their trig to figure out the redistribution of the areas in that square, but it can be done.

Mr. Carmichael: I would think ones that are kind of on the bubble maybe you would. Here's a group, jolthead porgy, red hind, and hogfish. There's a number of unknowns with hogfish and so hogfish could get some life history information and actually slide down some. That one it's hard to say. Maybe they're right over into the high category.

Pink shrimp is right on the overall medium, but maybe with some life history information it slides down into low, because that would be the way you would think stuff would slide. There are some on the bubble which might could -- If we put more categories, more get on the bubble.

Dr. Cooper: Actually, you raised a point that I think -- Food is still on my brain and I'm half asleep, but the other way things can move besides in the susceptibility is things moving from 4, that we don't know, to actually gaining knowledge, which actually would change things quite a bit. We could actually get significant movement even in three categories, because of the way we're treating unknowns. I was just looking at given it's known, what would management change, which isn't a whole lot, but yes, knowledge would change them quite a bit, even with three categories probably.

Dr. Williams: I would suggest that in that case maybe three categories is good for now and we can reevaluate.

Mr. Patrick: Earlier in the day we talked about potentially using our vulnerability Excel spreadsheet to help with other species and I just wanted to point out that the way that we calculated vulnerability is different than what MRAG did and everybody else, because they start from a 0/0 axis instead of actually at the 1/1 or 3/1 axis. If you did use our Excel spreadsheet, everything would be off by about 1.4 on the vulnerability. That's something to consider.

Dr. Belcher: Everyone is feeling comfortable then with leaving it at the three divisions?

Mr. Carmichael: I have a range of zero to 10 and a scale of 1, 2, and 3, zero, minus 5, and 10.

Dr. Belcher: Does everyone feel comfortable then with what we've got proposed so far for the assessed stocks as far as our control rule goes? Is there anything that we need to consider or we haven't considered or does anybody have any begging questions that they feel we haven't answered?

What I was thinking we should do, given the fact that I know there will be a lot more lengthy discussion on what we're going to do with the unassessed stocks is since there's a time thing with Amendment 17, those that we have assessments for, looking at what this exercise is going to yield to the council for advice on how to set the levels is what I was thinking we should do. John is in the process of filling in the table. Is anybody opposed to doing that? Okay.

Like I said, John is going to fill in the table for us so we can look at it and see what it looks like. The table that John has up on the screen is basically showing how our four tiers end up breaking out relative to the six of the ten species that are on the Amendment 17 list that have assessments.

Mr. Carmichael: Then the application of this means you would recommend an ABC for golden tilefish with a thirty-three-and-a-half percent chance of overfishing occurring, because it's a step-down of 17.5 points from the 50 percent level.

Everyone may want to just take a minute and look at these scores and look at the document and make sure if we're moving into the realm of applying this. It seems like Carolyn wants to kind of go through applying this for the assessed species and then work on polishing this for the unassessed species and then apply it for the unassessed species.

Dr. Cooper: Just remind me again -- The council has asked that the buffers be in the range of

zero to 40 percent?

Mr. Carmichael: The council passed a motion last September about risk and said a risk in the range of 10 to 40 percent of overfishing with a midpoint at 25. Since then, the SSC has built on this plan and they took that under consideration and expanded it a bit to include a range all the way to 50 for saying that in the best case scenario we would have this situation where we would not have any additional buffer.

The council can consider this with regard to their previous motion and may choose to do this or they could say that's fine, but we want to start from 40. As you've suggested, they could always modify the starting point. It's similar to what the council recommended. It uses the same floor and a little bit higher top level.

Dr. Barbieri: This issue -- Refresh my memory again. For something like vermilion snapper, where biomass status is unknown, it's not a matter of using a proxy for getting the biomass status. This is what I want to make sure, that in terms of the scores for status, stock status -- That gives all the species that have unknown either stock status or state of the fisheries and they're getting a 5 score?

Mr. Carmichael: A 5 score translated to a buffer in that category of minus 10, the max.

Dr. Barbieri: Okay. That's exactly what I was looking for. Thanks.

Dr. Cooper: Again, since it feels like we're doing kind of a gut check with this, of those assessed species, the most conservative management is going to be vermilion snapper with a 25 percent probability of overfishing and based on this, we're actually going to be more risk prone with things like gag, snowy grouper, and red snapper. I'm not sure -- I would be interested in hearing what other people's gut says about us being more risk prone with red snapper and gag than vermilion snapper.

Dr. Barbieri: If I understand what your concern is, I think this is exactly the kind of thing that we wanted to get captured by the PSA, was this -- It's exactly the productivity and susceptibility of a species to be more sensitive to fishing and not be able to rebuild as fast. To me, when you look at a -- Something is not adding up with the way that the PSA is or -- When you think about a gonochoristic versus a hermaphroditic species and --

Mr. Carmichael: Look at where the difference lies. The PSA buffer is greater for gag than it is for vermilion snapper and where is the difference? The difference is coming in in assessment information. Vermilion snapper is minus 5 and gag is a zero. It's coming in in status. Vermilion snapper is minus 10 and gag is a minus 5. Vermilion snapper is overfishing and gag is overfishing and vermilion snapper is unknown with regard to overfished and gag is a not. Vermilion snapper on status is getting a lesser score. Its status is -- Because there's an unknown, it's paying a price.

When you get to where the rubber hits the road, the price is 5 percent between having an assessment info of 3 versus 1 and a known versus an unknown, you're paying 5 percent of your

risk of overfishing. It's not just that the perception of vermilion snapper about the fish and what I noted in vermilion with the PSA is that vermilion and red snapper came out the same and that was kind of surprising to me. That's contrary to what we've always talked about with vermilion, but maybe our sort of seat-of-the-pants impression of vermilion is needing some revision.

Dr. Barbieri: To that point really fast, this was reassuring, because just walking it through this process, actually we are putting a lot of weight on uncertainty, the fact that vermilion status is unknown, and that actually represents higher uncertainty and we're putting more weight on that than on anything else really.

Mr. Waugh: This highlights the high cost of not having appropriate information and certainly in the risk-averse approach to management, that's a wise thing to do when you don't know. From my perspective, what's missing is a feedback loop to improve our data and improve our understanding.

The Magnuson Act says that you use the best available science and please don't anybody with the agency take this wrong, but there's just no incentive for us to improve the data. There isn't, because we've been sued and what we're doing now, it's enough to win lawsuits. What this is showing is that the fishing public pays a high price because we haven't done the job that needs to be done, for legitimate reasons, resources and so forth, to properly manage our fisheries.

Certainly there's a lot of biological rationale for doing this, but somehow, in order to stop paying that high premium in the future, we've got to create a feedback loop to finally start fixing our data issues or else we'll just continue paying this price into the future.

Dr. Cooper: I'm not quite sure if I'm interpreting you correctly, but I think this does exactly that. As we do gain information -- The thing that we're paying for the most is lack of information and so improved assessments, improved knowledge on the PSA scores, are the things that are really going to move these things up in the tiers.

There is that feedback and more to what my point was on the gut check is we're going to have to be able to explain, just like John did, as to why these things are ranking out the way they are, because the public is going to be doing a gut check on these and if we're thinking we're getting a lot of letters now on stock assessments, just wait until we start publishing these buffers and people start writing us letters of here's some information on this and this and here's why your scoring is wrong.

We have to be able to, or someone will, walk through and get used to doing that and saying here's why it doesn't agree with your gut. If we agree with the method to create the number, then that's what we should be going on and not whether or not it necessarily agrees with our gut completely, but as long as we can defend that.

Dr. Buckel: I think what makes me nervous on that is the category for overfished and we have an unknown certification of that. A lot of that is based off of historical data that's not going to get any better. It's not like somebody is going to come along and open up a crypt and find all of this reliable catch history from the 1940s and 1950s and 1960s and so there's no way of

improving that and yet, that's going to be taken into this model and people are going to have to, I guess, indefinitely pay for that. That makes me a little bit more nervous than anything else in this method.

Dr. Barbieri: Andy had pointed it out before and I agree with him. I think that yes, having this out there actually will help the process. People will have the motivation to focus more on the data, because they realize that there's a price to pay for that uncertainty and they're going to do their best to try and reduce the uncertainty.

Actually, this is one of the main benefits of this process, is that right now we do have this incentive for a little focus, more focus, on getting better data and better assessments and less uncertainty that before, not explicitly like this, we didn't have.

Dr. Belcher: Any further comments or concerns?

Dr. Cooper: Just something that should be pointed out when we present this, the council -- I can't remember the exact wording, but their point estimate was 25 percent was kind of what they felt comfortable with, acceptable probabilities of overfishing. That was kind of what their target and then they gave the range. I can't remember the term they used for that 25 percent. It was what they were planning on managing to.

Right now, after buffering, our worst case scenario gets down to that and we have no situations that's even more risk averse than 25 percent. Everything this is proposing right now is as risk averse or more risk prone than the council's first statement and so that 50 percent starting point is what's doing that. As this is put forward if the council really -- If their base is most of the time we want to be around 25 percent, right now it's our worst case scenario that gets down to 25 percent and everything else, the ABC is more risk prone than that.

Dr. Williams: That's just because that's our worst case scenario of our assessed species, which happen to be our most data rich situations. Once we get down the list with other species, we're going to see some really low values, I promise you.

Dr. Cooper: It depends on how you interpret their statement of the 25 percent. If that was referring to when we know what we're doing we want 25 percent, then right now this is more risk prone than what the council's -- This is something the council has to decide on. That's not our decision to make, but just -- It's just getting some clarification on what the council meant by in that statement of 25 percent and here's the range.

Dr. Barbieri: I want to jump in just because I have the same question and that's a question for you too, John, along those same lines. To me, that statement from the council wasn't really clear, explicit, about that uncertainty or risk of overfishing being associated with an ABC and so since they will be potentially adding an additional buffer when developing the ACL, are those probabilities or that range of probabilities that they gave the overall probability of overfishing after all the necessary buffers have been developed or is that specifically associated with the ABC?

Mr. Carmichael: It was referring back to the SSC's request for a little bit of guidance on how they interpret risk. As you recall, we've had a lot of discussion about how much risk will the council take and so the council was asked that and my opinion on what they said is that that was some initial guidance that they gave almost a year ago when we had a heck of a lot less information than we have before us and we were looking at a heck of a lot less robust system than what we're having.

I think if there were nothing else done other than pick an ABC off of a P-star table, then 0.25 was a reasonable place to put a midpoint, but there was an awful lot of members who felt like why isn't 0.5 just as good and we have the range at 10 to 40. My feeling is that that was useful to this committee for getting an idea of the level of risk and for making it clear that we have a range, essentially 10 to 40, 10 to 50 by law, and we should try to work within that.

I think we're well within our rights to come up with a much more robust system, which builds from that initial bit of guidance which came out in September, and as they've seen the committee work on this system, with its much more robust take and its many more criteria in there and placing much less reliance on any one particular decision, I don't think they're going to lose any sleep over the fact that that initial motion is now left by the wayside.

I think that was a very important first step to get some answer on that question which the SSC kept throwing back of how much risk do you want. I think we're on solid ground here with what we have.

Dr. Cooper: The fact that any of these numbers are actually reflective of the true probability of overfishing -- I believe in NMFS guidelines it's that relative to the AMs -- You shouldn't be surpassing the AM trigger, whatever that is, the ACL, one in four years, right? From these, they're going to have to buffer if we actually think these are similar to the true probabilities of overfishing. Right now, they would be surpassing -- They would be overfishing one out of every three years, in some cases.

Dr. Jiao: I was wondering whether it's possible to provide the corresponding P value based on the current management strategy, like 0.75 FMSY or 0.75 FMSY proxy. Then you can compare the current P value with the previous -- This P value doesn't correspond to how many percent of the FMSY, right? It doesn't equal that. This is just the probability of overfishing or overfished, correct?

Dr. Barbieri: Isn't this the probability of exceeding OFL, which in this case is MSY? Right?

Dr. Jiao: That's my understanding, but this doesn't equal to the percentage of FMSY. It doesn't equal that one and then I would think it's necessary to look at if -- If 0.75 FMSY was used, what's the corresponding P value? Then you compare it with the historical management. For example, for some species, we've already used 0.75 FMSY for five or ten years already, but we didn't decrease the trend of population decline and then you can get a sense of whether the current P value, the one that we just developed, is reasonable or not. I would think that's better adjustment of this P value.

Mr. Carmichael: I think you can do that if you convert everything to the common currency of poundage. If you look at what yield is at 75 percent of FMSY, you can compare that yield on this table, which is the probability distribution, the P-star analyses, essentially. This one is for gag and so you could find the yield then in this column of 75 percent of FMSY and then look over and see what the probability of overfishing occurring is.

For gag, we've recommended now, from our table, a 30 percent probability of overfishing, which then means the ABC for gag would become 489. I think this is metric tons. It would be 489 metric tons or 1,078 pounds. I don't know what the -- The 50 percent would be the yield at FMSY and so if we go down to 50 percent -- At 50 percent, it's 1,122. It's about a hundred-thousand-pound difference between your recommended straight OFL at 50 percent versus recommending the ABC. There's some separation. This is at FMSY and not FOY.

Dr. Williams: What Yan was asking is if you looked at 75 percent of FMSY what is the poundage that corresponds to that and the percent reduction in catch and how does that then compare to the P-star and what is the equivalent P-star to a 75 percent FMSY value, which we did all that for gag and it was 30 percent, which matches exactly what's coming out of our table, but that's the only one that we've done it for.

Now, I don't know what value there is in going back and computing all that for the others, because I don't know if it's going to change our minds necessarily on this new system, because this is a completely new system. If it's higher or lower than the 0.75 FMSY, I don't think it's going to change our opinion on how we've set this whole thing up.

That's my concern, is going back and revisiting a bunch of numbers isn't going to change our opinions, I don't think. At least I hope it wouldn't, because we've spent a lot of time on this and I think what we have is good to go. At this point, we really need council feedback instead of hashing over this a million times over and trying to reinterpret what the council wants. It's time to dump it into the council's lap, frankly, and get some feedback from them at this point.

Dr. Barbieri: I agree with Erik's point. In this case, I can understand why you want to see that and I would too, but we are kind of bound by NS-1 in the definition of OFL that we have accepted and so in that case, in terms of development of this ABC, I don't think it would be very relevant, because we are limiting this here to the development of the ABC.

Dr. Jiao: I think the relative numbers of the P values do make sense, because they tell you different species and why we pick different values and why some of them are high and why some are low, but the exact numbers of the P values for each species and each fishery, they're really very important and what we did, what we picked up like for each category, we minus 5 percent, that's very arbitrary and subjective and I need to say that.

I think we can compare the value of whether 30 percent is reasonable or not by looking at the corresponding management history to justify whether this value is actually reasonable or not. I think that's a very important step. For example, why we minus 5 percent if the stock assessment was not well done or if the PSA value indicates that there's high vulnerability and why we give it a value of a negative 7.5, for example.

We can adjust it in some way by comparing the result of the historical management to those exact values and if we just pick up the negative 5 or negative 10, it doesn't really mean that it's scientific, to me.

Dr. Cooper: Yes, the scores that were decided upon in March and then reapproved here are subjective, but the rationale was we have a range of forty and each of our four categories are worth equal weight and therefore, each one can account for 10 percent. Within each category, we've predefined the breakouts of where we think that knowledge lies and then gave those distributions equal weight and that's where the zero, 2.5, 5, 7.5 come from.

It has a very definitive way of doing it. We didn't pick these numbers out of the air. It was we've got this range and we've got four things we're looking at and that gets 10 percent for each. On the ones that we have three, we break the range into thirds and for ones we've got five, we break them into five and give equal weight each and it goes back to why equal weight? Well, right now, we don't necessarily have an objective way of changing those weights, which we talked about yesterday, and this is a starting point. I think, as Erik said, we'll see how this works. This is the starting point, but it's not like these are -- They are subjective, but it's not like these numbers were pulled out of thin air.

Dr. Jiao: As I said, I think those relative numbers really make sense, but I think some justification for the baseline is needed. I understand this is a starting point and I really am very glad that we realize this is the starting point, for example, and maybe later the 40 percent can be revised to 30 percent, based on the management experience later. Is this what you suggest?

Dr. Cooper: That 40 percent range was going from the median at 50 percent probability of overfishing down to 10 percent, which is what the council said -- The council said a little bit smaller range and we extended it to 50, because that's what Magnuson said. That's where the 40 percent comes from.

If the council says no, even in the best circumstance we don't want to use the median and we want to start at 40 percent, then that would shift. The council can set the range, but that's where that would come in and I think these relative weights and relative scores will be based on experience or if we get people to do some simulations or some other thing to actually justify changing the scale or giving some things more weight than others, but the range of 40 percent was going from the median to a 10 percent probability of overfishing, as dictated by the council.

Dr. Jiao: I just feel like even when we use this methodology and not all of the -- I actually consider in the P estimation and it's impossible at this stage to consider all of the -- involved in this model and data in fisheries. From that point, I think some feedback -- Staff needs to build in this framework or this management.

Dr. Cooper: I believe that once we start doing this and actually then have like a stock assessment and they follow these rules and it turns out they set their ACT equal to this and their landings equal to this and it turns out that actually went above our estimate of OFL, that's a warning sign that okay, this thing is meshing up quite right with reality.

If they set the ACTs and ACLs appropriately and they're still landing things way out here, there will be feedbacks and whether it changes the ABC or the buffer here or there -- I think we will be getting data as we go to make very distinct changes here.

Dr. Jiao: Yes, that's what I suggest, but what I also want to mention is that we have historical data and we can use the last five years or ten years of data to look at whether this approach is reasonable or not.

Dr. Belcher: Further discussion?

Dr. Larkin: Actually, it's just more about the process and how it's going to proceed. If the council says we don't want you to go to 50, is that going to come back to us here this meeting or when does I guess the feedback about -- We gave 5 to vermilion because it's an unknown and we have good reasons for doing that, because we want to send this message.

If they look at the SEDAR schedule and say, more along Gregg's line, that that's not going to happen and that's not the way that this incentive is going to work through this, do they change that or do we change that and does that happen over the next couple of days or are we talking six months from now?

Mr. Carmichael: I think in terms of if they were to say change the starting point which you work down from, that would be something that we would hear back from them this week and they will either adopt it here this week or adopt it in September or it might be something that each council committee has to adopt, because we're dealing with a snapper grouper amendment.

My thought is when we go with the comprehensive amendment that this will be part of something that gets adopted for all species. At that point, they might decide that we want to use a range up to 40 and nothing ever goes to the 50 level. That could be something they would come back and would require us to just kind of change our scaling.

In terms of changing an individual species, my thought is that you will consider that when you get new information. If you get an assessment update on a stock that's been run through this, you would look at that information and decide, okay, let's go through with what's in the assessment and compare all of our scores and something that's straightforward, like a status, that would be pretty easy.

You would also have to then look at the assessment and re-judge your assessment information score, because maybe one didn't have an MSY distribution and now it does. Maybe one used to be a proxy for FMSY and the new assessment says here's an estimate of FMSY. You would change that score as well and you would also have to go through and look at how the assessment treated uncertainty, which we would hope that as we do subsequent assessments we would do better.

One of the things we talked about in SEDAR is having a procedural workshop to talk about how we treat historical data for one subject and uncertainty in this risk situation. Something like this would help feed into that and the idea is to come up with some standards for all assessments

about what type of information is provided in terms of characterizing risk and uncertainty. As that goes through, then ideally that would improve the scores for uncertainty on all future assessments.

Dr. Larkin: Is our transcript -- Are they going to have our transcript and they're expected to read that before they start talking or are we going to raise these issues? Is our chair going to go in and raise these issues and say this is what this means and we had a discussion on this and this is what that means? Are they going to have to read through the lines or are you going to sort of lay out what we've talked about today so that it's on their radar?

Dr. Belcher: Again, it all comes down to the report. I will go in and I will present, to the best of my abilities, relative to the document we put together how we've deliberated and gotten to the end. Basically, my thought on this was we produce the table and we give them the recommendations that we're saying as far as where they need to focus on their P-star values.

From there, that gives them the ability to discuss it, but, again, they might have the same hiccups in terms of you know what your gut is telling you but you're visually not seeing it, that same way that John walked through and said here's the assessments and here's where the weightings are differing and this is why.

While it's contrary to what your gut says, based on the scientific data and information we have at hand, this is where we end up. Until you fix the problems that put you at this higher weighting in these other categories, there's not much better that we can do for you, but this is the best approach we have right now. It at least gets us going forward on that.

As far as -- You were talking about the 40 percent. In that situation, like Luiz and I were just discussing, it adds an additional buffer if they choose to drop from the 50 to the 40, which means that if you've got a P-star at 33.5, they're going to be at 23.5 if they choose to use the 40.

Mr. Waugh: I think you all were very wise to back it up to 50 percent, because I think were you to go with the 40 percent being the top end, someone at the council level could argue that the law allows you to go to 50 percent and so we would come back and want 50 percent. Should we find someone who wants to be more conservative, the recommendation they're going to get from staff is to do that in setting your ACL.

I think the likelihood that they're going to want to get in and suggest changes to this is relatively low, once they get the different weightings explained and understand what's causing some of that difference.

They've got a lot to do in going from your ABC and then coming up with an ACL and for those species in Amendment 17, I think it will be a test case for them to work through this and you'll get the feedback, but timing on Amendment 17, we need them to give us some final options at this meeting and so you'll get your feedback.

Dr. Belcher: Aren't you all glad that you're leaving on Tuesday evening and not staying through Thursday?

Mr. Carmichael: Kind of thinking ahead, at the end of January you're going to have a meeting that's going to be an SSC meeting/SEDAR review panel. You're going to get an assessment and one year it will be a benchmark and the next year it's going to be a set of updates and you're going to have all this information before you. That seems like a logical time, once that review is done, for the SSC then to go through and say okay, we have this assessment before us and it's all fresh in our mind and how do we update our ABC criteria for these species that we've just dealt with and then all of that can be ready and the council gets it in March.

Those would be the stocks that the council would be preparing amendments for to take action on, preferably under one single amendment that they approve long about September that says all right, here's the changes that need to be made for these three or four species.

I think the time to do it is when you get new information, you're going to be much closer to that new information and it might end up being a very logical flow to what you're going to do, because at that time the council would by saying we want to know -- Here's the new assessment and here's the new information and what's your new ABC and you'll have to go through this to get there and you'll have the information.

We might have kind of the feedback loop built in as we go through it and then I think as Erik mentioned, way earlier in the day, getting this out there and getting it in practice and seeing how it works and put it in place and then go through and do an assessment after you've done it and see how it panned out is the real test, which will come years down the road.

Dr. Jiao: I have another concern. I think it's very good that you have a penalty there when the fishery actually is overfished or overfishing is occurring and my question is for those rebuilding species and populations should we pick up a P value that actually guarantees the rebuilding by a certain year? I'm not sure whether it's required now.

Mr. Carmichael: Actually, the recommendation in the plan for the rebuilding species is that the council still has flexibility to pick a particular rebuilding year, which is bound by the law and then by the maximum allowable by law. Normally, what the council has done is pick a plan based on the year, which then provides like a 50 percent chance that the stock will be rebuilt by the year of their choosing to specify the rebuilding period.

Maybe they have a range from fifteen to twenty-five years for rebuilding options. They may choose to rebuild it in twenty years and normally they would say okay then, so find the F or the landings that rebuilds with 50 percent probability by that year, twenty years down the road.

What this proposes under this rebuilding target is that the SSC would accommodate the improving the success of rebuilding by changing the probability of being rebuilt in the final year and so what this says is then for the case of gag, if it were overfished, then the council would -- The suggestion from the SSC would be select a rebuilding plan that gives you a 70 percent chance of success in the year in which you choose it to be rebuilt.

It's adding in the increased probability of success for the point at which you're rebuilt. Then, of course, across the board in all years you should have a higher success of not overfishing and

everything else.

Dr. Jiao: If my understanding is correct, so this P value will be somewhat adjusted based on simulations according to the rebuilding plan?

Mr. Carmichael: The P value is picked here. The P value isn't adjusted. The simulations would determine what landings are necessary to achieve that P value, but they wouldn't be necessary to pick the P value.

Dr. Jiao: I don't think I get you. This P value will be fixed?

Mr. Carmichael: It will be fixed at the value of your choosing, that's right, based on the decisions that you've made for everything. You can see it ranges from sixty-six for golden tilefish up to seventy-two for vermilion snapper and so vermilion snapper I think we're talking about the unknowns and the price that you have to pay.

It says if vermilion snapper were overfished and needed rebuilding that applying these rules would tell the council -- The SSC would recommend to the council a rebuilding plan with a seventy-two-and-a-half percent chance of rebuilding. Then, of course, there's a lot of ways to get there. Scenarios would come in for that, but that would become the critical value that they're targeting, whereas now they're targeting 50 percent.

Dr. Jiao: We're going to, based on this fixed P value, to describe the year of rebuilding and the probability of rebuilding?

Mr. Carmichael: It's the probability of rebuilding in the year that the council chooses. We're not saying anything about when the council chooses to rebuild it, because that's fairly well specified in the Magnuson Act. They either do it within ten years -- If they can, they do it within ten years and if they can't, then they do it within ten years plus a generation time.

That's their maximum and so then they have anywhere from as soon as you can at F equals zero up until one generation plus ten years. That's essentially the range and I think for something like red snapper that we're looking at the range is like twenty years or maybe even less than that. It's twenty-some years to thirty-eight to forty-five years.

Now red snapper brings up the interesting situation of while we would say recommend a 70 percent rebuilding success, you're also going to have the overfishing situation coming up in red snapper and so there's a lot of rebuilding plans that would achieve 70 percent rebuilding success twenty to forty years from now, but a lot of those plans would result in overfishing next year, which we can't allow. That comes into play as well.

Dr. Jiao: If my understanding is correct, you're going to balance those two P values, the rebuilding probability and the probability of overfishing. Correct? The catch number is the number that it will actually will have to balance the P value and the probability of rebuilding, correct?

Mr. Carmichael: That could be the case, I believe.

Dr. Cooper: Maybe this will help or make it worse, I don't know. My understanding is that the ABC control rule versus a rebuilding plan, the rebuilding plan can't be less restrictive than the ABC control rule, but if the rebuilding plan is more restrictive than the ABC control rule, then you go with the rebuilding plan.

In other words, if they say we want the stock to recover in this amount of time and in order to do that the catches are lower than what they would get through the ABC control rule or ACT control rule they follow that. If that rebuilding plan results in overfishing and violates our ABC control rule, then the ABC control rule trumps the rebuilding plan is my understanding, that you can't have a rebuilding plan that will go against your ABC control rule. It has to be more restrictive or same as. Is that --

Mr. Carmichael: You guys passed a motion that said the ABC for red snapper, black sea bass, snowy grouper is consistent with whatever rebuilding plan the council chooses and so whatever rebuilding plan they pick is consistent with what you've set. You didn't give them as long as your F doesn't exceed this or anything else. You said pick the rebuilding plan and that's your ABC.

Basically then what they're bound in is rebuilding by the year of their choosing and rebuilding without resulting in overfishing, because legally they can't allow overfishing to occur. They have to end overfishing immediately and so that's what they're fixing to consider.

Dr. Barbieri: We just actually crossed that bridge for gag in the Gulf and the SSC was just ready to make a recommendation on an ABC based on whatever set of criteria, but then realizing that the stock was overfished and there would have to be a rebuilding plan. I believe if you look in the NS-1 document, the rebuilding plan trumps then the procedural steps for setting the ABC, because it is specified there that it has to follow that specific timeline or shorter. In that case, they do give us guidelines of how to handle that, but that's a good point.

Mr. Carmichael: When you're having to rebuild that's what becomes -- It's sort of supposed to be the driving force. You've got to rebuild and so what would happen is in the case of snowy grouper, if you went to this and you decided tomorrow that snowy grouper were overfished and this were in place and you had to rebuild, would you be looking at a 70 percent chance?

We take a fish like golden tilefish, we don't have to rebuild and so we can ignore this value. That's the important thing. This column comes into play if you determine that you are overfished and you have to rebuild and then this gives you a means by which the SSC has already decided what it will tell the council for dealing with rebuilding. If it's not, then all I do is I look at this. I look at golden tile and look at a 33 percent chance and that's the one I have to worry about. The two don't have to -- One doesn't have to influence the other. One is from fifty and the other is from a hundred.

Mr. Waugh: My recommendation would be only include that rebuilding probability for those species that are overfished. Otherwise, you'll spend a lot of time explaining why there are two

numbers there.

Dr. Belcher: Further commentary? Given the numbers that we have there relative to the P-star and the rebuild probabilities for those species that require rebuilding schedules, does everybody feel comfortable with those recommendations going forward for those species under 17? Anyone have any objections? Seeing none, then the group passes consensus for those six species on the list that we have assessments for that we can provide those numbers to the council for management.

Mr. Waugh: You all will take it to the next step and give what the ABC value is, in terms of pounds, right?

Dr. Belcher: I'm sure we can.

Mr. Waugh: I think that would be most helpful.

Mr. Carmichael: Let me show you the ones you don't have information on. Let's just summarize where we stand on Amendment 17. Warsaw and speckled hind, you've recommended zero and snowy and black sea bass and red snapper, you've recommended the rebuilding plan and golden tile and gag grouper and vermilion snapper all have assessed and you've just recommended a value.

We can go now and look at the distributions and pick out what the ABC recommendation would be. What are our critical values there? Golden is 33.5 and gag is 30 and vermilion was 27.5. I think we have all these in attachments. MSY distribution for tilefish, 33.5 percent we want. Here is your MSY distribution for tilefish. You're at 33.5 percent and would you like to interpolate?

Dr. Cooper: A question on that particular document, which I believe we've got other similar, is that the distribution of MSY or is that the distribution of FMSY times current abundance? The memos that we got for Attachments 15 and 16 simply refer to the distribution of MSY based on the assessments and not OFL and so we don't want to be taking that poundage off if it's actually MSY, because that's the buffer from OFL.

Dr. Williams: It's the distribution from a bootstrap procedure that is basically bootstrapping the recruitment residuals and all of that and so it's re-computing MSY and so each MSY point should correspond to an FMSY point, in other words. It does correspond to the FMSY distribution.

Dr. Cooper: Right, but it does not include the current abundance distribution and so it's underestimating the OFL uncertainty.

Dr. Williams: It's an MSY estimate, an equilibrium estimate, and so yes, in that sense -- No, it's not including current abundance.

Dr. Cooper: Right, so this is not -- We don't buffer from that value. We don't treat that

distribution as the OFL distribution. That's the MSY distribution.

Dr. Williams: It depends on how you want to handle it. In this case, the assessment is old enough that now I think the idea is to go with equilibrium values as the source to determine the TAC, because the assessment is so old that we don't have basically current abundance estimates that we could rely on. That's the issue there, is at what point does your estimate of current abundance become so old that you might as well go with equilibrium values?

Dr. Cooper: The caveat of the approach and that paragraph is assuming we have a point estimate of OFL and the uncertainty about OFL and not MSY and so I thought that we were going to be only applying this in pounds when we could actually estimate OFL in pounds and that we hadn't gotten to the point of what happens if we don't actually have current abundance and that we have those placeholders in the buffer calculation, but unless we actually have an estimate of OFL and the uncertainty, we weren't ready -- I think that's the next step, of what happens if we don't have one of those.

This may give us FMSY, but I don't think we can actually get a distribution of OFL from which to buffer. I don't think we've talked about how to do that appropriately and I don't think assuming that we're actually at BMSY right now is necessarily how we should be moving forward without further discussion.

Dr. Barbieri: Andy, I can understand strictly why perhaps this is not the best possible estimate of OFL, but in this case, the equilibrium value would be --

Dr. Cooper: No, the equilibrium MSY assumes you're, one, at equilibrium and, two, at BMSY. The fact is these buffers are assuming we've estimated OFL or have a proxy for OFL and we have not discussed the appropriateness of assuming an old MSY as being our current OFL. At least my understanding was this is for when we have a current assessment and that current assessment gives us a distribution, a point estimate of OFL, and the uncertainty about it and that we had not yet figured out what to do when we don't have those two things. I thought that was the whole point of that one whole paragraph that we've now bolded.

Dr. Williams: Except that tilefish is one of those where the stock status at the end of the last assessment, which was six years ago or whatever, was close to MSY, really close.

Dr. Cooper: This is where we need to -- I think this is part of the process that we need to talk about, is when we have an old assessment. I don't care if it was at -- We could have known it was at anything and so what do we think it is now? The assumption that it was at equilibrium six years ago and therefore it still is and again, given we are setting precedent here and we've been loath to recommend numbers ahead of where our control rule process is, I think we need to talk about our control rule process when we have an outdated assessment.

It may very well be that in the end we decide if it was at BMSY in the old assessment and landings had been minimal that we make the assumption that it's still there, but I don't think we should necessarily start applying these buffers to any situation except when we have a current estimate of OFL.

Dr. Barbieri: Andy, if you go through the document -- I think we should actually go through the document again and we did envision -- You're correct that those two are not comparable, but using the equilibrium value and actually taking into account that it is an equilibrium value and so therefore it's not the best estimate of OFL and that it comes from an older somewhat outdated -- Part of the buffer that we are building into it is to take that into account.

Dr. Cooper: No, we have not yet decided on the appropriate way to develop proxies for OFL. That is what a nine-year-old or six-year-old or whatever estimate of MSY is. It's a proxy for this year's OFL. We have not decided -- Just like with landings, perhaps we should take off 1 percent landing for every year since the assessment to calculate the OFL or we run a projection model, that okay, we still have this assessment somewhere and project it forward with the landings.

I don't think that we should just simply be taking an old assessment and making the leap from whatever that assessment says to the current situation of OFL, because, again, the fact that it is still an equilibrium and that that MSY value is a proxy for today's OFL, that's not part of the buffer yet.

Mr. Lange: Actually, I think it is. Under the assessment, and I'm not sure which paragraph it is, the age or degree of reliability of an assessment can be incorporated when determining the scoring for an individual stock. For example, a stock having a pre-SEDAR assessment may be ranked at a lower tier despite the assessment having the required outputs for a higher tier.

Dr. Cooper: Right, but that is buffering from OFL to ABC. That is not telling us how to define OFL. We have not yet figured out how to define OFL when it is not current abundance times FMSY, which is the definition of OFL. That is given we can now project forward and we're going to add this additional buffer to the fact that we're projecting forward.

That's how I was understanding this, that this wasn't saying we can take any old assessment and then buffer whatever that output was. I think this is an additional buffer for the uncertainty associated with this is old data no matter what we do, but I do not believe that this control rule, as written anyway -- Either that or we need to take out that first paragraph and have a really long discussion on a formal way we are going to define OFL in situations where we don't have it estimated.

