SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

Hilton Garden Inn
North Charleston, SC

April 20-22, 2010

DRAFT MINUTES

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Dr. Luiz Barbieri, Vice-Chair
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Chip Collier
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Dr. Scott Crosson
Dr. Matt Cieri
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The Scientific and Statistical Committee of the South Atlantic Fishery Management Council convened in the Hilton Garden Inn, North Charleston, South Carolina, Tuesday morning, April 20, 2010, and was called to order by Chairman Carolyn Belcher.

DR. BELCHER: Okay, I welcome everybody to the April SSC meeting; our first meeting that we're actually separated from the council. I appreciate everybody being here. We've obviously got a very busy agenda relative to ABCs and OFLs. Alex, I'm going to start down at your end of the table.

MR. CHESTER: My name is Alex Chester. I am a research fishery biologist from Miami, Florida.

MR. COLLIER: Chip Collier, fisheries biologist, North Carolina Division of Marine Fisheries.

MS. LANGE: Anne Lange, fisheries biologist, South Carolina.

DR. WILLIAMS: Erik Williams, National Marine Fisheries Service, Beaufort.

DR. REICHERT: Marcel Reichert, South Carolina DNR.

DR. BARBIERI: Luiz Barbieri, Florida Fish and Wildlife Conservation Commission.

DR. BELCHER: Carolyn Belcher, Georgia DNR.

MR. CARMICHAEL: John Carmichael, South Atlantic Council.

DR. WHITEHEAD: John Whitehead, Appalachian State University.

DR. CIERI: Matt Cieri, Maine DMR.

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

DR. JIAO: Yan Jiao, Virginia Tech.

DR. LARKIN: Sherry Larkin, University of Florida.

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

**DR. BELCHER: The first item on the agenda is the approval of the agenda. John and I are adding in, after Item Number 4, which is the election of chair and vice-chair, a discussion to talk about the appointments that we still need to fill for Goliath grouper and spiny lobster, so be thinking about your availability relative to helping us with the review and the update workshops. Anybody else have any further comments or suggestions for changing the agenda? Seeing none, the agenda will stand as is without that one minor edit.

**The next item is approval of the December 2009 minutes. Anybody have any comments or edits that need to be made to the minutes of that meeting? Seeing none, the minutes will stand.

**Item Number 2 is nominating SSC candidates. Those of you who were on the cycle for renewal this last go-round were asked to basically resubmit your CVs for reconsideration, but we're also looking to entertain some additional folks as potential candidates for the SSC Selection Committee. Does anybody have anyone that they would like to see as potential applicant or to be added to the pool? Does anybody know of anybody who might be interested? Marcel.

DR. REICHERT: Jason Murray, who is the faculty at the University of South Carolina, he is a resource economist, I believe; I think he would be interested and I think he would be a good addition to the SSC.

DR. JIAO: For those that we have already nominated, we don't need to renominate here?

MR. CARMICHAEL: You can just comment that you forwarded a name to us. For the other members, that would be good.

DR. JIAO: You want me just to restate it again. I e-mailed John and recommended George Sugihara from the University of California.

DR. BELCHER: Thank you for those names. If anybody thinks of any along this timeline or in between meetings, too – this doesn't have to be done necessarily on the record, but if you've talked to any colleagues in passing that you feel might be interested, please feel free to let them know that they can send their information into John and it can at least be put in the queue for future consideration. Update on the 2010 National SSC Workshop.

**MR. CARMICHAEL: For those who haven't heard, the South Atlantic Council is hosting the 2010 National SSC Workshop. It will be here in Charleston October 18-22. Our meeting space is at the Marriott where the council has met several times. We're working on some sort activity for folks at the aquarium, and the same cast of characters that have worked on the program, representatives from each council and Rick Methot from NMFS are working on the topics and the agendas and such at the moment.

We've fleshed out the general plan for what we're going to discuss at this workshop. The first one, we largely focused on the policies and procedures of the SSC. At the second one last year we talked a lot about ABC control rules and things under the new Act. For this round we expect to have the final rule on National Standard 2 that we discussed the last time with the proposed rules. That final rule should be out, so we'll get a report on that from NMFS. We also will ask each council to give a report on where they stand as far as implementing the ABC control rules that we talked about last year, and really kind of get into more of the implementation stage of the things under the new Act and how the SSCs are responding to it and how they're developing their recommendations; what seems to be working out; how the control rules have evolved over time.

Our intent is that we continue to build on this stuff and there is some thought that next year, when we hope to have another meeting, the next obvious step would be to get into more of the social and economic concerns that would come into play once we've dealt with OFLs and ABCs and things of that nature.

The Coordinating Committee hopes to have a final agenda near the end of next month, so that it could be considered at the Chairs meeting or at least give them a report on it as well at the Council Chairs, which will meet in May. Then we will be contacting the councils about deciding who is going to participate. The normal plan is that we ask for three SSC members from each council, the chair, the vice-chair and one other.

I would hope that given the proximity for our region we can get more participation and certainly local people who are on our SSC, which we have a couple, can definitely come over and we'll see about getting you covered perhaps for some daily per diem or something on that. Each council has the opportunity to appoint additional people.

In the grant that the council has to run the national meeting there is coverage for three travelers, but I think the Mid-Atlantic and the Gulf Council are both interested in sending some additional people, so we expect a pretty good turnout at this meeting. I don't think I mentioned it will be chaired by Carolyn. I don't know if I told her that or not. We're back to the normal process as well where the standard is that the hosting council's SSC Chair chairs the workshop.

If you have any ideas for topics, feel free to forward them up to me and we will pass them to the group. One other thing is last year we discussed doing a bit of an SSC exchange and trying to send SSC members to other SSCs during their actual meetings to see how they function and interact with each other, and so far none of us have really made a whole lot of progress on that front. What we agreed to do was each council is supposed to be submitting their SSC meeting information to Dave Witherell out at the North Pacific and he is going to post them on to the council's website.

All the councils together have a fisheries council website. Things like the National SSC Workshop Reports are there and other national level documents that affect all the SSCs. There is going to be a listing there of the SSC meetings for all the SSCs around the country. If you're perhaps interested and have some time that you might be able to attend another SSC, you can check that out and I'll try to remember to send the link to that to everybody if I haven't already, and you can see when they are.

It would be great if sometime this summer, before the meeting in October, we could have one our SSC members go attend another SSC meeting. Maybe you want to go and meet with the Pacific Islands – they were meeting in Guam when we had one of our conference calls – or maybe Hawaii. I think there is a meeting in Anchorage. I know there are probably some nice meetings up in New England in the summer, which might be a nice change of pace for those us from the south. Anyway, that is the National SSC. There will be another one and it will be this fall and it is going to be our gig so we have got our work cut out for us.

**DR. BELCHER: Item Number 4 is the election of chair and vice-chair. Normally we do this with our June meeting, but obviously now that we've kind of offset ourselves from the council, it comes up this meeting. At this point in time we will discuss your recommendations for your chair. Does anyone have any people that they would like to see nominated?

DR. BARBIERI: I nominate Carolyn Belcher for chair.

DR. BELCHER: Any other nominations?

MR. CARMICHAEL: You can move the nominations be closed.

DR. CIERI: I would move that nominations be closed.

DR. REICHERT: Second.

DR. BELCHER: All right, with that I guess I continue on as chair. Now we open nominations for the vice-chair. Currently it's Luiz.

DR. REICHERT: I nominate Luiz.

DR. WHITEHEAD: Second.

DR. BELCHER: Okay, so with the second Luiz will continue on as vice-chair for the group.

MR. CARMICHAEL: Unless there are further nominations.

DR. BELCHER: I guess we didn't close out for nominations. No other nominations?

DR. WHITEHEAD: Move to close.

DR. REICHERT: I second that.

DR. BELCHER: So with that Luiz will continue on as vice-chair. The next item, like I said, that we're adding into this is relative to filling spots that we need for reviews and update committees for spiny lobster and Goliath grouper.

**MR. CARMICHAEL: For spiny lobster we talked about who would participate in the workshops in December and Sherry was hoping to be able to participate, but with the timing of the event it is not going to work with her schedule. We would like someone who could participate in the webinars for the assessment. There is going to be a couple of webinars and then there is a face-to-face meeting to wrap things up, September 28-30.

We would like somebody to participate in that. It would be nice to get one SSC member to take part in that. Then we have a review. The review is going to be set up for the week of November 15-19, I think the dates are. It is the week following your SSC meeting. Your SSC meeting will

be here in Charleston. The review will be in either Key West or Tampa/St. Pete – I don't think we finalized the location.

The plan for the review is that Goliath would happen on Monday, Tuesday and Wednesday and then spiny lobster on Thursday and probably half of Friday. Matt has agreed to participate in the Goliath review, and perhaps he wants to come down early or stick around a little bit longer and do spiny lobster as well, if that will work in his schedule, but we could have a couple of other SSC members. We also need a chair for the Goliath. That's a benchmark so it's an SSC Chair. I believe that Luiz Barbieri may be interested in doing that; and as a representative of both the Gulf and the South Atlantic SSCs, he would probably be a good candidate; is that correct?

DR. BARBIERI: Yes, let's do it.

MR. CARMICHAEL: So Luiz will be offered up to the councils as the chair for the Goliath review; Matt as one reviewer; and is anyone else able at that time to participate in the Goliath review? Goliath is November 15-17. What we'll do is offer these for approval by the council in June.

DR. BELCHER: I'll go ahead and throw my name in for it.

MR. CARMICHAEL: Would you be able to do both, stay the whole week?

DR. BELCHER: I should be able to. If I can't, I'll let you know next week.

MR. CARMICHAEL: The spiny review, the goal is that's an update. The intent is that a subset of the SSC would go down there and act on that review. We would like to get ABC recommendations at that time for consideration by the council in December. Now, we will need the councils, of course, and the SSCs for both the Gulf and the South Atlantic so you can see this is quite complicated.

We need them both to accept a subset of the SSCs providing the ABC recommendation. It then goes to the joint committee and is talked about at the December South Atlantic Council meeting. One option is that we could hold a conference call of the full SSC after the review, so it would be probably the first week in December, between Thanksgiving and the South Atlantic Council's meeting; hold a quick conference call for the full SSC to endorse the ABC recommendations of the subset.

I don't think that will be too onerous for people and we should be able to squeeze that in. We will have to work out logistically and procedurally what is the best approach for us. It would be great if we can get the subset, and I think with you guys I sense if there is an endorsement of that, you'd be willing to let a subset handle that ABC recommendation. If something should happen between now and then, we do have a conference call option that we could pull. We would like to get up to three on that subset to deal with spiny lobster. Maybe we can twist Matt's arm to staying the whole week.

DR. CIERI: What week is it?

MR. CARMICHAEL: November 15-19; it is the week before Thanksgiving.

DR. CIERI: Yes, sure, why not.

DR. BARBIERI: John, I can also stay the whole week.

MR. CARMICHAEL: Okay, that would be good. Perhaps you could sit in on spiny lobster as a non-chair and another participant.

DR. BELCHER: You still need a representative for the review for spiny; correct?

MR. CARMICHAEL: I think we're okay with spiny. I have Matt, Carolyn and Luiz; and then for Goliath we have Matt and Carolyn as reviewers and Luiz as the potential chair, so I'm comfortable with that as well. If we could get someone to be in the spiny assessment process, participate in a couple of webinars, and then the workshop the 28th through 30th, and that workshop will be – do we have a location yet – hopefully in the Keys as well – if not in the Keys, then up in Tampa/St. Pete – yes, September 28-30.

Do you think you can make that Anne? Okay, we'll pencil in Anne for the spiny assessment. Now if someone decides they do free up a little bit and they can do it, we're going to submit names to the council for approval in June; so if you can let me know before the June meeting, that would be good. Plus, we do have a process for getting you named after the fact. If something frees up on your schedule in mid-August and you think you'd really like to go to that spiny lobster face-to-face workshop, then by all means let us know. We can make accommodations for you, I promise. I think we have what we need there.

DR. BELCHER: Okay, thank you for helping fill in those spots. If you do know that there is a chance that you might be able to help and fill in, please don't hesitate to either contact him or Julie Neer to let them know what your availability is for those workshops as well.

MR. CARMICHAEL: There are the webinars and if you think you may be able to make a couple of the webinars – pretty close. They just shifted the timing of the process to accommodate the fishery, and it kind of set up right in the middle of when the fishermen were fishing for spiny lobster; and to increase participation of the AP we moved the workshop out of August into September, so now they're resetting the dates for the webinars. If you'd just like to be copied on the materials, raise your hand and we'll put on that list to make sure you get all that.

DR. BELCHER: Okay, the next item on the agenda, obviously, puts right into the meat of the work. What I'm going to ask is for these next two items for folks to offer up their skills for rapporteuring as we go through so that we at least can start putting the report together. The ABC recommendation section, which is Number 5; can I have a couple of folks that are willing to rapporteur on this? Anne, Chip, Marcel – three would be great. We will focus on those four items.

Item Number 6, which is getting into the assessment reports, which is going to be this afternoon, I would like to have a couple to three or four people on each of them, to do the rapporteuring, so that we can get as much information as possible, because obviously these are going to be a large portion of discussions and making sure we're clear on what we're doing with our process. Can I have a couple of folks relative to black grouper – John and Jeff. Okay, the red grouper – Luiz and Matt.

Again, anyone else that as we're going through taking additional notes is more than welcome and by no means precludes you from that process. As John was asking, we'll go ahead and do assignments fro rapporteurs for the other sections as we come into the workday, so tomorrow morning I'll go ahead and ask you for all Item Number 7 and we'll do the same thing with that; a couple of people for each discussion item. **With that said, let's begin our discussion on our ABC recommendations for four species that are probably less then typical. We have the Shrimp FMP, the Golden Crab FMP, the Coral FMP and Sargassum FMP.

MR. CARMICHAEL: We do need ABC recommendations for these FMPs, mostly to be included in the Comprehensive ACL Amendment. What the council is requiring is recommendations for ABCs that go to the council at the June meeting, so this is our meeting to get ABC recommendations for these different stocks. We've batted this about for quite a while.

It was a little over a year ago we drafted out the ABC control rules, and now we're to the point of needing to apply that information and come up with some ABC recommendations. The assessment reports came out this afternoon based on timing of the presenter, so we decided to try and get into some of these FMPs first to make good use of our time and then spend as much as we can tomorrow on the snapper grouper and the other finfish stocks where we do have a bit more information. As you can imagine we're looking at a number of kind of data-poor situations here.

DR. WILLIAMS: On the roadmap there was stuck in there this whole thing on the ABC control rule options.

DR. BELCHER: Okay, I was just actually going to get to that. Who would like to have a hard copy of the roadmap? I will just go ahead and pass these out to the group.

MR. CARMICHAEL: An update on what Erik mentioned, the council received the ABC control rule that the SSC proposed I guess some time last fall and then again at the March meeting. Carolyn gave a presentation on it. At that time they were talking about the Comprehensive ACL Amendment. The discussion was that the council should have options for their ABC control rule, so they were provided with a number of options for that.

One of the options is, of course, the package put together by the SSC. Another option would ABC is just a straight percentage of OFL; other options being tied to ABCs being a percentage of yield at a particular F level. The Comprehensive ACL Amendment document has the options listed out, so the intent of the council then would be that those various options would be carried

forward into the amendment. The council will then take which approach they want to use for their ABC control rule.

DR. WILLIAMS: So we don't recommend an ABC; we recommend a range of ABCs? I'm trying to understand what comes out of the SSC. We recommend an ABC; it's no longer an ABC; it now is folded into a whole list of options of multiple ABCs; is that correct?

MR. CARMICHAEL: There are multiple ABC control rule options which could result in multiple ABCs. The SSC is asked to recommend an ABC within the ACT, so we are asking you to recommend an ABC. Our presumption is that you guys are going to recommend an ABC based on the control rule that you developed, but then the council may have other options for the control rule. I guess theoretically you could get into something where the council says, no, we'll use this control rule and not your control rule, and it creates it a bit of a disconnect that we may have to resolve.

MS. LANGE: I guess my question is it varies? I mean, once the control rule is determined; is that what will be applied forever or is it something where you'll have like three or four options for any given stock where they'll use a different option?

MR. CARMICHAEL: Well, I think it's like any action that we take. It could change; you know, they could do an amendment and change the control rule. Then you could have perhaps different control rules that you apply for different stocks perhaps based on their data availability or things of that nature.

MR. WAUGH: The guidance we've received in order to meet NEPA, the council has to consider alternatives for the control rule. I would expect you all to use your control rule that you recommended and to provide ABC recommendations based on that control rule if indeed in your opinion that's the best methodology to come up with ABCs. The guidance we have is when we go out for public hearings and the comment period, we have to give the public a reasonable range of alternatives. If you all feel that some of the alternatives John has described are inappropriate, that would be helpful to hear as well.

DR. WILLIAMS: I'd be worried about – my understanding from the NS-1 Guidelines is that the strict definition of an ABC is one part of it is that the SSC will recommend it. If we're only recommending one number from our control rule and yet there are these other alternatives, I don't think you can call those ABCs then because they're not coming from the SSC. That is my confusion is either we're going to provide multiple numbers or there is only one ABC coming out of our committee.

DR. BARBIERI: I just want to get clarification on whether we had officially made our recommendation to the council on our ABC control rule. According to Gregg, yes, we have, you know, just to make sure that they have been officially informed that has been our recommendation.

MR. CARMICHAEL: They were informed of your recommendation and your control rule at the March meeting, and that's when we got into the issue of bringing up these options, which are displayed on the screen now, options which came up at the March meeting and are included in the Comprehensive ACL Amendment.

MR. WAUGH: The thing is in order for the control rule to become official, it needs to be implemented in each fishery management plan, and we're doing that in our Comprehensive ACL Amendment that will amend all the plans. We're going to have specify which ABC control rule applies to the species in each of our FMPs.

We have your recommended control rule, and there are varying views on whether the council is limited to the recommendations from the SSC for the ABC control rule and the ABC values versus what the SSC is providing is just a recommendation and the council then specifies through its amendments the ABC control rule and the ABC values. I think it would be helpful for you to provide as clear a recommendation as you all feel comfortable doing. If you think your ABC control rule that you have come up with thus far is the one the council should use, then make that recommendation and provide your ABC recommendations based on that.

MS. LANGE: Well, I guess Gregg pretty much answered it except once it is set with the Comprehensive ACL Rule – once we provide a recommendation and the council makes the decisions – let's say they agree with the recommendation we made that this is the control rule that will be used, and that's implemented in that comprehensive plan, from then on that's the rule, right, we don't have to – everytime there is a new FMP or FMP amendment, it's not required to include those as alternatives in future rules; right?

MR. WAUGH: Well, if there is a new FMP developed we would have to specify the ABC control rule for that FMP, but for existing FMPs then the control, once it's implemented, that will apply for all the species – either all the species in that FMP or all the species that is specified to apply to if you have multiple ABC control rules; for instance, for snapper grouper you have an ABC control rule for data poor versus data adequate species. Once it is set, once it goes out through the public hearing process and once the final rule for that amendment is published, then that's the ABC control rule that we'll be operating under until it is changed via an amendment in the future.

MR. CARMICHAEL: I think the answer is, yes, you would not have to go through – you wouldn't be changing the control rule every year. The only time the control rule would change would be when there is some compelling reason that either the council recognizes an issue or the SSC brings something forward that says we would like to change this aspect of our control rule, and then you would do that through an amendment.

Otherwise it stands and it can be applied and it can be used to develop recommendations. Just like in the last comprehensive amendment for the SFA, they put in a rule in there for a lot of the data-poor stocks that Foy is 30 percent SPR, so that stood until such time that you get some more information, and we have had to then say, okay, now Foy after an assessment perhaps for an

individual species is something else and that requires an amendment. But, basically, you would have the control rule and it would be in place and you can then apply it from year to year.

DR. BOREMAN: So right now the way we're operating is there are no official control rules for any of the species we'll be discussing so the charge is to come up with an ABC recommendation based on our best scientific opinion on what that rule might be or establish a rule but it may not be the rule that is eventually passed into the FMP.

The national standard guidelines also allow for cases in which the SSC is trying to follow and establish a control rule and it can't and it comes up with an ABC that is not consistent with the existing control rule; and in that case as long as they justify why they're not following the control rule, it can move forward to the council at that point. Right now we're supposed to come up with one ABC recommendation and not a range. That would be dangerous.

DR. WILLIAMS: Just to follow up, I am definitely no NEPA expert by any means, but it just seems kind of foolish that the ABC control rule needs to fall under NEPA because ABC does not actually lead to any changes or it does directly affect quotas or anything. It is sort of a precursor to ACLs and AMs and all that but is the actual management numbers upon which management action occurs. It is kind of an intermediate step. It's no different, really, in some sense to having stock assessments and do stock assessments then fall under NEPA, too? It just seems like it's too far back in the intermediary step to fall under NEPA, but again I say I am no expert on this by any means, but it just seems kind of foolish.

DR. BELCHER: Any further comments or discussion? Okay, with that, how do you feel is the best way for us to proceed? Should we look through what John has projected as far as what the alternatives are; do you feel it's not worthy of the time at this point for us to do that; just to proceed as to how we've already decided with our recommended ABC control rule; and then having the discussion as to how that is going to apply. Erik.

DR. WILLIAMS: I think John summarized it perfectly, that we just need to come up with an ABC number. It may differ from our actual control rule if we have a unique situation. We have our control rule that we've kind of worked quite hard on, frankly, to establish, so really our goal is to establish an ABC.

MR. CARMICHAEL: And you could call on these options if you perhaps think especially with this first group of four stocks, if some of those do not work well with the control rule as was described, maybe you'd pick one of the other options and call on that to use in that circumstance. Let's maybe get into these species.

You guys can take them in whatever order you think will be most effective. Myra has a brief presentation on coral. Because most of us have not had a lot of exposure to coral and there are some very unique things about that fishery and the data collection. You could start off with that or if you want to start with shrimp or you want to start with sargassum, just let us know what your pleasure is and we'll set you up.

DR. BELCHER: So where do you want to start?

DR. BARBIERI: I suggest we start with the one that we have a presentation for. Unless they have presentations for all of them, I think it would just get the ball rolling a little easier.

**MS. BROUWER: I've put together a very short presentation with just some little background, as John mentioned, just to give you guys a feel for what the fishery is about. Basically these are organisms that are harvested live and sold to wholesale and retail dealers for the aquarium industry. Most of it takes place, as you would imagine, in Florida.

The South Atlantic and the Gulf of Mexico Councils were the first to describe this fishery in '82 with the establishment of the Coral FMP. Then in 1990, through Amendment 1 to that FMP, a joint quota between the South Atlantic and the Gulf was established at 50,000 colonies. It is important to remember that this is a joint quota, and it's for federal waters only.

Then the Florida Fish and Wildlife Commission ruled that octocoral harvest in Florida would be unlimited until the quota in federal waters was met. There is an unlimited harvest and that quota has never been reached, so the harvest of octocorals has been unlimited until now. There is no stock assessment that has been done on octocorals.

As I mentioned before, it is mostly in the southern part of Florida, mostly in the Keys where the bulk of the harvest is now taking place. Octocorals are designated EFH by the South Atlantic Council, and this is another thing to keep in mind. The council has considered setting an ACL of zero in order to discourage harvest of EFH for various reasons. Another thing the council is considering doing is delegating management authority of this fishery to Florida.

From what I understand, the Gulf Council is also looking at doing that as well. They have already submitted a letter to the commission with the intent to delegate authority to Florida. As far as the data goes, there is not a lot of it. Landings from 2000-2008 were obtained from the Florida Wildlife Research Institute in the summer of last year. I provided this to the Coral AP in September. We met here in Charleston.

The Coral AP did their best to come up with options for the various fishing level recommendations just so that there would be something for the council to look at and for you guys to have. Then in March of this year FWRI provided an updated data set that is a little bit different than the one the Coral AP saw back in September. Their recommendations have changed since September. The numbers are different.

However, they provided basically a way to come up with these numbers so we've kept that for you. This is what landings look like since '91. Most of the harvest is in state waters. These are in thousands of colonies. This is a summary. This is basically all the landings' information we have. The total in federal waters over the last nine years has been 54,000 colonies. There is your mean, your median, the maximum, the minimum.

In state waters the harvest is substantially higher, 275,000 colonies, with the various other descriptives. These are the AP recommendations for the various fishing levels based on their discussions that they did in September with applying the different data sets to their guidance. These are the options for MSY.

Now, understand that the Coral AP is made up of many scientists with expertise in deepwater corals, a couple of folks representing the industry and then biologists that specialize in shallow water corals, so we have a very broad range of expertise in that group. They were at a loss for how to come up with these fishing level recommendations. Like I said, they did their best at putting something together.

The harvesters would not like to see any changes. They feel that the fishery is healthy. They don't see any problems. They deal mostly with the state regulations, and so this is a fishery that's tricky for that reason. We are charged with setting fishing level recommendations for federal waters, but most of the harvest is taking place in state waters.

Of the ten top species that are, only one comes from federal waters. The other nine are in state waters. These are the recommendations for OFL. As you can see, the numbers are substantially lower than the current quota. There is ABC. That's all I have so I'll be happy to try and answer any questions.

(Unable to hear question..)

MS. BROUWER: I'm not sure. Gregg, do you have any input on that? I'm really not sure. It may have something to do with the council implementing the live rock aquaculture program in '95, so I think that probably affected the landings. They prohibited harvest of live rock except in designated areas, and that was passed in '95. That is still ongoing, so another option for this fishery is to only allow harvest of octocorals as part of the live rock aquaculture program, so basically prohibit harvest, set the ACL at zero in federal waters, but continue to allow harvesting of octocorals within the leased sites for live rock. I know this is confusing.

DR. CHEUVRONT: One of the things that is difficult with dealing with the corals is we need to have an understanding of something on the life history of these animals as well. If I'm not mistaken; aren't most of these corals able to regenerate in about four or five years? This is not like you're talking about corals on the Great Barrier Reef; as you harvest these things they're gone forever.

You're looking at 275,000 colonies that have been harvested between 2000-2008. Well, those that had been harvested in the earlier years actually have been able to regenerate. Also, to talk about from the harvesters' perspective as well, having sat through some of the Coral AP meetings, they're greatly outnumbered by the scientists who have reasons – you know, for whatever reason that they don't want corals harvested, there are some people who are on there who clearly think that no coral should ever be harvested for any reason.

Now, that's not a reason for you guys to decide on an ABC, but you need to understand a little bit of the dynamics of what is going on there. I'm the Chair of the Ecosystem-Based Management Committee for the council, and I think it is pretty clear or honest representation to say at this point that the council hasn't gotten any indication that any of these corals that we're talking about here are in any kind of trouble.

I think the question that the council would need to consider – and I'm saying this just to give you the perspective from the council. I'm not trying to sway you from what you're going to do. From the council's perspective, we're not sure that there is really anything that needs to be done except for perhaps to constrain harvest at where we are now or to consider are we willing to allow it to expand; and if so, at what level.

What I think we're looking for from you guys is can you give us any kind of insight that will help us to set management levels that could impact this fishery, and that's kind of what we're looking for from you is help us to make sure that we don't put these animals in any kind of jeopardy. Thank you.

DR. BUCKEL: You mentioned that there is no indication that the corals are in trouble. Are there data sets or some monitoring program of corals that shows the number per meter square has stayed constant while this fishery has been operating? Secondly, there are the issues with coral disease. Are these octocorals susceptible to those? Is there any indication of what is happening out there?

DR. CHEUVRONT: All I can say is from what I've heard from some of the harvesters is that many of them say that they work an area and have worked the same area of maybe not even a square mile for many, many years. They harvest one area and then they move on to the next; and by the time they get back around to where they were before, they have absolutely – you know, it has all grown back. I'm not a coral biologist, so I'm not the one to talk to about that. There actually other issues that could be pressing here like invasive species with orange cup corals coming in that could actually – we don't know for sure, but I think may have the potential of adversely impacting some of the native species that are there. It is a complex dynamic of what is happening; and as a council we're asking for help.

DR. BOREMAN: Jeff asked my question about any fishery-independent sources of data to look at the status of the stocks; and since there are none we have to just rely on the landings. It looks sort of stable. There is some variability in there, so the question is – and I think you've already answered this – they look stable until you fish around it, fish all the spots, and all of a sudden everything disappears, but you said that these fishermen fish an area and then rotate back on the area, so that's good to know, as opposed to just keep fishing out of spots, fishing and fishing, and the landings will stay up and then all of a sudden everything just disappears off the map. It is good that this is a regenerating fishery.

MS. BROUWER: I wanted to talk to what Jeff asked. Just to give you an idea, there are some studies that have attempted to calculate density, and so the numbers that I have for octocorals

range between seven and twenty-five colonies per square meter, but then the harvest is very selective.

There are different species that happen in different types of habitat, so I also have acreage for the different types of habitat. You could potentially come up with an overall density for all the available habitat out there, and it is really high. They grow very fast. There are some studies that show that asexual reproduction actually causes lesser growth, so actually harvesting them and pruning them back actually causes growth to be more rapid. It is very driven by demand. The harvest is driven by demand; so if the aquarium industry wants specific, very beautiful orange corals, then the guys go out there and harvest the right size and shape with the right number of branches and all that stuff. It is a very selective, very non-impacting type of harvest.

DR. CIERI: If you slap fins on these and gave them a hard spine, the level of uncertainty associated with the data that we have in front of us is huge, if you look at it from that point of view. Yes, it is obvious that this probably should be more state managed than federally managed given the level of landings. We have almost no data other than landings.

While it is certainly a crop, I'm not even really quite sure it is something that should be discussed. In some ways if we applied some of our thoughts dealing with what we do with finfish, there would be a P-star value and some other things that are associated with it, which would urge that in this sort of uncertainty, where you only have landings, no fishery-independent indices, that would suggest something lower than the long-term average.

MR. CHESTER: And adding to that uncertainty is we're really looking at a species complex rather than individual species. Myra, if I understood you correctly, there is only one species in the EEZ that is being harvested as compared to ten, you said, in the inshore waters?

MS. BROUWER: Among the top ten harvested species in 2008 – and this came from one individual. It was presented to the AP. The other harvester said, yes, that's right – there is only one among those top ten in federal waters.

MR. CHESTER: And I'm assuming that there is no species breakout for the inshore landings; correct?

MS. BROUWER: No, the way the harvesters report it is actually by color category, so the trip tickets in Florida have purple corals, brown corals, red corals and other or something like that, and so there is really no way to track.

MR. CHESTER: So there is no notion, then, about what the relative densities of that one species that is caught in the EEZ is inshore versus state waters?

MS. BROUWER: No.

DR. WILLIAMS: My thoughts actually follow right up on what Alex was just hitting on is a concern about the selectiveness of the harvest. It sounds like they are targeting a particular

species, and I wonder if the selectiveness even goes further than that, that there are certain properties that they're looking for that may be the same desirable properties that you want to retain in the ecosystem, so there is some concern there.

MR. CARMICHAEL: This ABC would apply to the state and federal or is this just going to apply to the federal harvest? That is one part I'm not exactly clear on.

MS. BROUWER: I'm not clear on that either, but from what I understand and the answers that I've been able to get from NOAA is that it will only apply to federal waters. And then Florida, what typically has happened is that Florida issues concurrent regulations.

MR. CARMICHAEL: To follow up on that, then, it would seem to me you might want to consider the state versus federal landings' breakout if you're doing an ABC and you specify this is an ABC to the federal portion or perhaps you give an ABC for both. We know we need an ABC for the federal and that's what the council manages; but if the situation occurs where you could have something applied into the state or to the fishery as a whole, then maybe the SSC says in the event you can do that, here is an ABC which we think is appropriate for the entire fishery, in which case it would seem more appropriate to look at the state and federal landings total.

DR. BELCHER: Along those lines, what I was thinking is what is the breakout for the southeast Atlantic versus the Gulf of Mexico, because that proportion is not even broken out relative to that either?

DR. BARBIERI: Well, I wondering if we are at the critical deadline here to provide this ABC now at this meeting; I mean it looks like there should be a way for a summary report with the information available that could be – not a stock assessment. We can't do a stock assessment. At least we would have something we can refer to that would give us a little more information on what to base our decisions.

I just feel that everything that was said here today has been informative, but it is the first time that I'm exposed to this information. I don't have enough time and the data in front of me to actually make a well-informed decision; so if we can request that a summary report with all relevant information, perhaps based on some of the questions and comments the SSC members made could be put together, maybe we could reconsider this recommendation at a later date; you know, either through a webinar meeting or we wait until our – you may have missed, John, my comment.

Based on all this discussion here, I get the impression there is a lot of the information out there that perhaps could be combined and put together the summary report, not a stock assessment but a summary report that summarizes some of those things for us so we could analyze – you know, like we sort of review stock assessments in a way and try to come up with a –

MR. CARMICHAEL: I guess the question would be perhaps to Myra who knows more about this certainly than I do and probably most of us in the room is can some of that be provided from

the material that you have like at this meeting or would it actually require getting up with some of these coral experts and figuring out is there other information that could be put together that might give us something; and recognizing that we still do want something by June?

MS. BROUWER: I have provided bits and pieces that I have available and I could consolidate it all in a summary report. I know that you have seen some of this or at least it has been included in your materials over the last few meetings, but I know you haven't had time to really look at it since you have been bogged down with everything else. I can certainly do that.

As far as the timing, the actions for corals are included in the Comprehensive Ecosystem-Based Amendment 2, which has other actions; for example, one that would affect South Carolina and they were sort of wanting for that to move along; so the sooner we can get this the better, so that we can get that amendment moving.

DR. REICHERT: I've got two questions. I think for the summary it may be good if we can get some indication on why that steep drop in the harvest in federal waters, whether it is a data issue or a reporting issue. The other question I had is has the Gulf SSC addressed this or taken this up and how have they addressed the coral issue?

MS. BROUWER: My understanding is that the Gulf SSC has opted to first ask whether Florida would consider taking over management of that fishery on the Gulf side. They have not really had any discussion on this. It is included in their Comprehensive ACL Amendment, but they haven't really delved into it very much at all.

DR. BOREMAN: I'm not sure how much more we're going to gain by punting this further into the year asking for a summary report. I think what we have in front of us, even though it might be bits and pieces, is probably all we're going to get. Maybe ask a few specific questions about why the drop in federal landings and increase in state landings, but I think the numbers that we're going to see are in front of us.

With that in mind, I just had another question, if you go to the next slide, in terms of picking an MSY value for federal waters, why didn't the advisory panel choose the maximum value of landings at 10,000 for '07 as a potential MSY value? You just might want to add that in as another alternative to think about.

MR. CARMICHAEL: Do you have some idea of what this – we have mentioned this cropping. They go back and then they can go back and cut them again and harvest them again. Do you have some estimate of like how long that recovery period is; like, you know, you cut your grass weekly in the summertime and it grows back, so what is sort of the harvest period for these critters?

MS. BROUWER: I think it varies by species, but what I've heard is two to three years so it's very fast.

DR. CIERI: The difficulty as Erik and Alex were alluding to is when you're talking about multiple species in a complex, there is a very serious potential for wiping or really, really cutting down one particular species and not even know it.

DR. BELCHER: What is the timeline for it possibly becoming a state – does that mean does it drop us completely out of it? If it is a possibility the FMP is going to go away, is there a possibility the FMP goes away before – I mean, is it something that we –

MS. BROUWER: The council is not considering the option of withdrawing the FMP. There are other things. For example, the deepwater coral habitat areas of particular concern that the council has just established are under that FMP, and Florida does not have the capacity to monitor for us, and they don't want to have that on their plate. It would be just a delegation of this particular fishery to the state, and I really don't know how long that would take, but it is being considered in the Comprehensive Ecosystem-Based Amendment 2 as one of the options.

DR. BELCHER: Well, that was just my thought was that the timeline was specific to this and not obviously the overall – I forgot about the HAPC portion of the corals, but relative to the transfer of these harvested ones, is it something that we necessarily – if the timeline is quick enough, is it something that we necessarily need to entertain?

MR. CARMICHAEL: I think that is uncertain enough at this time that you do need to entertain it and try to have some recommendations. Maybe you would work off the range that they already have or we list a few questions that Myra can try to look at here and maybe come back to you tomorrow with maybe some – if there are any survey or indices of trends or anything that gives you some comfort in the trends overall; you know, perhaps the acres covered or whatever of some of the other colonies.

Was there any time series on that number of colonies or acres covered? There might just be some occasional points in time type of information which is probably not going to kind of get at the question I think you guys are looking at of is there any indication of trend over time in the population. There may not be in which case maybe capping it off for a while longer and encouraging some more information is the best that you can do.

MS. LANGE: I think John is right; we really should do something. As far as the uncertainty with how long it would take to transfer, look at red drum.

DR. BELCHER: Point taken. Luiz.

DR. BARBIERI: Well, if we could get some information about are there any major differences, and maybe this has been provided and we haven't really looked at the specific life history attributes, the things that would give us an idea of differences in vulnerability between these different species, if they exist.

To me, I don't feel I'm really well enough informed at this point to be dealing with a species complex and make a recommendation that I really feel comfortable with, especially taking into

account how careful we have been over this whole process in looking at the finfish, as Matt pointed out. We have put in a lot of thought and here you're dealing with a group of species that constitutes essential habitat and includes ecosystem components. We just don't seem to be looking at this at the same level of detail that we have the other species. That's why I'm expressing some level of discomfort in making a decision here today.

DR. BOREMAN: We've got several issues in front of us. First of all, we can't tease out individual species and manage them separately here. It is managed as a complex, which is unfortunate because obviously some species are more vulnerable to being overfished than others. There are no data on individual species. The data are collected as a complex, too, numbers of colonies. It may be different colors but they're meaningless. White coral should be in there, too.

The bottom line is we can go back and ask for more data and we're not going to get it in terms of individual species and the vulnerability. If we do come up with an ABC recommendation, it is going to have to be as to numbers of colonies overall. We can make a recommendation in terms of research into the selective vulnerabilities of the important species in that complex, but I don't think we're going to – if we are looking for more information, my sense is that it's not there in terms of judging.

Even if it does, can we go to the council and say we want individual ABCs for each of the species in the complex? We can't do that. We can do that with fish but you can tell fish apart. They're landed; the data are more accurate, but here I'm not sure that we can do that.

DR. CIERI: Getting to Luiz's point, do we just simply want to run them through the mill with our data-poor situation ABC control rule and treat them just like we treat every other species?

DR. WILLIAMS: Well, just for the sake of building the record, one other factor we should consider with this is that it is habitat essentially and how that fits into the ecosystem and its importance there I think is part of that scientific buffer, and we should consider that as well.

DR. BELCHER: Further discussion? I still kind of like to know relative to the South Atlantic what proportion of that total is ours because we're still trying to determine if it's 5,000 in federal waters, that's assuming the South Atlantic and Gulf combined. That's not? I guess I wasn't clear on that.

MS. BROUWER: I'm sorry if I confused you but the numbers that I presented are just for the South Atlantic. The proportion of the harvest of that 50,000 pot is very small in the Gulf of Mexico. The trend is similar over there where most of the landings are in state waters, but proportionally you can see here from Option 2 for the MSY, the Coral AP decided to recommend something that would proportionally split that quota between the Gulf of the Mexico and the South Atlantic based on the percentage of averaging the harvest, and that turned out 29,000 some colonies for the South Atlantic.

MR. CHESTER: Myra, is there a similar trend in the Gulf of a decline in federal harvest?

MS. BROUWER: I have that on my computer; I can't picture it in my head right now. I can look it up.

DR. BOREMAN: I'm looking at Table 2, Attachment 6, and he has a table here from the Florida Fish and Wildlife Research Institute. The number of colonies harvested in federal waters in the Gulf of Mexico from 2000-2008, that only started harvesting in 2006, zeroes up through 2005, and then the numbers are 75 in 2006, 234 in 2007 and in 2008, 151, so not very many. I don't think there is a trend there either other than it's more zeroes.

DR. BELCHER: Is there any possibility that those – and I hate to ask this, but this has happened before – is there any possibility those zeroes are actually reflective of confidential data? I mean, if it's an initial start and you have fewer than three dealers – I mean, we've had that happen before in some of our trends' data where people have gotten it and instead of it being an empty space it has been a zero placeholder. That's the only reason I asked that.

DR. LARKIN: I don't know if this applies to this particular set of data, and it has been about ten years since I looked at the marine ornamental data in Florida, but I do know that over the course of the time when we had looked at it, there had been for some particular species or species groups a change in how they recorded them, so over time they would create new codes for things that they saw increasing in landings or not. I guess it's just to reiterate that it's really difficult to draw conclusions unless you have some specific knowledge about one thing. It could be the confidentiality or it could be it was reported as something else and they created a new code for it.

MS. BROUWER: To add to that, another thing that seems to be occurring – and FWRI has acknowledged this – is that the trip ticket only has one spot to mark the location, the area of harvest, but you can imagine these guys are going to various different spots depending on demand, but there is no room on the trip ticket for them to report where they're harvesting in one day. They may go to six different areas in one day, but they only report one. The data are biased in that respect, also.

DR. CIERI: Let me get this straight. We have got a complex of species and not a real good breakdown of where the harvest is located, not really a whole lot of background on the life history of the individual, no fishery-independent indices, and some mild to moderate uncertainty dealing with landings overall for a species that is a critical habitat for others.

DR. BELCHER: Yes, now that we have identified data deficiencies, what is the next step forward?

DR. CIERI: I'm struck with a lot of uncertainty.

MR. CARMICHAEL: And I think that is reflected in the recommendations from the AP and I think from the discussion that Brian relayed about some people thinking that you should only remove these from aquaculture operations. I guess you're kind of at a point here of saying, well, given that, do you just say, well, cap it off where it is, there is no evidence that it's doing harm;

or do you say out of fear that it could be doing harm that is completely unknown you go to zero? I think that is sort of your range.

DR. WILLIAMS: Just as a point of order on how we're going to tackle these things, we do have to establish an OFL first or an MSY, which may be the appropriate measure for OFL, then characterize the uncertainty and then establish the ABC based on that uncertainty, so we should be careful about following those steps.

MR. CARMICHAEL: Is anyone comfortable at doing, say, the first part of that, OFL, at this point or do you have Myra to try and answer some of these questions? Some she may be able to, but I think she has made it clear there is not a whole lot of additional information out there that she could bring to you.

Species by species is obviously going to be very difficult. They have some records from a fisherman. Two other fishermen have said, yes, that's kind of similar to what we catch but we know they're not landed by any of those species, so you really can't look into landings by species. It couldn't affect management of landings by species at this point.

All of that could be recommendations, so are you willing to look at what you have and perhaps get on to OFL now or do you want to say let's ask Myra to come back with some more information the first thing tomorrow morning and you're going to take this up then? It depends on what your comfort level is, I suppose.

DR. BARBIERI: And one other issue with what others have pointed out to add to this is the fact that here we're going to be making a recommendation based on a species complex, and we haven't yet as a group really evaluated this even as an option or discussed whatever methodological approach we might decide to take to move forward. It is difficult to take a step forward until we have some time to discuss these things.

DR. WILLIAMS: So what are we waiting for?

DR. BARBIERI: Well, I would like to have some idea – for example, I know that the landings' data is very limited and the species are landed based on color or whatever way the fishermen actually identifies whatever they are harvesting, but are there studies out there that have been conducted by academics or whatever that actually can report what species are being harvested, scientific papers that have been published.

I know there are several that have been published on the aquarium trade in general that look at different species. Do we have some characterization, even though we don't have landings by species, but do we have any characterization of what the suite of species actually is and is there information on differences in vulnerability, life history attributes of the different species that could be informative for us to look at complexes, for example?

DR. WILLIAMS: How is that going to help us set a better MSY?

DR. BARBIERI: Well, to me, it would help me make a judgment call on – for example, if I'm dealing with a species complex, I want to be conservative and base my recommendation on the most vulnerable species within the complex. I mean, that's the kind of stuff that I'm thinking about. Without any knowledge about this, I may be making a recommendation based on a species that is not suitable for a harvest level for everything.

DR. BOREMAN: Another factor to take into account is that for each area where these colonies exist, the makeup of that complex is going to change. It's not going to be a consistent species composition for each area. In some areas you may have one species dominant or another area you have a different species dominant, so that just adds another layer of complexity to the issues. I agree with Erik if we get that information and we know what you're saying, even if we know it absolutely what are we going to do with it in terms of setting an ABC. The way that the FMP is written now we have to set an ABC for all the colonies, all the species at once. It's one number.

DR. BARBIERI: To that point, if within the complex for whatever reason – I just don't know at this point, but if within that complex of species you have one species that actually fully regenerates every ten years instead of every three, it just has a slower type of productivity and life cycle, if that's the case, you know, maybe base our catch level recommendation on that species. We set the bar the most conservative so we don't actually run the risk of harming that species when we're setting to another one. I mean, it is just a way to inform our decision in a way for that complex, that we don't risk harming a species that is more vulnerable.

DR. BELCHER: Would it be as simple as just focusing on the one species that occurs in the federal waters? Out of the ten species – and I'm just throwing this out because if it is an issue of complexes and we have multiple species, if only one of them is actually falling into the federal zone –

DR. CIERI: Do we know that?

DR. BELCHER: Myra had indicated based on the top ten species that have been landed, only one of those ten is outside of the state water.

DR. CIERI: From where; where is that information coming from?

MS. BROUWER: The information came from the Coral AP based on one individual's recorded landings and then agreed upon by the group or the other harvesters in the group.

DR. WILLIAMS: It is irrelevant because the bottom line is we're setting a complex quota that could be harvested at any way that the fishery moves towards, and so we would have to assume your worse case scenario essentially and protect against that.

MS. LANGE: Well, Myra has gone through all the information that seems to be available, and I would expect that if there was information to say there is one particular species that is more vulnerable we would have known it by now. I guess it goes back to the question of what else are we going to gain, what little bit more information that we gain.

MR. CARMICHAEL: I think you guys would certainly be well within your right to recommend studies along this kind of stuff and that you look into it species by species, accounting for these species, and definitely get right on top of these issues and how difficult this is and concerns about you could be wiping out something that is incredibly vulnerable simply because it's purple and has white branches that looks very popular in an aquarium and no one would ever even know.

Based on what you said, they harvest according to branches and what is desirable and what people want now and I guess what is selling so it probably varies all the time. Until you get more of an organism harvesting type data coming in where you actually know what species it was, there may not be a whole lot you can do. Getting that type of information out of the plan should probably go right along with these recommendations.

DR. BOREMAN: That's a good comment. With that in mind, I would like to move to set the overfishing limit equal to the maximum landings from 2000-2009, which is 10,407 colonies.

DR. CIERI: What is the rationale for the maximum level?

DR. BOREMAN: We need a second before we can talk about it, I think.

DR. BELCHER: Well, here is another question. I thought we were doing away with the actual motions? No, I'm just saying because – yes, which is fine – I mean, it is a discussion point. I don't disagree but we're not doing the Roberts Rules anymore. We're working on a consensus. So, anyway, but, yes, I think –

DR. BOREMAN: All right, I'm not going to move it, but I'm going to throw it on the table or put it on the table. To answer Matt's question, the rationale is again to put a cap on the landings we start with setting an OFL and then we can move on to pick an ABC either equal to the OFL or something less than that.

DR. BELCHER: And I did take your point, John; that was a good way to put it out there as far as throwing it on the table. Discussion. That's a starting point for us to talk about is OFL is going to be set at the maximum for the landings.

DR. WILLIAMS: For the sake of consistency, we should consider the way we're handling this because this is going to apply to our finfish examples, too. If all we have is landings and we have not much of an idea where MSY is, I don't think anybody here thinks we should go to the maximum of that time series, and that is sort of what seems to be suggested here.

DR. BOREMAN: Again, that's the overfishing limit, and the reason why I choose that is because it doesn't look like at this point, based on the information we do have, that these colonies are not in danger of collapse or imminent collapse under that range. If we put a cap there it might be, at this point, an apparent safe upper bound to doing an ABC.

DR. CIERI: As an alternative we can certainly set it at something a little bit more reasonable such as the median.

MS. BROUWER: Bear in mind that this is broken out between federal and state waters. Like I said, the majority of the harvest takes place in state waters; so if you cap the harvest at 10,000 colonies, that is going to great affect the harvest in state waters because the maximum annual harvest for state waters has been 35,000 colonies.

DR. BOREMAN: My motion just pertains to federal waters and not state waters. My understanding is that we are limited to setting an ABC for federal waters.

DR. REICHERT: We may have discussed this a little bit. If this was a finfish, what would our ABC control rule tell us to do?

DR. WILLIAMS: The ABC control rule only kicks in after we have established what OFL is.

MR. WAUGH: The question about this issue of just setting ABCs for federal waters, that is not the approach I don't believe that we're taking for all our other species. The ABC has to account for all harvest. I know we had some discussion earlier on here about state versus federal, but it seems to me we need to be dealing with setting our ABCs based on total mortality. It should include federal and state water harvest.

DR. CIERI: My understanding is that normally you would. If you had a stock assessment, you would set it on a stock-wide basis, but whereas you don't have a stock, you don't have a unit stock, you have a multiple complex with a sedentary animal, it doesn't move, therefore you can set it in that sort of an area-specific fashion.

MR. CARMICHAEL: I would hope that perhaps the SSC considers both and maybe we'll have another consensus on in the event you apply it at federal and state, here is another one for the federal, and then the council can work out how they need to accommodate that. Maybe that will be forthcoming after we get through this.

One other thing I was going to add, I suppose, in terms of the complex is I think we have to remember what Myra said about the AP, and that there are some very well-credentialed coral experts, and I think the fact that in the AP report there was nothing about, you know, should be this cap and no further harvest of species X, Y and Z or orange species or red species or what have you.

You know, I think the fact that nothing along those lines came up from that group of experts, so I certainly yield to in terms of telling us if there was a severe problem – and from what Brian said, it didn't seem like they – you know, it didn't seem like those guys were inhibited in any way or perhaps outweighed by a fishery vote in that circumstance is the scientists actually did have a very strong voice. I think there is something to be considered there that they didn't bring us up anything about the complex.

DR. WILLIAMS: Right, and so it's all that information that we have to kind of put together; what is leading us to suspect that this population is not going down the tubes, so to speak, that it seems to be stable. Well, we have stable landings, we have this anecdotal information. But even in that situation, if this were a finfish I don't think we would take the maximum of the time series. I think we would take something more like the mean or the median and we would call that a sustainable level.

DR. BARBIERI: Well, another question. So those options they have presented, they were at different levels, their proposals for OFL, right, can you give us just a little background on how those options came up? Do you have a consensus statement from the AP, you know, something that can give us a little guidance on how these things came up?

MS. BROUWER: I'm sorry I can't do that right now, Luiz. I don't really recollect. As I mentioned, there was a lot of discussion and some folks wanted to set it at zero and some folks said that is not going to fly because this is what we do for a living. There were very different opinions and they really didn't build a consensus on any of these options.

DR. CHEUVRONT: I recall the same as Myra did, but the 20,814 colonies, there was I believe on behalf of some of the harvesters, that they felt that actually the stock could handle twice the amount of what has been ever harvested. That's where that number came from because if you look at it, it is twice the number of Option 2. That was their feeling is they thought that could happen without adversely impacting the stock, but this is coming from the harvesters.

I think what you have there is the wide range of opinions that occurred during that meeting. You also have to realize that this AP was very reluctant in the beginning to come up with any of these things, and they were instructed that, well, you know, you're the best qualified to help us out with coming up with some of these numbers; and if you don't do it, the SSC and the council will take over and this is going to affect you and your livelihood so you guys need to do something. They still couldn't come up really with the idea of consensus. These were the suggestions that they brought up.

MR. COLLIER: What was the original reasoning for the 50,000 colonies?

MS. BROUWER: That is a good question and I don't have an answer for that.

DR. BELCHER: Okay, so again we've kind of obviously nixed what John's proposal was or I guess we're still discussing this as to whether or not we want to start with an OFL value set to the maximum of the landings. We keep getting caught up in the uncertainty portion of it. We understand that there is a lot of issues and uncertainties around it, but we're going to end up having to answer this exact same question with every species we're looking at.

We're in the same situation. This one happens to be unique because we're dealing with a multispecies complex that is not broken out in a way that we have a good handle of the species impacts. This whole issue of coming up with an OFL when given such poor amounts of data is going to affect us with everything we've got for the next couple of days.

DR. WILLIAMS: And we need to be careful about where we're accounting for sources of uncertainty. In this case when we're establishing an OFL, we want to look at the time series, we want to look at the anecdotal information, we want to pick a period from that time series in which we think things were stable and base it pretty much on just the landings' time series. That is going to be our best shot for OFL.

Now all those other uncertainties, that comes into play then when we start discussing what the ABC should be. We need to careful and make sure everybody is clear on where you're separating your sources of uncertainty and where they're going to get applied and where they're appropriately applied.

DR. BARBIERI: This is a part of it so my comment adds to it. I heard here today some discussion about perhaps we just try and apply the same rationale we discussed at the webinar back in January. That was discussed just for finfish, but we use that same methodology, that same procedural set of stats which wasn't discussed on a species-specific basis, and we apply the same thing here, you know, and remain consistent as a way to generate OFL and then subsequently ABCs for this data-poor species. The only added complexity here is that we're going to be giving this to a species complex, which we haven't yet discussed.

MR. CHESTER: Given all this uncertainty – and I'm kind of going back and looking at the catch. If I look back to '97 or '98 up to about 2002, it's pretty consistent that the harvest was above the median level, but then if you look at the last seven years, they're all at or below the median level. The catch pattern itself makes me kind of lean in Erik's direction that I would be pretty uncomfortable with anything above the median level of catch at this point, to the discussion that's on the table.

DR. BELCHER: So are you speaking more to the ABC or actually the OFL?

MR. CHESTER: The OFL.

DR. BELCHER: Other people's thoughts on that. John.

DR. BOREMAN: I'm not wedded to the value I've put on the table. I just wanted to get this thing moving along. At the same time setting an OFL equal to the average when you're dealing with all the uncertainty here, I would be reluctant to set ABC equal to OFL at this point. Keep that in mind when we're discussing an OFL level. I would be more comfortable having an ABC at half the OFL or basically what the average has been, but that's my personal opinion.

MS. BROUWER: Alex, I just wanted a clarification. You were looking at the time series from '07 through 2009 for that median OFL or what would be –

MR. CHESTER: Well, if I look at the 5,000 colony level, pretty much the beginning of that time series is pretty much above 5,000 and the back half is at or below 5,000. There is a pattern in the catch I guess is the point I'm making.

DR. CHEUVRONT: I understand what you're trying to do here in setting the OFL for federal waters alone, but you realize in talking about the nature of this fishery there is one species that they catch in federal waters. It is quite possible that what they will do if you set the OFL and the subsequent ABC lower for this federal waters one-species harvest, that they're going to just continue to fish in state waters and you're not doing anything to constrain the harvest in state waters.

If you look at the potential correlation – and I'm just sort of running it through my mind – between about 1997 and 2009 landings, you would see that there is not much of a correlation between state harvest and federal harvest. What you guys are proposing to do now is just going to shift the fishery. This isn't what I'm thinking; it could potentially happen.

Of these ten species, they're going to hammer nine of them in state waters and you've done nothing. What we need to really do is to – while it is a multispecies complex, we need to manage for making sure that these ten species don't get overfished. I can't tell you what to do, but as a council member who is trying to look at how we can protect all ten species in this complex, it would make me feel a little better if we could do something that could have a recommendation that would affect harvest in state waters as well as federal waters, especially since we have a clear delineation between what species are harvested in state waters versus the one species in federal waters and what you're basically suggesting here now would only manage one of the ten species.

DR. CIERI: I think if we knew that there was only going to be one harvest of one species in federal waters, that would be okay. I mean, for example, we could set some sort of limit on that one species in federal waters, not on the whole complex, but require identification of that one particular species that occurs in federal waters.

Shifting back to state waters and putting caps and so on and having effort shift into state waters is really a state waters' problem. If that state needs to manage – if we need to shift the management of the entire coral complex to Florida, I think that would probably be a much better choice than having it done on a council level where only one of those nine species is being managed.

DR. BELCHER: Other comments? Okay, we still are coming back to the same issue of how to set – Erik is saying no.

DR. WILLIAMS: I don't think we are. I think we're close to consensus that the OFL should be equal to the median; anybody disagree?

DR. BELCHER: Okay, so the consensus has been stated that the OFL should be set to the median language. For which time series, Erik?

DR. WILLIAMS: Well, I thought we've been discussing the 2000-2008 period all along.

DR. BELCHER: So the full time series?

DR. WILLIAMS: Yes.

DR. BELCHER: So 2000-2009, sorry. The value is going to be 4,970 colonies. Okay, everybody is comfortable with that. Erik.

DR. WILLIAMS: Okay, so now we need to be careful. This is our first delve into this stuff and it is going to play out for all of our finfish, too. The next step in the process is we need to discuss the level of uncertainty and how we're going to characterize that uncertainty and then whether we're going to apply our ABC control rule or not. I'm just suggesting that we focus our set discussions for now on the uncertainty and how we're going to characterize it about this OFL.

DR. BELCHER: Okay, John's suggestion is brainstorm.

DR. CIERI: Yes, let's just list it out. I went through a little bit of it, so let's list out what we don't know.

DR. WILLIAMS: I think that's a good exercise. We have all those. I guess where the rubber is going to meet the road is how are we actually going to quantify that because a lot of the uncertainty we have talked about we don't have any quantitative estimates for at all.

DR. CIERI: But we do have a control rule. I think if we can bring up that control rule spreadsheet, that we can actually go through and see if we can do that.

DR. WILLIAMS: Except that control rule requires that we have a distribution about OFL, which that is what we don't have. That is why I'm saying we have to quantify the uncertainty for this somehow.

DR. BARBIERI: Well, along those lines, my recollection – and these are just based on notes when we had the webinar, so who knows if that is really what our decisions were. My recollection is that back in January, during the webinar we discussed when using average catch or whatever standard tendency management there of landings multiply by a constant scaler, that we actually considered two scalers, 0.75 and 0.5, and those were the options discussed, right, and that we would use one or the other based on two factors.

One would be the degree of uncertainty, of course, if we can measure that; and, two, some measure of the species vulnerability, being more conservative with the species that are clearly more vulnerable than others. I'm just bringing this up to confirm that is where we pretty much agreed to use back in January.

MR. CARMICHAEL: At its core the control rule gives you a buffer value, right, ten to forty, that you apply to the distribution. That was kind of the core of Andy's approach. You assume the CV around that and you apply that buffer value to pick your point and you treat that buffer then as the P-star adjustment.

You could apply that buffer to determine the percentage reduction from OFL to ABC; so the most buffering that comes out of your control is 40, then you could perhaps say, okay, so we set ABC at 100 minus 40, so it's 60 percent of the OFL level; or, maybe you say we default and we say we don't go – if we start at 75 if we have a data-poor situation and then we apply the buffer to that level, that could be another way you could look at it. Then you'd be like 35 percent. I think you maybe can work within the control rule.

DR. WILLIAMS: I would disagree with that because that whole ABC control rule is sort of predicated on the fact that we have a distribution of uncertainty and then we're using P-star, which is the probability of overfishing, which relies heavily on that distribution. A P-star doesn't translate into a percent reduction from a mean.

They're not related and I wouldn't want to go down that road. The key here is what is the characterization of uncertainty about OFL in this case? We don't have a measure and so what are we going to do in these cases because there is going to be a lot of them coming up? In a sense our ABC control rule as it stands now isn't going to help us, I don't think, other than it can at least tell us in a relative sense whether this is the most uncertain situation or maybe it's not quite as uncertain relative to other stocks. I think if we're in this boat to begin with where we don't even have a characterization of uncertainty, we're probably at the worse case scenario. I don't think the control rule is going to help us out here.

DR. BUCKEL: Erik, I was interested in your thoughts on – and all our examples are for finfish so it would be even tougher to apply Andy's rule, but looking at the distribution of OFL from the fully assessed stocks and using that CV then and applying that to this case.

DR. WILLIAMS: That was another thought that came up of our assessed stocks, what is the worse case CVs that we have, you know, what are some of our maximum uncertainty levels that we have measured in our assessed stocks, and we can at least start from there, and that whether we then go down the road of using expansion factors to expand for other sources of uncertainty or if we just adjust from that to lower values based on all those external uncertainties.

DR. CIERI: I don't know if I'm really comfortable about translating something like that, like assessments for Goliath grouper and applying some of those worse case scenario CVs to coral. I know in New England when we have been faced with this kind of stuff, there has been that sort of hard and fast rule where when you really don't have a whole lot, that you end up setting it at 50 percent – you end up setting your ABC at 50 percent of your OFL because you don't have a stock assessment, for example, that has been rejected and you set it at maybe 0.75 if you have an inkling that the stock is okay. That is as a general rule of thumb and that is in New England.

DR. BELCHER: Well, it is better late than never, but my original thought on how we would proceed for some of these is starting with Restrepo et al as being the worse case scenario of how we proceed, the 75 percent value arguing away from that. Do we have better information that says that we can do something better than that or do we start with that and then haggle around that number?

That was kind of what I was thinking as opposed to kind of going around the table and talking about the issues. We need to come up with a number. That one has already been put out there. NS-1 previous has already stated that this is an approach in which to start at, worse case scenario; start here and let's argue either up from there or starting point and step down from there. Is that not a better way rather than us kind of dancing the issue?

I mean, we're going to be asked to validate why we picked the numbers we picked, anyway; what was our reasoning. As we found before, using 90 percent and 95 percent kind of got us in a corner, where at least if we have something that we can – and I hate saying that but it's already there. I can point it to you of why 75 percent? Because it has already been the precedent set. We're working within the precedent and we're working forward or backwards from that point. I'm only using this as an example for those species in which we're dealing with the situation we're dealing with right now. John.

MR. CARMICHAEL: I think Erik has made the good point about using the control rule and saying it is designed around the P-star endpoint; and perhaps if we had designed it around a straight-up buffer as a percentage of OFL, we may have applied entirely different ranges and had a much different approach.

I think that's a very good point and it illustrates perhaps the need to now consider, okay, so for these data-poor stocks, where we don't have that distribution, we need another control rule. We need some other approach. We came up with the control we had by considering a range of options and scenarios and setting some bounds.

Perhaps we're looking at a bound between OFL and 0.5, and then it behooves us then to go through this and figure out what are the distinctions at which point – maybe we use ABC equals OFL, 75 percent of and 50 percent of, and then we try to come up with some criteria in which you would assign different stocks to that so that we can be consistent when we get into all of our other uncertain species. Maybe we need to take time out and think about that now at that we're at this point in the game.

DR. WILLIAMS: And I would add to that – I mean, there are numbers being thrown out all over the place – is 0.5 as low as we would go or should we consider something even lower than that, especially given this situation and that this being essentially habitat that we're talking about.
DR. CIERI: We could always look at it at this point is you're not really arguing down from OFL but up from zero.

DR. BELCHER: John's suggestion is that we do a break for an early lunch and come back at one o'clock for the assessment, but over the course of lunch people sit down and kind of come up with some strawman ideas of how we best proceed in these situations.

MR. CARMICHAEL: This afternoon is devoted to the assessments starting at 1:00 so we want to be on time for that because we'd like to get through both of them today.

DR. BELCHER: (recording starts here) – on black grouper, the results of the SEDAR assessment, so, Bob.

**DR. MULLER: All right, black grouper – I'll have to admit that ten months ago in this very building and in this very room I had no idea that this would actually work as a way of introduction to black grouper, but amazingly enough it did so it all did come together. Okay, this is just your basic garden variety outline. It is no big deal. We're going to talk about data as usual.

I'm working under the assumptions that you guys are the SSC and you want to know more detail so it's not the overview that I've used for other groups, so we're going to go into probably a little more detail than you would like. We're going to start with management history just to get it out of the way and then do life history and then fisheries data.

Okay, the FMP is back in the early eighties and right after that the state of Florida put in an 18-inch minimum size, and the only reason why that's relevant is that in a lot of grouper species where we've done these things is they wanted to go back umpteen million years before and they do it by ratioing, and they usually use like 1986 to '89 ratios of grouper compositions because before that it was all mixed groupers.

Well, they put in this 18 inches here that kind of goofs you up because it is only two species affected, so for black grouper that is one of the reasons we didn't take it back historically because you had this confusion in sizes and then, of course, we have the confusion with gag. But since then we have the 20-inch, the Gulf did, and then in 1992 you had the 20-inch minimum size was put in place in the South Atlantic and the five-fish aggregate grouper, and in 1999 the minimum size was raised to 24 inches; and of the five-fish aggregate bag limit, only two could be gags and blacks.

Then down here you guys also as part of the SFA Amendment put in an MSY proxy of 30 percent and then an OY proxy of 45 percent static SPR. Then what is not on here is, of course, in 2010 you have the closure from January to April of the waters off the South Atlantic. So, those are the main – yes.

DR. BOREMAN: Would you tell me what a static SPR is? That's a new term for me.

DR. MULLER: Static SPR means that it's the spawning potential ratio associated with a given fishing mortality rate and sets an equilibrium value, and that is distinguished from a transitional, which means like I took the fishing mortality rates over time, and it came out of a – we actually had a meeting on SPR back in 1994, which in turn came out of that.

DR. BOREMAN: I wouldn't call it an equilibrium, though.

DR. MULLER: This is an equilibrium –

DR. BOREMAN: This is a direct calculation; isn't it?

DR. MULLER: It's a direct – but it's equilibrium in the fact that you're assuming that for that one recruit it is going to have this by age by age by age coming down, and so that's what we meant by equilibrium, because this really depends on your natural mortality, fishing mortality and selectivity.

Okay, stock definitions, this particular critter is a Caribbean species that extends up in Florida. It extends a little bit further. In fact, some of the works by Keener et al was actually done in the Carolinas, but when they were looking for the genetics of it to find out who is related to whom, the samples taken from Belize down here, these Belize samples, the ones up here and off of the Florida Keys, and then also they did Bermuda. They did 294 fish and there was no – they could not find any genetic substructure of the Florida, Mexico and Bermuda.

So basically this whole group is genetically similar. The reason I put this thing over here with all the pretty colors is those are current species trajectory, and the darkest color along here, that is the current, this is the Gulf Stream, there is another set here, the Caribbean current, which is this one, comes right up here along side of Cozumel and that area, along the edge of the Campeche Banks and then up.

So that you get exchange across here is not surprising; and so at the data workshop the life history group basically are saying, okay, we will consider black grouper, the stock is going to be those fish which occur in southeast waters. There is no distinction between the fish occurring in the South Atlantic waters down here in the Keys or on the Gulf side, so we treat it as one stock.

So the stock definition is it's going to be one stock and a given fish on a given day could be in the Gulf or it could be in South Atlantic waters or it could be in state waters, so it's one of those. South Florida does that. Okay, the stock definitions are easy. We say one stock in the southeast, and it would make a whole lot of sense if we could get data out of the Caribbean and out of Mexico and all that through an area-wide assessment, but I'm not holding my breath.

Okay, natural mortality, I'm taking this thing upside down. Previous work that these guys did is the folks at Beaufort, and it was actually Chuck Manooch and the gang, and they were looking at samples, and their oldest individual was 14, and so they used 0.2 as a nice value. Well, as we have more information and more fisheries, we found that 14 indeed was very typical.

In fact, when we looked at headboats studied here, we only had a very few fish older than that 14, and we had a lot larger sample. What they had to work with was reasonable; however, with more samples we have actually gotten animals out to 33; and in addition to just getting 33, we also have 32, 31 and 30. We have all ages out of that. The bottom line is that when you do a catch curve just to get some idea of total mortality and obviously there are fisheries going on, is we get very low total mortality values.

The only reason we did this little exercise was to put a cap on natural mortality, because there is no way – the other day I made the mistake of telling adobe that I would redo these things so they're updating it. The point is that the – we did a catch curve primarily to get some idea of

what would be a cap for natural mortality because, again, there were folks who were thinking, well, maybe we might use a higher natural mortality rate like 0.2 or 0.25 or things like that.

We did some sensitivity runs at 0.2, which were very, very hard to get to convert because it really was lower than that, so we actually used, based on that Tmax of 33 years, we went with Hoenig's estimate and it looks goofy that 0.136, and I kept wondering why are we doing this with three decimal places. We sure don't have that precision.

I went back and looked in the data report and indeed it just says we recommend using 0.136 and so I just did it straight. I should have just done 0.14 like everybody else would have done, but I did the 0.136, so don't worry about the fact the three decimals is really 0.14. Then one of the things that always came up when we have our five-year assessment, well, how does this look like the other ones that we've done in SEDAR?

The thing that says "BG" right there, that is our black grouper, and this is just smack dab in the middle, because what you see here is this particular cloud, really pretty much those were done with Hoenig. The two red snappers over here tend to be a little bit out off the screen because these are all groupers except for one poor little mutton snapper in there.

I was just getting a feeling for at least – so if people wanted to talk about consistency, that these indeed are consistent with what we have based on Tmax and for other groupers, and I threw in a couple of snappers. Then we did the Lorenzen thing basically instead of assuming there was just that 0.14 throughout the whole thing, that we did use the age-specific thing from Lorenzen.

And that 2005, that is the paper based on the length where the earlier paper was weight with a scaler of 0.3. Then, again, we used the sensitivity run for 0.1; and if you do your arithmetic, that says that the equation would be about 45 years; and actually if you do 0.2 it would be about 22, and we had whole lot of fish on that 22. So natural mortality, we are going use this 0.14.

Discard mortality, discard we're using – this comes straight out of the data workshop and it was 0.2 for the recreational fishery and for the commercial hook and line and 30 percent for the longline fleet. I put this deeper and shallower water thing because that's really what the distinction is, and, of course, you get back into the whole barotrauma and reef fishes. The recreational guys and the hook and line – and this paragraph at the bottom thing is really all that we have said is that same shallow water argument was used on – using a selectivity curve was dome shaped rather than flattop.

And that was the decision made at the assessment workshop, but it is consistent that they do operate in shallower water. Most of the hook-and-line fleet is in less than 20 fathoms and the longline fleet is restricted to 20 fathoms. Of course, you don't have a longline fleet in the South Atlantic.

Okay, age and growth, they grow really quickly at first. I was very surprised. The key ages here – the key age thing up here is maturity is right around here, and they mature right around six years. They enter the fishery about here and they actually do enter the fishery between three and

four years old, which there was a discussion at the data workshop about how much longer it would take the black grouper to reach minimum size and it would take a red grouper as well.

On that growth thing, this is growth based on all of the observations. The end value there is about – well, it should be about 20-some hundred, about 2,000 observations. That is using a truncated, fitting that bit of what Walter Ingram put together. However, for assigning ages to particular years, I actually went the other route and said, okay, we have not very large sample sizes. We have very, very small numbers and so what I end up doing was could we get a reasonable fit to a von Bert curve as close as we get to annual as we could.

If you can get annual, that was the ideal. If we couldn't we would combine a couple of years like 2002 and 2003, and the root mean square errors over here are relatively similar; and the standard errors, most of the estimates are relatively similar. There are some that are quite large like that one, but the biggest error and the smallest error actually both are about the same sample size, so it didn't bother me too badly.

So I did assign this – I executed a stochastic aging method where you take the von Bert curve and then a standard deviation by age. Now, this part over here on the right, the reading probably should have gone off here straight rather than diagonally down; all of this curving down is actually in the plus group, so it really doesn't hurt too much if I'm off a little bit between the 25 and the 28-year-old fish.

It is still going to be the 25, so that's how they got that. This is just the actual steps involved where you basically all ages, all lengths have a probability, some probability – it's very small, obviously. And from that, by those 20 von Burt we assigned age. We had to do that because we just did not have very many aged samples from the fishery to work with.

Okay, reproduction, these things are production hermaphrodite. Spawning season is in February or April. Basically these areas down here on the west coast and down in the Keys and probably in the Tortugas, probably spawning is occurring in this neck of the woods, and then you saw those currents.

There was a study – again that one in the Carolinas – where they collected larvae and they back-calculated by looking at the rings on the otoliths and what were the age of these post-larval fish, so that gives you some idea of when the spawning actually occurs. This is your typical thing. The flattop is a curve. It is about 6-1/2 years before the 50 percent maturity, and that is basically the same as the 856 millimeters total length.

The other point about – later on we'll be talking about spawning biomass. We will be including the male biomass with the female biomass so all the discussions about biomass and recruitment and all that, that will be both species, so it is really looking at this upper graph is really the thing about how it is going to be treating it.

So reproduction, now if you notice we're talking about they actually enter the fishery at about four years. Well, that's about 2-1/2 years before they're at 50 percent maturity at 50 percent

maturity, and it's about another four years before their full maturity, so that's just something to keep in mind. Movements and migration, we only have general patterns about that. We know that the little guys are in vegetated areas or in – and you were talking about octocorals when I came in this morning – they're in octocoral beds.

You'll find small black groupers. Then they gradually will be out on to the reef track and then they will be out on the shelf itself, on hard bottom. The picture on the right shows a typical habitat for them, which is basically back in under a ledge because they do ambush things as they go by. This other one over here is going by this nice montastria. Here he is again. That is a typical thing you'll see down in the Keys.

You will see that sort of medium black grouper cruising along the edge down towards the bottom. But basically his pattern is the older, larger ones are in the deeper water and that is evidenced by the longline ages, which for the same size animals are older animals. Distribution of landings is found pretty much in a pattern like that, which is not very exciting until you look at that. What you see there is that basically is the longlines are out here; the hook-and-line boats, like the commercial hook-and-line boats are in here, and, yes, that is only about 20 fathoms.

Then the recreational boats are much more inshore; and on the other coast the same thing. They're very close down here in southern Florida; and as they go up here, they're back on the shelf. You note the shelf is much narrower on the Atlantic side than on the Gulf side, but that distribution of where landings occur, it is just really following the bathymetry.

Okay, commercial landings, now if you're reading the CIE report, there were some comments from the CIE report about why are we doing assessments of such small magnitude. Yes, indeed, that is about – that's 200,000 pounds commercially which would be basically about a hundred metric tons. We used two fleets for the commercial side.

We did hook and line and hook and line includes hook and line itself plus spears, traps and others. What we did was choose that – we compared them using K as two sample sets to see which one had similar size distribution, so we could group the traps, spears, hook and line. And other gears; I'm not quite sure what that entails, but it is there; and then longline. So really it's longline and other, if you want to think of it that way. Hook and line is a simple way of looking at it, and the traps and stuff were also set in shallow waters than the longline fisheries were set.

This is a table using – it basically just gives the number equivalent to that last one, but you'll notice the numbers – what is interesting about that is the longline discards, you're dealing in only hundreds of fish. Later on when we're talking about release mortalities, you will see the longline release mortality doesn't really make any difference. That is because the numbers are so small compared to the others.

Here is our biological sampling. We had over 4,000 lengths and about 4,000 commercial lengths, both longline and hook and line. Ages is horrible. We had 1,100 ages; for hook and line we only had 200 ages. That goes back to why we didn't use age/length keys. We had to go back to that whole stochastic von Bert thing.

DR. BOREMAN: Another question. Now the hook and line and the longline account for all the commercial landings; 99 percent or what?

DR. MULLER: This hook and line includes the traps, it includes the spearfishing. The magnitude of the spearfishing is very small. The trap, I would have to go back and look. What is fixed in my mind is it was a very small number in terms of landings because these things just are not very trap happy. Most of this as hook and line is actually hook and line and not bandit boats.

DR. BOREMAN: My question is, though, these numbers represent all the commercial landings?

DR. MULLER: These numbers here are only the biological sampling. These are the lengths associated with this. The landings were based off – you bring up a wonderful point. These landings are sort of the flip side to the gag landings because what they did, there is confusion in identification of black grouper, and typically in Florida the common name of gags is black grouper. They didn't call them gags; they called them blacks. Then they called these things are carbos.

People knew the distinction but they did colloquially call them black grouper, so that made kind of a mess out of the landings. When they did the gag stock assessment, they looked at using TIP data. They looked at animals called black grouper and gags and then looked – that's in the market category or what the dealer wrote down, and then what the port samplers identified them at so they could actually ratio which were really gags and which were really black grouper.

These landings reflect that derivation of splitting out gags from black grouper; so in answer to your question, no, I can't swear that those are the exact landings of black grouper. These are what was derived by the data workshop using the algorithm derived for gag and then just using the coral area. Does that answer your question?

DR. BOREMAN: There is a source of uncertainty there?

DR. MULLER: Yes. Again, this is the biological sampling. The only reason why I bring this one up is you'll notice that in the hook-and-line fleet that age fours, threes and fours, that is basically right at minimum size. That minimum size is the 24 inch or 610 millimeters. That's right between three and four, so they're right here.

You get down here, you get very, very few threes in longlines. Most of theirs out here is sixes and sevens. This is just to show that indeed longlines are getting older fish. This was the same time period of 2000-2008, which means it's all under the 24-inch minimum size after it was implemented because it was implemented in 1999, so I used 2000 just for illustration purposes. But, you can see the hook-and-line portion here is right at minimum size.

Okay, the recreational side we have two recreational fleets. We have got the headboat survey and then we have the other, which is charterboat. For the most part here it is going to be private boat out of MRFSS. Don't worry about the landings. We will get to a picture in a minute.

There are five zones they use for calculating the charterboat, and so that is the color of the five zones down here.

Now, there are three curves here. However, when they manufactured what the live discards for headboat were, they used the charterboat discards. They used the charterboat discards, a ratio between discards to landings. Well, that ratio turned out to be 5.2. Then if you use the 20 percent release mortality, you have a 5 and 20 percent, well, guess what, it's kind of like on top of each other.

But when we use other release mortalities you actually can see a difference, but that's why landings and dead discards in this plot are sitting directly on top of each other. It is just like fluke. The ratio was 5.2 and then we did, like I say, the 20 percent, so that's why you only see two curves. But the number of fish released alive as estimated like from charterboats, again, is much higher than the landings, and that is going to be in both recreational things.

As far as aging in the headboat, there was an at-sea program. MRFSS had an at-sea program for headboat, and they saw 76 black grouper, and these are the ages of those 76. There is one missing on this column, 2005, and that's because a legal size fish is actually 670 millimeters, so that one is actually down one, but it is in this count.

That's the only observed information on discards for headboat, so we had to do inferencing. On MRFSS landings, most of these landings, as I just said, are going to be private boat or charterboat. They include the landings of animals that the creel clerks got to see and they also include the animals that the angler claims to have caught, but they do not include those that were released alive.

They estimate the number released alive separately, so under landings there is no confusion between what is released alive and what is not. These are just landings. You will notice here by doing this by region, you see the green here and that is the Florida Keys and red is the southeast. The southeast, which is this part right here, and the Keys account for the lion's share of the recreational landings.

And, again, here you will get the three lines. Because they're estimated separately, the dead discards are a portion – you have the live discards, dead discards. Both of those together make up the total. Then you have the landings. Biological sampling, headboat we have about 400 lengths and we had about 43 ages. MRFSS, we had 826 lengths and 58 ages.

We were not swamped with ages. We did not leave several on the shelf because we didn't need them. Indices, we started out with eight. We had the usual suspects of the poor fishery-dependent one, and then we created some fishery-independent ones. The ones that have red X's with them, at the review workshop they recommended – they wanted to actually see a new base without them, so the X out there, we pulled those. We only end up then with the four fishery-dependent and one fishery-independent which was used as an age one recruitment indices.

And the indicates; the commercial ones were done the same way. Most of the commercial ones are they used Stevens-MacCall to get a working data set in pounds per hook. The way this was analyzed, the assessment model does total catch, and so this is linked to the commercial hook and line, so that selectivity is applied to the index as well as to the fishery; and the same thing with the longline, the same Stevens-MacCall to help the lognormal count for hook sets, and again that is going to be linked to the commercial longline selectivity.

Headboat, the same thing. MRFSS is a little weird. Because black group are not caught in near the abundance of gags and red grouper and other species like that, when you try to do something like bring it down to do one of these logistic regressions, we ended up with very few intercepts; and because so many trips only got like one fish, especially recreationally, you throw all those out, so we ended up going actually with a cluster.

Again a recommendation of the data workshop was to go with a cluster approach because then now we at least keep all of the intercepted and black grouper as well as all those who had gray triggerfish, yellowtail or mutton snappers, and so the cluster approach gave us a working data set. Then because this is based on total number of fish caught per interview, and it's including all the discards, it was treated more as a population or fishery-independent index, and so we actually fitted it with its own double logistic curve.

DR. WILLIAMS: So why wouldn't you link that one to the fishery, the selectivity for that index?

DR. MULLER: Well, because the fishery part of that was more a landings' thing whereas this is a total. And on thinking about it, you probably could have done it that way. It would have saved us one set of logistic curves. Yes, I'm trying to think would it or would not. Yes, it would have saved us one set of logistic curves, so it would have saved four parameters, and it probably wouldn't have made that much difference. I never actually ran it in order to verify what I just said. That is a good point.

Okay, the visual survey is two divers get dropped and they look at a cylinder extending from the bottom to the surface of a given diameter, which is 15 meters, and then they count all the fish they see in that in a five-minute period. Then they do two of those per dive. You notice the thing is not per dive but per dive habitat, and that is because when they move from one to the other they can actually change habitats because you can go from a low relief to a high relief or you can go from hard bottom to sand or mixed, and so we actually grouped them by habitat and bottom, because it just made it a little bit cleaner.

So the actual number is the number by that habitat is what my, quote, unit of effort is in this particular thing, and that was a double logistic. And, again, that was not used in the assessment. This is the same thing before except it then curtailed only those animals of age one. Again, what we did is we took that same von Bert fitting thing, ran this data through it, picked out the age ones, and then went through.

It was also done with like the Delta thing. We did a binomial with a logic for the portion positive, and then we used a gamma – it was a log link – for the positive ones. What you have is that – and that was used as a recruitment index, and that was left in. There was also the NMFS University of Miami – yes.

DR. BOREMAN: On the age one, usually the younger age fish are harder to identify and separate from other species; was there an ID issue with those age ones?

DR. MULLER: Oh, no, these were actually beautiful because these are much crisper. That black pattern is much crisper in the young ones, and so these were much easier. The little ones like that are much easier to identify. You can separate a gag from these very simply. That isn't a problem. Plus the fact that most of that problem between gag and blacks, that was something we noticed back in the late eighties, and in the early nineties we started addressing it, and this starts from 1999. This is all by trained biologists, and so the ID issue is not a concern here.

Okay, this is the visual reef census. Now, what this is, this is a two-stage random design. What they do is they have – they divide up by habitat the entire Florida Keys and the Tortugas and all that into 200 meter by 200 meter areas. Then if that 200 meter by 200 meter contains a given habitat, it gets put into that category and that's included. Then they draw those out randomly and then drop divers into that and do their count.

Then what they do – this one actually does a raised value to be the number of fish in the Keys by one centimeter length categories, so that's what those are. There is a slight change in methodology in 1998 later, so that '95, '96 and '97 may not actually be real. It could be a change in what – because what happened was in 1997 the Florida Keys Sanctuary put in some restricted area called SPAs, sanctuary protected areas, and so they had to start categorizing SPAs separately from the other and they're just different.

So '98 on is all consistent methodology, and this is only for the Florida Keys. It does exclude the Tortugas. I mentioned the Tortugas; they do both areas, but this is only the Florida Keys. We also did the same thing on the age ones. We took lengths associated with age ones. Since they've categorized their numbers by one centimeter, we just took that grouping and added them up and that's what you get.

These were not used. They were dropped primarily because they believed to be redundant with the other visual survey, plus these were so much noisier that they just thought – the feeling of the group with the assessment workshop and the review panel was to just go ahead and delete them because they were the poorest fit. Whenever we looked, there were the poorest fitted data, so they just dropped them out. That is just what the patterns looked like superimposed, fishery independent and fishery dependent.

Okay, statistical catch-at-age model – like I said, we did the catch curve primarily to get a feeling for natural mortality we're doing. We also did ASPIC surplus production, and I have a slide way towards the end about comparing the results of ASPIC to the ASAP, but what the main model was saying was the statistical catch at age – and that statistical catch at age is one out of the

NMFS toolbox called ASAP, and it is the Version 2, which is much, much better than Version 1, and so we used that.

This is how it is configured. We used four fleets. We used the hook and line, longline, headboat, MRFSS. We did use 20-plus rather than going out to 25 or 30. We took the length measurements, assigned them ages with that stochastic von Bert and used that for the age comp, and then the natural mortality. Now steepness is always an interesting point, and so we used from 0.6, which we figured was on the low end, and we thought 0.7, 0.75, 0.8 was probably where we should be, so we ran it all the way to 0.95 because if you turn the whole thing loose, it wants to go to 0.95 and 0.97, in that neck of the woods just because there is no real pattern with your information.

We actually ran it both fixed at these 0.05 increments and then we ran it again using a CV of 0.1, and we'll talk about that later. Now catchability, there was a whole lot of discussion at earlier SEDARs about catchability; should it be constant; should it be increasing; if it's increasing, what rate it's increasing. Well, what we did is we turned on the variable catchability in the model; and depending on the fishery, sometimes it went up, sometimes it went down, sometimes it went up and then went down, and it just moved all over. So the folks at the assessment workshop said why don't you just go with constant, and so we went with constant because there was no consistent pattern to what the catchability patterns were. Yes.

DR. WILLIAMS: You would rarely expect there to be enough information in any assessment model to actually estimate time-varying catchability, so the fact that it was going up or going down or doing both is really non-informative.

DR. MULLER: It was.

DR. WILLIAMS: Really you should be basing what you decide about catchability is on your external factors' knowledge of what is going on in the fishery and what is going on with the indices. In this case there is evidence that catchability has been going up with technology and particularly GPS; you know, the progression from LORAN-A to LORAN-C to GPS and some other factors. I wouldn't rely on model estimates to determine whether –

DR. MULLER: Well, all I'm telling you is what came out of the assessment workshop and why the decision. Yes, we did have discussions – in fact, again, over here at the data workshop, that was one of the discussions with the fishermen of where were the key time breaks like – you know, they thought that like after 2003, GPS didn't really contribute anymore. We pretty much plateaued there on that one.

A lot of the folks, as you say, you had your various LORANs shifting over to GPS. That's true and that made a difference but it didn't – I'll put it this way; the group ended up going with the constant; that's the bottom line. That whole time-varying thing, it makes perfect sense, but you would really need to quantify it.

DR. BARBIERI: Bob, you might want to explain a little more in detail that this was looked into. I mean, there were some homework assignments done during the assessment workshop to actually try to look into patterns in catchability changes and increasing some diagnostics, you know, just trying to identify where the patterns could be because there was a lot of discussion on whether to use constant or time varying based on the results of the catchability.

The SEDAR procedure, you know, the catchability workshop, we wanted to be consistent with the recommendations coming out of that report, so we did look; and after a lot of diagnostics and evaluations, I don't recall – Anne and Chip were there as well – if we could come up with anything that was meaningful, and at that point we decided that perhaps just stick with the constant.

DR. MULLER: Okay, these are the fleet fits, and the residuals at the bottom are standardized residuals, so they're going to look large sometimes because the fits were relatively small. The deviations were relatively small because they are standardized residuals. But, again, these models tend to fit. The models seemed to work very well. There are your discards and there is your age one fit.

This basically just summarizes that same stuff by looking at the root mean and square area, who fits and who doesn't. What you had was the commercial hook and line fit the best and the commercial on discards fit the best. It looks at the fits and that's all I'm saying. Okay, for selectivities we went with, like I say, flattop on longlines, dome shaped on the others. This thing in the lower right-hand corner is kind of a composite selectivity. All it really says is which by type, superimposed all those selectivity patterns, what fleet is catching what at what age is what all that says.

What you have is the blue over here; that blue, those are the discards. And, again, those are ages one, two, three and four, which makes sense. But you notice all this red, well, all that red, that's the recreational fishery. Now, on the selectivity, one thing that I have to bring up is the selectivity is for both what is kept and what is discarded. It is the selectivity of catching a fish, so that you can actually separate out what the – the way the program does this is you have a probability of catching a fish and then you have – once you've got it, there is a probability in there of it is going to be discarded or not.

What this says is that over these ages, most of that probability of catching a fish is by the recreational, which makes sense; and these older ages, of course, this is all the longline way out here on the older ones; and then the hook and line is in there kind of like a little sliver. But it really just says that these ages from about three to ten are going to be pretty much the recreational fleet are the ones that are – that's where most of the fish are going to go.

This is your numbers of fish at age that are estimated and the biomass, and obviously they're going to be different because as you see here the first four age classes comprise over half the fish, and yet the first four age classes in weight are about 15 percent of the fish, but that is, again, young fish are smaller. That's all that says and nothing more than that.

And the biomass you see there has been an increase in the biomass starting around 1992; and if you remember in 1992 was when the South Atlantic went to a 20-inch minimum size. We said that the bulk of the fishery really was the recreational fishery, and the recreational fishery is pretty much in the southeast and the Keys. The Keys was considered South Atlantic waters, so it did not – the 20-inch minimum size did not go in in 1990; it went in in 1992. So after 1992 you start seeing this. Yes.

(Unable to hear Dr. Cieri's discussion; microphone not on.)

DR. MULLER: Okay, these guys here would be those guys there, which are whatever.

(Unable to hear Dr. Cieri's further discussion; microphone not on.)

DR. MULLER: Well, yes, you can see that this out here is much larger.

(Unable to hear Dr. Cieri's discussion; microphone not on.)

DR. MULLER: Up here, yes. Now I see what you're addressing, yes. Yes, they're getting bigger.

(Unable to hear Dr. Cieri's further discussion; microphone not on.)

DR. MULLER: Yes, because the dome-shaped ones are all down around – less than 10.

(Unable to hear Dr. Cieri's discussion; microphone not on.

DR. MULLER: You can think of it that most all of that growth occurred – they went through a gauntlet; and once they got through that, yes, the older fish started getting bigger. Yes, they were survivors; more older fish survived, yes.

(Further discussion by Dr. Cieri.)

DR. MULLER: I haven't actually looked at it in that detail. Okay, that blue line is that dark blue line; that is where age ten is. Yes, these age tens – what you're saying is these guys up here; you're maxed up here and then these come down; that is what you're getting at.

(Further discussion by Dr. Cieri.)

DR. MULLER: I know, but there is ten above here. I think there is ten above here and from here to here is – okay.

(Further discussion by Dr. Cieri.)

DR. MULLER: That's right; it's beyond. As I said, it's like a gauntlet. I haven't looked at it that way; that's pretty cool. Okay, this is the fishing mortality that comes out of that and it

basically is again stepped as in – there is the 1990 and the '92 areas, you're down here, and you drop again. That 24-inch minimum size seems to have made quite a difference, which is going to take a while for them to grow up here. You see those little guys.

Biomass and recruitment – steepness on this one came out to be 0.84 and the rest of this is just the various numbers. There is the obligatory yield per recruit and the spawning potential ratio. The lines here, this is the F 30 percent. This is the F 45, which is the OY. This basically is the MSY proxy. This is the OY proxy. Then your actual fishing is down around here, so your actual fishing has an SPR value right around – above 0.5 or 50 percent.

Now this is one of the ugliest stock- recruits you've even seen. Basically they had the same value for a long time, and then basically from '96 they just started getting – the biomass went up but the level of recruitment has stayed the same. Now, part of that is if you go back to that age one index, that age one index was flat down here. The '99 value was up here; so you added up and down like that and we told it to match that pattern, so it did match the pattern.

So it do that but over here, which was interesting because it just – the biomass there is basically staying the same for almost a decade and then it starts up, and then it is just one after the other. Now, that pattern is quite different from the pattern we had before we took out the age one NMFS-Miami Census Index. With that index you had a very marked drop in 1996 and then very, very noisy, but your typical stock-recruit where this is all just noisy, so you had a very low point. So when they took that out, that then gave all the weight to that one index for age ones and you end up the recruitment giving you that same pattern.

DR. WILLIAMS: Bob, how is that stock-recruit curve being estimated; is that internal to the model?

DR. MULLER: Yes, that is being fit in the model and it is being fit – basically, it's solving for steepness and the virgin biomass and then with this ratio we flip the two, and then these things, they're equivalent to alpha beta, so it actually – the program actually gives me all of these, but it's solving for these two.

DR. WILLIAMS: Right, just visually examining that fit, something doesn't seem right because if you put a straight line through the top part of those, you would get a better – it looks like a better MSE just from a –

DR. MULLER: You would get a straight line through here and that is straight right there.

DR. WILLIAMS: Right, but see right now – I mean, if I were to look at the residual pattern from that, you would see a whole bunch of positive residuals and then bleeding into the negative residuals. If you would put a straight line fit through there, you would at least reduce that positive and negative, so it seems like a straight-line fit, just from a visual standpoint, would be a better fit to that, which would suggest then that the steepness should be hitting that upper bound. It should be hitting like 0.99.

DR. MULLER: Oh, if you turn it loose it goes to 0.97.

DR. WILLIAMS: It does so what is – in this run what is preventing it from –

DR. MULLER: This was run – it had a CV 0.1 associated with it. The starting value for this 0.75 is a CV of 0.1, and so it could go up there, but remember it had to work harder to do that.

DR. WILLIAMS: So it is heavily influenced by your basically constraining or prior conditioning.

DR. MULLER: I agree with you completely.

DR. BARBIERI: And, by the way, just to that point, this was not the original –

DR. MULLER: No, no, this is the outcome of when we threw out the three other fishery-independent indices.

DR. BOREMAN: You're trying to attach some biology to all this. Right now we're just writing models. Is there any evidence of cannibalism which might explain this negative slope after the peak?

DR. MULLER: Well, for the most part the adults are more on the shelf and towards more the middle shelf and going further out, and the little ones tend to be very inshore, and so they're not really in the same areas. Now, could you get cannibalism as they get bigger? Now, these guys would be about that big. They're not in the same areas; they're not in the same habitat.

DR. BARBIERI: And I don't think that this species would have any more of a tendency to be cannibalistic than any of the other reef fisheries. I mean, there are some of the snappers that show very strong evidence of actually being more cannibalistic than black grouper.

DR. BOREMAN: I'm not getting at that. I'm just trying to put some biology into this plot here. If we accept this as something near to what is going on out in the environment; first of all, every single year it looks like it has been dropping down. It might not be cannibalism, but it might be a super-imposition of spawning areas; they're overlapping, they're competing for spawning areas or something like that behavior.

DR. BARBIERI: Right, and perhaps, you know, an important point here is that the assessment workshop panel decided not to accept the stock-recruitment relationship for any, for that matter, as really being well enough estimated, and the reference points and the stock status determination is just based on proxies because they didn't feel the data was good enough for estimation of a stock-recruitment relationship, so this is really, you know, perhaps an artifact, especially when you consider before and after removing those recruitment data points.

DR. MULLER: But it only had one index for age ones and so it is going to take that index. Because that index wasn't weighted anymore or any less than the other index, it actually received

equal weight, and so it actually tried to fit it. I'm agreeing with you; the point is that this is one of the reasons why the proxy was chosen and not going with the MSY because this curve is not very well defined.

DR. WILLIAMS: One last question; did you estimate the proxy that would be associated with this curve? If you assume this was representing Fmsy, what is the SPR proxy that would correspond to this; do you know that?

DR. MULLER: Yes, there is an Fmsy and all that good stuff. It is not very different. In fact, it comes out almost the same, and let me just look it up, because it's on a bunch of tables in here, but it's not at the top of my head.

DR. WILLIAMS: Actually, I think you're right, Bob; I just want to confirm that. I'm building a record here.

DR. MULLER: I'm going to give you the figures. All right, in answer to your question, the Fmsy value of that one was 0.226 or 0.23 where the F 30 percent was 0.22, so a difference by 0.01.

MR. CARMICHAEL: Was this male and female together?

DR. MULLER: This is both sexes, correct.

MR. CARMICHAEL: So, Matt's comment about increase in biomass looking like it is an older fish increase in biomass is males; did you look at male versus female trends in the mature biomass?

DR. MULLER: No, we did not.

MR. CARMICHAEL: You know, protogynous hermaphrodite I guess is something to make sure the committee talks about, life history implications and that stuff.

DR. REICHERT: To that point, if you look at Slide 49 again, at 2000 is where you see those numbers dropping a little bit; and then to Matt's point in terms of fewer fish, but they're bigger.

DR. MULLER: Okay, anything more? Okay, this is just looking at the distributions. This is the F in 2008, and the spawning biomass in 2008; and, again, the spawning biomass does include the males. This is the results of the MCMC, and it's basically 2.5 million simulations, and it summarizes – and all that really does is show you that it centers on both of these estimates, and so the distribution is nothing surprising. That's the 0.11 and the 8.3 biomass.

As far as the retrospective analysis, the retrospective analysis was somewhat small, which was amazing because most of the time I've done this on other species I don't get these pretty plots like that, so it's a very minimal retrospective pattern. This goes back five years. Okay, this is

the summary thing of criteria. You'll note down here that the F ratio was based on F 2008 and the spawning biomass is on 2008.

We had a discussion the other day with John Walter, and he pointed out that in one of the documents that it turns out that that ratio should have been on Fcurrent, which is the geometric mean of 2006-2008. The number of that geometric mean is 0.096, so it's just a little bit lower than the 0.108 here, and so all it does is make that ratio just go up a little dab. The other ratio won't change. The other ratio should be done on the spawning biomass of 2008. I did do that on 2008 and it's labeled, but, like I say, the Fcurrent is just a little bit lower.

That is the local fuzz balls. This was looking at the objective function surrounding the estimates to see whether or not there was any real patterning and 0.5 would be out in here, so they're mostly there, and this would have been 1.4, which is about there, so that's your F ratio of 0.5; and the spawning biomass ratio of 1.4.

The thing down on the bottom, of course, is the banana plot, and there are only a few dots below the 1.0 line. The actually MSST is the red dotted line and there are no dots. There is one on it but none below it, and so that is out of 2,500 points of which one of them is sitting on the MSST and all the rest are above it, and there is one point sitting on the line up there with all the rest.

That is just showing you for the most part this value down here is not a flukie value. Then the other day I was reading a paper by Philburne and Stokes in the newer issue of Fisheries, and they were talking about reference points and are we going nuts on reference points and maybe we should go back and look at surplus production; and they made a point you can look at surplus production – no matter what kind of a model you have, you can always go back and see what the production was.

So I did that and I did what they did, which is say go ahead, and that's what this little line says. That is where your maximum surplus production occurred. This is the F 30 percent, of course, this is current, and all it really says is the council's current objective of F 30 percent SPR as a proxy is this line. If you actually did this other, is it reasonable? This corresponds to an F value of 0.23, and that would have been 28 percent, so it's about the same value.

Again, it all comes out of arithmetic, but it was kind of fun to calculate it. All it really says is that even if you go back and look at something very practical like surplus production, that where you're at – your goals are very realistic goals for where you're at. Then we were talking one time with some other groups about this whole overlap and things about how like P-stars work and all that. I was just going to show if you have this 0.5 ratio, how far apart are they, and there is almost no overlap between – this is your goal and this is the F 30 percent and is your F value.

That's the same thing you saw before with the MCMC results, and they don't overlap very much. When you come down to the spawning biomass, there is a 15 percent overlap there, so 15 percent of these points of your spawning ratio actually are overlapping your goal, but that's way less than half. The conclusion that the spawning biomass is above that is again a robust one. These are different ways of looking at it.

Then looking at landings because fishermen always want to know, well, if you actually were fishing at OY or fishing at MSY, how does it compare to historical, and the blue line is the historical landings. The green line is the F 45 percent and the red line is the F 30 percent; and so, really, this fishery since 1999 has been below the F 45 percent, which is your OY estimate.

Then this is a whole bunch of sensitivity runs. This was kind of fun because if you look right here in the middle, there is some red around that yellow dot. That red is all of the steepness plots with a CV of 0.1, so that's going from 0.6 and 0.95. With a CV of 0.1 they're all right there. If you turn steepness completely loose, that gets you this little green triangle right next to the yellow one.

All I'm really trying to get to here is in this particular case the status doesn't seem to depend on steepness, and again because these ratios are based on the proxies and the proxy is pretty much independent of that. Now, there is one point up here – now that point took a whole lot of trying to find a point that finally got us on the other side of this red line, because, again, this is the MSST. What that took to do was we had to take the data set and chop it down to '91 to 2008.

We had to cut the visual survey and only use from '98 and later. We only used two selectivity blocks. We used one selectivity block for all hook-and-line fisheries for all years, and we used one selectivity block for longline for all years, so there were only two of those. Then we took the indices and multiplied and gave them a weight of ten over everything else. Everything else was weighted as one, so we gave it ten.

And if you do all of that, we finally got the F value to move up here. This value here is that same short and truncated and all of that, but we actually used the 11 selectivity blocks rather than the two and that brought it back down to there – then all of the rest of these values, all of the rest of these runs. Now, just for illustration, this point here and down to here, this kind of light diagonal, those are the values for different release mortality rates on hook and line.

The reason the dots look a little fuzzy is because there are six of them on top of each other, and the six are for the six values of the longline, and so there are six longline values for each of these. The one closest to the green line up here, that is using a 90 percent release mortality, and the blue down here is using a 10 percent release mortality, and we're doing the whole spectrum there.

This triangle is using M equals 0.1 and this X out here is M equals 0.2. Changing M shifted the biomass ratio and the release mortality, obviously because it's directly dealing with mortality, changed the mortality ratio. There are 75 X's and plots on that crazy thing and symbols on that. Okay, like I said, the surplus production model, ASPIC, we did run ASPIC on it, and it worked.

Then if you just take and make relative values, meaning that you're scaling them – excuse me, these aren't run. These are just straight values out of ASPIC. This is the fishing mortality on the fully selected age – it would be the age fives out of ASAP compared to just the fishing mortality rate calculated from ASPIC, and this has a maximum scale one per year. They are totally different things because one deals with vulnerable biomass and the other one, of course, is dealing with the whole age structure thing, but the bottom line here is that the fishing mortality

rates were correlated, and they show that same downward trend whether you do it with all that aging and von Bert's and all the stochastic stuff or if you just do a simple surplus production.

The surplus production was just the landings, the fishery-dependent indices with the total landings for that fishery, and then the two – there is no age one in this. We just did the two fishery-independent indices. We had two fishery-independent indices and the other, and this is what you get.

Then when you do the vulnerable biomass versus the spawning biomass, again, they're also correlated, so you basically are at the same results whether you did a production model or you did the age-structured model. You had a decrease in mortality rates that has been flat since, say, 2000, 1999, and you had an increase in biomass. The vulnerable biomass, of course, is different than the spawning biomass, but the trends and the patterns are similar.

DR. WILLIAMS: How did the stock status compare from ASPIC versus –

DR. MULLER: The same. When I presented this to the review, I built a plot that looks like the one you get out of ASPIC where you put the fishing mortality and biomass on the same thing to show them the F ratio. Okay, for projections I was asked to do P-stars, and so these go from 0.05 to 0.5. Now, P-star, the version I have, which is the sequential version, it has two sources of variability. It has the variability associated with your limit, which we took out of the MCMC runs for F 30 percent.

We have the bias-correction term, which is really the term on the recruitment, adjusting that, and those two were the sources of variability. A few slides ago I showed – when I was looking at the distribution of fishing and its limit, how far apart they were, that little red thing was pretty narrow. That is the variability in the F limit, and that's why these things are very, very close to each other because you didn't have much variability from that estimate, and the bias correction didn't have much variability either, so they tend to be sitting on top of each other, but the bottom line is you probably expect to see your P-values would be right around – a little over 500,000.

Right now your total catches are a little over 300,000. The reason this goes up again is the fact that if that limit you were looking is 0.22 and if you're currently at 0.11, you're down about half, and that is why this thing goes up. The biomass pretty much is almost flat or it goes down just a dab, and your discards and so on.

These probabilities are pretty much all the same only because, again, there is not much variability driving it. The other set of projections that were run go – they use the variability. They were not looking at what percent overlap you got, but they're more looking at given an F, what do you get? And the Fs that you were given or asked for were F equals zero, Fcurrent, F equals 0.65 times your limit or F 30 percent, 0.75, 0.85; the limit itself, F 35, F 40 and F 45.

So, given all of those, now there are eight here and there are six here because these two, the 45 and the 65, are basically the same, and the 75 and the 40 are basically the same, so that's why you only get six plots out here. These work on the idea that you had two years of fishing at

Fcurrent and then you do something, and then whatever you do, you either close or change it or whatever, then that run is for ten years. That's how each of these were built. It did the same assumptions on selectivity as the one on the P-star in that you had discards and you had your fishery selectivities, and you assume the ratio among those doesn't change, so you don't get to go change size limits on one component only, and then the biomasses.

Now, the reason the highest discards occurred with F equals zero is because when I was running this, we're thinking that, well, this is a reef fishery, they're going to be out in the same places, nobody makes a living fishing black grouper. They're mostly fishing for other species and they get a black grouper, so all of the current landings are going to be considered as discards.

So what happened is we just let it run at encountering a fish is the same as Fcurrent and they are now discards, so that's why that has that high discard. Here you're going to have lower discards because you're keeping some of the fish. So like now, if you're running Fcurrent, your discards would be down here because this difference is due to this difference. And, again, you know if your scales are different, and your various mortalities.

And, again, these things were – the sources of variability in this all come from the MCMC, and we had 2,500 stock-recruit relationships, 2,500 F limits, 2,500 F 2006, sevens and eights to make 2,500 Fcurrent and so on, so that is why there is a lot more variability dates portrayed here. But the end result is these all kind of center around that same 500,000, which is what you would expect, and they do.

Then some of these, if you go to F zero, the population goes up; Fcurrent, the population goes up; F 75 kind of – and then these others just have haven't had time to come to whatever new quasi-equilibrium they're going to end up having. One is looking at given an F what kind of projection you get; the other one is what kind of a percent overlap. Okay, that is all.

DR. BELCHER: Thanks, Bob. Any other questions for Bob? John.

DR. BOREMAN: Again, to return to the comment made by John Carmichael, obviously, being a protogynous hermaphrodite there are sex differences, but I take it that they were considered during the assessment, the possible differences in natural mortality rate or growth rate or anything like that or selectivity to the fishery?

DR. MULLER: The answer to all those is no. As far as the growth rate, we have some males but they were not split out separately so I can't show you on that curve which ones are – can we? Hang on a second. The bottom line is we did not run male growth curve and you'd only have from about age 16 on because the other side of here, which we didn't show, is that the 50 percent transition from female to male is at age 16, so it's just the 16 and up are basically the males.

No, we did not do that. Again, we sort of took that paper by Liz Brooks and them, where they were looking at when you have these types of species, that should you treat them separately or should you combine them, and their recommendation was combining the sexes because you want to make sure that get that contribution from those males, and so we just followed that.

We did not explicitly do males, but it would be very interesting because when you were pointing out about how the number versus biomass – it would be interesting to have a number versus biomass in the males themselves. It is one of those things that never came up in any of the workshops. It would have been nice had it come up because that would be something that is doable, but we never did do it.

MR. CARMICHAEL: It is one of things we've talked about at a procedural workshop at some point and it seems like we had a discussion of dealing with the protogynous fish, hermaphroditic fish, and giving SSB in male, female and then combined. I don't know if you have it separated that way, if that is something that could be provided.

DR. MULLER: Now, what you'd end up doing is you'd end up taking the numbers of fish – well, if you had enough fish that were sexed, which is capital letter I or capital letter F, if you had enough fish you could actually do that because if you could get weight at age males versus females, then you could take that number of fish and split them, because we have the equations for splitting them.

Basically, you look at the proportion of males and the proportion of females, so all you would do is take the descending limb for females – if you want to think of it that way, because remember it is kind of dome shaped – you could take that and then you could actually do that. It's a very straightforward spreadsheet type thing to generate if we had that basic information; and that basic information I would have to go back and really chase down from – since I didn't build those, I have to go chase those down. If the information exists, it would be an interesting calculation to see how that does because what you really want to see is what the trends are especially in the males.

MR. CARMICHAEL: Yes, I think that is the big "if" whereas a lot of species we've have had that information that come out of the life history of the data workshop with male versus female information that facilitated doing that versus it sounds like you have quite a data challenge on the male fish being 16 and older and having enough information to do this.

**DR. BELCHER: Any other questions or comments for Bob? Well, thank you, Bob. I guess at this point, given the information at hand we should be able to discuss our OFL and ABC value relative to this species.

DR. WILLIAMS: In our review do we have to make some statements about various aspects of this assessment?

MR. CARMICHAEL: Yes, you do. In fact, I think the first thing you should do is discuss the assessment and whether or not you accept it and then make your recommendations for MSY, Fmsy, MSST, MFMT, stock status and all of that kind of stuff. Provided to our chairperson is a little worksheet that I think covers just about everything for black grouper and red grouper where we can have the value units, what it is based on; and we have MFMT, MSST, M, Foy. We have covered quite a bit of that, I guess, based on the rule the council has. MSY, OY, overfishing; is

it overfishing, is it overfished, and then we get to the OFL and the ABC. I think that's all the fishing level recommendations.

DR. WILLIAMS: Well, I'll start with some general comments that concern me with this assessment, and that is there is a slight bit of cumulative optimism that is going on in here that concerns me a little, and that is centered around the choice of M, the choice of constant catchability, the choice of 30 percent SPR as the proxy, and even the dome-shaped selectivity functions. I'm not sure what to do about those, but the others could be addressed potentially. I don't know if we want to tackle those one by one, but in combination I feel like those little choices were all taken – they weren't on the conservative side necessarily. They tended to be on the – I don't know if you'd call it the optimistic side or what, but just combined together you get sort of a cumulative optimism going on there I think between a lot of those factors.

DR. BUCKEL: I had to step out so I don't know if this has already been discussed right after Bob's presentation, but reading through it I was struck with the differences – I was expecting to see something similar to the gag assessment, and so to see something that was much different, I was wondering, well, the 24-inch regulation, why did it seem to work for black grouper and not for gag or is it something different that is going on with black grouper that's causing these larger animals to be able to build up and not continue to suffer the higher fishing pressure that we're seeing on some of the other groupers. If some folks that are more familiar with the fishery could weigh in on that, that would be helpful for me.

DR. MULLER: Well, unfortunately, I'm not familiar with the details of the gag, but my first question would be what is the level of the gag landings, because the number of fish in black grouper – because remember these are big fish and so consequently the number involved with those low landings; I mean, we're talking about 150 metric tons total, and these are big fish. There are not that many fish actually involved.

Again, these differ in that when you talk to somebody I know on the longline side of the conversation, they can talk about setting a longline for gags, they can set a longline for reds or whatever, no one sets a longline for blacks, and they may or may not get one, but the numbers are very low. That is the first thing that I would be curious about.

The thing that has been bothering me all the way through this whole thing, to be honest with you – because, again, I was of the opinion this was flat out not going to work because there just wasn't enough data to work with – was just how low the landings are; again, what makes this species – how do you have fish that are very – I mean, basically it is not unusual to get fish that are in their 20's and 30's, and most of the fish in the 20's and 30's have been caught all along.

It wasn't like we just got a 30, that we have some 30's back in the – we have some of the 20's and 30's from the late nineties, from the early 2000's. In fact, I think the 33 is like 2008. And so it's not historically that they were old, so the question is how do – why don't they take the hook, why don't they – I just don't understand, to be honest with you.

I don't know that much about why they're caught in such infrequent things, and yet they are caught by anglers. Off of St. Petersburg, where I come from, spear fishermen get 70- and 80-pound specimens almost every year because they have a big tournament, and the winning fish frequently is a big black grouper. These big fish like this – this picture is a 2008 picture, but the point is it is not like we had those fish 50 years ago like in some species and now you've just got the little ones.

DR. BOREMAN: To follow up, then, do you have CPU indices in terms of black grouper compared to other species like gag, that maybe their catchability, relative catchability is much –

DR. MULLER: Well, actually you could look at the – we have the longline and hook-and-line indices, the fishery-dependent indices and you could compare those. They were done by the same lab, the calculations both for gag and for these, and so it would be very simple to compare those.

MR. CARMICHAEL: Perhaps the headboat, also.

DR. MULLER: Oh, you can do the headboat, too, but the problem with the headboat, the headboat is the inshore guys and you're now back into you're looking right at legal size, which are those animals that are probably three, four and five years old; whereas, if you look at – at least the hook-and-line boats are a little bit older and you can look at those. You get this gradually moving from the little ones inshore and the larger ones are more towards the shelf edge.

MR. CARMICHAEL: Gag has some vulnerability for inshore harvest. I remember in the gag assessment the discards were pretty big, and increased discards were pretty noticeable at least in the Gulf side of that assessment. After the size limit went in, there were an awful lot of encounters of undersized fish and that perhaps is something that is the difference between these two.

DR. MULLER: Gags are found in estuaries when they're little and then they move offshore. These are not in estuaries, per se. These are more like your octocoral beds. These are the seagrasses that are nearshore. Let me go back to Erik's comment about M. When we ran at the 0.1, it was actually very happy. In fact, at that thing where we did the sensitivities, as you notice where we did the 0.1 actually came out to be a very low F as well.

It was up a dab higher than the other ones but it is a low F, but you did have lower – the spawning biomass would be less because of the arithmetic, that works out. But, no, you've got the solution. The MCMCs were much easier to run on 0.1. They are nigh to impossible to run the 0.2, and so my own personal preference would have been to use a lower one, but, again, we're taking this whole thing out of the data workshop.

Another reason I would have probably gone a dab lower is we've only seen a couple thousand fish. We got that 33; we actually had four. We don't have one; we have four 33-year-old fish. I bet if you had a sample size of 5,000, we probably would have some fish older than that, which,

again, is why – but, at the beginning when I was talking about natural mortality, I mentioned that the 0.1, if you looked at a Hoenig's equivalent in age, that would have been a Tmax of 45, so it actually kind of encompassed that the point – if you had done a 0.1, you should be pretty much encompassing what is possible. The conclusions don't change when you go to 0.1 in terms of the overfished/overfishing law.

DR. WILLIAMS: But they get closer to the benchmark or to the limits?

DR. MULLER: Oh, but you would expect that.

DR. WILLIAMS: But that's an important part.

DR. MULLER: Oh, yes.

DR. WILLIAMS: We care about that overlap with the limit at this stage.

DR. MULLER: We actually have the same MCMC runs on 0.1 as we do on this. They exist.

DR. BUCKEL: Going back to the – I'll follow along with this, and to the Z's, Bob, you mentioned those as being a cap, but then the M's are very close to the Z's, so I may have –

DR. MULLER: All I was getting to was the fact that because the longline fishery itself turns out to have very low F's associated with it, but all I was trying to get to – the reason for the cap argument was again there was some sentiment about, well, should you be doing 0.2, 0.25 or high M's, and we were trying to say that, well, you can look and see what is reasonable at least, and being lower than about 0.15 was reasonable.

I know when trying to run it with 0.2, every now and then you get a combination out there where you would actually get some minus fishing mortality because, again, it really wants to be those lower values. Obviously, as I said, it caused me fits trying to actually do an MCMC run on 0.2. I could not actually successfully do it because you're giving it too high of an M compared to total mortality essentially. But that was all, so it was just a cap.

One other thing and this stems back from a few years ago when we had some discussions about is there any way that we can get some idea of trying to at least ballpark or get some realistic boundaries on M and are there areas where, you know, that is exploited or is it lightly exploited and this type of thing, and so I was using this kind of in that vein of saying, okay, the longline fishery doesn't catch that many fish, and let's use that because we know that is low mortality – does include fishing mortality for that component.

The ages in that catch curve were like seven up, which is basically – if you had looked at those ages involved for the recreational and the inshore, by the time you get to age seven, pretty much you're dealing with only a small percentage of those guys, and so the fact that that was a low total mortality out there was consistent.

MR. COLLIER: Erik, one of the reasons we went with the dome-shaped catchability for the hook-and-line fishery was due to the behavior of the fish, where the smaller fish were further inshore and therefore as they got bigger they migrated further offshore. Typically, the hook-and-line fishery was closer to shore and therefore they become less successful as they get larger. It is not to say that they weren't caught up, but it seemed that the larger fish were migrating further offshore.

DR. WILLIAMS: Well, to clarify my issue with that, it is not that I don't doubt that it's probably a dome-shaped selectivity. The concern is that the shape of that curve is identifiable in this model, and in models where your dominant or most of your catch is coming from a fishery where you're estimating a dome-shaped selectivity, you get some heavy confounding with mortality then because the descending portion of that dome-shaped selection is not very well defined and it is confounded with mortality estimates.

In this case the only fishery that is fixed at a flattop is the longline, which is not the dominant fishery, so my concern is with the identifiably of those dome-shaped functions and whether they're really that dome shaped or maybe they should be not quite as domed as they're being estimated. I don't know.

DR. MULLER: Well, towards that, one time we also did a catch curve with just using headboat because we wanted to see about whether or not that was really a selectivity question or whether it was just sampling or whatever. When we just used headboat, we got 0.52, which is very similar to 0.56 or whatever that Chuck Manooch got. We know we had these other fish out there. When we used the same fishery, we got as much, quote, higher total mortality.

And, again, it is not really mortality. What it is really giving you is migration as you're leaving the inshore fishery and going out on to the shelf, and so the dome shaped – now the question that you have is, well, can you still get big fish inshore, and most of the larger fish we have seen have come, like I say, from the longline fishery, which is the offshore fishery.

Now there were a couple of fish during the early years with the headboat, but in the early years with the headboat they did some offshore trips, and so you're back to that. We just went with the dome shape on that and assumed that, indeed, that descending limb was reflecting a migration in addition to partly mortality. I mean, there is mortality there, but it is also the other.

DR. BELCHER: Okay, further comments and discussion? Erik, the 30 percent SPR concern, did you want to elaborate?

DR. WILLIAMS: Well, what is the justification for 30 percent when the literature seems to be pointing more towards 40 percent for these longer-lived animals?

DR. MULLER: The 30 percent was really the – that is what was in Amendment whatever for the South Atlantic, and it said this is what your measure was, and so I thought I would use their measure. Obviously, it can be changed to whatever makes more sense. Again, I did find it kind of interesting when we did that Philburne and Stokes thing and we came up about in the same

ballpark from just looking at the surplus production conversation, because, again, you're talking about a limit limit. You don't want to be there, but you'd like to be much lower absent that; and that as far as a limit, it seems reasonable based on both of them.

DR. WILLIAMS: Just to complete the record, again adding to this cumulative optimism is when I just look at the trends, if you look at the – looking at Bob's slide 40 and 41, the independent indices all tend to show – I mean, it's not much of a decline, but they show a steady decline in the last decade; whereas the fishery dependent show an increase except in the 2008 point, which is a pretty big drop, and that tends to be almost one of the lowest values in their time series. Again, there is some concern there with just the raw CPUE data in both the recent values for the fishery dependent and then the trends in the fishery independent.

DR. MULLER: Okay, you're talking about the visual census; not the age one but the other one, and you're saying that – I just look at it as very noisy, to be honest with you. I look at it basically almost as flat. The other one hasn't been flat since basically 2001, so I get flat and flat. I guess it's in the eye of the – whether you think that those ups and downs here mean something.

DR. WILLIAMS: Well, are you looking the ones that were not used in the assessment?

DR. MULLER: Well, the only one that was used in the assessment was the goofy little –

DR. WILLIAMS: Well, clarify Slide 40 for me.

DR. MULLER: Well, I've got to find what Slide 40 is. Can you give me a hit since I'm not looking at the numbers?

DR. WILLIAMS: It's right after that last visual census one.

DR. MULLER: Okay, where it says fishery independent; that one?

DR. WILLIAMS: Right.

DR. MULLER: Okay, I get you now what you're talking about. You're talking about these two points right here; right?

DR. WILLIAMS: No, for clarification look at the next slide, fishery dependent, and look at the last points tend to be a really big dip in there, the lowest in some cases in the time series almost. That is fishery dependent and then –

DR. MULLER: That's fishery dependent.

DR. WILLIAMS: – the slide before is labeled as fishery independent. Maybe that's not labeled correctly but just looking at the – you know, it's not much but it looks like a general decline to me in the decade, particularly in that lower slide.

DR. MULLER: Down here – that is what I was saying is these points down here are the ones you're talking about being lower, and they are lower.

DR. WILLIAMS: Well, I'm just saying this adds to my perception that there is a cumulative optimism going on in this assessment because the data seems to suggest some downward trends, some low values in the recent years seems to be a suggestion of a slightly high assumption about M, and the assumption of an F 30 percent for the proxy is also a little optimistic, so it all adds up, and that's my concern.

DR. MULLER: I'm just looking at the – what I was just looking at was the fleets to see – indeed, what you're seeing is this, which is down. You get the little drop at the end and these are the little drops at the end you're talking about. This is the same thing except as far as how they fitted, and so they did fit in with the little drop, the drop at the end.

It didn't fit this one, but that one, then, wasn't really showing a drop. That MRFSS there is different. Remember I said that this MRFSS here was being treated as fishery independent and there was not a MRFSS on this one because we didn't use it. You would be using the same data twice. We did not treat it as a fishery dependent one in this case, but it fits it.

DR. WILLIAMS: And then add on top of that that we assumed a constant catchability, so I –

DR. MULLER: Yes, it does assume a constant catchability; that is correct. We originally had it with a 2 percent increase and that was removed at the assessment workshop.

MR. WAUGH: On this issue of what proxy you use for the MSY, any guidance you all can provide would be helpful because the council's current position is if they get a true MSY or Fmsy from a SEDAR assessment, they will use that value. If they get proxies, then it's the council's current position that they will vote and choose what proxy value to use. Any guidance you can provide would be very helpful.

DR. CIERI: Is that set in stone? I mean, I know what their inclination is. What I'm asking is has that been approved by the Regional Administrator and Silver Spring that that is what happens?

MR. WAUGH: Well, that position has been advocated by the Southeast Regional Administrator. It has not been submitted in an amendment and approved yet, but right now as of the last council meeting their position in Snapper Grouper 17A, the preferred alternative is to specify – if we get a true MSY or Fmsy from a SEDAR assessment, that will automatically be the value that is adopted. If it is a proxy, then the council will specify what proxy value to use.

DR. CIERI: Right, so that actually is still up in the air; correct?

MR. WAUGH: Well, I wouldn't term it up in the air. I would say it hasn't been approved and implemented yet, but that is our council's current position.

DR. CIERI: Right, but until it is actually approved in that Federal Register thing, usually it is not a done deal, so I would suggest we would continue with making whatever recommendations we see fit, whether it be proxy or an absolute MSY estimate.

MR. WAUGH: Yes, and I was just asking that in doing that, please give us as much rationale and information that the council can use.

DR. WILLIAMS: I'll just add that the point is rather moot, anyway, because our ABC recommendation is going to be based our assumption about OFL or its proxy. They can change the OFL all they want, but it won't change our ABC.

DR. BELCHER: Okay, so in furthering along the discussion, in light of concerns – I get nervous about strong language stuff, but if Erik's comments directed to points within the assessment that you've had specific interest in getting clarification on, what is the group's feel relative to proceeding forward with what we have in hand for data relative to this? I'm assuming this is the next step we should be going. Do we still endorse it as best available science?

MR. CARMICHAEL: Really, what you're looking to say is do you think there is information within the assessment that isn't adequate for you to develop fishing level recommendations and proceed with that.

And if you believe that to make that statement, then we can start talking about of everything that has been presented, where do you make your recommendations and you probably will want to look at what the review panel recommended. If you get into, say, the reference point value, the Fmsy proxy of 30 percent; and if you wish to choose something different, definitely acknowledge what the review panel said. I think Carolyn and Erik and certainly I can all say we will be called to the mat on these things for anything that differs from the review panel or anything of that nature and try to give good justification for it.