I think these buffers are in addition to how do we figure out what OFL is, just like with the landings. If all we have is catch data, we have said again and again that average catch is not OFL. We have a buffer if we have average catch. Just because we have a buffer in there does not mean we have agreed that that value that is the last one printed is the one that we're treating as OFL. Otherwise, we've got the control rule and average catch and we've got a buffer for it. I think how we go from whatever our last real data point is to our OFL is a separate discussion.

Dr. Belcher: We do have the wording in there that it says if the assessment is considered unreliable or inapplicable that we can drop it. There's nothing saying we have to use it. Obviously it doesn't answer the question at hand of what's the number, but the bottom line is if we're not comfortable with using it, that's that caveat, we don't have to use it.

Dr. Cooper: Then we should have a discussion before we start putting the tilefish number up there on whether the number from the six-year-old tilefish assessment is the number we want to use as OFL and not just jump into putting the number up there.

Mr. Carmichael: I think that's kind of your question, how old is old? At what point does the tilefish, which was very, very close to equilibrium, at which point does that equilibrium-estimated MSY become such that you're no longer comfortable using that as OFL? If that's the case then tilefish is going to fall into the realm of a stock for which we cannot give an estimate based on this rule, because you don't trust the OFL and so let's not talk about tilefish. Let's move ahead to vermilion snapper.

It's a recently done assessment and we have the same distribution and can we use it for vermilion? The other one which is on the list is gag and so golden tile, gag, and vermilion are the three that stick out requiring definitions for which we have a probability distribution P-star analysis. We need to decide for any of these three can the group accept the P-star analysis? For vermilion, which is recently done and you have in a similar memo, do you accept it for vermilion?

Dr. Cooper: I would argue let's not call it a P-star analysis, because that is -- Is vermilion snapper and equilibrium? The memo gives us a distribution for MSY. Let's make darned sure the numbers we're getting are proxies for OFL and have a system for evaluating these. A P-star analysis is current abundance times FMSY. A P-star approach is not the posterior of MSY.

If in fact these are P-star approaches, then we can treat them as such. If these are simply posterior distributions for MSY, then we need a discussion of is that equivalent to an actual P-star approach?

Dr. Barbieri: Andy, technically, yes, you're correct that we're going to have to have this discussion. Basically, it's how we're going to treat all those different types of proxies. When we accept actually -- In several of these other assessments, more often than not actually, we actually come up with a proxy for FMSY.

We come up with then -- We end up with an OFL that actually also represents a proxy and we're trying to integrate that and so are you saying whenever we have to use -- What I'm saying is as a different type of situation, whenever we have to use, from an older assessment, an equilibrium value of MSY as a proxy for OFL, how do we treat that in terms of building a buffer?

Dr. Cooper: The equilibrium MSY value is only appropriate for a stock that we think is currently an equilibrium at BMSY. The equilibrium MSY value for vermilion snapper -- Is vermilion snapper at BMSY? If we use MSY distribution for something that is well below BMSY, our ABC is going to be off the charts relative to what it should be and so we need to figure out what is the distribution of OFL and maybe with tilefish we're just fine assuming that.

I'm not familiar enough with it to know that landings have been relatively stable, as it was during the assessment, and it was about at equilibrium during the assessment and so okay, but for the ones that we don't think are at equilibrium or aren't at BMSY, the default assumption of an

equilibrium MSY value being the OFL distribution is just wrong. It's a case-by-case basis and we need to figure out a systematic way of determining how do we go from whatever it is in the old assessment to a current OFL estimate and then buffer it.

Dr. Barbieri: Correct, but you see because in many cases we won't know that, that represents uncertainty. The way that we are treating that uncertainty is enlarging the buffer then. If we enlarge the buffer, then we decrease the probability of having an ABC.

Dr. Cooper: No, because if all we have is catch data, all we're going to do is buffer 10 percent and I would like to see anyone who would say take average catch and decrease it by 10 percent.

Dr. Barbieri: Andy, there is nothing --

Dr. Cooper: No, you just said take the data we have and treat it as OFL and then we've got the buffers in there and no, the step of going from the data we have to the OFL distribution, in many cases, is a step that we have to talk about on a case-by-case basis and in many cases, we're going to have to figure out how we're going to do it if it's not an equilibrium in the past and we don't think it's equilibrium now, let alone when we don't have an actual assessment.

Dr. Barbieri: Andy, we explicitly discussed yesterday the fact that we're not going to be working with average landings and that we have to start from some estimate of OFL or a proxy.

Dr. Cooper: Right and your default assumption that a posterior distribution of MSY from an old assessment is OFL is wrong. This continuum of from catch data through whatever we've got, that's a continuum and we have not yet figured out when can we say the old estimate of MSY is the proxy for OFL.

What happens if the stock was at half BMSY? What do we use? If in the old assessment it was at half BMSY and wasn't an equilibrium, what's our OFL? We need to come up with a way of doing that and it may be easy for golden tilefish, because we can say yes, it's probably an equilibrium now and let's move forward, but if it wasn't equilibrium, the default assumption isn't that the buffer is going to magically fix it.

Dr. Barbieri: The buffer doesn't fix it. The buffer actually takes into account -- This is why it's called uncertainty, because there are things that we don't know and that's the whole idea. Some of these things, Andy, we're not going to be able to estimate anyway.

Dr. Cooper: Right, but we need to come up with a way of getting there. We're not going to come up with FMSY times current abundance, no, but we need to come up with a systematic way of what it was at half BMSY five years ago and we don't have an assessment and we do have FMSY and what is OFL?

Mr. Carmichael: Let's take a moment and look at vermilion snapper. This is Table 3.2.0 from the assessment and it says a probability of overfishing of 0.3 and it gives different landings each year. Then I guess what Andy is arguing is the difference between say 2010 for a landing of 1,113 and the distribution table at 0.3, which is 1,456? Is this illustrating the difference?

Vermilion snapper is at 86 percent of BMSY in its terminal year in that assessment and so therein lies the difference and so would we be recommending the wrong thing? Do we actually need to have Table 3.2.0 done after the SSC picks its probability?

Dr. Williams: Yes, that is the issue here, because you can't -- For vermilion snapper, that's the case, because vermilion snapper is overfishing and so it's in a different situation, but I would say that tilefish and gag, because they're not overfished, which means, by definition, they're pretty close to MSY.

They can't be at half BMSY because they would be declared overfished if they were at half BMSY. They were not declared overfished and so they are near MSY and assuming the catches didn't go through the roof or whatever, I think the assumption that the equilibrium distribution is representative for those two species is fine. Vermilion, yes, is a different situation and Andy's point is correct as it applies to vermilion.

Mr. Carmichael: If you could use the equilibrium for those two and then use the probability values for vermilion, then the team can go in and do the necessary calculations now that you know the probability value, which they couldn't do if they didn't know the probability value, which is why we asked for a distribution for vermilion snapper because we had point values of 0.3, 0.4, and 0.5. Now we're in a different ballgame.

Dr. Cooper: That is also still assuming that the landings have been actually what were predicted in the model and projected forward.

Mr. Carmichael: That assumption just may have to be.

Dr. Cooper: Do we not know landings of vermilion relative to the projected landings in the assessment?

Mr. Carmichael: We know what they are, but sometimes you can get into a can of worms when you start trying to make too many kinds of adjustments for reality, such as accounting for landings but not age and length structure.

Dr. Cooper: But the thing is we're going to be consistently in the position of having three and four-year-old assessments and having to figure out what do we think FMSY times abundance is and do we rely on the four-year-old projection? That's something I think we need to discuss before we start -- Just like before, we weren't comfortable because we were getting ahead of our control rule. Let's figure out how this thing is going to work before we put numbers to the paper.

Mr. Carmichael: I've looked ahead to all the stocks that don't even have the luxury of a four-year-old assessment and I don't have as much heartburn over the four-year-old assessments. I'm more concerned about the many stocks that have absolutely no assessment and the slight difference in landings in the projections, I think we understand there's some uncertainty in this and we're chasing our tail trying to catch up.

Hopefully in the future, when we know in advance they can do the projections with the probabilities, we're not quite so far behind. We're trying to catch a new system here and every step forward we take we find that there's three more pieces of information we want.

Dr. Jiao: I think I totally support Andy's point, because according to the law, it is the baseline control rule or OFL -- It is FMSY and not MSY and we cannot go ahead and use MSY and it's too risky if the population size is low or you don't know it. In that situation, it's just not appropriate at all.

If you use MSY when the population size is very high, we will get into trouble and the fishermen will want to harvest corresponding to FMSY level instead of MSY level and so theoretically, if we harvest at the FMSY level perfectly we're going to reach MSY. That's the idea and I was told that's the law right now.

I thought of that as the mystery part, is the catch at MSY level, but if it's really MSY, then I think we shouldn't use it, no matter if it's close to equilibrium or not. We just cannot go ahead and use MSY because it just doesn't fit the MSA requirement.

Dr. Barbieri: That's fine. I think the point here is we're going to have to decide how many of these proxies we're going to accept and how we're going to apply them or how many we're going to say we just don't accept this being a proxy for any of these estimates and we just start from scratch. We just put those in data-poor species that we don't have good information and we go to a different protocol.

Dr. Jiao: I agree. When we describe a proxy, we need to see FMSY proxy instead of proxy of catch and that's what my understanding is according to the law and for data-poor species, we haven't moved to that one. For those we have assessed the species, we need to stick to FMSY or FMSY proxy, I think.

Ms. Lange: I guess maybe we're getting ahead a little bit here. From the agenda, we were first supposed to finalize the approach to assessed stocks, which I think we have done and agreed to. Then we were going to discuss the application to unassessed stocks.

Dr. Belcher: I reordered that, because of the fact that I knew we were going to have exactly what's going around the table going on and because we're trying to move forward with 17. If we had perfected or come up with something everybody was happy with relative to that control rule for the assessed, I thought we could at least check off that box and get those numbers and then we could focus the dialogue to the unassessed species.

Again, it's one of those things that it's -- I'm not saying that we need to be caught up and constantly trying, but it just seemed like if we had the assessed portion where we wanted it there was no reason why those numbers could not have been calculated and at least taken care of and taken off the table and we could start focusing on the unassessed stocks, but obviously there's a little bit of a hiccup in the assessed.

Ms. Lange: I guess that's where I'm at, that even though these are assessed they don't meet the

criteria that we put in earlier in the document that Andy alluded to or stated, which was that it's for those stocks that have an OFL stated in fish weight with statistical uncertainty described. Even though we have the assessments, do we not have that for these stocks? I think that's what you're saying we don't have and so therefore, those really move to the not unassessed, but certainly not fully assessed.

Dr. Belcher: To me, what that does is it's just where particular species have been removed off of that list of assessed. We have a different tier that's come up is what it sounds like that we need to -- Again, like we have talked about, the age of an assessment. We've got a paragraph in there that talks about that and so now I guess the question is how do we best address it? I don't know that we've gotten too far ahead. It was, again, just thinking about trying to get some checked items off the list if we could do it, but it did open up a different dialogue I don't think that was expected. It's 3:25. I'm going to request that we do a ten-minute break and then we come back and we continue talking.

Dr. Belcher: Everybody, let's go ahead and get started, please. At John's suggestion, what we're going to do is to come back to the control rule and kind of discuss it. Like I said, in all good faith, I had hoped that we could kind of parse it a little bit and at least be able to make some forward progression. That probably was jumping ahead a little bit.

Maybe the better thing to do is to make sure that we have some sort of recommendations at this point as to what we are going to do relative to the assessed and unassessed stocks and then go species-by-species down the list of 17 and say how we're addressing those relative to providing ABCs. Given what's at hand and the procedure that we've put down thus far, what do we want to do as far as taking up for those species under which we have no assessment? I'm assuming this is where we were going, correct, and pulling it back on track? If anybody has a different suggestion for proceeding, by all means jump in and start directing it.

Dr. Cooper: Perhaps in order to get moving towards 17, not necessarily look at the unassessed, but how are we going to treat old assessments, which will at least get us forward to putting numbers down for these species that have been assessed and worry about the completely unassessed next, because it's a continuum and I don't necessarily think we're going to use the same approach each way, but I put that on the table as an idea of what to talk about next instead of jumping all the way to the all we have is catch.

Mr. Carmichael: Start with defining old.

Dr. Cooper: Let's take the most extreme, we do not have an estimate of current abundance, going through the OFL, that we don't have a projection of current abundance.

Dr. Barbieri: In that case, let's use the example of gag grouper and that assessment. Do we have an estimate of current abundance?

Dr. Cooper: As Erik pointed out with gag, in that assessment they did do a P-star approach and actually predicted, under a certain P-star what the ABC would be in 2010. I think under gag we do not have the posterior distribution of the abundance in 2010, but we do have something, an

ABC, that was calculated for 2010 under a given P-star, I think.

Mr. Carmichael: Did we have that for gag? We have that whole thing? Can I pull that up out of the report?

Dr. Cooper: Wasn't that the table you just had up there for P-star of 0.33?

Mr. Carmichael: That table that I had was for vermilion snapper.

Dr. Cooper: Vermilion was 0.33. Hopefully I'm not the only one with an opinion on how to deal with this and someone else can jump in. What's old?

Dr. Barbieri: I don't know. We're kind of just thinking out loud here and just trying to understand, because we're going to be in situations where depending on the cycle of updates and benchmarks and all and sometimes just the whole process, the council process, takes a while as well and things get shifted around and something that could be a relatively recent assessment -- For example, just an example from the Gulf with gag and red grouper, which were assessed back in 2006.

Since then we have had a major red tide event along the West Florida Shelf and abundance has shifted dramatically from what it used to be at the time of the assessment and so we are at different abundances. Fortunately, we just had an update that kind of brought that up to the surface and we were able to assess what the new abundance levels are.

Ms. Jensen: I guess I could say for a definition of when assessment is old is you can take into account -- Assuming you have projections from that assessment, you can take into account kind of the life history of it, so that if the majority of your stock is still in the age classes that are being assessed are still in that projection and it's not relying so much on the stock recruit relationship or whatever method you have for estimating recruitment for the incoming year classes then you can kind of gauge that for reliability of your projections or whether or not your projections are fully reliable on just the assumption of stock recruit.

Dr. Belcher: Continued commentary? Part of it, to me, the obvious, is anything that was pre-SEDAR, first of all. I would think that would throw out, which, i.e., is where we got into the red and black grouper. It's not that we didn't have data to do the assessments, but the assessments just haven't been updated. That's just one of the easiest ones to look at.

Ms. Jensen: Then there's the problem of assessment methodology and things having changed over time and now we do it better than we used to do it and that kind of thing as well.

Dr. Belcher: Is it something that -- I know intrinsically there's probably a better way to assess old. Again, if you're looking at animals that, like you're talking about, are present based on when the assessment was done and are they still currently tied into what you're projecting for your catches, but is there something more superficial to look at in terms of whether it's the scheduling in the SEDAR process or timing of the report or -- Again, I'm just trying to throw out something that might be --

Mr. Carmichael: My sense is the old is being applied more toward the you don't have a projection today. It's not so much the old of how old the assessment was. We didn't consider the golden tilefish an old assessment when we established its ranking amongst assessment information criteria.

If it were so old and pre-SEDAR, then we said all you have is landings. We considered it to be a current assessment with regard to that dimension. The question seems to be then in applying this to an ABC. To get an ABC from the MSY, do you have the projection, which is really the key thing to get you the OFL, which is the rate and the current abundance, versus the rate and the old abundance.

That seems to be the part -- In that sense, one year could be old or you've moved past your projections. How far out really then do the projections become old? Is it that you've moved past the projections and you don't have any projections of what it should be or is it that you've got projections that were made in 2008 through 2010 and now I have landings for both 2008 and 2009? I have two years of new landings I could feed in and does that become old enough that I don't trust the projections? That's the gist of it and I'm not sure what the answer is. Maybe it's something that just comes down to a case-by-case.

Ms. Lange: I expect it will come to a case-by-case. This seems like sort of a circular discussion in that we tried to address all of this in that first category, the assessment dimension, accounting for older assessments and everything else. I guess we just never really thought about our starting points and how an older assessment related to a starting point.

I guess on a case-by-case basis how confident are we with changes in the fishery and changes in the stock status and ancillary data information that would let us be more or less confident in the projections that are available. I think obviously this is something that's going to be changing over time and as we get better information, we can always update that, but we need a starting point, I think, and the best opinion of those here I think is what we have to use at this point.

Mr. Carmichael: It kind of gets us back to the three stocks and what information we need. You know what information we have. You have it basically at the equilibrium for golden tilefish, which may or not be where that stock is about now. Vermilion we know was about 0.86, but in support of this, we also have the projection at a P-star of 0.3, whereas we're looking at a projection at a P-star of about -- We were saying like a twenty-two-and-a-half or 25.

You may decide that for purposes of right now that projection from a couple of years ago with a P-star of 0.3 is adequate or you may request additional projections and gag, I think, is in the same boat. You may request additional projections or you may select an ABC using your probability off of that equilibrium-derived table.

That's really the choices, either picking it off of the equilibrium table if you have confidence in that with regard to where the stock is -- I'll point out with golden tilefish the stock was presumed to be right around equilibrium and we can look at what the landings have been over the recent years, because that information is provided and you can make your educated, professional opinion as to whether or not you trust what's in the MSY distribution table enough, knowing that

the council just put forth an OY of 326,000 pounds in Amendment 15B. For comparison, it's an MSY of 336,000, which is what matches up to the table for the 50 percentile as I scan down to right here.

This is essentially what the council has put in place just now and so if you were to change your probabilities, you could be essentially recommending an ABC a little bit below what just went in for 15B.

We could talk about this potentially being old or we can recognize that this is what's hitting the streets right now as the current information for managing golden tilefish. Snowy, you may ask for more projections and gag, it's a little older than snowy. I think that's kind of the choices, pick off those equilibriums if you think it's there or request more projections.

Ms. Lange: Can we use the information from the projections and then given those landings that we know we've had since the time of the assessment, can we compute those into F rates and then kind of predict the abundance that we think it might be at now, based on what was landed in the past?

Mr. Carmichael: Can you do that right now? I think that's essentially asking for more projections.

Ms. Lange: It is, because essentially what we're trying to get at is what's the abundance right now. How else can we do that? To me, that seems like the best way, given what we know now.

Mr. Carmichael: You can look at the landings of what you have. You can look at the landings of the golden tile and you can try to say whether or not you think that anything in there makes you think it's deviated a long way from being around equilibrium. If you don't see anything that makes you think it's deviated, then you could pick off that table. If you're not comfortable with doing that, then new projections are in order and let's go look and see when the next assessment update is coming.

Dr. Cooper: Just so I understand how we're supposed to look at that table and know whether it's deviated from equilibrium -- That's what you're asking us to do, right?

Mr. Carmichael: No, I'm not asking you to do that. I'm describing that as one of your choices.

Dr. Cooper: Okay. What's that table telling us?

Mr. Carmichael: This is golden tilefish landings, commercial landings.

Dr. Cooper: Observed or predicted?

Mr. Carmichael: This is your Attachment A-14 and it is what actually happened, with the notes and the asterisks here, based on what wasn't quite complete when they put this table together.

Dr. Cooper: Do we know what the assumed catches were in the projections that produced the

equilibrium MSY values and how those compare to the actual landings?

Mr. Carmichael: There's no projections of that MSY. Remember it's the probability around the equilibrium distribution of MSY for a stock that's arguably at equilibrium.

Dr. Cooper: What is the landings associated with FMSY?

Mr. Carmichael: 336,000 pounds.

Dr. Cooper: A fair percentage of those are lower than MSY and some of them are above MSY is basically -- The question is given those deviations from MSY versus the relative catch, do we think it's still at equilibrium and about at MSY?

Mr. Carmichael: At least to the extent that you're willing to accept the ABC from the equilibrium conditions and not for anything about its current stock status, but only that you would use that as the basis for recommending an ABC.

Ms. Jensen: What age do these recruit to the fishery?

Mr. Carmichael: I don't know. I guess someone could look it up in the assessment.

Ms. Jensen: I'm just thinking what was the abundance of ages prior to recruitment in the population that now would be a recruited age? Were there strong year classes or weak year classes that would lead to deviations in abundance?

Mr. Carmichael: It seems to me if you start getting into those kind of questions then you're getting into age composition of the catches questions before you can begin to answer that question, in which case you're pretty much saying we would like to have new projections. If questions like that become a driving force, then it sounds like new projections are in order.

Ms. Jensen: Personally, if you're asking me to predict what the abundance of the stock is, I would feel more comfortable doing that with new projections and not a new assessment, but updating the projections and plugging in these landings, converting those into F rates and getting abundance now.

Dr. Cooper: One thing we should be thinking about is, with regard to SEDAR or Science Center workloads, what type of information will we be able to expect each year when we're doing this, because that's how we need to tailor our control rule and if we're never going to get projections for next year based on the landings of last year based on however old the assessment is, then we need to adjust our control rule to say these projections are all going to be made at the point of the assessment and carried forward and how do we deal with that.

The point of the control rule is it has to be married with the data that we're going to be getting on a regular basis. I think we're in the weird situation now of the process hasn't started and so we're using things that were built prior to this process and I don't know if we're going to be able to expect to get projections for each of our stocks using recent data. That would be nice, but if

not, then we need to figure out where's our comfort level and things maybe.

Mr. Carmichael: I know where mine is, but in this area, my opinion doesn't matter to this committee. I will tell you that in 2010 you have an update requested for tilefish. There's been some concern about pulling off four updates with current personnel in that year. We know red snapper is a priority and we know black sea bass is a priority. I put tilefish about number three and snowy about number four.

We're not asking you to infer abundance of tilefish. All this is asking you to consider is whether or not you'll accept the MSY equilibrium-derived OFL from which to reduce to your ABC. You don't have to say anything about current abundance and it could turn out to be that you're completely wrong, but you have to decide if you're willing to recommend an ABC given that MSY-based equilibrium-based distribution.

Ms. Jensen: Given that the landings are all below MSY for the most part, in most of those years, you would expect that it would still be at or above equilibrium.

Ms. Lange: I guess I would agree with that. Where we're at right now is the starting point really for something that's going to be growing more and more complicated over time. If we don't take a first step, which we can always a year from now or less than that if we get additional information that contradicts that, we can report back to the council, but I think we need to use what information is available, because we can't expect the Center or anybody else to continually update projections on all 120 stocks or whatever it is that we have responsibility for on a monthly basis or whatever.

Mr. Carmichael: That's why I think the Spanish situation comes in a little different than the tile, because we have the projections at the P-star value. In the future, maybe if we got those there would be more confidence. If we're not comfortable with golden tile, then we can skip ahead to Spanish and look at the slightly different information, which may give us more confidence. That assessment isn't as far back as this one.

Dr. Whitehead: I'm more comfortable with the approach that's being discussed versus -- I guess there are two alternatives and one is asking for the projections, which, as Anne said, we don't want to fall into that routine in this interim period, versus treating this as an unassessed stock and the predictions that come out. We haven't developed that approach, but say we do develop that in the next day and the value that we get out of that for ABC is way off the mark compared to this. Then we're going to probably eventually want to come back to this. That is the other alternative, just treating it as an unassessed stock.

Ms. Jensen: The other question is, is there any other significant environmental events that would have caused a large amount of mortality other than fishing, like cold water. I don't know what other events would affect tilefish.

Ms. Lange: I guess I may go back to what we talked about earlier, that maybe we should talk about how to handle the unassessed stocks now. Instead of continually going around in circles on tilefish, number one, decide what we want to recommend for unassessed stocks and what we

want to consider an unassessed stock that we have to address as an unassessed stock as opposed to using the assessment dimension. Even though we account for that with the dimension tiers, we're not even there yet if we're not considering this to be assessed, if it's too old.

Mr. Carmichael: I tend to think if it's garnering this much discussion, you're not comfortable with making a recommendation on tilefish and I'm ready to move on to vermilion.

Dr. Belcher: Discussion about the vermilion?

Mr. Carmichael: Your critical value is 27.5 percent, based on your analysis. You conveniently have a P-star analysis from the assessment at 0.3. You could decide that that's appropriately close to 27 percent, given that two years are under your belt, and recommend ABC based on the 0.3 that's predicted for 2010 or you could request that this analysis be done at the 27.5 level.

Dr. Belcher: What do we want to recommend?

Dr. Buckel: I'm fine with the P-star of 0.3.

Dr. Belcher: Any other discussion or comments to that?

Dr. Barbieri: I agree with that. I'm also in agreement with the P-star of 0.3.

Dr. Belcher: Anyone in the group have any major concerns with that?

Dr. Cooper: So long as we put in a caveat saying that the control rule dictates 27.5. However, in this case, due to time constraints, et cetera, and given this data is readily available of 0.3, we are accepting that and however, not setting it as a precedent of rounding up from the control rule. It's basically saying we're doing this for the sake of time and not because we think it's right.

Mr. Carmichael: Unless you chose to interpolate between the 0.25 and the 0.3 values.

Dr. Cooper: A valid question is we have a P-star of 0.25 and a P-star of 0.3 and which one do we go with? They're equal distance from 0.275 and why choose the 0.3 over the 0.25?

Mr. Carmichael: Yes, it is a difference of -- It's 1,042 versus 1,113 thousand pounds. It's 1.042 million pounds or 1,113,000 pounds. Take the midpoint between the two if you would like.

Dr. Cooper: So moved.

Mr. Carmichael: The calculator says it's 1,077,500 pounds ABC for 2010. Then I presume you would do the same for 2011 and 2012 and that would be as far as you would carry it out.

Dr. Belcher: Everybody is comfortable with that? Okay. I see nodding of heads.

Dr. Crosson: I'm just getting lost in the CD for the briefing book. Do we have the recent landings for vermilion in one of these attachments?

Mr. Carmichael: I think the most recent landings you have are probably from the assessment, which you just received in December. You received the assessment at your last meeting and so these are the most up-to-date landings. I hope this one isn't considered old by any stretch and I think by the criteria that was discussed, the fact that you have projections at the P-star that encompass the current year, it's not considered old.

Dr. Belcher: Moving on, we're going to look at gag.

Mr. Carmichael: We have the same quantile table for MSY for gag. All I have is the probability distribution from your attachment. Is there anything else that may shed light on gag, Erik, that you can recall? It was written up in that paper, but I don't know if has the information that's kind of desired. I'm trying to remember that paper and where I stashed it, but if it doesn't help, then there's no sense in pulling it up. It's built on the P-star. They used gag as an example in the P-star example.

Dr. Williams: John, let me send you a document real quick that might have it.

Mr. Carmichael: As I recall, the original P-star work dealt with both management and assessment uncertainties and it went in a slightly different direction than where we are today. Here for your viewing pleasure is the gag ACL report from Erik. Table 6 gives the projections with annual overfishing probability. The P-star is based at the 0.3 level, which conveniently happens to be the level that resulted from your analysis of gag. It gives us then SSB, recruits, F in landings, and dead discards.

Dr. Williams: There's one caveat and that's this does not have the landings from 2006 or 2007 or 2008 or 2009. We wouldn't have 2009 yet, but the landings weren't updated. This is just a pure projection from the end of the assessment.

Dr. Cooper: Which is the same as it was for vermilion, right?

Mr. Carmichael: It's just a greater passage of time. Vermilion has -- Only one year has passed in vermilion and this has several.

Dr. Cooper: Presumably this model propagated the uncertainty in those seven years such that that P-star in 2010 accounts for the fact that you are projecting -- It assumes landings were actually equal to that, but it was projecting based on the various assessments. It was propagating the uncertainty forward.

This is the type of thing we could expect in the future, where a stock assessment does a five-year projection and we have to decide do we accept the five-year projection or do we actually track down the landings and do an update. Would that be a correct assumption?

Mr. Carmichael: Do you consent to this table as a basis of ABC for gag, focusing on its estimates of landings as well as discards in numbers?

Dr. Barbieri: Yes.

Mr. Carmichael: Landings in pounds and discards in numbers. This is Table 6, which you will be emailed this document. It is called "A Probability-Based Approach to Setting Annual Catch Limits off the Southeastern United States". It's a preliminary report for the SSC from May of 2007. It's reaching back into the archives.

Dr. Belcher: The next level, John, what do we have left? Just the unassessed stocks?

Mr. Carmichael: Amendment 17 species, that leaves two which have not been addressed. These are species which are currently or soon to be assessed. The data workshop starts a few weeks from now on black grouper and red grouper. I sense the opinion of the committee has kind of been to not put forth a recommendation on these two species, given that the assessment is forthcoming. Is that still your pleasure?

Dr. Cooper: I would word it rather than setting a precedent of waiting until we have more data that we haven't yet developed the methods to determine the ABC, given -- Do we have any data on these? Given the data on hand, we haven't figured out how to calculate the ABC.

Dr. Belcher: Anyone else have any thoughts or comments on that? There's actually enough data that they're going to be running the assessment on it, but for right now, as far as an assessment, there hasn't been one ever run. I shouldn't say ever, but -- The data workshop is coming up. It's at a point where it could be, but it just hasn't.

Dr. Cooper: Right, but its current situation, best available science, it's in the unassessed category and we haven't figured out what to do with an unassessed stock.

Dr. Belcher: Let's discuss what do we do with unassessed stocks.

Dr. Crosson: Common sense would dictate that if we're just beginning a stock assessment for a species that we probably don't need to make any activity until that's completed. We know for a fact it is about to start and it's not even projected.

Dr. Belcher: I'm talking from that we're going to a generic statement now of how do we want to proceed with unassessed stocks. We're not going to proceed with anything with black and red, obviously, because we're going to wait on that. In the meantime, we have to come up with that ability, because we do have other species that fall into this category and so we have to propose something and we've already said that we're not going to use average landings.

Mr. Carmichael: We're focusing on the ABC control rule component. We're not delving into how do you get the OFL. This is from OFL what would you do and then you can talk about OFL, but let's get the first step out of the way. I was just suggesting you run it through your current framework criteria and see what you end up with. How would you categorize a stock for which you don't have an assessment?

You either have catch history or no catch history and you have no uncertainty and that becomes a minus ten and stock status is unknown and that becomes a minus ten and so it really becomes a function of what you trust on your catch history and what your PSA comes out to be. It would

seem that you believe your same model can essentially apply.

Dr. Cooper: I believe that was the point of developing a model that applied to all situations. It's the finding the OFL that is the sticky wicket.

Mr. Carmichael: The sticky wicket is in you developed a rule which is based on a P-star, which is a reduction from a probability. We know that all we're going to have is landings and all we're going to have is some landings level and so how do we translate this into a buffer in poundage, knowing forthright that you won't have probability distributions?

Ms. Lange: Actually, it sort of relates to -- We sort of planned on applying this, except for that one paragraph early on that said that this applies only if we have the OFL. Now we say that we can apply this also to unassessed stocks in the criteria for developing an OFL for those. That's where we're at. We may want to change the wording in that highlighted paragraph.

Mr. Carmichael: We address the question of how do I convert and deal with the probability situation. That's part of the reason that was in there, because this is all geared toward having a probability distribution of FMSY and being able to express it in terms of poundage.

I guess the question becomes if I don't have any of that and if I come up with a score of 30, does that mean I use 30 what? 30 percent? Do I take the median less 30 percent, the 30th percentile? Yes, I think we could add another section maybe to the report which softens that when we figure this little sticky piece out.

Dr. Cooper: My initial assumption was that we actually do figure out a way to develop an OFL proxy with uncertainty, even if it's the assumption of catch history -- 50 percent of historic landings with a CV of 0.5 and then we buffer from that. That's the kind of thing -- Eventually we're going to have to state the OFL and we're going to have to state the ABC and just putting gobs of uncertainty in there and then moving a heck of a far away from the median estimate, based on our model here.

That's where my brain was, but I don't know if anyone is comfortable doing that or using the Alex Maccall approach, which is basically you -- Based on expert opinion, how far from virgin do you think this is and you can then discount the catch history to get an estimate of MSY, which can then be converted into an OFL.

It's purely expert opinion on do we think it's 80 percent virgin or 20 percent virgin, but there are methods out there and then you can determine that we are extremely uncertain and so a CV of one or something even. Given it a huge CV and, again, we can set up rules to do that. That's how I was envisioning it, but I don't know if it's possible and I don't know if anyone else is comfortable with it.

Dr. Williams: I was thinking along similar lines. Maybe we could borrow CV estimates from the stocks where we have these probability distributions and maybe even look at these distributions that we're getting from the fully assessed stocks and first, are they normal distributions or are they skewed and then what is the average CV if they're normal or what does

the average distribution look like and then apply that.

We know we're going to be heavily discounting even with that, because of all the other unknown factors. We do that all the time, we borrow from neighboring stocks. In that sense, the distribution part may not be that bad. It's actually just how do you get OFL. That is a tough one.

Dr. Barbieri: Right and that's still the main bridge to cross, but I like that proposal, because it would put us back -- Before, I had thought about applying just plain percentage discounts there, just because in the absence of not having those probability distributions, but I like better this idea, just to stay internally consistent with the rest of the framework to then come up with the average and apply it that way. If that would be doable easily or not as painful as could be, I would rather go that way.

Mr. Carmichael: You take the CVs and whatever the historical landings are and create a distribution of them at random using that CV and then you would pick say the worst case scenario, which would be about a ten, a twenty, a ten, 37.5. You would pick the twelve-and-a-half percentile?

Dr. Williams: Let's go back to how we're going to be computing this in a normal assessment, where we have good information. We'll be projecting stochastically the population forward at all FMSY values that are in the range of the stochasticity. That will produce a distribution each year of landings.

We can take that distribution from many assessments and look at the properties of that and standardize that so that the mean or median is at our estimate of OFL and so there you have your error distribution that you apply to OFL. It's just a matter of now coming up with OFL.

Dr. Barbieri: You could do this actually from groups of species, within families or whatever, similar groups, that would prevent us from borrowing from too far away what the expected variability, given the recruitment pattern and some of the other patterns that are intrinsic to that species.

Dr. Belcher: Further comments?

Mr. Carmichael: We can't do that here. Maybe work on how you would like to try and get this fleshed out, keeping in mind that this is going to be a big part of the comprehensive amendment, which you'll be asked to be coming along pretty far on and making recommendations for it certainly by this time next year, if not a little sooner.

We have a few months to try and work this out. Is this something where people with ideas need to try and flesh them out and run through some examples and come back to the group with some ideas, kind of like we did? Do we need to hold a special meeting like we did to get this far?

Dr. Belcher: What do people think?

Dr. Cooper: To save myself time and my brain, we've got, in our background documents,

Williams and Shertzer 2003, "Implications of Life History Invariants for Biological Reference Points". Did you get, without having actually read the paper, can you remember which invariant BRPs were there and do any of them relate to MSY, FMSY, or OFL?

Dr. Williams: No, because actually the conclusions of that paper were that you can't get away from basically measuring steepness directly. There is no magical BRP that exists across any life history characteristics.

Dr. Cooper: Which implies we shouldn't be using solely life history characteristics to determine OFL in simulation frameworks. That's good to know. We'll take that off the table.

Dr. Barbieri: Couldn't we step back a little bit back in time and just as a starting point just not to have to rely on the catch histories and just either get some of those equilibrium values from a YPR-type -- You would just have to pick up a few parameter estimates. It's easier to get those things and then plug into a new per recruit type of analysis, just to have some estimate of the ballpark of where we could be. Actually, we could even get an FMSY-type from that. Couldn't we do that?

Dr. Williams: You can do all sorts of things, but who is going to do the work? The bottom line is at some point we're going to have to ask probably the Science Center that we want your best estimate of OFL for species X, Y, and Z and let them come up with what they can.

Dr. Barbieri: Right and my question of can't we do this, I know that theoretically we can, but I'm just trying to measure, weigh in, the amount of work. Is this something that is workable? I don't know how this could be assigned. Something that could generate some -- Not too troublesome to do for a few of these stocks.

Of course it's going to take somebody's time to do it, but it might be easier to handle. Is this something that would be acceptable? That would be my suggestion. It's not something that we would like to use, of course, over the long run, but in the meantime, I would feel more comfortable with that than having to ask for those OFL estimates to come out of those catch histories.

Dr. Cooper: The problem is even with an SPR yield per recruit, we don't have current abundance. Even if we could back calculate FMSY, it's FMSY times current abundance. It needs to be in pounds and so somehow it's going to have to be tied to landings, because that's the only thing that gives us any measure of how much is out there.

Now I agree with Erik that I think it is going to boil down to tell the Science Center to give us OFL. Even if we developed a method by which to determine OFL, we're still going to have to tell the Science Center to give us OFL, as opposed to us calculating it ourselves. I personally kind of like the idea of just asking for OFL and the uncertainty and the Science Center will figure out how to do it, whether it's the Maccall approach or some other magical hand waving.

Dr. Barbieri: I wasn't implying that we would do it here or at any other special meeting. I thought we had already decided that we would go to the Science Center and that we would be

functioning as reviewers or proofers of those estimates, but yes, I guess we go back to that.

Dr. Belcher: Are we wanting to basically re-stress what we had asked for then back in March? Is that the best approach to the group or not as far as what we had recommended and maybe not, again, where we tried to get it cut into the SEDAR schedule, maybe obviously since it was flat out denied that we need a different approach to request that information.

Dr. Cooper: Given even if we base it on average catches, I think most folks are uncomfortable with us doing the average catches, because of species issues and stuff. I think either way we're going back to the Science Center.

Dr. Williams: This gets back to -- Step back and let's look at the role of the SSC and the council. Should the SSC even be asking for any work or should it really be the council asking for it? We're really just a review body for the council. The council asks for some analysis and then it comes through us and we mull it over and then bless it or whatever and it goes on to the council.

It's not our job, in my mind, to even ask for anything. Now we can suggest to the council that this needs to be asked, but ultimately, this request, I think, needs to come from the council and not from us.

Mr. Carmichael: A request to you from the council -- If you think to how you've offered requests before, you tell the council in your report what you require and then the council develops the memos that say this is what we request on behalf of. If you say we have this, but we need to be given OFL, then that's what the request will say.

If you say we have a stock that's been assessed and we have an ABC control rule but we need OFL calculated as rate at FMSY times current abundance, then that's the type of specific request that should go through so that it's exactly clear that you get what you want. You ask for what you want from the council. You don't go to the -- You won't be sending a request to the Science Center. You send it up to your next level and be as explicit and descriptive as you possibly can in making sure you get everything you want and you keep asking and keep asking if you have to.

Dr. Belcher: Then what are we asking for, other than we need measures of OFL?

Dr. Williams: One thing is I don't think we should limit our request to any realities about workload issues that we might perceive or might know of. That's irrelevant and we need to request what we need and if it is -- Level 1 would be ideal. We would want a SEDAR assessment for all of these species and it will be up to the powers that be to decide how achievable is that and that sort of stuff.

Dr. Barbieri: Again, we can, I guess, flesh out the details, basically like we did with the December meeting, in putting together some of the more specific items to be requested that will go in our report, but basically, we will be asking the group are you comfortable with this approach and if so, the report is going to reflect this request. Right?

We can flesh out how the language of this I think will come out when we put together the report. Basically, right now, I guess we just want to get from the group a general consensus on whether we have any points of disagreement from the group with us proceeding with this approach and requesting the Science Center that those estimates be provided so we can move forward with application of our ABC control rule and generating ABC recommendations.

Dr. Buckel: I suggest projecting it and we can help you out right now and get it written.

Mr. Carmichael: I see that you have a couple of situations. You have some stocks that have been assessed that you didn't give recommendations for. I think now you have a sense of what you would like projected and so that would be one thing and then the other thing would be what can you get for all these other stocks. Let's look at the ones -- You've kind of discussed a couple of stocks in a lot of detail and let's look at tilefish as a beginner. You could ask for that information, for projections.

Dr. Cooper: Actually, provide measures of OFL and the associated uncertainty. For tilefish, this would consist of projections from the last assessment, based on known landings projected to the current year and for all years up until the next SEDAR assessment. As long as we're asking, we might as well get everything we need for the next couple of years. For the current year and through the next assessment, based on an assumed P-star of whatever the P-star is for golden tilefish or for a range of P-stars. How about for a range of P-stars, just in case the council changes the baseline and we don't have to go back and ask.

Mr. Carmichael: Do you want to add the range of P-stars? I think you're better off just -- You've got 30 percent and maybe just ask for 30 percent.

Dr. Williams: I think it's easy enough to -- You're going to be running this in a big stochastic framework. You just run it all at once and you're going to get a distribution for each year and each set of landings and you can pick the points off of that.

Dr. Cooper: The trick is that projecting up to this year, based on known landings, and then projecting forward based on a range of P-stars, right? Isn't that what we want? We have to know what the assumed F is for the next couple of years and so maybe even a table similar to those provided in the vermilion snapper. In other words, if the council decides --

Dr. Barbieri: This is what we had decided that we would request for all forthcoming assessments anyway, that that was the vermilion snapper style set of tables, which already were built to cover the whole range of P-star values, right?

Dr. Cooper: How about based on a P-star of 25, 30, and 35 percent, to cover our bases? Does that cover what we want for tilefish?

Dr. Buckel: Given the chance that the P-star might go lower, maybe add 15 or 20 in there, if it's as easy as Erik says.

Dr. Cooper: Everything else is then unassessed, right? Then for unassessed stocks (red and

black) --

Mr. Carmichael: I believe in this case we're looking for everything.

Dr. Cooper: Okay. For all unassessed stocks. Are there other stocks for which we have old assessments that we're not currently looking at that aren't in Amendment 17 that we should throw in here then?

Mr. Carmichael: I expect there are.

Dr. Cooper: How about for tilefish and all other assessed stocks besides those listed in Amendment 17, going back up to the four tilefish, and all other assessed stocks and then we could put in parentheses "besides those other ones in Amendment 17 for which we've already got ABCs for". We can insert the actual names there or something.

That then covers all assessed stocks and the only thing left is unassessed stocks and so for unassessed stocks, we ask the Science Center to apply best available science to provide estimates of abundance times FMSY. Do we want to do a range of P-stars projecting forward or do we just want -- What is it that we want, just next year's OFL for an unassessed stock or OFLs for all future years until hell freezes over? Do want to at least say for the next five years? Provide estimates of OFL and associated uncertainty for the next five years or through 2015, to make it a nice round number. You can delete the "of abundance times FMSY".

Mr. Carmichael: Would you like some sort of supporting work in this and would you feel more comfortable if you specified it, like also provide landings for all of these species? That would be similar to something that's been asked for on behalf of the Gulf Council.

Dr. Cooper: I think other people besides me can answer that question and so you can stop looking at me.

Mr. Carmichael: To actually provide landings and perhaps average size information. It's kind of math class and show your work sort of stuff, but it might not hurt to ask for it. I think it would be very nice in your interpretation to have a nice summary of the official numbers for all of this stuff.

Dr. Cooper: A description of the methodology used.

Ms. Lange: Would it be better to include that the SSC would also ask that the Center provide landings and average size information rather than saying "information would also be helpful", just include the landings and average size in the same sentence as the methodology? That's not really asking for the landings and average size. It's just saying it's helpful.

Mr. Carmichael: Now think how you're going to do ABC for coral and sargassum.

Dr. Cooper: I believe they're classified under unassessed stocks. Should we put including sargassum and corals?

Dr. Williams: Why do we need landings and average size? Ultimately if what we're after is OFL and its associated uncertainty, what more do we need?

Mr. Carmichael: Background and the --

Dr. Williams: Are we going to use that somehow? Is average size going to -- What we would do with that information?

Mr. Carmichael: I just threw it out there. If you don't want it, cut it out.

Dr. Cooper: Do we, for the unassessed stocks, have enough information to conduct a PSA analysis or do we need to request a PSA analysis for these unassessed stocks as well?

Dr. Williams: They did it for all the snapper grouper. I think all that's missing is like the coastal pelagics and -- I think that needs to be requested.

Dr. Cooper: How about PSA values are needed for all stocks or how about PSA values as performed under the MRAG approach are needed for all stocks not included in the MRAG report.

Ms. Lange: I have a question of Erik. Is there a problem providing the landings data or is there a concern you have about providing landings and average size data, just so it's, again, sort of on the record? If it's not used at all in the generation of the OFLs, that's one thing, but if they're going to be used, it would be helpful, I think, to have a consistent dataset that's available. It's just a question.

Dr. Williams: It just gets back to what would -- If we're presented with a landings stream, what are we going to do with it? In other words, we should not be inferring OFL from average landings and we should not be looking at landings streams and trying to determine OFL. That's a function that should be done away from us. We should just be reviewing the results of that.

Dr. Cooper: One thing you deleted from the unassessed stocks section is a request that we get a description of the methodology and I think it would be valid to ask for the data that went into that calculation, because part of the review is going to be saying, okay, did they actually do the math right. I think if landings are part of that approach, since our job is going to be to review it, to actually have the data on hand. Otherwise, we're not going to be able to review the specifics.

Dr. Williams: In that sense, the other thing we should probably add is maybe in that first sentence something about running it through a peer review process or a SEDAR like process or even the SEDAR process, because ideally, that's what we would want.

Dr. Cooper: It is strongly recommended that the Science Center provide us with --

Dr. Belcher: This is about Erik's comment just was, about strongly recommending that it go through a peer review process.

Dr. Cooper: I was going to lump it altogether, and that all this goes through a peer review.

Dr. Buckel: Could it just be under the SEDAR process instead of a process similar to SEDAR?

Mr. Carmichael: I think what you're really concerned with is that it gets peer reviewed and so maybe just ask that it be peer reviewed. It's come before the SEDAR Steering Committee and they didn't accept that. You might just want to leave it open.

Dr. Cooper: Just nitpicky, but do we want to move that last sentence to before "the PSA values", so they know that we're referring to OFL in the estimates and not a detailed methodology report of the PSA?

Dr. Belcher: Further wordsmithing or commentary? Is there anything else we think we need or does that pretty much cover it?

Dr. Cooper: Here's a question. Given our tables for calculating the buffer, there's no assessment and how are we going to determine whether it's reliable catch data or scarce? Do we somehow need them to describe the catch data in order for us to apply that or supply the catch data? Those are the two tiers in our buffering, right? Do we need to be able to make that determination?

Dr. Barbieri: That's a good point. This is one of the reasons that we had thought about actually putting this through the SEDAR process, so there would be those workshops and even some summarized report or some participation from the SSC or some way for us to evaluate what those data were. Now, this might require development of some kind of a report, even a brief summary describing the actual data streams that were used to generate the estimates.

Dr. Cooper: In Table 1 of our original draft, it looks like we've got catch history versus no catch records at all and I thought I remembered seeing something else on the screen where it was reliable catch data versus scarce or unreliable. Am I remembering or am I hallucinating due to the lack of caffeine?

Mr. Carmichael: No, I think that's kind of the criteria you had, reliable and have it versus don't have it. It's kind of a judgment call in there. That's part of having the catch history and that's why I was thinking of asking for that, because you know that part is in there.

Dr. Cooper: Right, but there's the qualitative term of "reliable" and so we may have catch records, but somehow have to determine whether or not they are reliable.

Dr. Barbieri: Right, but that would be then -- It's either reliable or isn't.

Mr. Carmichael: As in is it something that was landed as an unclassified species or is it something that's landed as the name of another species or do you have any information about that or do you have issues identified that you know contribute to its unreliability? They were described in the text as reliable for a 4 and scarce or unreliable for a 5.

Dr. Cooper: Perhaps we should a request in there -- Somehow, we need to determine that the data that went into that was either reliable or unreliable and simply having here are the catches for the past thirty years, I think we need some kind of description of the catch data in order for us to make the determination whether those are reliable catches or not.

We need some kind of history or at least more than just the raw data that went into the methodology, but a description of -- These landings, they may say, well, we had this mixed species landings and we assumed they were 10 percent and here's your catch without telling us actually how they got to that catch stream. I think we do need in there some description of the available sources or am I just being overly pedantic? Somehow we need to assess reliability and I'm not sure if we've captured that here.

Mr. Carmichael: You pulled out the request to even get the landings history and so you are kind of making it difficult for yourselves to even start there, right?

Ms. Lange: Our second dimension is uncertainty characterization, which I believe relates to the assessment information. If the Center could just say, based on our five scales, whether it's ultimate high, medium, low, or none, relative to the certainty they have or the uncertainty of the information that went into it.

Dr. Williams: If would assume, if any of this actually gets done, that there's going to be a report associated with it and it will basically describe how everything was done and the quality of the data. It will be just like any sort of thing that goes through the SEDAR process. Any analysis that comes out of the Center usually is pretty thorough about that sort of stuff.

Dr. Belcher: Do we go back to modifying it again through a peer reviewed process similar to SEDAR? Does that help it or does it not? Is it overstated or not?

Dr. Williams: We could get even specific and saying with a set of terms of reference or something. I don't know. I think it's implied in that statement what we're asking for.

Dr. Belcher: You do? So we don't need to modify it?

Dr. Williams: It's going to hit my desk in one form or another and I'll know the intention behind it.

Dr. Cooper: To that point, I'll draw your attention to say like Attachment 15, where someone asked for posterior distributions of MSY and we got a table of numbers and a graph with a paragraph saying this is based on a certain SEDAR assessment and we weren't sure if that was OFL or MSY or what were those numbers.

I think being explicit on your report -- Whether or not we then list terms of reference will be forthcoming, but I think we do need to list terms of reference to make darned sure everything is included so we don't just get a two-page memo that's a table and a graph with a one-paragraph description.

Dr. Williams: It's a little slight on some work from my shop, because actually that short description and table is exactly what was asked for. It was asked for equilibrium estimates and so --

Dr. Cooper: Again, that faults us for not asking for the right thing and so being very clear on what we're wanting and not leaving it up to you guys to infer what we want, because you will give us exactly what we want. It was no intention on a slight on the shop, but it's just -- I didn't actually see the formal request that went out, but making sure we get what we need so we don't have to go back, assuming any of this actually makes it to your desk.

Dr. Williams: In that sense, I think just asking for OFL, a best estimate of OFL, and its associated uncertainty I think covers it. That basically -- Unless I'm missing something. Is there some wiggle room of how that could be interpreted?

Dr. Cooper: No, it's that in order to apply our buffer we need to make a determination, as the SSC or whoever actually calculates the numbers of the control rule, of is the catch history reliable or unreliable and so I think a description of the catch data, so we could actually determine that.

Dr. Williams: Maybe I guess what we should put in is a description of the methods used to compute it or something like that. Maybe that would be --

Dr. Cooper: And the data or something. I'm worried there will be generic methods, but there will be some steps left out and so we won't really know reliability or maybe the methods will be detailed enough that we can actually determine when different methods had to be used.

Dr. Williams: I think when we imply that we want this to go through a peer review process that necessarily means that it's going to have all the details behind it to show exactly how it was done and what the issues are. In order for that to be properly peer reviewed I think that's just implied.

Dr. Belcher: I just added in that phrase "through a peer review process with applicable terms of reference" if that helps clarify it on behalf of --

Dr. Williams: Except if you put that in that there than we're going to turn around and say give us the terms of reference. How is that terms of reference going to get established? Are we going to have to do that here as the SSC?

Dr. Cooper: How about this -- Let's take out the "terms of reference" and if we actually get a final report and if it doesn't contain the information we need to determine whether it's reliable, Erik will buy us all a drink.

Dr. Belcher: He'll take us all out to dinner. How does everyone feel about this then? We're obviously back to the original language, but does everybody, even after discussion, still -- Okay. I'm looking to see where we're at. Application of Unassessed Stocks, I guess we've kind of addressed that.

The last action item is the Finalizing the ABC Control Rule Document, but we don't have all the caveats detailed in that yet, do we? Don't we have to capture what we've just discussed in the document or not?

Ms. Lange: I think, based on this discussion, the request that we've put in to the Center fills in the OFL, that directing paragraph, assuming we have the OFL and associated uncertainty. Once that gets in there, then all the stocks, including the unassessed stocks, fit into our framework. I don't see that the document itself needs additional modification.

Dr. Belcher: That's what I wanted to make sure, because --

Ms. Lange: That was my response. I don't think that it does.

Dr. Belcher: Anyone else feel --

Mr. Carmichael: You can accept it as you've modified it, because you made a few changes in the criteria and description of the stock, the assessment information, and there was one other one that we modified slightly. The PSA business, which you then applied, the depletion threshold information. If everyone consents to that, then you can update the document and have the final document as part of your report.

Dr. Belcher: Everyone is okay with the document then? You've already sent us around the final version?

Mr. Carmichael: I haven't made the updates. I sent you around the changes, yesterday's changes. I have not done anything to incorporate it into the document.

Dr. Belcher: I think that would be the only other thing, was if we could have basically the final version with those updates to it to review it before tomorrow morning so that we can all decide if we're going to agree to endorse that paper as is and then that section we can discount that action and be done with it.

Mr. Carmichael: If you're looking to me to make the changes, I won't guarantee to have it by tomorrow morning. I have another council meeting and I won't be here actually first thing in the morning, but if someone else were perhaps willing to take it on, it may be something you could have by tomorrow morning.

Dr. Belcher: Okay. Julie is raising her hand.

Dr. Barbieri: What is this?

Dr. Belcher: To go over the final document with the changes from yesterday, because we have an action item that says to finalize the ABC control rule document. We had some subtle changes that John had addressed through the language that needs to be incorporated in and we'll get that draft and as long as everyone endorses that, that will stand as our final control rule.

The last thing that was on the agenda for today and I know it's 5:30, but see if you think it's quick and if it's not, then we'll address it in the morning. The only thing we're going to do is a little bit of change in order, because John has to leave. I asked Rick if we could possibly move up the socioeconomic analyses earlier in the day, before John leaves, so he can have a chance to see what Jim Waters has to present, so that he and Sherry and the socioeconomic folks can put their spin and get their questions answered. We're going to try and do that early in the morning.

Again, let's look at Item Number 7. It's, again, ABC Control Rule Application. This is relative to review information for Amendment 17 stocks, which you've done, and wreckfish and golden crab. We have to talk about applications of the ABC control rule to wreckfish and golden crab and provide ABC recommendations, if feasible. Is it quick? Is it something that we can run through right now or do we need to wait and do it in the morning?

Dr. Barbieri: Wait and do it in the morning.

Dr. Belcher: Do it in the morning?

Dr. Cooper: We don't have a recent -- Basically, doesn't wreckfish and golden crab fall under the request of assessed stocks for which we don't have projections?

Dr. Belcher: Like I said, I guess that's the question, can we go through that step and just define it and basically be done with it and add it to this list or --

Dr. Cooper: I would hope so.

Ms. Lange: My assumption is that it's all other assessed stocks or unassessed and so those should be included. We've already asked for the input for them, right?

Dr. Belcher: Okay. I'm just making sure we're covering everything. Is everybody okay with that then? In that situation, do we really need to discuss anything tomorrow?

Dr. Cooper: Do we want, just for completeness, for tilefish, wreckfish, and golden crab, just to make sure we're including all the ones we are specifically assigned in our request?

Dr. Belcher: A question to the group. Is that the easiest way to capture it?

Ms. Lange: Since we specifically list tilefish, maybe we -- If that's what we were specifically asked for we might as well do that and then the all other will be whatever ones there are.

Dr. Belcher: Then by changing that wording, we've basically already addressed the action item. Is everybody comfortable with that and we're good to go relative to what was on the agenda for today and caught back up?

Dr. Cooper: For completeness on the record, due to a lack of an estimate of OFL we were unable to produce ABCs for wreckfish and golden crab.

Dr. Belcher: Do we need to say that for tilefish as well?

Dr. Cooper: I thought we already did.

Dr. Belcher: That's what I did, was I just cut in wreckfish.

Dr. Cooper: I'm just talking about as far as our action items go we talk about tilefish and we're on the record as to why we weren't able to get an OFL and so just in reference to this particular action item the reason why we're doing this is because we do not have an estimate of OFL and therefore, we're requesting one, which we can then insert into our ABC control rule, just so we know it's -- For the report, et cetera.

Dr. Belcher: With that said, like I said, we can pretty much end the meeting for today and we will start back at 8:30 with Snapper Grouper 17 and a status update from Rick DeVictor and then follow that with the socioeconomic analysis and then proceed forward from there. We're just bumping Item D up to Item B's spot. With that, we'll see you at 8:30 tomorrow morning.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened at the Hutchinson Island Marriott, Stuart, Florida, Tuesday morning, June 9, 2009, and was called to order at 8:30 o'clock a.m. by Chairman Carolyn Belcher.

Dr. Belcher: We'll go ahead and get back on the record. If most of your comments are just editorial suggestion, i.e., nothing that's going to dramatically change the language or the framework of what's in the document, we'll go ahead and reserve not to put that on record and if you all can just write down your comments and get them to me and Julie and we'll make sure that those are edited.

The main thing is the way that I'm going to present it is it's going to be a working draft. However, the concept is considered finalized and so while it may be a little rough around the edges, i.e., we don't have consistent font through or whatever, if that's all that there is, then what's I'll do, is just submit your comments to me as to what needs to be fixed and we'll get those finalized before it goes to the council. Otherwise, as long as the concept is fine with everybody, that's what I want to hear their comments on.

Dr. Barbieri: To that point, it will be okay then for us to have the next couple of weeks, perhaps, to send in some just minor editorial changes and reformatting of the table. There's something about whether if we want to have references that are cited in the text and included in the document, minor kinds of things that would not change the actual content of the document. Would that be okay?

Dr. Belcher: Yes. The main thing to me is, again, like Erik had mentioned, that there's an inconsistency with the wording of one of the tiers in the text to what's in the table. That, to me, needs to be addressed before it goes to council. Like I said, the subtleties and nuances that are just editorial, I'm not going to be too worried about, but we'll have to decide a deadline to make sure that we get final comments in.

Again, if you've got them, as you read through it, we can pretty much address those and then I can send another edited version out for folks and put a deadline on that. With that, does anybody have any major changes or anything that they think is catastrophic that should be addressed, so that I can write it down before I get comments later? Okay. With that, is the consensus of the group then that the document is fine as stands, based on final concept? Seeing everybody's heads nodding, I will take that as we have full consent.

Now we can transfer control to Rick, who will present the status of Snapper Grouper Amendment 17. We have a little bit of change in order as far as the agenda goes. As I said yesterday, the socioeconomic analysis is going to follow the status update. We're going to discuss proxy SPR values after that and then Gregg Waugh is going to discuss the table that he had sent to us on Sunday, which basically has the cumulative effects under the red snapper management that's coming up, and then that will fall in between the proxy and management evaluations and everything will fall in behind that. With that, Rick.

Mr. DeVictor: Thank you. I am going to run through the actions in Snapper Grouper Amendment 17. I was on one agenda to give an update and then another to give an overview and I decided to go through -- Since it's been six months since you've seen these actions, I'll just go through in a pretty brief presentation and focus on the preferred alternatives specifically, because there are sixty alternatives and about eleven actions in the amendment.

What I would like to go through are first the amendment objectives. Again, since you haven't reviewed this document since December, I'll go through why the council is moving forward with Amendment 17 and then for each action, I'll touch on the need for action and that basically can divide into two separate parts. One is the stock status which is driving Amendment 17, whether a species is undergoing overfishing and whether it is overfished as part of it.

The second need for action, of course, is to update snapper grouper in line with the new Magnuson-Stevens Act and that's specifying the annual catch limits and accountability measures where they are needed for these ten species undergoing overfishing.

Then after I specify the need for action, I'll go through the proposed solutions and those basically are the preferred alternatives at this time and then, of course, like I do each time, I'll go through the amendment timing and let you know where we are at in the process. Again, this has not gone out to public hearing yet and so there's still time to work on this document.

Objectives, again, we're dealing with ten species undergoing overfishing. There's four main objectives. One is to specify ACLs where needed and second is to specify the accountability measures where needed, where we don't have them, ensure that future F does not exceed the annual catch limits. The council is going to have to look at their management regulations in place right now, after they set the ACLs, and say hey, where do we think that we're going to exceed the ACLs and we may have to ratchet down the regulations for certain species.

This leads to Number 4, which is the big one in the amendment, red snapper. As you know, it's undergoing overfishing and overfished and so the council is required by law to end overfishing and implement a rebuilding plan and so that's currently in the amendment. Those are the four

categories of actions in Amendment 17.

Like I said, I'll go through each of the actions with the need for action and go through the council's current preferred alternative. According to NEPA, you need a range of alternatives, of course, and so the council, in most cases, has specified a preferred and so I'll just focus on that. What I would like to do is start with the deepwater species first and then move on inshore.

Speckled hind and warsaw grouper, why is the council considering action? Well, it's undergoing overfishing and the overfished is unknown. Again, this is based upon a pre-SEDAR assessment and looking at catch curves, it was determined it's undergoing overfishing.

Your recommendation to the council right now is ABC equals zero. I'm not sure if that's changed in the last day. I wasn't here. The current one is acceptable biological catch equals zero, but then you made sure to say that is direct landings only and so as I interpret that is that to ensure that overfishing is not occurring on these two species you have to set landings to zero or put in regulations where landings are zero. That's the current problem before the council at this time that's prompting regulations.

Here's the proposed action currently on the table and this is their preferred alternative. The red line is at the forty-fathom depth and the council is proposing to put in regulations that seaward of that line or eastward of that line no fishing for, possession, and retention of deepwater species and that's nine deepwater species and so you have your golden tilefish, speckled hind, warsaw grouper, snowy grouper, misty grouper, queen snapper, and I'm probably missing one or two.

Again, no harvest for, possession, and retention of those deepwater species. You'll see two yellow lines. Those yellow lines follow the hundred-meter and 300-meter depth contour. That would be allowable golden tilefish fishing area. Golden tilefish is typically caught on mud bottom habitat, where speckled hind and warsaw are typically caught more inshore and on rocky habitat.

We looked at the landings data and trips that had caught say speckled hind and warsaw did not necessarily catch golden tilefish and vice versa. In fact, when you look at trips for speckled hind, they mostly caught vermilion snapper. The belief is that you can still go out there golden tilefish fishing and it would not be a lot of harvest of speckled hind and warsaw and so there would be allowable golden tilefish fishing.

The council understands that within the forty-fathom there still will be mortality on speckled hind and warsaw grouper. That's the shelf edge. You typically catch juveniles there, but they think that this will protect the older, more fecund species of fish past the forty fathoms. This is the current preferred alternative that the council has. Those blue boxes are the MPAs that just went into place through Amendment 14.

Next, moving to golden tilefish, what is the need for action? The species is undergoing overfishing and not overfished and this is data through 2002. The commercial ACL is currently set at the yield at FMSY level. The council is looking to lower that to the yield at FOY to account for management uncertainty. That FMSY is where the overfishing threshold is and so

they would like to lower that to put a little buffer in there for management uncertainty.

There's no recreational ACL or AM and so the council is required by law, under the reauthorized Magnuson Act, to put in an ACL and AM and so they're going to do that. As is the common theme with the deepwater species, there's uncertainty in monitoring of recreational catches through MRFSS and MRIP. These species aren't encountered a lot and landings are pretty low on the recreational side for golden tilefish and so you have PSEs upwards of 40 to 60 percent in any given year.

What happened -- An example of this is in 2002, golden tilefish recreationally represented 2 percent of the catch. You fast forward to 2006 and it was 40 percent of the catch recreationally and commercial landings have been pretty steady since then. What we're seeing is snowy grouper and golden tilefish, you'll get a big bump in a year and that presents a particular challenge to the council, as you really don't want to set an ACL and you go over that due to a function of the sampling, where you trigger an AM, where, again, that's probably not reflective of the recreational landings, but it's just a function of the sampling. It's a challenge to them where you have these deepwater species that are rarely or not as often encountered with the recreational fishery.

The council's current preferred alternative is to set a single ACL and this would be set at the commercial quota at OY level and so the AM would be to prohibit commercial and recreational harvest when the ACL is met and so what this would essentially do is it would just track the commercial landings and once the commercial quota is met at the OY level, right now it's at the FMSY level, you would close the commercial and recreational fishery. You would not track the recreational landings for golden tilefish.

The last deepwater species is snowy grouper. What is the need for action? The species is undergoing overfishing and is overfished and, again, this was data through 2002. There's a challenge here because you have a pretty low ACL, recreational ACL, at 523 fish. You look at MRFSS landings some years it's 13,000 snowy groupers were landed recreationally and the council has gone over that.

How do you set up a system of an ACL and then how do you set up a system of AMs and so once you exceed the recreational ACL that you trigger an AM? That's a challenge, again, in the uncertainty in the monitoring of recreational catches and PSEs around 30 to 62 percent.

Here's what the council is looking at. Recreationally, you're currently at one snowy grouper per day per person and so they're looking at putting in a limit of one per vessel per day, again, to try to -- The council really needs to get the hooks out of the water for this species recreationally and so maybe this would deter recreational trips from occurring and you could retain the one snowy grouper, if you catch one.

The recreational AM would be if the ACL is exceeded you reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL in the following year and so whereas commercially you have this system of a commercial quota and once that's met you close down the commercial fishery, the council is looking at this in a different way on

the recreational side and if you exceed your ACL, you would shorten the fishing season in the following year.

This would use a three-year running average of recreational landings. You would need to be over your recreational landings three years in a row before your AM is triggered. Again, the council sees this as a way to work in the buffer to those high catches in any given year. That's the preferred alternative for snowy grouper.

Now, moving more inshore to shallow-water and mid-shelf species, you have black sea bass, gag, red and black grouper, and vermilion snapper, to round out the ten species undergoing overfishing.

Black grouper, black sea bass, gag, red grouper, and vermilion snapper, what is the need for action? Again, these are all undergoing overfishing and so, of course, you need ACLs in place by 2010. Black sea bass is overfished, according to the stock assessment. Black and red grouper, the overfished status is unknown. As you know, there is a SEDAR beginning on these two species later this month and the review workshop, I believe, is scheduled for late January of 2011.

Then the question is should the council wait? Should they try to put in ACLs for red grouper or black grouper or should you wait until you get the results of the stock assessment? There's no ACLs for black and red grouper currently and no recreational AMs for any of these species.

Here's the current preferred alternative and staff does have a concern with this preferred alternative and we're going to talk about it when the Snapper Grouper Committee meets. Right now through Amendment 16, which, as you know, has been approved by the Secretary of Commerce but the regulations have not been put into place yet, are these gag ACL commercial and gag ACL recreational.

Here I have the values up there and 353,940 would be the gag ACL commercially and recreationally would be 340,060 pounds of fish. The preferred alternative is looking at having this aggregate ACL for each of these sectors and this would include gag, black, and red. You can see the values up there and they would use the Amendment 16 for gag, those values, but for black and red, they would look at recent landings and that's how they came up with this 662,000.

The concern here is that you could be overfishing on gag, but you would not meet this aggregate quota where you would shut down fishing for the shallow-water grouper species and so there is some concern here with having this aggregate. The council just sees this as a way to try to come up with an ACL for black and red grouper, which is very hard at this time.

The AM, again -- Once you meet this three-species ACL, you would close the shallow-water grouper fishery and so that's a whole host of species and, again, you would use the three-year running average of recreational landings and so, again, there is also some concern there in maybe not being as conservative, because you would need to be over three years in a row on the recreational side of landings. Again, the council is going to talk about this later in the week, this issue.

Moving on to red snapper, as you know, it's undergoing overfishing and it's overfished. Your F current over F40 percent, which is your FMSY proxy, is 8.19. As you know, if you're over one you are undergoing overfishing. Bcurrent over MSST is 0.042. Again, if you're less than one you are overfished. It's pretty significant levels of overfishing and overfished.

The team has calculated that an 87 percent reduction in fishing morality is required to get to 40 percent SPR and so that's the issue for the council. In addition, there are no ACLs or AMs for red snapper.

The council does not have preferred alternatives for red snapper at this time. We hope to get them later on in the week, but I'll go through the actions. There's four categories of them. One action would set the MSY and, again, that's using the F40 percent SPR as the FMSY proxy. Then OY alternatives and the council typically has this where they have the yield at 65 percent of FMSY and 75 percent of FMSY and 85 percent of FMSY. Those are three alternatives in addition to the no action and recently, they've gone with setting the OY at the 75 percent of FMSY level, but they have not chosen a preferred for OY.

Then you move on to the rebuilding plan, where red snapper is overfished. By law, you need to put in a rebuilding plan and so there's really two components to this and two separate actions and the first one is the schedule.

How long are you going to take to rebuild red snapper? The current alternatives are the no action or do you take fifteen years, twenty-five years, thirty-five years, where thirty-five years is set to Tmax and so that's the maximum allowed by law that you can take to rebuild red snapper.

Then the second part is really the strategy. Once you choose how many years you're going to rebuild red snapper, then you come up with a strategy of how you intend to do it and that really sets your ACL in year one, which is 2010, and to end overfishing in year one. The strategy portion sets your ACL.

Finally, once you have your schedule and your strategy preferred alternatives, you go forward with your management measures. Say your strategy sets you up with 87,000 pounds to get to F40 percent and end overfishing and how do you put in say your closures or your no possession of red snapper in order to achieve that, so you end overfishing? I'll go through that in a second.

Finally, the monitoring plan is the fourth component of red snapper that's in Amendment 17 and I won't dwell on this very long, as we have an agenda item for this, but the question is you're going to restrict possession of red snapper and you may put in this closure and you sort of lose your data collection system, particularly in terms of the headboat sector, which your headboat CPUE is your longest relative abundance level that you've used in your stock assessments over time.