DR. WILLIAMS: And I'll add that this is a tough one and I'm not sure how to best handle it, but I will say that again I raise these only because they're cumulative optimistic assumptions. Now is it fatal to this assessment? No, by no means. This is a pretty solid assessment in my mind. Now, could we choose an alternate base run, perhaps the 0.1 M and then use F 40 as a proxy and accept the other optimistic things that are going on, and maybe that is an acceptable solution at this point. I don't know but I throw that out there.

The other solution would be we stick with the assessment as is and the base conclusions and we just keep in mind that there is some optimism going on; and then when we get to the ABC-setting stage, maybe that is when we account for it.

MR. CARMICHAEL: And maybe consider there is somewhat from giving a range, and I think that would be totally appropriate given the comments that we have received about giving the council more information about what the underlying uncertainties are and what their range may be on some of these parameters and say here are the values from the base run and the uncertainty around them and however comment on this potential cumulative optimism and say there is a

possibility that this would be another appropriate set of parameters that gives you another reasonable and certainly a plausible scenario.

You may even get to the point where you look at, well, what is the OFL between this run which may have a lot of optimism built in versus another run which the panel may see as tempering that to some extent. I think giving the range of that would be well received by the council.

DR. MULLER: All I was going to show you was you talked about the indices pointing down; it just treated them as, okay, the F went up, and that's why the Fcurrent remember I said was lower and then F 2008, so it did interpret it as, indeed, an increase in F or a smaller biomass.

DR. BELCHER: So is there any further discussion and comment? Okay, so with that, what we'll do is we'll take a ten-minute break and come back and we'll start talking about we want to flesh this out.

DR. BELCHER: Okay, let's make some forward progress. What are our recommendations going to be?

DR. CIERI: Do we need to make some sort of official statement that the assessment as peer reviewed is accepted or whatever?

DR. WILLIAMS: Yes, but do we have to make a statement that we accept the whole kit and caboodle or can we make statements about parts of this like we accept that the data input was handled properly, the model was appropriate, that sort of stuff, but then stop short of maybe the stock status or the final estimates.

MR. CARMICHAEL: I think the more detail you give along those lines the more helpful and informative your report will be.

DR. BELCHER: So where do we want to start?

DR. WILLIAMS: I think before we can make that, maybe we need to decide how are we going to handle this? In other words, we could say that, yes, we accept the whole assessment and then we deal with it all when we set the ABC and we adjust accordingly; or, we don't go that far and we say, all right, there are some issues to start with and we would prefer that a different base run be used for management, and we basically go forward then with that, which I don't know if we even have the base run that we would need to forward with that or not.

DR. CIERI: I'm always a little bit leery of asking for a base run or using a run of a model when there has been something that has been peer reviewed and accepted at that review panel for final management use. I mean, that the reason why a peer review is accepted. I would be more inclined personally just to – some of those concerns that have been raised around this table, to sort of factor that in in setting the buffer, and that can be completed simply by putting down an explicit uncertainty in model selection – run selection. Do you see what I mean?

MR. CARMICHAEL: And I think something along those lines would be good. Perhaps you start as a structure and let's talk about the data and talk about the method, talk about the outcomes and then comment on things that you think you need to consider in making your recommendations because that's really the ultimate task before you.

In general you accept the assessment and you think there is information there that you can work with and develop your fishing level recommendations. Then from there you move into, okay, on the data front are there things that you see that you believe you should consider in your uncertainty evaluations and to the method – you know, how is it quantified.

Definitely your control rule wants you to discuss how well the assessment is quantified by the assessment. That is one of the criteria, but I think you can have some discussions about those lines and then get to some core recommendations on the basic assessment outputs and then go through the SSC ABC control rule application. Maybe start with data and talk about the assessment methods, talk about the results; and if people have comments to add, that the rapporteurs can keep kind of a running tally of comments that are made.

DR. BELCHER: Could you build it into looking at the ABC control rule? I mean, there is no adjustment. I shouldn't say that. We have an adjustment, but we're right now in structured tiers of how the adjustments are done, so there is no real moving numbers to and from those parameters that we've already put out there, so maybe the idea is look at the first dimension, what penalty we're assessing it, and then talk about what the strengths and weaknesses are in the current assessment in meeting that goal. We're giving it a 2.5 percent penalty but we're also acknowledging that there are additional things that should be accounted for. That is just an idea.

DR. WILLIAMS: Well, I think we can try to wedge into our ABC control rule, but we also have – and John Boreman mentioned it earlier, that we don't have to stick to the ABC control rule in every case, and maybe this is one of those where there is enough concern that we deviate from the actual ABC control rule in setting the ABC.

Maybe we'll wait until we get to that point, but it sounds like what I'm hearing is people would prefer that we make the adjustment for some of the concerns that I raised at the ABC-setting level rather than at the review of the assessment level.

DR. BOREMAN: Yes, I think we should avoid redoing the assessment and getting into that trap. As Matt said, we had a panel of experts. They came up with what they consider the best science. We can identify what we see as major sources of uncertainty and make a comment whether or not they were picked up in the assessment or not. I think that's important.

I think what we would want to focus on are possible major sources of uncertainty that were not picked up in the assessment; for example, separation of sexes and looking at spawning stock biomass or a sex-adjusted M value. That would add to our feeling of uneasiness about the assessment output without having to go back and ask for additional runs and so on.

MR. CARMICHAEL: In the past what you have usually done is made a statement that you endorse the recommendations of the review panel with regard to stock status and the reference points, MFMT and things of that nature, so we've created a table just to make sure we actually get the values written down.

So considering the discussion earlier where you said you need to get to OFL first and then talk about ABC, you may just want to get the basics out of the way. If you support what the review panel said and no one feels compelled to override their base run or recommend an alternative base run, then I think it would be appropriate to just endorse that, let's get the answers to these questions and then move into, okay, now let's talk about the uncertainty and we draw our ABC recommendation and do you bring in some of these other issues when you make your ABC. That is sort of the core question; what is MFMT, what is MSST, what is the stock status?

DR. BELCHER: So do we want to proceed in what manner? I can say that Page 41 of the black grouper SEDAR report has the Table 1 summary for stock status determination criteria, if that is a starting off point. That's the summaries for the M, the current F, F 2008, your SSB values, your MFMT values.

MR. CARMICHAEL: It's Page 41 of the PDF that we're looking at. It's Table 1 in the stock assessment summary and it summarized I think all the core values that are listed on our table. Step 1 is do you think there is useful information in here and do you support this list of recommendations based on the peer review panel?

DR. WILLIAMS: Well, I think I raised the issue that the Fmsy proxy; I don't know if we would agree that it's F 30 percent.

DR. CIERI: Just a quick question; where does that F 30 percent come from?

MR. CARMICHAEL: That's the value that's currently in place from the council's actions from the SFA Amendment and most species were at a F 30 percent SPR level. The review panel comment on it, they talked about the steepness of Point A and the consistency was 30 percent – there is like two paragraphs in the review panel report where they comment on it, and they supported the 30 percent SPR. They brought up issues beyond – that's beyond status quo. They made a couple of comments about it.

DR. CIERI: Yes, I remember. I was just curious as to where it came from initially.

DR. BELCHER: So how do we propose to address that issue? Well, John said I should ask you; do you all consent to everything aside from the proxy – as far as the F 30 percent?

MR. CARMICHAEL: Seeing no objection, I would take that as a yes, so now have a discussion of a proxy.

DR. BELCHER: So what is the general consensus of the group relative to the use of the F 30 percent SPR? Obviously, this has been an ongoing discussion for quite some time not just at our level but also at the council level.

DR. WILLIAMS: And I would add in the scientific literature.

DR. BARBIERI: I just wonder if we want to clarify, you know, based on the comments of the review panel some of this other support information that Bob showed, whether – you know, really our problem is with the 30 percent SPR being the appropriate proxy for MSY or whether, you know, we have concerns that MSY itself might be given us a poor measure of long-term stock health and sustainability; that if we make a recommendation to go to a higher SPR level proxy, we actually would have – you know, older age classes are going to start rebuilding the age structure.

We're going to have some of those other biological productivity issues restored – I mean, if we look at recommendations of integrating consistent-based management principles into our fisheries management framework and all of those things, you know, and advise the council that going with F 40 percent might be the best way that the concept of MSY because it is really looking at just the total biomass of fish.

And even though the models do take demographics and age composition into account, it really is not accounting for things like older females having better quality eggs and young and higher survival and better – a higher probability of producing stronger year classes and actually having the fishery restored to a level that's real long-term sustainability. I mean, is this the issue?

I mean, looking at some of the issues and the points that you find in the literature regarding F 40 percent, those are the things to me that come to mind. Are these the issues that we are trying to address, which I completely agree with that we should address? Are these the concerns that we have or are we concerned really in having something that we feel represents actual MSY?

DR. WILLIAMS: Well, from the literature standpoint, a lot of the literature analysis that comes out and recommends F 40 percent is based on looking on what is an appropriate Fmsy value so it is what is the best Fmsy proxy, and what they have found is that things tend to be leaning more towards F 40 percent being more appropriate, especially for more at-risk stocks being ones that live a little longer and maybe have a unique reproductive strategy and so on and so forth.

DR. BOREMAN: The monkey wrench here, though, is this is a protogynous hermaphrodite; and by reducing F to encourage longer-lived individuals you're probably favoring the males. I don't know how much you're gaining on the female side by doing that, what the tradeoffs are.

MR. CARMICHAEL: Well, the review panel addressed – this is on Page 493 of the PDF document. It is in the middle of their review panel report, and it is what is displayed up here and highlighted. I think if a different recommendation is made, obviously we would very much want you to address the issues that they raised because I'm sure that they will read back to us at the time when reports are made and Carolyn is telling the council that you recommended a different

SPR than the review panel. We will need to address these concerns that the review panel put to address their justification for supporting 30 percent.

DR. BOREMAN: Well, I think a fallback that we like in the Mid-Atlantic is there is no compelling evidence to the contrary as far as I can see other than what Erik points out in the literature, but here they are using an SPR of 30 percent as a proxy because it seems consistent with the data that were in front of them in terms of the assumed steepness of 0.8 and the stock-recruit curve and so on. There is some justification here that makes sense, and in order to do what John says – in other words, pick another value and provide more compelling reasons for the other value, I don't see those here.

DR. WILLIAMS: To that point I disagree. The data doesn't support that. As stated by Bob, the data wants to put steepness at 0.95. The only reason it ended up at 0.8 is because of some heavy constraints put on it, so steepness is telling us nothing about the potential SPR rate. The other thing that I would add is it looks like to me from this report the only SPR value that the review panel was offered was the 30 percent. I think they just fell on the default because they weren't presented with another option.

DR. BELCHER: Like in the reports, I was going to say there is Terms of Reference Number 6, which is actually Page 279 of the PDF document, it says the AW Panel actually discussed the SPR level to use and eventually recommended proxy benchmarks be generated for both SPR levels, meaning 30 and 40 percent, so both were done coming out of the assessment.

DR. CIERI: Back where you had it before, it said the review panel recommends an SPR of 30 percent, it is really, really hard to come up with a justification to use something different when you've got that clear of a statement stuffed in your document. I sort of agree with John. I mean, unless we've got some other information out there to say that, no, we need to do an SPR of 40 percent, my guess it would probably be 30 percent. To account for some of Erik's uncertainty is maybe put in about some of this other stuff, but that's where we need to account for that between the OFL and that sort of ABC portion.

DR. WILLIAMS: This seems like it is being handled as a legacy more than an actual scientific basis for supporting F 30 percent and that's my concern. I mean, I guess if the review panel endorsed it; do review panels make mistakes? Hell, yes, and I think they may have made one here.

DR. CIERI: I would suggest when we sort of wrap all this stuff up, that we really have some recommendations for the review or even the next update to examine an SPR of 40 percent as an alternative benchmark. It's pretty clear in the document; and unless there is something else to refute it – you know, if they were presented both and chose one, I'm not really that interested in setting a precedence of reconfiguring a peer review panel's recommendations.

DR. BARBIERI: And although I agree with that point, Matt, the review was conducted and we respect that, it doesn't mean that for us here as an SSC to make a recommendation based on what we know about the biology of the species being local, more familiar, so we can actually

contextualizing perhaps the recommendations coming out of – you know, I don't think that us making a different recommendation to the council on the actual SPR level to use would put us in the position of a completely disagreeing, Erik.

I think we would be upgrading saying that, you know, within the level of information that they had, this is fine, and perhaps MSY as such, you know, looking at the data, as John pointed out, came out to be around that, but it doesn't mean that we cannot take some of these other life history attributes and population dynamics kind of into account.

You know, this is a hermaphroditic species, it is long lived, you know, late maturing, you know, that we make a recommendation based on that. All I wanted to say is I don't see that as us disagreeing with the outcome of the review. I see us as contextualizing their recommendation to the set of species that we have here in the southeast, you know, given our better knowledge and familiarity with the species biology, perhaps.

DR. CIERI: As sort of a quick response, we've got a lot of uncertainty between 30 and 40 percent and let's handle it where we handle the uncertainty. Do you know what I mean? We kind of can do both. We can say we agree with the review panel and choose the best – you know, the SPR of 30 percent; however, there is some uncertainty that the SSC has and then follow that up in the uncertainty discussions. Does that make more sense?

MR. CARMICHAEL: The addressed the steepness of 0.9 in the paragraph above, and they said the steepness of 0.9 applies to 90 percent unexploited recruitment at SPR of 20 percent; and then they say where lower steepness is suspected, as in this case, higher SPR benchmarks would be needed. So if we discuss steepness and 0.9; does 0.9 imply more of 40 percent SPR or more to 20 percent SPR as compared to 0.8?

DR. BARBIERI: Just one comment; based on what Matt said, that kind of jogged my memory. I mean, our control rule does take vulnerability into account. We did keep the PSA there as a way to take species' vulnerability and life history attributes and all into account, so perhaps we can account for that uncertainty in the vulnerability component.

DR. BELCHER: So, again back to – and I apologize if I'm kind of losing track of how we're circling back to things, but back to Table 1, then, and that endorsement table of values, that summary table of values, so we're saying what relative to the 30 percent? We're just acknowledging as a group that the review has put forward with 30 percent; are we proceeding then with the 30 percent with our caveat on it that we would prefer that it not be 30 percent? I'm trying to get in my mind's eye how I'm going to handle this as a more procedural thing so that when we get to red grouper this is more of a tick list of what the questions are that I'm going to ask you for that.

MR. CARMICHAEL: Some stated they didn't see a compelling reason to change; others have stated they think there is a compelling reason to change; and we need to reach agreement on the issues and how we're going to handle it; and most importantly how it is going to be presented to

council. Maybe that's where it stands is that 30 percent as the departure point and you will work through your ABC and make sure you provide the range and the information to the council.

DR. BOREMAN: What is the value – if it was F of 40 percent SPR, how would that value change from 0.216? Are we talking about a lot or a small change? I think it looks like a small change from what I recall of 0.21 or 0.23.

DR. BUCKEL: I've tried to take notes on the black grouper discussion and to address your question about where we were, I think the bulk of the folks felt because it was so strongly stated to go with the 30 percent, that that would be done, but I think everyone agreed with Erik as well that the justification for using the 30 percent was inadequate in the review and I think that could be a jumping-off point to either considering that or in the discussion of setting the ABC.

Erik, correct me if I'm wrong, but I think the justification that they provided, that 80 percent or the 0.8 steepness value isn't a good one for going with the 30 percent. I think everyone here would agree with what was said about the literature, that there is not only theoretical but also the empirical evidence that when 30 percent has been used, it hasn't worked the greatest, and that's another reason for folks wanting to go towards the 40 percent.

DR. BELCHER: Thank you, Jeff. So is everybody in agreement with Jeff's statement relative to consensus – well, his capture of our consensus statement? Okay, thank you, Jeff, that helped me quite a bit.

MR. CARMICHAEL: The F 40 percent SPR is 0.165 versus 0.216, so the range is 0.05.

DR. BOREMAN: It's not 0.05; it is 25 percent or so.

DR. WILLIAMS: Right.

DR. BOREMAN: That is the difference; that makes a big difference, but it is a lot bigger than I thought, so this is an important decision we're making, folks.

MR. CARMICHAEL: 0.165; I think 40 percent was included in Bob's presentation of the sensitivity runs.

DR. BELCHER: Bob said he could get us ratios for the record. I'm going to pose a question that the council asked. Given the discussion that has been going on – I mean, we've had our discussions within our group, but the council has been spending a lot of time kicking this around the table, too, it seems like every meeting that I've been to over the past year and a half, almost two years – well, it's probably been a year and a half, but it seems like it has been two years – this has been something that keeps getting revisited.

Everytime we think we have this discussion is it management, is it science decisions to be made; is this something that as a group we all should be having a discussion on? I mean, I know we have it within our group, they have it within theirs, but we have never had a face-to-face

discussion as to what the actual debate is. You've got managers debating it from their standpoint, saying it is a management decision, and you've got scientist debating it within their arena saying it is a science-based decision.

Is it worth it to bring everybody together to have this discussion or not? I mean, I just feel like we keep throwing rocks over a wall at each other. We're trying to defend for one side and they're defending at it from the other side. It's a rhetorical throw out, Matt.

MR. WAUGH: That was a question? I think Matt answered it basically is we will see if it stays in 17A and gets submitted, then we will have some guidance on whether it is a manager's decision or a scientist decision. I honestly don't think getting you guys together with the council would resolve.

We've got a council member here and Brian might have a different view. I think we had some joint discussions December two years ago up in North Carolina. I don't think it is going to be resolved. I think it is going to take a test case and see if indeed the council can – it's a manager's decision or not.

DR. CIERI: I'm not aware of another council who has suggested that they have the ability to do such a thing, but I certainly could be wrong. It will certainly be very interesting. Should it go through, that would certainly give the councils a lot more flexibility in determining annual harvest.

MR. CARMICHAEL: It is an extremely critical point, too, because as we all know consistency is a question that is often raised. The question will be asked of Carolyn as to, well, for one stock recently you recommended 40 percent SPR based on an unknown situation in the literature and in this case 30 percent SPR. Now in that case the review panel recommended 40 percent SPR. In this case the review panel recommends 30 percent SPR.

There are differences there, but the question that does get raised – as Carolyn mentioned, the discussions and what question does get quite often asked is that, well, is the SSC now moving to 40 percent SPR in all cases? Well, given the tendency of perhaps the majority here, it doesn't seem to be the case. If you're saying MSY can't be estimated, we use 40 percent SPR in all cases, you're open to looking at the information before you. I don't know off the top of my head what is in red grouper that we're going to look at in a little bit, but that could add another wrinkle into the whole fabric here.

DR. BELCHER: And part of my concern, too, is just as John was saying is that is it going to end up being a term of reference. That no matter what, you know, if management states that it is going to be an SPR of 30 percent, then that means to me that it is going to be a term of reference; that no matter what, SPR is going to be 30 percent of the proxy, so we won't have wiggle room at that point. There won't be those discussion anymore if management determines it.

In science at least like we did, you can debate, you can put the two forward, have the discussions and say what the data supports or doesn't, but if it is mandated – again, I hate throwing strong

words out there for fear of how they're going to come back, but if it is mandated that we use SPR of 30 percent, is that going to become a constant term of reference that we're not allowed to work with? How does that work?

MR. CARMICHAEL: It is no more mandated than it is now by being a fact that in this case of this fishery it is the status quo; and the last comprehensive amendment addressing the SFA for a number of stocks, which nothing else was known, the council chose 30 percent SPR, so it is no more mandated than that.

DR. BELCHER: Well, it is the question I was asking.

DR. CIERI: Usually in the terms of reference you have a terms of reference and the appropriate biological harvest and reference points, right, so that there always frees up a review panel to choose – you know, they could have asked for any type of – they could have asked for an SPR of 35 percent if that is what they chose to do.

Those terms of reference are so open ended that they're allowed to examine any of those things in between or at least they should. They're the ones that are actually trying to come to some sort of consensus on what the appropriate reference points for the stock is, so they could have chucked all of it and said run with an F at MSY, run with an MSY benchmark or run with any other type of benchmark. That is sort of up to them, and I would rather leave that in their hands rather than us doing it afterwards.

DR. BELCHER: If they recommend this SPR of 30 percent, if you're leaving it up to the review, I'm not understanding the council's input of saying that it will be SPR of 30 – their decision to make it SPR 30, then. I agree with you; it should come out of the review panel, whether it's 25 percent, 55 percent or somewhere in the middle. That's up to your scientists who are reviewing the data and the assessment and all. The idea that it's coming from a management recommendation, I'm not understanding how that is feeding into it other than to lock you to a specific value.

MR. CARMICHAEL: The review panel makes recommendations, you make recommendations to the council. The council's opinion and what they have stated is that choosing a proxy involves an element of risk acceptance, and that is where they come in as picking a proxy, so you should present it to them in terms of what is the risk to the stock of 30 percent versus 40 percent.

If you think there is considerable risk to this stock and to its status and to its moving into an overfished/overfishing situation, if they were to fish at 30 percent SPR as opposed to 40, then that is what you need to convey to them so that then they can make an intelligent decision based on the risk. That is what they ultimately want. They want the risk evaluation for the different levels.

That is part of what has gone into the discussions of our favorite species, red snapper, is talking about the risk to the stock and considering where that stock is, and also talking about the uncertainties in the assessments which may figure into how much risk you're willing to accept.

That is the kind of stuff that needs to go into the discussion for them to make a decision and maybe you would feel more comfortable with your recommendation.

DR. BARBIERI: I completely agree. To me, the way I see this, this is really no different than us getting some direction from the council about their range of risk level that they're willing to take, the risk of overfishing as we define limits and targets. I don't see this as different. In this case it should be a management decision but well informed by science. I think our role will be to present the council with a rationale for different levels of SPR that are sensible, perhaps update what they have in front of them now which came from the early nineties or mid-nineties.

Maybe we should put together some kind of a white paper that gives the council some direction and explains that all these things, that we are at a different time, an appointed time where we need to take these other things and science has moved forward from where we were back then and that we need to update.

I disagree that we should leave this proxy to the review panel because this is another form of uncertainty, in a way, because they're going to have different panel members and based on two or three individuals they're going to make that decision, and it is going to really put us on the spot here to disagree with them.

If we put together some form of analysis of what would be levels of SPR that we should use as proxies for different species that involve different vulnerability levels, I think then it would be easier for us to define those in the terms of reference. If we define them in the terms of reference, then the review panel is going to just evaluate them from that point forward.

If they have a strong basis to disagree either at the assessment or review panel levels, if they have a strong basis to disagree with our recommendation, what we have set in the terms of reference, they're more than welcome to write some strong justification and we will evaluate it here, but I think this should be our role to help the council with this issue. In doing this, I'm saying explicitly we should develop some form of an analysis or some kind of white paper that summarizes these issues for them, but right now we are not putting this in front of them where they can really understand it.

DR. WILLIAMS: To that point, that all sounds fine and good, let's characterize all the risks associated with that. If we could do that we would know what an appropriate proxy is. The bottom line is we don't know the risk associated with these. We have some literature suggesting it should be higher values. I mean, if we had that information we wouldn't have this discussion. The bottom line is it is a huge unknown, period, end of discussion. It is unknown, we can't characterize the risk associated with F 40 versus F 30; we can't. There is nothing to base it on.

DR. BARBIERI: No, all I'm saying, Erik, is that I don't think it makes sense from a biological perspective to say that the proxy is the same across a wide range of species with different vulnerabilities, with different maximum ages and life history and population dynamics' attributes, so it is really that minimum level.

You know, perhaps all of this should be upgraded and we say, well, 30 percent is no longer appropriate for a hermaphroditic species that lives to be over 30, and we point out that needs to be updated to 40, and that other species may need to have 45 or 50. That makes more sense, but we present that to them.

I mean, we know that we're not going to be able to really measure and quantify that risk, but we tell them that for this suite of species you want to be a little more risk averse that for those other species, based on the productivity and vulnerability pattern, and I think it will help them understand. Maybe we say the minimum level at this point, based on the scientific literature, that we feel is the most risk averse; the minimum level is 40 and we justify to them – and I think it will help them understand.

DR. BELCHER: John and Bob have worked out some numbers. What did you come up with for your ratio?

MR. CARMICHAEL: Well, you know, curiosity killed the cat, so we were wondering what – you know, we talked about the F level so what is the MSY difference and all of that? You know, the MSY at F 40 percent is 493; MSY at 30 percent is 520; so a 27,000 pound difference. The SSB is about a 2 million pound difference, so you are putting quite a bit more spawning stock out there at your 40 percent SPR.

I mean, those are some of the things that are to be considered and they're the kind of factors I guess to consider in the potential risk evaluation. The question is I think as Erik posed it, is it -- and Luiz alluded to it – is it something where F 40 percent is emerging as more acceptable; and in that case does that override the specific information here in this assessment? I think we're still kind of split on it and we are going to have to figure out some way to move forward.

DR. BARBIERI: And it came out to where I tried to hit that on that key about us putting together some kind of white paper and give direction to the council, but it is difficult for me as a fisheries biologist to understand how we would have F 40 percent for a species like red snapper and for something like black grouper and vermilion snapper.

I don't see those being in the same bin. Perhaps 40 percent is not enough for something like black grouper or some other grouper that is hermaphroditic and therefore more vulnerable. Those are the things that we should be looking at. I think some of the other councils – I mean, we look at what the Pacific is doing for those rockfishes, and they use much higher levels for those species because of their vulnerability. That is the type of thing that I think we could either do or request that the Center provide us and we can comment and expand on it.

DR. WILLIAMS: Well, you're extending the whole fallacy of the argument, which is that there is somehow a relationship between the appropriate Fmsy proxy and some life history attribute. That has yet to be borne out with empirical data, for one. Two, the reason that things are shifting to F 40 is a lot of hindsight, looking at, all right, when we can estimate Fmsy, what SPR corresponds to that, when we think we have a reliable estimate of Fmsy, and it tends to correspond more closely with higher values of SPR.

That is the data we should be looking at. We don't have any of that for our region. That's the problem; there is no clear life history attribute that says, oh, yes, it should be F 40 in this case and F 30 in that case because – really, what ends up happening, if you look at the history of this whole thing, is, for instance, the rockfish, they've moved to F 40, even all the way up to F 50 in some cases, and it is all because of hindsight, looking at, well, when we could estimate Fmsy, what was the appropriate SPR, and it turns out to be about F 40 to F 50 percent.

Then they say, oh, well, yes, that makes sense because this is a long-lived species and this and this when really it is not that attribute necessarily that led them to that. It's really just the empirical analysis and they sort of the biology around the solution in the end, and that's my concern.

DR. BARBIERI: Right, and I agree, but what happens with this issue I think is this concept of MSY is somewhat antiquated in a way to really represent – well, I know. No, I know, I know we do, but what I'm saying is that in us providing scientific advice to the council and explain that this is not – that even our well-informed complex, sophisticated assessments are not really being able to integrate all the life history attributes and all those things, you know, taking the biology into account.

I mean, I don't know how to come out of this conundrum, Erik, in terms of like having something that is defensible, we can put before the council as defensible. I mean, I understand the issue, but I just don't know how to resolve it any other way.

DR. BOREMAN: I would like to roll back to the tapes for about 30 minutes. I didn't get a clear answer and I didn't sense a clear answer on whether we are locked into F 30 percent because that is what is defined in the fishery management plan as an MSY proxy. Is that what is in a framework?

MR. CARMICHAEL: That would be the status quo, no action alternative, but if you recommend something different, then there will be an action item in the amendment. The council will have to then take an action to change it to 40 percent SPR. That is the case with the red snapper example where the status quo is 30 percent SPR and they have an action to change it to 40 percent.

DR. BOREMAN: So it is a framework action as opposed to going out for more public hearings, et cetera?

MR. CARMICHAEL: It's an amendment action; it is not a framework action at this point.

DR. BOREMAN: So it would have to go through a round of public hearings.

MR. CARMICHAEL: It will go through a round of public hearings; it will go through the amendment. I imagine in the Comprehensive ACL Amendment it would be an action for this species.

DR. CIERI: I think we're getting really bogged down right now into things that are sort of like longer term on whether F at MSY is appropriate or what is better on the long term for most of the species, 30 or 40 percent. Maybe to get past this; again, we've got a recommendation from a peer review, and we've got some uncertainty as to whether or not that recommendation is appropriate, I would suggest accounting for that uncertainty within our buffer, to state fairly clearly to the council, hey, the peer review came back and suggested 30 percent, but the SSC questions the appropriateness of 30 percent given the life history characteristics, and we're going to account for that in the buffer. It's kind of what I said like an hour ago.

DR. BELCHER: Does everybody concur with Matt's statement relative to that? Jeff.

DR. BUCKEL: Erik, for clarification, Matt just said based on life history attributes, but you just said that there is no relationship there, so should we change that language?

DR. WILLIAMS: I would say the better thing to say is that the track record of the snapper grouper complex says that F 30 percent has not worked because we have more proportion of overfished stocks than anywhere else in the country.
DR. CIERI: Based on hindsight; yes, experience.

MR. CARMICHAEL: And we'll pause while Jeff writes that down, please.

DR. BELCHER: So as a group do we endorse Table 1 in its entirety, then, to put forward to the council?

DR. WILLIAMS: This gets back to what does our endorsement mean at this point; do we put a giant asterisk after it?

DR. BELCHER: Can we put this forward for use in management; can the numbers be used for management?

MR. CARMICHAEL: These would be your fishing level recommendations, which you're obligated to provide to the council. Now we have an MSY estimate in there, which you can decide is your OFL and from there we can begin to discuss the ABC control rule.

DR. BELCHER: So is everybody comfortable with that? So now using the results from this table, we should be able to proceed – now that we have a level of OFL, to develop our ABC. We're going to apply the control rule and develop that number. Let's go ahead and walk through the exercise. Let's go ahead and run through our dimensions and tiers; so, assessment information, level one. What tier are we on within Dimension 1 for assessment information?

MR. CARMICHAEL: It's Document A-2; it is the ABC control rule, final proposed, from 09/09. Most of you have probably gotten it about six times by this point. Tier 1, assessment information, it includes MSY-derived benchmarks – that is a no; no MSY benchmarks. Proxy reference points, reliable measures of exploitation or biomass, so is it a yes for level two, tier

one, you have reliable exploitation and biomass, but you don't have MSY benchmarks; you have a proxy reference point.

Level 2 for Tier 2; uncertainty characterization – the top is complete; the key determinate being uncertainty in both assessment inputs and environmental conditions are included. That is not true. Number 2, high, key determinate reflects more than just uncertainty in future recruitment, so what sources of uncertainty are addressed – recruitment being one; how about others; are there other things?

And the question between two and three, the distinction is really whether or not full uncertainty is carried forward in the projections? If full uncertainty is carried forward, then it would be a two. If it is not, then it would be a three. I guess I'll go one further and say, okay, if I look down to four, Fmsy and MSY distributions are lacking – we have those, so we're somewhere between a two and a three. Let's open it up for what people think.

DR. BARBIERI: Well, we don't have real distributions of Fmsy and MSY. We have distributions of the proxy.

MR. CARMICHAEL: So what is the extent to which the full assessment uncertainty is carried forward into the projections you would then be using to calculate your ABCs?

DR. WILLIAMS: Yes, I think the distinction between two and three could accommodate a lot those cumulative optimism points that I brought up earlier.

DR. CIERI: And in general some of our uncertainty on whether or not 30 or 40 percent. For here you've got some uncertainties dealing with the natural mortality estimates as well as that steepness factor, which for me is a big one; if it has been constrained, the use of locked-up catchability where it is not being estimated. I would suggest just as sort of a proxy that we put it into the medium category.

DR. BARBIERI: And, by the way, don't forget the uncertainty also about the ratios between gag and black grouper, the ID and the actual level of –

DR. CIERI: Wouldn't that be in the assessment information, right? That's where I stuck it as your input data. Yes, like I said, I'm just going to throw it out there that we're haggling between two and three. I would suggest that whole SPR 30-40 discussion, toss it into a three.

MR. CARMICHAEL: And I think you do have the case of the number of the uncertainties. The M, the catchability, the dome shape, the steepness aren't all fully carried forward into all the uncertainty calculations in the projections; so three – agreed? Tier 3 is stock status, neither overfished nor overfishing – that is true.

The stock is a high biomass and low exploitation relative to benchmark values – not necessarily. It is not really high, I suppose. Neither overfished nor overfishing; stock may be in close proximity to benchmark values – it's two; do you think it is one? The F level is about 0.5 and

the SSB ratio was 1.4, so you're about 50 percent above your SSB. However, if you look at the F 40 percent proxy, which you had quite a discussion about, the SSB is at 1 and the F is at 66 percent of MFMT, so you are in closer proximity – right, against MSST.

DR. CIERI: Right, let's not double count; let's not count that twice. My suggestion would be – you know, all things considered, 50 percent away from your SSB and so on is pretty far away.

DR. WILLIAMS: Except if we considered again the natural mortality issue and looked at the 0.1 run for natural mortality, that is a little closer to the biomass benchmark.

MR. CARMICHAEL: I would think it would be appropriate to look at your range of sensitivity runs and consider your uncertainty as reflected in the assessment outputs you have in judging this criteria in particular.

DR. BOREMAN: Yes, during Bob's presentation he had a graph of the overlap of Fs, the current F versus the distribution of the – yes, there was no overlap there and like a 15 percent on the biomass side, and that is pretty far apart, I would think.

MR. CARMICHAEL: So it sounds like a one. The next criteria is the PSA score, and let's see if it is done for this species. We'll look that up and find out what it is; the PSA score for black grouper. Is that low, medium or high? It's a three; it's a high risk, okay. That's a score of 12.5 percent for a P-star of 37.5. Carolyn, it can't be 12.5 percent because I've got a ten and a five.

DR. BELCHER: I'm sorry, you're right, wrong one.

MR. CARMICHAEL: Ten and five is 17.5; it's 33.5. The P-star equals 32.5. The Gulf SSC came up with a P-star of 33. Well, I guess that raises a question, then. All right, so now we know the Gulf came up with 33 percent; could we use the same ABC that they came up with of 33 percent; or do you want to see what 33 percent extrapolates to? Does the committee accept a P-star of 0.33, given you're at 32.5?

DR. CIERI: Yes, you're talking about carrying out your uncertainty estimation to a couple of decimal points or at least one.

MR. CARMICHAEL: Well, Bob will tell us what the ABC is in a second.

DR. WILLIAMS: Looking back at Bob's presentation, Slide 63 which shows the P-star, I'm concerned about what is actually being accounted for under the uncertainty in the P-star calculation.

DR. MULLER: There are two sources of variability in that model. The variability on F 30 percent SPR which is only going to vary based on your selectivities, because M is basically a vector, and so – and F, you're setting an F value going into that, so the selectivity is going to vary, and that is giving you a variability there. The other source of it is on the bias correction

which basically essentially is the log variance of the recruitment. Those are your two sources of variability in that model.

DR. WILLIAMS: Yes, but which seems completely inadequate because if you look at the plots there is essentially no difference. We can choose a P-star of 0.1 or 0.5 and there is no difference almost, so this is all becoming an academic exercise.

DR. MULLER: I agree.

DR. WILLIAMS: This is where it gets fuzzy because then the characterization of uncertainty, it's really not the characterization of uncertainty in the model as much as it is the characterization of uncertainty in the P-star analysis that really counts.

DR. MULLER: It's exactly what it is.

DR. WILLIAMS: So in that case we did a horrible job with this assessment in terms of characterizing uncertainty in the P-star analysis.

DR. MULLER: Which gets back to the discussion in February about, well, do you pick a variance and give it that?

DR. WILLIAMS: Bob, you can't do stochastic recruitment projections?

DR. MULLER: The stochastic recruitment projections were – the stochastic projection has virtually – everything in it is stochastic, but the P-star sequential that I have – it only had two sources of variability, because I went through that – in fact, I e-mailed Kyle to find out where indeed does the variability come from? What we pointed out was the fact that the variability in population numbers is what is coming from the bias correction, which, again, is a variance of the log requirement number.

The other variability comes from your MCMC in this case of your limit, which in this case is F 30 percent. Those are the two sources of variability that I found. The stochastic one is much wider because it is using – for each MCMC it uses its own stock-recruits because I have 2,500 of the darned things, and it takes all of the outputs, but not in the other one. I did not modify the program. I just basically took what I got and popped it in.

DR. JIAO: I just have a quick comment about this projection. Since it is from the MCMC, I think it is pretty convenient to do a projection based on the MCMC results because you have the joint distribution of the population size in 2009 and you have the stock-recruitment relationship from each MCMC run, so you can just go forward and also you can have the F effort be inside when you project the Fmsy proxy, and so you just combine those three joint distribution forward to get – you should be able to get a very nice projection when the uncertainty is pretty clear. I'm sorry, do you get my suggestion?

DR. MULLER: No, I understand; all I'm saying is that since I did not program the P-star program that I ended up using, that capability was not included in that. As far as doing it, yes, it would be very straightforward because it actually has – I mean, we could take, as you say, the M in 2000 – actually it would be the M in 2008, but, yes, each run has that and it has the variability in recruitment and that could be very easily dialed in, and that would take changing that program. It was not done that way.

DR. JIAO: Right, I think the P-star, the basic idea is there. You don't have to follow exactly the procedure used either by Kyle – you get uncertainty of Fmsy proxy, the population size uncertainty differently – if you use a different approach. Since you used this approach, you have the joint distribution now of the stock-recruitment range and shape of the population size, uncertainty of Fmsy proxy, so your approach should be more advanced because you have those correlations built inside already. Otherwise, you would have to assume independence, so you can scientifically write your projection based on posterior MCMC runs, then this question should be solved easily.

DR. MULLER: Yes, in fact, actually we had a discussion – Kyle and I had a discussion at the workshop in October and that was, quote, one of the things he wanted to put into it was actually retrieving those MCMC results and doing that, but, again, the version that I had did not have that at that time.

MR. CARMICHAEL: This table shows the P-star of 0.33 and the ABC recommendations – and I guess 2009 and 2010, as you recall, the projections are maintain status quo for an F – right, no changes go into effect until like 2011 in terms – so, ABC in 2011 under this is 649,761.

DR. MULLER: The jump means that you are actually raising your Fs to be that overlap value; whereas, remember, you're starting with a much lower value, because this is backwards in most fisheries. This one you actually have a low current fishing rate.

MR. CARMICHAEL: Your current F, as we said, was like half of the reference level, so this would be – the ABC doesn't necessarily mean it is the ACL. The council may not wish to move all of this direction at one time for fear of other things going on in the fishery; I don't know.

DR. WILLIAMS: Was the P-star approach reviewed by the review panel or was this done after the review panel?

DR. MULLER: The P-star approach was presented to the review panel. I know if they discussed it in addition to that or not. I don't actually have any explicit memory of them saying anything about it.

DR. WILLIAMS: This is wholly inadequate for our needs. I don't think we should even be looking at these results because they're just appropriate. As Yan said, we need to incorporate the full uncertainty into these projections.

DR. CIERI: And there are off the shelf that NMFS has a model that does that. I don't think it incorporates directly and it doesn't incorporate the P-star but it does use everything from the MCMC. I'm trying to remember whether or not it can be incorporated.

MR. CARMICHAEL: If we use the same program that has been used for what was missing in this –

DR. MULLER: Okay, the main difference is the fact that if you look at this with – Kyle, you should be up here doing this and not me, but basically you'll be using Fmsy. Now Fmsy, in this particular case everytime you changed the stock-recruit relationship, the Fmsy has changed and it was changing quite drastically.

Where here, because your – the only variability is the variability in the selectivity. This thing doesn't change very much. It basically only changes – the minimum and the maximum value differ by 10 percent of your mean value, if you want to think of it that way, so it's a very narrow type thing. If you do an Fmsy, it is much broader. It goes from 0.15 to 0.3 something, so it's a much, much broader dome. Then it comes out looking like everybody else's. It's that variability in the F limit because that is one of the main drivers of variability in the model.

MR. CARMICHAEL: Can we get an updated P-star which better encompasses the method there that better addresses the uncertainty given the situation with this model? Is it doable? Is there a coder who can do the recoding to handle this?

DR. BOREMAN: I'm trying really hard to follow this and I'm not being very successful at it. I'm reading the review panel report and they were asked to evaluate the adequacy, appropriateness, application of the methods used to project future population status, et cetera. It says the review panel agreed that projections correctly modeled the time series of future Fs and biomass values required for evaluation of the various management options. The P-star software package is the preferred method for projections of the probability of overfishing and it was used for projections. What we're saying is we disagree with the review panel at this point?

MR. CARMICHAEL: So we agree with the P-star package, but is there a question about implementation in this particular instance; and if so, we need a pretty clear statement about what that problem is and how it can be rectified. It would be real nice to know if that could be done in the next two days. Shertzer et al are cited here quite often.

DR. SHERTZER: I'm trying to stay out of it, but it is hard to be quiet in the back. Just to clarify what is in there and what is not in there is there is uncertainty in future recruitment and there is uncertainty in current abundance at age, and then it projects forward from the base run parameter estimates. It does not carry forward MCMC uncertainty and parameter estimates.

One way forward would be – and I think this is how at least this SSC has handled these things is in computing an ACL you could account for the lack of uncertainty in the projection through the actual choice of the P-star value rather than inflating the uncertainty around your future projections.

MR. CARMICHAEL: I guess the question is not so much the P-star value as it is the distribution and the point being made that the distribution seems unacceptably narrow because it is missing some component of the uncertainty which might be tied to using a proxy that is fixed as opposed to an Fmsy with uncertainty around it. It's narrow, right, whereas an MSY has a wider.

DR. BARBIERI: Now, granted that we have actually already increased – and this is just for discussion purposes – but when using proxies we are creating a discount that should be accounting for that, right; I mean, for the fact that – right, we are inflating our P-star value, inflating the buffer between OFL and ABC already based on the fact instead of having actually MSY estimates we have proxies.

DR. MULLER: That is correct except what Erik is pointing out – and we have also discussed this at the review and others – basically you get almost the same value whether you're doing a 5 percent overlap or whether you're doing a 50 percent overlap because there is so little variability that is actually being captured and brought forward. That is where the difficulty lies. You can talk about doing a 2.5 percent adjustment in your control rule, but it becomes irrelevant in the outcome, Erik, I believe is what you're getting at; not to put words in your mouth.

DR. BARBIERI: So how have we handled that for other species for which we had actual proxies instead of actual MSY estimates?

DR. WILLIAMS: Typically what is done is you account for other sources of uncertainty in the projection analysis. This is sort of a software limitation as well as a proxy limitation, so they just happened to converge at once.

DR. MULLER: One could conceivable take, quote, the bias correction and expand that and then you can – that would be the mechanism whereby this program could generate that variability. The reason I say that one is that then you would have basically a little spiky thing on your limit, but what you would be feeding it would be things that have variability associates with them. Unfortunately, the bias correction is very narrow, also.

It goes back to the fact that pure synergism – you take two narrow a distribution; the joint distribution becomes really narrow. That is where the problem lies, and so a way of doing that – that is what I said before. One of the discussions we had back in February on the uncertainty discussions and how to put these in is do you add variability saying that this is way too thin? But unfortunately because, see, what happens is the way that ASAP fits the stock-recruit relationship, it is not doing it by the log fit that you're getting your bias correction out, so what you have to do is you'll take what they give you and then calculate the corresponding bias correction, and that bias correction comes out to be 1.01.

Now flip that back for you on the log scale. That is your other issue thing. That's what I'm saying, so that could actually be – you could say we could add variability to the model by increasing that term, and that would be like what we were talking before is maybe adding some

multiplicative variance when it is so incredibly narrow, and that is just a fluke, as you said. It's two things that just by fluke had narrow distributions on them.

DR. SHERTZER: This is an ad hoc idea, but you're using a proxy for Fmsy and you don't necessarily have to use the proxy of the variance for the variance of Fmsy. You could use the variance from Fmsy and apply it as you were.

MR. CARMICHAEL: You could plug in place things that could be done?

DR. MULLER: Without doing it, I don't know how much great variance you're going to get out of it. It's one of these deals that when you start adding this and adding that, where do you go into your ad hoc; I'll put it that way?

MR. CARMICHAEL: That's right, and I think as we recall from the presentation a lot of the uncertainties are relatively narrow. There was not a wide range of recruitment, pretty estimates on numbers, all of this playing together. The suggestion of using the variance of MSY; is that something that the committee thinks would be a refinement and is it worth requesting that this try and be done and Bob to see if he can do that; or, we have the explanation perhaps played out this way and it is what it is. I'm just trying to bracket your possibilities here.

DR. WILLIAMS: The other possibility is skip all that nonsense and look at other stocks where we've had P-stars in that range and look at the percent reduction in landings and go with something like that. In a sense we have a P-star but we don't have a good estimate of the uncertainty. Either we will fill in that uncertainty or then we fall back on some other ad hoc method.

MR. CARMICHAEL: Can you really look at other stocks given that this is such at a different point and status and how much might that affect your perception of future recruitment and numbers at age in the short-term future?

DR. WILLIAMS: Yes, it's all ad hoc no matter how you look at it, so there is no clean answer here.

DR. BARBIERI: Right, and then perhaps the best option is instead of making an ABC recommendation here is let some of these additional runs be made and we schedule one-hour webinar or conference call where we are allowed to review the results ahead of time, and we make it by conference call. Is that acceptable, Madam Chair?

MR. CARMICHAEL: To point out one other thing as well, the yield at MSY is 520,000 pounds. Potential ABCs are considerably higher because we have a stock which is well above the MSY level. We're having heartburn because the number is high to some extent, but I think however you slice it you may end up with a recommendation that is coming out of applying all of this information that you could harvest more than the yield at MSY in 2011 because you have a stock that is at high abundance, and we know that is a possibility.

Now, does this mean that MSY is something that comes into play and perhaps that becomes a limit for an ABC recommendation if you have a lot of uncertainty as to whether or not your stock truly is at that point? I don't think we ever considered being at this point when we developed the control rule. I think it is about 610 on the 2011 ABC versus the MSY is at 520, so you're about 90,000 pounds higher even than MSY, but our stock is at 1 point something times SSB and our F is now at half.

DR. BELCHER: So what does the group recommend; should we wait for Bob to give us some updates, work with what we have? John.

DR. BOREMAN: Maybe both in the sense of go with what we have now; and pending these updates, are they enough to change our minds in the near future. I think what we're talking about here is a topic that I wanted to add to the agenda for the National SSC Workshop, and that is integration of risk policy and ABC determination, because right now I think we're more on the side of how much risk do we want to take of being wrong in our ABC recommendation.

If the stock is above the Bmsy level by 50 percent or whatever it is, we may be able to afford to take a little more risk with our ABC recommendation than if it was way below the Bmsy level. That's at least how we're addressing it in the Mid-Atlantic where we have a separate risk policy that looks at factors external to the assessment, and one of those is the stock history, its current status versus Bmsy and so on.

DR. BELCHER: So how does the rest of the group feel about that as far as proceeding with what we have and wait for updated numbers relative to this incorporation of the variability from the actual MSY value?

MR. CARMICHAEL: There is the discussion of ABC being less than MSY/OFL unless there is really a compelling that it would even be equal to it. Now you're in a situation where it could potentially be higher than it and maybe the one recommendation as to – or you could set ABC at MSY, comment on the P-star giving you that and talk about the uncertainty for not going that high or do you take the P-star straight up I think is what John is saying, take it as what it is and it is what it is.

DR. BOREMAN: I'm not suggesting you set ABC above OFL. I don't think we can legally do that according to the guideline.

MR. CARMICHAEL: OFL would, of course, be the yield at Fmsy in that year, so I guess we haven't seen that actually; go the yield at F 30 percent SPR in 2011, so obviously we would be below that, but we would be above our long-term MSY.

DR. WILLIAMS: So if we do that we're ignoring all the issues I raised earlier in our setting of ABC; in fact, going in the opposite direction.

MR. CARMICHAEL: So the yield at F 30 percent SPR in 2011 is 695,000 pounds and it tapers down to 599 – it's about 600,000 pounds in 2020; so the ABC was about 40,000 pounds less than

the yield at Fmsy, both of which are above the long-term estimate of MSY, equilibrium estimate of MSY, so over time you would be fishing the stocks down closer to that biomass level.

DR. MULLER: Right now you basically have a surplus and you would be bringing it down is what you basically said, but that's why it decreases because you're raising the F.

DR. CIERI: Isn't there something against fishing above F at MSY or its proxy? No, I guess you wouldn't be, okay. That might be something for the managers to look at, whether or not they wish to reduce their overall stock size.

MR. CARMICHAEL: So the ABC, based on what we showed there earlier in the P-star of 0.33, even the run as done, is 649,761 pounds. That's the starting point and an attempt will be made to try to include the variance from MSY to get a broader range on that and to see how that is, but for now we have that. It's 649,761. It is just presented in pounds. We could probably get that; I'll look it up.

DR. CIERI: But then from there managers have to account for management uncertainty, and they would have to make a fairly strong argument based on proper monitoring to set an ACL at an ABC; correct?

MR. CARMICHAEL: Then they should be made aware that they would be fishing their stock down to this other equilibrium point.

DR. CIERI: And they're more than welcome to be even more precautionary if that is something they wish to avoid, but ultimately the stock – ultimately that is their sort of decision; isn't it, John?

MR. CARMICHAEL: And they should be made aware that that is not a long-term sustainable harvest level; and that if they do choose to fish at that level, they would ultimately have to ratchet the fishery down, so they may choose not to fish above the estimate of long-term Foy, perhaps.

DR. CIERI: We've dealt with this actually for some of the stocks in the northeast, at least for Atlantic herring, and the managers have always steered clear of reducing stock size. They've put in something where they have wanted to keep the stock at a relatively stable level given ecosystem concerns and other things. Ultimately they do have the ability to come down from the stock size.

MR. CARMICHAEL: And if you are cumulatively optimistic, you're windfall could be extremely short lived to turn out to have been non-existent. You just don't know.

DR. WILLIAMS: Let me get this straight; what are we proposing here, that ABC be set to a value that is very close to Fmsy after we just went through a lengthy –

MR. CARMICHAEL: ABC is set at 649,761 pounds, which is considerably above the long-term equilibrium estimate of MSY, which is 520,000 pounds. It is 50,000 pounds below the yield at Fmsy in 2011.

DR. WILLIAMS: But it is awfully close – it is equal to a P-star of 0.5 essentially, almost. There is essentially no reduction for P-star. How does that value differ from P-star equals 0.5?

MR. CARMICHAEL: I haven't a P-star of 0.5, but, yes, that's true, right, there is not a lot of range in the P-star. To go back to the table, the MSY actually doesn't include the discards so it is actually pretty darned close, so we have discards of 126,000 for an ABC of that, but the directed landings fits which is very close or similar to the MSY, which is just the landings, and the 0.5 P-star was 530, which validates Erik's point about there is precious little range across our P-stars. It is less range than we're accustomed to seeing because of the variability around all of the things that are accounted for in the P-star are much less than has come out in the past assessments.

DR. WILLIAMS: I think we just need to declare that P-star analysis as inadequate for our purposes, period, and now what are we going to do about it?

DR. BELCHER: What does the group think relative to that statement, the adequacy of the P-star? Does everyone agree with Erik that it is inadequate to go forward? Jeff is giving me a thumbs up; everybody else is kind of nodding in acknowledgment. In kicking the P-star approach to the curb for this particular analysis, now we have to come back to what are we going to do in lieu of not being able to use the P-star approach?

DR. WILLIAMS: Well, then we can fall back on – well, right, that's why I think we should finish up our discussion that was started this morning and we'll come back to this eventually because it can fit into that realm.

MS. LANGE: I agree with Erik so basically what we've done is we've moved this from a fully assessed use of P-star standard ABC control rule that we developed to saying that this doesn't fit, and we go back to whatever the data-poor or not fully assessed stock is; a different control rule that we haven't yet developed.

MR. CARMICHAEL: I don't think you're going to a whole different control rule; are you? I think you're talking about what you do when you have an issue with the P-star distribution approach.

DR. WILLIAMS: I think you are because, again, the steps needed is an OFL estimate and then the uncertainty about it, and what we're missing here is the uncertainty about OFL. We don't have it so we're missing a piece.

DR. BARBIERI: And we are, but can we get it within a reasonable timeframe? Since this is an assessed stock for which we can actually get that information, we have the ability to get it from the Center or actually from Bob with assistance from the Center. I just think that in terms of us

presenting the council with the justification for why we use one control rule versus another or one set of procedural steps – I mean, unless there is an urgency to have this number here today or tomorrow, that is a different story.

DR. WILLIAMS: No, I agree that there could be some calculations done to make this more useable, but again this gets back to, well, what is our conclusion about this assessment now and then what is the urgency of the ABC recommendation? Do we have to come up with it at this meeting or not?

MR. CARMICHAEL: You have to have to come up with it by June. It needs to go to the council in June. You have to come up with it by mid-May to get in the briefing document.

DR. BARBIERI: Which is fine; I mean, how long would it take for this analysis to be done, Bob?

DR. MULLER: The question is are you talking about expanding variances on – basically the existing software with expanding variances and their variability in that or are you talking about dialing in more of the MCMC results, because you're doing the MCMC results, that requires coding, and you know as well as I do maturing software, you really hate to do that on the fly. But as far as just expanding variance – now the next question it gets down is how much you expand it?

Now one thing is to say, okay, you could take the variance off Bmsy and glue that on to the limit part of that, and then you'd still want to have – but that's still not addressing the variance associated with the stock-recruit. The stock-recruit recruit came out very narrow.

DR. WILLIAMS: Well, there is data on that from the literature. I mean, Rick Dereso suggested using 0.5 standard deviation of recruitment, so you could apply that.

DR. MULLER: We could do that. We could do a 0.5 and fire that up. If that's all you're talking about, that is very straightforward because all that requires doing is – again, we would capture out of the MCMC the Fmsy variability, scale it to the F 30 percent is what you end up doing, those values, fire that up and then back-solve whatever the bias correction associated with a 0.5 is, and away you go. That's doable.

DR. WILLIAMS: And I think that's a reasonable approach. My concern is then where – I mean, let's assume that we get those results from Bob. Then where are we incorporating the additional uncertainty that we discussed about all the cumulative optimism and the use of F 30 percent as a proxy and so on and so forth?

DR. BARBIERI: Well, considering if that's not explicitly taken into account into our control rule, perhaps we can add some additional variance there; you know, increase those values, use our best judgment and expert opinion to say, well, we know that this variability here misrepresents what the true variability should be, that we have high uncertainty which we have

discussed as documented in our discussion here, so we would like to increase it by 10, 20, 25 percent, whatever is reasonable – we can do it that way, potentially.

I think this is a good point in a way that – I mean, back then, before we even got engaged in this, I remember we had that meeting with the whole group there at the lab and there was a discussion on whether this could even go forward, would we be able to actually do the assessment, and then a similar discussion took place at the assessment workshop of is this going to fly and should we go to a surplus production model?

It was really recognizing that there are lots of uncertainties associated with the information for black grouper and that perhaps what we are getting out of this assessment really doesn't represent the full range of uncertainties that should be taken into account. I don't think it is unreasonable for us to use our best judgment and expert opinion, and based on those documented uncertainties suggest some increase in the variability there.

DR. MULLER: Okay, what happens is now when you start adding up all these little ad hoc adjustments, then what have you really done? Basically you have a control rule. You say, okay, we'll tier this and it will be this percent and tier that will be that percent. Then you come along and say, okay, we're going to just add some level variability to develop overall.

By the time you have done that, haven't you sort of canceled the whole validity of trying to work out what this overlap thing is, and the point is the original idea of the P-star is you have – there is a distribution associated with your limit, there is a distribution associated with your fishing, and you're trying to see how much that fishing overlaps the distribution of the limit.

And as you keep adding fuzz, which is what you're talking here, you've sort of gone away, so what you're trying to do is you're to use a very quantitative control rule on a very fuzzy now output, and I'm not sure what you end up with.

DR. BARBIERI: Right, which is a very good point, but we can take advantage that Kyle is here, and looking at their paper, Prager and Shertzer, 2010, it says, "Here is described a framework that can be used to choose ABC giving three things, the OFL, the distribution of OFL and the allowable probability of overfishing. Ideally, the distribution of OFL will be available from the stock assessment. If not, the distribution can be computed by propagation of your methods." Can we use something like this? There is no way out of this conundrum?

MR. CARMICHAEL: The only thing if it gets into something like that of expanding out the variance is to make sure it is stated very clearly why that is necessary in this circumstance and hasn't been in other circumstances unless we end up in some position where it just looks like the fact that answer is what it is and it's causing consternation. Be very careful about that.

If we start ad hocking, well, in this case we're going to expand the variances because we don't think the variances around R and the reference point are wide enough; whereas we haven't really gotten into that in other situations. As long as we can write reasons why that it is different, then carry on that way.

DR. BELCHER: So procedurally back to this, what do we want to do, what are we going to ask? Are we going to ask for the additionals to be run? Are we going to talk about, as Erik said, direct back to the conversations from this morning and punt back to what we do when it's not acceptable or come up with something that is more of an ad hoc approach, as suggested, with variances and having a strong justification for why we're choosing to do that?

DR. BARBIERI: Well, I agree with everything that John said there. I think that if we make a suggestion of increasing the variability there based on – I mean, we have a number of well-documented uncertainties about this assessment that we haven't really been able to appropriately capture through our control rule and unfortunately it wasn't captured in the actual uncertainty assessment of the distribution of OFL. I don't think that's unreasonable in my opinion. I mean if we don't do this, what will be the alternative? Is there another alternative that we can propose to handle this situation?

MS. LANGE: Well, I guess I'm getting a little concerned that we were talking this morning about data-poor stocks and developing some sort of a control rule that we could apply consistently for those type stocks. We spent a great deal of time a year ago or a year and a half ago developing the current control rule for those stocks that fit into it.

I think we need to make a decision does this stock and the assessment fit into that role or does it fall to the data-poor type, whatever we're going to come up with for that. I mean, if we keep ad hocking every single assessment and every single stock and come up with, well, we're going to use this except this, this and that, we're going to not have any consistency or standards that we're following. Right now at the very beginning of trying to do this control rule I don't think is the time to start waffling on ad hocking at random. That's my perspective.

DR. BARBIERI: And I agree, Anne, but the problem is here is an assessment that was conducted through the SEDAR process and it was fully reviewed and we have a CIE report and a SEDAR review report with some recommendations, including the projections and everything else, and I just feel that us now saying, well, we're going to treat this as a stock that was not assessed, it is not correct either. I mean it is a conundrum. I agree with your points there completely and I wish we could find an easy answer, but from my perspective it is going to be viewed as some form of a conflict.

DR. WILLIAMS: I disagree; we're not treating it as a non-assessed stock because we have a very good estimate that it is not overfished, it is not overfishing. We have a pretty good indication of what MSY should be. We just don't know how far we need to back off from MSY based on the uncertainty; that's all.

That's a lot more information than we have for our unassessed stocks, a hell of a lot more, so I wouldn't throw it into that arena that easily. I mean, yes, it's disappointing that it has gotten this far and then we just sort of fell short at the end in characterizing the uncertainty, but that's all that is, and we will find a way to deal with it.

MR. CARMICHAEL: We applied the control rule; we decided it fit; we have a P-star value. The question is interpreting the application of the P-star analysis to tell you the yield associated with that P-star value, and the concern then is going back to the uncertainty around the parameters that are included in the P-star, which is kicking back into how well those are truly done in the assessment and whether or not it encompasses all the uncertainties.

Is it something that is inherent within the ASAP model, is it somehow underestimating the uncertainty in these parameters compared to more of the AD Model Builder configurations and other approaches? Is there something tangible along those lines that justifies why you would want to expand out the confidence intervals a bit? If that's the case, then we have grounds for which to expand those.

MS. LANGE: Well, that type of discussion is more appropriate, but talking ad hoc, what can we throw in there, that is what was concerning me. I mean, if there are some very specific issues that can be addressed through modifications in the model for specific reasons, then that is the approach to take; but, again, to just start talking about ad hoc this – we can just start increasing the variances without specific reasons for it I don't think is appropriate.

MR. CARMICHAEL: That would be shaky ground and I don't think that would result in an adequate record. The critical point here is why this assessment differs from something like vermilion snapper in terms of the application of the P-star approach and the distributions; or red snapper or things that we have done in the past and used this method.

We have used P-star with a proxy. We used P-star with a proxy on red snapper, so we have used it with a proxy, but those used a different modeling approach, which seems to result in wider confidence intervals around these things or is the nature of just the data themselves? I guess that is a question I don't quite grasp the answer to; how much is tied to the methodology in the ASAP method compared to the other methods versus how much of it is just inherent in the data itself that it is not revealing a lot of variability.

DR. WILLIAMS: To answer John's question, it is just the software limitation because, yes, the way we did red snapper and we have been doing a lot more is a full bootstrap procedure.

MR. CARMICHAEL: Well, bingo, there is a very tangible thing that is different that justifies looking at wider confidence intervals because it doesn't incorporate the bootstrap output which would account for more of the uncertainties and allow greater variability is resulting in confidence intervals that you feel are unreasonably narrow as a result. So now how do we expand them out and we'll get the new runs?

DR. CIERI: ASAP is capable of doing bootstrap runs.

MR. CARMICHAEL: So our option is to incorporate something – pull something out of the MCMC that is there and to expand them or we come up with some other way of expanding the confidence intervals?

DR. MULLER: Okay, what starts your MCMC, of course, is your covariance matrix in this thing; and that covariance matrix, one thing about the AD Model Building is it tends to have very small deviation by covariance. And when you go out there and look at that thing, it tends to fit very well. Then what you're doing is you're putting a lot of things that don't vary very much together, and that is what we're talking about.

Also, because you're doing that parametrically – in essence you're drawing it into – you know, you're drawing from the distributions; that you're probably encountering more variability in the bootstraps, because you're drawing from cases that you've built, and so you're probably going to capture more variability that way than the other.

But, that would be a difference in how previous ones versus this, that's true, because they did – fundamentally the variance associated with the parameters was estimated differently. That's the true statement. But as far as getting around to where we are now, Erik's comment about, well, that using a standard deviation for recruitment of 0.5, that is easy to handle, and it is also easy to do the other, but you would have to actually have some justification if you want to do any addition to that, because that is not that weird between those two. But if you started with this whole bit about, well, adding more, I'm not sure how you would quantify how much more to add; I'll put it that way. The other thing is when you run this, does it change what you're looking at?

On the table, of course, are the median values coming out or mean, depending on how you calculate it; and does that change, because what you might be doing is playing with the variability but not necessarily changing the central tendency. Because if you noticed when we were doing the MCMC, most of these things were actually – those little fuzzballs were pretty much right in the middle of those little fuzzballs, so those things, while they're narrow, they're relatively well – their variability was relatively defined; I'll put it that way.

And so when you put that cumulative, you're probably capturing what is coming out of that covariance matrix and they tend to have low variability around them. I mean, lots of AD Model Builder things – that is one of the things that got us involved a whole lot in the discussion of, well, we know that the model is going to underestimate uncertainty. Well, it does. And when you put a whole bunch of them together, it just continues to do that.

No, I have no problem, like I say, with the 0.5 thing because that recruitment, again, it is fitting it directly. I think we've mentioned there is a CV restriction of 0.1. We selected – actually, it varied between 0.95, relatively at 0.65, 0.55, actually. It varies in that. But it is just that it is that last little thing about add some additional variability that is kind of – I'd be hard pressed to come up with a cool reason on why you pick a value for that.

I mean, now you could do the other. You can do the sensitivity run and say, okay, here is 10, 20, 30, 40, 50; how does that change the central tendency of the projections? And you can do that because then you're saying, okay, this is based on if you add that variability because you know the things that are underestimating it. But that's really for you guys to decide and then give me happy marching orders.

DR. BELCHER: So what do we have for recommendations to Bob?

MR. CARMICHAEL: Standard deviation of recruitment of 0.5 and the other was – right, the variability from the Fmsy as to the variability around the proxy reference point; those are the two to look at.

DR. BELCHER: Is everybody happy with that, then? We will ask for this by what time period to have us review – when do you think you could have it back to us, Bob?

MR. CARMICHAEL: Do we adjourn at five o'clock on Thursday – four o'clock; that was quick. I haven't gotten such a quick response out of this group all day; four o'clock on Thursday.

DR. BELCHER: So we will revisit this discussion on Thursday afternoon. Thank you, Bob.

MR. CARMICHAEL: Before Bob does this, are you content with him using the 0.33 that he already has semi-configured or will you insist upon using the 0.325?

DR. WILLIAMS: I will insist that we revisit that because we are still not factoring in all these other considerations..

DR. BELCHER: So when do we want to revisit that discussion?

MR. CARMICHAEL: Given what we have learned?

DR. BELCHER: Okay, let's revisit the discussion relative to that.

DR. MULLER: Speaking of one little revisiting here, when I did it before, I actually did it from 0.05 to 0.5. Is there a way of narrowing that down because these things are not instantaneous runs? Okay, I'll do it by tens instead of by fives – okay, 0.1 to 0.4. That will give me a ballpark and then I can work from there.

DR. BELCHER: So how are we going to handle this issue?

DR. WILLIAMS: Well, this is an important question because if we feel need – I guess this is Step 1. I feel we need to deviate from the ABC control rule potentially because of this cumulative optimism that seems to be occurring in this assessment. I guess we should just discuss whether there is consensus on that; and if there is, then how we proceed I don't know because we're in unchartered territory at that point, but maybe others feel differently.

DR. BOREMAN: I'm having a tough time separating, Erik, your argument from how we are using the control rule now. Under uncertainty characterization we've knocked it down to a medium because uncertainties are addressed but full uncertainty is not carried forward in the projections. Isn't that what we're talking about here that it is not accounting for the full uncertainty or is it more than that?

DR. WILLIAMS: No, I think it's more than that because I think the issue I'm raising is unidirectional. It is not just the uncertainty. There is a clear bias that is tending towards one direction and I think that we need to account for that somehow. The factors I raised are going to tend to push that stock status closer to its limits, and so I don't know how we address that because the control rule just sort of assumes these adjustments to where we land in the uncertainty space. But if that uncertainty is actually biased and not precision problems, then it is different I think.

MR. CARMICHAEL: You all picked a 1 for status so if you're saying your cumulative optimism points you closer to the limits, are you questioning that tier three and use something different there; use 2 instead of 1?

DR. WILLIAMS: Yes, maybe that's another place to address it.

DR. CIERI: As long as we're really clear because somebody else reading this document will say, hey, you know, overfished/overfishing not occurring – those point estimates are nowhere near as close and neither are the error about – if we're going to do something like that within tier three, let's put down the points. The last thing you want is, again, for the council to go back and say, no, no, that should be tier two.

DR. BELCHER: So are you suggesting a limit, then, as far as like what the ratio – like when you come up with your ratio, your benchmark ratio is what that should be, like we have 0.5 for fishing or the ratio for a fishing level; is that close? I guess I'm not –

DR. CIERI: Yes, it is not the same thing. When we chose, for example, under stock status tier three, we used either not overfished and overfishing not occurring, right, but you can drop it down to 2 if it is in close proximity as long as you make that case. You need to make that case fairly strongly that even though the stock assessment report suggests 1, the SSC decided to go with 2 because of cumulative optimism and uncertainty around that cumulative optimism as discussed by the SSC during whatever meeting. Do you see where I'm going?

DR. BELCHER: Yes, and I'm going to let John say something.

DR. BOREMAN: Well, just along those lines, just reading the wording, it is that stock may be in close proximity to the benchmark value. That is what we're saying, it may be close.

DR. CIERI: Because even if Erik's comments aren't dead on and if there is a persistent bias in some of the assumptions, there is at least uncertainty around those assumptions, right?

MR. CARMICHAEL: And the other thing you could comment on and I seem recall is in terms of the uncertainty characterization we put in examples but I don't think that those examples were meant to be exclusive and the only criteria. We've had this long discussion about how uncertainty is characterized; and if you now feel that perhaps really it is more of a low, you have distributions and you did carry stuff forward but you still don't feel that it is as thorough as you would have liked, I think it is well within your right to categorize that where you see fit. We've

put in examples to try and draw some distinctions, but we hadn't applied these a whole lot to really understand how they would work out when we did that. You should probably talk about that one as well.

DR. WILLIAMS: In that sense the uncertainty characterization is lacking a distribution about Fmsy. That is what got us into this whole pickle with the P-star. Again, I think with all the discussion that went on, I think there is a good enough record to support that.

DR. CIERI: I know the horse has kind of left the barn, but can we sort of like rename number four as distribution of F at msy are lacking or there is some uncertainty associated with them. We're uncertain about our uncertainty. Do you know what I mean; it is not lacking, we have this distribution, we just don't think it captures everything.

DR. BARBIERI: I agree with that, Matt, because I feel since we put this much effort into developing this control rule, that we should stay, if at all possible, true to the control rule and apply it as objectively as we can. Perhaps it needs some refinement. I mean, we identify as we use it, and we gave ourselves – there is text here in this document that gives ourselves an out where we say as things move forward, we will identify refinements that need to be brought up and adjustments. This hasn't been fully accepted as the council's ABC control rule. The council has notified us about this and they are looking at other options. The door is still open for us to revise this.

DR. CIERI: It is kind of like the door is open until things are approved, which is Silver Spring. My suggestion would be to change under tier two, number four, under low, it is distributions of F at MSY and MSY are lacking or as John also suggested "insufficient", and that would place the stock in this category.

DR. BELCHER: That pretty much wraps us up for the time being to be revisited at a later time this week. We are going to change the start time to 8:30 tomorrow morning, starting off with red. Kyle, is that good for you? We're going to go ahead and recess until 8:30 tomorrow morning.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Hilton Garden Inn, North Charleston, South Carolina, Wednesday morning, April 21, 2010, and was called to order by Chairman Carolyn Belcher.

DR. BELCHER: I will turn it over to you, Kyle.

**DR. SHERTZER: Okay, red grouper, SEDAR 19, the same SEDAR cycle as black grouper from yesterday, and this presentation will pretty much follow the same outline as Bob's did, starting with data, we will look at the stock definition and life history information, landings and discards, length and age composition, indices of abundance. I'm not going to spend a lot of time on the data. I'll try to concentrate on the results from the assessment's models.

We applied four different models, catch curve analysis, the Beaufort Model, Stock Synthesis 3, and the surplus production model. The primary model was the Beaufort Model so I will focus on that and then projections at the end. You should have a copy of this talk. It should have been e-mailed out yesterday as a PDF.

Okay, data, this slide shows the distribution of red grouper. You can see it is centered around the equator, and we're talking about, in this case, an assessment of the northern extreme of the stock's range, so North Carolina down through Florida, southern Florida. This just shows the council's boundaries for this stock that we're treating as a unit stock.

I wanted to mention at this point that if you look at the landings from this species or from this stock, there is geographically a bimodal distribution with large landings coming from North Carolina and then again in southern Florida. In between there is little. There is some evidence of stock separation, but in the data workshop we didn't suggest overturning the status quo assumption that this is a unit stock.

The assessment workshop concurred with that, the review workshop concurred with that, but at each stage we acknowledged that this is an unquantified source of uncertainty in the assessment. Since we're big on uncertainty now, I wanted to mention that. Natural mortality was treated as a Lorenzen function, decreasing with age, and it was scaled to different constant estimates that would give the same cumulative survival to the maximum observed age of 26.

The Hoenig estimate in this case was 0.14, which was treated as the base estimate. This plot shows different values for 0.1 – scaled to 0.1 and scaled to 0.2 and scaled to 0.3. The range of 0.1 to 0.3 was suggested at the data workshop. The assessment workshop narrowed that down further to from 0.1 to 0.2 with the sensitivity run at 0.3, thinking that 0.3 was probably an extreme value for reasons that I'll explain later.

This plot shows the growth curve that was estimated at the data workshop and then the variations around mean growth that was estimated within the assessment model. Again, this is like black grouper, a protogynous hermaphrodite. Sex switching was modeled with a logistic function. Female maturity was modeled with a logistic function and then all males were assumed to be mature.

The spawning season for this stock is February through June, and in the assessment we assumed that it occurred at its peak in April, so the assessment assumed that it was in mid-April is when spawning would occur. The spawning biomass was treated as total mature biomass of both sexes. We did look at sensitivity runs that used either female or male mature biomass.

This slide shows the sex ratio observed and predicted. From this you can see that the 50 percent is right around 7 or 8 years old, so they're switching sex younger than were black grouper, but it is a rather gradual transition. Then female maturity, we assumed that there were zero maturity of age one fish and then used the logistic model for age two-plus.

We only had one observation from age one and that was not a mature fish, but I think it was more the assumption that zero age ones were not based on N equals one but just on the belief of the life history biologists at the data workshop. Otherwise, it was modeled with the logistic model.

Landings and discards, the regulations for red grouper have been a little bit different in the federal versus Florida and in North Carolina, South Carolina and Georgia have all gone along with the federal regulations, which in 1983 began a 12-inch size limit both in commercial and recreational, and in 1992 began the 20-inch size limit both for commercial and recreational, and then on the recreational there was also a five grouper per person per day bag limit.

Florida's regulations were a little bit different from that. In 1985 they started an 18-inch limit for both sectors and then in 1990 a 20-inch limit. We looked at the contribution of landings at least in the commercial that were from within state waters in Florida and it was minimal. The assessment model assumes that regulation changes occur along with the federal in North Carolina, South Carolina and Georgia regulations.

Starting in 1984 – beginning in 1984 we assumed the change in size limit or the implementation of the 12-inch limit and then a shift to the 20-inch limit in 1992. Recreational landings were reported in units of number of fish and the assessment model treated them that way, in units of 1,000 fish.

The general recreational sampled by MRFSS ran from the years 1981 through 2008. These landings were smoothed because of some spikes that were apparent, that we did not believe to be real. Sampling of the headboats was from 1972 through 2008. Now, the assessment period was 1976 through 2008, which left a few years at the beginning of the time series where we did not have observed general recreational landings from MRFSS. In those years I guess there are a couple of options on how to handle that.

One would be to create observed data, which is commonly done by applying ratios or ratios to ratios or some other method. In this case we applied an average F from that fishery, so the recreational landings would have been predicted by the model from 1976 through 1980, but not fit to any data because the data did not exist.

More on the smoothing of the MRFSS data; the light gray here is the data that came out of the data workshop and it was this really large spike in 1984 that was much larger than any other observation that concerned us. The approach that we took here was to smooth using a blind smoother through the data, but you can see that the affect of that really was in two years, the two spikes. It brought the observed landings down. In other years the trajectories were very similar.

I was asked at the review workshop why the spike in the observed was not sort of reflected in the blind smoother, why this value was lower than its previous value rather than just a peak but a little bit lower than the original peak. At the time I didn't realize the answer, but I figured it out when I'm putting this talk together on Monday, so I'm really excited about that and I wanted to share with you what it is.

It is pretty obvious actually, but the blind smoother is weighted by variance of the observation, and the variance of this observation was so high that the value got very little weight in the blind smoother. This is just a comparison of recreational landings between MRFSS and the headboat just to show that the – and these are the smoothed MRFSS landings. The general recreational is quite a bit higher than the headboat landings.

Commercial landings are in units of weight, treated as 1,000 pounds of whole fish weight. In the assessment we pooled the commercial handline and the longline landings into just a single commercial line. The reason for this was that we did not have sufficient length composition or age composition from the longline data; so if we were to treat as a separate fleet, we would have had to have invented a selectivity to match those landings.

The usual way to do that would be to borrow one from another fishery, and in this case it most likely would have been commercial handline, so we wouldn't have gained much by separating the two, and in particular because the longline landings are very small in the recent years. They were more substantial prior to longline regulations. Since the early nineties, there really haven't much longline landings.

The commercial diving, trap and miscellaneous gears were all pooled into a commercial other. I'll just mention that the trap, diving and miscellaneous part was likely to have a dome-shaped selectivity we thought, so that's one reason to pool of those gears together. We also didn't have composition data or much composition data on those gears to try to estimate a selectivity we ended up borrowing one from a different gear, which I'll explain later.

This shows the relative comparison of the commercial landings from the two different fleets. As treated by the assessment model, the commercial line is the top one so it is the heavier one. As I said, most of the landings at the end are handline landings. The longline landings came prior to the nineties. The commercial other has shown a decrease in the recent years, also, so it's a minor player in the recent years.

This plot shows all of the fleets together, total landings in numbers, and these are numbers as predicted by the assessment model. The point of this plot is just to show that mostly in the – since the early nineties that we're mostly talking about commercial lines and general recreational as the two major contributors here to fishing mortality.

Discards are always difficult. The recreational discards, the MRFSS ones were available from 1981 through 2008, and those were smoothed to be consistent with what was done with the landings. The headboat discards are available only for three years, 2005-2007. The data workshop extended those back to 1984, again using ratios I think, and we handled that a little differently in the assessment model by applying average F.

The commercial lines, the logbook estimates were available from 1992 through 2008, and those were extended back to 1984 with the start of the size limit. I think I mentioned this earlier, but the assessment period runs for longer than where we have observations; so when we needed to

fill in predicted landings or predicted discards for a few of the fleets for discards, we applied the average F to those years.

This is a comparison of the smoothed general recreational discard versus those that came of the data workshop. These smoothed ones were the ones that were used in the assessment. Release mortality rates, we did not have a lot of information to go on. There are a few empirical estimates and the ones that are available are all over the map, from close to zero to 0.8.

The data workshop, after much deliberation, suggested a point estimate of 0.2 and a range of 0.1 to 0.3. We went with that recommendation and also examined with a sensitivity analysis of higher values. This plot is discard mortalities as predicted by the model in terms of numbers of fish. Just to give you an idea of the scale, most of those discard mortalities in terms of numbers are coming from the general recreational and some from the headboat and the commercial lines as well.

Indices of abundance, coming out of the data workshop and at the assessment workshop we had five indices of abundance. We had the Florida Keys Visual Survey from the University of Miami and NMFS. We had the MARMAP Chevron Trap and we had three fishery-dependent indices, commercial logbook, headboat and then the MRFSS index.

There is a red line through the top one because at the review workshop the Florida Keys Survey was thrown out by the review panel. The reason it was thrown out was because we looked at tradeoffs between all the different data sources. It wasn't fitting well to begin with; and when we looked at tradeoffs among the data sources, it appeared that it was in conflict with all the other data sources.

It appeared to be just a source of error in the assessment model so the review panel suggested rather than not fitting it well and allowing it to at least contribute to predictions, just remove it. This map in the next slide shows the spatial coverage of the indices. The three fishery-dependent indices are really spanning the whole geographic area that we're talking about. The fishery-independent indices, the MARMAP trap covers most of the northern range.

The very southern range was covered by the Florida Keys Survey. This is the one that was thrown out. The reason it was included at the data workshop, even though we had some issues with it, was that we thought that between that survey and the MARMAP survey, that we would be covering the full range. I guess I should also mention the visual survey in the Florida Keys, we were never able to find out exactly how many red grouper were observed.

If you look in the number of fish observed that were provided, there were values that would go from like 10,000 to 20,000, which indicated that 10,000 might have been a scaled-up version of 1 and 20,000 might have been a scaled-up version of 2, so we think there were actually probably low sample sizes, but we were never able to actually see what those values were.

The next slide shows the indices of abundance, and I think Bob used a red cross on his, too. This wasn't planned. I think this was convergence evolution, and maybe it is just obvious to use a red

cross for something thrown out. The gray areas are confidence spans, 95 percent confidence span. The MARMAP had considerable noise around it. It has a very high CV.

The headboat index decreased at the beginning and then generally increased at the end. If you look over a similar timeframe for the three fishery-dependent indices and I guess also the MARMAP Index, there was a general pattern among all of them that they have been increasing since the nineties. In general there was a lot of fluctuation.

There was also a combined index that was created, and this was done using a method that Paul Kahn published recently that applies a hierarchical Basian analysis; basically assuming that each individual index is an observation of the same underlying event with observation error and process error, and that underlying event is the actual abundance trend, so it is trying to get back to what is the actual abundance trend, which is what we want in the assessment model, and that is the black curve here with its confidence-credible intervals.

This index was not used in the age-structured models. It was not used in the Beaufort Assessment Model. It was only used in the production model. Length and age comp, this is just to give an idea of sample sizes from the recreational length comp. The shaded areas are the years that were used. The non-shaded areas were years that were not used in the assessment. For fitting purposes, we used the numbers of trips rather than the number of fish as sort of the sampling units that we were interested in.

These is a slide of the commercial lengths comp, and I guess the take-home message here is that the number of trips for the pots and traps, the other gear that we're talking about, they sampled a lot of fish. In one year there were over 1,200 fish sampled, but that was only from 13 different fishing trips; so when we're looking at the effective sample size, those numbers of trips is actually rather low for the other gear, and we only had three years from that, so we ended up partially mirroring the selectivity of the MARMAP trap gear for the selectivity for the commercial other. The next slide shows age comp sample sizes; and again the same thing for age comps, we used numbers of trips as the effective sample size. Before I go on, are there any questions on data?

DR. BUCKEL: Kyle, the headboat series is the only data series that extends back into the seventies, and I was just curious where those trips were. You mentioned bimodality in the distribution. Were those mostly trips further south or further north or was it a combination of both?

DR. SHERTZER: For the index, the index started in 1978 and that is the first year of full area coverage for the headboat sampling, so South Florida was covered for the index. Before that, for generating the landings, I don't recall exactly how that was done, but I believe there was probably some ratios applied going back to those earlier years, so certainly there would be more uncertainty in the headboat landings prior to '78 than after '78.

Okay, the catch curve analysis, we applied two techniques, the regression estimators and the Chapman-Robson estimators. These are from age comps, the plots here. The top one from the

headboat age comp were years where we thought we had sufficient sample size to apply this. The bottom is from the commercial age comp, handline age comp. From this the Z appeared to generally be in the range of 0.3 to 0.6, but there are wide confidence intervals around this, and there are some values that are a bit below 0.3 and some that are a bit above 0.6.

I'm not going to spend a lot of time on catch curve analysis, but I will mention two ways that we implicitly used this analysis – well, three ways, really. One is just to gauge whether the estimates of Z coming out of the assessments are generally in the ballpark of where you would expect from the catch curve analysis, and that was the case.

Another implication of this is that this was one of the lines of evidence that we thought that an M, a natural mortality of 0.3 was probably an extreme estimate on the high end just because it would in several of these years bump up or even exceed the values that we're seeing in Z. An M, of course, should always be less than Z or less than or equal to. Well, the other thing about a natural mortality of 0.3 being an extreme value is the maximum observed age of 26. It would be unlikely to have a maximum observed age of 26 if 0.3 were the actual natural mortality rate.

The third implication of the catch curve analysis is the comparison between commercial and headboat and implications on what the selectivity shape might be for headboat. By comparing these two, if one of these had a flattop selectivity and one of them had a dome-shape selectivity, the one with the dome-shape selectivity should be giving estimates of Z's that are much higher than the one with the flattop selectivity. That doesn't appear to be the case here. The years where the two overlap where the estimate of Z from either headboat or from commercial is one might be higher and in other years the other is higher.

DR. BOREMAN: Kyle, I assume these include the discards as well as just the catch.

DR. SHERTZER: No, these are just the catch.

DR. BOREMAN: Well, wouldn't that be important to include the discards if you're estimating Z?

DR. SHERTZER: Well, we're just looking at the descending limb of the age comp, so these are mostly older fish, anyway.

DR. BOREMAN: When you're talking about the dome shape, people on some of the fisheries may be throwing back smaller fish and keeping just the large ones and selecting certain size groups. Would that have an impact?

DR. SHERTZER: I would have to think more about what the effect of that might be.

DR. BOREMAN: Yes, I'm just thinking in terms of the differences you're seeing between the fisheries.

DR. SHERTZER: I guess the short answer without much substance is that discards are not included here and we're just looking at just the older fish. The catch curve analysis, I guess it is what it is; it's taken with a grain of salt to begin with. We looked at this at the assessment workshop and we thought there was a priority reason to believe that the commercial selectivity would be a flattop selectivity for a shelf-edge species that is available to the fishery. We wondered whether the headboat selectivity might be dome shaped, but we don't see evidence for that in this analysis.

Okay, the next section is on the Beaufort Assessment Model, which was used as the primary assessment model. An overview of the BAM, which now has a name – it has the same formulation here as that used in previous SEDAR assessments for any of the Atlantic snapper grouper species for assessments that have been done in Beaufort. It is a forward-projecting model with optimization done using AD Model Builder software. The model was tested on simulated data, and the good news is it worked.

The statistical catch-age model, the likelihoods included a multinomial portion for any of the length or age composition data and lognormal components for landings and indices, and then it also has prior distributions built in and some penalty terms that are built in for some of the parameter estimates. Most of those are on selectivity parameters; also on steepness. The ages that were modeled for red grouper were 1 through 16-plus, so recruitment was treated as age 1 and 16 was treated as a plus group.

Sixteen appeared to be old enough so that life history features had saturated by then, such as extra transition and growth and maturity. Again, the assessment period was 1976 through 2008. The initial abundance at age was estimated and it was penalized or was allowed to deviate from the stable age structure given the initial F in the early few years but with a penalty, and the penalty was just to allow the model to be able to estimate the values with an invertible Hessian, so that the model would converge.

Again, the natural mortality was treated as age varying following the Lorenzen Function. The age-length conversion matrix was a probability matrix that assumes the normal distribution of length at age with an estimated CV, which I showed early on the talk of surrounding – with variability of size at age surrounding the growth or the mean growth. The normal would be a truncated normal distribution is a size limit applied.

For example, average weight of, say, age two fish would be based on the truncated normal distribution of the fish that were large enough to be kept rather than on all fish that were, say, age two. The catch was modeled with the Baranov Catch Equation, and we did implement some options for catchability for the fishery-dependent indices, and I'll come back to that in a moment. The recruitment was modeled with the Beverton-Holt Model and the spawners or SSB was based on total mature biomass of both sexes. The annual recruitment was conditioned on the spawner-recruit curve, but very loosely so recruitment deviations could fluctuate with lognormal error pretty much at will, depending on where the data suggested they should go. They were not tightly constrained to the spawner-recruit model. And then MSY benchmarks were estimated from a bias-corrected spawner-recruit curve.

Steepness, in this assessment we applied a prior distribution to steepness, and this was based on a – the prior distribution was based on meta-analysis that included data from Ram Myers paper on steepness; the stocks that were demersal stocks or seemed to have similar characteristics as red grouper, and this did not include Pacific rockfish because they appeared to have very low steepness values, but it did include any of the previous SEDAR assessments of snapper groupers that were relevant, and by relevant they had to meet certain criteria.

They had to have estimated steepness freely rather than have it either fixed or have it influenced by a prior itself because we didn't want to double-dip on priors. The estimated prior had a mean of 0.72 and a standard deviation of 0.17. The model runs indicated higher steepness. It was coming out near 0.92, which might be higher than one would expect, but it was consistent. Even when we bootstrapped on the data and Monte Carloed on other parameter inputs, it was consistently coming out near that value, so it was not hitting an upper bound.

This is a case where we appeared to have a two-way trip of stock abundance, which some other analyses have shown that those are the cases where you would be able to get a good estimated of steepness, so it is sort of a good scenario for estimating steepness. Selectivities; the MARMAP trap was modeled with the double logistic functions of the dome-shaped selectivity. The commercial lines and recreational and headboat were all flat-topped for landings.

For discards it was assumed that this was mostly younger fish so we fixed the age at – full selection at age two; estimated selection at age one as a free parameter; and then for age three-plus the selectivity was fixed at the age-specific probability of being below a cut-off size, like a size limit. The commercial other gear was modeled as dome shaped.

We, as I pointed out earlier, had little composition data to estimate the selectivity freely, so it was assumed to mirror the Chevron trap selectivity, but the ascending inflexion point was fixed at the age at the size limit because it was a fishery selectivity we couldn't just assume that it was following the fishery-independent selectivity for the MARMAP trap because we had to account for the size limit.

The selectivity used to estimate benchmarks was an F-weighted average across landings and discard selectivities from the last three years of the assessments, so 2006-2008. And then the selectivities applied to the fishery-dependent indices were the same as those that were applied to the fisheries. I will point out the MRFSS index included both landings and discards whereas the headboat and commercial logbook index was just of the landings, so we would use the appropriate selectivity or combination of selectivities depending on the case.

Back to the catchability issue, for fishery-independent indices we assumed a constant Q. For fishery-independent indices we assumed a constant Q, but at the assessment workshop we spent quite a bit of time investigating alternatives because of the SEDAR workshop on catchability last year. Three of the other options that we considered were a linearly increasing Q that would have been estimated or fixed at, say, 2 percent, and letting that increase until 2003 and then fixing it as constant after 2003.

That year was chosen because of discussion at the data workshop with fishermen who suggested that any effect of GPS had probably saturated by that year. We also examined the possibility of density-dependent catchability and also allowing catchability to be a random walk. We didn't find any evidence at the assessment workshop for density-dependent catchability or linearly increasing catchability, which was why we fixed it at Q.

We could have allowed a random walk catchability. The reason we didn't do that is because it is difficult to specify how much randomness to allow in the walk. There is really no information so it is just an input parameter that you can give it as much flexibility as you want, so give it free flexibility you're going to fit the indices perfectly. If you clamp down, the more you clamp down on the random walk, then the less you'll fit them annually perfectly. We clamped down all the way and went with a constant catchability.

The assessment years were 1976-2008. Because landings and discards are not available for all those years, we had to fill them in. For MRFSS landings and discards we had data from 1981-2008; for headboat discards, 2005-2007; and for commercial lines' discards we had 1992-2008. The way these were filled in was by using average Fs for the years where we did not have data.

For the MRFSS landings, these are extending back to '76, using an average F from '81 through '83. The headboat discards were extended back to 1984 and we also had to fill in 2008, and those used average discard F from the three years that we were able estimate, 2005-2007. The commercial lines' discard extended back to 1984, using the average F over the full time series where we did have data from 1992-2008.

The likelihood weighting, we did not use any external weights. Lognormal components were controlled by the CV estimates. Here we assume that they were small, a CV of 0.05, and that was assumed to achieve a close fit to the landings. The indices applied the CV that was estimated by the data workshop. The age and length comps in the multinomial components were assumed to have a sample size at equal to the number of trips.

A base run was configured using the Hoenig estimate of M or the Lorenzen M but scaled to the Hoenig estimate of 0.14 and with a discard mortality rate in the middle of the range suggested at the data workshop so at 0.2. Then uncertainty in these results were quantified using sensitivity runs and retrospective analyses, and then we also applied a mixed Monte Carlo and bootstrap approach to further quantify uncertainty around our base run.

Fits to the data, in the interest of time I did not put them all into this talk, but I know you have all read the report very closely; and if you have any questions, feel free to ask them now. I'll just say that the data were fit reasonably good. Okay, so I'll focus more on the results. I'm just going to scroll through some estimated selectivity curves. This is the estimated dome-shaped selectivity of the MARMAP Chevron trap.

The next slide shows the selectivities from the commercial lines for the two different time periods, 1976 through '91 for the top panel; 1992-2008 for the bottom panel, so you can see that with the implementation of the 20-inch limit that the selectivity became more steep. The next

slide shows the selectivities of the commercial other gear, which, again, this was assumed to mirror the Chevron trap but with the ascending limb determined by the size limit; so as you move from the top panel to the bottom panel, it just shifts the selectivity curve to the right.

The next slide shows headboat selectivities. In this case we had three time periods because we had observed composition data from prior to the '84 regulations, so we attempted to estimate a separate selectivity for that period. As you slide down across the periods, you can see a shift to the right, as you would expect with larger size limits coming into place.

Then the next slide shows the general recreational, which the top two periods were assumed to mirror the headboat. The bottom period for 1992-2008, we had data from MRFSS so that was estimated separately from the headboat, but the pattern here is the same and it shifts to the right as you move through time.

Then the next slide shows discard selectivities. Again, these were assumed to have full selectivity at age two, and the age one was freely estimated, and then the ages older than two were fixed at the age-specific probability of being below the size limit. It is similar from the first to the second time period, but you start including some older fish, age threes and age fours, with the shift to the 20-inch size limit in '92.

Then the next slide shows the average selectivities that were used. For landings is in the top panel; for discards in the middle panel; and then for total mortality in the bottom panel. These average selectivities were used to get the MSY benchmarks and were also used in projections. Okay, fishing mortality rate, the fishing mortality rate through time across fleets; it spiked in the mid to late 1980's and has been a bit lower than that since the nineties, but mostly it is fluctuation. It has been sort of lower in recent years. The estimates have been lower in the recent years than they have been throughout the time series.

Most of the mortality rate or at least in terms of the full F here is coming from the commercial lines and from the general recreational landings. The next plot shows number at age predicted by the assessment model, so it started off in the early part of the time series and decreased to the early 1990's and since then appears to have been increasing in general, and the last three years maybe a little bit of concern that they're lower but in general I would say this is an increasing trend since the 1990's.

The next slide shows the same thing but in biomass. The reason I wanted to show this one in addition to the numbers is that it more clearly shows the rebuilding of the age structure towards the end of the time series. The older fish are starting to repopulate the population that were just not seen around the 1990 time period.

The estimated recruitment, the top panel shows lots of fluctuation in recruitment with a banner year class estimated in 2004 of age one fish, so I guess that would be 2003 age zero fish. The next slide shows the predicted spawner-recruit curve with the time series of recruitment overlaid. This is one reason – if you look at this, you can see why its steepness was estimated at a high value because you are getting some reasonably high recruitment events at lower stock size, but

you're also getting at the lower stock size a lot of the lowest recruitment events, too. There is at least some information here I think in steepness, but it does suggest that it is a high level of steepness.

The next slide shows the base model predictions of spawning biomass, which, again, decreased in the early time period and following what you expect from the numbers at age has been increasing. What I thought was interesting is that the initial increase here is coming before the size limit regulations went into place.

I believe what is happening is that there was a recruitment event or multiple recruitment events that started the population on an upward trajectory, but then the size limit that came into place later reinforced that increase, but there is a downturn at the end and that's the effect of the increase in F that we have seen at the end of the time series.

F over Fmsy, throughout the time period we have seen F above Fmsy so the estimate here is that overfishing has been occurring since the mid-1970's, but it has been steadily decreasing throughout the 1990's. Again, this may be a concern or it may just be fluctuation here at the end that the last several years have been an increase.

If you look at the age structure relative to the age structure that we would expect at MSY through time, I guess you could predict this plot from looking at the age-structured biomass time series from a few slides ago, but you can see that the age structure is through time approaching what you would expect at MSY. The first year shown here in 1985 for most of these ages is the lowest value of abundance at age, and then the last year of 2008 is coming much closer to the values at MSY.

Per recruit analysis, the top panel is yield per recruit, which is maximized somewhere around 0.25, just eyeballing. SPR value is in the lower panel. The F 30 was just under 0.2. The F 40 is around roughly 0.12 or so, and then the F 50 was a little below 0.1. These were provided in case a proxy was to be chosen. In the end we were suggesting using the MSY estimates directly.

The next slide shows the equilibrium analysis, which is where the MSY values come from. The top panel is equilibrium landings, so the value of F that maximizes that curve is the Fmsy, and that occurs around 0.22 or so. Then the bottom panel shows the equilibrium landings' overfishing mortality rate again or equilibrium SSB.

Okay, the management quantities that were estimated, I'll just point out that in this case Fmsy was estimated at 0.22, and the F over Fmsy terminal year was estimated at 1.35. Although that is labeled as 2008, that is actually using the geometric mean for the current F of 2006-2008 as 1.35. The F in 2008 was a bit higher than 1.35 because of the increasing trends that we saw in F. The spawning biomass relative to the biomass threshold was at 0.92 for the point estimate, so just under or just in the category of overfished.

Sensitivity runs, there was suite of these run at the assessment workshop. I'm not going to go through all the values here, but just to give you a flavor for what was done. At the assessment

workshop we ran sensitivities on different values of natural mortality, different values of discard mortality, so the low M was 0.1 and the high M was 0.2 and the extreme M was 0.3 for these sensitivity runs. The low D was the lower end of the range of 0.1 for discard mortality. The high D was a discard mortality of 0.3.

We did runs with just using spawning biomass calculated from females and a run with spawning biomass just calculated from males and then retrospective analysis, which could only go back to 2004. We couldn't go back any farther than that because of data sets dropping out. Particularly the headboat discards would have fallen out. I'm not going to show plots from the retrospective analysis, but there weren't any trends that were of concern from those estimates.

At the review workshop we had several more official sensitivity runs, and by official I mean they ended up in a report, but, again, the low M and the high M and the extreme M. the low discard and the high discard and then a very high discard mortality rate of 0.7, the review panel thought that 0.3 may have been on the low side.

MR. CARMICHAEL: They didn't do runs with dome selectivities; was there a discussion about that? I imagine that we will be asked those questions since the Gulf red grouper does use the dome selectivity.

DR. SHERTZER: Yes, we investigated that at the assessment workshop, so, yes, we did those runs.

MR. CARMICHAEL: You did runs at the assessment workshop but not as like sensitivity runs?

DR. SHERTZER: They did not end up in the report as official sensitivity runs, but they were looked at there.

MR. WAUGH: Kyle, coming back to the discards, I know you have got it labeled very high, but wasn't part of the rationale for looking at higher values, that there was a peer-reviewed value that was much higher than 0.3?

DR. SHERTZER: Yes, there were few papers on this. There was not a lot to go on. One of them had a value – this was the Rudershausen paper – had a value that was high, somewhere around 0.7. It might have even been a little higher than that. Yes, that was one reason for including that.

MR. WAUGH: And I think when the SSC discusses it, if you all could spend some time talking about that. Just from my view, maybe labeling it very high is not the best way to label it because to me that implies – well, in other instances we've labeled things very high because there were some extreme values that were picked, and in reality that's a peer-reviewed value. To me it sort of discounts that value when you look at it when it is labeled very high versus it being a peer-reviewed value.

DR. SHERTZER: Probably relatively very high would have been a better description, but I ran out of space on the table – yes, upper value. I take your point, sure.

DR. BUCKEL: Yes, I can speak to that real quick and we can come back to discussing more of it. That was a paper with Paul Rudershausen and Erik, and the 0.7 was, I think we would say, the worse case scenario. That was any fish that had evidence of barotrauma was killed; and we know from tagging data that if fish have barotrauma and you stick a tag in it , you do get returns back, so they don't all die. The 0.7 was the worse case scenario.

Now, the other values that are the other citations that you included, that is just the release mortality that you see at the surface and not delayed mortality, so I think the values at the lower end are probably too low and the 0.7 is probably too high, so somewhere in between is about right. We can talk more about that, but I just wanted to point out that the 0.7 is on the high end.

DR. SHERTZER: I would characterize this as one of the big sources of uncertainty in the assessment. At the data workshop and at the assessment workshop and at the review workshop we spent a lot of time discussing this. If you go back and look at the transcripts of those, I think you will see there are lots of opinions but not a lot of hard information to go on.

The next slide shows the sensitivity runs and where they fell or the results fell on a phase plot of overfishing on the X-axis and the overfished on the Y-axis. The panel on the left is what became the official review workshop sensitivity runs. There is a smear from the overfishing category and coming up into the not overfishing and not overfished. The ones that were suggesting not overfishing and not overfished were the extreme M and the high M, so for higher natural mortality things looked rosier, as you would expect.

The panel on the right were a lot more sensitivity runs that were conducted at the review workshop, and these are showing some variation in how data sources were weighted for most of these. They still contain the visual survey, by the way. Then a few of them were just differences on how the data were treated, but most of these are weighting on the data.

In most of these cases the weighting on the different data sources did not have a heavy influence on departing from this result of being in the category or in this quadrant of overfishing and overfished, but again the exceptions are the higher natural mortality rates. Okay, that was the sensitivity analyses that were run.

We also ran a Monte Carlo bootstrap to quantify uncertainty around a base case or base run. The way this worked was that the data were bootstrapped, so the landings and discards and indices all were bootstrapped assuming a lognormal distribution with a CV of 0.05. The age and length comps were bootstrapped using the multinomial distribution that had the annual cell probabilities and sample sizes as from the original data by just drawing new data at random.

Then we also did Monte Carlo or random draws of two of the key parameter inputs that showed themselves to be important in the sensitivity analyses. The natural mortality was pulled from a distribution that was a truncated normal distribution with a range of 0.1 to 0.2 and it had a mean

0.14. Then the discard mortality, that was just a uniform distribution over the values suggested at the data workshop of 0.1 to 0.3.

We fit the model 2,500 times. Most of these converged; a few did not converge and those were discarded so the results are not included. These panels show the distribution of estimates from the spawner-recruit parameters, so R-zero on the left and then steepness on the right. This is what I was referring to before that we had consistent estimates of steepness being high, but it wasn't reaching the upper bound even when we were tweaking the data or some of the parameter inputs. There was sort of a tight distribution of steepness.

The next slide shows the estimated management quantities and the distributions around them, so Fmsy had a distribution that spanned roughly .15 up past 0.3. SSBmsy and MSY had some long tails out to the right-hand side, but most of it was focused around the – most of the distribution was focused around the point estimate. The panel shows the time series with the 5^{th} and 95^{th} percentiles as estimates of confidence from the MCB runs.

The times series of SSB over MSST in the top and you can see that in the terminal year that the point estimate is close to the reference line of 1, but if you look across the bootstrap runs, there is quite a bit of uncertainty in that estimate and it spans the range from overfished to not overfished. That's not true of the overfishing estimates. F over Fmsy in the bottom panel, throughout most of the time series the point estimates and most of confidence spans are in the overfishing category, and in the terminal year you can see there is a lot more certainty in this estimate of overfishing.

The next panel shows those status indicators together in the phase portrait. The crosshairs represent the point estimate, so they intersect at the point estimate from the base run, and the width of the crosshairs are the 95 percent intervals from all of those little points, which each one is from a different MCB run.

The next panel is just another way that show the same thing; the distributions of terminal stock status in the top panel; the point estimate just below 1 but covering the range of overfishing to not – or overfished to not overfished. Then the bottom panel the distribution of the terminal overfishing, which, again, as a point estimate of overfishing and the bulk of the distribution would agree with that but not all of it. Any questions on the BAM before going on?

Okay, the rest of it is quick. Stock synthesis, most of you are familiar with it, but if not, it is in the NMFS toolbox and programmed also an AD Model Builder by Rick Methot. Just for this assessment Rick added the sex switcher option, which was very kind of him. Unfortunately, he programmed a mistake, which we didn't find out about until after the assessment workshop, but it was corrected in time for the report.

I thought I would mention that Rick was quite helpful at helping to configure the red grouper input files. It is a statistical catch-age formulation and very similar to the BAM. There are a few differences, which I will highlight on the next slide. In SS, recruits necessarily come in at age zero. In the BAM Model that's free to be any age, which we modeled as age one.

In SS, the spawning biomass is computed at the beginning of the year. It the BAM we compute that at the time of peak spawning so it was mid-April for red grouper. Really, what that means is that in the BAM you apply a partial year of mortality before computing what would be spawning biomass whereas in SS the spawning biomass would just be whatever is there on January 1. In SS the selectivities are length based rather than age based as in the BAM, although the model population is still an age-based population.

The catch in stock synthesis is divided into landings and discards using a retention function. The fishery or the fleet has a single selectivity that applies to all of the catch, and the catch is then divided up among the landings and the discards using this retention function; whereas, in the Beaufort Model they're really treated as separate entities where we estimate a selectivity and an F for the different components of landings and discards. The dome-shaped selectivities were modeled with double normal function; whereas, in the BAM it was double logistic. You can get similar shapes from the two.

The double normal might be a little more flexible. The probability of sex transition in SS was modeled with a cumulative normal function rather than a proportion of male at age. Another thing that came up after the assessment workshop was in how the transition was modeled. Rick programmed it in as an actual probability of transition, which this was user error on my part.

I assumed it was proportion at age and it acts differently. This was corrected also for the report, but that was not done correctly at the assessment workshop. I thought I would also point out that SS was not rerun after the review workshop without the RVC index, so the results were with the RVC index. The data inputs also required some differences.

There is a pre-data initialization that goes back a full cycle of all of the ages, so prior to the beginning of the assessment it goes back to 1960. For that you have to assume something about the landings so it assumed the constant landings by fleet using geometric means. The discards need to be supplied in the same units as landings.

For example, for commercial fleets we have landings in weight and discards in numbers. The BAM can handle that without a problem. SS needs them to be in the same unit, so we had to convert the discards to weight for input into SS; and to do that we assumed that the average weight of discards was the average weight of age two fish, and then missing landings are supplied as input rather than in the BAM they were predicted with an average F.

The early recreational landings from MRFSS, they assumed the same value as the first year of MRFSS, which was 1981. These are the results. From SS the top panel is the F over Fmsy time series. The gray bands are 95 percent confidence intervals, and in this case those are coming from the asymptotic estimates that AD Model Builder spots out. The confidence intervals are a bit narrow than they were from BAM.

There is agreement between the two models in the time series of F over Fmsy in the sense that overfishing has been occurring throughout the assessment period and at the last several years have been on the increase. The bottom panel, the SSB relative to its threshold shows a similar

trend that we see from the Beaufort Model that it was decreasing initially, increasing since right around 1990 or just before that with a down tick at the end.

I think if you were to plot the two side by side you would see that the estimated SSB relative to MSST is a bit lower from SS than it was from the BAM. The terminal year was, if you remember, for the point estimate from the BAM was at 0.92, so it shifted down a bit. Any questions of the stock synthesis application?

All right, the last one was the production model. The production model does not assume age structure. We used the non-equilibrium logistic formulation. It was conditioned on yield. We did look at some analyses with the combined index of abundance but not all of them used the combined index.

We used ASPIC and uncertainty was quantified with a bootstrap analysis on the data. The model runs that we looked at for production models were combinations of separate or combined indices and then constant or increasing catchability. We looked at one without the RVC survey. This was done at the assessment workshop so you can see even at the assessment workshop we had a little bit of discomfort with the RVC index; and then the headboat index as the only index for another run. These are results from the production model. All of these panels are biomass relative to its threshold.

The top panel is where all of the indices were treated separately. The top right panel uses the single combined index, so you can see there is a lot more uncertainty in that result or wider confidence bands at least. The bottom left panel is one with separate indices but the catchability was increasing linearly. Then the bottom right panel was one with combined indices and catchability increasing.

The next panel shows the same scenarios but the F over Fmsy, so overfishing in a lot of these cases but different from the age-structured models did not predict overfishing throughout the entire time series in most of these. There is still an uptick at the end. The next panel shows the terminal distribution of the status of biomass from the different runs. Then the final slide from the production model result shows the terminal status of F over Fmsy. All right, any questions on the production model?

Projections; the projections, we used 12-year projections from 2009-2020. The projections had the same structure as the population structure as the assessment model. The full F was divided among the fisheries according to proportions seen in the last three years using geometric means. The initial abundance, which would be in 2009, was based on the 2008 estimates discounted by total mortality, and then the initial recruits would come from the spawner-recruit model.

The current F that was applied was applied in 2009-2010, and it was assumed that new management might start in 2011, so we considered several scenarios that had reductions in F in 2010. That is because of the regulations that went into place this year with the four-month closure on grouper.

We can't say for certain that F will decrease in 2010, but it seems like it might be likely, but if it is we really don't know at this point to what degree. Expected values from the deterministic projections were used with bias correction to get sort of the expected values of the projections, and these did have consistency with the estimated benchmarks.

Then uncertainty was quantified around the projections using, in this case. 40,000 different time series projected, and each one of them was carried forward from the end of one of the Monte Carlo bootstrap runs. These projections did carry forward all of the uncertainty in parameter estimates from the Monte Carlo Bootstrap Analysis in addition to uncertainty in the initial abundance and also in future recruitment, so that the future recruitment was modeled as stochastic with lognormal error. The rebuilding timeframe was defined by spawning biomass reaching SSBmsy in at least 50 percent of the projected time series, and here we took the value to compare it against as the point estimate from the base model.

The next slide shows the different scenarios that were considered, so F equals zero, F equals Fcurrent, which was the three-year average; also using some proportion of Fcurrent starting in 2009 so if there is indeed a reduction in F starting in 2010 with the grouper closures, we don't know what that reduction will yet, but we ran several scenarios investigating that so if it were reduced to 75 percent or 50 percent or 25 percent.

And then there were scenarios looking at fishing at different proportions of Fmsy from 65 percent up to 100 percent; and then four Frebuild scenarios to compute the value of F that would allow rebuilding by 2020 with different scenarios assuming that F equals Fcurrent in 2009 and 2010, but also assuming that there was a reduction in F in 2010 at 75 percent, 50 percent and 25 percent.

Those are all in the report and I thought I would just show some example results. This is the projection in F equals zero to define the rebuilding timeframe. Without fishing mortality and because it is already predicted to be fairly close to SSBmsy, the stock recovers fairly quickly, so by 2013 you have at least a 50 percent probability of achieving SSBmsy. Because it can rebuild within ten years, I believe by law it has to rebuild or that has to define the rebuilding timeframe as ten years, so that is where the timeframe of up through 2020 came into place.

This is an example of a projection where F is from 2010 on. In 2009 F would be at its current value, but then from 2010 on it would be at 75 percent of the current value. From this projection in the top left panel, you can see that at least the expected values don't quite get to the recovery level, but in the next slide, if F were reduced to 50 percent you could see that it gets there fairly quickly; and by 2020 is quite a bit above.

This would suggest that if the current regulations are reducing F somewhere between 50 and 75 percent of the current level, that that would probably do the trick. I think you see that if you look at the Frebuild scenarios. That was the only slides I wanted to show on projections, but, of course, all of the results are in the report with tables. Questions?

MR. CHESTER: I have a question about the BAM results. Your Fmsy was quite a bit higher – the one that was the Fmsy directly estimated was quite a bit higher than F SPR at 30. Did you figure out about what F SPR, the Fmsy was about 0.2 or so?

DR. SHERTZER: 0.26.

MR. CHESTER: Yes, in this case using an SPR of 30 or 40 would have been much more risk averse than the Fmsy that you actually estimated. That is interesting.

DR. SHERTZER: I think it is all driven by the offset between the maturity and the selectivity.

DR. BOREMAN: Following up on that, related to our discussion yesterday of F 30 or F40, here it looks like an F in the 20 percentile – F at 20 percent SPR, or 25 percent or something might be an appropriate proxy, so it is interesting. It's more than that, but at least it's interesting.

DR. SHERTZER: I think it really shows that it just goes stock to stock and it depends on the characteristics of each stock. We have seen some where it has been close to 50 percent for some of the snapper groupers in the southeast, so, yes, it is tough to say apriori.

MR. COLLIER: How come the review panel felt strongly about out that RVC? I mean, there is indication that there might be stock separation, but we don't have an independent index down in South Florida with the exception of the RVC where it is unlikely what is going on up in North Carolina where a majority of the MARMAP was is impacting South Florida.

DR. SHERTZER: Their rationale was that it was, well, not well documented, for one. Like I said, there were probably quite low sample sizes. If you actually looked at the number of red grouper that were counted, it was probably quite low and we could never actually see the data. They weren't provided.

What was provided was scaled-up estimates of what the abundance would be. That was one reason is that they didn't have the information available to them to evaluate whether it was adequate. The other was when we looked at tradeoffs among data sources, this seemed to be the one that stood out as being different from the rest.

Both SS and the BAM recognized that in fitting, and it really provided poor fits to that index, anyway, in favor all the other data that were in better agreement. Their suggestion was that rather than just fitting something poorly, because it probably is having some influence on parameter estimates, even if it's low, it would probably be better off just removing the source of what the model thinks is noise.

DR. JIAO: I have a few questions about those models. My first question as the lead modeler, between the Beaufort Model and the SS-3 Model, which model structure do you think is more appropriate in this case; and then which method in dealing with the missing data is more appropriate to you as the modeler?

DR. SHERTZER: The models are really similar in structure, so I think you could make an argument that either one could be appropriate for these data. A major reason for using the Beaufort Model instead of stock synthesis was simply that nobody at the assessment workshop was an expert in stock synthesis.

It appears that to be an expert in stock synthesis to the level that you could apply this in a real stock assessment, you have to be named Rick Methot or at least have good access to Rick because almost every assessment – even people who use stock synthesis quite often rely heavily on Rick's advice. None of us at the assessment workshop felt like we were qualified to use it as the base model. We tried to apply it in exploration to see how it worked and possibly move forward to using it in the future as really a test case for us to see how it worked.

It turns out it was probably a good thing because as I mentioned at the assessment workshop there was one error that was programmed in that Rick discovered after the assessment workshop, and then there was one user error, which I'll take blame on that, that I had misinterpreted how sex changing was applied. It is applied as a probability, which is quite different from a proportion at age.

If Rick Methot were doing the assessment, I think it would be a perfectly good model to use. A downside of using it, even if we felt fine with using that model, is that a lot of the post assessment analysis that we do is tied in tightly with the Beaufort Assessment Model now, so it would take a lot of programming time I think to get back up to speed with using stock synthesis output in terms of graphics and projections, although it does have some projection capabilities.

DR. JIAO: Yes, I realize the basic structure is almost the same. There are some differences between the selectivity pattern and also the sex ratios. Is there any way to compare those two models, for example? I think both you used the likelihood to evaluate. Yes, that's one I think that I'm wondering. I guess you probably didn't compare so far. I have another question that I'm wondering is I think the combination of Monte Carlo and bootstrap is a very good idea if the Beaufort approach, for example, cannot be performed, but 2001 seems very limiting if you need to random sample some of the predators and at the same time do bootstrapping. How do you think?

DR. SHERTZER: Okay, let's see, the first question on model comparison, I think it would be difficult to do that directly because of how the likelihoods are programmed. They are different. I mean, they're both using lognormal or multinomial likelihoods for some data components, but there are a lot more penalties built into stock synthesis and prior distributions built into stock synthesis. Although some of those are in the BAM as well, they're not the same necessarily. It would be difficult to compare based on likelihood the two model outputs I think.

DR. JIAO: Well, to me I think you can maximize the posterior likelihood because that's the way you used it, I think. Well, we can talk about that later. As I said, yes, I think you can use the posterior – to maximize the posterior likelihood which balances the penalties that are used for prior years and are a result of likelihood that it would be fine for those different parameter values.

DR. SHERTZER: You might be able to do something like that or you just pull out pieces of the objective function that are just the likelihood components that you're talking about, but another problem is that the data aren't exactly the same because the data inputs are a little bit different. When the data are different, then I don't think you can do those types of comparisons.

DR. JIAO: Right, that's why I asked you the first question like which method in dealing with the missing data is more appropriate. I think that one question maybe needs to be further considered in the future and see whether it actually causes the differences between those two methods, because structurally they're very close.

My last question, since the number of runs used in the Monte Carlo and bootstrap is 2,000 and your projection is 40,000, so my question is like you weighted the distribution first and then used the distribution and you fitted it to move forward for the projection?

DR. SHERTZER: Okay, so there were 2,500 CB runs and the way the projections work is they were an extension of each one of those runs, so it was different from compiling the distributions of results and then drawing from those distributions in a sense, because it was actually extensions from the runs, but you'd probably get similar results with either approach. The reason that the projections have a lot higher sample sizes because within each one of those runs there would have been a lot of different possible time series of stochastic recruitment, so there is that additional source of uncertainty in the projections.

DR. JIAO: So my understanding is for each run you have stock-recruitment relationship really fitted and you used the refitted uncertainty to project.

DR. SHERTZER: Each run would have a different spawner-recruit relationship, but then the projection would additionally have stochastic variation around that relationship. In other words, 2,500 relationships, but you draw one of those 2,500 at random to for a projection, and then even for that draw you could get a lot of different time series just because of the stochastic recruitment.

DR. JIAO: Do you think that's appropriate for each stock-recruitment relation – for each stock-recruitment you have the stock-recruitment relationship with uncertainty and then you move forward?

DR. SHERTZER: Well, while I think it is an okay approach, I think the question is are the sample sizes adequate. For the 2,500, the way I examined that was whether parameters were converging or standard errors were converging on different estimated quantities and it appeared that 2,500 was plenty of runs for that to occur. The number of projections – and that was similar decision, too, was looking the distributions of results and seeing that it was an adequate number that the distributions appeared stable.

DR. JIAO: I also have a question about the bias correction. So if my understanding is correct, the plots that you showed a bias correction, that is just based on one run. You just demonstrated

that the stock-recruitment, the meaning of the stock-recruitment relationship, correct, but in your bootstrap and also in your projection you don't have the bias correction?

DR. SHERTZER: Yes and no; yes on the deterministic projection, so for expected values the bias correction is there, and that is to make sure that it lines up with the MSY benchmarks. So if you fish at Fmsy you should get a stock size back as SSBmsy at landings of MSY. Now in the stochastic part of the projection, you don't use the bias-corrected version.

You use the – well, I guess different people will call the bias-corrected line different things depending on which direction you're going, but we used the lower of the two curves and then add lognormal deviation to that, so that on average you would in an arithmetic space get back to the bias-corrected – what I was calling the bias-corrected version.

DR. JIAO: So I would assume several plots with F _____ at Fmsy and B_____ by Bmsy, there are no bias corrections in all those procedures, right? The plot with the – you know, you have a mean value in the confidence intervals.

DR. SHERTZER: Let me pull up a slide just to make sure we're talking about the same thing. In this plot, these would be within each of the runs; in other words, SSB over MSST would be computed sort of within a run, so the MSST or Fmsy in the lower panel would differ across each of the MCB runs, and that would have the bias correction.

DR. JIAO: This one has the bias correction?

DR. SHERTZER: Yes, in the assessment results, right. Are you talking about projections or the MCB results?

DR. JIAO: For both – to me I don't think bias correction should be applied since you used the empirical distribution of those bootstrap and Monte Carlo combination.

DR. SHERTZER: Let's make sure we're talking about the same thing when we say the bias correction because I know it's not always the same. People use different labels. Here we're talking about for devising the benchmarks and in the deterministic projections the dashed line, the upper curve?

DR. JIAO: I'm fine for – I think it is appropriate for one run because you want to show the mean value and then you use bias correction, but you want to just show the empirical distribution, then I don't think it is needed. That question is not just for your report, but for some of the other stuff I have the same question. If we use the empirical distribution, do we need the bias corrections?

DR. SHERTZER: Of the empirical distribution of Fmsy?

DR. JIAO: No, Fmsy is a combination of stock-recruitment relationship.

DR. SHERTZER: I'm sorry, when you said empirical distribution, what were you referring to?

DR. JIAO: For both, you know, projection and also here –

DR. SHERTZER: For benchmarks, for Fmsy?

DR. JIAO: Not the one value – I mean, the distribution with the confidence intervals. It doesn't change the results that much because since the bias correction is not that serious, but this is a question we can discuss maybe. We can discuss it after the meeting, also. It won't change the results that much.

DR. SHERTZER: I guess I'm not quite sure what you're saying, but is there a slide in the talk that you're referring to?

DR. JIAO: This one I think is a bias correction to demonstrate to the stock-recruitment relationship and also the projection, because when you project the stock-recruitment relationship I don't think a bias correction is needed. Am I correct? Since we used the empirical distribution, we don't need to do the bias correction anymore. The thing I'm not seeing is it is not stated in the report, but did it say bias correction when you demonstrate that figure, so I just wanted to clarify that.

DR. SHERTZER: I think it should be consistent between the projections and the benchmarks, so if we're going to use a bias correction for the benchmarks, then we should be using it for our projection, too. I guess I'm still a little confused; I'm not sure what you're saying.

DR. BELCHER: Well, what I'm going to recommend is to take a break for ten minutes. Kyle, if you and Yan want to talk about it, talk about it on the break and when we come back we'll start up with our discussions relative to what we're going to recommend unless folks have more questions for Kyle.

**DR. BELCHER: Let's see if we can get started again, please. Do folks have additional questions or comments for Kyle relative to the presentation? Okay, seeing none, thank you, Kyle. At this point we need to discuss the report that we have been given and what our recommendations are going to be relative to the data and the information that is at hand. The first question I will pose is do we recommend the information that we have be used in management decisions?

DR. BARBIERI: Yes.

DR. BELCHER: Okay, everyone else on the SSC feel comfortable with the information that we have been given to proceed forward with looking at OFL and ABC for red grouper? Okay, we have consensus. We have a table that Julie forwarded in the e-mail. It is the summary report.

DR. REICHERT: It is the table in the summary report the same as the table that Kyle provided; so for those who have not been able to access to e-mail, they can look at the table in Kyle's presentation?

DR. BELCHER: Well, John is actually going to project it. The good news is we have no proxy. The first thing, I guess, is in looking at the information in the table, we have to determine the overfished/overfishing status. Obviously, it has not been named as such. We have the ratios but we have not identified it.

DR. BOREMAN: I didn't realize that was our job. I thought that came out of the assessment.

DR. BELCHER: I just know that when John gave me the copy of the other table that was working similar to this, we had to say overfished or overfishing.

DR. BARBIERI: Well, perhaps we can just – you know, like what we did for black grouper, just look at the table and discuss whether we accept this list of summary results or whether we have any suggested modifications or comments.

MR. CARMICHAEL: That is really the point is to make sure that you see all the numbers that are going into what is entailed when you say, sure, we endorse the runs in the assessment. Ideally, to pull a table like this out of the assessment and put it in your report, so when someone looks back at the SSC report they can see clearly at that point what all your fishing level recommendations are. Otherwise, it becomes quite a bit of a scavenger hunt to find what the actual numbers were.

DR. BELCHER: Any comments or discussion relative to the numbers that are contained in the table?

DR. BOREMAN: I believe Kyle said the biomass status, that SSB 2008 should really be 2006-2008. Was that the one?

DR. SHERTZER: Just the fishing status, so just the F over Fmsy. The biomass status is the terminal year of 2008.

DR. BELCHER: Is everybody happy with the numbers that are there; is everyone behind the information that is contained in the table? Okay; then now using the information in the table, we can determine our fishing level, correct; our level of OFL? Matt.

DR. CIERI: Is this one a little bit different because it is on a rebuilding plan? Yes, that is kind of partly my question; is it on a rebuilding plan now?

MR. CARMICHAEL: It is not a rebuilding plan now, but as being overfished a rebuilding plan would be necessary.

DR. CIERI: Okay, is there a timeline?

MR. CARMICHAEL: Well, for rebuilding stocks the ABC control rule and the discussion the SSC has had is that it should be based on the probability of recovery occurring by the rebuilding date.

DR. CIERI: And that would be?

MR. CARMICHAEL: So instead of like a probability of overfishing occurring of 0.33, it would be the probability that –

DR. CIERI: Probability of its success, right.

MR. CARMICHAEL: – you would rebuild in ten years is 0.33.

DR. CIERI: Right, so refresh my memory, is this the first time this stock has been considered overfished?

MR. CARMICHAEL: I believe so, but I would have to look back through the management history to make sure. That it isn't now is probably now is probably enough, so it would be a new rebuilding plan.

DR. CIERI: Okay, that is my question is whether or not we'd start a ten-year time clock or whatever it is now as opposed to this is a couple of assessments ago and it was under a rebuilding plan over the last five or six years.

MR. CARMICHAEL: It would be now starting a new clock.

DR. CIERI: Okay, or at least in 2008, right?

MR. CARMICHAEL: Well, the clock starts at whichever point the council is notified that the stock is overfished and overfishing –

DR. CIERI: It's not on the terminal year of the assessment?

MR. CARMICHAEL: So basically the current status as it was listed in the management summary is that the biomass status looked to be unknown and the fishing mortality status I think was unknown. It was overfishing, yes, is a very good point to make.