The council is sort of talking about maybe allowing some headboat harvest in these closed areas in order to keep that headboat CPUE going, so you can use that for your assessments. Again, we'll talk more about that in a moment.

Here's the current alternatives. Again, there's no preferred alternative. Each of these alternatives would prohibit the possession, retention, and harvest of red snapper throughout the entire EEZ, but the issue before that, when you look at the projections, is even if you prohibit the retention of all red snapper, that's not enough to end overfishing, due to the discard issue with red snapper.

They are looking at these closures, spatial closures, that would prohibit all harvest of snapper grouper species and these encompass where red snapper mostly live and where they're mostly caught. Alternative 5, the northern boundary is basically at your South Carolina/Georgia border and going down just past Cape Canaveral and, again, prohibit all retention of snapper grouper species in this area.

This follows the four logbook commercial grids. Alternative 3 has the same northern and southern boundaries except you're moving them in to follow a ninety-foot depth contour on the western boundary and the eastern boundary would be a 240-foot depth. The council sees this as a way to reduce the socioeconomic impacts. You would allow fishing inshore. I don't show it here, but there's quite a bit of artificial reef off of Georgia, where there's quite a bit of fishing going on. You would still be allowed to catch snapper grouper species in that area.

The council believes, in looking at the life history data, that this is between a ninety-foot depth contour and 240-foot depth is basically where you see red snapper, for the most part. Inshore, if they do encounter red snapper, the release mortality rates are higher than they are in the deeper water and so not too bad.

Here's Alternative 6 and 4. It basically has the same southern boundary, which is just past Cape Canaveral, but this goes up three more logbook grids for Alternative 6 and so that's seven total logbook grids, the boundaries, and so going off the coast of South Carolina and Alternative 4 has the same northern and southern boundaries as Alternative 6, except, again, you follow that ninety-foot and 240-foot depth contour. Those are the alternatives pretty quickly, the preferred alternatives.

The timeline is an SSC review, which you're doing here. The schedule is for the council to approve in September of 2009 for public hearings and take these options out to public hearings in November and then the council would review the public hearing comments in December of 2009 or March of 2010 and then submit to the Secretary of Commerce sometime in 2010. That's it.

Dr. Belcher: Thanks, Rick. Does anybody have any questions or comments of Rick?

Dr. Crosson: Rick, how were pre-MRFSS recreational landings incorporated into the assessment for red snapper? What was the methodology that they used and how does that affect the target levels that we're trying to rebuild to?

Mr. DeVictor: Someone else could probably explain this better, but I believe red snapper we used the U.S. Fish and Wildlife surveys, the three data points. Correct me if I'm wrong, Erik, but I believe that's how they used it and extrapolated to 1981, when MRFSS began. Then we'll talk a little bit later on -- We have some presentations talking about the management evaluations

and how MRFSS was used and so we'll touch upon it then some more, but I believe they used those three data points from the Fish and Wildlife Survey.

Dr. Crosson: Would it be better to hold off on more questions on that until the further presentation? Okay.

Dr. Cooper: I can't remember specifically which species this was, but you're talking about the AMs for recreational landings being based on the -- The slide said three-year running average and you said it has to be violated three years in a row and I just want clarification, is it the slide or what you said?

Mr. DeVictor: The slide. Go with the slide if there's ever a question.

Dr. Belcher: Anyone else? Thank you, Rick. Next on the agenda is the Socioeconomic Analyses and Jim Waters.

Dr. Waters: Thank you, Carolyn. I'm Jim Waters and I work for the National Marine Fisheries Service in the Beaufort, North Carolina lab. Formerly I'm part of the Miami lab, but I just happen to be in Beaufort. I'm going to talk a little bit about Snapper Grouper Amendment 17. This is an ongoing analysis. I can already tell from Rick's presentation that I'll have to do a little tweaking on a couple of items.

Basically, Amendment 17, the portion that I looked at, has management alternatives for the speckled hind, warsaw grouper, golden tilefish, red snapper, and snowy grouper. I'll be looking primarily at the management measures rather than the AMs and ACL discussion that Rick had.

I have a little star by snowy grouper here in that most of the alternatives proposed for snowy grouper are administrative in nature in terms of specifying the ACLs and AMs, but there aren't really any management measures directly associated with it and so I'm not going to talk about snowy grouper directly. However, I will note that the management measures for speckled hind and warsaw grouper will have a big impact on the snowy grouper fishery. Most of the alternatives that I'll look at include prohibitions on the harvest and retention of these species or restrictions on the area fished or the depth of fishing.

The method of analysis is very similar to what you've seen in the past with a couple of previous amendments. The basis for the analysis is the federal logbook program. As you know, since 1993, fishermen with federal permits to fish in the EEZ for snapper grouper species are required to report trips, landings by trip, and other information, like area fished and how many days absent and that sort of thing.

More recently, since the year 2005, they've been required to report on depth of fishing and so we've been able to use some information about fishing depth to examine these alternatives in Amendment 17.

Anyway, what we do is hypothetically impose the proposed rules on the trip level data that have been submitted to the logbook program and then I record the expected change in landings,

revenues, and trip costs. I aggregate those changes by year and so I have separate yearly totals for 2005, 2006, and 2007 and I take the average three-year average and that's my expectation, my simulated average annual output for this proposed alternative.

I did not use data prior to 2005, because those data did not include depth of fishing. I think in the previous amendments we used five-year averages, but we're using a three-year average here and when we first started looking at these alternatives in Amendment 17, the data for 2008 were incomplete and so the IPT decided to use a three-year average from 2005, 2006, and 2007.

I'll briefly go over some of the advantages of the model. I think one of the big advantages is that logbook data are directly from the fishermen or reported by the fishermen. Quite often, you go to public hearings and people will claim that the data just aren't very good and they're usually referring to sampling programs. In this case, we have the data directly from the fishermen and I think that's a plus, a big plus.

Item Number 2 is this type of analysis can accommodate very detailed and complex combinations of proposed management alternatives. This is a big deal, because the council quite often in their management alternatives will propose very, very specific things and for NEPA purposes, you have to have more than one alternative to consider and quite often, the differences in those alternatives are very minor.

Standard bioeconomic models that you often read about in the literature really don't get down to the level of detail. When you use this method with the logbook data, trip by trip as reported to the logbook program, you really can look at those very minute differences in proposed alternatives.

Another advantage is it really enables us to account for the large heterogeneity in fishing activities within the fleet, accounting for their differences by gear type, duration of trip, crew size, good luck or bad luck, you name it.

There are limitations to the model. The premise of the model is that the near-term past is a good predictor of the short-term future. Naturally, the farther into the future we go, the less likely it is that the near-term past is a good predictor for what happens in the future and so I think this method works best for short-term analyses and we're using an average, this three-year average, because no one year in the past is probably going to be a really best predictor of the near future and so we use an average of the recent past and that's going to be our predictor of the near future.

This Bullet Number 2 here, this is an interesting one and it will come into play in this analysis. By using the logbook data as reported by fishermen, we are basing our analysis on the historical fishing patterns and fishing strategies that fishermen have employed. We do know that when you impose regulations on individuals that people will adjust what they do to try to minimize the effect of the regulation on themselves. This model does not account for changes in fishing patterns as fishermen adjust to regulations.

Also, I would like to note that this model focuses on net operating revenues to commercial

fishermen and it does not look at the broader perspective of what happens to local and regional economies.

Dr. Crosson: Can I ask a clarifying question on the previous slide? The second bullet point, when you say that the model doesn't account for changes in fishing patterns, do you mean that it just assumes that the fishing activity stops and it doesn't bring in the possibility of people substituting another species?

Dr. Waters: Right. Actually, I can go into a little bit more detail on that. We will allow fishing trips to disappear. If a regulation causes the trip to become unprofitable, we'll allow that fishing trip to disappear, but we won't allow people to change the type of activity that they're engaged in. Let's say they're primarily fishing for red snapper right now and rather than cease fishing at all, they might focus on a different species. The model does not account for that type of switching behavior.

Dr. Cooper: Along those lines, with area closures, does that mean that if all those trips that were in those areas just disappear and the areas left open just get the same harvest they always have?

Dr. Waters: Right. That's why I said in this bullet -- This limitation in this bullet will come into play in this amendment. That is a limitation. Another example that you're all thinking of probably is a seasonal closure and fishermen might react to a seasonal closure by trying to harvest a little bit more quickly immediately before the closure or maybe harvesting more intensively immediately after the closure. This would just have those trips disappear and it wouldn't be re-dispersed within the year.

Another interesting aspect of this analysis is that -- What we want to do here is we want to compare the economic outcomes with the proposed alternatives in Amendment 17 and we want to compare that with the economic outcomes that would occur without Amendment 17. It's with and without comparison, but the trick here is that there are some regulations that have recently been imposed or we have some regulations that have been passed and they're being reviewed, but they have not been imposed yet and that's Amendment 16, for example.

We can't just try to simulate landings and economic activity with Amendment 17 and compare that to observed catches, because our three-year time period is 2005, 2006, and 2007. Amendment 13C just went into place in October of 2006 and Amendment 16 hasn't been implemented at all.

What we have to do is simulate the effects of Amendments 13C and 16 on the fishery and then we're going to compare the simulated outcomes for Amendment 17 with the simulated outcomes for the no action of Amendment 17 and this graph right here gives you the simulated effects of Amendments 13C and 16 on some of these species.

You can see, for example, in 13C the blue bar -- These are in percentages over here and so the pounds -- If I had shown a graph here with pounds on the vertical axis, the vertical distance of the bars would be different, but I'm showing percentages here now.

13C dealt primarily with the deepwater species, snowy grouper and tilefish, and with black sea bass. Amendment 16 deals primarily with the mid-shelf species, like red snapper, vermilion snapper, gag, and red grouper. Even though Amendment 16, for example, specifically only dealt with vermilion snapper and gag in some of the shallow-water groupers, it does have ramifications for some of these other species.

Right off the bat, part of the no action alternative for Amendment 17 includes a fairly steep reduction in harvests for some of these species and so fishermen -- When all the smoke clears, they're going to incur fairly substantial reductions in their harvest and their net operating revenues. In our very -- I can't think of the proper word, but in trying to do all of this for the amendment, we're only going to be saying that there's a certain level of reduction due to Amendment 17 and they're going to say look at all the reductions we've gotten and we're just trying to decompose the reductions into the effects of 13C, 16, and 17, but we're not trying to deny that people are not going to be hurt. Right off the bat, Amendment -- Anyway, the point of this graph is that the no action alternative for Amendment 17 already accounts for fairly substantial reductions in harvest of some of these species.

These are the management alternatives for speckled hind are warsaw grouper. Rick already went through them real quickly. From a modeling perspective, Alternative 2 and no action are basically the same. It prohibits the harvest of both species and Alternatives 3, 4, and 5 prohibit harvests of additional deepwater species in an attempt to try to limit the incidental catch and mortality due to discard of speckled hind and warsaw.

Alternative 3 is the most comprehensive alternative. It includes a complete closure of all these species here and not just speckled hind and warsaw grouper, but it includes snowy grouper, misty grouper, yellowedge, golden tilefish, blueline tilefish, silk snapper, and queen snapper. Among those, snowy grouper, yellowedge grouper, golden tilefish and blueline tilefish are -- They're important commercial species.

Harkin back that I did mention that I wasn't going to be looking at any specific management alternatives for snowy grouper, but as you can see, these alternatives for speckled hind and warsaw grouper at this particular alternative would completely eliminate the commercial fishery for snowy grouper, for example, and yellowedge grouper and golden tilefish, et cetera.

Alternatives 4 and 5 are less restrictive. Alternative 4 allows the harvest of tilefish in certain depths and Alternative 5 prohibits the harvest in depths of 240 feet and greater. This, I'm going to go over these fairly quickly. It's a busy graph. I think most of the interest of this talk will be on red snapper and so I thought I would skip through these alternatives pretty quickly.

The graphs at the top are denominated in dollars and the graphs at the bottom are denominated in percentages. Each bar we have -- The bars side by side represent the outcomes of the different alternatives and the red bar right here is Alternative 3. That was the most comprehensive alternative and you can see that these reductions -- The vertical distance of the red bar for Alternative 3 is quite large and the reason for that is that Alternative 3 would preclude the harvest of golden tilefish. Alternatives 4 and 5 are less restrictive because they would allow harvest of golden tilefish, which among all these deepwater species, that was the primary

commercial species.

At any rate, it's important impacts on fishermen who fish in the deepwater species. I should mention that the graphs on the left are denominated by gear type. The deepwater species are harvested by both bottom longline and vertical line and so they would share in the impacts.

The graphs on the right are denominated by area, North Carolina and South Carolina and Georgia and northeast Florida and central and southeast Florida and south Florida. Most of the tilefish are landed in this area right here and so that's where Alternative 3 would have its biggest bite. Snowy grouper and blueline tilefish are caught in the Carolinas and so the Alternatives 3, 4, and 5 would have impacts in those areas.

There were some management alternatives for tilefish, but they were primarily administrative in nature in terms of declaring the value of the ACL and the AM. The main difference though is that the no action alternative has a quote of about 295,000 pounds gutted weight and all of the proposed alternatives have slightly smaller quotas of 287,000 pounds. Other than that, they're basically the same and so I only ran one scenario, which was preferred Alternative 5.

I won't show you a graph on this, because I'll just go over it real quickly, but basically the simulation model predicts fairly small losses, because of the smaller quota. The lower trip limit -- There's a very interesting schedule of trip limits here for tilefish. It's 4,000 pounds per trip unless 75 percent of the quota is reached before September 1, at which the trip limit reverts to sort of an incidental bycatch limit of 300 pounds.

The smaller quota here is predicted to trigger this smaller trip limit more quickly and that leads to fairly small economic losses. Now, remember back in the limitations of the model, when we talked about we're using the recent past as a predictor of the near future, those limitations come into play in this analysis here, because one outcome of the analysis is that the quota is not going to be reached for tilefish and the major economic effect is simply triggering the lower trip limit.

In real life, we did observe quotas that were closed on October 23, 2006 and October 7, 2007. Even though we're not using data for 2008 in this analysis, the fishery did close on October 17, 2008.

What's happening here is that the observed data include landings that are capped at the quota in 2006 and 2007 and 2005 just happened to be a fairly poor year and so when you take the three-year average, it does not come up to what the magnitude of the quota is and so the fact that 2005 just happened to be a bad year has ramifications for the predictions of the outputs here.

Now I'll move on to red snapper. This is probably the most contentious species here. Rick went over the alternatives for you. There are six. The no action alternative would maintain the twenty-inch minimum size limit and all of the other actions also include the size limit, but it doesn't really matter, because we're just talking about prohibitions.

Alternative 2 prohibits the harvest of red snapper only and Alternatives 3 through 6 prohibit some other species in addition to red snapper in an effort to limit the bycatch and discard of red

snapper. As Rick showed, Alternatives 3 and 5 compare areas. Alternative 3 has a depth restriction between ninety-eight feet and 240 feet in areas off Georgia and northeast Florida.

Alternative 4 is the same depth restrictions, but it adds areas off of South Carolina and then when you get to Alternative 5, we remove the depth restrictions and we're just talking about restrictions off the coasts of Georgia and northeast Florida and Alternative 6 includes restrictions off the coast of South Carolina.

Now, there are some exceptions to some of these rules. Fishermen with black sea bass pots are exempt and fishermen with dive gear are exempt and the tilefish fishery, people with tilefish, are exempt.

Really what I thought was one of the most interesting outcomes of this analysis was sort of an interaction with Amendment 16. Amendment 16 specifies a quota for gag, but when the quota for gag is filled, the fishery for all of the shallow-water groupers would be closed and so what this model was predicting is that these restrictions on the harvest of species in conjunction with red snapper by depth or by area would slow the rate at which gag was harvested and that would keep the shallow-water grouper fishery open a little bit longer and so you see reductions.

Now, this dark blue line here is the Amendment 16 no action and I put that in there for comparison. The Amendment 17 no action is this magenta line right here and all of the alternatives for Amendment 17 are below the magenta line.

This is the area right in here where the shallow-water grouper fishery would be closed, from January through April, and then the gag fishery would open, but sometime around October, according to the simulation, the shallow-water grouper fishery stays open a little bit longer than before and so you actually see harvests, projected harvests, with Amendment 17 that are actually higher than they would be with the no action alternative, which was just Amendment 16 only. I thought that was kind of an interesting outcome.

That previous graph showed landings and now we're talking about dollars here. There would be losses by calendar quarter. There would be losses in the first three quarters and a potential gain in the fourth quarter and overall losses, but the interesting aspect was a little bit of a tradeoff right here in the fourth quarter.

Now, this is a simulated outcome. Is this really going to happen? Well, this is where fishermen's reactions to regulations come into play. The model assumes that the trips in the zones that are restricted by depth or by area would be lost. If fishermen were able to redirect some of those fishing trips and catch gag, for example, in other areas or in other depths, then some of these potential gains in the fourth quarter would not materialize, because you would still see the gag quota closing closer to what it would have closed with Amendment 16. You would see the shallow-water grouper fishery closing a little bit earlier than what my model is predicting.

We take these predictions with a grain of salt, but it was kind of interesting. It has ramifications for the distribution of the losses by area. The previous graph showed dollar losses and this graph shows percentage losses. The overall result could be an additional up to 15 percent over and

above the effects of Amendment 16.

The distribution of the landings in the fishery by state, you can see this blue line here, the left-most blue line, is the Amendment 16 no action and so Amendment 16 is going to have a fairly stark effect on fishermen in North Carolina and South Carolina and in Georgia and northeast Florida.

Amendment 17 is not going to affect fishermen in North Carolina or south Florida that much. It's going to hit fishermen in Georgia and northeast Florida a lot. You can see this drop off a lot here and fishermen in South Carolina, it depends on the alternative that's chosen. Remember that some of those alternatives would close the fishery off the coast of South Carolina and other alternatives would not. This is the graph of landings and here's the dollars, in terms of net operating revenues.

You can see it's possible that fishermen in North Carolina might actually gain with Amendment 17 and this is a reflection of the shallow-water grouper fishery primarily for red grouper, staying open a little bit longer. South Carolina is going to win or lose depending on whether their waters are open or closed. Georgia and northeast Florida are going to lose big time and southeast and central Florida are going to lose a little bit. These are dollars and these are percentages here and so you can see that over and above the effects of Amendment 16 Georgia and northeast Florida could lose over 60 percent of their net operating revenues for the commercial fishery and so this is -- The center of the red snapper fishery is off the coast of Georgia and northeast Florida and those people are going to get -- This amendment really targets their fishing activities.

By gear type, this isn't quite as interesting. Most of these critters are landed with vertical hook and line gear and so most of the incidence of the Amendment 17 is going to be borne by those fishermen.

This is dollars and this is percentages. Notice dive gear could win, in a small amount here. You can see there aren't many pounds landed with the dive gear and so they're barely a blip on the dollar screen, but on the percentage screen, it could make a difference. This is the last slide and I would just like to note that there are a couple of caveats with the analysis.

This is a simulation model. A model is a simplification of reality. I think the model does a pretty good job of bringing in a lot of the detail of all the different variables that are reflected in the logbook database, but it's still a simplification of reality and how fishermen -- Specifically how fishermen react in changing their fishing strategies and fishing patterns in response to regulation is the big thing that this model does not account for yet.

I might also note that in a general sense remember I said this model assumes that the recent past is a good predictor of the near future. We used data for 2005, 2006, and 2007. The data for 2008 show greater landings of red snapper than in any of those other years and so if I had used 2008 data in this analysis, the potential losses to the fishery would have shown up to be larger than they do under this time period.

There's one other caveat I could mention here. In the logbook database, the variable for depth of

fishing was first required in 2005. Whenever there's a change in the data collection system, it always takes a little while for people to get used to the change for one reason or another. Anyway, for 2005, there were some trips where the depth variable was unrecorded. I didn't worry about that. I just didn't worry and so for the alternatives that dealt with depths of fishing, I probably underestimated the potential impact because it did not account for those trips in 2005 where depth of fishing was not recorded.

We've got it bounded by the other alternatives, where all the fishing was prohibited. If it turns out that one of these alternatives by depth becomes the preferred alternative, then we'll go back and we'll try to make an adjustment to see if we can allocate those trips with unrecorded depths to the various depth categories and rerun the model, but for now, I thought that was probably a little bit more work than was warranted. With that, I'll open to the group for discussion or questions or anything else you might have.

Dr. Belcher: Thanks, Jim. Comments and questions?

Dr. Larkin: One I had that hadn't come up, but I think was in Attachment 14 -- Was that the attachment that had the summary of this analysis? It's just a clarification. You talk in there at the beginning about opportunity costs of labor and I didn't see where it was described how that was calculated.

Dr. Waters: Opportunity costs of labor was not really calculated. It was assumed to be fifty-dollars per person per day fished in Amendment 16 and I bumped it up to about fifty-two-dollars per person per day fished for Amendment 17, just to account for changes in cost of living. There's no analysis behind it other than I looked through the data and the data reflect a broad range of fishing experiences.

In most cases, if fishermen knew exactly what they were going to catch, they would take a look at their cost of fishing and they would compare the value of the catch with the cost of fishing and if the value of the catch was below cost of fishing, they would not take that trip, but they don't know exactly what they're going to get and sometimes they go fishing and they think they're going to do well, but it turns out that they get skunked.

There are a number of those trips in the database where when you compare the cost of fishing with the ex-post value of the catch, it's just -- It didn't work out for them. What I did is I played around a little bit with the opportunity cost of labor so that I cut out those trips, but I kept the opportunity cost relatively low and so I didn't cut out a huge number of trips in the database. I wanted to keep most of the data that were in the database. It was sort of a pragmatic give and take between keeping data and throwing data out.

Dr. Crosson: I guess in keeping with that bullet point that I had questions about earlier, there's no incorporation of the possibility of guys shifting effort further north, to get out of some of these restricted areas, and I think that's one of the things I've heard, is the possibility of guys moving up to North Carolina and setting up shop up there. That's not in this, right?

Dr. Waters: You are correct. We did not reallocate effort to either areas or different depths or

different seasons or anything. It was this is what was reported and we ran through the simulation model and the trip either went as reported or it was eliminated in the model.

Dr. Cooper: The first question, related to that point, is how easy would it be to simply figure out how many trips are lost due to say the area closure and just sample with replacement some proportion of those trips from the database that are outside of those areas to actually say what happens if some of those trips do get reallocated and how sensitive your results are to the assumption that the trips in those areas are simply lost, as opposed to reallocated?

Dr. Waters: I would have to think about that and see how it would work and how much difficulty it would be to work into the model. At this time, I have not done that. If your committee thought that that was really an important thing to do, I would look into it, but at this time, I just have no idea how hard it would be or how much time it would take.

Dr. Cooper: Part of the problem is the relative costs are going to be related to the size of the area closed. If you close more area, the costs are going to balloon and you don't even need a model to do that if you say those trips are completely lost and not reallocated and without knowing how much of those costs are dependent on -- Say if 10 percent of those trips go elsewhere, what are the catch rates there relative to -- It's almost a no-brainer that you close more area and the cost is going to be more expensive and so since what we're really looking at are the relative costs and not the absolute costs, it just kind of would seem important to see how sensitive those relative rankings are to the assumption of redistribution.

Dr. Waters: I agree.

Dr. Cooper: I'm not making a motion, but it's kind of like well, the results -- I question how much those results are driven by that assumption as opposed to the actual effect of the implementation of Amendment 17.

Dr. Waters: Point well taken.

Ms. Lange: If you're not reallocating, then this is basically the worst case scenario? Is that what this would be as far as the loss? If you're assuming that nobody goes fishing somewhere else and in fact, it's probably highly unlikely, in my mind, that someone involved in the fishery wouldn't at least attempt to go somewhere else and that this would be sort of the maximum loss or worst case.

Dr. Crosson: If they didn't reallocate their effort up towards North Carolina, I think our guys would actually think that would be one of the better scenarios, but, yes.

Dr. Whitehead: There's also no species substitution and so that makes these numbers high too, Jim?

Dr. Waters: That's right. There's no species substitution.

Dr. Whitehead: What are the opportunities for species substitution? Are there good

opportunities or bad opportunities or limited opportunities, do you think?

Dr. Waters: If you were managing one species, there would be good opportunities for species substitution, but this amendment is fairly comprehensive and so there are opportunities, but they're not as much as what you might think anymore.

Dr. Whitehead: The sensitivity of your estimates to that effect -- There's not much sensitivity is your opinion?

Dr. Crosson: Jim, I'm also assuming that your analysis does not take into account any market changes in price or anything like that as a result of these large closures.

Dr. Waters: That's true.

Dr. Crosson: That could go potentially either way.

Dr. Waters: Ordinarily you might think if the quantity landed goes down the price might go up, but the South Atlantic is not really a large volume fishery compared to the Gulf of Mexico, for example. Now, I do expect the price of red snapper to have gone up because of the ITQ experience in the Gulf of Mexico with red snapper and that could be one of the reasons why landings in 2008 were higher than in the past.

We're pretty much tied to prices. We're a small volume, small percentage, compared to the Gulf of Mexico and on top of that, we're really, really small compared to the volume of imports and so changes in our production here are not likely to have big effects of restaurant prices, for example.

Dr. Larkin: I think it is really helpful to think about what things might drive the estimates to be over underestimated. I think if you talk about pushing people out and hypothetically saying what they will do, the further you push them out, the higher their costs are. They may catch the same amount of species of the same value, but their costs are going to go way through the roof and may not tip that balance between a profitable and unprofitable trip.

I also think it's interesting this data that cover 2005 through 2007 had a really high fuel cost during that same period and the use of net revenues, these estimates could be underestimated, a loss of a trip and it might be something -- I know that there was another document that reported the index of fuel price over that time and so that might be another point to make in terms of discussing whether they might be over or underestimated.

Dr. Belcher: Further comments or questions for Jim? Thank you, Jim. We appreciate the information. Our next item on the agenda is relative to discussion on proxy SPR values. This primarily focuses around the use of SPR 40 percent. According to our roadmap, it says that at the March meeting the full council approved a motion requesting that the SSC comment on the use of 30 percent versus 40 percent SPR as a proxy for FMSY and whether the recommendation of 40 percent for recent stocks, specifically red snapper, represents a decision on behalf of the SSC to move towards a 40 percent SPR as a preferred reference when FMSY is unavailable.

The motion from the council was task the SSC to investigate the 30 versus 40 percent SPR on a broad, overarching level. Scratch that. There's another presentation on recreational. I didn't realize we had two presentations. They just said Jim was presenting and sorry.

Mr. Lamberte: My name is Tony Lamberte and I work with the Regional Office at St. Petersburg and I've been assigned to talk about the recreational aspect of the economic analyses. Jim mentioned about his model as a simplification of reality and now this one that I'm going to present is even more than that. Hopefully you can stretch a little bit on reality, but I'm not so sure about that.

Anyway, on the recreational side, we generally look at two major factors in determining economic impacts in the recreational sector and that is consumer surplus and producer surplus. The producer surplus we just take it as a proxy by net operating revenue, similar to the one on the commercial side, but the additional thing on the recreational side is this consumer surplus, which is more or less equivalent to profits, but this is more on the consumer side, on the angler side.

The methodology we used here for Amendment 17 follows that of the other ones, 16 and 15A, but it mimics more the approach used in the red snapper interim rule. You probably haven't seen that interim rule, but this is what we used for that. Let me start with the parameters and values we used for the consumer surplus and producer surplus. The model is very simple here actually.

What we do is just get this value for per trip and then multiply it with the total number of trips and that will be the total impacts, but in terms of parameters, we have the consumer surplus, which is the loss in economic value per angler per trip, and the producer surplus is a proxy by net operating revenue. The value of $53.53 is based -- Both values actually, producer surplus and consumer surplus, are based on the analysis done for the Gulf red snapper, but some of this may have relevance for the South Atlantic area and we used this mainly because it is the only one we have at the moment that can be used for our analysis.

We have these two numbers, the consumer surplus and the producer surplus, and we break down the producer surplus into charterboat and headboats and then we have the target trips. Now these target trips with the MRFSS, you know that is provided for it, but in the headboat survey, there's no targeting information and so what we have here has just used the angler days and I will talk a little bit about this headboat thing later.

If you notice, for example in the case of red snapper, the headboat target trips just dominated all. This will just give us an indication that most likely the economic effects of using these target trips would be overestimated, because of these heavy domination with the headboat sector. If you note, the headboat sector accounts an average only for about 15 percent of red snapper catch, by mode.

The way we calculate the economic effects is this way. In the case of consumer surplus, we change the value per trip, but we retain the target trips. What we do here is essentially reduce the experience of an angler when he cannot retain any more of the species, for example red snapper, but we still allow him to continue fishing and maybe switch to other species or just stop fishing

for red snapper, but continue for all these other species. That's how we handle the consumer surplus.

We can do this because of the way the information was derived. It is more specific -- It's a species-specific type of consumer surplus. Now in the case of the net operating revenue, our only information is about net revenue for the whole trip and so it includes not only one species, say red snapper, but also revenues from all the other species and so the way we handle the change here is instead of changing the NOR value, we change the number of trips. In this particular case, if you close the red snapper fishery, for example, the assumption we have here is just you just cancel all those trips for red snapper, which actually will overestimate the whole thing.

Dr. Whitehead: What's the NOR value again?

Mr. Lamberte: The net operating revenue. That's for the charter and headboats. What I call the baseline economic values is actually just a product of those consumer surplus and net operating revenue, thanks to target trips. This is not essentially a baseline in the strict sense, but it makes it very convenient to look at or estimate the effects of the various alternatives, because we can just take it as the percent reduction on these values.

For example, Alternative 2 for red snapper, if we close red snapper to the fishery and we assume, in the case of the consumer surplus, we assume no cancellation in trips, but in the case of the NOR, the net operating revenue, that's where we're bound to, by the information we have, to actually cancel the trips.

In this case, the entire baseline will be lost, will be foregone to the fishery, if we eliminate red snapper from their trips. In the case of Alternative 7, this just -- We could not estimate the effects of removing the twenty-inch size limit, but in the case of reducing the bag limit from two fish to one, what we do here is just essentially reduce by 50 percent the consumer surplus that we have at the baseline and this essentially affects only the consumer surplus side.

For the other alternatives, in terms of closures, what we plan to do is once it's determined what is the percentage of trips that will be affected in those various areas, we will apply those, but not in the snapper case, but on the baseline for the snapper grouper species. For example, Alternative 3, which closes red snapper and in addition to that closes certain areas in the South Atlantic, we will have as our estimate reductions on the red snapper case and certain parts of the snapper grouper values. We will add those together to come up with the entire effect for Alternative 3 and with 4, 5, and 6, once we have determined what those percentage reductions would likely be in terms of cancelling trips or affecting the values for those fishing in those areas.

This is more actually governed by issues of limitations more than Jim Waters' is. The first issue we have here is the headboat landings of target trips. We don't have information, as I said, on targeting by species. We use instead the Georgia and northeast Florida angler trips for headboats.

This area accounts for an average for more than 70 percent of red snapper landings by the

headboat sector and so we use that and because the headboat fishery actually only accounts for about 15 percent of red snapper catches and in this particular case if we use those information for headboats, they will just dominate the trips and so we come up with more economic effects from the headboat side than from the other sectors and so using this targeting information or assumed targeting information for headboats would overestimate the effects of the various measures.

Now the consumer surplus, this is based on the Gulf red snapper analysis, but it is the database that was used in estimating this value was for the entire southeast area and so in a sense, the value for red snapper and for other species that were generated in that study would have some likelihood of holding true also for the South Atlantic and not only for the Gulf, but note that this was originally used for the Gulf side.

In the case of the net operating revenue, this is, again, based on the red snapper analysis done for the Gulf and this time most -- The data is Gulf specific. The charter fishery was surveyed in 2002 and 2003 and so that information was used to generate the net operating revenue for the charter fishery and there were a couple of studies way back in 1999 that generated information for the headboats and so those studies were used to generate the net operating revenues for headboats.

For both charter and headboats, net operating revenues, they are more specific to the Gulf, but maybe to the extent that there are some commonalities between the South Atlantic and the Gulf headboat and charter operations then there could be some validity in the use of those information to address the same issues in the South Atlantic.

Target trips, there's always the issue of -- The second issue is always there, the cancellation of trips. It may not be true that if you disallow or you prohibit the harvest of red snapper that all trips will be cancelled, but it's totally possible, highly possible, that some trips are highly dependent on red snapper and they might be canceled in the event that red snapper is prohibited in certain areas.

This probably will be more to the -- The cancellation probably will be more true when considering large closure areas in addition to the prohibition on red snapper harvest, because by then the -- There are substitutions, for example, to other species that would be highly constrained if you close especially larger areas.

The baseline, they're not strictly baseline economic values, but I just used them for convenience purposes and do not take it -- Like Jim's analysis, they do not take into account the effects of all the other previous amendments. I think that's all I have. It was a very, very short one. Do you have suggestions? I know some of you probably are familiar with the recreational fishery in the South Atlantic both in terms of practice or economics and if you have some suggestions on how to improve it, how to address the issues, I would be very glad to consider them.

Dr. Belcher: Thank you, Tony. Questions or comments from the group?

Dr. Whitehead: What's the NOAA 2008 study that you used for values?

Mr. Lamberte: There are actually two. The NOAA 2008 study was conducted with the Southeast Fisheries Science Center with respect to the Gulf red snapper closure, seasonal closure, as well as they tried to also address the issue of closing or not closing state waters and what the implications would be if states do not make their regulations compatible with the federal waters. That's the 2008 analysis that they did.

Dr. Whitehead: Is it possible to get a copy of that?

Mr. Lamberte: Sure. It's actually from the Science Center, but I have a hard copy and an electronic copy and I can give you a copy of that.

Dr. Belcher: Anyone else have further comments or questions? Thanks again, guys. We appreciate it. Now we can come back to the SPR discussion. What's it going to be as far as our investigating the use of those two values? What's our recommendation to the council?

Dr. Barbieri: Perhaps we can reread the text here, just so to get us again to --

Dr. Belcher: I'll reread it. At the March meeting, the full council approved a motion requesting that the SSC comment on the use of 30 percent versus 40 percent SPR as a proxy for FMSY and whether the recommendation of 40 percent for recent stocks, for example red snapper, represents a decision on behalf of the SSC to move towards a 40 percent SPR as a preferred reference when FMSY is unavailable.

The approved motion from March of 2009 is the following: Task the SSC to investigate the 30 percent versus 40 percent SPR on a broad, overarching level. Erik was kind enough to provide us with a lot of background information relative to those points in the form of papers that everybody hopefully received.

Dr. Cooper: Given the documentation we received, in particular the memo from the "Summary Statement on SPR-Based Benchmarks for Red Snapper Stocks in the Southeastern U.S." dated 25 February 2009 by Rick Methot, Paul Rago, and Gerald Scott, who have just a little bit of experience in fisheries management, for those who don't recognize that name, basically they pretty clearly state that 30 percent is not recommended for long-lived species, if I read that correctly, and they state pretty emphatically that 40 percent is more appropriate. It's pretty emphatic there.

The document is from -- There's a couple others from the SSC from the North Pacific, where, again, for long-lived species SPRs of 40 percent -- I don't see anything down to 30 percent and nothing we have received that is published recently that suggests that 30 percent is appropriate. We have to be broad and overarching.

I would find it difficult to come across a situation with a long-lived species where I would be able to justify an SPR of 30 percent, based on the publications we've received. Is that broad and overarching enough? I can let someone else get broader or more over arching.

Dr. Barbieri: No, I don't think that's broad and overarching. I guess their question -- I'm

speaking up because there was a discussion during the chair's presentation to the council or we were called in there for questions and I think that was at the December meeting and we were asked about using the same SPR proxy for red snapper and vermilion snapper.

In that case, we were asked to justify and at the moment, right there on the spot, I really couldn't justify appropriately why we had accepted the 40 percent level for vermilion and I think this generated then the discussion within the council on whether we would be adopting some standard sort of like a default level of SPR as proxy for FMSY.

I don't remember in any of our discussions that we had that we actually adopted or suggested the use of any standardized level of SPR as proxy for FMSY, but I think, to clarify, I think this is what may have initiated that discussion.

Dr. Cooper: Just to clarify what I just said, I don't think anyone heard me say as the default in all cases we now shall consider SPR as the default. My statement was on a case-by-case basis I would be hard pressed, given the information currently in front of me, to justify a 30 percent SPR.

I did not say that that is now my default assumption. It's we look at the data on hand as it's presented to us and if other things come before us that say for this species it is appropriate, then -- I did not propose the default assumption being an SPR of 40 percent, but, again, information will have to be, in my mind anyway, on a case-by-case basis to justify of the long-lived species why go to an SPR of 30 percent and why is that appropriate, given the documents we see that for long-lived species it isn't. It's not saying default. It's saying here's the data in front of us and we need additional data to now say that that doesn't apply to our situation.

Ms. Jensen: It would be more like could we look at the resilience of the stock or the steepness of the stock recruitment curve when selecting the appropriate SPR rate? If you have something that's highly resilient, maybe something closer to 30 or 35 percent might be more applicable and if not's resilient, low resilience, not quite as steep, steepness on there, then go with something like 40 percent.

Dr. Barbieri: Right, but I didn't understand really -- Andy, that wasn't my understanding, that you were proposing anything at an overarching to a level of 40. I was just trying to restate the question. The question was did we discuss adoption of some default value of FMSY to carry across basically all species and I don't remember us having that discussion and so basically regarding the question here from the council, no, I guess the answer would be no, we have not had that discussion, that I can remember, in adopting an overarching level. We can have some discussion of how we would apply this over different species, but I don't remember us having had that discussion before in terms of a default value.

Dr. Belcher: Further comment? I need a consensus statement then as far as how we're responding back to the motion that we received from the council to investigate it. How do we want to couch this?

Dr. Williams: I'm still unclear what exactly are we being asked for.

Dr. Barbieri: The motion from the council tasked the SSC to investigate the 30 percent versus 40 percent SPR on a broad, overarching level, which my understanding of this is if we are adopting or recommending a default level for proxy FMSY.

Dr. Cooper: Could we get some clarification from staff if they're expecting a statement about default SPR levels? The task is to investigate and we've read and two of us or three have now said something and therefore, I guess that's a discussion and mission fulfilled or do they actually want a formal statement?

Dr. Belcher: I think we have to give a formal statement for it. Again, listening to commentary, I don't think that we're suggesting that it should be a broad scale application. It should be on species-by-species basis and it just happened to be that the discussion came up relative to red snapper and I think, again, not to rehash old situations, but we did have the dilemma where you're looking at a 26 percent use in the Gulf and 40 percent, but the standard, loosely stated standard, is 30 percent. I'm wondering if that's a lot of that driving of why, because we did not question the 40 percent that came out of the review.

Dr. Williams: The question seems to be -- Actually, it's two parts, in my mind. One, do we believe we should have a default SPR? In some sense, what I'm hearing around the table is we shouldn't even have a default, period, and we should analyze it on a case-by-case basis. Two, if we're going to have a default, what should it be? Maybe just answering one -- Maybe we can just make a statement that we don't think there should be a default.

Mr. Chester: Would it be helpful to the council to put down in writing the characteristics of species life history or recruitment variability, which would indicate a higher SPR might be more appropriate, the sorts of life history strategies that would sort of cause us to recommend a higher SPR than the current 0.30?

Dr. Belcher: I don't think we really need to do that. There's enough peer reviewed out there that kind of suggests how that's being done and then at the review level, I would think that would be where those discussions would come into play. We would be seeing that discussion through the review process and so I don't think we need to -- I think we're better off, as Erik was stating, to make that consensus statement that we don't feel the default value is needed and it needs to be considered on a case-by-case basis, based on life history traits that come through the review.

Dr. Buckel: Not based on life history traits, according to Williams and Shertzer, but on the steepness, just to clarify.

Dr. Cooper: Just to make reference back to our SEDAR scheduling talk, this is another instance where someone says they use this in the Gulf and we use this here and why is there something different? We're now setting up SEDARs to do benchmark in the Gulf when we're doing an update here and we're going to have different methods in different regions and again and again we keep getting asked to say they did this here and you're doing it differently here.

The SEDAR schedule is being set up to explicitly create that problem again and again and so someone needs to make sure that if a system is being set up to make those differences that we're

not going to have to sit here and justify besides that was an update and this was a benchmark, that we're not going to have to revisit this for every single stock assessment that comes across our desk, because we're setting ourselves up to make these comparisons again and again.

Dr. Williams: In some respect, those comparisons are always going to be made and there always are going to be differences and there are justifiable differences and I think worrying about that now is -- Then what's to stop us from comparing Northeast to what we do down here? Where do you stop the comparison? It's always going to be done and as long as you're just using the best available data and best available methods for that particular situation, what's the issue?

Dr. Cooper: The issue is one region will be doing a benchmark, which can't change their methods and they're beholden to the previous ones, and the other one is doing an update, which may change methods, and so the definition of best available science and what they can do is being structurally defined to create that difference and so yes, there will be a difference, but right now we're actually engineering the process to create discrepancies that we're going to have to discuss, as opposed to either staggering them or doing something such that one region isn't forced to use an old methodology while the other one is creating a new one and then one region having to explain why didn't you do this.

It's an easy answer to say we couldn't, but, again, this is -- The public is going to have to know why didn't we and it's just always going to be made, but the scheduling is going to really bring that out and force those differences to occur.

Dr. Barbieri: Andy, when you look at the schedule, this is not going to happen over the long term. For this coming year, 2010, and to some extent 2011, just because they're trying to readjust getting to the new schedule of alternating benchmarks and updates, you're not going to have that problem over the long term, when you look at the way beyond those transition years.

Dr. Cooper: I just wanted to raise that as the potential. If it doesn't happen, thank goodness. I will be very happy to hear that.

Dr. Jiao: I am not sure whether there's a history of F 30 percent previously, but if by using -- A percent of SPR is always a problem and it's not like something like FMSY that you know it's theoretically you will reach MSY and it's very clear cut in there or very clear at a maximum value there.

Usually when we pick a percent of SPR, it's based on the F replacement and because F replacement means you're going to get the fishery sustainable and I don't know whether this F 30 percent where it came from and if we cannot get F replacement, then we're usually going to pick up a percent of SPR based on the similar species with an F replacement and also the life history. I think those need to be considered as evidence of adjustment of F 30 percent or F 40 percent and in values that we would like to pick up. Again, I'm not sure of the history of F 30 percent. It's just an absolute value that people picked up or maybe it is based on F replacement?

Dr. Barbieri: Actually, a lot of the papers that Erik sent us go through all the history moving from 20 to 30 to 35 and so on. You can get some perspective on that, but the issue here

basically, I guess, is get to the point where we leave it up to the analytical team and the assessment panel to make some of those choices and then for the review panel and/or the SSC to adjust those choices on a case-by-case basis. All those possibilities could be considered. It's just on whether if we want to use one as a default or not is my understanding.

Dr. Jiao: I agree. The best way is to make it a case-by-case based on the real F replacement. That's a combination of stock recruitment and spawning per recruitment analysis and that's the best case. You basically can estimate F replacement and then you let it equal F percent of the spawning per recruitment and then you get a very solid evidence of the percent of the spawning per recruitment and I think that's how the mackerel percent of the spawning per recruitment was picked up.

In this consideration, as I said, I don't know where this 30 percent came from. Maybe the stock assessment scientists actually can provide the F replacement to see whether it's actually more close to F 30 percent or F 40 percent and if they cannot provide the F replacement, because of the, for example, the per stock recruitment relationship, then maybe we can compared the similar species and the life history parameters with the similar species with the similar life history parameters.

Are those papers provided by Erik, I didn't finish reading all of them and it seems like most of them were published papers and to discuss how many percent of the spawning per recruitment actually got --

Dr. Belcher: Any further comments or discussion?

Ms. Jensen: Just real quickly, if you're talking about F replacement, just for depending on what we're requesting the assessment workshops or review workshops to look at, F replacement should only be looked at for points that come from when the biomass was actually around BMSY and not when it was overfished.

Dr. Belcher: Additional comments? I put a statement up on the board that I'm currently working off of as a consensus statement and so I'm asking for wordsmithing or if it represents basically the summary of what we've just discussed. I basically wrote that the SSC recommends against a default proxy for FMSY and the SSC indicated that the appropriate level should be determined on a case-by-case basis. Anything further to add to it or it states as good and we'll go forward with that? Okay.

What we'll do is it's 10:27. We'll take a ten-minute break and we'll be back at 10:40 and we will pick up with Gregg discussing the cumulative effects of all the amendments thus far relative to -- It's the table he presented to us on Sunday. He's going to discuss that in detail and so ten minutes, please.

Dr. Belcher: Let's go ahead and get restarted, please. Gregg, we're going to start with you.

Mr. Waugh: I apologize for the small text and I can have hard copies made if the SSC would like to see them, but this is an attempt to start looking at cumulative impacts across our different

snapper grouper species in a slightly different way. The concern we have is if you do hindcasting and use the past three years catch distribution and catch rates and species composition to project what fishermen are going to do in the future, that seems to make more sense if you're not introducing a lot of change.

What I want to talk about is a level of change here and suggest that this is something that perhaps our socioeconomic group could take a closer look at, because I think we're underestimating what the cumulative impacts are and what this table does is start with species on the left and it starts with mackerels and basically lists all our species that we have quotas for now or those that we will have.

It also shows the start date and so for king mackerel, it starts March 1 and as of the 2008/2009 fishing year, approximately 78 percent of the quota was taken. We are going to be looking at responding to the new SEDAR values for king mackerel and so that commercial quota is going to come down.

Spanish mackerel starts March 1 and, again, the past quota wasn't met and we may have to reduce that quota some. Gulf king mackerel eastern zone starts November 1 and it was closed in March. We know there are linkages between snapper grouper and mackerel. The next one is greater amberjack. That starts May 1 and as of the end of the fishing year, the end of April, they were at 610,000 pounds and the quota is 1.2 million pounds and so there's some room for effort there.

Wreckfish has a seasonal closure and also that's an ITQ program. Snowy grouper right now has an 84,000-pound quota and starts January 1. What happens to snowy and the whole deepwater complex in Amendment 17, we're looking at a closure beyond a certain depth and so perhaps that deepwater fishery will be closed, with the exception of golden tile. Golden tile starts January 1 with a quota of 295,000 pounds.

Where we wanted to focus -- We've got the quotas there for red porgy and black sea bass is one that starts June 1 and that reached its quota and was closed on May 15. Then when we get down to red snapper, the interim rule proposes to close any directed fishery, any retention. What we're looking at in Amendment 17 is a closed -- Maintaining that prohibition on any retention and some time/area closure. That time/area closure will certainly shift effort into other areas.

For vermilion, we've got a quota of 1.1 million pounds, but under Amendment 16, when that kicks in, that's going to be reduced to 600,000 pounds in two six-month increments and down to the bottom, we look at gag and we've got a lower quota starting through Amendment 16 and then a four-month closure on the shallow-water groupers.

If we go to see what fishermen are going to do starting January 1, 2010, the first four months the shallow-water grouper fishery is closed and so they're going to be targeting vermilion and they'll target black sea bass if the black sea bass quota hasn't been met and we're concerned that in looking at your projections for what your red snapper bycatch rate is going to be, basing it on past catches, you're going to underestimate the level of bycatch of red snapper.

When the vermilion snapper -- Again, the vermilion snapper quota is in two six-month periods and so if you rely on vermilion snapper and gag, or the other groupers, then you've got to fill your portion of that vermilion quota before May 1, when gag opens, so you can switch over and fill out your portion of the gag quota.

What our concern is is that when we start next year, we're going to see a significant change in fishermen's behavior and we don't seem to be modeling that the way we're looking at cumulative impacts now and we just wanted to surface this with you all now and certainly any suggestions you all have here that we could consider in our Amendment 17 discussions, as well as possibly having the socioeconomic group look at this in more detail, but I would be glad to answer any questions that you all might have.

Dr. Belcher: Thanks, Gregg. Does anybody have any comments or guidance for Gregg or questions?

Dr. Barbieri: I think that, back to a comment that Andy made earlier, that I think there's a way now that you have identified some scenarios that can be considered to go from that default assumption basically of no change in choices of species or areas fished -- We have some scenarios to bound choices for evaluating, kind of like a sensitivity run perhaps that can give us different scenarios to look at on those potential impacts, if it's what I understood what you said, Andy.

Dr. Larkin: I appreciate the suggestion that the movement toward looking at all of these cumulative impacts, because I think one thing that was striking when Jim gave his presentation is all those bar charts that showed those percentage changes were just based on 17 and those looked pretty big, especially for northeast Florida and Georgia. I was surprised at how large they were, given that 13C and 16 were embedded in there.

I would I guess reiterate that maybe this is a good first topic for a new socioeconomic panel to be involved in, but I would not recommend that any specific additional analysis be assigned to Jim until that panel -- We could ask for a gazillion things, but I think any request would have to be really targeted and discussed before it's assigned.

Dr. Cooper: A question for Gregg. The concerns in the modeling here, are you mainly concerned about the cumulative economic impact or cumulative biological impact? I'm curious when we're looking at the management measures and predicting bycatch, how are we doing that and how is that tied to how we're predicting switching behavior in the socioeconomics and are you thinking that the socioeconomic subcommittee can actually look at how to model the dynamic choice behavior of fishermen to both inform the bycatch and ecological impact and the economic impact or what's the frame that you're wanting us to get to?

Mr. Waugh: My short-term concern is for the biological impacts, particularly looking at our red snapper total mortality. In order to ensure that overfishing isn't taking place, we've got to ensure that total mortality doesn't exceed some level around 84,000 pounds, perhaps. The larger picture is what the cumulative socioeconomic impacts are.

The reason I was suggesting the socioeconomic group look at this is because it gets into the fishermen's behavior, which I think is more a socioeconomic issue. Those folks are better suited to talk about how the fishermen's behavior is going to change, but my primary concern for the short terms is how is this going to factor into our estimates and projections of what the red snapper bycatch mortality is going to be as we look at measures in Amendment 17.

Dr. Cooper: Is your thought that this socioeconomic subcommittee would generate a request to the Science Center, essentially, regarding how to model redistribution of effort or simply the need to or what exactly -- I mean we can develop a committee, but as we've kind of said with all the way back from estimating MSY to now estimating ABCs and OFLs, the SSC is primarily review and so are you wanting a subcommittee to actually develop methods or are you wanting them to be able to review or just discuss in order to make a coherent recommendation?

Mr. Waugh: My intent wasn't for them to do any analyses, but to think about this and give us some guidance on how to approach it. In the shorter term, you all are going to be asked to look at Amendment 17 and look at various ways that we are projecting what's going to happen to the red snapper bycatch based on prior management actions and we're factoring that into what we do in Amendment 17.

I think it's useful to have this view of what's going to happen to compare it with what you're seeing in some other methodologies that are looking at ways to estimate what the future bycatch is going to be of red snapper.

Dr. Larkin: I think one of the ways the panel could work and one of the ways it has worked in the Gulf is some of the people on that panel can bring in information that they know about studies that are going on, because there's a lot of really good, solid work being done on fishermen behavior, due to the availability of logbook data.

The panel, I think, can both bring together knowledge on what is out there that can both help shape and really integrate, because some of those folks will have been those that have done some of these studies and so you can get a mixture.

Dr. Belcher: Further comments or guidance for Gregg? Thanks, Gregg. The next item on the agenda is looking at management evaluations that were done by both council staff as well as Southeast Regional Office staff. Nick Farmer is going to be giving us some information relative to the commercial and then Andy Strelcheck will present information on headboat and the MRFSS and John Carmichael will talk about landings by stat zone. Go ahead, Nick.

Mr. Farmer: Good morning, everybody. I'm Nick Farmer and I'm with the Southeast Regional Office with the National Marine Fisheries Service and I'll talk to you a little bit about some impacts we saw potentially happening with red snapper total removals from the regulations associated with Amendments 13C, 16, and the proposed alternatives in 17 on South Atlantic commercial fisheries.

To outline my talk, I'm going to give you a brief introduction to those amendments. We've already covered them and so I'll go through that rather quickly and then I'll describe both

methods and results for computing baseline removals and analysis I did on the reliability of reported areas and depths fished in the commercial logbook dataset, the use of an economic trip reduction model to predict the impacts of management regulations on red snapper removals and how to compute total removals from that, and then some brief points of discussion.

To refresh your memory, briefly, Amendment 13C implemented a series of quotas and trips limits for snowy grouper, golden tilefish, vermilion snapper, black sea bass, and red porgy. This report is available and so I'm going to just go right past this. This amendment was implemented in October of 2006.

With Amendment 16, it's in the proposed public comment period for shallow-water grouper. It established a closed season from January to April and also a quota for gag and for vermilion snapper, it created a reduced quota. This is just summarizing the impacts of Amendment 16 on commercial fisheries and so the recreational impacts are not in there.

For Amendment 17, we've gone over these alternatives, but basically there's some closures of statistical areas with depths and also without depths and one important point I want to make is that Alternatives 3 through 6 do allow some exceptions for allowable harvest in closed areas for golden tilefish, black sea bass, and snapper grouper species. That does have a little bit of an impact on red snapper, which I'll show you in a moment.

The objectives of this analysis were to determine the impacts on commercial harvest from Amendment 13C and 16 and also to evaluate the cumulative effects of those regulations in conjunction with the alternatives proposed in Amendment 17. We're looking at trying to see what sort of spatial closures might be needed to achieve that 87 percent reduction in red snapper fishing mortality and so the first thing we wanted to do was what's the baseline and what are we working with?

Using the commercial logbook, which is a self-reported dataset coming from the commercial fisheries, we summarized red snapper landings by year and area and we assigned year using the date that the fish was landed and then we scaled up these landings to account for all commercial landings, because there are sales made on state permits and other forms of landings that we needed to account for.

We used percent scalers from SEDAR-15 for 2005 and 2006 and then derived a scaler for 2007 using identical methods and computed a baseline landings as an average of 2005 to 2007 scaled landings and so to look at those percent scalers, just to show you the difference in logbook landings versus the cumulative commercial landings that's on this slide and you can see the percentage is there in red at the bottom.

The next thing I wanted to look at was since some of the management alternatives for 17 have depth in them, we wanted to look at how reliable is self-reported depth in the commercial logbook and is this something that we can use and so I went through and looked at the depth reported for any red snapper landed in the logbook from 2005 to 2007 and the valid range of depths available in the area reported and so if there's a record of a red snapper, it's got a depth that it was landed in and an area that it was landed in.

I matched those up with the available bathymetric values within those grid cells to see is that even possible and can you land a red snapper at that depth in that area, based on bathymetry, and then I flagged unrealistic reported depth values.

One thing to note from this table right here is that you have quite a bit of unavailable depth values in 2005. Reporting of depth was pretty poor, but then in 2007, it drops to 0 percent. Every record for red snapper landings had a reported depth. In terms of unrealistic depths, you've got a range from 5.2 percent to 8.4 percent and so there were apparently a relatively significant level of mismatches between the reported depth and the area that the fishing was supposedly occurring in.

Just to note on that real quick that there were actually even reported landings of red snapper with depths greater than 1,000 feet, but those only accounted for 1.4 percent of the total landings and so not a super significant trend there. In order to compute total removals, we've also got to figure out what the discards are. The logbook, the commercial logbook, does not report discards. However, there's a supplemental discard logbook that provides about 20 percent coverage of the fishery that reports discards and so that was scaled up by the Science Center using a general linear modeling approach to compute a total discard estimate for 2005 through 2007 for the commercial fishery.

You can see that as that D-1000 and so that's total discards in numbers in thousands of fish for 2005 through 2007 and then that was converted to discards in a thousand pounds using the ratio of 1.48 pounds per fish, which we derived from a projection model for the red snapper stock assessments, using the average from 2007 through 2009 in the projection model for discards in numbers to discards in pounds.

Then we set that mean discards 2005 through 2007 of 25.62 thousand pounds as our baseline discard and then converted that to dead discards using a 90 percent release mortality rate recommended by SEDAR-15.

Then to figure out what the impacts of the amendments were, we used an economic trip reduction model and the data from this model was provided by Jim Waters, who is a true pleasure to work with and he's in the room if you guys have any questions about that model. We'll direct them to him, but basically, the goal of the model was to project reductions in take associated with new management regulations.

The way the model works, which he explained to you briefly, was it imposes proposed regulations on individual fishing trips that were reported in the historical logbook database, computes the impacts of new regulations on catches, revenues, and costs and if the revenues don't exceed an opportunity cost of fifty-two-dollars per person, the trip is eliminated.

The model uses a three-year average to cancel out anomalies and basically, one thing to note is that the Amendment 17 regulations all close red snapper and so what would be predicted as landings in the sense of old logbook landings then becomes new management discards and also the model assumes that discards from spearfishing are zero for red snapper. We're assuming they aren't shooting red snapper by accident.

Coming out of the model, we've got eight different scenarios that are looked at and so we had a baseline and then we have the impacts of Amendment 16, 17 no action, and then the various alternatives. Then you can see in this table that I'm expressing it as the percent of baseline and so that's not a percent reduction. That's a percent of baseline and the reason that I'm using that is I'm using this percent of baseline of the cumulative landings or new discards coming from these models as a proxy for a new fishery interaction rate with red snapper.

That's basically expressed as a change in harvest or new discards relative to the baseline harvest and so then you take that percentage and hit the baseline harvest with that percentage and that's your new rate. It's a rather complicated equation, but basically what's going on is that you're taking your baseline landings or new dead discards due to management and your dead discards by area and aggregating them together to create total removals.

For the total removals, you can see we had a baseline estimate of 131,000 pounds removals. After Amendment 16, you go down to 129,000. The way this is listed may be a little bit confusing for you, but where it's labeled "A-16", that's a no action scenario for Amendment 16, so that basically that accounts for the impacts of Amendment 13C and then Amendment 17 no action accounts for the cumulative impacts of 13C and 16.

You can see that when 13C and 16 are bumped in there that you drop to 84 percent of the baseline and then Amendment 17 has cumulative impacts dropping it down potentially to 27 percent for Alternatives 4 and 6 of the baseline. One thing to note is in this computation you're applying the 90 percent release mortality to all those numbers listed in red, because those are no longer landings. They're new management discards.

To look at it spatially, this is kind of how it breaks out. For the baseline, you can see that the landings are focused pretty intensely in Grid Cell 3080 for red snapper. You've got 39,000 pounds in there and then there's some more landings around the northeast Florida area and then off the coast of South Carolina. Those are basically the core of the fishery and I've listed the top couple of grid cells there on the right-hand side for your reference and the cumulative removals there are 131,000 pounds.

As you move through the regulations, this is the Amendment 17 no action scenario and so this accounts for both Amendment 13C and Amendment 16. You can see that there's a slight drop in 3080 and you get some small declines here and there from the other management actions.

As you move into Alternative 2 for Amendment 17, you get a substantial decline in 3080. You get basically between 10 and 90 percent by grid cell reductions kind of in the core of the fishery and then minimal reductions around the periphery. Going into Alternative 3 for Amendment 17, you get greater than a 50 percent reduction in most of the core and the northeast Florida area, with less substantial reductions off of South Carolina.

One thing that I want you to note is that some of the highest removals are still coming from grid cells that are partially closed by that alternative and so the model is predicting that something in the exceptions allowed in the language of the model right now or in the language of the amendment with regards to golden tilefish harvest and other species is basically resulting in red

snapper discards still coming out of the model.

Moving into Alternative 4, you can see we've got about a 50 percent or greater reduction in northeast Florida and South Carolina and also some still relatively high levels of discards coming out of areas that are partially closed under that alternative.

For Alternative 5, you get very large reductions off of northeast Florida, but less substantial reductions off of South Carolina and still a little bit coming from a closed cell and then for Amendment 17 Alternative 6, you get substantial reductions throughout. There's actually only three statistical areas left that are resulting in greater than 3,000 pounds of removals and one of those is already partially closed under that alternative.

Looking at spatial closures that might be necessary, if you assume that there's no impacts of 13C and 16, then you've got to go through and look and there's quite a few cells -- Basically, what I did is listed the cells in order of landings, so that you could look at the minimum number of cells that would need to be closed under each of these scenarios and so you can see I think there's about ten right here.

If you assume the impacts of 13C and 16 coming out of the economic trip reduction model, you get a cumulative reduction out of those two amendments of about 16.5 percent and then you've got less cells that you would need to close to hit that magic 87 percent number.

Going into Amendment 17 alternatives and looking at Alternative 4 along with the cumulative impacts of 13C and 16, you get a 73.5 percent reduction out of the cumulative impacts of 13C, 16, and Alternative 4 from 17. Then after that, you only have a few more cells you need to close, two of which are already partially closed.

Then if you look at Alternative 6, again, you get a 73.5 percent cumulative reduction right off the bat. You've only got four additional cells that need to be closed and two of them are already partially closed.

In summary, Amendment 13C provides minimal reductions, less than about 2 percent. Amendment 16 slight reductions, about 16 percent, and the alternatives coming out of Amendment 17 provide substantial reductions, ranging from 48 to 73 percent. Under all the scenarios, additional area closures might be necessary to achieve an 87 percent reduction in removals.

Obviously this analysis suffers from assumptions and caveats, as any model does. The economic trip reduction model eliminates trips that would become unprofitable under new regulations. The nice thing about it is it accepts real-world input. It's built off of real-world data, which incorporates variability in fishing behavior and success. One thing that I think would be difficult for any model to do and it does not do is it doesn't account for the redistribution of fishing effort into new fisheries or areas.

It also doesn't account for changes in fishing effort or stock size through time. Some assumptions that you need to be aware of when considering these results would be that past

trends are assumed to be representative of future trends.

Discards are assumed to be spatially occurring proportion to landings and there's no effort shifting from the closed areas and that release mortality rate of 90 percent in the commercial fishery remains unchanged, even when areas of the highest abundance or landings are closed. Also, these reductions currently don't account for any of the spatial closures coming out of Amendment 16 and they assume that area fished is accurately reported in the logbook. With that, I would like to acknowledge several members of various Science Centers, especially Jim Waters, who provided a great deal of input going into this, and if you have any questions --

Dr. Belcher: Thanks, Nick.

Dr. Williams: Nick, that was a good presentation and thanks for going through a lot of the assumptions, but we're going to have to kind of rely on your opinion a little bit and I'm hoping you'll answer this question. Given all those assumptions, which way do you think those reductions are likely to go if those assumptions are violated? Are they likely to be increased or reduced?

Mr. Farmer: With regards to the assumptions, I think Jim mentioned in his presentation that landings were higher in 2008 and so since we're just using 2005 to 2007, our baseline that we're using is lower. If you incorporated 2008, the baseline might be higher and so that might drive the estimates in the opposite direction. You would get less substantial reductions, presumably, from that.

With the discard concern, it could go either way. If you just happen to close the grid cells that are the main cause of all the discard mortality in the fishery, which is clearly the biggest problem in the fishery for the commercial side of things, then you've achieved a massive reduction beyond what could have been predicted, but it could be the complete opposite.

Effort shifting from closed areas clearly would reduce the impacts of these alternatives. If people are moving their fishing elsewhere and still encountering red snapper and result in an increased rate of encounter with red snapper, you're going to have problems.

Then the Amendment 16 spatial closures, I think the general consensus is that we don't think those are going to have a substantial impact one way or the other on red snapper and with regards to area fished being accurately reported in the logbook, it's a species level set level reporting for area fished, but I'm not sure how reliably reported it is to set. Nevertheless, when you look at those maps of where the core of the red snapper fishery is, they seem to make sense with most people's take on where it's happening.

There are anomalies here and there. There are some cells kind of pretty far offshore that you wouldn't think would have any red snapper landings, but they have an extremely low level that really are not impacting the outcomes of the model.

Dr. Williams: Another follow-up. Which assumption do you think is most likely to be violated?

Mr. Farmer: I would probably go for effort shifting in that case.

Dr. Belcher: Further comments or questions?

Dr. Cooper: Towards the end, you put in a slide that -- I can't remember exactly. Was it that all options currently in Amendment 17 would need additional closures in order to achieve 87 percent and that's even assuming no redistribution of effort?

Mr. Farmer: Correct. Assuming no redistribution of effort, which would make it even harder to achieve that reduction for the commercial side of things. Basically because of that massive release mortality, you would have to close additional cells beyond those already proposed in the amendment. The least amount of closures in addition to those proposed would be for Alternative 6 and there's two cells there out of the four that you would additionally need to close to hit 87, while closing the least number of cells that are already partially closed, but yes, you would have to keep going.

Mr. Strelcheck: Just a follow-up comment to your question, Andy. One of the things we have yet to do, and I think John will present some of it later, is the cumulative effect of what areas would need to be closed looking at all three sectors within the fishery. If you look at the areas that would need to be closed, they might differ from one sector to the next and so it's a combination of those that ultimately would need to be determined and whether or not that would achieve the reductions in Amendment 17 as laid out with the alternatives.

Mr. Farmer: Right. So if we close a certain number of cells, you might not hit 87 percent of the commercial fishery closure, but you could be well over 87 percent in the recreational side of things and so you might achieve that overall reduction.

Dr. Cooper: I'll make the same suggestion that I did previously, is that it would be helpful, especially in the analysis we have yet to see regarding all sectors, is look at how sensitive the results are to some of these assumptions, even in the most simplistic of saying let's say the closures -- Those landings aren't removed and 10 percent of that landing is landed elsewhere and you don't even have to spatially distribute it, but let's look at how sensitive, especially when we're saying what's written down may or may not even work.

Let's figure out, okay, if we're off by 10 percent or 20 percent, does that change our conclusions at all or is it all of a sudden if we're off 10 percent then all of a sudden we need to close much more or whatever, just so we know, because part of what we're going to have to do when it comes to this amendment is it based on best available science.

The assumption of no redistribution of effort, right there -- I have yet to -- You look at any MPA paper and not a single one of them assumes that effort just disappears and so sensitivity to that assumption I think would be crucial, so we'll at least know is there a chance in heck of these regulations meeting the goals and how sensitive is that, even in a very simplistic way.

Mr. Strelcheck: Andy, I don't disagree with you by any means and certainly I think we can do it from a simplistic approach. It would really be useful to get some strong guidance from the SSC,

given the council needing to move forward with this amendment and develop their public hearing draft, so that they can have kind of a fixed range of alternatives moving forward.

I don't know if there's any ideas you might have or anyone else might have in terms of how we would look at effort shifting beyond just saying 20 percent or 40 percent or some other arbitrary value. If there's some guidance you could provide, it would be useful to us.

Dr. Cooper: Again, just off the top of my head, you have a certain percent reduction in landings that you predict and just say okay, what happens if that's only 80 percent effective and then you could look in the MPA literature, which talks about how efforts have shifted. In some cases, what you do is you get buildup around the border of the closed areas and your actual landings don't change at all.

There's a whole range, but there's so much literature out there on redistribution of effort as a function of closed areas that you should be able to ballpark is 10 percent reasonable or is 50 percent reasonable? Again, if it turns out as little as a 5 percent redistribution of effort makes the whole thing go kattywhompus, that's what we need to know or does it take a 50 percent before it's just not even worth it? Even, again, just make the closures partially effective and just figure out how sensitive the conclusions.

Dr. Larkin: I'm all for that type of analysis. I think in general socioeconomic folks are willing to make ad hoc assumptions, whereas the biological side has always been reluctant to do anything without data. I would just recognize that it's not so simple to do that.

These models aren't based on distance traveled right now and so to incorporate changes in distance traveled and the costs involved in our vessels willing to do that -- You would have to build a model that would have vessels drop out. We know the fleet size is getting small and so while it sounds very reasonable and very simple in theory, actually building these models is not trivial and can't be done, I don't think, very quickly.

Dr. Cooper: But that's assuming you actually want to spatially redistribute those landings that are going out. I'm just saying we don't care where they go, but let's just say that the complete removal of those landings -- Let's say only 80 percent of those are completely removed and not talking about the economic impact, but the problem is right now -- Granted, we haven't see the full analysis of all of the options combined, but if it looks like right now, even as laid out these aren't going to succeed --

If there's something that finally one of them might succeed, but it turns out if you make just a minor assumption on effectiveness that it no longer succeeds, that's something that the council needs to know. It does come down to the assumptions and yes, you can get incredibly complex.

I don't even know specifically how they decide estimated discards and what trips were they pulling from. Again, I'm assuming that there's no increase of effort for the other species leading to an increase in -- There's no redistribution of anything, but just put ballpark estimates on what if we're 10 percent off and not redistribute them spatially or anything, but just how sensitive is that?

It may be that the areas that are still open are so marginal that it won't matter and they could all go there and they're being pushed into such marginal areas that it's no big change or it may be -- Who knows, but I think at least looking at some of that -- It's going to be hard to say yes, this is going to be effective, especially if it's only estimated to be right at the cusp, when there's some huge assumptions that we know aren't going to hold and are going to be directional.