DR. BELCHER: So our OFL will be equivalent to our yield at Fmsy or the MFMT, correct, and working from there we would then apply the control rule to determine our P-star value, which also helps us determine our rebuild probabilities as well. Dimension 1 one talks about the assessment, which tier do we have within the assessment? So Tier 1 is quantitative assessment provides estimates of exploitation and biomass, it includes MSY-derived benchmark, so we meet that, so we have the zero penalty under assessment information.

Uncertainty characterization, tier one is the complete, which includes uncertainty in both assessment inputs and environmental conditions are included – obviously not. High was the key determinant reflecting that more than just uncertainties in future recruitment is accounted for. You're saying it fits a two. I'm seeing heads nod; okay. So we're looking at a 2.5 percent penalty for uncertainty characterization.

Stock status, we're obviously not a tier one or two, which is the neither overfished nor overfishing category. Tier three is stock is either overfished or overfishing. Tier four is stock is both overfished and overfishing, which is obviously this status, so that is 7.5 percent penalty. Then we have to look to the PSA results for productivity and susceptibilities; it is a three, which puts it at a high risk, which a maximum of ten, so that gives us a 20 percent, which would be a 30 percent chance of overfishing; a P-star of 0.3 or 30 percent.

Then the probability of recovery relative to the rebuild would be 70 percent or one minus the 30, or a hundred minus the 30 or one minus 0.3. Then the question is do we have those probabilities generated?

MR. CARMICHAEL: Not at this point, perhaps.

DR. SHERTZER: I think the discussion at the assessment workshop is we came up with a suite of projections knowing full well that the SSC would probably request more after that; so rather than try to guess what you would ask for, we held off.

DR. BELCHER: So then I guess our next step would be to request from you the runs that would correspond to a P-star of 0.3 and a probability of rebuild for the projections relative to 70 percent or 0.7.

MR. CARMICHAEL: Have you discussed the rebuilding time period? You perhaps would want to make a recommendation on that. I believe we probably do have the projection of rebuilding at F equals zero?

DR. BARBIERI: Yes, we do.

MR. CARMICHAEL: So the time to rebuild at F equals zero is three years, so you have a three to ten year option.

DR. SHERTZER: I think it is ten years because if it can rebuild within ten, then you have a maximum of ten.

MR. CARMICHAEL: You have a maximum of ten so you can have a range of three to ten that the council could choose from.

DR. BELCHER: How quick could we expect those runs, Kyle? Obviously, we have to request it, but still the turnaround time?

DR. SHERTZER: Let me ask my boss if I can off of the red snapper assessment. Some additional input would be helpful. For the Frebuild we did different scenarios for what is the fishing rate in 2010 relative to current, which we really don't know. We applied a hundred percent, 75 percent, 50 percent and 25 percent. Do those seem like reasonable guesses? I guess you will have to choose one eventually.

DR. CIERI: Is there any reason to believe that in 2010, which we're currently in, that any management action is going to happen to change the fishing mortality rates?

DR. SHERTZER: Yes, it did happen. It's a spawning season grouper closure for four month this year.

DR. CIERI: Do we know how much that will reduce the F?

DR. SHERTZER: No.

MR. COLLIER: We do know it is going to reduce the landings considerably.

DR. CIERI: Right, and that's kind of my point, but we don't what is going to reduce that estimate in that terminal year for 2010. Slide 86 basically had a code through 2010 using the current – I'm sorry, different slide, but using pretty much the current one at a hundred percent.

MR. CARMICHAEL: We might have some estimates of the expected catch reduction. I think Gregg is coming up to the table; he may have something on that.

MR. WAUGH: Well, I think there is an estimate of what that would likely produce and we can dig that out, but, again, that's for the first four months of the season. Then what the fishermen do in terms of altering their behavior over the remaining eight months, that will determine what, if any, reduction there has been.

There has been biological protection during the spawning season, but as far as overall reductions in F, we won't know what that is until the end of the year, because there are a lot of other quotas that are closed and/or will be closed, and there are a lot of changes to fishing effort so there is no realistic model to talk about changes in fishing behavior.

We've talked about this some with the economists and this is something slated for them to work on in the future, but there is no model now to allow us to predict what these fishermen are going to do. If you look at what has happened in other fisheries, every single quota has been met and the fishery closed much sooner than our projections based on their past landings.

DR. CIERI: So I'll just throw this out there; it might be just a case where because of the uncertainty and the simplicity and all of our unknowns, that we simply use 2010 as 2009 F within the projections. We would start whatever rebuilding management actions for 2011.

DR. BELCHER: Anyone else have any comments to that or does everybody agree with that suggestion? Could you repeat that again for Marcel?

DR. CIERI: Only that we don't have any expectation, given all the uncertainties and considering we are in 2010, of being any different in 2010 than it was in 2009.

MR. WAUGH: And just state why and justify that rather than just have that statement.

DR. CIERI: Because we don't have any good handle on whether or not there is going to be a change in either effort or targeting by the fishery between 2009 and 2010.

DR. SHERTZER: So you don't know if there will be a reduction; and if there is, how much. Also I'll add that from the sensitivity runs or the projections that were already run, the answer is not very sensitive to this value, anyway.

DR. BELCHER: Is there any other information that you need from us, Kyle? Okay, is that our request for Kyle is just a single run relative to those numbers or are there other runs that folks want to see? Okay, it will be the single run.

MR. CARMICHAEL: At the end of 2020, right, starting at the start of 2011. I was thinking like your probability calculations; are those at the end of the year or the start of the year?

DR. SHERTZER: To 2020, if that's the year we use, then you have to the end of that year to rebuild.

DR. BELCHER: Okay, we will be waiting on those numbers. We will get our request through to Bonnie, but we're waiting on those numbers and then we can make that determination for the ABC as it comes out of that plus the rebuild pattern. Matt.

DR. CIERI: Timing; when?

DR. BELCHER: Yes, it is going to be dependent with scheduling, but some of that I think is going to have to be discussed with staff to see when they need numbers by. I mean, if it's June we kind of have to work back.

DR. SHERTZER: Why don't Erik and I discuss it at the next break?

DR. BELCHER: Okay. How about that; we'll revisit it later on in the day as to what is a reasonable timeline that we could have it by. Have we actually finished that? Well, no, but I mean as far as discussions; we're actually through that?

MR. COLLIER: I do have one more thing to discuss with that. With this stock there appears to be two separate stocks. Although they are probably connected through larval connectivity, Florida does seem to be independent of the Carolina stock, and that should be looked into in future assessments.

Based on migration and tagging data, these fish don't move much, so it is unlikely that they're mixing as adults, so it is just that larval supply and the level of fishing effort in the different areas that could impact the overall stock productivity and growth rates might vary as well. The next SEDAR we might want to consider it, but right now we don't have sufficient evidence for it.

DR. BELCHER: Thank you for that, Chip. Okay, thank you, Kyle, and we will get back with Erik after the break or after lunch, I guess. Okay, so back to what we started yesterday with the

ABC recommendations where we were talking about coral yesterday, falling back into that group again, which is Item Number 5 on your agenda.

I don't know if we want to say picking up where we left off because I don't really remember how we left off yesterday other than we hadn't really reached any discussion on how we were going to look at computing OFLs for this particular species or group of species, complex of species.

**DR. BARBIERI: I don't remember whether we were going to be provided with some additional information or at least search for some easier-to-find additional information that would be brought up today or not.

MR. CARMICHAEL: Since we went ahead with the OFL, I didn't ask Myra to come back in this morning. She had another MPA meeting that she was going over to, but if we do have some more, we could ask her to bring something else in.

DR. BOREMAN: You said we went ahead with the OFL; what are you talking about?

MR. CARMICHAEL: You recommended an OFL for coral; you didn't recommend an ABC?

DR. BELCHER: We threw some ideas out on the table as to what we were considering, but I don't think we ever really reached on consensus on how that was going to happen. I know John started with one particular number and we talked about another number, and then we kind of backed away from it.

MR. CHESTER: Madam Chair, I thought that we did reach consensus –

DR. BELCHER: We did.

MR. CARMICHAEL: I thought we did, too.

MR. CHESTER: – that OFL should be the median value.

MR. CARMICHAEL: That was my recollection that you all consented to the OFL being the median, and that's when we started to talk about ABC and then we got into the question of was ABC what level of OFL.

DR. REICHERT: Well, in my notes from yesterday it said the consensus was set the OFL to 4,970 colonies.

MS. LANGE: My notes as well.

DR. BELCHER: That is why we have you all rapporteuring. I know that there has been further discussion because of those single species, so again we had ideas kicking around the table, but I

don't remember where our final settled point was. Saying that, then, we have the OFL so we need to determine the ABC. Erik.

**DR. WILLIAMS: I would offer up one thing that might help us just in thinking about this is Mike Wilberg at the last National SSC Workshop presented a nice little figure looking at just distribution assumptions about your point estimate and what proportion reduction you'd get for various assumptions about P-star and the coefficient variation.

I've put a quick little spreadsheet that looks at both normal and lognormal distribution assumptions and then what the percent reduction would be for various coefficients of variation and various P-stars. That might just help us wrap around this whole concept of whether 75 percent even makes sense or just a fraction reduction or not, but it might worth looking at those. We could either put it up on the screen or I could e-mail to everybody, however you want to do that, but it might be worth looking at.

DR. BELCHER: Well, then, there is the question; are we better off talking about determining what is the better approach? Do we talk about the methodologies and having a suite of methodologies in front of us as to what you're suggesting and apply the species or do we – and we've kind of had that discussion when we were doing the ABC in the development – was looking at what is in front of us and then applying it on a specie-by-specie level as opposed to going to a specie, looking at specifics and then kind of determining methodologies as we went.

MS. LANGE: Weren't we talking about trying to get an idea first so that we would be consistent from species to species so covering the methodologies –

DR. BELCHER: Right.

MS. LANGE: – and making a decision?

DR. BELCHER: The only reason I'm saying that is because we're kind of picking up – well, by brain is picking up where we left off in coral, so what we're kind of doing is backing away from the coral to talk about a methodology.

DR. CIERI: I actually did a little bit of thinking about this last night. When you do something like this, you probably want to choose a landings' time series that is fairly stable, keeping in mind that you would like to have your more recent fishery capture. It doesn't mean that you can't use the sort of last five-year average, but you also want to find a stable time spot.

I think in choosing an OFL based solely on landings, I think that is something that the SSC should do; and just start from zero and work your way up to that average landing point, you know, where you add 25 percent if you believe that there is a good probability that the stock is not overfished and overfishing isn't occurring; you add another 25 percent if it is not an ecosystem component, habitat, forage, an important part of that ecosystem.

You add 25 percent if is not a long-lived species or has at least a moderate resilience; and then you may add 10 percent onto that, getting up to that average landing or median landing over a time series; you know, add or subtract 10 percent if you don't know your landings, if you're looking at a complex as opposed to a single species; but if you do know the landings, for example, or for some other mitigating factors, you could add up or subtract 10 percent under that; and that sort of gets you up to that landing level. That was just an idea. Does that make sense at all?

In these situations, at this point, you could do it the other way where you go down from whatever average landing, I think starting from zero and going up sort of sends a fairly clear message on the precautionary principle in dealing with these types of situations. Already you don't know what the heck you're dealing with when you get into these situations, and so I think it is easier to work up from zero rather than down from another number.

DR. BARBIERI: Matt, that makes perfect sense only in a way it would be nice for us to stay consistent with our concept of having an OFL and then the buffer being a reduction from the OFL. Perhaps you could explain that after building that from zero to whatever we build the buffer between the OFL and ABC just to make clear that –

DR. CIERI: But it gets us to the point where we add things as we know things. If we know that the stock by its life history characteristics is not vulnerable to overfishing or if there is a very large refuge population out there that isn't exploited and we know that it is further offshore and those types of things, then we add it in.

If we don't know and we don't as opposed to the flip side where you add in the buffer where you're sort faced with I don't know in which case you end up taking it off, and you can get into an argument is it probably or not, is that reasonable or not when you're removing it. Coming up you've got to be fairly certain that the specie fits into this sort of regime.

DR. BELCHER: What are other folks' thoughts on this? In some ways, as we were talking about yesterday, it could just be that there is going to be a quasi-separate control rule for data-poor stocks, so maybe we do have to take that approach of we know we're already in a bad situation because we don't have the information at hand.

In a worse case scenario we would have to say zero, but as you know more, buffer more towards whatever you're thinking your OFL is going to be, whether it is 75 percent of the landings or half of and then build your way back to it. I mean, it is just not a constant buffer in the sense of we're not decrementing the buffer, per se, but we're bringing it back to what we're hoping would be the full median value as opposed to how do we buffer away from it. We already know we don't know anything.

DR. CIERI: And this is why I'm trying to do some sort of quasi-control rule or just an idea; you know, where you can go up to 85 percent of your last few years' worth of landings if you've got a good handle on your critter. You know what the landings are and it's a fairly moderately lived

species that is not really vulnerable and is at a high biomass. On the flip side the less you know the closer you start getting to that zero percentage.

DR. BELCHER: Other thoughts? How does the group want to proceed? Do we want to think about it and come up with some ideas as to how we could possibly build this? Erik.

DR. WILLIAMS: I think I completely concur with Matt. In the sense our control rule for our data-rich situations, if we're going to call them that, or just data situations is we work down from a P-star of 0.5 and we work down based on uncertainties and various things. I think it makes sense when we know pretty much nothing to work from the bottom up instead. I keep it keeps intact one of the main principles of this new Magnuson Act, and that is there needs to be some incentives for collecting data and for improving our estimates for reducing uncertainty, and this will clearly put those incentives in place if you're working from the bottom up.

DR. BARBIERI: And, Matt, I guess the devil is in the details and I think it would be helpful to have anything written that we can up there and kind of – well, it's just like what we did with writing the original control rule, that we put it up on the board and kind of worked our way through so we can sort of adjust the wording and play with things up there.

DR. WILLIAMS: I would add one more thing. The other justification for starting at zero is we do have a stock for which we went through a similar exercise where we set ABC to zero, so it is not unprecedented to even start at zero for some of our species in this complex.

DR. CIERI: And this also takes into account that sometimes you get stocks that you didn't know really existed. You have a complete stock – you know, this has happened in the northeast where we have a complete stock that you didn't know was a complete stock until the last assessment and some tagging data indicated that. This allows you to deal with those sorts of situations.

MR. CARMICHAEL: Do you want to write something on this?

DR. BELCHER: John is going to put Matt's new stuff on the board for us to discuss as a starting point.

DR. CIERI: And that's one of the things that I think I really wanted to get across is that we've got all these rote things when we go through the P-star value and so on and so forth. In this sort of situation you need a ten percent plus or minus just for stuff like, for example, species within a complex that you don't identify; or, on the flip side you've got a refuge population in which you're only exploiting – you know, for example, for drum where you're only exploiting ages one through three, but most of your spawning stock biomass is offshore so that you can adjust that in – I don't want to say ad hoc but certainly using expert input.

Basically, the idea and the concept is that we choose a landings' level over which the stock was stable with special weight consideration given to the recent time period. You don't want to pick something back in the 1980's, but on some level. If your recent time period is all over the map, then you might want to choose something that might be back five years, for example. It just

gives it that acknowledgment that you want to try to use the recent time series, but you also want to balance out when you think the stock was a little more stable.

DR. BELCHER: Okay, John put his encryption of Matt's notes up on the board.

DR. CIERI: One other thing, where it says "not long lived", put in a slash and say "not vulnerable or low susceptibility"

DR. BARBIERI: This is something we have discussed during that January conference call when we were trying to find out how to integrate vulnerability into this data-poor component, and one of the things that were discussed was using the PSA, which, you know, at the national meeting that had been the recommendations. A lot of the other SSCs are actually using PSA more for data-poor species than rich. I think that was the intent of the vulnerability working group that NMFS put together to develop that thing.

DR. CIERI: And I think putting it in 25 percent increments – you know, when we're figuring out the P-stars, we come out with this thing that is 22.5, that type of a percentage. I think because you're in a data;-poor situation and there is fewer criteria, you need that longer spread.

DR. BELCHER: The only reason they were divided up that way was just equal weighting across dimensions and within dimensions. I mean, that is the other thing is again just as you're saying if you have five criteria, you equally allocate it. Erik.

DR. WILLIAMS: Before we even go down the path of discussing these individual criteria, should we first talk about what is the maximum that we would consider? In other words here this would add up to 85; would we consider even going that high for a species that falls into this category of data poor?

DR. CIERI: You might. Seriously, I mean, if you think about it in the most data rich of data-poor situations in the stock, you've got a stock that has a fairly high resilience, it is at a high biomass, you know the catch records really well -- actually I'm thinking of some of our northeast species in which that is true, where you have got a long-time index with the stock falling through the roof, that type of thing.

Then in that case that other factor which you don't have to add in and those other factors are basically based on our user input, and so the maximum under those criteria that you would possibly get would be 75. And then, for example, if there are other mitigating factors, it could go up or down by another 10 percent.

DR. WILLIAMS: Well, then, the problem there is we run into some potential inconsistencies with the other ABC control rule if we want to separate these two, but where we could end up with a situation where we throw it into the data-poor category, we could end up with a higher ABC than if we ran it through an assessment and the P-star declination from the other end – you see what I'm getting at is we've got to be careful about avoiding that.

What I would recommend – and this is where this spreadsheet I sent to everybody might come in handy – that for the data-poor species we would want to assume the worse case scenario for our P-star, which is if we had all the penalties maxed out from our other control rule, we would be at a P-star of 0.1. Well, if we look at the lines on these tables or the figures that I have sent around, I assume a normal and a lognormal.

We can then look at the coefficient of variation and make some rough assumptions about that. I think a bare minimum would be around 0.3. Then for a P-star of 0.1, you're looking at a maximum ABC value that is around – in the lognormal case around 70 percent and in the normal case around 60 percent. I don't think we'd want to get much above 60 or 70 percent.

MR. CARMICHAEL: Would you go 70 to 75? That is one of the default values that have appeared in the literature. If you look at that like the precautionary principle and other guidelines, it suggests that 75 percent as a starting point, you could set that as your maximum.

DR. CIERI: Again, just readjust everything from there and that would work.

DR. WILLIAMS: As I said, these are suggesting between 60 and 70, so I'm wondering if we ought to choose 65 percent, and that is assuming of CV of 0.3, which is actually kind of small.

DR. BELCHER: So what do folks do think about that?

DR. BARBIERI: Well, looking at Matt's table there, I'm not sure we're going to ever be able, really, to assign any points for that first – you know, we don't know if is a data-poor – I mean, we're already from the get-go –

DR. CIERI: But it is not true; the wording would be that there is high likelihood that the stock is not overfished and overfishing isn't occurring. That is not a definitive statement. That is basically based on surveys, landings going up, testimony, those types of things from some of the fishermen, so you have to feel good about adding in that 20 percent.

DR. BARBIERI: Right, and my point is that is one major source of uncertainty that we have. Most likely the default assumption there is that we will not know whether there is overfished or overfishing.

DR. CIERI: Then you don't add it in. Now you're starting off with – you know, automatically that goes away.

DR. BOREMAN: I would caution against having it in there and coming up alternate means of declaring stock status. It is just going to confuse matters because there is an official declaration sent out by the regional administrator. To have the SSC come back and say, well, we have looked at other data and we have a different version of stock status is just going to be confusing. Maybe word it a little different.

DR. BARBIERI: And just for the sake of discussion, the one advantage of leaving it there and actually just always not using that as an assumption that we do know, because that will recognize that for those data-poor stocks – I mean, we're already starting from the point that we don't know, we really don't have stock status determination. That is something that we already know doesn't exist at least not in a formal sense.

DR. BELCHER: Well, here is your question, then; what about those species that we do have determinations for that were done under an older premise and we don't have a current assessment for?

DR. CIERI: The fact that it was doing really good ten years ago doesn't really help you.

DR. BELCHER: No, I mean in the sense that it was determined previously under a different definition to be overfished or overfishing and you still don't have the means by which to do a SEDAR assessment or the best thing that you have in front of you is landings' data.

MR. CARMICHAEL: There could be some. That perhaps could be another factor if you decide not to include the status. There won't be very many stocks that fall into that at this point. I guess the question is what do you do with the status, what do you do with the criteria? Do people have other things that they think should be considered? Are there more things to add to this list? Maybe we could come up with some appropriate categories.

DR. BUCKEL: To touch on something that Matt mentioned at the beginning was this point about there are recent trends suggesting a stable population or in the past ten years or something like that, and maybe that could – John, put "trends" there and maybe that could be something in the first criteria; because if you don't have that, if it is suggesting that it is going down, then you would want to obviously –

DR. WILLIAMS: I think I get where Jeff is headed with this, but I think it should actually be a separate category, and that is – because it really gets at the core of the issue is what is the reliability of our OFL estimate. In this case our OFL is going to be based on some average landings. Well, in some cases like the corals we had a nice steady time series. There weren't any trends in that. We might say that that OFL estimate was a little more reliable than one where we had just a continual decline in landings and we're trying to compute an OFL from that.

MR. COLLIER: I was going to go along with Jeff; and also with the trend's stuff you could have something where if you have a fisheries-dependent only and then if you have a fishery dependent and fishery independent, that way you could – you're getting a better picture than if you just have landings alone.

DR. CIERI: Yes, you're going to be pulling in all this other accessory data for a stock that is not assessed. If you've only got landings, that is one thing; if you've got landings going down but an upward trend in your independent index, that will lead you to another sort of conclusion. The point is that you have to have some sort of proof in order to add in something. You've got to be fairly certain that your biomass is high and that your population is trending up in order to add in

20 percent. You have to be fairly certain that your stock is fairly robust and fairly resilient to fishing pressure in order to add that in. That is sort of the premise.

DR. WILLIAMS: Matt, that last category that was added, trends in – I guess just to be more specific it would be trends in the target fishery or other co-occurring fisheries or something like that. We could use a time series from another species that we may have assessed and look at that in conjunction with average landings from another species.

DR. CIERI: And there is actually precedent on that one on the New England winter flounder where the Gulf of Maine stock, the assessment didn't go through but it was assumed that the stock was overfished or overfishing occurring based on southern New England.

DR. WILLIAMS: I'm still brainstorming out loud a little bit, which isn't always a good idea, but are we viewing these as just yes or no or are we going to get in – yes, that is what I'm wondering if these should be scales that we can fit up to that maximum value that we're indicating here?

DR. CIERI: Yes, because we have to make things more complicated.

DR. BELCHER: Erik just likes his dimensions and tiers, that's all. What else?

MR. CARMICHAEL: Do we agree not to include status as in not considered overfished or overfishing because of potential implications there? I sense a nodding yes. Okay.

DR. CIERI: I do think we need to have some sort of – we're going to have some sort of general idea of where the stock is relative to historic, and I think that is a key thing. If you have no information at all about how the stock is doing, then you don't sort of add it in at all. But if you've got a fairly good idea that your stock is doing well either because of the fishery-independent index or some other type of testimony input, something along those lines, then you can add it in. You want to separate your stocks that are doing really crappy that you know are doing crappy versus the ones that might be okay.

MR. CARMICHAEL: Maybe it is more of something if you think of the coral example where it was more along the lines of anecdotal information and testimony about the fishery not appearing to be currently adversely impacting the stock, which is kind of different than status. Maybe that is the point we're trying to look for.

DR. WILLIAMS: I think we can break this one into three outcomes. You either have some indication that it is not overfished. Maybe we don't use overfished but some indication that it is not heavily depleted or something like that, or you have some indication that it is heavily depleted or you have none, you don't know, it is a complete unknown. Those are the three categories and how we assign points, I don't know.

DR. CIERI: And I would suggest that you only add in 20 percent on one of those. If you really have no clue – as with any of these, because they're added in, if you don't know about a

particular criteria, it doesn't get added in, so you have to be fairly certain that your stock is not depleted in order to add it in. That is this whole sort of point.

DR. BELCHER: I was just thinking a thought especially with dealing with suites of species; can you look at the consistency of the landings over the time, what percentage it made up, like to find out if it was actually a targeted species. Some of these things that are incidental, you're going to expect them to be blitzed in the radar. We have some of those species; they're not there, they're there, they're not there.

DR. CIERI: And that might be something to consider under other factors, non-target species, and that could an additional sort of 15 percent, but it also could be this is a bycatch species that we know absolutely nothing about.

DR. BELCHER: But the idea being if it is a bycatch species, it is not necessarily a targeted species; therefore, exploitation may not – well, I mean, I'm trying to think logically out loud in terms are you better off looking at the trends and how – like we had a fishery that completely flip-flopped in terms of a trawl fishery in the wintertime and it was originally a blue crab trawl fishery, and what they found was that they could make more money or it worked better for them that their bycatch of whelk actually started exceeding the blue crabs, so we're still managing a blue crab fishery that is now a whelk fishery.

It is something that wasn't traditionally the target for the fishery is now – the exploitation has changed out. That's about the only thing I was thinking of, if you something that is hit or miss along that time period, your impacts, if that is the only place it occurs, it may be sustainable, a relatively level level, as opposed to all of a sudden, oh, look, there is a market for that, it is still a bycatch species but every chance we get, where before we may throw it over, now it's – so you're getting a change in how the landings are changing over time in that sense.

DR. REICHERT: Matt, didn't you say that unknown you should not add 20 but zero?

MR. CARMICHAEL: Is someone content at the moment with the first one as a general placeholder? I added some notes down here about what we talked about for the considerations in that thing are landings, trends, CPUE or fishery-independent indices trends as sort of general reliability of your OFL as factors you could consider. Whether or not that one fits there is debatable.

DR. BELCHER: For the yes, would it be better – Marcel.

DR. REICHERT: Should we discuss the 20 because I expect that people will be asking us that question?

DR. CIERI: That sort of gives an equal weight to everything; and in order to add it in, you have to know. It is unlike the P-star in which you're trying to go, well, it's probably somewhere between here and here. It is either is there an indication of depletion; if it is yes – you have to basically say no. It is almost like a true/false statement.

DR. REICHERT: I understand that. I'm talking about the value of 20.

MR. CARMICHAEL: Three 20s and 15 gives you the 75. I scaled it from the 85 and I'm open to scaling it more if you would like.

DR. REICHERT: It is not that I disagree with that, but I think in terms of justification we probably need to come up with reasons why we choose that if we say we equally divide it or roughly equally divide, and do we feel as an SSC that each of these factors should be contributing equally to the code.

DR. WILLIAMS: I would say let's table that discussion for now and let's flesh out all the criteria first and then we can go back and fill in numbers.

DR. REICHERT: I agree with that.

DR. CIERI: On the next one, put in habitat but also forage.

DR. WILLIAMS: Do we want to try and develop some sort of scale for this one? I would say that if something is habitat, I think that should get fewer points than something that's forage versus something that is a predator. I don't know, but that's my bottom-up bias on ecosystems.

DR. CIERI: Out of all of these, this is going to be one of the most objective ones because everything is important in the ecosystems to somebody along those lines, but there are certainly species that are probably the most – that are really, really critical that we all recognize; for example, coral and habitat, but shrimp, for example, is forage or any of those other species, for example.

DR. WILLIAMS: I'm wondering if we call this, then, the role in the ecosystem rather than not an ecosystem component, just role in the ecosystem.

DR. REICHERT: That was exactly the remark I was going to make.

MR. CARMICHAEL: Perhaps you reserve the right to adjust these scores when you actually go in and apply them for certain things you may know about, some species which you have no idea, of course, being at this point.

DR. REICHERT: Wasn't this initially not – the initial text was not an ecosystem component, so should this be not a critical ecosystem role.

DR. WILLIAMS: Right. We don't have the reliability of OFL estimate in there anywhere. I think that needs to be a new criteria.

DR. CIERI: As in a completely new criteria?

DR. WILLIAMS: I think so; it is a very critical one. It is really what essentially should determine the buffer from OFL to ABC is the uncertainty in OFL. Are we getting ourselves in trouble with something as opaque as "other factors"?

DR. CIERI: Well, there is that general recognition that we're not going to be able to account for everything in a list. For example, we hadn't thought about a species complex until we started talking about coral. You're not going to think about a refuge population in which most of your biomass is in an area that is unexploited until it happens.

As Anne was suggesting we were going through and having to remodify every one of our control rules for each of our species simply because you can't account for all these factors, so let's put them into unaccounted for factors, but it also allows you that, hey, you know, if industry and other people want flexibility, we should give flexibility to ourselves.

DR. WILLIAMS: Maybe we should at least then put some examples. What would be an example of some other factors? I'm assuming one might like trends in environmental conditions or something like that that we know about.

DR. CIERI: Yes, like for drum, which most of your exploitation happens on a very few select age classes and most of your spawning stock biomass is unexploited because it is in a refuge; the same thing, for example, like in the northeast for squid where that particular fishery only operates in a very, very short amount of time on a short-lived species in a very narrow area.

DR. BOREMAN: Wouldn't that be part of the PSA, though? That's susceptibility.

DR. CIERI: Yes.

DR. BOREMAN: As a followup, putting other factors in here implies that maybe we should be doing it for the regular control rule, too.

DR. CIERI: You're simply not going to be able to account for everything while we're sitting around the table today.

DR. WILLIAMS: I would say it is ill-defined and you could probably wedge most of the other issues into one of those other factors. For instance, the reliability of OFL certainly could absorb a lot of things.

DR. CIERI: Or you might have a concern about localized depletion, for example, you know, on the flip side with drum where you have the ability to wipe a fairly large – you know, a small spawning component.

DR. WILLIAMS: I would say we get rid of the other factors.

DR. BELCHER: Anyone for keeping it? Okay, so we're striking it from the list.

DR. WILLIAMS: Should we revisit the maximum discussion; what is our maximum fraction that we'll get out to for these data-poor species? I threw out on the table 65.

DR. BUCKEL: Erik, if you could just maybe give an idea of the CVs that you typically see and why you focused in on 0.3; I was just curious where that came from.

DR. WILLIAMS: I kind of pulled it out of the year but it is kind – yes, it is some internal calculus that is going on in my brain that I can't think of specific examples, but around 0.3 seems to ring true with other assessments. I don't know, Kyle, you forked with some of this when you were doing some of the P-star analysis with Mike.

The question would be what would be sort of a rough and ready typical CV about OFL that we have seen from a lot of our stocks where we've done a pretty good characterization of uncertainty. The other thing I was thinking of is the last paper that actually I was a part of but I can't recall the numbers that we submitted; what were sort of the ranges of CVs that we examined in that one?

DR. SHERTZER: Do you mean around Fmsy? I don't remember what they were. I could look it up if you'd like to.

DR. WILLIAMS: Yes, I just pulled 30 percent out of the air and thought that was a reasonable estimate.

DR. SHERTZER: I think that sounds very reasonable.

DR. BELCHER: So how do other folks feel about this?

DR. CIERI: I've been trying to look at it from an extreme where you've got a stock where you know really good landings, you know if the stock is okay. Basically it takes a 20 percent penalty just for walking in the door for all intents and purposes in this sort of data-poor situation. I do see Erik's point. I think it really important to understand that all this is a placeholder; you know, you don't have an assessment and so you're going to get it wrong all the time because you don't have an assessment.

If you had some inkling of what the stock was doing for real, you wouldn't be in this situation to begin with. The idea of moving up from the bottom is, of course, to give that incentive to collect more data and also not sort of go over things. I personally think there is probably enough precaution built in from – you know, you have got to know it before you can add it in and moving up from the bottom. I'll leave that one up to the group.

MR. CHESTER: I appreciate what Erik is saying, too, but I'm a little reluctant to move down from 0.75 simply because it has become sort of a national number. It is in a lot of the guidelines and that sort of thing over time; and because, as Matt said, we're building things up and there may be precious few that actually reach 0.75. I think we might be raising eyebrows if we go below 0.75 just given national consistency.

DR. WILLIAMS: Well, I would counter that and saying that we have established a new consistency that we have to adhere to, which is our ABC control rule. The 0.75 is sort of older than our ABC control rule; and really to be consistent with our ABC control rule, then I think we should be looking at the P-star of 0.1 and looking at how the percent reduction changes with assumptions and the CV, and that is shown in those figures. I was just looking at the manuscript that Kyle and Mike Prager and I recently submitted, and we looked at CVs from 0.2 all the way up to 0.6 in increments of 0.2. I mean. 0.3 may actually still be a little on the low side.

MR. CARMICHAEL: So in the lognormal that is like 0.46 or 0.77, so we're somewhere between 50 and 75 percent.

DR. BELCHER: I see the merit in both ways. It just a matter of establishing the record. That has been our biggest issue in making sure that the record is standing as to where that number is coming from. If there is enough information and as Erik is referencing something, if there is a reference to which we can put that forward, then I think that should stand just as strong as – I mean, I agree with Alex.

My kind of feeling is if Restrepo et al has kind of been – that 75 percent of has been the constant, then at least that way you know it is going to be harder for someone to keep saying, well, why did you pick that number. Again, if there is a counter argument based on more current data that suggests the other, then by all means now we can say that we feel confident and move in that direction, but we need I think to have that same – there needs to be a reference to it. Whether it is Wilberg's stuff or Erik's and Kyle's work or whatever, we just need to have a strong backing for it. Erik.

DR. WILLIAMS: Maybe a way to proceed forward is start with 0.75 and just say this is a placeholder and that one of things we will evaluate in the future is as we do more of these analyses, we will look at what our average CV is coming out of our assessed stocks is and use that with the P-star of 0.1 as our cap for this.

DR. CIERI: I actually kind of like that because, let's face it, as you do those assessments, you want to keep that CV for the stocks in your region rather than borrowing black cods in the Pacific Northwest.

DR. BUCKEL: I'm just ignorant on the 75 percent OFL; has that been applied to any stock long enough that we could see if it was successful? That is another way to justify or not justify using it.

DR. BOREMAN: My understanding is that the Pacific Council has been applying that for a number of years. Whether it has worked or not, they haven't changed it to a different number.

DR. BELCHER: Yes, it is like the lowest tier on their previous – what we're calling the ABC control rule; their tiered system, that is their lowest tier on that.

DR. BARBIERI: And the North Pacific as well has just a 0.75 and 0.5 at times, depending on vulnerability of the stock.

DR. BELCHER: So does everyone feel comfortable with saying we're looking at moving at 75 percent? Okay, so John will do the weightings relative to 75 percent.

DR. WILLIAMS: I'll throw this out there; I think the reliability of the OFL estimate is going to have a lot of factors in it, probably more than any of the others. The PSA is pretty prescriptive; not that it should get any lower weight, but I would that the reliability of the OFL estimate might want to get a slightly higher weight than some of the other categories.

DR. BELCHER: So what do people feel for a weighting; should it be half of it, less than half of it, three-quarters of it?

DR. WILLIAMS: Yes, I would say that could be 25, almost a third of it.

DR. BOREMAN: Yes, I would go along with that. My comment was weighting the first two as 15. Those are the squishiest I think of the four in terms of having some justification or backup data. The PSA is kind of self-prescribed; and the reliability of OFL estimate, we can probably nail that with incidental evidence – yes, other evidence can support that. The first two are just touchy/feely type of estimates.

DR. BELCHER: Yes, I think that's a good point, especially because the PSA is calculated based on information at hand, and it's not just a how do you feel, high, low, medium. It is an actual quantified number that we can put some concreteness to it. What does everybody think? Does anyone have any disagreement with the weighting?

MR. CHESTER: I don't disagree with the weightings; I think they're pretty good, but I am a little uncomfortable with the reliability of OFL estimate, the lack of any kind of quantitative or separation, yes-no-maybe. It seems to be the least well defined in terms – or the most subjective in terms of picking a number. I wonder if there is some way that we can compartmentalize it a little bit.

DR. BARBIERI: That was going to be my question, too; how do we try to quantify that or break down into categories that – you know, just like the data appropriate, I guess, control rule, you know, that we tried to generate some categories to guide us in making a choice.

MR. CARMICHAEL: I've put some things on there based on the discussion for potential considerations for that and perhaps that will help us look at things to focus on without being overly prescriptive in terms of assigning scores for each one.

DR. WILLIAMS: I think you need to put in there lengths, something about the length of the time series. Just landing's time series doesn't say much about what we're concerned about.

DR. BOREMAN: Yes, besides landings we've got to think about discards, too; not landed but thrown overboard is kind of important.

DR. CIERI: Yes, and that includes things such as discard mortality. These are just considerations; there are no weightings. There is no, you know, this is just, oh, okay, we're going to do something here. What did we say the last time?

DR. REICHERT: Didn't we also discuss whether a fishery – was it like a directed fishery or whether it was a fishery as a bycatch or not a fishery. I wasn't sure whether that was in there somewhere.

DR. CIERI: Or changes in gear or changes in management, the whole nine yards. I think we've got enough.

DR. BELCHER: I kind of keep going back to the indication of depletion. We talked about it in terms of – it kind of triggered something, because there is landings' trends, CPUE trends; what about the trends? We talked about yes and no and you give full weight to if there is a depletion indication, yes, but is it stable, is it increasing, decreasing; does that give different weight?

DR. CIERI: Remember, it is not evidence of depletion; it's evidence that the stock is actually doing okay. There is sort of the big difference. You've got to have – if your CPUE index or fishery-independent indices are going up, in order for you to add that in, you need to have a lot of faith in those indices as a measure of your overall populations. Just because your landings are going up, a lot of times you can certainly make the argument a lot of times or even a CPUE index, if it is going up, it's going up, but if you don't buy it, then –

DR. BELCHER: But I'm thinking not so much from the rosy side, I'm thinking the depletion side of it. As you see a trend that says it is decreasing over time, does that mean that it is going down because the stock is going down or is it because there is a lot of interest in people keeping them? You know, how do you interpret?

DR. CIERI: You don't care because you have to have the evidence that the stock is going up in order to add it in, so it's sort of – whether it is going down because landings or a trend is going down because management action or somebody builds a better mouse trap or tilapia tastes better that week has almost no bearing. You need evidence and you need faith or something else that you need to add it in because there has been an increase in the population size. That is what I'm suggesting. It goes into the unknown in which case it is whatever.

DR. WILLIAMS: I doubt you would ever use landings alone to help you really inform about depletion. Really, we ought to put landings and/or effort trends because I that is really what –

DR. BELCHER: Yes, I think that is what I was kind of trying to get at, because I'm thinking of it more in terms of the exploitation rate changes that are happening, because if you've got stable exploitation with that –

DR. WILLIAMS: That applies to the one above, John, under depletion consideration.

DR. BELCHER: Other comments and consideration for any of these? Okay, so everybody feels like we have something we can work with?

DR. WILLIAMS: I'd make that we add, if this gets written up a little more formally, which I assume John looks like he is heading down that path, to make sure we grab that last paragraph from our other ABC control rule, which says we reserve the right to totally change this thing with new information.

DR. BELCHER: Okay, so everybody feels we're at a good jumping-off point for us to look at applying this towards those species that we have listed under five as far as coral and shrimp and sargassum and golden crab? Okay, since you all have been doing such hard work, I am going to say we'll go ahead and take lunch. We're taking a break for lunch and be back no later than quarter to two.

DR. BELCHER: Since everybody is here, we'll go ahead and get started again. Now we have this new handy-dandy little approach defining ABC, now we get to have the discussion relative to how we're going to apply it. Erik brought we still have to have discussions about where the OFL values are coming from, but obviously it will go along with the process as we work on each of these species.

**So revisiting coral as a starting point with what we have in hand and the OFL that we recommended yesterday, what does our ABC control rule get us for a value for that particular fishery? This is our new data-poor control rule.

MS. LANGE: Can we add it on now like we did for the first one, indication of depletion and put a zero there as well?

DR. BELCHER: What do folks think; does that work for everybody? It looks like yes. Okay, the table is back up on the screen, so how are we incrementing up from zero for coral? I guess we can walk the same steps. Do we have an indication of depletion for coral; yes, no or unknown? John.

DR. BOREMAN: I would say no.

DR. BELCHER: Is everybody in agreement with that; any comments or questions? Okay, so that gives us that. Okay, the next one is does it have a critical ecosystem role, habitat, forage, et cetera? It is critical, so if it is critical does mean that we don't add anything to it? Okay. Not long lived, the results of the PSA, can we assume low, medium or high risk or unknown risk? Unknown, so we don't do anything for that. The reliability of the OFL estimate; any thoughts?

MR. COLLIER: Can you scroll down to the criteria for reliability?

DR. CIERI: It is part of a complex.

MS. LANGE: Well, points for each one of them; we have good landing trends. We have landing trends that it is stable. It is pretty much unchanging, I guess. The landings data issues are that we don't have species identification. The time series, we have a reasonable time series, I think. It is a complex and the range of the species is defined. Discards are not a concern because they pick what they want. It is only a directed fishery. Those are the responses to those weighting factors, but now the question is how to weight them.

DR. CHEUVRONT: I've got a question about one of your factors that you're all just looking at here. It is the long-lived one. I could see how that could apply to fish, but I'm not sure how it would apply to corals in this case. Isn't the question really more along the lines of how quickly can they replace themselves?

DR. CIERI: I think it is more generally – I mean, we put in long-lived, but I think that is an indication of the relative vulnerability of that particular stock, and I think that is what that is trying to get at is the vulnerability and its resilience.

DR. CHEUVRONT: These are highly resilient.

MR. COLLIER: But we're also going on the PSA score. I don't know if we're really going with that long-lived part. It is more PSA.

DR. CIERI: Yes, more PSA and a generalized vulnerability.

DR. CHEUVRONT: How applicable really is that to a sessile animal like this that replaces itself.

DR. CIERI: Wouldn't that copy into the old unknown category?

DR. CHEUVRONT: No, there is a lot that is known. It is just that is the PSA really the appropriate thing to use for this, I guess is the question I'm asking?

DR. CIERI: Right, wouldn't it come in as unknown. You don't really know what effect your removals are having. You don't really understand what your –

DR. CHEUVRONT: Sure, you do, you know a lot about what your removals are doing with these corals because they have been removed for years and years and they come right back.

DR. BUCKEL: I guess there was discussion that were multiple species yesterday, and I don't know if we've been provided enough information to know if they're all – if you take a chunk from one, that they are going to come back; or if you take a sea fan, if that is going to come back. I don't know enough about these so do the other folks on the SSC feel that we were provided enough information to know that each of these species that is taken in that multispecies fishery has a high productivity? Brian, you may able to answer that for us.

DR. CHEUVRONT: Not with authority but I've not heard of anything of anybody saying that is a problem with any of these species. They're all really very resilient. When you talk to the people who are out there, who are researching and harvesting them, they all agree they come back. I've not heard anybody say that by removing this one species, the other species become more invasive and they shut it out or something and it doesn't come back. I don't hear of anything like that.

DR. CIERI: But that is not proof of absence was what I'm saying and you need to have a fairly good idea that what your stock is fairly resilient, and in this case it is individual species and you don't know the cumulative impacts of removing – as Erik suggested earlier on in the week, you don't know the cumulative impacts of removing specific features from the coral, targeting specific – I'm trying to think of a word, but particular attributes.

DR. CHEUVRONT: But the thing is, is that these guys go back and they harvest the same areas and they harvest the corals for the same attributes in the same areas three years later, so that would lead you to at least indicate that those features come back.

DR. CIERI: True, but in a general sense it still is unknown. You don't know what the impacts of your fishing is on the corals population or on that particular coral species in general, right? J

DR. CHEUVRONT: I think you're claiming a lot more uncertainty than really exists; that is the bottom line.

DR. CIERI: Let's see if the SSC feels the same way.

DR. WILLIAMS: Where is the documentation, where is the report at this point in time which is what we have to deal with? It is unknown. There may be anecdotal information but that's all it is; and if we don't have a document in front of us at this point in time, it is unknown. If we don't have something to say for sure that the PSA is low for that category, it is unknown. Now if we want to reconsider that whole category of whether it should just be strictly PSA because we have already hit first snag, I don't know. That's another discussion.

DR. BUCKEL: This is a question for the SSC. If we did have fishery-independent data that shows things were stable in areas where this harvesting of coral took place, would it be happy with being able to use that? The reason I asked that question is we were talking to Bob Muller yesterday and he said that there are surveys of these done in Florida, and he did get a data stream from those guys. The data may exist; I don't know if they do or not but a trend of that would be helpful here.

DR. BARBIERI: And, again, that is the issue, and I had brought this up yesterday of whether we had to do this right now with the information that we have available at this meeting or not. I'm sure for these species there are scientific papers. These are not like species that have not been surveyed. There are fishery-independent surveys or studies that actually have been conducted and published information that we haven't looked at.

I don't know anything about them or not much, anyway. In that case, yes, it is unknown to me but I'm not sure that if we were to conduct a literature review or survey and asked Florida or other agencies – I mean, academics have been doing studies in the Florida Keys, I can tell you, for quite some time.

MR. CARMICHAEL: I think we should be careful and remember what PSA is and what goes into its calculations for the analyses that have been used for the species that have them conducted. Stability of the fishery doesn't say anything about probability or susceptibility, per se. The fact that there is stability doesn't mean something is not susceptible. It is an entirely different suite of characteristics that go into those PSA scores.

Now, we started this meeting and had no idea we would be here. I mean, it might be something where the SSC can say at this point, as Erik said, we don't have the information before us, but if information became available and if coral experts could apply the PSA concept to corals and provide documentation of what their relative level of risk is along the same vein as has been done for those finfish species, I think the opportunity is there to go in and refine this.

The work would have to be done to some extent, and it might be something that could be done in time to get this updated for June or for whenever the action is taken. We didn't expect to be here so on one hand saying it is unknown is potentially a bit harsh because it could be known. We just had no idea we were going to be at this point. People probably do know and there probably are experts who have studied coral and could apply the PSA concept to corals and come up with values, which is probably something worth pursuing.

MR. CROSSON: I'm not willing to state that something is unknown because it's not in the briefing book in front of me, but I just wanted to ask who is the authority on this? Does the science center have coral people? I'm not even sure on this particular question. Who would we even ask for more information? We have been asking the science center a lot of things on finfish, but I don't even know who to begin to ask on coral issues or what the turnaround would be on any of that.

DR. BARBIERI: Well, I don't know for sure either, but I know the Institute has a coral group that actually conducts monitoring over the Florida Keys in collaboration with the University of Miami and NMFS and in collaboration with a number of other academic institutions. I know the University of Georgia has a couple of really internationally respected coral experts that have been doing work in the Keys for over 20 years. There are books published and papers published on the life history of this organism. We just don't have it in front of us.

DR. BOREMAN: This past winter I completed a review of the NOAA Corals Program, and they do have a very active monitoring and mapping program in the southeast in collaboration with I think Florida Atlantic University and the Institute, the University of Miami. The key contact I would say is Jim Bonzek in Miami.

DR. CIERI: I kind of agree with Erik. If we don't have the information in front of us, then somebody needs to produce a white paper that lists out the literature and gives us copies of papers that describe the effects of fishing on coral reefs or the effect of harvest on coral reefs.

DR. BELCHER: Myra actually did have a literature list yesterday.

DR. CIERI: With some summary of some keys; you know, information. How long is regrowth, does it vary by species, does it vary by depth in which the coral reefs occur, does it vary by latitude, all of those things are going to help us determine that, but until then we don't really have the information in front of us. If you put a gun to our heads and ask us to give you an ABC when you don't give us the information, guess what it is going to be.

DR. BELCHER: Further comment and discussion? We're still sitting at that one point of determining at what level – I guess not really. The verdict has kind of been around that we're still sticking with zero, right?

DR. WILLIAMS: I think we do need to change that title of that so that it does say the productivity and susceptibility of the stock and then we don't have to stick with the PSA score, per se, but we do have to still think of the concepts of productivity and susceptibility and PSA happens to be one measure of that.

DR. BARBIERI: Yes, really, it is integrating the vulnerability into what we're trying to accomplish here. Again, I understand the sensitivities here with this issue and we may be here with a gun to our head. I'm just thinking my concern at this point is the credibility of our recommendation and us making sure that we are giving this decision the same weight that we give all the other ones which we are presented with an abundance of analysis.

When we don't have enough, we request additional analyses be conducted. We have in the past and we have a science center. We have ways to request the information. I would rather make a decision that is well informed and I can actually stand by in the future than feel like we don't have the appropriate amount of information and default to something that is premature.

DR. CIERI: Get us the information and have it not be zero.

DR. WILLIAMS: This gets back to the whole incentives' thing. We have to create an incentive for more information. Right now we don't have the information so it gets marked as unknown and there is a penalty for that, and that's the bottom line. Now, two weeks from now we might be provided that information and then we could change that score, but for now, if we're really being asked to produce an ABC today, that PSA, the productivity/susceptibility is unknown. The productivity part might not be, but the susceptibility part I think is definitely unknown.

DR. BARBIERI: But to that point, the thing is here is I'm concerned about how the council is going to be perceived in this example. This is really my concern.

DR. REICHERT: Well, this may seem detailed but I think what we should do is split high risk and unknown because many people may see this as kind of the same, so high risk is the zero and unknown is zero. I just want to make sure that we all understand that those are separate issues.

DR. CROSSON: I understand what you're saying. Getting back to what Erik said, if we have unknown information I don't think we should be setting a PSA accordingly if the information may be out there. I think we should not be making an action at all. I know you were talking about as an incentive system and if we inflict a penalty, maybe they will pay attention and come back and give us the information we need.

I think they will also probably react in a certain way if we don't provide any recommendation on this because we don't have enough information in front of us to make a judgment. I don't want to go down the road of just setting something up just because we don't have the information.

DR. WILLIAMS: To that point, we can't go down that road because we have done that enough and they're insisting that we provide ABCs and we're going to do that. If we use that logic, we can apply it across the board, there is better information on all those species we're about to address for the rest of this meeting, and we can use that same logic and say, well, we need better information before we make a decision, but we're not going to get it.

DR. CIERI: And we are at that point where we've got that gun to our head. They want an ABC recommendation. We are required by law to give it to them; and if we do not give it to them, we're in violation of that law. We are required to give them an ABC recommendation. If we don't get the data to help us make an informed decision, then that is where it leaves us, but we have to make a recommendation. We are out of time. This is the last meeting in which we were to discuss all of these particular critters. We have had ample time all the way up to this particular meeting in which to get the information. Stalling is not an option anymore.

DR. BARBIERI: And, again, Matt, just to make sure that we are clear, it is not about stalling. Yesterday we were provided with the information on black grouper that we felt it was really inappropriate for us to make an ABC recommendation, and we had specific recommendations –

DR. CIERI: To get more information and we didn't make that recommendation because we're getting that information by the time we leave here this week, but this is the final meeting for us to make these determinations. That was made very clear. That is the reason why we went through and had the conference call.

We have been leading up to this point all along over the last, what, two years, and each and every single time we have been requesting more information or this and that and this and that. There has to come a point in which that ends and that stops; and now I think we're at the point where if we do not have it in front of us by the time my ass gets back on a plane, then we need to make some sort of a recommendation, whatever that number is.

DR. BELCHER: Further comments and discussion? Continuing on with corals again, do we have enough information to say what this final penalty is or again what that increment up from

zero is, because right now I see where we only have – well, we still haven't decided what we're doing with the reliability of the OFL. Are we still staying with zero as far as the productivity and susceptibility? So far I see us with a plus 15 and we're looking at that reliability of the OFL estimate now. What do people feel relative to that?

Anne kind of walked us through all of those criteria; should each of those criteria have a weight to them? I know that technically we just kind of brainstormed and put a list up there, but is that a comprehensive enough list, that somehow they could have some weighting or no weighting or how are we going to determine what gradation from zero to 25 you're going to put in with that reliability? Erik.

DR. WILLIAMS: I would recommend for simplicity sake we just have maybe five-point scales since it happens to be 25 points and we just say whether it's very reliable, moderately reliable, just some scale like that. The one thing I did want to mention is when we talk about reliability of the OFL estimate, we have to keep that reliability in the context that it is in, that we're already in the data-poor situation so we're talking about the reliability with respect to data-poor species, so I would say in this case this is probably going to be one of our more reliable OFL estimates in the context of a data-poor species.

DR. BELCHER: What are some other thoughts on folks relative to determining this percentage and how it is going to be applied in the generic species sense and not just the coral sense?

DR. BOREMAN: Well, the fact that the consensus I guess yesterday was that the OFL will be equal to the median of the catch rather than the upper part of the range history, I would agree with Erik that it would make it more reliable.

DR. BELCHER: So does that mean we want to give it the full 25 percent, 20 percent, 22.5 percent, 24.99 percent?

DR. WILLIAMS: I think Matt raised the issue; the one bullet that may be against this is it is a complex we're talking about and not a species so maybe that costs it five points; I don't know.

DR. CIERI: Yes, and that was exactly what I was thinking. The landings as far as an aggregate species are very well known. I think it is a stable point in the time series since the landings are well documented. The difficulty comes in you don't know what – again, it is a complex and you're not quite sure, for example, if your removals are the same in species composition to what your stock is, and that could get to be a bummer, as you know, because that can lead to one species being depleted over another.

DR. BELCHER: So what do people feel, then; is the 20 percent adequate? Okay, so with that we're looking at being at 35 percent of the median or the OFL. Comments and discussion from the group on that; what do people feel about that as an overall outcome? Everybody feels comfortable with us going forward with that and then offering it for an ABC? John.

DR. BOREMAN: I really can't think of an alternative, but essentially what we're saying is we're reducing the fishery by over 50 percent from where it is now and the sole reason is scientific uncertainty, and I can't think of any other reason. It doesn't appear to be increasing or decreasing. It seems to be a stable fishery; things are perking along, but we don't have the information in front of us so we're penalizing the industry.

DR. CIERI: As the law requires.

DR. JIAO: I sort of agree with John. I was just wondering whether the team working on the corals, whether they can provide the productivity information for those two top harvested species in a reasonable time and give them a chance to see whether – because there is a 20 percent penalty there – whether they will be able to provide the information. Since there are only ten species, I would think there are publications about their productivity there.

DR. WILLIAMS: Well, that is exactly the incentives that we're creating now where, yes, we're recommending a harsh reduction in landings, but they can gain an immediate ten points or more by providing the information on productivity/susceptibility and showing that it is either low risk or medium risk. Let's look at this thing in reverse. What is the information that they can now collect or provide or do to bump this up? There are some things here that can be done.

DR. CIERI: And in the absence of that information, it is not zero, which is the whole point of working up from zero based on the information that you have and not the information that you would like to have.

DR. BUCKEL: Should we provide some specific guidance on the types of information we're looking for. If fishery-independent data does exist that we've heard about either at the federal, state or academic level, if we could get a time series of that for species density estimates in the areas that this fishery operates, I think that would go a long way for me if I saw that was stable along with the landings. I would like to hear what others have to say.

DR. WILLIAMS: Along those same lines, I was trying to think if a stock assessment could ever really be done for this, but I don't know if a full stock assessment, but one big piece of information we're missing here is what is the total area that is being harvested from and then what is the fraction of that that is actual octocoral habitat and then based on some surveys what fraction of the landings – I mean, that in itself could almost suffice as a near complete assessment and that would bump it completely out of the data-poor category, then.

DR. CHEUVRONT: I would just like to make sure for clarification you're talking about this ABC is applying to landings in federal waters, correct? Okay, there is one species out of this ten that is landed in federal waters out of this complex of ten species. In the document that you were presented in Appendix 7 there is a lot of data that are in there that gives indications of stock abundance.

For example, through scientific studies, published literature, just for one type of these corals, there is estimated to be 28.8 billion colonies just off of the Florida Keys and the Dry Tortugas.

Out of those 28.8 billion colonies, 56,000 is the most that has ever been harvested in one year. Also, if you're setting an ABC for just federal waters, most of the harvest is occurring in state waters.

The way the laws are set up right now is that the state harvest does not end or will not close until the federal harvest closes. What you're setting up right now is going to lead to a change in the fishery. My guess is that they will stop harvesting the one species that is captured or harvested out of federal waters and they will just keep right on fishing in state waters.

DR. CIERI: We addressed this other day when we were talking about this. The federal jurisdiction does not apply to Florida waters and Florida –

DR. CHEUVRONT: Yes, it does; it's in the FMP.

DR. CIERI: Right, but as Erik suggested, the management implications aren't really part of this. Does Florida manage corals in state waters or it just relies on the federal government, correct?

DR. BARBIERI: To be perfectly honest, I really don't know. I think they do and actually defer to whatever recommendation is coming out of the council and federal management and adopt those as well.

DR. CIERI: I guess Florida is free to do whatever it wishes within its state waters, right? I don't know.

MR. CARMICHAEL: You guys perhaps can come up with some questions and we can get Myra back in here, who is the staff with that FMP, and answer some of these and some of these implications and what it means and what it means if you just address the federal component of the stock. When it gets into the fish that has a stock that is described, sometimes it includes all the waters and sometimes it doesn't.

States don't always go with the federal regulations and sometimes the feds threaten to be more restrictive in some finfish instances when a state is going to not adopt similar regulations. I think Luiz has seen that happen plenty of times in the Gulf and on the verge of happening on things like red snapper recently.

There are a lot of complexities there and Myra may be able to answer some of these questions if you guys have some specifics. I think one thing to think of, though, is what John mentioned initially in this is like, wow, that's a pretty big chunk out of the fishery just for the uncertainty; and even if you did get the information on the PSA and came as low risk, you would just add 20, you would still be at 55.

In terms of understanding sort of what the consequences are for the lack of information is that even in the best case on this stock, you would be at like 55 percent of the average landings just based on the uncertainty, and I guess maybe that's something worth considering in the scale and

make sure the entire committee is comfortable with that because that is what this control rule is sort of heading towards.

DR. BOREMAN: This is why, when I originally proposed the overfishing limit, that I proposed the upper part of the range just for that. I kind of sensed this was going to happen; we were going to wind up somewhere about 50 percent of that. I'm drawn because I know if I'm being a pure scientist and all this, the uncertainty argument really weighs strong, but I think here we're asking industry to pay a pretty hefty penalty, and I don't see signs that that industry is in trouble at this point.

DR. CIERI: We've gone round and round and round about this in the northeast and Atlantic herring is a perfect example; not overfished, overfishing not occurring, but 43 percent retrospective bias. When all was said and done, you ended up cutting your ABC down from 43 or 45 percent simply because of the uncertainty within the model, and that was an explicitly modeled species that had a lot of information. The law requires that we go through and we account for that scientific uncertainty.

MR. COLLIER: For a lot of these species we're dealing with ghost of fishing past, and it doesn't seem like we're dealing with a ghost on this one.

MS. LANGE: Well, that's basically the point I was going to make, herring has a very, very long history of ups and downs and management failures for multiple reasons. This fishery, from every indication the data that we do have and from the reports that have been provided to us, it has been a fairly stable, very small individual picking of species, so I don't see this anywhere near the same category that something like herring would be in, any of the big major fisheries that are – you know, trawl fisheries that are not so selective.

DR. WILLIAMS: I think we have to put this – I mean, gosh, I hate being the bureaucrat, but we have to put this in context of the process. We may have all the anecdotal information we think we have, but the bottom line is we do not have a scientifically reviewed OFL estimate. We have one that we created at this committee in a matter of 20 minutes of discussion.

If somebody were to put together their estimate of OFL and make a logical defense for it, it could pass review. It could go through a SEDAR-like process and that would bump it out of this data-poor category. The bottom line is that kind of work hasn't been put into this; and I'm sorry, it pays penalty for that. This is where we have to stick to the process. We have to insist that the distinction between data poor and not data poor is you have some sort of peer-reviewed assessment. It can be a very limited assessment. It could be just catch curve analysis, but it has to go through a process, get reviewed and make sure the data is correct, the analysis is correct and all of that. This has not been through that process.

DR. CIERI: It is about that uncertainty between that OFL and that ABC, and there is simply a lot of uncertainty. When you sit down and you go through it, you're not sure what species are being landed, you're not sure where they're being landing from.

When we were discussing information on what area they were coming from because there were multiple cuttings coming one particular trip, you're not sure of the species composition, you're not sure of the reproductive ability of this particular stock, and it is a critical habitat for a lot of other species. There is a huge amount of uncertainty here and the law requires and scientific protocols in other places such as ICES require that you account for that scientific uncertainty in setting your ABC. More information means more landings.

DR. BOREMAN: I think we are certain about what species. There is only one species out of the ten that are being harvested in the EEZ. I think that was made pretty clear. But, again, I don't know what the validity of that information is. It could be anecdotal, but I thought it was based on measuring landings.

DR. CIERI: No, it is not, it is from one person at a meeting saying that he predominantly catches one species and having another harvester concur.

DR. WILLIAMS: And we're being asked to set an ABC on all the octocoral under those ten species and not just that one species.

DR. CIERI: Not just that one; and if it is that big of a problem, given the split between state and federal landings, if they're just going to go into the state waters, anyway, it won't be that big of a deal, right?

DR. BELCHER: Then I'm a little confused because if it is supposed to take into account for state landings, that is not 4,970 colonies. That is just the federal harvest. Again, that's where I keep getting confused because we keep saying that same thing is they're measured as a complex, but we yet we have acknowledged that there is one species, but yet in trying to manage on one species, it causes problems because of the way that the Coral FMP is currently written.

As Brian keeps bringing that up to us, you keep catching on both sides of it. We focus on the federal, which is what we're doing, but it has ramifications. It is because of the FMP we have to consider the other nine species, and this is where, again, if we're going to say the ten, then we can't just use the OFL for one species. That means to me we have to go back and rethink what our OFL is.

DR. CIERI: Okay, again, do we know that there is only that one species that is harvested from federal waters and where is the documentation of that information?

MR. CARMICHAEL: The question to be asked is whether or not the committee was going to consider making it a recommendation for the fishery as a whole, also. You've made a recommendation for the feds. Are you content to stop there or were you intending to bring up OFL for the entire fishery?

MS. LANGE: Well, I'm not coming on either side on this right now. My understanding is as the SSC we're supposed to be providing advice to the council relative to what is in its FMP. The FMP is for the entire complex or the entire fishery, which includes state and federal waters. I

think maybe we should go back and reconsider what the total should be rather than the median relative to just federal waters but look at the overall fishery that the FMP applies to and use the median for the combined. That way we're not separating out.