Dr. Larkin: I guess just to put it in context, I would say the equivalent would be us saying we could do the same thing on the biological side. We just sat through all the discussion about the control rules and we can say why don't you guys do some ad hoc bioeconomic models to show how this works. That's kind of my frustration, is the suggestion that simple and crude assumptions could be made.

We could on the biological side say the same thing for a lot of aspects, because we didn't even talk about bioeconomic models and the like. I suppose if the council is willing to accept the very crude ad hoc on one side and the very detailed on the other side, then that's fine, but just recognizing that there's a whole suite of tools and opportunities to do more sophisticated analysis on behavioral modeling and to just set the precedent that we're always going to accept these last minute, gross ad hoc, do-what-you-can back-of-the-envelope could miss a lot of rich analysis that could help on both sides.

Dr. Cooper: Okay, but that's not at all what I'm saying. I'm saying these things -- Right now, the proposed is ignore it all and assume everything is static and no redistribution and we're not going to test the sensitivity of our assumptions. I think at least figuring out something to do there -- Yes, discreet choice modeling and spatial redistribution, definitely. It's fun stuff and I've done it myself and I love it, but the fact is our ABC control rules -- We had to figure out a back-of-the-envelope expert opinion driven way to do it.

If you don't -- I'm looking at this as how are landings going to change. You see that as a socioeconomic issue and I look at that as a biological issue. Are we achieving the reduction in F? This is one case where I think the same models are being used for both socioeconomic impact and biological impact and no, this isn't a precedent of just do some back-of-the-envelope cocktail napkin while drinking a beer thing.

What I'm saying is not doing anything is not the precedent we want either, especially when, again, we haven't seen the full one, of if it turns out Amendment 17, even under best case scenarios, might not work. We should know -- One of the things they say in risk assessment is you don't manage for the best case scenario. You manage for what's going to happen if we're really wrong.

Right now, we're not looking at what happens if we're really wrong. We're looking at what happens if we're spot on and it's worst case scenario, because most of these assumptions are directional for there's going to be a lot more landings. Again, the socioeconomic costs of that and is it profitable, I don't know, but I think something on the sensitivity of the assumptions needs to be done to determine whether or not the proposed actions have a chance of even working.

No, for the record and we can write this in the report, ad hoc approaches are not the default assumption, but I certainly wouldn't say let's go forward and treat this as working without at least some kind of analysis of the sensitivities. I fully support -- There's some amazing human behavior stuff going on and fishing behavior stuff and fleet dynamics, awesome stuff. I can't wait to get some of that stuff into this, but, just like with stock assessments, we can't wait sometimes until we have a fully age structured surplus production model.

This is what worked and this is what we were able to get out and these are the decisions we have to make and is it best available science and oftentimes what we say is do some more sensitivity runs even if -- Put it at 50 percent and put it at 200 percent and see if your answer changes.

Dr. Barbieri: Andy, just to that point, I think that I understand your point completely and I think it's right on, but I think that we have an opportunity, based on what Sherry made a comment, because now that we are moving forward with establishment of this socioeconomic panel, there's an opportunity, perhaps, for us to make a statement that even though in this case we don't have the time and we set here the course for any future analysis to get some direction from this panel on additional perhaps a little more sophisticated analysis that can be done.

For us to insert this comment here that I think would send a message really to the council and the Science Center that we would like to start incorporating a little more sophisticated analytical socioeconomic models and different types of scenarios into the materials that we look at.

Mr. Farmer: Just from a working standpoint, given the limited time and people have thrown out "crude" and "ad hoc" a couple of times and if you want 80 percent, just multiply 34.7 by 80 percent and then figure out how many additional grid cells you've got to close. That's about as crude and ad hoc as it's going to get. If you want something more sophisticated, I would definitely encourage the SSC to formulate a very detailed, thought-out request.

Ms. Lange: I agree that at some point in the near future additional analyses need to be done, but I agree with Andy that this is going out with some very specific assumptions and Erik went to that point by asking which of those do you think has the most impact or the most potential impact and I think just to bracket it some way, that for instance if we're wrong and even 10 percent of the effort just moves to a different area, it could mean some level of -- Just so it's understood that there could be some major differences if some of those assumptions aren't met, to get some sort of a minimal bracket at least.

Dr. Waters: I would like to pop in a little bit, because I think there's a little bit of a misconception about how this model is working. What Nick has done is he's combined commercial landings that would appear at the dock with estimates of discards, which are encounters with red snapper that would not be harvested because they're either accidentally caught for one reason or another and they had to be returned to the water and a certain mortality rate was applied.

I agree and I've said many times in the past that I think the single most important improvement that could be made to the model is to build in effort response, but the lack of effort response, what that does is it does not give a unidirectional bias. That's where the confusion arises here.

Without considering effort shifting, what we're doing is minimizing the estimate of red snapper that would be brought to the dock, but we're maximizing the estimates of red snapper discards. If you have effort shifting, you're probably going to see a little bit more red snapper brought to the dock than what the model is predicting, but you're going to see fewer red snapper being encountered and discarded.

The effect of the way the model is currently working on overall mortality is not unidirectional and in fact, it's not exactly certain which direction would -- If effort shifts, which direction would the mortality go? Would it go up or would it go down? It's not exactly sure, because the estimates of discards would go down and the estimates of landings would go up. I'm not sure which would dominate the other. I just wanted to clarify that, that confusion.

Dr. Cooper: Then who is still fishing in the closed area? If the whole snapper grouper complex is closed in an area, those discards are -- How is your model generating discards?

Dr. Waters: There could be some encounters with red snapper like with I think dive gear was an exception and so there were some encounters with red snapper with dive gear. Now, we were not allowing those trips if they went -- Let me back up. This is not very coherent at the moment and let me back up.

The way the model works, it looks at the reduction in the value of the catch and if the reduction in the value of the catch falls below the cost of fishing, then that trip is ruled no longer profitable and it does not happen.

However, if the reduction in the value of the catch is lesser and it still looks like it's a profitable trip, then those fish are still encountered, but they're encountered as discarded. Some exceptions are in the dive gear and black sea bass pots and some of the exceptions don't really encounter much red snapper, but the dive gear did catch and so you would see some landings with dive gear. We set the model up so there wouldn't be any discards with dive gear though.

The other thing was depth of fishing and so you can see some critters being caught by depth of fishing. Other than that, I would have to go into the model in detail and try to figure out exactly who is doing what, when, and where, to figure out --

Dr. Williams: It seems to me the basic assumption though is you close an area and trips that occurred in that area are no longer going to occur and it seems to me that there's a flaw in that assumption, because one driving force that we see over and over in any fishery as a whole, like in a coastal area, and New England is a perfect example, is an area gets closed and everybody switches to other species and everybody switches to going to different areas. They do what they can to hang on to their boat, because they've got a boat payment to make and they're going to do what they can to make that boat payment.

If that means taking your boat and even moving it up the coast, that's probably going to occur. If that means that the dividing line between the closed area and the open area is right off your coast, you're going to head to the open area and ignore the closed area. There is going to be an increase in effort outside of the closed areas, without a doubt. I would stake my reputation on

that.

Dr. Waters: Erik explained that very well. That's exactly what's going to happen. What we don't know is what the species mix of those landings are going to be. They may be fishing for completely different things.

Dr. Cooper: Just so I understand what the -- If it's closed to all snapper groupers, then when you randomly pull a trip, then if it was a snapper grouper trip it doesn't occur or it occurs but it's caught as bycatch? I'm trying to figure out where these huge bycatch are coming from if there's no snapper grouper fishermen in there and what trips are you drawing that are creating the effort that are creating the bycatch?

I understand that no red snapper and yes, you've still got fishing for other complexes, but when it's closed to all snapper groupers, which I believe is one of the proposals, what's the effort that is causing the bycatch? I don't need a sector-by-sector basis, but you're saying that the discards could compensate for change in effort and that means there's going to be a huge amount of discards, which means there's got to be a heck of a lot of effort coming from somewhere who is discarding and what trips are you drawing that's producing the effort that's producing the discards?

Dr. Waters: I didn't look at that side of the data as much as Nick did, but I think when we completely closed off an area, we ended up zero discards in those areas, didn't we?

Mr. Farmer: No, there were still discards and the reason was -- At least my interpretation of it was that they were the exceptions for the black sea bass harvest and the golden tilefish harvest. The commercial logbook, I think the way that it reports landings and the way that your model processes them, the interaction rate was still existent with red snapper, albeit a lower interaction rate than it would be for snapper grouper fishing, but still some level of discards, simply because they're occurring in that area and I guess the fishery periodically gets them.

Dr. Waters: I can't remember. Did we have any trips that were fishing for other non-snapper grouper species that may have encountered snapper grouper as an incidental catch and so would those -- If that were the case, those trips would have continued and they would have continued to encounter those species, but I just didn't look at that side of the output close enough to really give you a definitive answer on that.

Mr. Farmer: That was my take on it, but further investigation on that probably would be useful and also trying to figure out -- I think there might be some things that could be teased out of the model in that regard, because it is an unexpected result from plotting it out and saying that area is already supposed to be closed but we're still getting discards out of it. In that respect, if that is something that could be adjusted in the model, then it might be even a rosier picture, which might compensate for the effort shifting.

Dr. Williams: To follow up a little bit on Jim's point that we also have to look at the ability to actually shift to some other fishery too as a part of that equation and one of the issues is snapper grouper is a true complex in the sense that if you're dropping a hook down there on a reef in

most areas you have an equal chance of catching a red snapper versus a vermilion snapper versus a gag grouper or whatever.

There are certain areas where they tend to be concentrated, but overall, it's a true complex in the sense that if you shift a lot of hook effort into another area you are going to increase the potential bycatch of red snapper if they exist in that area. Unless they're switching to completely different fisheries, coastal pelagics or trap fisheries for black sea bass, if there's a hook in the water, there's a chance there to increase effort on red snapper.

Dr. Belcher: Any other further comments or questions? Thanks, Nick. Thanks, Jim, for your added clarification. The next item is a presentation from Andy Strelcheck and like I said, it's relative to headboat and MRFSS analyses.

Mr. Strelcheck: My name is Andy Strelcheck and I'm with the Southeast Regional Office and I oversee our Limited Access Program Data Management branch. We've been working, obviously, on evaluating the effects of Amendment 17 on red snapper. I'll be presenting the headboat analyses. I actually have two presentations, one of which you have a report for. The second presentation you don't have a report for, largely because the data is confidential. However, I have summarized the data as best we can to give you as much information as we possibly can, given the confidentiality surrounding the data.

For this presentation, what we wanted to do is quantify changes in red snapper catch associated with Amendment 16 and in particular, we focused on the new closed seasons for vermilion snapper and shallow-water grouper for the recreational fishery. Those will apply for vermilion snapper from November 1 through March 31 and for shallow-water grouper from January 1 through April 30.

Just to give you an idea in terms of headboat landings when landings occur for these species and species groups, for the most part red snapper landings are fairly stable. They're a little bit higher during the spring months and dropping off during the summer, whereas vermilion snapper and shallow-water grouper landings show a nice peak during the summer months, falling off toward the winter months, and then increasing, obviously, again in the spring to the summer.

To conduct this analysis, we used the catch records from Beaufort, the headboat reported logbook files. These are essentially logbook reports and they don't represent all trips, but they represent at least a large portion of the trips taken. We first had to make some decisions about how we were going to define trips for this analysis, because the net effect was we had to evaluate would trips change or possibly be eliminated in association with the new closed seasons for vermilion snapper and shallow-water grouper.

I'll talk about how we went about defining those trips, but we essentially had three categories, target trips and non-target trips. Those occurred during the closure months for those two species and species groups and then open season trips were essentially trips that reported vermilion snapper, shallow-water grouper, red snapper that wouldn't be affected by the new Amendment 16 closures.

Next, once we identified those target trips, we either eliminated them from the dataset or we modified them. The modification approach we took was we took the target catch rates and assumed that they would shift to a non-target catch rate and it was done on a per-vessel basis by year and by month, so that it was representative of that particular vessel's operating characteristics, and then for the non-target and open season trips, we did nothing with those. We assumed those would not be affected by any of the Amendment 16 regulations.

Finally, we recomputed landings using the catch effort records and running it through the Beaufort estimation procedures for calculating total red snapper landings, or total landings for any species for that matter, and that accounts for underreporting and non-reporting of landings and trips.

You've heard presentations already on commercial and you'll also hear one on the MRFSS data here in a little bit, but we didn't have any data to work with in terms of determining what species are sought by a headboat versus those that are actually caught and so we didn't have any primary or secondary target species information.

We didn't have any data to assess whether trips would be profitable and would or would not occur because of Amendment 16 closures and so what we decided was that we would define target trips based on a quantity of vermilion snapper or shallow-water grouper caught as well as the percentage of the catch that those species represented relative to the overall snapper grouper landings on a particular trip.

This gives you an idea of the distribution of landings by trips during the closure months for vermilion snapper from 2005 to 2007. The frequency distribution on the left-hand side of the screen essentially shows the number of fish caught on a trip. You can see that the bulk of the trips obviously report landing twenty-five vermilion snapper or less, but there is a large number of trips that land a hundred or more vermilion snapper per trip.

We looked at just overall landings on trips, regardless of vessel size or number of passengers. We also looked at what percentage of those landings did vermilion snapper account for relative to overall snapper grouper landings on that particular trip and you can see that the bulk of the trips accounted for -- Vermilion snapper accounted for either 1 to 25 percent or 26 to 50 percent of the overall snapper grouper landings for that particular trip.

The dashed lines there represent some break points, which I'll talk about in a few slides, but essentially those were our break points for defining target trips. Any trips that exceeded twenty-five vermilion snapper or exceeded either 25 or 50 percent of the total snapper grouper landings were defined as target trips and so it actually had to meet both of those criteria and we looked at the lower percentage of 25 percent just to evaluate the sensitivity of the assumptions of defining target trips.

This gives you an idea of the percentage of trips that would be defined as target, given the previous graphs, and if you look at the middle column, it says "percent trips" and so for a criterion of fifty fish landed, 50 percent, 16 percent of the trips during the closure months would be defined as target. Of those trips, they landed 547 red snapper, which accounts for a little less

than 3 percent of the overall red snapper landings in the database.

If you look at a more liberal criterion down at the bottom, you can see that that percentage of red snapper increases to approximately 8 percent and so even though we're defining a lot of trips as target, up to 35 percent, you can see that they don't necessarily represent a bulk or even a large percentage of the overall red snapper catch and so there's definitely some differences in terms of catching vermilion snapper versus what red snapper are actually caught on those trips.

These are the same graphics except I'm showing them for shallow-water grouper. They're a little bit different scale, mostly because of the actual number of fish caught on trips and percentage of fish caught on trips, but you can see that a majority of the trips land five shallow-water grouper or less. It's not necessarily a very targeted species for headboats, although it might be one that's highly sought after when going on a particular trip.

Then for the percent of snapper grouper landings, once again, it follows a similar trend, with only a small percentage of trips actually accounting for greater than 25 percent of the overall snapper grouper landings on those trips.

What you can see here is pretty much there's hardly any trips, given the criterion that we had selected, that would be defined as target trips for shallow-water grouper and so pretty much all of the effects of this particular analysis would be driven by vermilion snapper trips being eliminated or modified.

I've already spoken about this. This was essentially our definition for target trips in this instance and the net outcome -- Because a bulk of the trips, although there's a lot of trips that can be defined as target trips for vermilion snapper, very few for shallow-water grouper. They don't account for a large portion of the red snapper landings and as a result, you don't really get a large reduction relative to status quo when you evaluate the impacts of Amendment 16 closures and this gives you a relative idea of what percentage changes you're looking at.

If you took the target trips and you modified them to have non-target catch rates, you're looking at a 1 to 3 percent decrease in harvest resulting from Amendment 16. If you took the target trips and eliminated them, depending on the criteria chosen for defining a target trip, you're looking at a 3 to 8 percent decrease associated with Amendment 16. Overall, we concluded, given the definitions that we came up with for target trips, that Amendment 16 closures would have a small effect on red snapper landings.

Based on the landings distribution, the maximum reduction that you could have achieved would have been 50 percent, because that's approximately the amount of landings that occur during the closure months. As I've mentioned, there's just a small number of red snapper caught on those trips that are defined as target for vermilion snapper and virtually no fish caught on trips that are defined as target for shallow-water grouper, essentially leading to the results that we came to. With that, I'll take any questions.

Dr. Belcher: Thanks, Andy. After comments and questions from you all, we're going to break for lunch before Andy's next presentation and then we'll come back and start with that.

Dr. Williams: Andy, I think one of the issues with headboats is this whole concept of even targeting doesn't really apply, because I don't think a headboat is going to not make a trip because of regulations.

Now they may shift where they fish, but I can't imagine they're going to completely eliminate the trip and to the degree that then red snapper and vermilion snapper, for instance, are co-occurring -- In fact, they may be actually not co-occurring and you actually could envision where if they're attempting to avoid vermilion snapper they might move into areas where there's a higher probability of catching red snapper. I would be a little cautious about whether there's even going to be any effect at all and it could actually even go in the other direction, in my mind.

Mr. Strelcheck: I agree with you, Erik. This is really the expected outcome I had leading into this exercise, given the nature of how headboats operate. I guess with the closures there is potential for angler effort to decrease, just because they want to go out and catch certain species of fish and if they know that the season is closed for those certain species, they're going to be less willing to participate on a trip.

That then gets into the effort shifting discussion that we had earlier and how do you quantify it. I also agree with you that one of the things that we did look at is what would happen if you shifted to the non-target catch rates and those non-target catch rates are higher. Then you could lead to higher estimated landings overall.

Dr. Belcher: Further comments or questions for Andy? Thank you for the presentation, Andy. It's just a little before twelve and given yesterday's lunch exercise, we'll be coming back at 1:30. Be here ready to start at 1:30.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened at the Hutchinson Island Marriott, Stuart, Florida, Tuesday afternoon, June 9, 2009, and was called to order at 1:30 o'clock p.m. by Chairman Carolyn Belcher.

Mr. Strelcheck: As I mentioned earlier, this is the second presentation on headboat data that we had worked on. We didn't provide a report on this because we have confidential data that we were working with in this report. We have aggregated throughout certain parts of this presentation so it won't be as meaningful as if you had all the details, but hopefully it will give you some direction.

The main emphasis of this presentation, unlike the last one, is to now start looking at Amendment 17 management actions and quantify the change in red snapper landings discards that would occur in direct association with those management actions and as everyone well knows, Amendment 17 is considering a series of year-round closed seasons for recreational and commercial, as well as a variety of spatial area closures.

One of the first things that we have to do is determine how can we partition landings into spatial areas so that we can analyze what the effects of these options would be. With the headboat dataset, they do provide some information on the location of reported landings. Some of it is incomplete. Sometimes that information isn't reported at all. Essentially, this gives you an idea

of the percentage of complete, incomplete, and non-reported landing locations in the catch record dataset for 2005 to 2007.

On average, about 85 percent of the location had lat/long coordinates, as well as some information on the sub-grid reported. There was about 7 to 8 percent that were incomplete, where they didn't provide any sub-grid information, but did provide at least some general lat/long coordinates and so that was kind of our starting point in terms of looking at how we could partition landings.

The big question, as I've already mentioned, is how do we go about doing this? The approach that we've taken, which may differ from what you hear from John Carmichael a little bit later, is a hierarchical approach to assigning landing to statistical grids and I'll go through kind of the three major steps that we went through.

We are obviously assigning landings to broad statistical areas and so it definitely reduces the spatial resolution of your data, but at least in this approach I feel a lot more comfortable that we've at least identified the relative area in which most of these vessels are fishing.

Kind of the initial screening was to look at vessels that reported complete landing locations for all trips. They also had complete landing records. That represented a little less than 50 percent of the dataset and so about 50 percent we had really, really good data, where every trip was reported and every landing was reported and every location was reported.

From that, we were able to assign to statistical area, landings in weight, by vessel, year and month. There were a few instances where a complete location was reported and that location showed up on shore. For those small instances, and we're talking on the order of hundreds of pounds or less, we went back to the vessel that reported it and looked at the landing locations that had been reported on the water and reassigned those small amounts to the statistical areas that they were reporting generally on the water.

Kind of our second layer of screening was vessels that reported complete landing locations for some of the trips, but not all of the trips. This also included some vessels that had landings that went unreported or trips that went unreported. For this, we tried to utilize the complete landing location that was provided and we assumed that that would be representative of their trips that weren't reported or that didn't have complete landing location information.

We then rescaled their landings that were reported on a monthly and yearly basis. They were always obviously scaled upward to account for those unreported landings and the landings without complete location data and so that affected probably another 25 percent, roughly, of the dataset.

Then the third kind of layer was what if we don't have really any complete location information or it's incomplete and what do we do with those vessels? What we've seen is that reporting has been improving over time and so first we looked at was there complete location information reported during 2005, 2006, or 2007. If there was and it represented more than 50 percent of their trips, then we used that location information as a proxy for years that might not have

complete location information during the 2005 to 2007 baseline years.

If there's no good information during the baseline years, we then went to 2008 and once again used that as a proxy and what we have seen is that there were a lot of vessels that didn't report any locations in 2005 to 2007. They have begun reporting in 2008. We validated that in fact the locations that were reporting were in the vicinity of the inlets that those vessels were operating out of during 2005 to 2007 and we then distributed their landings during the baseline years based on the locations reported during 2008.

If we didn't have any information essentially for 2005 to 2008 to assign landing locations, we then started looking at proxy vessels and a proxy vessel from the same inlet and assigned landing locations or statistical grids based on a proxy vessel that operates out of the same inlet and if worse came to worse and we didn't have any information to go on, and there was a few instances, particularly in southeast Florida, we went back to where the vessel was operating and looked at the trip durations and assigned a logical statistical grid based on how far they could travel from port and given the trip duration. Statistical grids were assigned in that manner.

As I said, I had to aggregate data to maintain confidentiality and so these landings for any one row represent three or more vessels operating in the fishery during that 2005 to 2007 timeframe. This is fairly consistent with what we saw with the commercial logbook data, that zones off of northeast Florida and Georgia represent a bulk of the landings, then they diminish the farther south you go or the farther north you go, which is what would be expected.

The distribution is a little bit more inshore than offshore, which is also not surprising, given the nature of the fishery. Just to graphically show you this, these are aggregated in some instances over two or three statistical areas, but you can see that blue area off of northeast Florida, that represents around 31 percent of the landings between those two statistical grids and another 18 percent we estimate are in the green area just above that and 20 percent occurring roughly off of Cape Canaveral in the two statistical grids that are aggregated together. It gives you just a general distribution of where the landings are occurring.

That was essentially the first layer, to partition landings by statistical grid over the 2005 to 2007 timeframe. We also needed to estimate discards and we went back to SEDAR-15 and they had used the ratio of MRFSS discards in numbers over the MRFSS landings in numbers to calculate a relative discard to landing ratio. That was then applied to the headboat landings in numbers and resulted in total headboat discard estimates and so it was essentially being used as a proxy for the headboat fishery.

From that, those were converted to pounds in the same manner as what Nick discussed earlier, using projection data from the red snapper Addendum 5 projections and an average weight of a little less than 1.5 pounds.

Just to give you an idea of what the discard estimates look like relative to the landings, you have landings in numbers in the first column and discard were anywhere from about three-and-a-half to eleven times the amount landed, given the discard to landing ratio. Overall, headboat discards averaged anywhere from 45,000 pounds upwards of 100,000 pounds during the three-year

timeframe. To calculate total dead discards, we then multiplied these estimates by a release mortality rate of 0.4, which was accepted by the SEDAR-15 review panel.

I won't go into detail -- We've all heard the Amendment 17 alternatives. I will say that we did not evaluate Alternatives 2 and 3, given the spatial resolution of the data and the work we had to do to just partition it into statistical grids. There was no way we could partition it into a finer spatial resolution dealing with a specific depth range.

This is just a visual of what Alternative 5 looks like in terms of the closed areas being considered and that's Alternative 6 and so you add an additional three statistical grids, primarily off of Georgia and South Carolina, and expanding those areas. We looked at Alternatives 5 and 6 as well as just closing the fishery with no closed areas for snapper grouper considered.

Pretty much to estimate reductions, we took landings and discards in pounds, dead discards in pounds, and summed them together. We applied the release mortality rate and then we essentially calculated the total removals that would occur for a particular statistical area. From that, we looked at what would happen if a statistical area was entirely closed to snapper grouper fishing and set that statistical area equal to zero. We were assuming 100 percent compliance, obviously, with the closed area at that point.

This integrates essentially back into the results I discussed earlier this morning, but the bottom line is if you assume no effect with Amendment 16, Alternative 2 gets you roughly, which is the full closure of the fishery but no additional spatial area closures, it gets you about a 40 percent reduction.

Alternative 5, which has the additional four statistical areas closed, and Alternative 6, which has seven statistical areas closed, gets you an 80 to 85 percent reduction. If you take into account the least conservative option that was presented in my earlier presentation, you can see that the biggest gains are achieved with Alternative 2, particularly when you start eliminating red snapper target trips in that last column, but the areas in yellow are essentially the reduction levels or the proxy essentially for reducing fishing mortality that would need to be achieved and so you can see that Alternatives 5 and 6 were the only ones that actually achieved the necessary reductions.

As we discussed earlier, obviously there's limitations to this approach. It's based on numerous assumptions, effort shifting, obviously, as we discussed earlier, and compliance with the closed areas. Also, I guess one that is worth mentioning is release mortality rates. I know it's a fixed rate across all areas, but if there's some reason to believe that release mortality would increase or be reduced, given that you're closing certain areas to red snapper and fishing will occur in shallower or deeper depths. Then obviously that would also affect the outcome of the results and that we've assumed, obviously, that discards are proportional to the landings as we've estimated the statistical grids. With that, I'll take questions.

Dr. Belcher: Thanks, Andy. Questions or comments or recommendations for Andy?

Dr. Cooper: Just one clarification. The grouping of statistical areas for confidentiality, that was strictly for the presentation here and not in the actual model, correct?

Dr. Belcher: Other comments or questions?

Mr. Strelcheck: I don't know if you want to wait maybe until after John presents some of his information, but it would be really useful to get feedback in terms of this partitioning of landings into statistical grids, because it's a huge issue that we've run into. We know there's limitations to the data and there's a lot of holes in the data. This is how we've come up with at least one solution to solve that problem. It's certainly not perfect, but at least in my view it's probably the best we can do at this point, given the data itself.

Dr. Williams: I guess one other question is the area analysis is from the headboat data, but the use of this area analysis is going to apply to the MRFSS or not or how is that --

Mr. Strelcheck: Nick will be discussing that next, because it's certainly another implication of this, is that we have even worse spatial area resolution for MRFSS data.

Dr. Cooper: I'm correct that the assumption of the model for like Alternative 5, where it's retention of the species in the Snapper Grouper FMU, that headboat effort will stay the same spatially and it's just the interaction with red snapper. They won't change their behavior at all, even though they won't be able to catch any snapper grouper, that's correct?

Mr. Strelcheck: The way we built the model, we have a very simple way of shifting effort, but the question then becomes where does effort shift to? If you just distribute it proportionally, then that might be one way of approaching it, but there's obviously logical ways that effort might shift, given proximity to inlets and ports, that might be a better approach for looking at effort shifting.

Dr. Belcher: Any further questions or comments?

Dr. Cooper: In your slide that you had the calculation of the numbers of discards, you had the MRFSS -- Basically it was MRFSS discards over MRFSS landings and then you also mentioned the -- I thought it was in here you mentioned the 40 percent release mortality. The discards from the MRFSS are not dead discards, but the actual caught and thrown overboard, right?

Mr. Strelcheck: The B2 estimates, the reported discards that would then have to be converted to dead discards.

Dr. Buckel: I'm okay with how you've done things, Andy. I'm just curious if efforts are in place to improve the headboat landings data so in the future you don't have to go through so many different steps to arrive at the numbers that you've done and if not, a recommendation from the SSC, if that would help.

Mr. Strelcheck: Erik can certainly speak in more detail to this. I've worked a lot with Ken Brennan over the last month or two and certainly you can see that data is improving in the dataset. There appears to be certain regions that are more problematic than others, but overall, I think steps are being undertaken to get better compliance with the data.

Dr. Belcher: Any further comments or questions? Seeing none, Nick, do you have another presentation? I guess we'll do Nick's and then we'll come back to John.

Mr. Carmichael: Andy, I have just one question in trying to understand the cumulative effects. I was looking at like Table 12 and it says the overall reduction due to 13C, 16, and Amendment 17 Alternative 4 and I take it that's the closed area Alternative 4, but some of the areas that are in Alternative 4 also appear lower in that table as an additional percent reduction and so I'm just trying to understand how to interpret the tables like that and the overall reduction.

Mr. Strelcheck: Which report are you looking at?

Mr. Carmichael: It was the commercial regulatory evaluation, 21-B.

Mr. Strelcheck: That would be specific to what Nick put together and so I guess Nick would have to respond.

Mr. Farmer: John, if you want to talk about that after, we can go over that some more and we can get Jim involved in that conversation. I want to talk with you briefly about the projected impacts of Amendments 13C, 16, and 17 on removals by recreational fisheries and so this will be very similar to what I presented earlier, but this time we'll be dealing with data coming out of the Marine Recreational Fisheries Statistics Survey.

An outline of my talk, we'll be talking real briefly about the amendments and I'll tell you how we computed baseline removals and how we went through and determined removals for Amendment 16 and 17 and discuss. We've already gone over these. Just, again, note that there are some exceptions within the alternatives proposed in 17 that allow some harvest.

Objectives, we're going to look at 16 and 17. The first thing we did to compute baseline landings was went through for 2005 through 2007 and summarized red snapper landings in numbers and pounds, using a post-stratification program developed by the Office of Science and Technology for National Marine Fisheries Service up in Silver Spring. Then we set our baseline for landings equal to the average of 2005 to 2007, to minimize year-to-year fluctuations.

Then we went through the exact same process to compute discards in numbers. There is no discard in weight estimate available from MRFSS, because they're thrown over the side. In order to get discards in weight, we used the ratio from the stock projection model for 2007 through 2009, as with the commercial and headboat presentations previously. Then to compute dead discards, we multiplied discards in weight times that 40 percent release mortality and when you add the average 2005 to 2007 landings and average 2005 to 2007 dead discards, you get your average baseline for removals.

The data that I'm presenting here is the average 2005 through 2007 harvest and dead discards. Those are the discards that have been multiplied by 40 percent for red snapper by post-stratified state and area. We have it broken down into state waters and federal EEZ and what you can see is that 82 percent of the overall aggregated landings are coming from northeast Florida, 8 percent from Georgia, 7 percent from southeast Florida, and 1 percent from South Carolina and North

Carolina respectively and we have a baseline of about 399,000 pounds coming out of MRFSS for the removals.

If you break that down into areas, this is about as fine a scale as MRFSS provides and you can see that it kind of glosses over those logbook statistical grids in a very coarse fashion. I have this broken out into state water, which you can barely see at this scale, EEZ, which is the solid boxes, and then international waters that are contained within the statistical areas that would still potentially be in MRFSS.

Looking at this, you can see we've got that 28,000 pounds in southeast Florida and then the majority of the fishery there is in northeast Florida, at 323,000 pounds. Then Georgia is at 33,000, approximately, and then going up.

In order to partition that coarse scale data into statistical areas to do any meaningful analysis of Amendment 17 spatial closures, we opted to use the spatial distribution of headboat landings as a proxy for the recreational effort for MRFSS, since there's no other alternative that I could identify.

The MRFSS landings were aggregated by post-stratified region and then we assigned the statistical areas with headboat landings of MRFSS sub-region, based on that post-stratification protocol, using a majority rule. A lot of these MRFSS cells -- I'll go back to this previous one. You can see that some of the MRFSS sub-regions overlap logbook statistical areas and so you could have some portion of it from South Carolina and some portion of it from Georgia and so we opted for a majority rule there.

The equation basically says that the MRFSS removals in an area, in a statistical area, is equal to the percent of logbook landings in that area divided by the total percent of logbook landings in that MRFSS sub-region times the MRFSS removals in that sub-region.

This is aggregated for confidentiality purposes, similar to what Andy showed you before, but basically what you can see is that for MRFSS you've got about 38 percent of your removals coming from that northeast Florida area and an additional 25 percent or so coming from the Cape Canaveral area and then just north of the northeast Florida area, on the Georgia/Florida border, you've got an additional 22 percent and so that's your core of your recreational fishery. You've got some a little bit further south of Canaveral, at about 6 percent, and then off the coast of Georgia, near South Carolina, another 3 percent and fading in importance beyond that.

In order to evaluate the implications of Amendments 16 and 17, we needed to develop a rubric for determining what is a targeted trip for those species that are in those amendments. We categorize trips as target, non-target, or open season. Targeted trips can actually be explicitly specified in MRFSS and so that would be kind of a conservative approach to it, is that if the fisherman said I'm going out to catch vermilion snapper, that's what we were going after, regardless of whether he caught it or not.

That's, in my mind, a very explicit way of determining what a targeted trip is, but a lot of times they'll say that they're going for something more generic, snappers or groupers. We wanted to

look at if you say you're going for snappers or groupers, but you land -- The majority of your landing is vermilion snapper, maybe you were targeting vermilion snapper, for example.

In order to do this, we took the MRFSS dataset, which if any of you have ever seen it, it's quite convoluted and complex and basically amalgamated all these various files together to compute landings per angler per trip and looked for natural break points to determine what might be a directed trip for a species and we considered those to be targeted trips under some of the scenarios we evaluated.

Regardless of how we determined targeted trips, once we had determined them to be targeted, we removed them from the dataset and then generated new post-stratified estimates for harvest and for discards.

Here's an example of how we determined targeted trips for vermilion snapper. The plots on the left here are for 2005, 2006, and 2007. They're histograms of catch per angler per trip for vermilion snapper during the closed months of November through March for Amendment 16. As you can see, there's a bit of a natural break point at one fish per angler per trip. The histogram changes its dynamic pretty substantially after that and we thought there seems to be another kind of natural break point there around five fish per angler per trip.

We evaluated those two scenarios and looked at them both under the context of this is a targeted trip for vermilion snapper and also included in the mathematics there for determining whether a trip would be eliminated or not if it listed a vermilion snapper as the primary species targeted during those months. It was eliminated and if it caught five fish per angler per trip or one fish per angler per trip, depending on the scenario, it also had to meet a criterion of exceeding 50 percent of the total snapper and grouper landings on that trip.

The same thing for shallow-water grouper. There were two kind of natural break points at 0.5 fish per angler per trip and one fish per angler per trip and so nearly as abundant as the vermilion in the data. This is during the closed months of January through April and so they would also have to exceed that 50 percent grouper and snapper landings criterion or else be listed as the primary species targeted.