We have the issue relative to we don't have information on the species composition so we can drop the reliability – whichever ones it is. Anyway, our task I believe is to look at the entire fishery that is included in the FMP.

DR. CIERI: Okay, Appendix 7 comes from – it's a coral summary and you're looking at Table – where does this table – this looks like personal communication data and it is only for 2008, so we have no idea what has been harvested from federal waters by species. This is, again, provided by Dr. Henry Feddern. It is not in any peer-reviewed report, and it is just one unit of data from a source that is particularly unknown, without a description of methods associated with it. I'm not convinced that only one species comes from federal waters without a lot more information.

DR. BOREMAN: So, Anne, if I understand you right, what you're proposing is we combine state and federal and maybe use the sum of the median from both as an overfishing limit and work off that rather than the median from just the federal waters?

MS. LANGE: Again, that is what I was suggesting; that we had determined yesterday that the appropriate OFL was the median, but that was only considering the federal and we are supposed to be providing advice relative to the entire FMP or stocks included in the FMP, then the appropriate would be to use the median from the overall; again, if median is the way to go.

DR. WILLIAMS: What is the ABC we're being asked to provide; is it meant to cover just federal waters or is it meant to cover the entire stock?

DR. BELCHER: Octocorals.

DR. WILLIAMS: Octocorals in state and federal waters?

DR. BELCHER: The complex.

DR. WILLIAMS: Yes, it would have been nice to know that yesterday.

DR. BELCHER: And we kept touching on it and coming off it and touching on it and coming off of it, and, again, the discussion was – because it was broken out between federal and state, you would assume that we're responsible for the federal. Gregg.

MR. CARMICHAEL: Some of it is the AP recommendations you had; like they gave an MSY of 5,000 colonies as just above the median of annual harvest. Some of those were based on the federal – the AP recommendations reflected the federal landings' levels and not the federal and state combined landings' level, and that's where I think much of this confusion come in.

MR. WAUGH: Just like your other ABCs, we want them for the whole management unit and that includes state and federal waters, so that is the recommendation the council would look for.

DR. CIERI: Then let's set the ABC for the entire species complex in state and federal waters and let the managers figure out how to distribute that.

MR. CARMICHAEL: Well, the state waters median – is that where we use the median – was 28,785, so I think you would be looking at adding that to the federal 4,970.

DR. CIERI: We would be combining all of them and then taking the median of that, so you would take the landings from state and federal waters.

DR. BELCHER: Okay, I'm going to ask this – and I know this is just housekeeping for me – the consensus of the group then is to take off the original OFL estimate that we put forward yesterday? We're going to completely mix it and we're going to discuss a new OFL that accounts for octocorals as put forward in landings from state and federal? Okay, so we're starting over for OFL for coral.

MR. CARMICHAEL: The median of the state of the federal combined, based on the presentation that Myra showed yesterday, which is landings for 2000-2009, is 33,755 colonies.

MS. LANGE: There was one other issue. The reason we chose median yesterday rather than the mean was because there seemed to be a trend where in more recent years there were lower numbers. Can we see the time stream with the combined numbers to see if that still applies? Can you add the state and federal together and get one total number for each year?

DR. REICHERT: We were not provided with Myra's presentation, did we?

MR. CARMICHAEL: We could calculate that if you wanted that.

MS. LANGE: Again, for those of us that were taking notes we discussed earlier why did we choose the median, and we wanted to be sure that the notes reflected the justification, and the justification at that point was the data that we used, over the time period we used, it seemed as though there were greater catches in the earlier part of the time series than the latter; and if we used the mean, it may not have reflected that.

MR. CARMICHAEL: That is not exactly accurate because really over the 2000-2009 period there was really kind of one year with pretty high landings that pushes up around ten versus most years they seemed to be slightly below five. The state waters are sort of more of a flowing curve there. I think perhaps the median was mainly being tied to this one 2002 point in the federal that was so very high.

DR. WILLIAMS: Well, in general the median tends to be a more robust measure of the central tendency and that is probably justification for using that over the mean.

MR. COLLIER: Is that for both the Gulf and the South Atlantic or is that just South Atlantic?

DR. BOREMAN: I believe he was asked that question yesterday, and he said this is only South Atlantic.

DR. BELCHER: Only South Atlantic was the understanding, but I guess that is an interesting question because with state waters, and you're talking about the Keys, is that actually going to be split by region? I mean, that is just –

MR. CARMICHAEL: You guys are potentially asking an awful lot of questions that are to be worked out in the management arena. It seems like there are a lot of uncertainties, there is the question of handing it over to the states. There is statement that was made in the presentation about potentially setting ACL at zero. There were some people talking about that. There was confusion about the two different areas. There are the AP recommendations which seemed to just consist of federal landings as well. I don't know that we can answer many of those questions.

DR. CIERI: I said it yesterday; I'm feeling really uncertain.

DR. BELCHER: Is it worthwhile couching this to have Myra back for clarification in terms of just the coral? I'm not talking about couching for everything else. We have got more than enough other stuff, but I don't want to see us keep losing ground to this either. If there are still questions that need to be addressed and we're still having a lot of things, it just seems like all we're doing is unraveling it and we're not getting any farther down this road with this particular FMP. That is the only reason why I'm suggesting waiting to get more current answers. Anne.

MS. LANGE: Well, my suggestion if the issue is whether we use state or state and federal waters, can we just provide two; the one we've already gone through, assuming the 4,970 and saying this is what we've come up with; yet, however, if we're supposed to be looking at both the state and federal, then this is the number and let the council decide which is. Basically, we're just changing the 4,000 to the 33,000 and just applying the same criteria, I would think.

MR. CARMICHAEL: I think it would be appropriate given the number of uncertainties in the situation, that you were to give them both and tell them how it was derived. In case some other new information comes to light or they decide some other way of allocating landings, at least there still exists a rule for how you derived OFL and how you derived ABC.

DR. BELCHER: So does that mean that we stick with the original OFL that we did for the federal waters and the ABC and then we basically apply the same exact to the 30,000 whatever it is? Okay, John.

DR. BOREMAN: On the ABC adjustments, the building up from around zero, are we going to use the same scoring now that we are dealing with the whole complex. We did discuss I think when we did the original scoring that there was just one species, but now we're dealing with multispecies so they're going to lose more points.

MS. LANGE: Actually we did take off five points because we weren't sure about the species.

DR. BOREMAN: Okay, you're right, I forgot. Just to comment that if Florida needs an incentive to take over management of corals, I think we're going to give them one.

DR. REICHERT: Yesterday we came to a consensus of 4,970 colonies and no one stopped us from discussing that any further, and now we've completely stopped and starting reworking these. I don't understand that.

MS. LANGE: Marcel, I don't think that we have changed anything. The question came up as to whether or not we're talking about – you know, based primarily on Brian's concern about whether we're talking federal or not, and I think that, again, my perspective was that the FMP is for the entire complex. I don't think our discussion has changed any. It is just whether or not we're dealing with just the federal or the state and federal fishery. The calculations all remain the same.

DR. REICHERT: I understand but I'm still wondering why that correction wasn't made earlier is all I'm saying.

MR. CARMICHAEL: I think we recognized the uncertainty, at least I did, in the federal versus the state, and it was always my intention, as you got through the feds, and say, okay, you give consideration to giving the state and hope that you could perhaps either then give a combined or give a federal and state or something so we could cover the possibility of however this may pan out and whatever the council does.

What happened yesterday was we got to the point of looking at ABC and decided to go do our ABC control rule and then took time out for largely a day to deal with the assessments, so it seems a bit longer. I always expected to come back and ask you guys about, okay, what about the full fishery? It just has taken much longer than anticipated.

Right now you have a recommendation for the fed and you have a recommendation for both areas and you have your approach which is ABC is 35 percent of the median in 2000-2009 landings. I think that should provide the council with the information they need to work out all of the other questions that are in that presentation about the plan and what they're going do for ABCs here. Shall we move on to another component?

DR. BELCHER: I think we should probably get a consensus statement. What the SSC is recommending, then, relative to the Coral FMP is an OFL for federal waters of 4,970 colonies and an ABC which is set at 35 percent of the median landings from 2000-2009 equal to 1,740 colonies. If you take both areas into consideration, we're also recommending for both areas combined an OFL of 33,755 coral colonies with an ABC set at the same level of 35 percent of the median landings from 2000-2009, which is equivalent to 11,814 colonies. Everybody in agreement with that; anybody have further comments or disagreement with what those numbers are? Jeff.

DR. BUCKEL: Yes, I'm not sure if this is the place to do it or not, but we also have mentioned that we want to make it clear that this 35 percent could be changed with probably just a little bit of – with providing us with some data that we could increase the certainty.

DR. BELCHER: It could help them bring this value up slightly; any information that could be brought forward, we're willing to look at to help make any adjustments. Is everyone okay with that? Okay, then moving down the list, John wants us to do sargassum now since we're talking habitat. **Relative to sargassum, how do we want to proceed?

MR. CARMICHAEL: Well, in your roadmap you will see the actions from the FMP of November 2002. The management unit is sargassum throughout the EEZ of the South Atlantic jurisdiction; the east coast of Florida including the Atlantic side of the Florida Keys to the North Carolina/Virginia border and within state waters of North Carolina, South Carolina, Georgia and the Florida east coast.

MSY is estimated to be 100,000 metric tons wet weight per year; optimum yield as 5,000 pounds wet weight per year. Overfishing is defined as the rate of harvest which comprises the stock's ability to produce MSY. MFMT is nine to eighteen units per year. I do not know what a unit is. The minimum stock size threshold is 25,000 metric tons. We have no information on landings nor any information on stock biomass.

We have requested some information on landings but have been unable to attain any. It looks like it is zero. We have no information anywhere that says landings are anything but zero. There are no records of any landings. No one has any reason to believe there is any harvest going on, correct? Yes, there seems to be acknowledgment from the rear. No one is aware of any landings.

DR. WILLIAMS: I propose that OFL equal zero and ABC equals zero.

DR. BELCHER: Any discussion or comments relative to that? Is everyone in agreement with that? John.

DR. BOREMAN: We're moving a little too fast; I'm sorry. This nine to eighteen units per year; can anybody answer a question on that; what does that mean?

MR. CARMICHAEL: Does someone know what a unit is? It may be a wet pound.

DR. BOREMAN: So the maximum fishing mortality threshold is nine to eighteen pounds per year; I don't so. There is no, quote, stock grass assessment for this or whatever they call it? What were the bases, then, for the 100,000 metric ton MSY; was this just a swag value or a wag value?

DR. WILLIAMS: There was a document that came out of the Beaufort Lab about eight years ago, nine years ago, and I don't remember how they did it, but they came up with some numbers for this.

MS. LANGE: I think part of it is the life cycle is so quick, you know, like leaves or something like that, and the area that it covers. There has only been a really small fishery for a number of years and actually only one vessel. I think it was North Carolina, wasn't it? The major concern came back a few years ago when there was concern about the habitat issue, so they just basically closed it down since only one person was participating in the fishery.

DR. BOREMAN: So it is not a question of confidentiality in there and the reason why the landings are zeroes because they can't be reported for one individual. The fishery was actually closed.

DR. WILLIAMS: My understanding is the one individual that was interested in harvesting sargassum never ended up harvesting any.

MS. LANGE: No, he did.

DR. WILLIAMS: For one year, yes.

DR. BOREMAN: So if the council closed the fishery, why are they even requiring us to give them an ABC? Until they open the fishery, then maybe come to us and say what is an ABC; but if it is closed, then it is moot. They're wasting paper.

MR. CARMICHAEL: I don't think they have an option to not require an ABC if there is an FMP so we need an ABC.

DR. CIERI: But that is a critical distinction on whether or not it is simply the landings have been zero because it hasn't been economically viable or for whatever other reason versus the fishery is closed.

DR. BOREMAN: The council requires an ABC to set the ACL. They just don't need an ABC just for kicks and giggles; so if they're not going to be setting an ACL, there is no need to require an ABC from the SSC but probably need to go to regional counsel for that. The easiest thing to do is just say ABC equals zero and a note to the council saying when you guys decide or you folks decide to reopen this fishery, come back to us, and until that time our recommendations will continue to be zero every year.

MR. WAUGH: I thought I heard a question and came up here, but it doesn't sound like there is an outstanding question. The fishery is not closed. There are no landings; nobody is fishing. The council's original intent –

DR. CIERI: That makes a difference.

MR. WAUGH: – was that there be no harvest. We submitted the FMP with no harvest. It was rejected by the National Marine Fisheries Service and the council has to allow some harvest, and that is why a minimal harvest level was in so that we could get the FMP approved. Since that time, there has been no fishery, no landings.

MS. LANGE: And I believe that was because the one fellow that was fishing felt the number was so low it wasn't economically viable for him to participate.

MR. WAUGH: I don't know, but there was not – this dragged on for quite a while going back and forth between the councils and NMFS, and in that period, when there were no regulations in place, there was still no harvest. It wasn't that there was harvest and then the 5,000 pound quota went in place and the harvest stopped because it was no long economically feasible. There was no harvest for several years leading up to implementation of the FMP.

DR. BOREMAN: So let me modify my recommendation because what Gregg says does change the picture a little bit, that the council didn't deliberately close the fishery. It just never happened. I think set an ABC equal to zero and tell the council when they would like it more than zero – in other words, there is interest generated in beginning a fishery out there – then come back to us and we'll try to give you an ABC recommendation. Until then it will remain zero; just be honest.

DR. BELCHER: Further comment and discussion? Does everyone agree with John's assessment relative to setting the ABC and OFL to zero?

DR. WILLIAMS: I concur with the Boreman Sargassum Statement.

DR. BELCHER: Okay, that one was a little bit easier. Do you want to do golden crab or shrimp? **Okay, we will go with golden crab next.

MR. CARMICHAEL: The background on golden crab, remember you guys were involved in a workshop with golden crab fishermen and others with the wreckfish last summer. There have been some actions and recommendations as far as MSY and ABC. You have the ABC recommendations that are currently on the table in your documents in your roadmap. Other documents we have provided include a SAFE report. Efforts at assessments that were done are getting a bit dated at this point, but that is the information that we have. If you have any questions, I'm sure Kate can probably come up and give you the answers you need.

MR. WAUGH: John, I think Kate e-mailed you those presentations from the June meeting, too, and there is one of them that has the landings' information if you all want to look at that. Some of the data by zone is confidential, but it does have the landings' information.

DR. CIERI: I'm looking over the roadmap and there are a number of alternatives; are those alternatives for us or is that alternatives for the council? It's what is in the FMP right now?

MR. CARMICHAEL: Those are alternatives for the proposed amendment that is underway right now. Those are not alternatives that are – there isn't anything in place so those are alternatives that are under consideration.

DR. CIERI: So actually our recommendation is but one alternative of five in an upcoming amendment?

MR. CARMICHAEL: That's what the alternatives are now, but I think there is the realization that they can't exceed your recommendation. This was built at a time when they didn't have a recommendation from the SSC. You have some things to consider and I think these are kind of what resulted following the workshop and then the subsequent committee review of all that information that was available at the time.

DR. BELCHER: And if remember right, at the June meeting the ABC values that were in there were actually presented to us from the AP, weren't they? That was part of their presentation, I thought. The fishermen were talking about what they felt should be the catch level.

MS. QUIGLEY: The fishermen made one recommendation and that was 5 million pounds. I think that's the first OFL or ABC recommendation. The others were devised by staff based upon the information that we had in various documents.

MR. CARMICHAEL: The presentations are the ones that were from last summer, from the workshop; is that correct?

MS. QUIGLEY: Yes, that is correct.

MR. CARMICHAEL: Right, so from your June meeting, and at those they had landings it looks like through 2007.

DR. WILLIAMS: I'm going to say those landings are also in that Attachment 6, Page 39 of the PDF. Just to get us back on track, we first need to establish an OFL. John, can you or somebody refresh memory on what kind of analysis has been done? Was there an assessment attempted at some point?

MR. CARMICHAEL: In looking at the SAFE Report, there is a production model that is referenced. Isn't that what it is earlier, an assessment attempted back at that time. It is included in the Golden Crab SAFE Report, which actually is dated 2004, and there was a fishery status and stock assessment evaluation. There are a number of area analyses and CPUE analyses and things of that nature.

DR. BARBIERI: Is that A-35, Attachment 35, Golden Crab Trends?

DR. WILLIAMS: And refresh my memory; did this go through a SEDAR Review or not?

MR. CARMICHAEL: No, golden crab has not been through a SEDAR Review. In 2000 there was a stock assessment of a surplus non-equilibrium production model, and Fcurrent was 0.2 and Fmsy was 0.21. What is the official NMFS determination of status; did they accept this information? It is quite a history that goes with the golden crab fishery in terms of the MSY and the stock status and the background of the assessments, which is included in one of the documents, Attachment 37.

MS. QUIGLEY: Right, Attachment 37 has the whole run-through of how things went around. The council adopted an MSY I think of 4 to 10 million pounds and nothing beyond that.

MR. CARMICHAEL: The status officially is unknown. The status report says they're unknown; unknown if they're undergoing overfishing and unknown if the stock is overfished.

DR. BOREMAN: That is the current status?

MR. CARMICHAEL: Yes, that is the current status.

DR. BOREMAN: I'm reading here that the 2003 status of the stock says the stock was not overfished or undergoing overfishing, but they have changed that now to unknown?

MR. CARMICHAEL: By 2008 it had changed perhaps based on that information that came to light in 2004 and the other efforts that were made maybe from that SAFE Report. It is difficult for us to know at this point why NMFS decided that the information was no longer adequate to determine it is not overfished and not overfishing.

DR. WILLIAMS: Did it have something to do with the fact that it was a portion of the stock and not the whole stock?

DR. CROSSON: If I remember correctly, the reason that are so many confidential numbers in here is because there are only four fishermen that do it and they were all – at least three of them were in different geographical areas. That was my recollection of last summer.

MR. CARMICHAEL: That production model showed an MSY of like 680-some thousand pounds. That was the estimate. The MSY, they went into the – the amendment was 4 to 12 million pounds, because it says estimated MSY of 673.

MR. WAUGH: You all should have received those two presentations. If you look at the one golden crab, the powerpoint that just says golden crab and look at Slide 17 – it is the last slide in there – it has the MSY, OFL and ABC alternatives that we presented to you at that June workshop. The 5 million pounds is recommended for MSY by the AP. The 2.5 million pounds was recommended by the Southeast Fisheries Science Center in a letter dated September 12, 2001.

Another alternative is to look at the average landings for various years between '95 and 2007, but only represents the middle and southern zones and not anything out of the northern zone. There are two values for OFL. These come from the Harper et al assessment, which was a production analysis only, based on data out of the middle and southern zones; 0.21 to 0.71. Then ABC were just some alternatives staff worked up looking at some values coming off of the 2.5 million pound MSY as suggested by NMFS in their letter.

MR. CARMICHAEL: And all of that carried over into the amendment, it looks like, which you have as Attachment 6.

MR. WAUGH: Right.

MR. CARMICHAEL: That starts on Page 20 with the MSY.

DR. BELCHER: How does the group want to proceed? I think we have an estimate of an MSY. Is it adequate; not adequate; if not adequate, then what?

MR. CARMICHAEL: You have an estimate of an Fmsy, but there is no way of finding yield at that Fmsy today. You could have an estimate of an MSY but apparently that was well exceeded in setting the MSY the first time around.

DR. BARBIERI: Well, we have landings there, right, so maybe we can handle this.

DR. BELCHER: Can you project landings? Kate, where did you say they were in your presentations? It's Page 39 in the FMP and that's PDF Page 39.

DR. WILLIAMS: One thing that seems to come up in a lot of the documents is that the indications are that these landings are really just a small fraction of the population. One thing I guess to try to wrap our heads around is how strong is that evidence that this is really just a small fraction because that would have a bearing on what we do with this landing time series potentially.

MR. CARMICHAEL: I think that is what a lot of the discussion was at the workshop as well was that small fraction of where the area is harvested or what have you. I think that is part of the reason why MSY values that are in place now are well above the observed landings.

DR. CIERI: Do we have anything more recent than 2007?

MR. CARMICHAEL: We requested landings for all managed species and golden crab was not included in the distribution that we received.

DR. CIERI: That has to be known. Landings have been tracked since 2007. It would be nice to see whether they have plummeted or stayed about the same.

MR. WAUGH: To address Erik's question about what has happened in the rest of the area, there has been survey work done by Glenn Ulrich and Betty Winner off of South Carolina. That information was included in the workshop. Those papers were included in the workshop looking at relative density in the northern area versus what has been observed in the southern area. We do have good documentation that they occur. The fishery has not developed in the northern area because it is farther offshore. There were handling issues in the past with crabs. Apparently they've got a refrigerated seawater system that is working better now, and so that may address some of those issues.

DR. WILLIAMS: The other reason I'm bringing up the fraction of the fishery landings versus the potential population size is that has bearing on – we talked about looking at landings' time

series, but the other thing to consider is the effort. If this is just a mere sort of skimming on the surface potentially, then really the trends in the landings' time series are going to be moot discussions if they're potentially just really low landings and they could be a lot higher because we are dealing with just a small fraction. I'm just saying so we don't get caught up in detailed discussions about the patterns in the landings because that may be a moot issue.

DR. BARBIERI: I'm trying to clarify here. I guess what you're saying is that we have incomplete landings' information?

DR. WILLIAMS: No, what I'm suggesting is that you've got landings that may be well below MSY. That seems to be the indication. We don't know how far below but at least we know that there is good evidence that they're well below what could be some potential MSY. Then there is no reason to debate the up and downs in the time series of the landings because all of them are well below MSY. That is what I'm trying to say.

That is why I was suggesting what is the evidence because that seems to be what the documentation is suggesting, that these landings right now are well below the total potential capacity for the stock, but I want to be sure that evidence is pretty solid. If it is, then focusing on this landings' time series, we could take the max of it, I don't know, but we don't need to get into the old ups and downs and what has it done in the recent years if it is all kind of moot relative to the potential MSY.

MS. QUIGLEY: I've got 2008 data. It looks like logbooks showed about 400,000 pounds of golden crab were caught in 2008, and, of course, 2009 data has not yet been released.

DR. BELCHER: So, again, how do folks want to proceed then, taking in account Erik's comment?

DR. CIERI: Median over the time series since the fishery ramped up?

DR. BELCHER: Is that a question or a statement?

DR. CIERI: I'm throwing it out there on the table for your perusal, I guess; so from '97 on.

DR. BELCHER: Comments and discussion relative to that idea?

DR. WILLIAMS: It is consistent with our past approach.

DR. BARBIERI: Right, and that's a really good point, we want to stay consistent if it makes sense. In this case it does so to me that makes perfect sense.

DR. CIERI: You certainly don't want to use '95 or '96. It looks like it is just ramping up, but now whether that is true or whether that is a reporting issue, I don't know, but everything from about '97 on.

DR. BELCHER: Does everyone feel comfortable with the idea of using the median landings for that time period? Any other consideration on a time period; does the '97 forward agree with everyone? Everyone supports the use of the median value, then, from 1997 to 2008 for determining for OFL. Okay, so everybody reaches consensus on that. Now we're getting down to the ABC.

DR. BARBIERI: I think we go back and apply the same the control rule, the data-poor species stock control rule that we applied to corals.

DR. BELCHER: Kate, were the landings exactly 400,000 because we're going to put it in the time series?

MS. QUIGLEY: 385,000, but this data was provided by the science center, but I'm not if it was quality checked or not and maybe that's why I didn't use it in the first place because I received it in early 2009, but the number that I have is 385,000.

MR. CARMICHAEL: In early 2009 it might not even have been complete, so you should –

MS. QUIGLEY: It was complete; I checked. It was through December; complete meaning they had landings from December. Now, maybe some of the fishermen did not hand in all of their logbooks. That is very possible, so those might have been preliminary numbers. I'm thinking that it may be preliminary numbers because they have had higher landings recorded in the past, and 385,000 sounds rather low compared to those previous years. They have told us that they have been ramping up their refrigerated water system and that the price has been going up so they have been selling more. What I'm thinking is that 385,000 looks a little bit low to me.

MR. CARMICHAEL: Are they fishermen logbook landings versus dealer reports and ALS landings?

MS. QUIGLEY: Yes, they are fishermen logbook landings; that's all I have.

MR. CARMICHAEL: Versus the other years they're probably ALS landings and dealer reports?

MS. QUIGLEY: No, the other years were logbook as well. We were using logbook because they were thinking about a catch share program, and for initial allocation for a catch share typically is the logbook.

MR. CARMICHAEL: What opportunity is there for additional landings outside of the logbook system? It is in the case of some species but not in the case of this species?

MS. QUIGLEY: Well, we've heard that there are illegal landings very likely occurring in the Keys.

MR. CARMICHAEL: But they wouldn't be in either system. You don't have any state-licensed fishermen who would be fishing out there and landing some. They have to have the federal

permit. There are none of those other small sort of residual landings going on like there are for some other species?

MS. QUIGLEY: No, this is 40-plus miles out.

MR. CARMICHAEL: Because then the only question is completeness, so does the group wish to include 2008 in your median? I see a lot of heads nodding in the negative so we won't include that.

DR. BELCHER: So we will modify that to be the time series from 1997 to 2007.

MR. CARMICHAEL: Based on you not having more up-to-date landings that you can verify are complete.

MR. WAUGH: Does the fact that we have – and this was presented to you all at the workshop, and it is included in that golden crab powerpoint as well. We've got size data over time showing no decline. We've got catch-per-unit effort over time showing no decline.

MR. CARMICHAEL: I think all of that could calculate and factor into the interpretation of the control rule criteria with concerns of indications of depletion and reliability of the OFL and all that.

MR. WAUGH: But that wouldn't affect your use of the median versus some other value?

DR. WILLIAMS: The concern is what other value; that is the problem. That is why I having that discussion about, well, we have pretty good evidence that this is just a small portion of the potential MSY, but we don't know what that potential MSY is, so all we really have to go on is this. As John and Carolyn have pointed out, we will take all of that into account when we go through this next stage of the exercise.

DR. BUCKEL: But by doing this will we ever get a chance to know? I guess I'm just back to your point, Erik, about maybe considering the max since we know a little bit more – well, we know they're distributed farther to the north and there is no fishery up there right now. I'm just struggling with that median versus max for OFL.

MR. CROSSON: Following up on what Jeff just said, considering there are only four guys in this and it is such small difficult fishery to operate in, I don't see this moving itself to the top of the stock assessment pile anytime in the next – forever. I mean, honestly, I don't see anything. That's why I'm a little way of this median value. To my mind, even the top one, whatever, a million pounds is probably perfectly viable. I just don't have any real basis for arguing for that.

MR. CARMICHAEL: Just to bring back the issue of consistency and how you're interpreting the information that is before you and to look at corals, there was an expansion in that Attachment 7 about the coral population, that there are 7 to 25 colonies in a square meter and

estimated then to be 28 billion colonies in the Florida Keys Marine Sanctuary and Dry Tortugas National Park areas alone.

If you want to make a case of scratching the surface of a population, perhaps we should make sure that at least you are aware that information is in there. Maybe there is something to be said here and let's make sure we're consistent because I don't want to have to be in one of these situations where it looks like maybe we didn't consider everything consistently.

DR. BUCKEL: Back to the coral, if it was a single species and it was 27 billion colonies of that species that they harvested and then – but the other confounding issue was the coral is a multiple species and so the selection of what – they're after purple ones and orange ones, but the 27 billion is – you know, there is only 0.5 percent that are purple and orange. We don't know.

DR. BELCHER: And it has been noted that the one estimate for MSY for golden crab is 684,000 pounds, so the million really might not –

MR. CARMICHAEL: The median from that time series is 518,316 based on the data table that is in the FMP. That is not far off of the estimates that was provided from that Harper et al assessment.

MR. CHESTER: Have we lost sight or discussed this older recommendation by NMFS from 2000 or 2001 of an MSY of 2.5 million pounds region-wide?

DR. WILLIAMS: Where is the documentation to support that?

MR. CHESTER: Well, I just pulled something up on the internet. This figure was presented by NMFS; letter from Joseph E. Powers to Fulton Love, September 12, 2001, Southeast Fisheries Science Center, Memorandum from Harper 2000: "Indicate the proposed MSY proxy of 4 to 12 million pounds appears to be several fold higher than indicated by analyses of historical landings. Specifically the most recent fishery-based proxy of MSY for the southern and middle zone on the order of 684,000 pounds per year. Information presented in Section 3.3 of Amendment 3 and Table 2 summarized MSY proxies for the northern zone. The estimates vary from 170,000 to 1.65 million. Adding the estimates for the three zones would provide a region-wide proxy of approximately 2.5 million."

DR. BARBIERI: This is from Harper et al in 2000?

MR. CARMICHAEL: There are a number of memos. The Harper et al –

MR. CHESTER: Yes, this was put together by Gregg Waugh, June 2009.

MR. CARMICHAEL: Harper et al was rejected. All of this is pretty well documented in your history.

MR. WAUGH: Yes, that is material that we put together for your workshop last year, and that was a letter from I think it was –

MR. CHESTER: Joe Powers.

MR. WAUGH: – Joe, Acting Southeast Fisheries Science Center Director at the time. I would just note that is 2001 and Harper et al is 2000, so best available science is 2.5 million. That is later than Harper's.

DR. WILLIAMS: Except that Harper was updated in 2003 according to the document here.

MR. WAUGH: But again for that portion in the analysis that Joe presented was for the entire area, so one could plug in those new numbers from Harper et al into the methodology used by the center director at the time.

DR. BELCHER: In looking at the data, too, when we talk about the northern zone, in just 2006 was the first place that you actually see anything that is technically a number that we can't see because it is confidential, but in looking at what was caught in the middle zone which is 566,000 versus the total which was 599,000, that is 33,000 split between two zones. It is not significantly higher in the northern zone in terms of contributions from that area. Then in the next year you have middle zone and northern zone being your two contributors for a total of 502,000. If trends being what they seem to be from previous, you would expect the majority of that is going to come from the middle zone. Kate.

MS. QUIGLEY: I'm not saying you're making this leap, but I'd be careful about assuming that just because landings are pretty low in the northern zone that the abundance is not there. A lot of this fishery depends on where the fishermen live and there just happened to be two fishermen that live down in the Fort Lauderdale area, and so they fish the middle zone.

Then there is actually three that live down there and all of them fish the middle zone. Then someone new came into the fishery about three years ago and has been just year by year ramping up his landings, and he is in the northern zone and fishes exclusively in the northern zone, and so those landings have gone up drastically in the past couple of years, but I don't have the numbers. Actually the northern zone is considered the most abundant by the fishermen. It is just that it is not where they happen to live and they've been – ramping up production is a difficult thing to do because they're out for sometimes seven to ten days at a time and they need a larger vessel and weather conditions – anyway, all the stuff that you heard before back last summer.

DR. BELCHER: But I guess I was just getting at with the estimate of MSY, bumping it up to 2.5 million for a zone that up until recently hadn't been fished and not knowing what those impacts – I'm just trying to think – and, again, it is difficult because this is going to be one of the things that we're going to end up having issues with. As we look at this confidential data stuff, I mean we're trying to make the best judgment calls on how to allocate this, but, again, intuitively you're filling in boxes because you don't know what those numbers are.

DR. WILLIAMS: The other issue, though, is because all these landings seem to be coming out of the middle zone, we have could have a big issue with localized depletion if we set a 2.5 million MSY and it is all being centered on the middle zone, which seems to be where all the effort is.

MS. QUIGLEY: To that point, the fishermen in the middle zone also own permits in the northern zone and are looking to expand. This is something they went over last summer is they're looking to expand and they've just been developing the market for the last ten years and now it is where they want it to be, and so now they can start bringing in more crabs.

Before they were on ice and the supply was pretty good, but it was a little more difficult to sell than it is now. With the live crabs it is very, very easy to sell them and so therefore they can catch more and bring in more and they do have permits to the northern zone that they plan to use.

DR. CIERI: The point that John just made, there is a reason why we're in the data-poor category with this. If we had a working assessment we would be trying to estimate a P-star, so what are we doing here? If we don't have an assessment, we don't have an assessment.

DR. BARBIERI: Well, one of the issues is and the possibility is perhaps go with this approach which is treat this consistently with the way that we are treating all the other data-poor species. Since these are to provide ABCs, an annual catch limit, there is the possibility of us being able to update – is to revisit this next year if we can actually get more detailed information from the fishery, distributional landings or more detailed landings and effort, you know, distribution of the fishing effort out there. That might give us the opportunity to revisit this and perhaps correct what we are proposing now.

DR. CIERI: Yes, give us a peer-reviewed assessment and we will take it out of the data-poor category and run the numbers on the P-star on it.

DR. CROSSON: I immediately worry of us putting a cap on here that is already going to – I mean, I'm looking at the 2006 numbers. They would already be over what we would be setting with 518,000 pounds. There seems to be a general agreement in the room that it is extremely unlikely that we're anywhere near a situation of overfishing this stock or depleting it. We know there is only a handful of fishermen in there. We know how difficult it is to get out there and bring a vessel 40 miles offshore at best, with the refrigerated tanks trying to preserve the meat. Any further data that we get is going to be pretty close to confidential again because there are so few guys in there, so that is not going to improve.

With everything else that is going on in the South Atlantic, we're not going to see a stock assessment at least anytime soon. I feel like it's overly punitive to be cutting this off or basically at best, at very best we're capping them where they are right now, and I just don't see the justification for that. I understand some of the arguments that are being made, but it just seems overly cautious to me.

MS. LANGE: Well, I can see both sides of it, but I do have a concern. If this is a developing fishery in the northern area, they're getting vessels, they're just getting the refrigeration, we will never be able to do an assessment if they can't fish. If there is not enough quota for them to fish in the northern area, we'll never get any data from that in order to do an assessment.

DR. CIERI: Yes, that is kind of backwards logic. That's telling them that you need to go fishing so that we can collect some data so we can see whether or not you're overfishing. It is what it is. It is in the data-poor category. There isn't an assessment. I understand the argument that it is punitive, but the fact of the matter is it's just like with coral. The uncertainty is fairly large. You don't know where this fishery is going. You don't know where it is the potential to go. Until you get better information, the law pretty much curbs you into keeping a fairly precautionary approach.

MR. CARMICHAEL: There is an assessment scheduled I think for 2013. It is still penciled in there or did we move that out? That's what it said in there. I'll check the schedule. I think that is when it is in there.

DR. BELCHER: So are we still considering the median values from 1997-2007 as our OFL? Further discussion; any other suggestions? So everybody is pretty much ready to go forward at that point.

DR. BELCHER: The median value –

MR. CARMICHAEL: 518,316 pounds; including '97 through 2007 is 518,316. It is the 1998 value.

DR. CROSSON: Again, I'm not going to hold this up if the group is nodding in favor of this, but with the idea of moving over to the mean instead of the median and bumping it up to closer to 600,000 pounds; would that be objectionable to everybody here?

DR. WILLIAMS: The median is a more robust measure of the central tendency.

DR. CIERI: And the decision of whether or not to use median or the mean shouldn't be based around what the end result is.

MR. CARMICHAEL: Not unless you want to go back and revisit coral because you have the same issue with one value that has been used, so we would be second guessing ourselves on the second pull of the trigger.

DR. BELCHER: So applying the control rule; do we have an indication of depletion; yes, no or unknown – no, so we can add 15 for that. Does it have a critical ecosystem role, habitat, forage and et cetera? So with that, it gets another 15. Productivity/susceptibility; is it low, medium, high risk or unknown risk?

MR. CARMICHAEL: Kate, can you comment on that? Has this been addressed in any of the analyses. Kari, I see, is looking as we speak. Kate, do you know anything about this?

DR. WILLIAMS: It is listed as medium.

MR. CARMICHAEL: It is listed as medium?

MS. FENSKE: I think this is one of the ones that I attempted to give some rough numbers on, but certainly your feedback would be valuable.

DR. CROSSON: Part of the susceptibility is the difficulty of fishing for the species, right? That is included in that factor. If it would be easier to do and if it was highly susceptible, we would not have seen the number of participants dropping off as dramatically as we have. I think there is ample evidence based off of what we saw when the guys were speaking to us a year ago in June that this is extremely difficult to do.

You have to anchor yourself out there in the middle of the Gulf Stream and try and fish in extremely deep water. The amount of capital that you have to bring into it to try and get some kind of marketable product, it is a very high barrier to cross. I don't see any reason that this is a risky factor for me to say.

DR. WILLIAMS: Well, what about the productivity?

DR. BELCHER: Kari, do you have any summaries. Obviously, if you have worked through – even it is just a rough workup of a PSA analysis, some of that stuff you would have available, right?

DR. BARBIERI: And the golden crab powerpoint that Gregg e-mailed to us, Slide Number 3 has a summary of the life history. Yes, it talks about the life span of probably over 30 years but unknown, I guess, not confirmed, slow growth.

DR. WILLIAMS: I think in general these sort of deepwater crabs aren't really viewed as being very productive.

MR. CARMICHAEL: The next slide addresses the spawning; mature between 85 and 100 carapace width; females, around 97. Reproductive cycle is a single batch of eggs produced each year. All the females recorded during September, October, November, 91 to 118. Spawn in the South Atlantic Bight through southern Florida into the Gulf.

DR. WILLIAMS: But back to that previous slide, it also says it targets males. It says the commercial fisheries targets males starting at 130 millimeters, and then it gives you an age.

MR. CARMICHAEL: So it's harvesting fish after they reach maturity at least for the males. That's a good thing.

DR. CIERI: And that's really similar to the North Atlantic Deep Sea Red Crab Fishery where the target is predominantly males and in deep water, so that is a mitigating factor when it comes to the susceptibility/production type thing. I'm buying medium. I mean it is a very slow-growing species, but it is predominantly a male fishery in deep water with few participants. That for me, they sort of cancel each other out. That's my opinion, but I'm willing to go either way.

DR. BELCHER: The feeling from the rest of the group, medium or low? Everybody feels comfortable with saying medium? Okay, on this one we're going to say medium risk, which gives us ten. Then the reliability of the OFL estimate, so getting to another point –

DR. WILLIAMS: I think in this case you can make the case that it is about as reliable as it is going to get because of all those other mitigating factors, so give that the highest.

DR. BELCHER: The highest?

DR. WILLIAMS: Yes, I would think so.

DR. BELCHER: So we get 65 percent; everybody comfortable with that? The recommendation, then, for the OFL is going to be 65 percent of the median landings from 1997-2007. Sorry, I'm getting them all reversed now. ABC is going to be equal to 65 percent of our OFL which is the median value for the time series from 1997-2007, so we have a consensus on that. John is going to give me the number.

MR. CARMICHAEL: Do you want the number; 336,905 pounds.

DR. CIERI: About what they landed in 2003.

MR. CARMICHAEL: The assessment is actually scheduled for 2015. I was just wondering if it had gotten bumped back since last summer, and it has. All of the schedule will be discussed extensively in May, and there is a lot of eye toward some different moves for the future because of the possibility of an independent monitoring program getting started and the need to do a lot of benchmarks once we get data coming in from that, so we may be doing some different things and updates in the next couple of years. So 2013 or 2015, we will find out in May, and who knows.

DR. BOREMAN: Yes, monitoring, it takes a few years to get real data and I'll reserve my comments about the 336. Once again, after the coral, we have given them a number of which is probably towards the lowest end of their catch they have ever had in the most recent years. Good luck, Carolyn, with the council. There is a process. The council can overrule the ABC with just cause, right? No, they're stuck with it? Well, we have rules for that.

DR. BELCHER: Okay, at this point let's go ahead and take a ten-minute break.

DR. BELCHER: We're going to go ahead and get started again. When Kyle comes back in the room, he was going to show us the results of his projection run and ABC value.

DR. BOREMAN: I'm still reeling from the decisions, and I understand the basis for the decisions on golden crab and corals. I understand the process by which they were derived. My emotions may be getting the best of me; and if they are, I apologize, but I think we're punishing industry for doing nothing wrong here. Just because we don't have the data, they're basically getting their quotas cut in half for the coming year. My understanding is we set these ACLs every year now for these species, right? This is going to be an annual process or these FMPs have multiyear specifications?

DR. BELCHER: Gregg, we've got a question relative to ACLs.

DR. BOREMAN: Do we set those every year for corals and golden crab or is this going to be a multiyear?

MR. WAUGH: The approach our council has taken is to set those values and they stay in place until modified.

DR. BOREMAN: Well, that changes things. I was just thinking in the Mid-Atlantic how we have handled these situations is if nothing appears to be going wrong with the fishery, even though we have no data, we can't estimate OFL or MSY or any proxies, we stay with status quo for landings, and maybe bump them up a little if like maybe the biomass may be increasing, kick in another 5 percent or something and take that approach rather than this form of approach which really I think is overly harsh at this point, especially for these two species with the information, anecdotal as some of it may be, but that is just an alternative approach. I hesitate to reopen this whole issue. I'm not proposing I do that unless I get support from everyone. If this is a consensus, is there an ability to file a minority report?

DR. BELCHER: We actually talked about that at the break; and it as we write the report those comments need to be captured as part of the actual dialogue that is in the report. We don't necessarily have to have anything that comes out as a contrary position on it, but that does need to be captured that even though it went forward as a consensus statement there was still concern within the group relative to X, Y and Z topics.

As we produce the report, which we've got a little bit of time in producing that, obviously it doesn't have to be done today and tomorrow, but over the course of the next few weeks I need to get – as much as you have notes, I need to get those from you before you leave tomorrow to start collating and putting the report together. Anything that you want captured, like your particular instance, even if you weren't assigned to writing the rapporteuring, I'm more than glad to take anybody's comments and include them in the dialogue.

DR. REICHERT: What does that do to our consensus?

DR. BELCHER: I understand that question, but John didn't feel that the minority report was going to do anything other than have that same – it is the same effect. It is just a matter of whether you want it to be a stand-alone document or capture that. The bottom line is we've all had the discussion and we've all said that is our consensus. Now you can still have issues even

though right now the problem is we don't have an alternative solution. You can still address the concerns.

DR. BOREMAN: I thought I just proposed an alternative.

DR. BELCHER: Well, I'm thinking in general. Yes, you're correct, you did propose one. Again, the question is do we go back and revisit it? Again, I'm open to suggestions from the group as to how best proceed with that. I guess the other question comes in, as you were saying, is it because seeing the outcome is really the problem? That is kind of where in the past we were trying to delve into doing this without using case scenarios for fear that the case was driving how we designed the process.

MS. LANGE: I'm not sure if it was the outcome that was the – I think the issue was the overfishing level, what would be the appropriate – given the history of the fishery, given the steadiness of it and that type of thing, and that is where the discussions were and not so much on the scores of our table, but on how to set that top level. When we went back on it with the corals, we went back to look at the full number as opposed to just the federal water number. I'm not sure what other numbers we have for this.

DR. CROSSON: Carolyn, I'm sorry, are we required to come to a consensus on this? I feel really uncomfortable with what we did with golden crab. To my mind I feel like we made a serious mistake. I don't want to hold up the process because we have a lot of other ABCs to set for species, and I know this is not last agenda by a long shot.

The reason I kind of bowed under is because I didn't see there was a lot of support for setting a higher ABC for that species despite the fact that everybody seemed to think that the 500,000 or so pounds that we have been catching for the past years was not anywhere near a dangerous level for the biomass that was out there. At this point I don't want to hold up the process anymore because, again, we have an hour left today and apparently we haven't touched any of the snapper grouper other than the ones we dealt with this morning.

MR. CARMICHAEL: I think to that point my advice is that what consensus means – and as much as what we deal within SEDAR – is that we want this entire committee to consent to the report that goes forward to the council. That may include that here is a recommendation that comes out of this process that we've described and here is the answer, and this is how that came up with now.

However, if others – and every individual on this committee has a right and an obligation to make sure that what they feel is written down and shown up in the report and everyone agrees with it, that it is factual and everything else even if maybe not everyone shares the same opinion, but that if there are divergent opinions and differing points of view, that they are brought forward to the council.

That's one of the most critical things, that is what the council wants to see in terms of – when they see a range of stuff, they want to see what are the uncertainties, what are the considerations

that go into this, what are the possible scenarios. I think writing up something like that for the report and you say like this is what came out, but some members of the committee feel blah, blah, blah or other considerations that could be made.

We do want an opinion that everyone agrees to. Now I suppose if the committee is evenly split, there perhaps there are two recommendations. I don't know; we have not really been in that point. We definitely don't want a vote that comes down to like eight to seven and those that got seven don't even list their list. I would rather see the majority felt this; however, there was this group on the SSC that felt that consideration could have been given to this and this was also a reasonable alternative. Then everyone gets a chance reviewing it and say, well, yes, that's factual, I can see your point though I don't like to go along with it.

DR. BOREMAN: What is the council going to do with that other than just cry in their beer because they're going to get one number? Again, how it was explained to me it is take it or leave it. You can't leave it; you've got to take it. Then if we come back say, well, there is a group within the SSC that feels that the number should be different, so what, that is not the number that the consensus was reached on. I mean, we can live with the number, but I would be much happier with a different number.

MR. CARMICHAEL: We have been told from the agency our advice is that the SSC can give a range. Isn't that what we were told at the last meeting; the SSC should be asked to give a range. Now maybe you would give a range that goes from what you have now for something like golden crab to something higher. I don't know, but we have been told the SSC can give a range. It would be a good time maybe to try that and see how it actually works out if you were to give a range to the council or a range around the value that you gave.

DR. BUCKEL: I just want to state that I agree with the comments that Scott and John have made. Maybe part of the problem is that this followed the coral discussion and we felt boxed in to a certain extent because we had gone one way with corals and then we felt that we had to stock with that median value for OFL, for example, for golden crab.

I feel that for golden crab we should consider a different value for OFL. Thinking back now, the folks that were in that fishery, they actually came to the table and explained their case. I think if that was done for the octocoral fishery we would have considered a different value for OFL there. I'm just trying to put those two things in perspective that we should think about the differences in the information that has been provided for those two fisheries in setting OFL.

DR. BELCHER: Well, we actually did get a report from Mark Robson last year relative to the octocoral stuff. They came specifically from an FWC person to explain that to us. That was last December. They did make the case; it just came from a different source.

DR. BUCKEL: Thanks for the clarificsation.

DR. CIERI: My difficult is that it is result stricken. It's only after we get through setting the ABC that we would like to go back and revisit the OFL.

DR. BOREMAN: That was my first proposal and it was rejected.

DR. CIERI: And I'm trying to struggle with another measure other than the median and a justifiable one at that.

MR. CARMICHAEL: Step back and consider the charge and what ABC is supposed to be; the level of catch that prevents overfishing. Does everyone look at the value for golden crab and feel that is the appropriate upper bound of the level of catch that prevents overfishing? And if everyone doesn't feel that is the case, then reconsider it. I think it's the same for coral; do you think that looks like the level of catch that prevents overfish? These are kind of unique fisheries here that we're dealing with obviously, special circumstances across the board.

DR. CIERI: When you don't know what overfishing is.

MR. CARMICHAEL: So maybe you know what it is not.

DR. BOREMAN: I wouldn't disagree that level probably will prevent overfishing, but I also feel that a higher level will also prevent overfishing. Maybe it is a little less probability, but within the range to me of what would be an acceptable level.

MR. CARMICHAEL: So we're really looking at sort of what is the upper bound of what will prevent overfishing. That is what the Act is really asking for; what is the most that should be removed while preventing overfishing?

MS. LANGE: This was probably already discussed but the values that are in the roadmap that the council currently has in – do we have any information on where they came up with the 2 million and 1.5 with a 4.5 range?

MR. CARMICHAEL: All of that is described in the presentations and it was discussed at the workshop last June. I'm not exactly familiar with all of it, but you can look it up. Kate might know a little bit more about specifically why those values were presented. If you look at that history, some of those values have some history to them through that about ten-year record of looking at this fishery and trying to understand. It seemed to be sort of a culmination of all that tempered by what the advisors recommended and looking at the council's four to twelve or whatever that is in place plus where fishermen think it could go anecdotally.

MR. WAUGH: Is the question about the MSY values, Anne?

MS. LANGE: Well, no, in the roadmap there are ABC alternatives. One was 2 million, there was another one for 1.5 million, and another for between 4 and 4.5 million pounds that are apparently currently in the amendment. I'm just wondering where they had come from.

MR. WAUGH: Those were developed by us based on the reductions from the MSY alternatives; the 5 million pound MSY. Reduced by some amount gives you the 4 to 4.5. The industry felt that based on their experience with what they're seeing on the water, they felt an MSY of 5

million pounds was appropriate. The Alternative 2, the ABC of 2 million pounds and Alternative 3 of 1.5 is stepping down from the NMFS recommended MSY of 2.5 million pounds.

DR. CROSSON: I'm very sympathetic to what Matt was bringing up about following the process and then you come up with the result and you're not happy with the result, but when I think about it the process spat out a number that I don't think is anywhere near the maximum that could be used for this particular species given the circumstances. We're going to go through this exercise with some of the snapper grouper species and observed species that have a significant recreational catch. There are headboats; there are charterboats; there are species that live for 40 or 50 years; they are very aggressive; they're caught in all shallow and deep water, depending on which ones you're talking about.

You know, I look at those and if we come up with low numbers for those, I'm not going to feel particularly upset about it because I can understand where we came up with those. I think the process was followed. The number of, whatever, 350 or 380,000 pounds that we came up with, it seems to me it spat out – the process spat out a wrong number.

I'm not thinking that following the process; you know, just for the sake of following the process when it came up with something that is clearly wrong, to my mind, and it's going to have a significantly negative economic affect on the handful of guys that are out there doing this, I just don't think it is something that I feel very comfortable doing.

DR. LARKIN: I just thought I'd ditto what Scott said. I think if we're going to stick with the value that we came up first, I would be supportive of helping to draft something like a minority report from the only purpose to convey that it would be nice to open a dialogue about what we do for fisheries where it is never going to be feasible to necessarily have a full-blown stock assessment.

I think we've seen a couple of cases of those and I can think of some others where that might be the case where we're back to trying to figure out what to do. I guess for the record I don't see anything wrong with the process of groundtruthing some of our numbers. I mean, to say, oh, we're going to come up with this rule and we're going to apply it to be consistent and not ever think of it again is sort of bound to fail. I kind of anticipated this and it doesn't necessarily bother me that we're having a chance to test it early on.

MR. CARMICHAEL: Just one thing to that, the SSC should not be considering the social and economic consequences and focus on the level that ends overfishing. I think it would be risky to get into, well, this number is going to have a lot social and economical consequences because that is really not within the charge of the SSC. Other than that, certainly everyone is entitled to have their expectation of what they think really ends overfishing.

DR. BELCHER: But there is one problem with that thought is you have three people that are socio-economic people that are put here for socio-economic input.

MR. CARMICHAEL: But it is not supposed to figure into the ABC.

DR. CROSSON: John, that is not what I'm saying at all. Like I said, if we come up with numbers that are going to cause even more significant reductions in the snapper grouper fishery, and that is going to have a heavy social and economic cost, but I understand that and we go through the process, because, again, groundtruthing it like Sherry was talking about, those species are heavily exploited by a variety of different sectors; they have growth patterns that are consistent with being exploited again over 40 or 50 years, I don't even come close to feeling like that is the case biologically with golden crab.

We basically saw all the fishermen that are in that fishery come into the room and talk to us about how difficult it was. It is a handful of guys. They're only operating in a very small geographic area. I also, again, don't believe that the SSC or least a majority of the SSC feels that biologically the number we came up with is necessary to preserve the integrity of that species. Given that, again, I feel like we're making a mistake on golden crab.

DR. BELCHER: So, then, bringing up Erik's comment earlier, what about localized depletion? If it is a localized area that they're hitting because of the difficulties being able to fish for these animals, what about that possibility?

DR. CROSSON: Let me just answer that real quickly; that's a management decision. We were asked to come up with a number for the South Atlantic. I would leave that up to the council's discretion to figure out how to break that down through the different areas.

DR. BOREMAN: That was my comment. Just to add to that, in our report we should caution the council of that possibly happening and suggest that they take measures to prevent that from happening.

DR. CROSSON: Would the SSC feel comfortable with going to the 2006 numbers of just shy of 600,000 pounds for one year and then maybe revisiting this at a future date?

DR. BELCHER: We have to come up with a justification for why we would do that.

MR. CARMICHAEL: A justification tied to preventing overfishing. As I said, the intent of ABC is a landings' level that prevents overfishing. Whatever you guys collectively come up with is you will stand behind is saying I believe this number prevents overfishing and it is the appropriate maximum catch level, it is the acceptable biological catch that can be removed and prevent overfishing, then that's your recommendation. If you come up with it with this rule or you decide that a species for some reason or another should be handled in a different way, that is well within all of your purviews just as long as it prevents overfishing; do you believe it prevents overfishing.

MS. LANGE: Well, going back to what John said what the Mid-Atlantic is doing looking at status quo if there is no indication that there is a problem or that there is an negative impact on the stock, for fisheries like this that are small, there is the likelihood of great changes over one year, if we put it in for a year with the caveat that we get more data – and, again, this fishery, the majority if not all of their members came to us last year and told us if we had any questions, if

we wanted any information, to ask them. They would give us whatever they have that we wanted. They came forward to do that; and for us to say, well, we're going to penalize them because we don't have the data – those are almost the exact words with what we're saying, if you don't give us the data we have to cap you.

DR. CIERI: I just can't come up with a biologically justified defensible reason to use something other than the median of the last ten years worth of catch. If somebody can explain to me a biological justification and give me some sort of estimate as to how close or how far away that is from overfishing, I would be a little bit –

MS. LANGE: Well, I guess this goes to the discretion that John said. The median is one thing but 65 percent of the median is significantly less; do we have a justification for reducing it?

DR. CIERI: Along with species with a high degree of uncertainty, we know more than likely that the median is probably sustainable because it hasn't been seeing a lot of fluctuations in the population at least anecdotally around that stock level. However, one, it is in the data-poor category; two, it is a deep long-lived species.

MS. LANGE: And, three, it is documented that the fishery doesn't cover anywhere near the range of the stock for the population.

MR. CHESTER: And, remember, I think this species is provided quite a refuge by the new habitat amendment that puts an awful lot of potential area off limits. I'm also concerned – and I recognize that the MSY estimate by NMFS is old and outmoded and perhaps based on not the highest level of analysis that we've come to appreciate, but still NMFS is on record as saying that an MSY of 2.5 million pounds is closer to what they feel comfortable with. I'm not sure exactly why we're discounting it, but I think we have a lot more information on this species than we do on many of the other species that we're going to be looking at.

DR. CIERI: On the flip side if we were talking about reducing a fishery based on an assessment that was conducted in 2000, we would catch a whole lot of flak on it. My guess is that if we have a lot of information we can take it out of the data-poor species. If there are other reasons for us to go back and revisit the vulnerability and susceptibility, then that is something else. However, tinkering with sort of the OFL at this point, I'm having a hard time coming up with something other than that that can be biologically justified as an OFL.

DR. BOREMAN: I don't know how much progress we're making, but I just want to respond to Matt's comment by saying if this was a developing fishery, which I think it is, it has the potential of developing more and expanding into new areas once we get technology on board and keeping these critters alive until we get back to shore, what we're doing de facto is preventing that from happening. The way the rules are set up it can only go one way and that is down. We will never be in a position to allow this fishery to expand. If that's what we want to do, that's fine, but I don't think that is our intent.

DR. WILLIAMS: I couldn't disagree more. Everybody is getting hung up on what constitutes a stock assessment and it doesn't have to be a catch-at-age model. There could some kind of nice – it could even be a one-year survey that surveyed that northern area and gave us some density estimates and the total area covered by the crab that would indicate to us how much potential biomass is up in that northern area. We don't have that right now.

It is interesting that everybody is talking about how this number must be much – that the OFL has to be higher than what we've determined it, but I have yet to see anybody throw a number out and tried to defend it because there isn't one. There is not a defensible number out there. We all think it is higher, but there is nothing out there to indicate what is the biomass in that northern area to tell us what an appropriate OFL should be, and there is data to be collected to determine that. It wouldn't cost that much to do a one-year survey to try and get biomass estimates in that northern area, but until we get that we're stuck in the situation we're in right now.

DR. CIERI: And I'll disagree with John, too. Really, all we need is their logbook information and we can start to run an ASPIC and surplus production model and take it out of the data-poor category. That data on catch-per-unit effort exists. It is currently someplace. We don't have it in front of us, but it is currently someplace. If the managers decided that this was a high priority stock, the stock could be benchmarked next year.

MS. LANGE: I guess to Erik's point, what I had said earlier was that the median or whatever the overfishing level was is just reduce by the 65 percent. That was another option. Again, it is a developing fishery, so if you just maintain status quo as opposed to applying – you know, John had said we don't necessarily have to apply the process to every stock so just leave it at the full OFL.

MR. WAUGH: Just to point out you do in fact have the fishermen's logbook data before you. You have their catch-per-unit effort, you have the trends in size. What is missing is following the law and providing the council with the annual SAFE reports that would show this information over time. It's nothing the fishermen haven't done. The agency has not conducted the necessary analyses that are required by law.

The council should be getting annual SAFE reports that would update this information and present it and we are not getting this. You don't have to do a full-blown, age-based analysis. These deadlines were known. These deadlines were predicted. The analyses could have been done to provide you all with the information you need to make more informed judgments. They were not. It is not the fishermen's fault, it's not your fault, but unfortunately you all are struggling with it and the fishermen are going to pay the price for it.

DR. CIERI: And, again, if we're not going to apply this particular control rule to golden crab, can somebody give me a justification as to why not other than we don't like the number that comes out of it?

MS. LANGE: Again, I don't like what you're saying that we don't like the number. I think it is that we question the number. Based on our experience with fisheries and how they move through time and looking at the catch stream, there is nothing to indicate to me that this fishery is in trouble and needs some immediate – and to me a 35 percent reduction in this is pretty draconian, that much of an immediate response when we could potentially have something later, you know, in a year.

DR. CIERI: However, that is exactly what the Magnuson-Stevens Act calls for when things are uncertain.

MS. LANGE: I don't think it says you have reduce everything even after you take the uncertainty –

DR. CIERI: It says you have to do it.

MS. LANGE: – under account so you cap the fishery. You don't allow it to increase until you get more. I don't know anywhere in the reauthorization that says that if you're not sure what is going on you must reduce the harvest.

DR. CIERI: But the way we have set the OFL is we have set the OFL – what you're suggesting is that we set the ABC equal to the OFL and have no scientific uncertainty between the two.

MR. WAUGH: Just a suggestion; you may want to step away from golden crab a moment and try another species. We don't expect it to be any different. In fact, wreckfish you'll probably step down more. I don't this is something just inherent with golden crab. I think it is something inherent with the lack of assessments and data that you have before you that we have been provided. I think you're going to struggle with the same exact situation with most non-SEDAR assessed species.

MR. CARMICHAEL: I think perhaps we just consider where you are now as being semi-preliminary until the conclusion of this meeting and we see what we can wrap up what you have down on paper and get through some more of these and see where you do end up. I think that's probably a really good place to go. I hope that we can get this level of discussion when we bring the SEDAR assessment of red snapper to the committee in November. If you think there are consequences for what is happening with this recommendation in golden crab, consider the consequences for the rebuilding strategy that is necessary for red snapper because that is going to be huge as well.

DR. BELCHER: So with that, on a more cheery note Kyle actually has the values for the rebuild and the ABC or OFL or whichever we're looking at.

**DR. SHERTZER: That was so fascinating I hesitate to come back to the world of data output. This is the results of the red grouper projection that was asked for this morning. The plot here shows the probability of rebuilding to 70 percent. By design in this case there is a 70 percent probability by 2020. This is a plot of the time series projections.

The dark line is the expected values and the dashed lines are the 5th and 95th percentiles from the projections of the top panel here. You can see that it is rebuilding to a bit over SSBmsy or least the point estimate and that's because of having a 70 percent probability. The X-axis in each panel is time in years. The top panel is the spawning biomass trajectory. That is the only one I was really going to focus on here.

The top right panel is recruitment which isn't changing much over time. The bottom left panel is the fishing mortality rate which is fixed across each of the replicate projections, so the first two years are fixed at Fcurrent. That is 2009 and 2010. Then anything new would start in 2011, and that's the Frebuild. The bottom right panel is landings in units of thousands of pounds. In each case the solid horizontal line is the point estimate of the corresponding benchmark.

This is going to be hard to see. As promised it is hard to see, but I'll just let you look at the values. The first column is the F. The second column is the probability of rebuilding so the terminal year here is 0.7, and that's by definition the scenario. I guess the column of interest would be the landings over time, and this is in thousands of pounds.

I think this column here would be the ones you're interested in as an ABC. Maybe that was plus discards over here, defining it. Discards is a separate column. I kept them separate. That is all I have to present. I can give you these tables and figures if you need them for your report.

DR. BELCHER: Thank you, Kyle. Does anybody have any questions or comments for Kyle relative to the values that he generated for us relative to our ABC?

DR. JIAO: I only have one thing that I think needs to be addressed because in the previous protocol we developed I was not there, but it said for the rebuilding species we need to make sure that the ABC or ACL, I forgot, needs to be the mean off of the Frebuild – based on Frebuild and the P-star protocol that we developed, so make sure this one is not larger than the values we based on the P-star protocol, I think. There was that sentence there, right?

I remember there was – because it is possible like for rebuilding species you can get an ABC value that is higher than based on P-star that we developed because of the penalty of the P-star. You can end up in that situation, I think. This needs to be addressed somehow because this is based on Frebuilding, right? It is not based on the P-star?

DR. SHERTZER: Well, not the standard P-star but for the P-star of 0.3, then 1 minus 0.3 giving a 0.7 probability of rebuilding so the probability is in the probability of rebuilding rather than the probability of preventing overfishing. I think when it is in a rebuilding plan, the rebuilding projections probably priority over any P-star analysis unless you have written it differently in the control rule.