For Amendment 16, looking at the results, and keep in mind that previously the baseline was about 399,000 pounds, if you implement Amendment 16 and strip those trips from the dataset, under the criterion of five vermilion and one shallow-water grouper, you can reduce removals by about 2.3 percent, down to 390,000 pounds.

Under the more liberal criterion of one vermilion and 0.5 shallow-water grouper, you actually get the exact same reduction, which was an interesting thing out of the dataset. It turns out that it's the same trip that's eliminated in either case and so the MRFSS data is rather sparse when it comes to that sort of stuff, but you'll see some more dynamic impacts when we get into Amendment 17.

Looking at Amendment 17, we did not evaluate Alternatives 3 and 4, because we didn't have any data on depth. However, Alternatives 5 and 6 have the complete closures of the cells and so

here's Alternative 5 spatially, so you can see where those closures are, and then Alternative 6 adds some additional cells to that closure.

In order to compute removals for Amendment 17, we looked at projected landings and discards in pounds and summed those up and applied a release mortality of 40 percent to that total removal, in order to compute the reductions associated with the fishery closure. If that statistical area was closed to snapper grouper fishing, the landings in discards within that statistical area were set to zero for the recreational fishery.

For Amendment 17, to determine what might constitute a red snapper trip, because now red snapper are going to be closed, to determine what was a red snapper we had several different criterion we examined. The first would be trips that are explicitly listed as being targeted for red snapper. The second was using a break point of two red snapper per angler and you can see that in the graphs again for 2005, 2006, and 2007.

It makes sense that there would be a break point there, seeing as that's the bag limit and if you're catching more than that, we want to know who you are. Targeted and directed, we looked also at one red snapper per angler and again, these had to exceed that 50 percent snapper grouper landings criterion.

If you have the Amendment 16 criterion, we're looking at cumulative impacts now, of five vermilion and one shallow-water grouper and you're looking at the Amendment 17 Alternative 2 scenario, which is just that red snapper is closed, if you eliminate targeted trips only, you get a 50.4 percent reduction in removals, which is a bit more optimistic than I was thinking. It has a lot to do with that 40 percent release mortality.

That drives you down to 198,000 from 399,000 pounds. If you eliminate targeted trips and directed under the criterion of greater than two red snapper per angler, you get the exact same result. Again, the quirks of the MRFSS data come through, but if you reduce that criterion to targeted trips and also directed trips that land more than one red snapper per angler, you get a 53.1 percent reduction, knocking it down to 187,000 pounds in removals.

Visually, this is a bit how that looks. Again, the distribution of landings in the fisheries don't really change all that substantially, but the level of landings definitely are reduced and so, again, this is aggregated for confidentiality purposes and also it's listed in percentages and so it's a bit hard to see the reduction there, but you can see where the landings are coming from.

Then looking at spatial closures in addition to that, so the other proposed alternatives in Amendment 17, if you look at Alternative 1, which is the do nothing scenario, you get a zero percent reduction out of these, but if you look at, for example, Alternative 5, you can actually achieve greater than that 87 percent reduction in mortality. Alternative 6 gets you up to almost a 91 percent reduction in mortality. Obviously this is sparse. This would be aggregated across space to protect confidentiality, but we have some information as to where it would happen, presumably, spatially.

There are some assumptions going into this evaluation, as there are in every other one that we've

presented today. Again, we have the assumption that discards are occurring proportionally to landings in space. We assume that there's no effort shifting from the closed areas and that there's 100 percent compliance within the closed areas.

We assume that that release mortality rate remains unchanged, even though the landings might be changing in space and reductions don't account for any spatial closures in Amendment 16 and also it assumes, and this is the bigger assumption that we haven't seen before, that headboat landings are reasonable spatial proxies for private and charter angler landings. I don't know of any better approach to do it and so that's why we did it.

I would really like to acknowledge Tom Sminkey in the NMFS Office of Science and Technology in Silver Spring. He was invaluable with his knowledge of MRFSS data and his SAS coding advice. With that, any questions?

Dr. Belcher: Thanks, Nick. Any questions, comments, recommendations for Nick?

Mr. Carmichael: MRFSS data aren't confidential and so you don't have to aggregate those.

Mr. Farmer: The MRFSS landings distributed through space was based on the headboat landings in space and you could infer back from the MRFSS landings to get the headboat landings.

Mr. Carmichael: That is a possibility I would suppose, yes.

Mr. Farmer: There's some sneaky people sitting in the back.

Mr. Carmichael: That's probably good to keep in mind then.

Dr. Belcher: Any other comments?

Dr. Buckel: Again, just a comment on the future sampling, since they're redoing the MRIP program, marine recreational sampling. Your first and last assumption -- Again, if we could get those discards and landings by depth, we could really improve on these things in the future and I just can't stress enough for retooling these programs to get that information to help with that work and ours.

Dr. Cooper: I'm curious if you looked at for those records in MRFSS that stated they were targeting red snapper, what was the proportion of red snapper in their catch and how does that compare to your definition of targeted for red snapper that you're inferring based on the one or more and 50 percent? It might just be an interesting way to validate the definition of directed, to see if they're even comparable.

Mr. Farmer: We haven't done that, but I think that's an interesting suggestion.

Dr. Belcher: Any further comments? Thanks, Nick. John, you're up next.

Mr. Carmichael: There's going to be a lot of similarities with this and what you've seen here the

last couple of hours. In a way, it's going full circle. The council staff started looking into these area options back in probably September, when the issue first came up before the council and we worked on it in September and December and March and presented it to the council. This is really the first time this has come to the SSC with a full treatment of what's going on. We'll get your comments on it and figure out how we're going to deal with this situation.

The approach here was -- It started back with the council staff, as I said, a while ago. It was to try to find a way to allocate landings for these different fisheries across areas and give the council an idea of how different area closures would affect the fisheries and what kind of savings they could get from different area closures.

In looking at the data, it was realized that the commercial statistics, the logbook reports in the one-degree statistical blocks. The headboat program also reports to that on some of their records. They report to the areas which were shown and some trips also report to a location code which matches up with the one-degree blocks. That was selected as the base area for the council to use in designing areas.

Discards were allocated using the same distribution as landings, because that's the information that's available. Basically, it's assuming discards are proportional to landings as far as where they're found and where they occur. The base period which was accepted by the team some time ago is 2005 to 2007.

The basic restriction we're looking at is no snapper grouper effort in the closed areas and so essentially, it's got the cleanest assumption as possible, is that landings and discards in those areas go to zero and that's one of the reasons that we've looked at some of the things we're looking at now, is trying to figure out how do we build on this and look into these trips in more detail, as Nick has been able to do, and try to say can we come up with some better assumptions to refine these analyses.

I've noticed that we had a discard of 1.53 pounds per fish on some of the older information and now we're at 1.48 and so we can modify that. Our goal is to keep ourselves as consistent as possible across all of these, to get the same relative results.

The caveats here is this is, as I said, is it's one of the earliest analyses we did and it's really based on the data as reported and so there's no attempt to account for whether or not reporting may be accurate. It's just whatever was reported for the area that's the area that's used. It doesn't incorporate the recent regulatory impacts and so in building on this -- You've seen what Nick and Andy have worked on to try and say there's regulations going into place now that will affect that 2005 to 2007 baseline and it will affect what's captured now. That's not in there.

This is going to present findings for the overall reduction across all fisheries, but just keep in mind that it doesn't account for things like changes in behavior, which Nick just talked about, which, as we've seen, could have a pretty sizeable impact on some of the overall total reductions. As it says, these are all issues that are going to be addressed by the team and we want to get some feedback from the SSC as to these methods and how we combine all of these different fishery impacts into one overall cohesive analysis to give the council the right information on

how these changes are going to affect the fisheries, including addressing the behavior changes and things of that nature.

Discard mortality is always a big concern. The 40 percent for the headboat and MRFSS, which was used by SEDAR, is incorporated. Through these analyses, there's an incorporation of a commercial 40 percent discard mortality. Acknowledge that the SEDAR-15 report used 90 percent and cited depth of operation and handling practices.

The case is being made that by the closure in the deepwater that the council is considering there's going to be commercial operations that are going to have a shallower average depth and that would potentially justify using a lower discard mortality. The council could consider other regulations that might affect the handling time aspect as well, but it's the depth that seems to be perhaps the most influential.

The headboat data is landings by area. In the case as reported, it's 83 percent of the landings by area of red snapper also report the other variable of location, which allows you to get to the one-degree grids. Their location is actually the grid divided into thirty-six segments and we're able to use a portion of that variable field to get the actual one-minute grids.

Interestingly, there's none of the location information and so none of the finer-scale information reported for Areas 6 and 11 and so the assumption was just made to spread those landings for that area across two of the adjacent grids beside it and this is certainly the kind of assumption that we can evaluate and maybe look at some other sources of information to try to refine that.

Essentially what was done is a key was created to convert landings by area into the landings by grid using location and then just take the average landings and spread them out. Then use that same basic information to apply to the MRFSS data, because that MRFSS data is only available by state, plus, Florida regions, thanks to the post-stratification, which is supported by Florida's additional MRFSS sampling. We're definitely indebted to Florida and the MRFSS people for providing this information and for doing the sampling that's necessary to supplement.

It was taking the same location information that's available from the headboat data and modifying the key a little bit to put it in terms of states instead of areas, which Nick explained very nicely how all of this essentially works and this is the same way.

The commercial data is relatively straightforward. The logbooks report by the one-degree grids and so you just take the landings as reported. There's a slight adjustment to match the overall total landings, because there are some landings of fish by fishermen who are legally landing fish who aren't obligated to report under the commercial logbook programs. That's a slight adjustment of about half a percentage to keep the totals consistent with the stock assessment.

The effects are calculated by saying that landings and discards in the closed areas goes to a straight-up zero and there's no effort in there and there's not going to be any landings and no encounters and no discard mortality. That just goes to a zero.

The remaining areas that are then open, considered open with regard to snapper grouper, the fish

that would be encountered in those areas are going to suffer the discard mortality and that sort of becomes the new discards, those fish that were otherwise landed in that area, but under no possession they're going to be thrown back.

You also have discards that occurred in those areas. Those discards continue and so the total removals that's expected basically becomes those new discards, fish that were encountered and otherwise would have been kept in that baseline period, you presume get thrown back, plus the remaining discards.

The example kind of helps bring this home. There's 75 percent of reported landings in the closed area, say, and so you have a hundred pounds of landings and twenty pounds of discards, for 120 total pounds that are being removed. If 75 percent of the landings are in that closed area, that means seventy-five pounds are being taken out of there and 25 percent, or twenty-five pounds, was taken out of the other area. You also have the discard mortality, which adds 25 percent of the twenty-pounds.

25 percent of the base discards in other areas continues as well, ending with five pounds, and the bottom line is we get a reduction of about eighty-seven-and-a-half percent. It's really just allowing for us to account for the discards and the new encounters of fish that are going to be discarded without having any concerns about double counting for fish and double savings of them. It seems a little complicated, I understand, but it's really not too overly complex.

The main issues that we're dealing with though in trying to interpret this is, first of all, it's well noted that reporting of grids in commercial logbooks may not be really reliable or accurate, which is definitely a problem and that's why I started out saying this treats this data -- How it's reported is how it's used. We haven't gone in and tried to infer what we really meant or say it doesn't make sense that red snapper was reported in this grid or that grid. If it's reported, that's where it was.

The reporting of location by the headboat records is another one that gets a lot questioning. It may not be reliable or it may not be overly accurate. The reporting is not necessarily consistent over space or time. There could be some concerns there, but it seemed like 83 percent of the red snapper do carry that information and so there's pretty good reporting there, with the exception of one small area and that can certainly be open to debate, but it seems that that area is largely going to be within the proposed closure grids and so the final result may not be overly sensitive to that decision.

The weight of the discarded fish is estimated, as we've shown. It's just one of those things that's going to be difficult to get around. The closed area restrictions could shift effort. That's definitely acknowledged and that could be, in some cases, depending, I suppose, on the size of the area and where a lot of effort is potentially located -- If it can go outside of the area easily, that may very well happen and that could then, of course, reduce the effectiveness.

The fact that there's no possession restriction could affect behavior, which we've talked about some here, and there's another possibility that could make things more effective, depending on how people feel about it. Then, of course, the recent regulations, which we've been talking

about.

What this came down to in terms of the options, and this is what the council was really looking for in dealing with this, is the overall percent reduction. Alternative 1 gave 32 percent. This is essentially the range, 32 percent to 88 percent for the options that they have on the table now. I'll point out we've also retained the original area, which is what the council talked about in September and December and even through March, which actually gives about a 94 percent reduction. If you remember, that was about a thirteen-block area and so by getting into this in more detail and looking at these analyses, the area has shrunk quite a bit in some cases and now we're down to a suite of options that are right around the nature of reductions that the council needs to get. It's a matter of refining these and finding out just exactly what poundage we can move.

The council is also looking at the column there that shows the total poundage, because they're bound by achieving a particular ACL, which is maybe say around eighty-some-thousand pounds. They may have to also compare against this total column for the total poundage that's expected to be removed. In that case, it gets very important as to the discard weight and how potential changes in behavior might affect the fishery.

With that, quick and dirty, that's what we've been working on in terms of putting this all together and the next steps are going to be the team is probably going to have to get together and build on what you've seen here today and take the SSC's comments and find out how we can take these refinements to each individual dataset and roll them all into one package and find the total reduction.

Whatever we can get from the SSC in terms of making that a little bit better and things that you see you would like to see a little bit different or raise some questions will be greatly appreciated. Questions?

Dr. Belcher: Thanks, John. Any questions or comments or recommendations for John?

Dr. Barbieri: John, just to kind of help us in frame of mind here for what is ahead, can you -- Briefly, what are the timelines involved here? I know that Rick had already gone over that briefly. In terms of when we might have to take into account how much time we have --

Mr. Carmichael: I would say we definitely need comments here. The council has wanted to get this through for some time and they haven't, as we've worked through these data issues and worked through these analyses and dealt with everything that's arisen. If they don't approve it at this meeting for public hearing, then they'll be considering doing that in September.

I think even if they approve it just to go to public hearing, based on what they have now, that will still leave time over the next several weeks to refine these analyses if we get information from you here. Now, if you're not prepared to give comments here today, then I think that would be a problem, but things that you suggest here today, we certainly plan to incorporate.

Dr. Belcher: With that said, any comments or recommendations to it?

Dr. Buckel: John, you mentioned the question about the size of the discards and I'm just curious if you played around with that number to see how sensitive -- I'm sure it is and it would affect these, but -- If there's some other sources of information. I think in North Carolina the state started sampling or putting observers on the headboats and so that might be a source.

Of course, there's not that many caught up there or if there were ever any tagging programs. You can use tagging data if they recorded the fate of the fish as either harvested or caught and released. You can use the size at which it was tagged and then if it was caught in a reasonable amount of time and you get the tag back -- Some size selectivity of discards from that. I don't know if there was ever any tagging data on red snapper in the South Atlantic, but I'm just curious about that.

Mr. Carmichael: I didn't run across much that gives that kind of information, though maybe the observer information -- Florida has had observers on the headboats for a number of years, which we might be able to get into, and maybe contact Beverly down there and see if there's a better estimate of the average size and if it falls into same range, within a few ounces either way, it's not going to make a big difference. It's not a huge number of fish, but yes, we could get some refinement there perhaps.

Dr. Cooper: Just a clarification. The weight that is going to be updated, the 1.04 or 1.05 one or whatever it is, it's from the projections from the SEDAR and is that the average weight of a landed fish, of a fish in the population, or from the discard?

Mr. Carmichael: If it's of a discarded fish. That's what was applied to the fish that we know in numbers, which are the estimates of the discarded fish.

Dr. Cooper: Now discards all -- You're assuming then that discarded fish were discarded due to bag limit and not size limit and is that correct? That's why you can apply the discard weight before discard weight now, whereas now all caught fish will be discarded and so would the average weight of a caught fish be more appropriate?

Mr. Carmichael: Actually, the savings are based on looking at the pounds landed by state and so it's actually what's spread out across the one-degree blocks is the pounds. Everything that we've done is working in pounds and so it doesn't get into that fact that the sizes of discarded versus kept fish are different, which would open a whole other can of worms to adjust for, which would happen if we had worked with it in numbers.

Dr. Belcher: Further comments or questions for John? Thanks, John. Moving on, we have Erik Williams, who is going to talk about the red snapper monitoring program.

Dr. Williams: I don't have any presentation, but you guys have an Attachment 24, which I think is written fairly well and has enough of a description there. I'll briefly just go over that for you verbally. Essentially, what we looked at was two ways to monitor red snapper, either through fishery independent methods or using headboats to monitor the red snapper fishery.

The original hope was that, going into this, that the headboat fishery captures a small enough

fraction of the red snapper that we could keep that entire fishery operating and still allow recovery for red snapper, thereby preserving the catch per unit effort index that comes out of that fishery and, of course, we could have supplemented that fishery with lots of dock sampling to get age samples and so forth.

The problem is it doesn't and so the headboat fishery would have to be reduced and in fact, it would have to be reduced substantially. Our estimates suggest that just if we had nothing but the headboat fishery operating that it would still only operate at 70 percent of its current capacity and that's shutting everything else down and then you go from there. Then you get down to a 30 percent section of the headboat fishery operating, just to allow 10 percent of the remaining area to remain open. That's not 10 percent of the area, but 10 percent of the red snapper catch to occur.

Unfortunately, that means that if you're going to design some sort of sampling program around headboats that it's going to have to be done in a very careful manner. You're going to have a much smaller sample size and you're going to have to try and stratify by area and time and it opens up a gigantic can of worms that no matter what we might try to do it's ultimately going to affect the behavior of the headboats and that's what you're trying to avoid when you're using fishery dependent indices. You really don't want to affect that behavior in any way, shape, or form, in order to maintain that relationship between catch and abundance, or CPUE and abundance, for a given fishery.

You guys can look at the report and you can see that technically it could be done, because we did some sort of random re-sampling and suggested that even with as low as 20 percent or even 10 percent of the headboat trips running you could feasibly get a catch per unit effort index. The problem is it's going to have a tremendous amount of noise and it's going to have CVs on the order of thirty-some-odd percent and the question is, is that really going to help us in monitoring recovery?

I don't want to draw conclusions. I'll let you guys draw your conclusions on this and, of course, in our report the recommendation is the ideal way to go is a fishery independent sampling program, but, of course, that comes with a price tag. I hope everybody has taken the time to read that report. It's not very long and you can probably get a quick overview of it just by reading the first two-and-a-half pages and understand what's going on in it.

Dr. Belcher: Thanks, Erik. Any questions for Erik or comments or points of clarification?

Dr. Barbieri: Erik, have you guys thought about any other way -- I'm sure that by the time that you finished that analysis you realized that then you balanced the tradeoff there the gains, in terms of data, were not justifying implementing a monitoring program and I agree with that. When you go through those numbers there, it would be very difficult to get anything that would be meaningful and you have the tradeoff and the disadvantages on the other end. I don't know, but any ideas that have come up on how to resolve this?

Dr. Williams: We went back and forth. Pretty much any idea you come up with is going to have a giant price tag with it. Either we go the fishery independent way and we load up some boats

with observers and that costs money -- No matter what way you try to go -- If you allow exempted fishing permits for certain vessels, you still have to pretty much put an observer on those kinds of things. It's just all of that is beyond the capabilities of our current sampling system and so it would require additional funds and significant additional funds.

Dr. Belcher: Further discussion? Thanks, Erik. The next item on the agenda is the Red Snapper Assessment Comment from Dr. Frank Hester.

Dr. Hester: My name is Frank Hester and I'm a marine biologist. I was hired by the East Coast Fisheries Section of the Southeast Fisheries Association to review the SEDAR-15 red snapper assessment. This assessment is a cause of concern to the members of the association, as well as many other people, and in its present form, a number of us have doubts about the results and conclusions.

In fact, reading through the report, it appears that a number of the members of the working groups also expressed concerns about the assessment. What I want to do now is run through a quick presentation that highlights the major problems that we have and since I think most of you are familiar with the SEDAR report, we can go through it fairly quickly, because a lot of this is for more general acceptance.

As you know, the resource has been declared overfished and overfishing is occurring, which immediately starts the clock that's going to put us out of business, probably in 2010. The picture that one gets from the assessment is pretty convincing that there's a problem. The question that comes to mind really is how you can have this tremendous decrease in the biomass and then have a long period of stability.

The report suggests that the population structure has changed over time and that almost all of the older fish have disappeared. Once again, that's another very serious concern, but when you look at the data that was available for SAR-1, you'll notice that there's really not much information that was available.

The basic information is some landings from the commercial hand line industry that go back well before 1945, but here's 1945 to 2006. Aside from that, the headboat landings were available starting in 1972 and the MRFSS data in 1981 and there was only three indices of abundance and when you look at those, you see that they're, with the exception of the commercial hand line index, subject to extremely wide confidence intervals.

How is this 1945 biomass determined that started this whole process? The model uses a catch at age model. There's no information on catch at age prior to 1984 and so the catch at age had to be estimated by the model and presumably the estimate was based on the pattern of catches in the more recent times.

The commercial landings extend back to 1927, but we start in 1945, 1946, landings data for headboats in 1972 and MRFSS in 1981. What's missing is early catch data for the recreational fisheries, early catch composition data that might be used to index recruitment, adequate recent catch composition data, reliable indices of abundance, and reliable biological inputs, such as the

natural mortality rate, fecundity, behavioral, seasonal distribution, and sub-stock identity and location.

The report says that the landing estimates for the first three years of available data for the headboats were averaged and the average was divided by the number of years between zero landings, which would have been 1945 or 1946, and the first catch estimates and that the landing estimates incrementally declined backwards to zero in 1946.

I don't have a picture from 1946, but Rusty gave me this one from 1945, where you can get an idea of what headboat landings looked like back there and here's 1969, which is almost twenty years later, and what they looked like then. I remarked to Rusty that the fish are a lot smaller in 1969 and this supports the decline in the age structure of the population and Rusty said, look at the dates. This was taken in July and this was taken in December.

He said the fish come in to the beach to spawn in the summertime and they move out in the wintertime and so that if you want to catch big fish close to shore, you go out in July and if you're a commercial boat or a hearty recreational fisherman, you can catch fish in the wintertime if you want to go fishing, but what is important to remember, he said, is that these fish move around and they're available seasonally and the size composition of whatever you're catching in any one day varies tremendously and so you need a good sample size in order to make any kind of inference about the population structure for any one year.

The working group -- This is a quote, again, from the data report. The working group considered several historic datasets for comparison with the recreational trends as a possible means for regressing recreational statistics back in time. The U.S. Fish and Wildlife Survey of Fishing and Hunting and Wildlife-Associated Recreation began in 1955 and is conducted approximately every five years. Due to several methodological changes over several time periods, the U.S. Fish and Wildlife Service does not recommend use of this dataset as a continuous time series and this dataset should not be used.

The data workshop agreed with this assessment, but the assessment workshop made this statement, that preliminary model runs suggested significantly higher landings in the earlier periods than were reflected in the landings. Now, the data workshop had provided the trend in landings that was graded down to zero. The assessment workshop decided to look for some additional --.

This is a quote, again, from the recreational working group. This is from the assessment working group. Although the recreational working group dismissed estimates from the saltwater angling reports, the assessment panel agreed that these estimates were at least as reasonable as the linear interpolation to zero in 1946 used by the recreational working group. Therefore, recreational landings were interpolated between zero in 1946 to 1981 with intermediate landings estimates used for 1960 and 1970.

Here's the comparison now between what the recreational working group had recommended and what the assessment group decided to use. The blue line extending back from 1980 to 1945 is what the data workshop suggested using. The red line with the big spikes on it is from the Fish

and Wildlife Service report and so you can see that there's quite a difference in the number of fish being taken. The landings are in thousands of pounds and so we're looking at almost six-million pounds at the top of that spike, whereas you're well under a million pounds for the recreational catches from the data workshop.

There was a mistake. After the completion of the assessment, it was discovered that the recreational landings in 1965 and 1970 had been transposed. Correction of these values affects not only the point estimates, but also estimates in surrounding years. Using the corrected recreational landings, the base assessment was rerun.

Here's the two versions. The double-hump version is the corrected version which was used for the assessment and the other, with the single hump in 1965, is the original assessment. That was one of the mistakes, but the second mistake is that the Fish and Wildlife Service reported the numbers of fish caught and the weight caught for each year. The assessment workshop only used catches by weight.

This is a summary of the Fish and Wildlife Service data. In 1960, they reported snappers and yellowtail snappers and the number and the weight and the average weight. In 1965, they decided to break out red snapper from snapper, which made quite a difference in the numbers of snappers, and the same in 1970. The assessment group prorated the 1960 snappers based on the ratio in 1965 and 1970 to get an estimate, but I ignored that in this particular table.

The important thing is that the Fish and Wildlife Service report indicated that the average weight of these fish was less than about three pounds, or about two-and-a-half years of age. If you compare that with the estimated catches at age from the SAR report for 1965 and 1970, the numbers reported by SAR are about half of what the Fish and Wildlife Service reports. The SAR numbers are estimated from the catch at weight and the selectivity that's assigned to the recreational catch.

The Fish and Wildlife Service numbers are estimated from the survey itself. You can argue that none of the survey data are very good and that may be, because there's obviously a huge raising factor that's involved. It's like the MRFSS data, but these are recalls from an interview of a guy is asked, do you go fishing and he says yes and what did you catch and he tells you and how many fish did you catch of that species and he tells you and what did they weigh and he tells you.

It's more likely that he'll remember what the fish weighs than he will remember exactly how many he caught, because he'll say well, they averaged many five pounds or three pounds, but I caught 103 or I caught 87 and that's a little more difficult. Although the data are bad, the weight is an important part of it and if you're going to use the dataset, it should be included.

Here's the selectivity curve that's used for the general recreational fishery, which is what gives us the catch at age table from the model. That produces the numbers of fish caught at age and the weight at age. This is the catch that reflects more what one might expect if the fish were small, as the Fish and Wildlife Service data suggests.

If we go back and look, we'll see that the SAR estimates of fish aged three or under are 30 percent and 35 percent of the catch and the Fish and Wildlife Service numbers are about 50 percent of the catch, since that's the average. The difference is that the assessment model is predicting that more old fish are being caught than the Fish and Wildlife Service data say are being caught. That's the big question, is whether or not this is the case.

The fact that there are data that suggest that these fish were smaller means that the selectivity curve that's being used, at least in the earlier period, is unlikely to be correct and something on this order might be closer to the truth. The answer to this is that the assessment methodology needs to be reexamined for selectivity. There's something wrong in the selectivity curve that's being used, evidently, and this is supported, of course, by observations from the fishery and the fishermen and that's one reason that I was interested in what Rusty had to say.

Now, the other area of interest is in the assessment itself. It shows that the stock has been at equilibrium for the past twenty-five years. Both the statistics on catches and the indices of abundance suggest that the level of fishing mortality is sustainable at current levels and the surplus production model that was run along with the age specific model also suggests that fishing mortality is close to being sustainable and the overfishing is not occurring.

It seems that there is some additional work that should be done and this includes exploring some alternative assessment models, such as the production model, which is less likely to be bothered by some of these selectivity problems in the earlier years. The selectivity problem needs to be reexamined. The problems that they're having with Beverton-Holt and the recruitment curve should be reexamined.

I'm suggesting that it would be useful to also model without considering discard mortality, just consider all the discards as part of the catch to see how much difference that made, because we were having quite a discussion on whether or not discards need to be controlled, and perhaps it's not any worse if say 90 percent of the commercial catch is going to die anyways and why not land it instead of throwing it away?

We need to collect some extensive data. I suggest this year and some of the people are already doing that, to see if they can get a better determination of the population age structure to see if indeed the older fish are missing from the population or whether it's just a matter of sampling properly.

Finally, it would be interesting to find out what the assumptions are that make this model so robust that evidently no matter what you do in terms of sensitivity analysis, with a couple of exceptions, you come out with the same answer. It doesn't seem that this is likely to have come from the indices, which are flat, but it's getting a signal from some place.

It doesn't seem to be coming from the catches in the earlier periods, particularly, since when you go back to the original proposal by the data workshop even it still gives you the same answer. There's something within the working of the model itself that is causing it to not perform in the way that one would expect if some of these inputs were varied the way they are. That's it at the moment and if there's any questions, I would be happy to answer them.

Dr. Belcher: Thank you for that. Questions or comments from the group? Thank you again, Dr. Hester, for the information.

Dr. Hester: Thank you. I appreciate the time and I'm a little disappointed that there's less interest on the part of the committee. I know you signed off on this. However, the discrepancies with the Fish and Wildlife Service data are actual and need to be addressed, I believe. I'm sure that if this were a scientific paper being considered for publication in a journal and a referee were to raise this kind of issue with the author, the author would have to respond.

I realize that you're under legal constraints to produce an answer and I appreciate your problems there, but I do think as scientists you should be able to at least address this issue so that you can truthfully say that this is the best scientific advice that we can give. Thank you.

Dr. Belcher: Moving down the agenda, we are at Future Meetings. December of 2009 and our next meeting is going to be in Atlantic Beach. It's December 6 through 8 and we'll be discussing -- Our potential discussion items are the Comprehensive ACL Amendment, Snapper Grouper Amendment 18, which is a final review, Mackerel 18, also a final review, SEDAR-19 progress report, discussion about unassessed stocks and MSY estimates and hopefully a progress report, the National SSC Workshop II report, which that meeting is currently scheduled for the week of November 10, which will be held in the Caribbean. That's going to be basically talking about where the other councils and SSCs are relative to the ABC control rules.

Then we have the national standards updates as well and with our spring meeting starting in 2010, that's where our meetings will start to shift away from the council and so we'll have more time to write reports before having to go and take them to the council and those, more than likely -- The first one is looking like late April and then the one in the fall will more than likely be mid-October, but it's looking like the venue will be in Charleston and, again, will be off-stagger with the council at that point in time.

Dr. Crosson: I'm just looking at the agenda of the SSC that's in the briefing book and under today's agenda for Snapper Grouper Amendment 17, it has Action, Provide Guidance to Staff and Recommendations to the Snapper Grouper Committee. Is there something we're supposed to be doing?

Dr. Belcher: I think that's what we were doing all along. As we were getting presentations, we were providing comments. At least that was my interpretation, because the way it's written in here it's kind of as we move down the presentations that was where we were interjecting comments and review. I don't know that there's an overall cumulative relative to 17. I think it was relative to components under 17. Is that incorrect, John?

Mr. Carmichael: No, that's correct, because in your roadmap you have a number of items listed under actions for this part. It's just one general action on the agenda. If there's anything else to add for Amendment 17, now would be a good time.

Dr. Williams: There is the one action item at the -- The very last one says consider approval of amendment as best available science.

Dr. Belcher: I asked for clarification on that. We will not do final review until December and so as such, that was probably just a carryover from a previous roadmap and we struck that off of the roadmap.

Mr. Carmichael: Considering doesn't mean you necessarily do it. I think you're considering that you're not ready to do that yet.

Dr. Belcher: To Other Business, does anyone have any other business they would like to discuss or bring up at this point in time? Seeing none, the only other item on the agenda is Report Preparation. Do we adjourn or do we not?

Mr. Carmichael: If you've concluded with your meeting and you're happy with all of your discussion, then you're adjourned and you guys can work on your report to the council, preparing your written report. Then that stands as what you recommend. If you're done with discussing everything and making recommendations and you're ready to start writing up from all of your vast notes over the week, then you adjourn.

Dr. Crosson: This is a question for John then. If we're going to be considering whether or not Amendment 17 -- Whether all the information that's going into there is best available science at our December meeting, remind me again what's the council's timeline for Amendment 17? Are they going to be dealing with it at this meeting or in the fall or what?

Mr. DeVictor: We have for the committee if they're ready to approve this document for public hearing at this meeting. That's highly unlikely that that's going to occur, due to all the complications that we've dealt with that we've talked about today. Most likely, the council will approve it for public hearings, at the earliest, in September.

You go out to public hearings in November and then after they review the public hearing comments, it's not until March or June that they approve it to go to the Secretary of Commerce. You should see the document again in a better state, a more complete state, when you meet again in December.

Dr. Williams: This probably doesn't need to be part of our regular business, but before we did adjourn I just wanted to make sure, could we get a report from the SSC Selection Committee? Do we know the results of that yet or can that not be divulged?

Mr. Carmichael: I believe we could get a report from the SSC Selection Committee, a preliminary report. They did meet. The SSC Selection Committee appointed the four individuals who had expressed interest in being reappointed to the SSC who were in the first round of the new three-year appointment process and that is Cooper, Belcher, Larkin, and Whitehead who were reappointed and so congratulations. Another three years on the SSC.

Of a number of new applicants, they appointed Chip Collier from North Carolina and John Boreman, a retired individual who lives in North Carolina also, to three-year terms and to maintain our distribution of members amongst the different terms and not have a big clump in any one year, they also appointed Matt Cieri, that many of you know, to essentially the two years

remaining in the term that was filled by Ken Pollack before he resigned. Matt will come in on a two-year term to keep our group fairly equal.

Those are the three new members that will be coming to you I guess in December and the SEP, the Socioeconomic Panel, they appointed our three SSC members, Scott Crosson, John Whitehead, and Sherry Larkin. They appointed Chris Dumas, who you know is a former SSC member, and they appointed Kurt Schnier, a fisheries economist at Georgia State, who you three are probably familiar with to some degree.

The committee is interested, because -- There's some confusion at the moment as to just how the committee is named and how it's described. We know what it's intended to do, but in dealing with the proposed rule out now for the council operating procedures, there's some concern as to whether it's called a committee or a panel and how it should function under different parts of the Act.

It's clear that this is intended to be a committee that deals with socioeconomic issues of a technical nature and brings them up to the SSC first. That's the level at which it will report. We'll work out those details, but as part of that, the committee is interested in having an SSC member who is also on that committee chair that committee, so that you have a good strong voice of the SEP at the SSC. We're kind of interested in whether Scott or Sherry or John is interested. Hopefully by the end of the week we can get an idea of if one of you three is interested in chairing that committee and decide amongst yourselves.

There's continued discussion of stipends and it looks like the way is being cleared for stipends to be paid to SSC members, as per the council chairs committee and getting basically similar guidelines to what the council members themselves fall under who are eligible for pay. We'll find out more about that and we discussed the SSC working under consensus and how well that seemed to be working at this meeting, which they were very glad to hear and look forward to seeing your report and additional detailed reports from you in the future.

We discussed your concerns raised about the agendas and getting reports and they agreed that there should be the -- The information that wants to come before the council of a scientific nature should be in a written format submitted to the council, which then can be reviewed by your chair and vice chair and they can decide if they believe that a formal presentation is necessary.

You'll review the report and it will be up to them to decide if you review it along with a formal presentation or you simply just review the report, but you'll serve as the peer review body for all science coming before the council and anything that comes in will vet through the chair and vice chair and I think that's going to help maybe deal with some of your workload timing concerns and I think we'll recognize, to the extent possible, we would like to get information in well in advance to get it on the agenda.

Stuff that comes in late we'll deal with kind of as we did here and if it's within time to add it to the agenda, it will be, but if it comes in kind of after the final agenda is in the Federal Register and it's a completely new topic, then it's probably something that will have to roll over until next time. Not quite willing to set a real strict deadline at this point and I think that's it. We've got

some new members coming and congratulations to the old members who are sticking around for another three years.

Dr. Belcher: Is there any other further discussion we need to have on the record or does everybody feel comfortable with all the discussions we've had over the past few days and is there anything we need to revisit or has everything pretty much been nailed down and closed up? Seeing no comments, I'll assume everybody is in agreement then that we can be officially adjourned.

(Whereupon, the meeting adjourned at 3:40 p.m., June 9, 2009.)

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DR. JIM WATERS
TONY LAMBERTE
ANDY STRELCHECK

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.

SSC Committee Meeting
Stuart, FL
Tuesday, June 9, 2009

NAME & ORGANIZATION	AREA CODE & PHONE NUMBER	P.O. BOX/STREET CITY, STATE & ZIP
JAMES G. HULL JR HULL's SEAFOOD	(386) 677-1511	111 WEST GRANADA BLVD ORMOND BEACH FLA. 32174
Melissa Recks, FWC	(561) 625-5122	8535 Northlake Blvd, WPB, FL 33412
Nick Farmer, SERO	(305) 4955554	263 13th Ave S, St Petersburg FL 33704
Bonnie Ponwith SEFSC	305-361-4264	75 Virginia Beach Dr Miami FL 33149
Dick Brame CCA	910-338-0012	WILMINGTON NC
David Nelson	386-566-8813	5918 Broken Bow Lane Port Orange, FL 32127
Rusty Hudson SFA ECFS/DSF	386-239-0948	POBx 11604, Daytona Bch, FL 32120-1604
Kari Maclauchlin U. Florida	3523758703	242 SW 2nd St, Gainesville, FL 32601
Pelican Seafood 461-2797	772-461-2797	735 N. U.S #1 Ft. Pierce, Fl 34950

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SSC Committee Meeting
Stuart, FL
Tuesday, June 9, 2009

NAME & ORGANIZATION	AREA CODE & PHONE NUMBER	P.O. BOX/STREET CITY, STATE & ZIP
Jon Polston Kings Seafood	386-756-7833	P.O. Box 291607 Port Orange FL 32129-1607
Frank Hester SFA ECFS		
Paul Nelson SFA ECFS	386-527-0733	736 Merrimac Dr Port Orange, FL 32127
SID PRESKITT SFA ECFS	321 212 8550	PO Box 22 Edgewater FL 32132
Dave Heil CFOA FRA	407-492-1991	1653 Jocline Ct Winter Park 32789
Scott Osborne SGAP	772 263-3548	1309 SELACONIA LN P.S.L. FL 34983
Joseph F Klostermann Jr	772-461-0499	251 Bimini D Ft Pierce FL 34949
Dennis Ottern FRA		

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SSC Committee Meeting
Stuart, FL
Monday, June 8, 2009

NAME & ORGANIZATION	AREA CODE & PHONE NUMBER	P.O. BOX/STREET CITY, STATE & ZIP
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Russell Hudson (SSF)	386-239-0948	POBX 11604 32120
Bob O'Boyle	902-446-1301	1042 Shore Dr. Bedford, N.S.
Wesley Patrick	301-713-2341 x137	NMFS HQ (SF3), Silver Spring, MD
Sid Preskitt	321-212-9550	PO Box 22 Edgewater, fl 32132
FRANK HESTER	52 1 613 100 332	2726 SHELTER IS. DR. SAN DIEGO, CA 92106
Holly Binns	850-322-7845	2107 Mulberry Blvd, Tallahassee, FL 32303
Leda Dunmire	305-393-0934	93 Manna Ave Key Largo FL 33037
NICK FARMER (SERO)	305 495 5554	263 13th Ave S, St Petersburg FL 33704

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SSC Committee Meeting
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SSC Committee Meeting
Stuart, FL
Monday, June 8, 2009

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Bill Murphy, Nielsen Golden Crab	954-830-5330	4501 SW 44th Ave, Fort Lauderdale, FL 33314
Howard Rau Gold Coast Lobster Co.	954-612-3176	1673 NE 36th St Oakland Park FL 33334
Randy Manchester	954-6329492	640 SW 8th terr Ft Laud. FL 33315
DAVID Nielsen	(954)-584-1289	2430 S.W. 80th ter Ft Laud FL 33314
Chris Bethell	954 9649181	4671 S.W 35th AVE FT. LAUD, FL 33312

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	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Species with Quota**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
2	Atlantic King Mackerel Quota=3,710,000		78% taken 2008/09	Start 3/1	4/16=22,815								
3	Gulf King Mackerel Eastern Zone Quota=1,040,625		**closed 3/6/09 105%**									Start 11/1	
4	Atlantic Spanish Mackerel Quota=3,870,000		66% taken 2008/09	Start 3/1	4/16=0								
5	Greater Amberjack Quota=1,169,931			3/16=511,567 3/31=588,026	**Closed 1/p/da or trip 4/30=610,661**	Start 5/1							
6	Wreckfish Quota=2,000,000	**Closed 1/15 on**	**Closed**	**Closed**	**Closed thru 4/15**								
7	Snowy Grouper Quota=84,000	Start 1/1		3/16=6,324 3/31=8,821	4/15=10,535 4/30=13,178	5/20=16,579							
8	Snowy Amend 17??	**Closed**	**Closed**	**Closed**	**Closed**	**Closed**	**Closed**	**Closed**	**Closed**	**Closed**	**Closed**	**Closed**	**Closed**
9	Golden Tilefish Quota=295,000	Start 1/1		3/16=143,331 3/31=184,193	4/15=225,538 4/30=252,482	5/20=263,955							
10	Golden Tilefish Am 17?? Quota, Area & VMS												
11	Red Porgy Quota=127,000	Start 1/1		3/16=679 3/31=741	4/15=741 4/30=741	5/20=2,165							
12	Black Sea Bass Quota=309,000			3/16=226,778 3/31=256,709	4/15=275,150 4/30=294,726	Closed 5/15 5/20=301,653	Start 6/1						
13	Red Snapper-Interim Rule	Closed??	Closed??	Closed??	Closed??	Closed??	Closed??	July/Aug Closed??	July/Aug Closed??	Closed??	Closed??	Closed??	Closed??
14	Red Snapper Am 17??	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures	closed & time/area closures
15	Vermilion Am 13C Quota=1,100,000	Start 1/1		3/16=87,241 3/31=136,432	4/15=153,000 4/30=175,691	5/20=205,957							
16	Vermilion Amend 16 Jan-June Q=315,523 July-Dec Q=302,523												
17	Gag Am 16 Quota=352,940	Start 1/1 retro to 1/1/											
18	Gag & Shallow water grouper closure (Am16)	**Closed 2010 on**	**Closed 2010 on**	**Closed 2010 on**	**Closed 2010 on**								

USE OF PRODUCTIVITY-SUSCEPTIBILITY ANALYSIS (PSA) IN SETTING ANNUAL CATCH LIMITS FOR U.S. FISHERIES: An Overview

MRAG

A report supported by

LENFEST OCEAN PROGRAM

Table of Contents

1 Introduction

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 1976 and the 1996 Amendments made progress toward recovery of depleted stocks and sustaining stock health. However, many stocks remain overexploited or have not been rebuilt (NOAA, 2007; Rosenberg *et al.*, 2006). As a result, the 2007 amendments reauthorizing the MSA are designed to improve accountability in management to prevent overfishing and rebuild stocks to levels that will support maximum sustainable yield.

Section 104 (a)(15) of the 2007 MSA reauthorization establishes "a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability." Annual catch limits are the amount of each type of fish allowed to be caught in a year. Congress has set a "no fail" deadline to establish catch limits for all fisheries experiencing overfishing by 2010, and 2011 for all other fisheries.

In January 2009, the National Marine Fisheries Service (NMFS) published a final rule to implement the new MSA requirements and amend the guidelines for National Standard One (NS1), including overfishing levels (OFLs), annual catch limits (ACLs), annual catch targets (ACTs), and accountability measures (AMs). Regional fishery management councils are now responsible for developing ACLs and AMs for each fishery management plan. For many fisheries, data are too limited to permit traditional analyses for the determination of current stock or overfishing status. Without a means to objectively determine overfishing levels and a fishing mortality at or below overfishing, regional management councils will likely set ACLs using conservative best guesses. Rosenberg *et al.* (2007) recommended a straightforward process for establishing sustainable catch limits for all species, including those that lack sufficient scientific data; this included procedures for estimating catch levels in data poor situations.

Rosenberg *et al.* (2007) proposed a precautionary procedure for setting ACLs based on requirements of the MSA:

- ***As a default or starting point, preventing overfishing applies to ALL stocks, therefore, so should ACLs.***
- ***To successfully end and prevent overfishing, OFL > ABC ≥ ACL.***
- ***ACLs should account for uncertainty in stock status and risk of overfishing for each stock.***
- ***Consideration of risk must include some evaluation of the vulnerability of a stock to the fishery.***
- ***The buffer or distance between the ACL and the OFL should be greater when the risk of overfishing is higher (i.e., when uncertainty is greater or the consequences of overfishing as expressed by vulnerability of the resource is higher).***

Central to the precautionary approach for setting ACLs proposed by Rosenberg *et al.* (2007) is determination of the "buffer" needed between the OFL and the ACL designed to increase the probability that overfishing doesn't occur and that rebuilding proceeds as needed. That is, the process is designed to determine how far the ACL should be set below the OFL to account for the various sources of scientific and management uncertainty referred to in the principles above. In general, buffers need to increase as risk of overfishing increases and amount of information decreases; conversely, low risk and more information allow a smaller buffer. This process will require a risk-based assessment using the procedure of Hobday *et al.* (2007) for all species.

1.1 The Risk Based Assessment

In July and August 2007, MRAG Americas convened a working group of experts (The ACL Working Group) in fisheries science and management to discuss applying the ACL and AM requirements to all species caught in U.S. waters. The ACL Working Group found that the framework developed by a recent joint Australian Commonwealth Scientific Industrial Research Organization (CSIRO) and Fisheries Management Authority (AFMA) project (Hobday *et al.*, 2006) for Ecological Risk Assessment for the Effects of Fishing (ERAEF) provides a good basis for a precautionary evaluation of vulnerability of fishery resources.

The Working Group recommended the Productivity and Susceptibility Analysis (PSA), which is the second level of a three level Ecological Risk Assessment for the Effects of Fishing (ERAEF), for this purpose. The Marine Stewardship Council (MSC) also uses the PSA (plus the Level 1 Scale Intensity Consequence Analysis) in a pilot program to assess sustainability of data deficient stocks (Hobday, 2007).

The PSA approach is a method of assessing a fishery species or stock based on a comprehensive screening of risk for a set of predetermined measurable attributes. The PSA methodology employed here was adapted from Hobday *et al.*, 2007. The results of the PSA measure risk from direct impacts of fishing only. In this case it is intended to illuminate if management complexes and regulations are appropriate for a given group of stocks and aid in the development of annual catch limits as mandated by the Magnuson-Stevens Reauthorization Act (MSRA).

The PSA approach is based on the assumption that the risk to a species will depend on two characteristics: (1) the productivity of the unit, which will determine the rate at which the unit can sustain fishing pressure or recover from depletion or other impacts due to the fishery; and (2) the susceptibility of the unit to fishing activities. The PSA analysis essentially measures the relative risk or the vulnerability of the resource to the potential for fishery impacts. This approach is especially useful as it allows for a baseline comparison between many species with varying levels of available information. In the stocks discussed below, there are cases where full assessments have been regularly conducted, while for other stocks little is known other than distribution or life history characteristics.

The PSA approach examines attributes of each unit (stock or assemblage) with respect to productivity or susceptibility to provide a relative measure of risk to the unit. Productivity is measured by averaging the seven attributes outlined in Table 1. Susceptibility is estimated as the product of four independent aspects; Availability, Encounterability, Selectivity and Post-capture Mortality (PCM); these aspect values are composed of attributes.

Table 1. Productivity and susceptibility attributed utilized to score the risk to a unit.

	Attribute
Productivity	Average age at maturity
	Average size at maturity
	Average maximum age
	Average maximum size
	Fecundity
	Reproductive strategy
	Trophic level
Susceptibility	[illegible]
	[illegible]
	[illegible]
	[illegible]

The productivity and susceptibility rankings determine the relative vulnerability of the unit of analysis (stock or assemblage) and are given a score (1 to 3 for high to low productivity, respectively; and 1-3 for low to high susceptibility, respectively). The output is graphed to produce a PSA plot (Figure 1). Overall risk scores are classified as follows: High (> 3.18), Medium (2.64 – 3.18) and Low (< 2.64) (Hobday *et al.*, 2007).

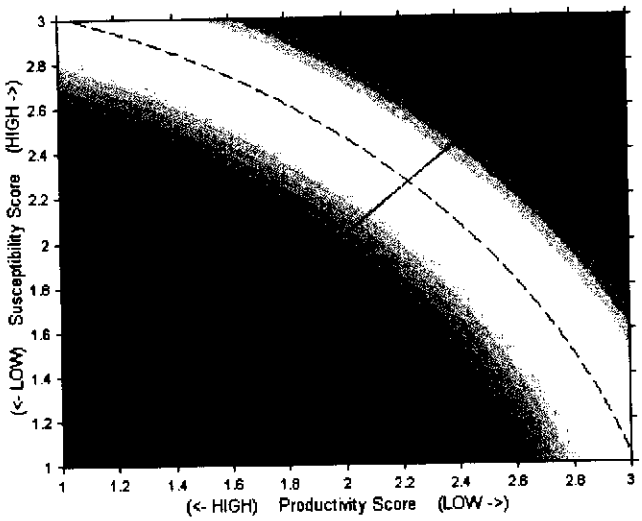

Figure 1. The PSA Plot. The *x*-axis includes attributes that influence the productivity of a unit, or its ability to recover after impact from fishing. The *y*-axis includes attributes that influence the susceptibility of the unit to impacts from fishing. The combination of susceptibility and productivity determines the relative risk to a unit, i.e. units with high susceptibility and low productivity are at highest risk, while units with low susceptibility and high productivity are at lowest risk. The contour lines divide regions of equal risk and group units of similar risk levels (Hobday *et al.*, 2007).

1.2 Information Collection

Productivity and Susceptibility Analyses (PSA) were conducted for fishery stocks from the Atlantic HMS Division, Northeast, Mid-Atlantic, South Atlantic, Gulf of Mexico and Pacific. All stocks are managed through federal fishery management plans and many have been the subject of stock assessments. Considerable time was spent collecting regionally specific information, where available for each unit. Reports and scientific publications were often consulted for the most recent and accurate information, along with stock assessments, FMPs, NMFS and other fishery management (i.e. State Fish and Wildlife Departments) websites for species specific information. When regionally specific information was unavailable, more generic species-level information was used (e.g., from Fish Base http://www.fishbase.org). All collected values for use in the PSA are sourced. In the absence of information, an attribute was given a default high risk score, in accordance with the CSIRO's treatment of uncertainty in their ERAEF methodology. Those units that were given a high score due to uncertainty in at least one attribute are indicated by open symbols on the resulting PSA plots (provided for groups of stocks in each region). Subsequently, attribute values assigned for each species were reviewed by experts for accuracy. Expert opinion provides access to additional information to add to the vulnerability assessment based on intimate knowledge of the species and fishery that would have been otherwise unavailable for our analyses. The resulting productivity and susceptibility scores for each species were plotted on a PSA graph; regional results are provided as appendices to this report.

1.3 A Note about our Productivity Susceptibility Analysis Methodology

The PSA methodology is a powerful tool that allows stakeholders and regulators to gain perspective on the inherent risk of a fishery stock to fishing activities. It also allows scientists to clarify specifically where information is lacking and where to focus resources to collect more information, since attributes weigh differently on risk. The methodology employed here was adopted from the CSIRO method as adjusted for the Marine Stewardship Council. MRAG made appropriate adjustments with respect to scoring guidelines for each attribute for US stocks. These analyses were limited by the timeframe for the study, but provide a powerful evaluation of vulnerability. They could be strengthened by stakeholder consultations and increased fishery specific information, to fine-tuning the determinations in the future. Additionally, this method does not weigh the status of the stock into the risk evaluations, which is undoubtedly critical. We have identified stock status, where known, for each species. Consistent with the definitions used by NOAA Fisheries as described in the MSA, overfishing is occurring when the fishing mortality rate has exceeded F_{MSY} (the fishing mortality rate that maximizes catch biomass in the long term), and a stock is overfished when the current biomass is less than the sustainable target (typically the minimum stock size threshold set below B_{MSY}). Councils, NMFS, and other management activities should incorporate some measure of stock status, if available, into a final assessment of overall risk score.

2 PSA Expert Working Group

The Productivity Susceptibility Analysis (PSA) Workshop was convened in January 2009, in Boston, MA. The workshop was composed of participants from the scientific (including one of the authors of the ERAEF PSA process), NGO, and management communities. Workshop participants reviewed the methodology conducted by MRAG Americas and the recommendations developed by the NMFS Vulnerability Evaluation Work Group (VEWG) (select members were also in attendance at the PSA WG) in consideration of changes to be made to the existing Productivity and Susceptibility analyses. Details of the Workshop discussions and recommendations are provided in the PSA Workshop Report.

Briefly, the PSA Workshop was tasked to

1) Establish the specific details of a methodology for conducting Productivity and Susceptibility Analysis (PSA) for all U.S. fishery stocks that will be applicable for use by U.S. Fishery Management Councils. Including:
   a) the development of appropriate scoring guidelines that serve as risk cut-off scores for attributes, and address the potential applicability of alternate scoring guidelines for divergent resources
   b) selection of the appropriate type and number of Productivity and Susceptibility Attributes to use in the vulnerability assessment of fishery stocks
   c) development of a risk score threshold appropriate to increase resolution and deal with uncertainty
2) Develop a method to incorporate vulnerability assessments into setting catch limits for data-poor stocks based on a model to simulate the performance of a specific

Annual Catch Limit (ACL) with various buffers (i.e. different proportions of ACL) developed by MRAG Americas

3) Promote a method for use in calculating PSA for stock complexes (multiple species or populations group for management purposes).
4) Provide a consistent set of guidelines for future PSA analyses. This will inform the current work of the National Marine Fishery Service (NMFS) and Councils about how to deal with a very large number of stocks were data are limited.

With regard to the analyses conducted and the results provided herein, item (1) from above reflects specifically on the methodology. Workshop recommendations included adjusting the PSA to include attributes and scoring guidelines developed by the NMFS VEWG. The NMFS VEWG spent considerable time determining the appropriate attributes that most related to vulnerability (susceptibility and productivity). Once a suite of attributes was determined, they selected risk bins based on expert opinion to serve as cut-off scores for the various attributes. The appropriateness of the chosen attributes was tested by conducting the PSA on case study fisheries. There was considerable overlap in the attributes by Hobday *et al.* (2007) and those chosen by the NMFS VEWG; however the NMFS VEWG did not utilize a nested approach to score susceptibility (where aspects of susceptibility are composed of attributes). Their process was designed so that the attribute tables used in scoring vulnerability would be populated by expert opinion. This differs considerably from the information collection conducted by MRAG Americas, which relied on generally available information. For this reason it is not appropriate to directly apply their suite of attributes to the MRAG methodology (by Hobday et al. and modified) as recommended by the Workshop participants. However, the updated PSA methodology was adjusted according to the Workshop recommendations that appropriately fit within the boundaries and continuity of the analyses. This did include application of a number of the NMFS VEWG findings.

The summary of changes is provided below, and tables illustrate the changes to the cutoff scores and susceptibility attributes.

- The seven productivity attributes utilized in the interim analyses were maintained, but cut-off scores were adjusted as determined by the NMFS VEWG (Table 2).
- The aspects of susceptibility (Availability, Encounterability, Selectivity, and Post Capture Mortality) were maintained (Table 3).
- Fishery desirability, measured as commercial catch value of the fishery in lbs/S, was added as a susceptibility attribute incorporated into selectivity. Where catch was less than 10 tons, fishery was assumed undesirable and scored low risk (Table 4).
- Each aspect (Availability, Encounterability, Selectivity, and Post Capture Mortality) score is now calculated as averages of composite attributes and the susceptibility score is additive of the aspects (Table 5).
- Charted results use different symbols to differentiate when a vulnerability score includes lack of information (precautionary high risk) versus those that are fully informative.
- The Workshop participants agreed that PSAs should be conducted at the fishery level; the results provided here represent updates to the interim assessments and are therefore maintained as stock level PSAs.

Table 2. Cut-off scores for productivity attributes.

	Low productivity (high risk, score=3)	Moderate productivity (medium risk, score=2)	High productivity (Low risk, score=1)
Average age at maturity	>4 years	2-4 years	<2 years
Average maximum age	>30 years	10-30 years	<10 years
Annual Fecundity	<1,000 eggs per year	1,000-20,000 eggs per year	>20,000 eggs per year
Average size at maturity	>50 cm	30-50 cm	<30 cm
Average maximum size	>150 cm	60-150 cm	<60 cm
Reproductive strategy	Live bearer	Demersal egg layer	Broadcast spawner
Trophic Level	>3.5	2.5-3.5	<2.5

Table 3. Susceptibility aspects.

	Aspect	Description
Susceptibility	Availability	
	Encounterability	The likelihood that a species will encounter fishing gear that is deployed within the geographic range of that species
	Selectivity	The potential of the gear to capture or retain species and the desirability (value) of the fishery
	Post Capture Mortality	The condition and subsequent survival of a species that is captured and released (or discarded)

Table 4. Desirability cut off scores, adapted from the NMFS VEWG.

Description	Risk Score

Table 5. Susceptibility aspects with component attributes.

	Aspect	Attribute
Susceptibility	Availability	
	Encounterability	Habitat Bathymetry
	Selectivity	Size at Maturity Maximum Size Desirability
	Post Capture Mortality	Post Capture Mortality

3 Summary of Regional PSA Results

One hundred and forty-three stocks in Federal fishery management regions were selected by the Lenfest Ocean Program for review, belonging to five regions including the NMFS Atlantic HMS Division; an additional 26 Gulf of Mexico stocks were also assessed. Table 6 below provides a summary of the number of stocks from each region where analyses resulted in low, medium and high overall risk scores. The majority of stocks evaluated have high risk scores (Figure 2).

Table 6. Summary of overall risk scores by region for the full 169 stocks evaluated (results include Gulf of Mexico stocks).

	Overall Risk Score		
	Low		High
HMS (50)		2	48
Northeast (14)		7	7
Mid Atlantic (4)		3	1
South Atlantic (73)	4	25	44
Gulf of Mexico (26)		8	18
Western Pacific (2)		1	1
Total	4	46	119

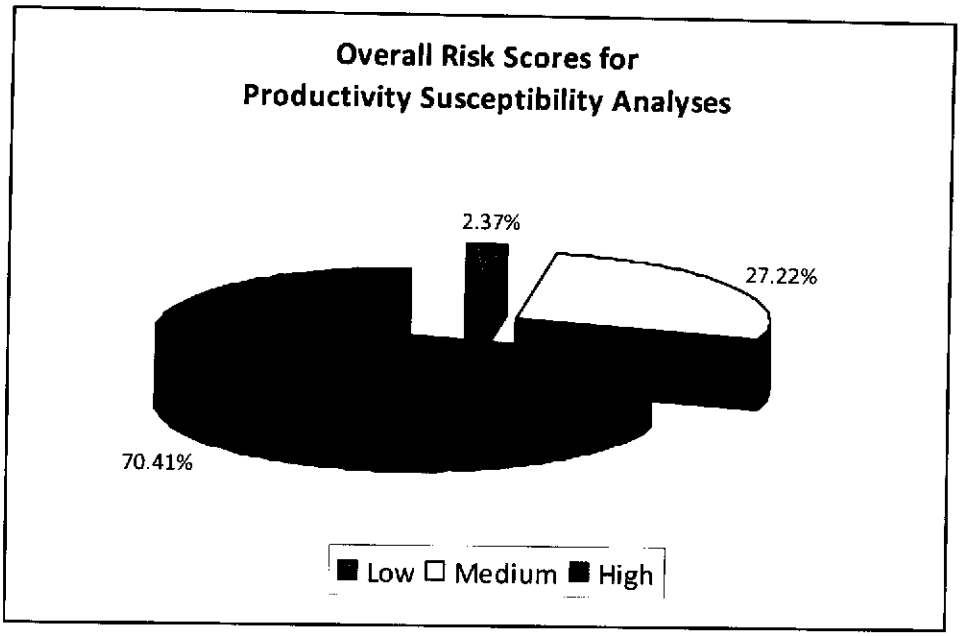

Figure 2. Percentage of high, medium and low overall risk scores from PSA analyses for 169 stocks in 6 regions.

4 References

Hobday, A.J., A. Smith, H. Webb, R. Daley, S. Wayte, C. Bulman and J. Dowdney. 2006. Ecological Risk Assessment for the Effects of Fishing: Methodology. Report R04/1072 for the Australian Fisheries Management Authority, Canberra.

Hobday, A. J., A. Smith, H. Webb, R. Daley, S. Wayte, C. Bulman, J. Dowdney, A. Williams, M. Sporcic, J. Dambacher, M. Fuller, T. Walker. 2007. Ecological Risk Assessment for the Effects of Fishing: Methodology. Report R04/1072 for the Australian Fisheries Management Authority, Canberra.

Hobday, A. J. 2007. Including a Risk-Based Component in the MSC Certification Process: a Solution for Data-Deficient and Small-Scale Fishery Assessments. Guidance document for the Marine Stewardship Council, London, June 2007.

NOAA Fisheries. 2007. 2007 Status of US Fisheries: Report to Congress. http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm

Rosenberg, A.A., J.H. Swasey and M. Bowman. 2006. Rebuilding US Fisheries: progress and problems. Front. Ecol. Environ. 4 (6), 303-308.

Rosenberg, A., D. Agnew, E. Babcock, A. Cooper, C. Mogensen, R. O'Boyle, J. Powers, G. Stefánsson, and J. Swasey. 2007. Annual Catch Limits Report from the Lenfest Working Group. Lenfest Ocean Program.

Smith, A. D. M., Fulton, E. J., Hobday, A. J., Smith, D. C., and Shoulder, P. 2007. Scientific tools to support the practical implementation of ecosystem-based fisheries management. ICES Journal of Marine Science, 64: 633–639.

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RESEARCH SERIES

SEPTEMBER 2007

A new approach to setting catch limits may help end overfishing in the United States.

SETTING ANNUAL CATCH LIMITS FOR U.S. FISHERIES

SUMMARY OF AN EXPERT WORKING GROUP REPORT:

Rosenberg, A., Agnew, D., Babcock, E., Cooper, A., Mogensen, C., O'Boyle, R., Powers, J., Stefánsson, G., and Swasey, J. 2007. Setting annual catch limits for U.S. fisheries.

WHEN THE U.S. CONGRESS reauthorized the Magnuson-Stevens Fishery Conservation and Management Act in 2006, it included requirements to specify annual catch limits and accountability measures for all fisheries that would prevent overfishing. In July and August 2007, the Lenfest Ocean Program convened a working group of experts in fisheries science and management to discuss applying these requirements to all species caught in U.S. waters.

The Expert Working Group developed a straightforward process for establishing sustainable catch limits for all species, including those that lack sufficient scientific data. The Group recommended a process for determining the appropriate level of precaution to ensure that overfishing does not occur, and outlined procedures for estimating catch levels in data poor situations. The Group produced a report titled "Setting Annual Catch Limits for U.S. Fisheries: An Expert Working Group Report." This *Lenfest Ocean Program Research Series* report is a summary of the Expert Working Group's findings.

ESTABLISHING A PRECAUTIONARY BUFFER

The Expert Working Group recognized that the most significant component in preventing overfishing is establishing a precautionary buffer between the scientific overfishing limit and the annual catch limit set by fishery managers. This buffer would address uncertainties in both science and management.

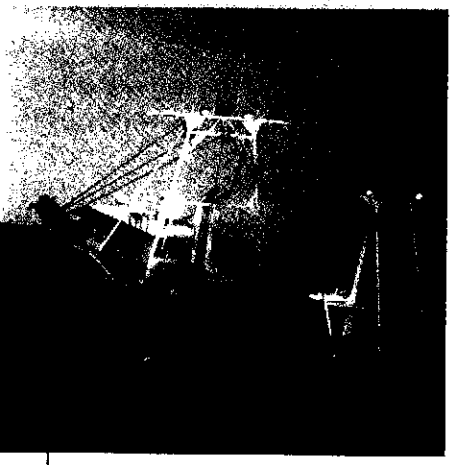
To set effective catch limits, the Group recommended that managers evaluate: (1) the vulnerability of the fish population to fishing pressure; (2) the uncertainties in scientific information about the status of the fish population; and (3) the uncertainties in the effectiveness of management tactics. From this information, scientists can determine a sufficiently precautionary buffer to help ensure that overfishing does not occur.

The buffer would determine how much lower to set the annual catch limit below the established overfishing level (OFL) or the acceptable biological catch (ABC) (see Box 1). In practice, greater precaution should be employed when: (1) the resource is more vulnerable; (2) there is high scientific uncertainty about the status of the population; and/or (3) there is high uncertainty about the effectiveness of management measures. For example, a fishery for a species that reproduces at an early age and for which there is good information and effective management might only need a small buffer. However, the buffer should increase if there is limited information about the fish population, the target fish is slow to reproduce, and/or fishery performance indicate that the overall catch from the fishery has not been well controlled. Focusing on the size of the buffer provides consistency in the process of dealing with various sources of risk.

BOX 1: OFL, ABC AND ACL: THE ALPHABET SOUP OF CATCH LIMITS

All regional Fisheries Management Councils establish an overfishing level (OFL), which is an estimate of the annual catch that can be taken without overfishing the resource. Some Councils also establish an acceptable biological catch (ABC) which is lower than the overfishing level and takes into account various sources of uncertainty. The Expert Working Group agreed that the acceptable biological catch (ABC) should be the upper limit for managers when setting the annual catch limit (ACL).

Uncertainty is inevitable and should be accounted for in setting annual catch limits.



One of the greatest challenges to implementing annual catch limits is the lack of sufficient scientific information for all species. The Expert Working Group stressed that catch limits need to be applied to all fish populations, not just those that constitute the majority of the catch or where extensive data are available. The Group recommended procedures for estimating catch levels in data poor situations, and cautioned against grouping fish populations of differing vulnerabilities into assemblages.

To implement these concepts, the Expert Working Group recommended that the process for setting annual catch limits follow five steps:

1. Scientists evaluate the vulnerability of the fish population based on an analysis of its productivity and susceptibility to fishing (see Box 2 and Figure 1).
2. Scientists estimate a sensible overfishing level for each population based on the concept of maximum sustainable yield, and estimate uncertainty in the knowledge of stock status and trends.
3. Managers decide on an acceptable level of risk of exceeding the overfishing level, considering the vulnerability of each resource and the consequences of overfishing.
4. Scientists recommend an appropriate buffer size between the established overfishing level/acceptable biological catch and the annual catch limit to provide reasonable assurance that overfishing does not occur.
5. To ensure accountability in the process, managers and scientists may then adjust the size of the buffer between the established overfishing level/acceptable biological catch and the annual catch limit depending on whether the fishery adheres to the catch limit and achieves the management goals.

BOX 3: U.S. FISHERIES MANAGEMENT

- Federal fisheries are managed by eight regional Fishery Management Councils and the Secretary of Commerce.
- 46 Fishery Management Plans are presently established.
- These Plans include over 1,000 species organized into 530 stocks or stock assemblages.
- About 230 of these 530 stocks or assemblages are classified as major (i.e., considered target or important stocks).

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Opinions expressed herein are of the authors only and do not imply endorsement by any agency associated with the authors.

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This Lenfest Ocean Program Research Series *report is a summary of a detailed report drafted by the Expert Working Group at and following two workshops in July and August 2007. MRAG Americas, Inc. convened the Expert Working Group and prepared the detailed report. The report is published at www.lenfestocean.org/publications/EWG_catch_limits.html.*

This study was initiated and supported by the Lenfest Ocean Program. The Program was established in 2004 by the Lenfest Foundation and is managed by the Pew Environment Group. For more information about the Program or a copy of the report, please visit www.lenfestocean.org or contact us at info@lenfestocean.org.

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BOX 2: CHARACTERIZING UNCERTAINTY

Vulnerability Analysis:
An evaluation of the ability of a fish stock to produce Maximum Sustained Yield on a continuing basis under a given level of fishing pressure. Stocks are more vulnerable if their *productivity* is low because of slow reproduction rates or other factors in the life history of the species, and/or they have high *susceptibility* to impacts from fishing effort due to factors such as: (1) direct capture by the fishing gear, (2) impacts from the fishing gear on their essential fish habitat, and/or (3) an already reduced population size.

Productivity and Susceptibility Analysis (PSA):
A ranking of the relative vulnerability of differing fish populations by mapping the populations in a chart that reflects both susceptibility and productivity scores. These rankings are based on information from knowledgeable experts (see Figure 1).

PRINCIPLES FOR GUIDANCE

Although the Expert Working Group focused on U.S. fisheries under federal authority, the recommended process is applicable to international, state and intrastate managed fisheries and builds on efforts underway around the world. While this is a conceptual framework, it can be implemented relatively quickly and is easily adapted as new information becomes available.

Additionally, the Expert Working Group identified a set of principles to guide the process and ensure consistency across fisheries:

- Annual catch limits and accountability measures should apply to all stocks, including data poor and minor components of the catch.
- Uncertainty about stock status and the efficacy of management measures is inevitable and alters the probability of overfishing. These factor should be accounted for in setting acceptable biological catch levels and annual catch limits.
- Consideration of risk must include some evaluation of resource vulnerability, including stock productivity and the susceptibility of a stock to fishing pressure.
- Grouping of stocks into assemblages for management should be avoided where possible because vulnerability and the consequences of overfishing primarily relate to individual stocks of fish.
- Setting and maintaining annual catch limits for each fishery in the United States should be considered a performance measure for that fishery and a basis for assigning accountability to managers and to the fishery.

FIGURE 1
Productivity and Susceptibility Analysis scores can reveal differences among species and different fisheries in risks of overexploitation.