DR. BARBIERI: I think what you had done before was to Frebuild, which came in the document, was a 50 percent, and in this case the value of the Frebuild is different to give it a 70 percent probability of rebuilding within that timeframe, so that is how it defines the Frebuild.

DR. JIAO: That is why I said it needs to be – because P-star focused on the – is based on the fishing mortality because it is a penalty on the fishing mortality here. Here the 70 percent rebuilding, that is based on the SSB, so that is why there was one sentence that said you need to get a mean value of the F so you meet both criteria.

DR. SHERTZER: I think I can answer that quickly. It meets that criterion because Fmsy, at least the point estimate was 0.22, and then the F here is fixed across all of them, right, so at least based on the point estimate of Fmsy it is a probability of overfishing of zero. If you account for the uncertainty distribution in Fmsy, that wouldn't be the case.

DR. JIAO: I'm okay with that. It just to make it consistent because the P-star is based on the variance of the OFL, so it's on the Fmsy or is part of it, but since we define a P-star based on the OFL – I think we would just need to somehow address it because since we developed the protocol in that way and that is reasonable to say. We need to match both criteria, both overfishing criteria and being overfished criteria for rebuilding species. I cannot find the exact sentence, but we have that sentence in the previous ACL or ABC control rule we developed.

DR. SHERTZER: Yes, if that is what you wanted to do, that is a little bit of a different projection having multiple criteria. One of the two would be the restrictive one, but I don't know which one in this case.

DR. WILLIAMS: But I think you meet both criteria because the Frebuild has got a zero probability of overfishing.

DR. SHERTZER: I guess, but now that I rethink that, if you account for the uncertainty distribution around Fmsy there would be some mass of that distribution that might be below 0.18, and I don't know what that mass is.

DR. WILLIAMS: I don't recall; is that really part of our ABC control rule? I know you can't exceed Fmsy in a rebuilding, but I don't think we state that you can't exceed – because when you're in rebuilding, rebuilding takes precedence. I don't that applies, Yan. I don't think we need to meet both criteria. As long as we're not exceeding Fmsy, you're not overfishing; but you're in rebuilding, then rebuilding takes precedence and rebuilding dictates the time series.

DR. SHERTZER: You would never meet both criteria; you would meet whichever one was most restrictive.

DR. CRITERIA: Basically what we do is we supplant Frebuild for Fmsy for a rebuilding stock, right?

DR. BARBIERI: By using the control rule, we set it up in a way that we changed that probability associated with the Frebuild to achieve to go within the expected rebuilding time to whatever comes out of the rule; like in this, instead of being 50, which would be the default that either you use or you use something more – yes.

DR. JIAO: But as I said there is a possibility of your ABC developed based on this Frebuild is actually higher than if you treat it not as a regular species, non-rebuilding species. That can happen if we only consider Frebuild. That is why there was a sentence there so that you make sure you use the minimum value of those two.

If you treat it as a normal species and not a rebuilding species, you get an ABC there; and then if you treat it as a rebuilding species, you get another ABC because you used a different rule. That's why we have both rules there and we are going to pick the minimum value between the two. That's what we discussed.

DR. WILLIAMS: No, I don't think that was ever discussed. I think the only secondary limitation in rebuilding is that as long as F doesn't exceed Fmsy. I don't think we ever discussed that you had to be below the ABC that would have come out of – if it weren't rebuilding because it just doesn't make sense. If that wording is in there, we need to change it.

DR. BARBIERI: We have two that says that if it is a rebuilding, then that automatically defaults to the Frebuild, right.

DR. BELCHER: Any other comments for Kyle or questions?

MR. CARMICHAEL: You could include this in your report as your recommended rebuilding strategy for the council.

DR. BELCHER: Is everybody comfortable with putting that forward as our recommendation to the council for the rebuilding relative to landings and the F level? Okay, thanks again, Kyle. Do we still have discussion –

MR. CARMICHAEL: Let's just see how it works on shrimp.

DR. BELCHER: We're just going to go ahead and move to shrimp. John.

DR. BOREMAN: I'm trying to write a little thing here. My question is do we have to come up with an estimate of OFL or can we slide directly into an ABC? The Mid-Atlantic, for our Tier 4 species, which are ones that are data poor, we don't even think about an OFL. We take an ad hoc approach and just look at landings' history and then do it through that approach. Are we required to have an OFL?

MR. CARMICHAEL: You have species for which you have said OFL is unknown and you have specified ABC. You have to specify ABC but I think if OFL is unknown, OFL is unknown. I guess speckled hind and Warsaw grouper come to mind. The OFLs are unknown which you set ABCs at zero.

DR. BOREMAN: Isn't that what we're doing here with golden crab and corals?

DR. WILLIAMS: Yes, but I would remind that the definition of ABC is a level that prevents overfishing; and if you don't have an overfishing definition, how can you be certain you're preventing overfishing unless your ABC is zero?

DR. BOREMAN: You use expert judgment based on the best science information available.

DR. WILLIAMS: Yes, what science information?

MR. CARMICHAEL: There is the trends report, the SAFE report, there is catch, there is CPUE; there are trends in that. There is information over time; there are time series in there, however much you want to look at to draw a conclusion from.

DR. BELCHER: So are we ready to hit shrimp?

DR. BARBIERI: Just a notification; we just got the revised P-star runs from Bob Muller as well. We can review those tomorrow morning, but I just wanted notify the committee that we have those as well.

DR. BELCHER: Do we want some more rosy news? As least we will have a number that we can talk about. John, do you have something that you can suggest? I figured I would nice and at least give us one more good uplifting feel to see what we got for our P-star.

MR. CARMICHAEL: Is that what you want see; do you want me to do the P-star?

DR. BELCHER: I will be honest with you, depending on how everybody feels, we can either work through another species, but obviously it is going to take us a while to work through it; or, we can go ahead and talk about black grouper and get it off the table.

DR. BARBIERI: Another suggestion for black grouper would be to perhaps distribute this to the committee and we have a chance to read it at our leisure this evening and then come tomorrow morning with a fresh perspective. He provided some text also explaining what he did and then we will have an idea to see if they're meeting really what we expected to see or we choose some additional refinements.

DR. BELCHER: Well, I'll put it to the group, whatever your pleasure is.

DR. BARBIERI: It's a page; we can do it right now if that's what the committee wants.

DR. CIERI: By the time we go through it, it will be five o'clock. Let's just hit shrimp and read that tonight and then come at it in the morning.

**DR. BELCHER: So let's discuss shrimp, then, and what we're going to do.

MR. CARMICHAEL: That's your roadmap. Attachment 4 summarizes the information on the shrimps. You have annual densities, time series, MSY estimates, landings. There is a core table

for brown, pink and white as Tables 4.25; the annual densities' number per hectare; landings, 1990 to – well, we don't have landings beyond 2002 with this table; and your densities, which you can see is quite variable.

DR. CIERI: It really stinks that we're in 2010 and we're using terminal landings from 2002.

MR. CARMICHAEL: Any insight on that, Gregg, to where our shrimp landings stand?

DR. CIERI: How many generations of that since then?

MR. CARMICHAEL: Are pinks included in the landings' reports?

DR. BELCHER: Pinks were discussed because the shrimp got together because of the low density and whether or not the trigger for the fishery – it has been low, what, three years running now and basically it is environmentally driven and not fishery driven. When you're looking at the SEAMAP, we have a fishery-independent index of abundance for shrimp and the pink has been below the threshold for three or four years running now.

But when the AP gets together or actually it is the subcommittee, I guess, that the advisory committee gets together to discuss the issues with that, it's more a function of environmental and not necessarily fishery reasons for why that index is low.

MR. COLLIER: It is environmental and economic because right now imports are cheaper than –

DR. BELCHER: Well, this is fishery independent, though.

MR. COLLIER: I'm curious; do we have a list of species coming up in the snapper grouper complex that we're talking about taking them from South Atlantic management and to state management and yet most of the fishery for shrimp are probably in state waters, so would we be kind of contradicting ourselves with that?

DR. BELCHER: Well, the shrimp plan, though, also includes – well, we've got rock shrimp in there as well is another species that obviously is exclusively federal. The hard part, as Matt was saying, with the determination of the time series that we have in front of us is that all are prior to the economic impacts that hit them, so those landings are all – especially white shrimp; at least for us, I know they are.

MR. CARMICHAEL: And you do have MSY estimates so I guess one question is would you look at those or would you look at landings?

DR. WILLIAMS: I don't know, the document doesn't seem to describe how those MSY estimates were derived. Is there any sense of how they were derived?

MR. CARMICHAEL: I'm not aware of how they were. I think they're what are currently in the Shrimp FMP.

DR. WILLIAMS: I bring that up because it would be one thing if they were model-derived, in which case then we could of maybe it doesn't really matter what the rest of the time series or landings are if this is a model-derived MSY. If it is an MSY that is sort of derived off annual landings averaging, then that is a different story and then we need those recent time series.

DR. BARBIERI: How were those MSY values derived? Is this assessment based or MSY results or is this –

DR. BELCHER: The review panel did not review the MSY values. I can look it up for you.

MR. CARMICHAEL: Do you have the Shrimp Review Panel Report that Gregg sent? Main total landings, I read to you from Shrimp Amendment 2; maximum sustainable yield, Section 3.4t says, "The three principal species of penaeid shrimp dealt with by this amendment are annual crops that fluctuate considerably from year to year depending primarily on environmental factors. Maximum sustainable yield is not particularly a useful concept.

"Though there is a good historical time series of catch data, the associated effort data are not considered adequate to calculate MSY. Nevertheless, the mean total landings are considered to be a reasonable proxy for MSY. The harvest of shrimp in the region has fluctuated around a relative flat plateau over a long period of time, during which time the fleet size and fishing power has increased tremendously."

This is from 2000 or even older than that, so that trend has obviously changed since this was written. "It appears additional effort will not result in increased catch suggesting the resources have fully exploited for many years. An MSY is considered to be the mean total landings for the southeast region."

DR. BELCHER: So with that information, how do we proceed in starting with an OFL?

DR. CIERI: Shall we simply go with the MSY listed, recognizing that it is based on landings, as a landings' proxy in the document; and recognize that it's old. It is eight years old.

MR. CARMICHAEL: This is from the 2008 Shrimp Review Panel Report, which there is a review panel that looks at shrimp trends and such and considers triggers that are in the FMP that might compel additional action. Browns and pinks and white and there it's number of hectares in the CV, so this is their abundances. I thought this had landings in there, too.

DR. BELCHER: No.

MR. CARMICHAEL: Yes, it does right there.

DR. BELCHER: Actually it is broken out, but I don't know that it is all –

MR. CARMICHAEL: It's just pink; it's just the one species. Landings are clearly very variable in response to a lot of things other than that because look how they're dropping off there in '05, '06, '07, especially in North Carolina.

DR. BELCHER: The pink shrimp is the only one that has really caused the triggers to go into effect.

MR. CARMICHAEL: I guess they were supposed to look at one in a little more detail the last time.

DR. BELCHER: Then the concern was this year, because of the cold weather that we had, whether or not there was going to be a loss in white shrimp. There was that discussion with South Carolina and Georgia relative to whether or not we would be closing – our water is already closed, but should that be extended into the federal part. Our assessment wasn't showing a significant loss in numbers, which we have a 12-month assessment.

DR. CIERI: At least it looks like the densities have gone up. We can look at some of those. Scroll to the top of that for 2007, I'm looking at the second to the last column, number per hectare for white shrimp, that is almost the highest in the darned time series; the same thing with, if I believe correctly is that brown?

DR. BELCHER: The bulk of your fisheries in the South Atlantic is dependent on white and brown. What do we want to do?

DR. BOREMAN: Well, one option is to continue with the established values, but it is not consistent how we applied to other species. These are means; they're not medians. The time series, it sounds like the most recent years may be affected by other factors than the fishery. The landings are dropping but the CPUE is going up. It may be fuel costs or something else. One option would be to go with the established MSYs in Amendment 1 when they officially established Bmsy values. Another option is to go with the median over those same years. There are two options right there.

DR. CIERI: In one of those cases earlier when we were talking about what to use for an OFL, the recent time series, with some caveats that you want a time when your stock is fairly stable; or in the case when there has been a whole lot of management/economic reasons why not to use that most recent time series.

In this case we could suggest fuel prices and other management measures and economic factors have basically dropped landings, but catch-per-unit effort has gone up, so that sort of argues for not using quite so much the recent time series of landings and going with something like the median over what is in the FMP, addendum or whatever.

MR. CARMICHAEL: So what is gained for using something for OFL different than the MSY that is currently in place?

DR. CIERI: I'm sorry, what is gained –

MR. CARMICHAEL: What is gained from using something for OFL other than the MSY that is in place?

DR. CIERI: You can capture the more recent time series.

MR. CARMICHAEL: But you just argued that there are a lot of reasons why there is no time recent series that is not necessarily representative of what the potential is and people can use –

DR. CIERI: I agree with some of the economic stuff, but for other things we don't a CPUE index which indicates a drop in landings because of drop in effort.

DR. BELCHER: But would you want to update – I say update, but if MSY is a reflection of average landings and that is only through, what, like '98, '99? I assumed the MSY value came off of an old report and not that it was recalculated. He said it was in Amendment 2. The question is, is it the same numbers from Amendment 2 or not?

DR. BARBIERI: And it looks like landings by and large, with some exceptions, but by and large they have been fluctuating around that MSY estimate for each one of the species.

MR. CARMICHAEL: MSY and there were overfishing definitions and such and it was tied to annual landings getting below two standard deviations, '57 to '93, and that may be when they used it for the averages.

DR. BARBIERI: Looking at Table 4.2-5 in Attachment 4, everything to me suggests that – and based on what Matt mentioned regarding the most recent landings' data not being really representative of where MSY could be indicates that us using this MSY estimate that is provided here would be in this case applicable. I suggest we use these values as values of OFL for each one of the species.

DR. BELCHER: Well, not being a stickler for detail, but we have identified the time series and everything else that we have put OFL down for, so we need to kind of know what that MSY is from, right?

DR. BARBIERI: But in this case at least if we have this record based on what comments Matt made, that we're looking actually for an earlier period of landings that don't have the same limitations.

MR. CARMICHAEL: 1957 to 1993, it would like from the figures, there is your mean which your MSY and your overfishing level which is currently defined here as the pink shrimp.

DR. BELCHER: My only thing is we've looked at the full time series on everything else, but this one we're basically looking at a shorter portion of the full available time series.

DR. BARBIERI: Is it shorter?

DR. BELCHER: Well, if you're using the MSY that is coming from that, you're saying '57 to '93, but yet to me there is at least another ten years of data that should be part of that landing stream. In the more recent years the economic stuff didn't start falling off until right around 2002, 2003.

MR. CARMICHAEL: But these have an MSY, a point value of MSY that is in place.

DR. CIERI: Let's be frank; it is an MSY proxy.

MR. CARMICHAEL: It is an approved MSY, though. That is why I asked before does someone have a reason that they would use something other than this approved MSY.

DR. BELCHER: Well, the MSY is just a function of average landings, so if that is all it is –

DR. CIERI: Right, it is just a proxy; it's just average landings. You could put in average landings instead of MSY and call it the same thing.

DR. BELCHER: To me is to update that value. I mean it is just that simple of a calculation.

MR. CARMICHAEL: I suppose it is fairly difficult when we don't have any of the information. We requested landings for shrimp. We did not get landings for shrimp so I don't know the status of landings for shrimp or how much is involved in getting those from the science center, but over the last three months since January, when we submitted our request following our conference call, we have been unable to obtain landings for shrimp.

DR. CIERI: How the heck are we supposed to choose OFL and ABC when the science center isn't going to provide us even landings in order to base that decision on? Does somebody think this is a joke because it is not? We have to actually come up with specifying these things; and if we don't have the data in front of us, it makes it nearly impossible to do so.

DR. BELCHER: Like I said, I would agree with using the MSY out of the report if it was a more complicated derivation of what MSY is, but based on the fact it is average landings, then we should be able to have the catch stream. This one is not a problematic as some of the other species for obtaining it or it shouldn't be. I would think going through the last few FMPs, unfortunately you would be piecemealing it out and back in.

DR. CIERI: Do we not have a central server where you can actually query the information from?

DR. BELCHER: In theory just what you have in that Appendix 4, which gives you 1990-2002 as the landings for brown, pink and white at least can be appended to the other time series. Those numbers are there. I just want to make sure – again, if we're going to argue for consistencies sake, I want to make sure that they're all done.

MR. CARMICHAEL: You're not using the last ten years; you not using the full time series for all these other species either. You just haven't used some recent data that you have, so consistency is not a leg to stand on, really, in this case.

DR. BELCHER: That was my misunderstanding then. I just assumed when we had a time series in front of us, that was the available time series of data and not just that we were dealing with a truncated – because, again, that kind of gets at our issue of we're trying to determine which stable level is relative to the landings and you're here telling me –

MR. CARMICHAEL: You have the available time series before you. I think you can call that available.

DR. CIERI: Is that available or is that what there is or is that the best available science and it doesn't put anybody out from taking a lunch break or something?

MS. LANGE: I'm sorry, I have to take issue. You are continually slamming people who are working pretty hard, I'd say.

DR. CIERI: What I don't understand is how we are supposed to make decisions based on ABCs of the stock when specific requests are blown off.

MS. LANGE: Again, I think you're being disrespectful by saying "blown off". There are a lot of issues. The northeast has a very good data set. They have a luxury in the northeast region including the states of having an exceptional data set that the states participate in and all the data gets into a central data set. The southeast doesn't have that luxury. They're working on that. I'm sorry if I offend anyone else, but I take issue with the assumption that the committee is being blown off. Yes, it is an inconvenience for us. I want the data, but it is just disrespectful I think.

DR. CIERI: I understand but at least bring somebody to the SSC and say, hey, you know, we could not get these landings because we don't have a centralized servers' data base or send somebody to the SSC and say, you know, hey, we cannot give you landings, you're going to have to use this other time period. There is nobody from that landings' section here, from that data section here.

MR. CARMICHAEL: We can go on line and query landings. How that compares to this, I don't know, but we can query shrimp landings.

DR. BELCHER: Again, my intent wasn't to make this more difficult. My understanding was that when we were given a catch stream, that was the available catch stream for that species. Like golden crab, if we had 2000-2008, my assumption was that was the data that was at hand for that species.

When we're saying that an MSY – and, again, it is not to add complications – I assumed this would be something that – you know, whether there would be an updated table for the same time series or not, that was my hope. I don't want to make this a belabored process, but it just seems

like if we're going to be looking at a full time series of data that has been collected and actually do it justice – if MSY is as simple as average landings over the time series that is reflected in a stable period, then we should be looking at the full time period and not just truncating it for the sake of convenience. That was all I was trying to say. Again, I apologize if it's kind of led us off into a weird direction. Unfortunately, it is a long data set for this particular species.

DR. CROSSON: I don't mean to get out on a tangent, but I'm just trying to think this through logically the importance of whatever number we set. The council is supposed to set accountability measures for any species. If you went over the target of an annual species like shrimp, what is the council going to do? They aren't going to take it out of next year's shrimp. It is not going to have any effect so what is the – it just doesn't seem like a hugely big impact on whatever number do come up with.

DR. BELCHER: I think the understanding is that we have to have an ABC, but there isn't necessarily ACLs or AMs that go with it for an annual crop. Is that incorrect? That is what my understanding was is we have to have an ABC. There isn't a requirement for ACLs or AMs, but because it is in a fishery management plan you have to define what the overfishing level is and acceptable catch, right.

MR. CARMICHAEL: Right, and there is an MSY that is in place that exists, it has been approved. If you start to recommend something else, then are you recommending that the council then take an action to change its MSY on shrimp based on a new time series. I think those are the things that have to be considered.

If we're going to get in and just adding new data because we've moved on since the 1996 amendment, the council has done three or four amendments since that amendment for subsequent years and they didn't feel compelled to change the MSY estimate or update it. I guess I'm sort of asking for what is the reason for updating that and compelling an action versus you have an MSY, you haven't defined overfishing levels and can we move on into ABC given that we have some things in place for these particular stocks.

DR. CIERI: Just sort of an offhand idea, what are these guys required to report as; are they required to report using something like a vessel trip report? Do we have trip level landings from these guys someplace?

MR. CARMICHAEL: Yes, you probably have trip level landings, and I would expect that some of the state people will probably know as much about those landings as anything else. Chip gets into shrimp. I guess you know what they report, right. What do they report, trip level?

MR. COLLIER: Yes; for us it can depend on – I mean, they can be out for a week, they can be out for a day, so a trip doesn't necessary mean the same in all cases.

DR. BELCHER: We have that same issue but the majority of our boats are one-day trippers. I mean, they go out in the morning and come back some time after lunch because the vessels are not – they're ill-equipped to be in the EEZ. I concede to using the current MSY if that is what

everybody else is comfortable with. Like I said, I was just thinking because it is based on landings and the landing stream being what it is; I mean, that was my only proposal.

DR. BARBIERI: Well, granted, that this is a species that is already an exception for which we know that there won't know be really ACLs and AMs established, so I think that in this case suggesting that we retain the current values of MSY I think is reasonable. Would anybody have any concern with us using the existing values of MSY as estimates of OFL for these three species of shrimp?

If not, Madam Chair, I suggest that we present these values as – unless you have concerns, I think that we can move forward and accept the existing values of MSY for these threes species as best estimates of OFL and we proceed for the development of an ABC recommendation.
DR. BELCHER: I guess some of it, too, is trying to figure out how this translates if it is not being used in the sense of what we have been setting up ABCs for. I mean, looking at MSY, we're saying that OFL is 14.5, like I say, for white shrimp; and yet you look down that column, how many of those years are over 14.5? So if we set an ABC even equal to MSY – again, I'm trying to understand the implications of setting that, but yet knowing that your catches are going to be generally higher than that number.

DR. BARBIERI: Right, but you see I see our role here as establishing OFL and an ABC, and then the ACL and the AMs or whatever management or corrective actions that the council wishes to take it is free to take –

DR. BELCHER: But that's the point, with the annual crops they don't have to do ACLs and AMs. They just have to give this OFL and ABC, so that's what I'm trying to understand is what is the exercise, what are we gaining with this OFL equals MSY? Okay, but then again you have an ABC that is set at 14.5 million pounds for white shrimp, and you look – Okay, fine, so it's lower but look at the number of years that those landings have been above even the MSY value or the OFL value.

That's what I'm trying to get, what is the value gained for this exercise if there is not going to be any kind of management of those. Okay, this is one thing that I will say. I'm just trying to say for the sake of if we're setting caps and yet every year these things are going over our caps, what is the sense of setting a cap? I mean, is it just an exercise just to fill in a box? Okay, fine, then you all tell me what you want to do. I mean, I'm asking this as a germane question relative to the exercises that we're doing. All these other things have a ramification. If there is no ACL and no AM, we're giving numbers.

DR. BARBIERI: Well, during the development of the agenda for this meeting, this question came up. We were provided an explanation from the council staff. At that point we were ready to discuss whether we needed to have an ABC recommendation for the shrimp species. Most everybody in the committee – and Brian was a member of that as well.

It was in that series of e-mails that circulated and several people – and Erik was, too – and several people questioned that and we were told that it is a procedural stat that is required. That

was my understanding is it is simply a procedural stat; that for the management plan to implemented and for the council to be in compliance with the Act, it needs to have an ABC recommendation from the SSC irrelevant of the fact that an ACL and AM will not be developed.

DR. BOREMAN: I think what the Act says is that we have to give a fishing level recommendation for each managed species. It doesn't say we have to give an ABC, just fishing level recommendations. I think the guidelines go on to say that it could be an ABC. I hate to nitpick here, but if you're looking for another way of phrasing this recommendation and not calling it an ABC.

DR. BUCKEL: If you look at the roadmap, someone took the text out of the guidelines, and it does say we need to provide the ABC.

MR. CARMICHAEL: The thing about this plan is the triggers and the overfished level is tied to them not catching a certain amount. It's under the presumption if they're unable to catch a certain amount, then this is a signal that there being trouble with the stock. You're saying OFL is MSY and the control rule value was 75 percent of?

MS. LANGE: Going back to the question you had, even though the council doesn't have to set an ACL, they have to go by the ABC we provide, and happens if, as you say, they exceed it as they have in most years recently; do they shut the fishery down the following year? Can't we switch it to use the maximum or something instead of the – so there is something realistic? This is a one-year crop. There is a difference between the other ones that we've done so as far as the OFL goes, if we look at the long term with a recent trend or something and look at the maximum – I don't know, to your point it seems sort of silly for us to recommend something that –

DR. BELCHER: But that is what I'm saying is to me it's a slap in the face of the process that we're working on here and the fact – and I mean, again, it's not berating anybody in the group, but it seems like we're just kind of dismissing this one with a flip of the hand after having so much time and effort and focus on corals and sargassum and everything else, that for me it is kind of like, wow, guys, I mean this is – you know, we have a long time series.

Well, you know, we have an MSY. Well, yes, but the MSY is also almost 20 years old now. The time series is not saying – in this instance of our arena, it is not that hard to get, so I'm kind of disappointed that we don't have that. Again, as we've gone through the exercises, this is what we have done; we have looked at the data at hand, we have discussed the time series, we have discussed the numbers; and with this one we're kind of just conceding to, well, we have MSY, but in looking at the trend of what is there and the discussions of it, all of these years of landings are above it.

DR. WILLIAMS: But this gets back to the bigger issue of should we be computing our own MSYs or if an MSY value is put before us should we not be using that, because, after all, we are mainly a review body and not a do body of –

DR. BELCHER: Well, then, let's take that out of it. The MSY value is 20 years old; do you feel comfortable with a 20-year-old value of MSY that was based on average landings?

DR. WILLIAMS: We have estimates just as old as that for some other species. We have ways to adjust for that. If we think there is more uncertainty because of its age, then we account for that in the scientific uncertainty in that we –

DR. BELCHER: But it is still based on the landing stream. I mean, to me, I would rather see us look at the full landing stream and determine something based on the landing stream than focus on an MSY which is basically a function of the same thing and a truncated time setting. John.

DR. BOREMAN: I'll try to add this and not detract at all, but our obligation is to use what we consider the best science information available, and I think what I'm hearing is our considered opinion for many of this us is that this landing stream – this MSY estimate that we have in front of us, we no longer consider that as best science available and it could be improved. We can improve it.

Again, referring to how the Mid-Atlantic handles this, we do not calculate OFLs or MSYs at the SSC. If it is not in the assessment, we say there is no estimate, period, and we go ahead and just do an ABC. I don't want to dredge over old ground, but that is how we handled it there. I don't think we can sit here in one day or several hours and derive at an MSY value. We have the option of accepting it or rejecting it. If we reject it on the grounds that it is not best science information available, we know there is better information out there.

MR. CARMICHAEL: Up on the screen now is the overfishing for brown and pink shrimp and notice that this is quite a different approach than what you normally see, and it reflects the nature of an annual crop. It is not overfishing when it goes over what is in there as MSY. It's overfishing when it falls below two standard deviations of the 1957-1993 mean landings for two consecutive years.

I mean, it is overfishing – if it falls below for three consecutive years, that is overfishing. It reflects the fact that if they can't take the fish, then perhaps the fish are not there. If they can't collect the shrimp, the shrimp do not exist in the environment so overfishing might begin to be occurring. The fact that we have white shrimp with a number of years above MSY, it is not a signal of danger that you're exceeding it. It is that, oh, wow, things are doing good.

DR. BELCHER: But we still define OFL greater than or equal to ABC. I didn't make the definition; all I can do is reiterate it.

MR. CARMICHAEL: So in the shrimp world ABC is equal to OFL.

MS. LANGE: Do we need a number or do we just say ABC is equal to OFL? Do we have to redefine –

MR. CARMICHAEL: We need a number.

MS. LANGE: So then the maximum of the most recent time series.

MR. CARMICHAEL: Sure, you could use that.

MS. LANGE: And, again, it is different than the other ones that we have worked with earlier today or yesterday. Because it is a single year, it has got a whole different way of defining overfishing than anything else we have worked with.

DR. BELCHER: So what does the rest of the group feel about that, using the maximum landings over a time period as a means for an OFL? What time period do we use?

MR. CARMICHAEL: If you look at Attachment 4 and the landings' data that are in there, looking at some of these, that's kind of when the fishery was operating at its peak production, and it seems like after that things have tapered off. There are some questions in the query on the pink shrimp because it is quite different from that.

I haven't looked at brown but at least looking on the basis of white, it looks like that is probably around a high time. It is a little above the MSY for all of them during that period, so you can consider the 1990-2000 period as representing sort of the maximum productivity of the shrimp fishery. I guess your option on the table is the maximum of the 1990-2000 landings as reported in Attached 4 of the shrimp summary that gives you a table.

The sentence right below it, "It is clear that if the penaeid stock drops below MSY abundance for one year and it is capable of producing MSY the following year, certainly the stock can result in landings at MSY levels within two years and even after very high levels can still produce high levels for a number of years following." White shrimp produced 23 million in '95; dropped a little bit in '96, '97 and '98, but back at 19 in 1999, which '96 was a freeze, so there are other things going on there.

DR. BELCHER: Any discussion or suggestions relative to that or is everybody comfortable with that time period? Okay, so OFL is going to be the maximum of the landings from 1990-2000 and then ABC was going to be set equal to OFL. Is everybody in agreement with that, that ABC would be equal to OFL for the instance of an annual stock, specifically to penaeid shrimp?

DR. WILLIAMS: Yes, I was just going to say let's write that justification not just because it is an annual crop but because of some other factors, too.

DR. CIERI: That it is predominantly a short-lived shrimp species in which the yield is more driven by environmental variability. This is the classic reason why Magnuson-Stevens just sort of ditched this whole concept of this particular type of an annual crop. It is all environmentally driven. I guess it is beyond the forces – it is the same as if it was harvested by another country.

DR. BOREMAN: Basically we had the same issue with butterfish in the Mid-Atlantic. It is very short-lived. It lives for two years, at most three years. We are dismissing the whole MSY concept for butterfish. We just set OFLs. Of course, we have found another – that's one of our

agenda items for our May meeting, but we said MSY is not really an appropriate measure of OFL for that species.

DR. BELCHER: Any further comments and discussion or anything anybody wants to add to make sure it is reflected in the report? Okay, so for white shrimp the OFL and ABC is going to be set at 23,691,923 pounds; for brown shrimp it is 10,908,183 pounds; for pink shrimp, 2,691,072 pounds.

DR. BUCKEL: Do we want to put something in the ABC control rule for data-poor species that ABC will equal OFL when it is an annual crop that is environmentally driven so we can be consistent if we hit something five years now or next year when we forget this one?

DR. CIERI: I guess probably not. I think the big thing would be simply whether or not you apply that ABC approach or not; and in the case where you don't apply it because it is an annual crop, then OFL equals ABC. How about that? Then in the cases in which you have an annual crop that is driven mostly by environmental variability, that we don't apply that ABC rule and instead we will consider – let's keep it flexible; we will consider ABCs approaching OFL, and that will give us a whole range.

DR. BARBIERI: I like that, Matt, because I think that way we clearly show that we are not applying the control rule, yes, in a way that is inconsistent with the way they're developed and intended to use it. I like that.

DR. CIERI: Let's face it, we won't apply the same ABC control rule to grouper as you do shrimp and we shouldn't be expected to, so for some of these annual crops you ditch them. You just ditch that whole concept and go with something else.

DR. BELCHER: Any further comments of discussion? Okay, with that I am going to go ahead and recess us for the evening.

MR. COLLIER: Do we need to hit rock shrimp?

DR. BELCHER: Oh, rock shrimp – actually, we don't even have a time series for rock shrimp.

MR. COLLIER: I say we accept what they have there. It is from 1986-2000.

DR. BELCHER: Unfortunately, I don't know much about the rock shrimp fishery because we only have maybe one fisherman that participates in that. John's point was that because for consistency, finding the maximum landings relative to the time series for rock shrimp. We can get that number; we just don't have it here.

If everyone is willing to come to consensus on agreeing to using the maximum from the time series to put in for OFL and equivalently ABC, we will go ahead and get that number and fill that in if everybody is happy with that being framed to get the number. 1990-2000 is what we would be using on the same time period.

MS. LANGE: We just need to document the years.

DR. BELCHER: Yes, 1990-2000.

DR. WILLIAMS: Are those years being chosen just because they correspond to the other shrimp or because that is the maximum exploited time?

DR. BELCHER: The latter would be the answer as consistency with the other time period, but maybe that is the better way to look at that.

DR. CIERI: Just to remind you all, that cite is usually wrong when compared to a lot of other things. I think a lot of it is because it is missing confidential data in some cases or I'm not quite sure why, but it never usually matches. In a lot of cases you probably should run just the regular ACCSP query instead.

MR. CARMICHAEL: I would have to return to the archives for Shrimp Amendment 5 because the version I downloaded from our website shifts from Page 14 to Page 45. Apparently there was a scanning issue.

DR. BELCHER: Any further discussion or comments relative to the shrimp stuff? Any other species that you can think of, Chip, that we might have missed, royal reds maybe? I don't know that they're in there. With that, we will go ahead and recess and start at 8:00 tomorrow.

The Scientific and Statistical Committee of the South Atlantic Fishery Management Council reconvened in the Hilton Garden Inn, North Charleston, South Carolina, Wednesday morning, April 22, 2010, and was called to order by Chairman Carolyn Belcher.

DR. BELCHER: I'm going to ask for some rapporteurs the first thing. We're going to start with the P-star runs that Bob ran as the first starting point. Those of you were rapporteuring for black grouper, if you will continue to take comments relative to this. Also, even though snapper grouper is the next discussion item, I'm going to jump us into dolphin-wahoo and king mackerel since hopefully we can get those through in a relatively quick fashion.

They're not as complicated as some of the discussions we're going to have again with how we're handling some of these data-poor species, which is pretty much a lot of what is in the snapper grouper portion. I'm going to need a couple of rapporteurs for the dolphin-wahoo and king mackerel.

DR. BARBIERI: I'll be glad to do it.

DR. BELCHER: Okay, so Luiz and Marcel. Okay, as far as the report, I was talking with John earlier, and what I'm going to ask is for those of you are rapporteuring, especially if there is a couple of you for an item, if you want to get together over the course next week and kind of flesh out a more complete writeup in terms of – and I know you have notes, but flesh it out and kind of give it a more final look, if I can have a draft from by next Friday and then from there everything

will get collated together. I will put the draft back out to the group because we will need it for the meeting in June for the council, which means that you should be done by what point in time?

MR. CARMICHAEL: Your report?

DR. BELCHER: Yes.

MR. CARMICHAEL: I think the briefing book deadline is approximately like – May 5 to Gregg, yes. I can give you guys two weeks; that will be okay. You need to have something at the end of that week. I need it by May 7th.

DR. BELCHER: So if you can, again, get the fleshed-out to me by next Friday the first draft, I will put everything together and put it back to the group for everybody to put their eyes, make edits and we will do a couple of rounds of that to make sure that the document is what everybody wants to see relative to the final report, and we will get it to John. If you have questions, get with me on the break. The other thing was if we want to do a working lunch, I'll throw it out there for now. I'll recheck with everybody after the next break to see what you want to do there.

MR. CARMICHAEL: Is there any objection to that?

**DR. BELCHER: Okay, so jumping into black grouper and looking at Bob's runs.

DR. WILLIAMS: I have got one minor technicality that wasn't done as requested. I'm pretty sure we said use a standard deviation of 0.5 for recruitment and not a CV of 0.5, and it looks like Bob used the CV or 0.5 rather than a standard deviation of 0.5. It is a minor difference when you look at the formula that translates CV to standard deviation and log space, but just to point that out, that it wasn't exactly what we asked for. Using a CV of 0.5 instead of a standard deviation of 0.5 actually is a little variance than what we had originally asked for.

DR. BELCHER: Discussion from the group?

DR. CIERI: I think we should make a clear statement that this will actually increase – you know, judging from Table 1 this will increase the current exploitation and lower the current spawning stock biomass. The management just should be aware of that, to highlight that.

DR. BARBIERI: Well, just one point; if this is something that Bob has already coded and it is just a matter of changing a parameter there into his – I can just step out and give him call and he will e-mail us the corrected results in the next hour or so. We will have it by lunchtime, that is for sure, and that way we avoid having something we're not fully satisfied with.

DR. WILLIAMS: I don't think like changing the standard deviation to 0.5 is going to make that much difference because I think when you calculate out the – using a CV of 0.5 the standard deviation is like 0.4 or seven I think or something like that, so it's a minor difference. I guess the other thing I'm just realizing is these analyses are using the OFL that corresponds to F 30

percent. I think my short-term memory has already forgotten where we landed on – whether we were going to adjust that OFL or not.

MR. CARMICHAEL: I don't think there was consensus to change it and it stayed at 30 percent. The ABC then would essentially be that highlighted green box of 0.275, so that essentially provides ABCs per year until 2020 or until there is an update. We often talked how long this is in effect; is there a point at which you guys would want to reconsider it, so we should clarify that.

DR. BARBIERI: Maybe we can ask Erik to clarify that, but my recollection is that Bob connected with Kyle to get the version of the P-star that will be adjusting fishing mortality, the sequential P-star method that already corrects so you can actually provide not just the one year – yes, ABC estimate for the multiple year estimate over the projection period.

DR. WILLIAMS: Yes, just to clarify because the pattern you would expect to see is the longer you go through time, the more the catch would reduce because the uncertainty increases over time.

DR. CIERI: And I know for other species, what they've done is basically they have set it for a specific time horizon. Usually that is fairly a round number. From there, as things have progressed over in time, that way you're not taking that actual column in the table each and every single year. Of course, all this stuff has to be reduced for management uncertainty as well. I guess I'm sort of – you know, how long of a time horizon are we looking at here? There is a big question. If you're not planning on doing another – if you're not going to look at this for another ten or fifteen years, which I wouldn't really recommend, you might want to at least highlight that to the council.

DR. WILLIAMS: I would say the numbers put before us right now are only good for 2011 and then we would have to see the sequential method before we would approve ABCs beyond that.

MR. CARPENTER: This isn't the sequential method? I think it is.

DR. BARBIERI: Yes, I know this is the sequential method.

DR. WILLIAMS: Then why are the landings not decreasing? It doesn't look like uncertainty is being cascaded through time.

DR. BARBIERI: Well, if you look at the fishing mortality rate – if you scroll down, you see the fishing mortality rate progressively –

MR. CARMICHAEL: The stock is 50 percent above the biomass target. It is at high abundance.

DR. BARBIERI: It progressively decreases to adjust for that high uncertainty as you go further out in time.

MR. CARMICHAEL: SSB tends to continue to increase over time, so the F is going down and the SSB is also going up. The Fs going down, I think that is reflecting the shift in the probability of the F that gives you the 30 percent chance of overfishing. It is 7,647 in 2011 and 8,383 in 2020; it is going up. Oh, yes, I'm looking at that one, too; yes, that one is going down, I guess. Of course, the fish are getting older and heavier and there is all of that working into it as well, and we're looking at yield in pounds and not yield in numbers.

DR. BOREMAN: But also we're looking at the effects of previous recruitment working its way into the stock biomass, so we have to work the old generations through before we take advantage of the new generations under the new fishing –

DR. BARBIERI: One way to resolve this I guess is just not to project this forward; do it for 2011 and then say, well, we're going to revisit this next year after we have time to check all the analyses to make sure that all of this is correct.

DR. BOREMAN: I still think it is worthwhile having these longer-term projections in there just so they know in what direction the stock is heading, so they know we're not going off a cliff after 2011.

DR. CIERI: Look at the discards; it is suggesting that dead discards are going to nearly double from 2010 to 2011?

DR. BARBIERI: Right, they can always be presented with this analysis in their report, but if there is concern that if we make ABC recommendations that extend into the future might be too risky, we show them the scenarios but say that our actual formal ABC recommendation is just for 2011 and that we will revisit this next year or at the October meeting to make sure that we can project forward.

MR. CARMICHAEL: And the discards go up because they're tied to F and you fish to a higher F. I think you guys can always change this next year. If you say here is an ABC for black grouper in 2011, you have not tied your hands and obligated yourselves that you will look at black grouper in 2011.

If you should look at this and say, no, it is fine, those numbers are great, if you set it for – you know, used it off of this table until 2015 or until 2020, if you pick some other time in the future at which case you say then we want to see this updated with legitimate observations of landings and all of that, you can do that.

If you were decide in six months from now, oh, wait, there was something wrong, you always have that power to go in and change it, but if you say it is only good a year, you obligating yourself that you will go in and change it, and we will be right here a year from now trying to figure out what it is going to be for 2012. This is one of 73 species.

DR. BELCHER: So what is the group's consensus relative to that? Is everybody in agreement with using just the number from 2011 and putting it forward for ABC? Anybody disagree with using that? John.

DR. BOREMAN: As opposed to putting the whole projection forward?

DR. BELCHER: As far as putting all of the numbers forward, I think. My understanding was we would still show them what was there, but the only number we were recommending for use was 2011 at this point. Is that incorrect?

DR. BOREMAN: I think we should recommend the whole vector of numbers and say that 2011 we're going to keep an eye on after that time, but we want to focus on 2011 and the other numbers are there just show what the trends are after 2011, but we reserve the right to revisit this.

DR. BELCHER: So does anyone have a major exception with this going forward? Is there enough discussion? Erik.

DR. WILLIAMS: I don't know if I have a major exception, but it just seems like after we ran through all discussion and everything where we have ended up is it doesn't seem to have addressed any of my concerns that there was this cumulative optimism occurring in this assessment. I'm not sure where that injected at any time during this, and in the end we're still with an F 30 percent, we're using a minimum adjustment for the buffer. It just seems like my concerns didn't get injected somewhere in the system. That is fine; I'm only one voice.

DR. BARBIERI: Erik, just so I have it clear to discuss with Bob afterwards, can you clearly outline what are the items besides the F 30 percent? What are the specific items that you feel inject an unwarranted level of optimism in this analysis?

DR. WILLIAMS: Well, this is where it is fuzzy. I don't know how we adjust for these things, but again going through my list I thought the choice or natural mortality was too high, the choice of the F 30 percent was not appropriate.

DR. BARBIERI: I thought the N came out of the data workshop report.

DR. WILLIAMS: It did but I still think it is too high. You look at the catch curve analysis, it is suggesting that even though we commonly used Hoenig's M, the estimate that comes of Hoenig, well, that's because we have no other estimate, but when you have seemingly good catch curve analysis data, which this one actually the catch curve analysis was not too bad because you didn't have major spikes in the age structure going on, and it was suggesting a Z of 0.15, and then yet we're using an M of 0.136 or something along those lines. That just seems a little high.

The other factor is constant catchability estimating dome-shaped selection functions for dominant portions of the fishery concerns me. All those things start to add up. The steepness

was hitting the upper bound even though it was constrained, but it tended to want to go to the upper bound.

DR. BARBIERI: Right, and I understand all of that. I can tell you I'm speaking up because we were – Anne, Chip and I were part of the assessment workshop. One of the things that we were trying to do is not disagree and not overrule the recommendations coming out of the data workshop unless we had a really clear reason to do that.

If you guys remember, there was a lot of discussion about fishers in the room feeling that the rates of discount mortality were really too high and that the range wasn't appropriate. That were lots of discussions about M suggesting we are not really exploring a range of M that was looking at the upper values, that we were just constrained to lower values.

If I remember correctly we reviewed everything that had been submitted by the data workshop. Going through the report, we didn't find any – you know, we were trying to remain consistent. I don't see that in terms of the way the M was estimated here disagrees with other assessments for which we actually used the same method.

It was like how can we stay consistent in the methodologies that have a scientific basis and background? You get caught in that situation and unless we can come up with an alternative in the case of the M. Catchability, yes, the discussion there – and maybe we can pull up those reports and look at – because I don't remember exactly the basis and all the details of the discussion, but we ended up with constant catchability for the red grouper assessment as well because discussions of the panel and the analysts actually led to that.

Using all the arguments that we had been presented with as a result of the catchability workshop, we couldn't really come up with a way objectively, after they did all of the evaluations, to come up with something that really indicated strongly to present an increasing catchability. I'm just trying to explain that our discussions and decisions from the assessment workshop perspectives – I mean, we were trying to investigate the things, we tried to discuss and the documentation is in the report. I don't recall everything.

DR. BOREMAN: I'm one of the rapporteurs here and going back over my notes, what we did to address at least partially Erik's concerns about this cumulative optimism, the stock status level, we dropped that from one to two, and the reason for that was because of the cumulative optimism. We basically penalized the assessment 2.5 percent.

DR. CIERI: In just going over some of the projections, we're talking about between 2010 and 2011 we're doubling the discards and overall increasing our fishing mortality by 50 percent. That warrants some pretty hard looks; one to see what its effect is on the stock; but, two, to see if it actually materializes given this fishery.

I'm starting to have a hard time that says that type of effort and that type of exploitation is really going to materialize. It could or maybe it won't. The truth is I don't really know, but given that

certainty I think we kind of need to nail this one to the floor and really commit to taking a look at this again not only to see if it materializes but also to see what the effect is on the stock.

DR. BUCKEL: Just adding to John's comments, we changed the one dimension from a one to a two, but we also changed dimension two, the uncertainty characterizations. We had originally given that a three and then we changed that to a four given some of these concerns.

MR. CARMICHAEL: I think certainly the council will look at if it will materialize, and I think a lot of the constituents would say based on the impacts for other grouper regulations that have affected black grouper, that a lot of them are probably skeptical that given the current seasonal closures and things of that nature that it couldn't materialize.

It also doesn't mean the council is naturally going to set the ACL up at the maximum each year either, especially if they might look more towards building some consistency in the fishery and not having it go up and go down quite so much. By telling them what the limit is, you are allowing them to do that, and I just think the committee should be careful to not presuppose any of that and try to bring the limit down that you recommend from ABC. The numbers are there to recommend so the council can act with them and give them some flexibility here unless there is some other reason to bring them down tied to the science and the uncertainty, but it seems to kind of be where we are.

DR. CIERI: Basically to bring up their fishing mortality and their landings and everything else, if you're going to bring it up let's take a good hard look at it; one, to see if it happens and do the projections from there; and, two, to see what the effect is on the stock. Like I said, my suggestion would be to take a really good hard look at this.

MR. CARMICHAEL: And it's a mixed stock fishery and harvested a lot with gag or there is a lot of overlap, as we talked about earlier on in this, so, yes, there are other concerns that will weigh in on this fish. The core question is how long does this ABC hold in?

DR. WILLIAMS: Well, just one final point is we made these adjustments to the P-star, but that is all predicated on whether the P-star analysis fully accounts for uncertainty and is appropriate, and in this case it is very ad hoc and we made some adjustments. For instance, if you just look at the difference between the 0.275 and the 0.3, you're only talking 6,000 pounds out of almost 500,000 difference so a penalty of 2.5 percent isn't really a penalty.

It is not like we're making major adjustments here. I think my concerns with this assessment go beyond just the P-star adjustments aren't going to really capture some of that cumulative optimism that I'm concerned about. I'm fine with going forward. I just want to be on the record with there are some concerns with this assessment that go beyond just our ability to adjust things through P-star.

DR. BOREMAN: I hate to bring it up, but here we are again looking at the outcome and not happy with it; the same case as golden crab and corals and everything else, so keep that in mind for what it is worth, that's all.

DR. WILLIAMS: I'm not looking at the outcome; I'm looking at the P-star analysis. It is an ad hoc, incomplete characterization of the uncertainty, period.

DR. BARBIERI: Well, I don't know, maybe – I have to say I feel uncomfortable because this is an assessment that even though it went through the SEDAR process, it was conducted by an FWC/FWRI stock assessment scientist, including all the additional analysis conducted for the P-star. Erik, if you feel – and I mean this in the best sense possible that we should just reject the P-star analysis.

I would be more than comfortable and I think it is advisable – if you have those concerns – to have the P-star analysis conducted by the science center and then we don't have this level of discomfort. I really feel it would be weird for me to have this situation give the impression that the analysis is inadequate. If there is a level discomfort, I'd rather not have it go forward; and no harm, no hard feelings. It is purely objective about the analysis.

DR. WILLIAMS: If I thought it was inadequate, I would say so. I just have some concerns and that's all I'm voicing.

DR. BELCHER: Further discussion and comment? So, again, how do we want to proceed relative to our consensus recommendations for these numbers for the management? Luiz.

DR. BARBIERI: First of all, I guess part of the issue here is, is the assessment credible? Do we have a level of comfort that the analysis was done in a way that the assessment outcome is credible? If it isn't, we send it back. If you think that the assessment is credible and that the analysis was conducted in a way that gives us reliable results, I would say I would be the most comfortable with let's make a recommendation for 2011 at the most; you know, present to the council in our report the projections as they are, explain that this is a projection just to give them an idea of how things may be looking into the future, but that we're going to reconsider all of this, do a more careful analysis and make sure that we revisit this either at the October meeting, which we have plenty of time to do or next year.

DR. WILLIAMS: I think we're just dragging this out. I'd just accept the 2011 estimate from the P-star analysis and let's move on. I think we have established the record that there are some concerns with this assessment and that will be reflected in the report, and that's it. Nobody is suggesting that we upend this thing.

DR. BELCHER: Further comments? Then the consensus is going to be to use the 2011 number for the ABC or at least for an ABC for 2011, and we will put forward the data stream for reference purposes for the managers. Alex.

MR. CHESTER: Were we going to ask Bob for a refinement on that standard deviation issue that Erik brought up earlier or are we okay with it as it is?

DR. BELCHER: Since Erik said that it comes out to be like 0.47, we're going to leave it as is.

MR. CHESTER: Okay, fine.

**DR. BELCHER: Okay, with that, we will move on. We will now be talking about dolphin and wahoo. Look to your roadmap for that information. According to the roadmap, we're going to be looking at landings and status criteria. For the Dolphin and Wahoo FMP, you're in Attachment 30. There was a 2000 exploratory assessment of dolphin done and that is provided in Attachment 31. We're being asked for recommendations of OFL and ABC. What are the recommendations from the group?

MR. CARMICHAEL: The no action alternative is a range. It is 18.8 to 46.5, which means that is what is in place right now in the current FMP; the 26.9 million pounds is what came out of the 2000 production model for dolphin. That was a pre-SEDAR model and it hasn't been reviewed through SEDAR and is considered somewhat exploratory by the author.

MR. WAUGH: One thing that is a little bit odd about dolphin and wahoo, too, is the MSY, OY, overfishing and overfished values apply to the Atlantic, the Gulf and the Caribbean, so what we're looking for is for you to give us specifications just for the Atlantic.

DR. WILLIAMS: So if the MSY estimates we have, as shaky as they are, represent more than our region, are they of any use and whether we should just then default to landings time series if we have that?

MR. CARMICHAEL: John indicates that the landings should be in that attachment. The Atlantic landings are projected up front.

DR. CIERI: So that is an interesting dip down there, isn't it, in 2007 and 2009. Somebody get the CPUE.

DR. BOREMAN: One of the issues I see other than the fact that we're asked to provide an ABC on plots like this is most of the landings are MRFSS data. I don't see an CVs with those, and I suspect that the CVs are quite wide for dolphin and wahoo; maybe not, I don't know. It looks like our ABC will be basically for the recreational fishery, which is the dominant fishery for both of these species. I don't have any sense of confidence in the MRFSS numbers that are up there. In other words, we're seeing a decline over time in yield, but is that real or not?

DR. CIERI: And how much of that is playing to our uncertainty?

MR. CARMICHAEL: We have the landings that go with this table and we have time series of landings on dolphin, so if you want to use average landings and you want to pick a year, that is perfectly feasible. Now as far as evaluating the reliability of the MRFSS landings, that is more than where we are right now, but we can certainly pull up the CVs off the MRFSS website if somebody wished to look at them.

I don't think we have a good understanding – Gregg, has it been discussed at the committee about this decline since 2000 in landings? Has anyone expressed sort of any justification for

why that is going on? I think I was at an SSC meeting during our last Dolphin-Wahoo Committee meeting and I missed that discussion on this document.

MR. WAUGH: The committee really hadn't discussed this too much other than looking at it, but if you look at the quota monitoring information for 2009, the commercial landings are 1,900,093 pounds, so they're up again. In 2009 the commercial landings are just under 2 million pounds. We don't have updated recreational estimates yet.

DR. CIERI: Here is a question; 2009 data for MRFSS, is that complete? Okay, sorry.

DR. BELCHER: So how do we work with the data that we have or can we work with the data that we have?

DR. JIAO: I think since the model is not based on the data that we're talking about and we only have landing data there, I guess that's only sources that we can forward, but it is also reasonable to think of the reason of the decline because I heard a lot of discussion about the recreational landings. It can be closely related to the economic status.

MR. CARMICHAEL: And let's remember this is a fish that occurs out towards the Gulf Stream, quite far offshore. With the discussions about fuel costs and everything, and we're coming into play about where that might likely be reflected, obviously you would expect that the farther offshore species would reflect that the most prevalently.

It is tied up with a lot of these landings coming out of the charterboat fishery as well, and I think there is a lot anecdotal evidence that at least in '08 and '09 quite a few of those guys were struggling and their trips are down. You make from that what you will; it's all anecdotal. Now we do have various periods of average landings for dolphin, 1999-2008; 2006-2008; 1986-2008; 2005-2008. We have quite a bit of information here if you wish to pick a period over which to use an average.

DR. WILLIAMS: The fuel price thing, I know that it affected 2008. We see that in the headboat data quite clearly, but 2009 fuel prices at least for headboats, which they tend to mirror charterboats to some degree, in 2009 it didn't seem to affect their effort that much. That dip in 2009 that we see in the landings, I'm not sure what the explanation is for that.

MR. CHESTER: It would be interesting to me if we had the Gulf landings to compare within the context of a 26 million pound MSY. It would be interesting to me see what the pattern is in the Gulf and see what the relative proportion is of those two regions. We don't have that; do we, John?

MR. CARMICHAEL: I have quite a plethora of various data sources that have come in for this stuff over the last three months and I may have that in the confidential ACL data set distribution that we got from the regional office.

DR. CIERI: I was just going to suggest the median for the time series 1999-2009 as a starting point, right after the P-star or run it through that – not P-star but run it through what we have as a proxy.

DR. WILLIAMS: The concern is whether this downward trend in landings is real or not. That's the concern.

DR. CIERI: I think we can probably account for that within the control rule, if you would like.

DR. WILLIAMS: Yes, except that you would not – when determining an OFL from the landings time series, you wouldn't want to use the whole time series if you have a continual downward trend. That is when that method doesn't work. You really want to apply that average method to when there is a stable period like we did with corals.

DR. BUCKEL: This is for the Morehead City Charterboat Fleet and I would say Hatteras and North Carolina in general, the additional socio-economic issue for 2009 it says the fuel prices dropped but there is a lot of their clientele, at least for the Morehead City charterboats, that didn't have jobs, so they couldn't afford to go fishing, so that's another reason for the drop in effort. I just pulled up the MRIP page and looked at effort for charterboats, which I don't know if you guys know and John Boreman may know that –

MR. CARMICHAEL: I was going to go there, too, so what does that show?

DR. BUCKEL: So '05, '06, '07 was around 1.4 million charterboat trips – and this is for the Atlantic if I did query right, Atlantic coast alone – '08 it dropped to 1 million trips, in '09 it dropped to 800,000 trips.

MR. CARMICHAEL: And I think that reflects the general – what you hear is it is the lag, the fuel prices got high and it affects sort of short term what people immediately did, but then the economic situation affected long-term people's vacation plans. All of us who live in coastal communities, we all know about the effects on tourism last year. It was pretty announced.

A number of the headboats left Charleston last year. They were operating right here a bit. I mean, you don't leave unless business is getting pretty bad. I think there are a lot of things going on there that contributes to that decline. Now, for reference, the landings looking at 1999-2008, the average is 2 million pounds so there is quite a bit more landed in the Atlantic than in the Gulf. That's 2 million pounds whole weight.

MR. COLLIER: Do they have a similar pattern?

DR. CIERI: Yes, I was going to ask does it have a similar pattern at least?

MR. CARMICHAEL: I don't know. I'm looking at average and not the actual –

DR. CIERI: Okay, I'm just curious about the pattern, whether it looks like that.

DR. CROSSON: So then can we just propose dropping off those last two years, 2008 and 2009 out of – you know, whether we choose mean or median; I mean, just get rid of those last two years and not include those in.

MR. CARMICHAEL: I think you guys really need to have a real discussion about using short term versus long term for this thing as well and what that might mean. Because if you think in the case of snapper grouper species, for the last ten years there has been a lot of regulations that affected a lot more than just the species they were targeted at, so there could be situations where landings are down because of regulations that are in effect; the cumulative regulatory burden which is sort of the other side of the equation that the council hears quite often. We know that regulations on things like red porgy greatly affected how headboats operated, changed the species composition.

We've talked about all of this stuff within the SEDARs. We used things like changing catchability; do you account for these regulatory situations? I think in considering the time series we really need to discuss that and how regulations might affect these time series, especially if we're going to use that time series as an inference on the overfishing catch level.

DR. WILLIAMS: To that point, what regulations would have affected dolphin in this period because I can't think of any?

MR. COLLIER: There was a size limit for Florida and Georgia, and I believe that was 2004, and also a ten-fish bag limit, a 60-dolphin limit.

DR. BELCHER: Okay, so where does that leave us with the time series?

DR. WILLIAMS: Well, then, the question is why did those regulations go in place; was there some perceived need to limit the fishery because of some concerns?

MR. CARMICHAEL: One of the things cited for the FMP was a concern over localized depletion and just preventing the – another thing was keeping the commercial fishery from expanding and preserving the largely recreational nature of the fishery. That is the 90/10 splint, I think. Is that correct, Gregg, the 90/10 split was the dolphin.

I think the commercial needed to stay at 10 percent of the total of the recreational at 90. It was similar to that, but there is a limit in there based on the commercial fishery exceeding its certain proportion. Now this decline in landings obviously has been going on a little bit, and I seem recall at a council meeting four, five or six years ago where this was discussed with regard to how declines in the recreational fishery could inadvertently pull that trigger on the commercial/recreational split without any increased effort apparent in the commercial fishery. The council has been aware of this of this drop-off for a while.

DR. WILLIAMS: Well, then, it seems to me that probably a better proxy for OFL would be the average from the pre-regulation period, so like 1999-2003 or something like that. Since we're

only dealing with five data points, I don't know in that case whether the mean or median would be better to us.

MR. CARMICHAEL: Well, there are more data points available; that is just from this particular time series. It is 30 to 13 percent.

DR. WILLIAMS: So do we have the landings pre-1999 that we can look at?

MR. CARMICHAEL: Some in one distribution we got that goes back to 1986, but for whatever reason it doesn't seem to have commercial dolphin. I've got for-hire and recreational dolphin but not commercial. Now, on the Gulf, Kari is trying to pull up the figure for the Gulf, and some of that looks like it has commercial and recreational partially. Obviously, they exist but putting our fingers on them right now with what we have received in response to our request doesn't seem to be straightforward as could have been hoped. Exactly, my next place to go is to look at the FMP.

DR. WILLIAMS: Can I voice my frustration with the fact that why are we piecing this stuff together at this last minute and getting documents right when we're at the point of trying to make a decision? I mean, this is getting to the point of being plain ludicrous.

MR. CARMICHAEL: I think part of that is it is extremely difficult for council staff to get access to these data sets is what has tied our hands, and the responses on getting queries that we asked for on this in incredibly slow as well. We need a better solution to this situation to be able to meet you guys' needs.

DR. WILLIAMS: I think this one is getting to the point where we punt because I don't know if we can – we don't have what we need in front of us at this point in time, period.

MR. CARMICHAEL: I have nothing for wahoo, nothing. None of these data sets have included wahoo. We have landings for 1984-1999 that are contained in the – through 2000. We have got some asterisks on 2000, I guess. We have at least 1984-1999 with pretty strong confidence, so which is the front half of this data series essentially.

Then we have averages for 1984-1997, which I would say the recreational over that time ranged from about 3 million pounds to 12 million pounds, so it is not too far removed from the time series that you see right there in terms of a range. There is a 1984-1997 average and 1990-1997 average and a 1994-1997 average, so the 1984-1997 average is 7.4 million pounds recreationally and 920,000 pounds commercially for the South Atlantic segment alone.

DR. BOREMAN: A couple of items; one, just reading these numbers, I would to see the numbers in front of us rather than that, John. It's not that we don't trust you, but it would be useful. The second is these are landings. We have got to set a catch level, so we don't have discard data. It may be minimal but still we can't base an ABC just on landings; can we?

MR. CARMICHAEL: Gregg, correct me if I'm wrong, but in that time there were no bag or size limits on dolphin and discards are minimal; were minimal at that point in time? There were no regulations during any of that period so there is no expectation of any discards.

DR. WILLIAMS: And just for clarification, ABC can be on landed catch only as long as the discards are accounted for. In other words, you suppose they're a constant fraction or you suspect they're limited, but somehow that is factored into your decision.

DR. CIERI: I agree; let's pump this puppy and move on.

MR. CARMICHAEL: I'm about to show you the landings.

DR. BELCHER: Can everybody see those numbers okay? The first two columns are the South Atlantic numbers.

MR. CARMICHAEL: The clarification is that actually for the entire Atlantic, which on this table which is Table 8 from the original FMP is the South Atlantic, Mid-Atlantic and New England combined, and say the 1984-1997 average recreationally is 7.9 million; commercial about a million; grand total, which you guys will be looking at, is 8.9 million. It is really not that different from the average of that more recent time series, as it turns out.

DR. WHITEHEAD: For whatever it's worth, the anecdotal evidence about economic growth and for-hire trips hold up over the 1981-2009 MRFSS time series. Every percentage point decline in GDP growth rate reduces for-hire trips by about 6 percent, so that would be a big impact over the last couple of years.

DR. BELCHER: So what time range do you all want to look at?

DR. WILLIAMS: Well, it seems to me that there is clear evidence if we dropped the last two years. '08 and '09, and it looks like then regulations also from 2004 on, so we're looking pre-2004 I think is just how far back we want to go.

MR. CARMICHAEL: And from the FMP we have 1984-1997, 1990-1997, 1994-997, and I presume you all think that is kind of a short-term time period. You're maybe looking at 1984 versus 1990. I'm not sure, '84, '85, '86, '87 are relatively low, which we can see. Gregg, was there some discussion about any kind of fishery development at that time or did they think it was – I'm wondering if anybody has some thought. They gave that '90 to '97 average after things had gotten a little bit higher. Do you remember what they might have discussed back then? We're getting back quite far into the memory bank there.

MR. WAUGH: From the purpose and need in the FMP, the intent was that this was primarily a recreational fishery and looking at that time recent years landings had increased, but between '94 and '97 was when they reached all-time high. The council had concerns when commercial landings in the Atlantic were increasing due in part to an increasing number of longliners targeting.

We had some issues of conflict over the initial redirection of effort by the longline fleet for targeting dolphin and wahoo. As John mentioned some of the rationale, the problems that we were addressing were the localized reduction of fish abundance due to high fishing pressure, disruption of markets, conflict and competition between recreational and commercial, reduce social and economic impacts.

The overall goal was to adopt a precautionary and risk-averse approach, and this will require that current catch levels not be exceeded and the recent conflict between sectors be solved. The status quo should reflect trends, average catch and effort in the fishery over the last five years, from 1993-1997. That is what was going on over that period of 1993-1997 is what the goal of the FMP was trying to maintain.

MR. CARMICHAEL: And it would seem in 2000 and 2001 they were still pushing close to probably 15 million pounds in total landings. I guess for those who don't know this is a very fast-growing, short-lived fish, very high natural mortality. Jeff probably is the resident expert on what their maximum life span is, but I think most of them lived to, what, around three or four and maybe some of them have gotten up to six observed, not even that high. Three is all they've seen. They used to think they all gathered down in the Caribbean to spawn in winter, but now you find them pretty much spawning as they move up through the Gulf Stream throughout; mature, ripe fish found off North Carolina and everything else. They mature at pretty small size, very young, so they're a very prolific fish.

They're probably not quite an annual crop but they're one of the closest finfish to it that is living out there in the ocean. It probably helps perhaps to put some of the time series in the – you know, you can look at really peak landings and see how fast the fishery rebounds to those levels if it was able to, and it seems like it has been. I think that is the extent of what we know on them.

I guess the 1990-1997 represents sort of the maximum productivity period that has been observed for like a sustained number of years. Certainly, 1994-1997 was the max. They were pumping out nearly 12 million pounds a year. They were able to get right back to that level in 2000 and 2001 again.

DR. WILLIAMS: Well, again, when we're talking OFL, I would think we would want to include a lot of those high years because that seems to be that can be sustained almost.

MR. CARMICHAEL: It kind of comes down to do you think that maximum of 1994-1997 potentially sustained?

DR. WILLIAMS: What does that come out to be?

MR. CARMICHAEL: 11.8; you're kind of looking between like 9 and 12 million pounds as really just a range that seems to be emerging between the longer-term average and then the absolute maximum. You can have an OFL perhaps to the 1994-1997 average and then reduce for ABC to account for the uncertainty in that, bearing in mind this is substantially from all the

snapper grouper species and other things you have talked about. It is much more closer to shrimp.

DR. CROSSON: I was just going to say on the commercial sector it is closer to shrimp because it is a worldwide distribution for this fish, and those guys have to compete with the people in the tropics, everywhere, so they may or may not go out depending on the market conditions.

MR. CARMICHAEL: Commercially it is not really a directed fishery. I know the last time I looked at it eight or nine years ago, 90 percent of what the U.S. was consuming was imported, anyway. The snapper grouper guys bring in some, the ones that get out there.

DR. BELCHER: So what time series; we have been throwing out 1994-1997 as a potential.

DR. WILLIAMS: Why that time period? I'm still trying to – why that as opposed to, say, more recently, 1999-2003?

MR. CARMICHAEL: It's another period of high yield and they're both pretty similar, I think. Well, I have the average for 1994-1197 in the FMP.

DR. BELCHER: We need to come to a consensus on it. Is everyone supportive of using the 1994-1997 or do you want the more recent time period? Gregg.

MR. WAUGH: Just a little more background in terms of those numbers that are in there that may give you a little more confidence in those than some of the more recent is when the Dolphin-Wahoo FMP was being developed Phil Goodyear had recently retired from the National Marine Fisheries Service, and we hired Phil to compile the recreational and commercial data. The data that are in the FMP I would say we have a high degree of confidence in it.

DR. BELCHER: So based on that, everyone is comfortable with using the 1994-1997 time period? Okay, so we're using average landings for that as our OFL, correct? Any further discussion or comments to that?

DR. WILLIAMS: Just to clarify that we're using the average instead of the median here because we have fewer data points.

DR. BELCHER: Okay, so now that we have the OFL, I guess we need to – it's that number, it is 11,882,898. I guess it's 11.9. Okay, so walking down our add-up; indication of depletion, yes, no or unknown – no, that's plus 15. Does it have a critical ecosystem role, act as habitat, forage, so plus 15. Productivity/susceptibility, is it low, medium or high risk or unknown risk – okay, plus 20. Reliability of OFL estimate, the full 25, is that what everybody –

MR. CARMICHAEL: You've got a good time series. You have seen it fished at that level, go down, come back, fished at that level. It's not a landings ID problem; it is not a complex problem, you have got the entire Atlantic coastal landings in there.

DR. BUCKEL: Yes, I'm fine with just thinking about the species and going with 75 percent of the OFL, but I'm just curious about the first one, the indication of depletion. Were we provided – we didn't get to see catch effort data for the last ten years, so I don't think we can – what were folks using for no indication of depletion there?

DR. WILLIAMS: I think the most recent economic situation has reduced the effort quite a bit. I think that is one thing and fact that regulations have gone in place in 2004 to limit the catch. If you look at the recent time series, they are all catches that are well below our OFL.

DR. BELCHER: Everyone in the group feel comfortable with that justification because again that will just strengthen the consensus on that? Okay; so with that, it is going to be 75 percent of the average landings, which is 8.9 million pounds. All right, the ABC value for dolphin will be 8.9 million. Moving on to wahoo.

MR. CARMICHAEL: We have essentially the same information. We have the FMP landings and we have a similar figure from the recent documents.

DR. WILLIAMS: Well, how about the regulation history for wahoo?

MR. COLLIER: The regulations for wahoo pretty much started in 2004. I believe that was a two-fish bag limit for the recreational and 500-pound trip limit for the commercial.

MS. FENSKE: Chip, could you repeat that again, please?

MR. COLLIER: Two-fish bag limit and 500-pound trip limit starting in 2004.

MR. COLLIER: Just because I like to be a pain in the butt, I went back and looked at the PSA scores for dolphin. They came out as high.

MS. FENSKE: Those were not done with the original MRAG stuff. Those are something that I tried to take a stab at and since I am not an expert on dolphin –

MR. CARMICHAEL: Disregard that for now; it has been overruled by the expert at the end of the table. Clearly, life history-wise dolphin and wahoo are quite different. Wahoo may be more king mackerel like. Does anybody know the age at maturity or should I look that up in the FMP?

DR. BUCKEL: There is a recent paper by Rich McBride, so if we could pull that up – well, there are two papers. One has got recent aging data and then it also has maturity.

DR. BELCHER: So what time series do we want to look at?

MR. CARMICHAEL: Clearly, you're looking at primarily a recreational fishery mostly caught in the South Atlantic; very scant landings in the Mid-Atlantic and New England. It depends on what happens to the Gulf Stream that year and how far north it goes and how many they

encounter; with landings averaging in the 750,000 pound range; the long term, 1984-1997, is 797,000 pounds recreational; all fisheries combined, 872,000.

Presuming a more long-term time series given the different life history for this species, perhaps it would be 1984-1997. Note that 2000 does not include the headboat. We could potentially use 2000 thinking that is not a huge component. You have 1984-1997 and 1994-1997, also.

DR. WILLIAMS: What about some of the 2000-2003 data? Yes, okay, but we have those numbers, right?

MR. COLLIER: The age and growth data, they're not as long lived as you would think, less than ten years is what they came up with; pretty high mortality rate; and age at maturity is just a little over age one.

MR. CARMICHAEL: Attachment 30 is the one that has the landings series. It is the dolphin-wahoo decision document. You can look at the more recent years there.

DR. CIERI: And there has been a steady decline since 1999 from roughly about a million with one bump up in 2007, down to less than 750,000.

DR. WILLIAMS: Right, the issues with this again are the 2008 and 2009 numbers are going to be affected in the exact same way as they would have been affected for dolphin, and then the regulations in 2004 on. I mean, for those that don't know, this fish is not like it is a targeted fishery; maybe off North Carolina, but that's about it.

It is a random event for people who are fishing usually for something else. I think we should use 2003 back to some point in time, but I would want to use back to some point where we think that the fishery sort of reached its – at least the charter or recreational had reached its peak at some point. I don't know if that would be in the mid-nineties, maybe.

MR. CARMICHAEL: Like dolphin, 1984 and 1985 are kind of low compared to the other years, but certainly by 1986, you know, looking recreationally, 1986 is a very high value. I think that might be one of those MRFSS things of an opportune merging of some encounters and some effort by cell stuff coming together, but it looks like it is probably in the 960,832, 890,914 in the late nineties, probably hitting its stride.

DR. WILLIAMS: Say, like 1994-2003?

DR. BELCHER: Discussion and comments on 1994-2003 as a potential time series.

MR. CARMICHAEL: It appears to capture sort of peak productivity at a time when the fishery was unregulated and we don't have any real points sticking out that might raise a question about MRFSS high PSEs on some of these.

DR. WILLIAMS: Right, and it seems to be stable over that whole period, fairly stable.

MR. CARMICHAEL: Yes, I'm concerned about the PSE on 1986, on that value.

DR. BELCHER: Any other discussion? Anybody uncomfortable with using the 1994-2003 time range? Now the issue becomes do we use the average or do we use the median?

DR. BOREMAN: I'm a little confused here. When we use these time ranges for OFL or ABC, are we adding in that commercial as well or are we just using recreational?

DR. BELCHER: He is using total but they were using, I guess, the trends in the recreational since it tends to be more of a recreational.

DR. BOREMAN: Okay, I'm fine with that.

DR. BELCHER: Since it will take a few minutes for the number, let's go ahead and walk us through the ABC portion of it. That way we can go ahead and just do it in one brush stroke. John is not going to project them; I'm just going to read it. So, indication of depletion; yes, no or unknown – no, so plus 15.

Does it have a critical ecosystem role, does it act as habitat, forage; adds a plus 15. Productivity/susceptibility, low, medium, high or unknown – low, that's 20. Reliability of the OFL estimate, so plus 75; so we're at 75 percent of the – are we using the average or median landings? Median landings. Any comments and discussion relative to that proposed for our OFL and ABC? Chip.

MR. COLLIER: For both of these, are we considering discards at all?

DR. BELCHER: The time period, my understanding was because it was pre-regulation, that was catch. That is correct, right, I'm looking around for acknowledgement from other folks, because it was pre-2004 when there were no regulations.

MR. COLLIER: Apparently I looked at the wrong citation. The maturity changed from 1.3 years to 0.6.DR. BELCHER: Let's go ahead and take a ten-minute break.

DR. BELCHER: Okay, let's go ahead and get started again, please. Okay, Kari has calculated the median values for that time series, and it came up to 1.1 million pounds, we will be taking 75 percent of that for the ABC. I kind of want to throw out a question to the group because I was thinking about this over the break.

Do we have full confidence in the OFL value even though 90 percent of that is linked to the MRFSS numbers? In most cases when we have full confidence, it is because we have commercial landings being the dominant portion of that. Because this is predominantly based on MRFSS estimates, which generally we know the issues that come up relative to MRFSS estimates, do we still feel that 25 percent is the way to go?

DR. WILLIAMS: Well, the issues with MRFSS are – well, the things that you should think about is whether MRFSS is biased or not and whether what is being reflected is just noise due to low sample size; and if you look at that time series, it still seems amazingly stable for a MRFSS time series than we typically see for, say, snapper groupers where you definitely get those spikes occurring. It doesn't seem to be occurring in this so it makes me wonder if actually the MRFSS estimates are not too bad for this species because it is fairly stable. I'm not sure of any reason why it would be biased necessarily for this.

DR. BUCKEL: I have a feeling that the reason it is stable is that the charterboat fleet catches a large proportion of these two species, and that's a relatively easy thing to do the intercepts on because they come in at the same time of day at certain ports and so the creel folks can get good estimates there. It is just a guess.

DR. BELCHER: Well, I just figured it would be good to have it for the record just because obviously we know the scrutiny under which MRFSS is hit for estimators. I just wanted to make sure that was clear among the group as to why we were still good with those numbers. Okay, 75 percent of that number, John, can you help me? Just so you all know what the value is, it is the 75 percent for the ABC. So 75 percent of the median value is going to be 826,000 pounds; so OFL is 1.1; ABC is 826,000. Any questions, discussion, concerns? Everybody is good with that as far as what we are for putting forward for wahoo?

Okay, so now we will move back to the recommendations for the snapper grouper – sorry, I missed king mackerel, so we're looking at king mackerel. **Okay, king and Spanish mackerel were both assessed through SEDAR recently. Both assessments were reviewed by the SSC in December of 2008. Additional projections in support of OFL and ABC determinations are available for king mackerel as requested by the SSC. This is Attachment 28.

The Spanish mackerel assessment was partially accepted with the SSC endorsing the review panel conclusions regarding stock status in determining the current exploitation and biomass estimates are unreliable. Landings' data are available for other species in the CMP complex. We're supposed to give for the coastal migratory, so it is not this king mackerel or – Okay, so it is actually a couple of species, then.

MR. CARMICHAEL: You guys requested updated projections for king mackerel following your last meeting. You were provided guidance on applying the P-star approach to that assessment, and that is what is contained in Attached 28 and also an e-mail from this morning, the same document. Your critical value for your P-star probability of overfishing is 27.5 is what you had following the December meeting when we discussed this.

So if we look Table 2 in the king mackerel projections memo from the science center is 27.5 in 2011 and is a TAC of 10.50 million pounds for Atlantic king mackerel based on the constant TAC projections. I think that is the wrong table. It is easy to get the Fs and the P-stars confused in this presentation. It looks like from Table 1 in 2011 it is closer like 11 million pounds. It was not exact to 27.5.

DR. BELCHER: And this would be our recommendation of ABC, correct? This means that we would be recommending a TAC or an ABC value for 2011 of 11 million pounds. Is everybody comfortable with this; does anybody have any disagreement with this? Discussion?

MR. CARMICHAEL: And the source is Table 1 of the SEFSC memo what is provided as Attachment 28.

MR. CHESTER: Yes, again, I think we should just point out for the record that this is just for the couple of years, it looks like, the catch rates at 27.5 percent decline in the out years.

DR. WILLIAMS: Should we be a little more technical and do a linear interpolation between the 11 million and 10.75 million to account for the fact that 11 million is at 28 percent and not 27.5 percent?

DR. BELCER: What do folks feel about that?

MR. CARMICHAEL: It's 0.254 at the 10.75 so you would be pretty close to the 11; 0.05 within it, and recognize that in 2012 the 0.275 value occurs about 10.3, about halfway between 2.5 and 0.5 if you wish to consider a multiple year recommendation for king mackerel.

MR. WAUGH: John just touched on my question. We're going to be setting this – when the council sets an ACL – until we get the next assessment, so I think it would be helpful to have some guidance from you as to what the ABC should be over the time period now until we get our assessment, whether you want to just present each year what it should be, but give us some guidance.

MR. CARMICHAEL: For your reference, the next assessment is scheduled in – in 2012 the current SEDAR schedule calls for an assessment of the coastal migratory pelagic complex to try to look at all the stocks together, cobia, little tunney, cero, Gulf Spanish and potentially including in there for updates of king and South Atlantic Spanish with the consideration that benchmarks could be conducted in those as well.

We will look at the whole complex in 2012, which by the schedule that means stuff would come to the council in 2013, potential changes 2014, so for consistency with that you could consider a recommendation that is in effect for 2011-2013.

DR. BELCHER: So how does the group want to proceed?

MR. CARMICHAEL: Well, for reference from the table, in 2013 a TAC of 10 million pounds results in a 0.262 probability of overfishing occurring, so you're kind of looking at something between 10 and 11 million pounds over that time series. Your other option is we do one for 2011 and you request an update of this information again for 2012 and 2013 to do it on an annual basis. The council would probably like to avoid having to do that for every species.

DR. WILLIAMS: I would recommend we specify ABCs for as long as we feel comfortable, but we re-evaluate every year because if it is exceeded or something like that, then we might want to reconsider our ABC for the out years.

DR. BELCHER: Comments from the group?

DR. BARBIERI: It sounds good.

DR. BOREMAN: Well, why don't we do what we did for the black grouper is just say this is what the P-star value would give in terms of TAC for the ABC for 2011 and shows what it translates to for each year out to 2020 and say we're going to re-evaluate this on a regular basis to keep track.

MR. CARMICHAEL: Would it work to pick the closest 0.25 million TAC that does not exceed 0.275 or 0.28, rounding it up, so it be 11 in 2011 and then in 2012 that goes to 10.25 and in 2013 that goes to 10.0 and then 2014, 9.75; and kind of drops down about 0.25 a year.

DR. WILLIAMS: Why not just do the linear interpolation?

MR. CARMICHAEL: I'll do the interpolation.

DR. REICHERT: Yes, that is what I was going to suggest.

DR. BELCHER: So I guess we'll need to calculate those, right?

DR. BOREMAN: It looks like it is going to flatten out over the – in about five to ten years it will be relatively flat.

DR. CIERI: When is the age at maturity?

MR. CARMICHAEL: A couple of years.

DR. CIERI: Of course, that's the danger when you're dealing with these, because in general short-lived species, when you project out far, all you're getting is whatever you've chosen for your recruitment back and you pay per fish.

MR. CARMICHAEL: They live to be 20, Chip?

MR. COLLIER: Over 30, it is not a short-lived fish.

MR. CARMICHAEL: We will interpolate for 2011-2020, the actual TAC at 0.275.

DR. BELCHER: The feeling from the group; is that acceptable?

MS. LANGE: And we will double check each year.

DR. BELCHER: Further comments or discussion on this. Gregg.

MR. WAUGH: Just a question about your looking at it each year; just what are you going to look at because a part of the ACL/AMs is the council will put in accountability measures to prevent the catches from being exceeded. I mean, is your intent that the SSC now is going to review each fishery to see how its performance is with respect to the parameters that you set? The reason I'm asking is to do that you would need something like a SAFE Report. You have recommended it, we have recommended it, and it is yet to be produced, so just some clarification on exactly what your expectations are.

DR. WILLIAMS: I think that's exactly our expectations.

MR. WAUGH: And it would be for every fishery, every species, every FMP?

DR. WILLIAMS: Oh, yes.

MR. WAUGH: It would be good to make that clear in your report at some point.

DR. CIERI: Yes, as we go through them and we do all these species, we're doing a lot of this sort of at the last minutes, and in general this is a completely new process. Further on down the road, you could certainly see setting specifications for three- or five-year timelines with assessed stocks and other stocks a little bit shorter of a framework if there is more uncertainty.

In general, yes, I think initially we want to start reviewing a lot of our stocks almost on a yearly basis, and that doesn't really affect the AM component, that being the management, but just to monitor the stocks to see how they're doing. It also allows for new information to come in, if and when it becomes available, to maybe mitigate some of these uncertainties.

DR. BELCHER: So with that, we're pretty set and everyone is in agreement with the king mackerel's ABC, then? **All right, moving on we will be looking at Spanish mackerel. Spanish has no P-star.

MR. CARMICHAEL: Spanish had a P-star but the biomass with such estimates and things were not accepted from the assessment. There was quite a bit of uncertainty in that assessment. It provided some status determinations, but for the most part people didn't think it was really reliable.

DR. BELCHER: Well, it is a non-valid P-star. Let me restate that.

MR. CARMICHAEL: I like that; I will live with that.

DR. BELCHER: It's not a valid P-star analysis.

MR. CARMICHAEL: I'll consent to that.

DR. BELCHER: Okay, so with that information at hand, how do we proceed at setting OFL and ABC for Spanish mackerel?

DR. BARBIERI: Do you have landings information to do similar to what we did for dolphin and wahoo?

MR. CARMICHAEL: You have pretty much the full treatment of this in the stock assessment, which was recently completed, and I think you guys looked at it about a year ago. Has someone taken a gander at that and have some thoughts?

DR. BOREMAN: Again, why wasn't a P-star developed for this; would you repeat the reasoning?

DR. BELCHER: It is developed; it was just that the discussion about the assessment, it was partially accepted but biomass and the exploitations were not – they did not have the confidence in the estimators; so even though it was generated, it is non-valid based on the concerns from the review.

DR. BARBIERI: The review panel actually, yes, rejected it.

DR. BELCHER: It is Attachment 29. What time series do we want to look at? Is that how we want to proceed is looking at landings? Obviously, we don't have many options in front of us.

DR. REICHERT: How have the regulations affected that? I'm not sure if we can use them.

DR. BELCHER: Okay, the regulations that went in place, there was an established TAC in 1983. There was a framework for a pre-season adjustment of TAC in '85, purse seine harvest limited to 300,000 pounds in the Atlantic; minimum size limit for commercial and recreational sectors; an emergency rule in 1987, dividing the quota into three areas; commercial fishery closed the 14th because the quota was met; 90-day extension of the emergency rule was in '87. There was a lot of stuff that happened in '87.

MR. CARMICHAEL: That was really the bulk of them, though, and there were a lot of TAC changes in '70.

DR. BELCHER: Yes, the TAC is pretty much rolled through '87, '88, '89. Reallocation was in '93. Erik.

DR. WILLIAMS: This might be one species where we can skip the OFL stage and go straight to the ABC based on the review panel's conclusions. What they concluded essentially is that the stock was currently not overfishing. They have said that pretty clearly, but they everything else is uncertain. If that is the conclusion of the review panel, it would make sense that you could probably just take average landings from the most recent years since the review panel says that's not overfishing and call that ABC, perhaps. Now, we don't have a probability of how certain are they that is not overfishing, but I just throw that out there as one possibility.

DR. BELCHER: What do folks think about that? Alex.

MR. CHESTER: Yes, I think that's a pretty good idea. If you look at most of the time series, the Fmsy is above one, so most of the time the population was being fished unsustainably. I'm kind of inclined to go along with Erik and look at the most recent years.

DR. BELCHER: Other comments from the group and what defines most recent years; since the last enactment of regulations, the last six years?

MR. CARMICHAEL: Landings and discards? Well, I asked about discards because Table 3.14 of the stock assessment, which is on PDF Page 275, it has the estimated time series landings in thousand pounds for the commercial and the recreational and the total, and then we have discards which are in numbers, so one of the issues is it's modeled with discards in numbers and recreational in numbers and conversions and weights and stuff were all done internal to the model.

We don't have a table that is everything all in one unit; it is like pounds. Sometimes you have requested that, that the science center provide you the estimation of discards in weight for this type of purpose. As we know for our other tables we have looked at, those are landings and they don't include discards and dead discards and all that, so we have discussed the relative number of discards.

DR. WILLIAMS: Just to remind people that one of the issues that came up with the review and probably one of the reasons why this assessment didn't pass review is because there is a large but unknown amount of shrimp trawl bycatch for Spanish mackerel, and we don't how bad and how that is potentially impacting the population.

DR. BELCHER: Wasn't Spanish taken out of the bycatch reduction protocol, though, for the evaluations? Originally it was based on weakfish and Spanish and I thought that Spanish came out of it; that it was just on weakfish when they rewrote the protocol. When we were doing the bycatch reduction device testing protocol, originally you had to have a criteria of five weakfish and one Spanish mackerel for the tow to be valid. I think that Spanish actually dropped out of that but I don't know why that was. It has been a while since I've reviewed that document.

MR. CARMICHAEL: Do you want to use like '86 to '08?

DR. BARBIERI: 2007 is the last year that is in the assessment?

MR. CARMICHAEL: Well, I have landings in a data set for different averages or '85 to '08, '86 to '08, '99 to '08, '06 to '08, so those are sums that are already evaluated.

DR. BELCHER: How does '87 throw that off? If we're going to start with '86, how does '87 fit into that, with all the changes that happened in '87?

MR. CARMICHAEL: It depends on when that took effect.

DR. BELCHER: All through the year starting January 5th. There was on January 5th, one January 20th, one in April, one in June, one in July, two in September and one in December.

MR. CARMICHAEL: I don't see a landings spike on the recreational at least in looking at this figure that is up there for '87 to '88.

DR. BELCHER: We said most recent but the last ten years?

DR. BARBIERI: So that would be 1998-2008; 1999-2008?

DR. BELCHER: 1999-2008. We're still wanted to work with median value, correct?

DR. BARBIERI: In this case, yes, sure.

DR. REICHERT: And use that at the ABC, correct?

MS. LANGE: We had already talked about Erik's suggestion that we skip the OFL because the assessment agreed that there was no overfishing, and the review panel agreed to that, so the recent landings were not overfishing, contributing to overfishing.

MR. CARMICHAEL: What was the time period?

DR. WILLIAMS: Now, what I was proposing – and I'm open to changing this – is that regardless of the regulations, what the review panel concluded is that the one thing they could conclude for this stock was that in the recent years there was not overfishing occurring, so I say we skip thinking about the regulations and skip trying to think about OFL, and go straight to that conclusion and use that conclusion to say that the most recent landings or some average of them are not overfishing and probably represent ABC.

DR. BARBIERI: Right, but if you look at some those other assessments for which we actually had the assessment, but the review panel still found that there was no overfishing, we still tried to take into account some of those uncertainties, right, to reduce from OFL to ABC. In this case we have uncertainties with the assessment that I feel warrant us making a reduction from OFL to ABC. I mean, in that case we would use the average or median landings as OFL and then apply the ABC rule like we did before for –

DR. WILLIAMS: But then you wouldn't want to use the most recent years because you have a review panel saying that there isn't overfishing occurring in the recent years, and you've got regulations imposed, so you've got all those other factors that would suggest that the recent years are not representing OFL, so you've got to go to some other gyration to figure out, well, what is OFL, then.

DR. BARBIERI: And I agree, but this is going to apply. I mean, think about the uncertainties that we have. That's what I'm trying to be consistent about is the uncertainty that we have and that we go straight to ABC from the actual landings –

DR. WILLIAMS: But we have an assessment that went through a considerable amount of effort and went through the full SEDAR process. Granted, large portions of it were rejected at the review panel, but we do have a review panel telling us that their conclusions are that overfishing is not occurring in the recent years.

DR. BELCHER: But it is still not from a quantified source the same way that the other one is. I mean, that's professional judgment. I understand where Luiz is coming from. It just seems strange that in one instance we have a fishery that is not undergoing overfishing, but we set an OFL, one that we're anecdotally saying there is no overfishing, but we're going to make it an unknown or not set a value.

DR. BARBIERI: And to that point, in black grouper, for example, the outcome of the assessment was overfishing was not occurring and hasn't occurred for many, many years, and still we estimated an OFL and then we put it through the control rule, especially because the probability that is associated with the assessment is coming out a default at 50 percent, we're trying to reduce from that 50 percent.

DR. CROSSON: Marcel and I were the two SSC representatives that were there, both at the assessment and at the review panel in Savannah for that week. If you go to Page 327 in the PDF, my general recollection of this is that the second half or at least the last third of that stacked bar chart is where the panel felt pretty solid that data was reliable.

But all that earlier stuff, the reason they couldn't declare whether or not is was overfished was because the pre-MRFSS data was made off of a large number of impeded data points. All of the recreational landings were based off of three Fish and Wildlife surveys of questionable validity. We went through all kinds of wrangling in trying to figure out how to deal with that, and eventually we just decided not to.

We looked at the past ten or fifteen years and it was pretty clear that all the age classes were increasing, that the biomass was increasing, that the stock was healthy and responding very well to the current regulations. Ben Hartig was in the room and that matched his own personal – I mean, he has been very involved with that fishery going all the way back to the sixties.

He said that there was the crash, everything went downhill, but that it had responded to all the regulations since then and everything was pretty healthy with Spanish mackerel. He was very convincing not just to us but to the review panel itself. I think looking at the past eight or ten years and looking at the ABC – looking at a level that is basically responding to them, this is a healthy fishery so I don't think we need to go through all this wrangling with the control rule and knock this down.

The uncertainty is something based off of what happened decades ago, and I don't think it affects the current stocks now. I think there is a pretty clear consensus that it does now. When you say that there are a lot of questions about the stock assessment, let's take that in context. I don't think it has any kind of impact on the current regulations that we have and the current health of the stock.

DR. CIERI: I kind of agree with Luiz in a lot of ways. If you set your OFL, which is basically what you're doing, you're setting your ABC at your OFL. If you set your ABC, you're basically setting your OFL at the same amount, correct? Erik is shaking his head. Even if you would suggest that your ABC and your OFL , for example, are the same and at that level is okay, on 50 percent of your probabilities with a median, you're going to go over that ABC, right, but you don't know whether or not you're going to go over that OFL.

In many cases even when you have a rock solid assessment, peer reviewed, the most recent information, everything is just fine and dandy, you don't normally set your ABC equal to your OFL and you don't normally set an ABC without an OFL. If we had the perfect assessment, like some of the ones in the northeast, with plenty of data and very little uncertainty, you still would set your OFL at your MSL level and then you would set an ABC lower than that to account for it.

DR. WILLIAMS: Just for the record, I'm not suggesting we set an OFL at all. I am suggesting that we just accept that is unknown and we go straight to the ABC based on the review panel's recommendation, so we're not setting ABC equal to OFL.

DR. BARBIERI: Erik, I'm trying just to understand how this fits into our overall broad framework that – everything that you have been talking about for quite a while about let's make sure that we don't come up with a situation where we are giving bigger discounts, bigger reductions from OFL to ABC to species that are actually fully assessed and for which we have good assessments versus the ones for which we have more uncertainty.

I mean, in this case if OFL is unknown I would identify this as a major uncertainty. I don't even know where OFL actually is. I'm relying on a proxy here that I know probably sits in that not overfishing situation, but I think it is a big uncertainty. It's just a matter of consistency. Your thought process I think is correct. I'm just trying to bring the consistency with the rest of that.

DR. CIERI: I think in some ways if you're your ABC based on the panel's recommendation, what you really are doing is you're setting your OFL higher than what they've suggested is a sustainable catch, right? You're setting your OFL – even if you're not specifying it, it is somewhere above whatever they've set as a sustainable yield or as a yield that is not incurring overfishing.

DR. WILLIAMS: And that is the distinction. I mean, ABC is meant to be a level such that it prevents overfishing, and they said that currently landings are not overfishing. I think there is an easy way to equate the review panel conclusions to an ABC in this case. I agree that then what it is implying is there is some OFL out there that is higher than what we're setting as our ABC, but we don't know how high.

I admit this is a leap of faith if we're just totally relying on the review panel, but I think in this case we stand on a little firmer ground because this is a full-blown assessment that went through a SEDAR process, it has a review panel recommendation. We went through every gyration possible with this assessment to try and produce credible numbers from a full-blown assessment,

and the best that came out is the review panel's recommendations that current landings are not overfishing. Now, can we use that information, should it carry a little extra weight because of all the work that went behind it; I think so.

DR. BARBIERI: Then how do we justify it to stay consistent with the application of our control rule? For a stock like black grouper, it came out as it is not overfishing. Why did we actually put it through the control rule? They're not overfishing, the outcome of the assessment is actually giving a 50 percent, and our rationale here is the reduction from OFL to ABC, right, to have a lower probability of overfishing at that 50 percent – I mean, I completely agree with the outcome. I trust the assessment as is. I'm not putting the assessment down. It has nothing to do with the assessment. It is the application of the control rule.

DR. WILLIAMS: We have three options for control rules. We have the full-blown P-star analysis where we get an OFL with the distribution and we use the P-star. We have our data-poor one. The third option we have at hand is to do something other than apply our control rule. That is always an option, to do something that's even mo re ad hoc than our control rule if the evidence is there to support it. We don't have to go with our control rule in every single case. That's written in the Magnuson Act, too. It says that we can choose some other method, but what we need to stick with is the definition of ABC is that it is a landings' level such that it prevents overfishing.

DR. BARBIERI: But how much?

DR. WILLIAMS: Well, that's a good question.

DR. BARBIERI: Right, and see that is the question and the committee – and, again, I'm not trying to be argumentative. I'm just trying to preserve what we have been building as our rationale for development and use of the control rule. If it is the committee's consensus to go forward with this other recommendation, by all means I'll abide by that.

I just feel that the confidence that I have with that recommendation coming out of the assessment is 50/50, and that a reduction would give us a reduction from that 50/50. Now, compared to the others, that's what we just did for black grouper and we did for other species for which we had full assessments as well and is just as reliable as this one.

DR. BOREMAN: If it was the average landings, 50/50, I think the wording from the panel would be that level may or may not prevent overfishing, but I think from what I'm gathering from the dialogue what the review panel said is this level probably will not cause overfishing, which means to me it is something less than 50 percent probability of overfishing, but we just don't know where in that range of zero to fifty it is, but it is less than 50.

DR. WILLIAMS: If you want to put that in context to our data-poor species of where we would expect those to fall out in our full-blown P-star analysis, if we had all the discounts in a P-star, we would be at 10 percent probability of overfishing is what we'd be accepting essentially. Again, if we put that in context, then maybe Luiz is right. If what we're really after because this

is now sort of falling into that almost data-poor situation, then we're looking for something that is going to only incur a 10 percent probability of overfishing; and if Luiz' gut feeling is saying it's only 50/50, then, yes, it should be reduced quite a bit from that.

DR. BARBIERI: My only concern is, first, to stay consistent with something that we feel is scientifically defensible. If you think that is consistent with the methods that we are developing and this is something that we can – we're going to have to do a number of other species this afternoon.

DR. CROSSON: It's not that we're not going to be using the control rule a lot this afternoon for what I would consider to be data-poor species. This is just not one of them. I can understand that the stock assessment came back with this big question mark about part of it, and there was a discussion about whether you can accept part of an assessment, but the question of whether overfishing is occurring was pretty clear and everybody felt pretty solid in it. I think that in this particular case to me there has to be an escape hatch for this.

You're never going to apply the control rule without logically thinking through the history of the assessments and everything and there is just a world of difference between this and some of the snapper grouper species where we don't even have solid landings data. I think the past couple of decades it is pretty obvious what has been going on with Spanish mackerel, and so to me this is a perfect situation in which we don't need to apply the control rule.

We have a recent assessment that has a pretty solid outcome on it, and I think everybody that was there felt pretty good about it, except for, again, this question of what you do with the pre-MRFSS landings. That was what was shifting the model around and making people wonder, so that is my take on it.

DR. CIERI: I'm trying to remember, but I think there is precedent for it, too, in New England to actually set an ABC without an OFL based on recently years landings for stocks that weren't overfished and overfishing wasn't occurring when you didn't really have a sort of estimate of where you were in relationship to your biomass targets or any of those things. Yes, I think I'm coming around to Erik's point.

DR. WILLIAMS: And just for the record, we're not worried about consistency with the northeast.

DR. CIERI: What it does do is I think it gives you this is – you know, in this particular case where the panel has said that this level of fishing does not constitute overfishing, and if somebody says, well, why is it not consistent when you didn't apply this control rule, you can reach out to other SSCs and say, look, see, they did this, something similar in this situation. What I'm doing is I'm establishing that record for you.

DR. REICHERT: Well, in addition to that I think Scott laid out some of the scientific arguments that I think we can use to justify this. At least that is the way I see it.

DR. BARBIERI: I will respect the committee's decision. I just feel that consistency as we go forward and making sure that we are not developing smaller buffers for species that we have actually higher uncertainty, which is a concern that we have been discussing for quite a while. On the one hand, we are really discussing minute details of how the P-star was conducted; and, you know, as this goes forward and we are making interpolations of the 0.28 to 0.75, to make sure that we have, on the other hand, you know – I mean, why didn't we use the average landings and no reduction then for black grouper as well. It is not overfished and overfishing is not occurring. It was a SEDAR assessment. It is just when you look across the spectrum, that is the consistency that I'm looking for, but I will abide by the committee's decision if that's the case. I'm comfortable concurring with the committee.

DR. WILLIAMS: Well, I agree. Well, then let's do a little more discussion on then what would be an appropriate OFL and just see if we end up with – I mean, that is my concern is how are we going to determine OFL. I don't think you could take the recent landings and say that is OFL when you have a statement coming out of a review panel that says overfishing is not occurring in the recent years. You can't do that for OFL, so then what else could we use for OFL. I was trying to avoid those gyrations, but it sounds like we probably ought to go through that just to maintain that consistency. I concur with Luiz on that; we definitely need to be as consistent as we can. I'm just don't know where we would even begin for an OFL for this specie.

DR. CROSSON: In the interest of time, again, I'm just feeling the clock ticking for everything else that we've got going. I mean, is that really a productive use of our time to sit there and try to figure out what the OFL level is for Spanish mackerel given what Erik just stated when we've got a lot other stuff that is stacked up right now.

DR. BELCHER: I would rather go forward to the council and tell them the reason we didn't get things done was because we're having germane arguments rather than – if there are discussions that need to be had – like I said with yesterday, and that was when my frustration started showing in the afternoon is I don't want us to dismiss things that we really can't discuss in detail because, well, we've got other things we have to do.

Well, to somebody that fishery is important. Regardless of how you look at that, whether it's six people or 250 million people, that fishery has an importance to somebody and we owe them the same discussion level. To me, again, if it is taking a hit because we didn't get all species processed, then, fine, I'll take that hit, but I would rather us have the germane discussions to make sure that what we're doing is defensible across every species that we're looking at.

Again, just fill in boxes to fill in boxes; I mean, and for all those we have landings, 75 percent of average landings – I mean, there is a precedent for that. There is nothing that says that that is erroneous. I just think we need to have the conversations that are necessary rather than – and if we're bogged down in the weeds, then, fine, but if it is really something that is causing a lot of consternation amongst folks, I really think it more important to have those discussions than not.

DR. BOREMAN: I agree, but this OFL, you talked about checking boxes, and that is what we would be doing, just like we did yesterday. We're making up a number that has no support

anywhere in the information we have, so we're just making up an OFL so we have an OFL, and then we go through this elaborate process based on some ginned up number to come up with an ABC. To me you're building a house of cards.

The alternative is just to say if we set an ABC an this level will it do any harm; and based on the information we have in front of us, if it is going to do no harm, let's try this; and if it doesn't work, we can always change later. But as it looks now it is not going to have a lot harm by setting an ABC at that level.

DR. BELCHER: But here is a thought as well with what we have been discussing about the most recent time period, why is it such a bad precedent in this situation to make OFL equal to ABC; use your median landings for the recent time period and set OFL to ABC? I mean, it is not going to stay static.

I mean, to me, I'm kind of in that same situation with Luiz with not having an OFL kind of says that we can pretty much set ABC wherever we want because we don't have a ceiling. It is the process of how this whole thing lays out. I'm kind of trying to wrap my head around the conversation and discussion, too, relative to this. I mean, is that a bad precedent to punt back?
DR. CIERI: Can we get around this by using OFL as a maximum over the time series, because basically that's what they said, that the maximum in any of those years in the recent time period didn't constitute overfishing.

DR. WILLIAMS: For starters I don't think we should set OFL equal to ABC in any case and especially in this case because that would then definitely inject an inconsistency in what we're doing because then there is the buffer that we're working with is from OFL to ABC, and basically we're saying there is no buffer which means there is no scientific uncertainty for this species is ludicrous. That cannot stand.

Now, what about working backwards? Why can't we use this information that is in our hands which says that the current landings are not overfishing and based on that we can then judge what an OFL might be given that these landings might be at ABC? Then we have our consistency and we have our buffer, we have an OFL. It is just we didn't start with OFL; we started with ABC; and we derived our OFL from our ABC rather than the other way around.

DR. BELCHER: So then the counter argument to me is what is going to stop that request from happening with all of our other species, especially in situations where discards may not be evident?

DR. WILLIAMS: Well, how many situations do we have this kind of information? I don't think there is going to be many that are – maybe there might be one other; I don't know, but I can't imagine we're going to have a full-blown stock assessment that went through a SEDAR review panel and the review panel comes out with a recommendation saying the recent landings are not overfishing, but we don't have any information about what OFL is other than they think that overfishing is not occurring. That is not going to be a common situation.

DR. CROSSON: I just wanted to say that the retrospective data that came up in the Spanish mackerel assessment – and I'm sure this is going to happen in those species – is never going to be fixed. I mean we are stuck with that. That is going to be a conclusion and the next time it happens you can't go back and change something happened in the sixties or seventies as far as the data collection.

We'd love to but it is not going to happen. Erik and I can't remember who actually ran this – okay, Paul, but that data is not going to get fixed, so we're never going to have an answer to this question so I don't see the need to go in there and keep trying to pretend it is going to get better at some point.

DR. CIERI: Again, breaking down all those words within that statement, every one of those points that they had, none of them constituted overfishing, so let's take the maximum of those, set that at OFL and then apply a control rule.

DR. WILLIAMS: But by definition it is not OFL, then, because they're saying every one of those points is not overfishing, which means it is below OFL in a sense, because if you're at OFL, technically you are overfishing so you're right at OFL.

DR. CIERI: Right, so we would know that OFL is some distance above that point; and setting OFL equal to the maximum of all of those I think would be probably a better bet.

DR. BARBIERI: I don't want to continue arguing this issue. I really concur with the committee. Let's set the ABC value as the median of the last ten years of landings or whatever makes sense and go forward.

DR. BELCHER: John is going to give us the number.

MR. CARMICHAEL: 4,913,254 pounds. Let the record show Kari is nodding in the affirmative.

DR. BELCHER: Is the group all in agreement with that is how we're going to proceed for Spanish mackerel? Okay, so is that only other species?

MR. CARMICHAEL: OFL is unknown.

DR. BELCHER: Yes, OFL is not going to be stated.

DR. WILLIAMS: I'll add one more thing just to build the record. Further, the other piece of evidence – and I don't know how much weight it should carry, but there is a 1999 assessment for Spanish mackerel and there the MSY was reported at 6.4 million pounds, so this is clearly below that.

MR. CARMICHAEL: There is quite a range of MSY estimates for Spanish mackerel over the years, but they do tend to fall out around the 6 million pound range if you look at the full history.

This is one of those stocks used to be assessed fairly regularly through the coastal migratory pelagic stock assessment.

**One other point of order, the followup is the king mackerel, I had thought that you guys recommended an OFL back in December, but Gregg pointed out that we didn't actually have the OFL. Now the recommended Fmsy proxy from the review panel was 30 percent SPR. The yield in 2011 at 30 percent SPR was also included in your updated tables, and that is 12.8359 million pounds, so essentially that becomes the OFL for king mackerel if there is no objection.

DR. BELCHER: Does everyone agree to that number as the OFL for king mackerel?

DR. REICHERT: That number again?

**DR. BELCHER: 12.8359 million. So, cobia is also a part of the coastal pelagics.

DR. WILLIAMS: Just for the record, I did the Gulf of Mexico assessment and not the South Atlantic.

DR. BELCHER: So assumingly we have landings. John has indicated there are also trends in the document.

MR. CARMICHAEL: Your Attachment 15 contains landing trends for many of these species, and I think cobia was in there. Cobia was not included in there; I don't have landings. We did not have a landings' trend for cobia at the time of the mailout.

DR. BELCHER: Does anybody have any suggestions?

DR. BOREMAN: So the only information that we have in front of us is this 1989 report from Eisley and that's it?

MR. CARMICHAEL: I have some average landings for cobia that are known to be confidential. I'm not assured of the non-confidentiality of cobia landings if we were to show you the average values; I mean, if we were to show the actual annual landings for cobia. I do have a table and I do have a document that I believe you guys were provided, the non-confidential SAFMC ACL landings which has the various averages that have been certified as being all non-confidential, but we know that some of these have some missing observations in them because of confidential data, which is explained in all of the data improvements and the data caveats and was explained in the e-mail that I forwarded from Nick. Commercial is also in there.

DR. BELCHER: But he is saying the total landings.

MR. CARMICHAEL: I don't think that suffices because if you knew commercial, you can then – if you knew the recreational like from another source, you can –

DR. BELCHER: Yes, you can back out the commercial.

MR. CARMICHAEL: – back it right out and know what it is. That is where we get into issues with all this. You're in the million pound range for landings for 2005-2008, 1986-2008, 1999-2008, 2006-2006. Kari is working on a figure of some of the trends from the non-confidential data section, but the caveat there, as I mentioned, is there may be some data which are omitted. As Nick stated in his e-mail that I forwarded to you guys last week, there may be some data that are omitted that should not be omitted, and he listed species like red porgy and black sea bass and others where it seems some data were being omitted perhaps inadvertently.

DR. BELCHER: Luiz is looking at a table that is labeled non-confidential SAFMC ACL landings –

MR. CARMICHAEL: That is what I'm talking.

DR. BELCHER: – for cobia and it has got numbers in it.

MR. CARMICHAEL: I was just explaining that. I was just talking about the fact that in some of these species there were data kicked out for confidentiality purposes that appeared to be inadvertent, and we don't exactly know everywhere every species which data were kicked out for confidentiality purposes, but Kari is trying to show a figure of that data right there that is in your sheet. I'm just trying to put the caveat on it that it may be a general trend but it may not be exact; so if you were to pick a time series of averages, I think it would be much better to pick one of these averages that are pre-calculated as they are likely more complete.

I guess I'll point if you look at that sheet you see the averages that we have; so if we're going to go through the 70 species or 65 species of snapper grouper which have not been assessed and evaluate each time series and then pick medians for different periods, understand that we're in for a colossal amount of work as we try to go through and do this.

Medians have never been discussed I guess really as a measure for this until we got here in this meeting so there is no advanced work that has dealt with medians. There was no discussion of a potential time series at any of our prior meetings, so you see we have a lot of different time series, and we seem to be repeatedly selecting ones that weren't within this. Just so you're aware, that is part of the delay. We're on new plowed ground and new territory than we've ever been in with any of our prior discussions.

DR. BELCHER: Thoughts from the group on cobia on what time series do you want to look at?

DR. BARBEIRI: What are the regulations, the time period for the regulations? We looked at the regulations for the other species. They look stable there, I guess, between most of the time series but then it is going up.

DR. REICHERT: I would suggest we use an old time series unless there are compelling arguments not to.

MR. CARMICHAEL: That would be '86 to '08 on this data and can you accommodate using the average? Then you're probably not going to get it today because we would have to get medians calculated from a known set of actual data. We may be to look in our confidential data set. Kari may be able to pull that out; so if you do want to do medians, then you're probably going to come to a halt and perhaps if maybe you can just discuss time series at this point and we can calculate medians later. But if you wanted the average for cobia for '86 to '08 it's 927,366 pounds.

DR. BARBIERI: Would it make that much of a difference to go from the median to medium since we are being flexible? Well, I'm learning to be flexible.

DR. REICHERT: But do we need the exact number now. We can go through the exercise and say this is what we suggest and we run that through our control rule, then that's what the outcome should be.

DR. CIERI: Given the variability in that graph and the spikiness of it, we probably would want to use the median. In general using the average because that happens to be what is in front of us at this particular time isn't really a good argument. I agree with Marcel, let's just run through the exercise and we'll calculate the medians later.

DR. BELCHER: Okay, so OFL for cobia is going to be the median of the full time series from 1986-2008, so then we need to use our landings' ABC rule.

MR. CARMICHAEL: You guys all have copies of your ABC control rule, right? Did we e-mail that to everybody? Well, we'll just do that and save us a little time.

DR. BELCHER: I'm trying to remember what they are now. The first thing was is it depleted; yes, no or unknown? That much I do remember, what was the question of depletion? Do we have any reason to believe it is depleted; yes, no or unknown?

DR. WILLIAMS: That's kind of a tough one for this. There is some indication that it is not depleted, but it is not as definitive as maybe like Spanish mackerel or any of the others.
DR. BELCHER: So unknown? Okay, then the next one, was it part of the importance of the food chain, whether ecosystem food chain or habitat?

DR. REICHERT: So for the record the first one since I'm taking notes was –

DR. BELCHER: Unknown. It is not considered critical ecosystem for its role, habitat, forage, et cetera, so with that we said that it was not, so it gets a 15. Productivity and susceptibility; low, medium, high or unknown.

DR. WILLIAMS: I think it is low for this one.

DR. BELCHER: Okay, anybody else have a differing opinion or do we need to discuss it?

DR. BUCKEL: They're fast growers. I'm just trying to think of –

DR. WILLIAMS: Their susceptibility isn't that great because they're very similar to – almost like wahoo in a sense that they're a solitary fish. But the one thing that might be the caveat to their susceptibility is they're a coastal species and so as recreational effort seems to be increasing along the coast, that might be the one part, but I don't think that is enough of a concern to bump it from a low risk to a medium risk.

DR. BELCHER: Everybody feel pretty confident with that as far as keeping it at a low risk based on what you just heard? Okay, and then last, reliability of OFL estimate.

DR. WILLIAMS: Well, I think it probably might need to get knocked down maybe at least 5 points because it is – that landings' time series isn't quite as stable as we've seen like, for instance, with wahoo or dolphin so maybe it should get a 5 point -- or get just 20 because of that, but otherwise it is stable across a long period of time so that's suggesting that it is a good estimate in that sense.

DR. BELCHER: Anyone else want to add comments to that?

DR. BUCKEL: I agree with what Erik said on the OFL, but how he concluded that makes me want revisit the indication of depletion because it has been stable. I guess I'm trying to be consistent with what we did for dolphin and wahoo and now for cobia. Maybe cobia is spikier and so that is why we're going to say it is an unknown depletion, but I think the stability argument could be made here that there is no indication of depletion just like we made for dolphin and wahoo.

DR. WILLIAMS: Right, and I said I'm not sure. There is some indication that it probably isn't depleted because there are actual signs in recent years that the population size particularly off Chesapeake Bay has been going up quite a bit.

DR. CIERI: Well, the same token with wahoo we actually had a statement to that effect that this landing stream wasn't causing overfishing. In this case there – what? Well, this one is a little bit more unknown, at least in my mind, and I'm free to change it. Yes, I mean, given the spikiness in the landings and everything else.

DR. BELCHER: So do we want to revisit the first one, then; should that be changed from unknown or not?

DR. WILLIAMS: I don't know; I mean, I hate to complicate our ABC control rule, but it seems like there should be – I mean, you either fall into the unknown or it's not, but here we have some indications that it might not be, but it's not very clear, so it's almost like we need something in between.

DR. CIERI: The reason why, when I was setting it up and when I was thinking about it, was that you know that it's probably not depleted. That was the idea; and if you didn't know or you

suspected that it could be or that it was probable that it was or possible that it was, that you basically put it into the unknown category.

DR. BELCHER: So we're keeping it at unknown in the top one, then. Okay, so, again, back to the reliability of OFL, 20 is compensating enough for the uncertainty?

DR. WILLIAMS: Well, the other thing to add to – actually, I can't say with any authority, but I know Joe Smith from our lab was starting to look at some recent age data for cobia, and another indication that might suggest that it is not depleted is he was seeing a pretty healthy age structure in the ages that he was looking at, if I recall, but, again, that's preliminary and so I'm hesitant to hang our hat on that, so I think, yes, probably still stick with unknown for now.

DR. CIERI: But in the future a filling out of the age structure or a geographic range or that type of stuff that we can document and get something in front of us would be a really good way of us saying, yes, no, this is doing okay.

DR. BELCHER: So then we would be looking to set this at 55 percent of the OFL? Okay, so is everybody in agreement with that; the ABC will be set at 55 percent of the median landings for the full time series, 1986-2008? Okay, so cobia is checked.

DR. BARBIERI: Matt, you said we need age data and the other thing.

DR. CIERI: Age data and/or some sort of geographic range; you know, if you got an expansion of the geographic range, both are pretty good indicators that everything is looking hunky-dory.

DRO BUCKEL: Yes, these are migratory so I think that increase in the Chesapeake Bay could just be the warmer temperatures in recent years, so I don't how you'd get at the geographic expansion.

DR. CIERI: That's why I said and/or.

DR. BELCHER: Okay, the numbers that we will be putting forward, then, for an OFL for cobia is 857,714 pounds and the ABC is 471,743 pounds. **Okay, so the next species that falls under coastal pelagics is cero. I'm assuming that will be the same problem with the confidentiality, so can we look at your figure.

DR. WILLIAMS: Do we have species ID issues with cero?

DR. BELCHER: Does anybody know if there are species ID issues with cero? It looks like a mackerel. Jeff.

DR. BUCKEL: I don't know for sure, but given that folks have a difficult time telling small king mackerel from Spanish mackerel, then my guess would be that cero mackerel and Spanish mackerel would be difficult for the average recreational angler.

MR. WAUGH: These other species in the coastal migratory pelagics are included for data collection purposes. We're not planning on setting ACLs on these species, so I would suggest we skip them and jump to snapper grouper.

**DR. BELCHER: Okay, so we can revisit the snapper grouper complex. Where would you like for us to start relative to snapper grouper?

DR. CROSSON: Again, maybe just trying to get things done a little more quickly; is it possible we could do the ones that we know we're probably going to consider zeroes, like kitty mitchells and stuff that we've already kind of went down that road and maybe just knock those out first before we get into some of the ones that we haven't discussed before.

DR. BELCHER: We were just discussing that, the numbers that we need to look at. I know obviously our assessed species – the one table that we have are just those that have been assessed. You don't have anything for golden tilefish? I thought we did.

MR. CARMICHAEL: Just a little summary of what we sent out as a little reminder; we sent you Attachment 18. It is SSC OFL/ABC tables. What this includes is an overview of the data. It has the potential considerations for OFL and things based on like the average, 1986-2008; the ten-year average or three-year average. We have then a number of different ways of looking at the ABC from the OFL; ABC as a percentage of the OFL; the method that was put on the table by Andy Cooper where you apply an assumption about the distribution in the CV and you calculate the P-star from the OFL.

We have the DC/AC which people asked for in January, which is typically what we called the MacCall approach, but it ties it back to essentially natural mortality with an assumption about the relation between Fmsy and natural mortality; a measure of the relative depletion of the stock or the trend in biomass, and it goes through a couple of calculations and gives you a potential ABC value.

Then we went through basically applying the ABC control rule that you have and getting the buffer and applying that as a percentage approach to decrease the landings from the OFL down to the ABC, which that we kind of ruled out earlier in the week, saying that really wasn't how the numbers were selected for that control rule, so that's perhaps not appropriate.

Then finally it was all brought together for all of these stocks in a summary sheet where we show the different ABC values that come from the four approaches and provided the min, the max and the range. That's where we were at the start of this meeting or the week before last when we sent this out to you guys, and now we're now in a different place with looking at medians and such. I will point out that the data that are in here are data that the council staff actually has had access to and it is not exactly the same as what is in the SERO data set.

One of the big differences in the SERO data set is they went through a pretty extensive exercise to, where they could, account for things like the MRFSS weight and the difficulties with the MRFSS weight estimates and including various fill-ins to try and improve those estimates. The

intent is that data set will be what the council will consider when they set ACLs. The SERO staff is working on the evaluations of the council options and we will use that data set.

When it came to our realization last week, the week before last, probably late, and decided that for consistency's sake obviously it made sense to get ABCs from the same data set that would be used for ACLs and all of that. That's where we are on that situation so we have evaluations that you were provided with slightly different data. They're similar but they're not exact in all cases.

MS. FENSKE: The data in Attachment 18, the comparisons are actually based on the SERO data.

MR. CARMICHAEL: Except in the spreadsheet, which is not the SERO data.

MS. FENSKI: Right, the first half is not SERO data.

MR. CARMICHAEL: So if you were to look at that for trends, perhaps, and just recognize that it may not match exactly; and if you were to calculate a median from that sheet called "data", it would not be the same as calculating a median from the SERO data set that we can do separate, but we can't share it with you because of the confidentiality concerns.

DR. WILLIAMS: I noticed that you computed the average landings in different ways, but you did it for some of the assessed species. What would be interesting is if we could add a column with the actual OFL for those assessed species, we could see how different those averages are compared to the actual OFL.

MR. CARMICHAEL: That has been done. The assessed stocks were intentionally included in there to facilitate that type of thing. Attachment 15 is in one of those spreadsheets and there were some comparisons of this stuff.

DR. BELCHER: So how do folks want to proceed?

DR. BARBIERI: Let's start from the top.

MR. CARMICHAEL: Take it from the top, almaco jack?

DR. BARBIERI: Yes.

DR. WILLIAMS: Are we going species by species or is there a triage method that we might want to talk about like grouping groupers, snappers, porgies or linking them to an assessed species so that we can get some indication of whether they're overfished or not and were they caught with – you know, were they impacted by, say, the red porgy or red snapper fishery.

DR. BELCHER: How many folks have knowledge of that?

DR. WILLIAMS: We have the species groupings analysis that Kyle and I did, that published paper that was essentially linking species by which ones were caught together. We could use that.

MR. COLLIER: Before we get started on this, there was that ACL Amendment about species we might want to remove from the Snapper Grouper FMP. Have we discussed that at all before we go through all 73 and then say, oh, we're going to take them out?

MR. CARMICHAEL: We haven't discussed that. You could comment on that. If you concur with some of those, perhaps you decline to provide ABCs for those; but then if they end up not being removed, then you'd have to come back and provide ABCs. You might do it but it might not go anywhere kind of situation that we're in with those since we can't go through it very step-wise.

But I think if people felt that those seem like some wise recommendations, then you're comments on that would be appreciated; maybe a philosophical statement about the appropriateness of the council managing things that are predominantly captured in state waters. We've discussed this a little bit about red drum and about the corals as well, and a statement from the SSC along those lines would be helpful.

DR. BELCHER: That's different from the one I had from you.

DR. WILLIAMS: I sent two because there is a follow-up paper for completeness, but the one that probably is going to concern us is the second attachment, I guess. It's the Shertzer and Williams one, the 2008 paper; and if you go to Table 1 essentially, it might show some useful groupings that we could somehow use.

DR. REICHERT: Can we do a group ABC or are we required to do a species-by-species ABC?

MR. CARMICHAEL: I believe the guidelines say the ABCs could be provided for groupings of species, complexes and such. You've already done it.

DR. BELCHER: I was going to say we did it for coral.

MR. CARMICHAEL: You did it for coral, yes.

DR. CIERI: That is really if we didn't have much of a choice. Here we do have individual species that are listed and hopefully some sort of landings.

DR. BELCHER: How could we combine these because we've got basically recreational and commercial? We would be dealing with total landings, right, and if the groupings differ – if you look at the aggregations that are similar, those that are common between the two, you use as a cluster and then those species that aren't shared end up being pulled out separately.

DR. WILLIAMS: I wasn't suggesting that we – the thing I was thinking for using these groupings wasn't necessarily combining them and then coming up with a group ABC, but mostly to use information from the fully assessed species that are within that group to inform on when a stable period might have been or when they might have been at MSY for computing the average landings because one of the issues we're facing with the snapper grouper complex as a whole compared to these others that we just dealt with is we have a lot of species that are overfished.

The concern here is that we can't just look at a time series necessarily and assume that some stable period is MSY because there is the potential that if it has been caught alongside a species that is severely overfished, that it is likely overfished as well. That's the main concern with using the snapper grouper complex as a whole, that these time series we have to take them with a grain salt because there are so many other species that are overfished from this complex.

MR. CARMICHAEL: Well, here is one of your complexes. There is the blackfin, sand tilefish, silk snapper, it was number seven or something, it was off the upper right column. There are their landings' trends. Silk snapper is the purple line that is over on the other axis because it is an entirely different magnitude. It is basically an order of magnitude greater.

You're not seeing the values. There is your trend. No, this is everything. This one ain't half bad. You're going to see some that are far more divergent and disparate than this right here. This is not out of the ordinary for a species – now keep in mind that of the species that have been assessed so far, the thirteen or whatever out of the 80 some, they represent about 80 percent of the entire fishery landings, so a lot of these species are pretty rare occurrences. Some of them may come up pretty regular in very low numbers. Others, they might pop up a thousand one year and ten the next year kind of stuff.

DR. CIERI: The difficulty with all of this is that as management action goes forward you could see a shift of effort from some of these species to others and/or an overall decline in effort where you wouldn't see any of these species landed.

MR. CARMICHAEL: I'd say all those have happened and will continue to happen. I think there have been shifts to some species based on management that the council has done. Some of these stocks perhaps they might have become something, but the council has had a policy in place for a long time, a two-for-one permit restrictions and stuff, and certainly in the commercial fishery bringing effort down; thinking of the recreational fishery, a lot of these, if they're farther offshore, stocks are just not going to get as much interest, you're not going to go out there for one or two species, and we have a lot of aggregate bag limits in place that has kind of an overall regulatory burden.

We've discussed a lot about the headboat fishery with – you know, when restrictions go in that restrict their take of, say, target species that might be farther offshore and they typically are the ones that would work farther offshore, a lot of their trips have changed over time where they operate much more near to shore than they did, say, in the sixties and seventies and eighties. All of that stuff has been going on, which means we might want to be careful to not begin to apply a scalpel to this thing and be a bit more coarse in how we deal with these types of landing trends.

DR. CIERI: And then for the next part how well are the species ID'd in the landings?

MR. CARMICHAEL: Many of them it is not well at all, so another common point of discussion at the SEDAR workshop we know that our data reliability has generally increased since the 1990's. As you get farther back, you're going to have a lot of these species landed as mixed. There are categories for things like snappers and groupers and grunts.

The general trend over time has been to more species specific and less the mixed categories landings. If you get in the more recent time period, you would probably have your more reliable landings. As you get in your more distant time period, you're losing some reliability but you don't have as much impact having new regulations, which the more recent years we know that there is a lot of regulatory impacts, especially on a lot of these non-target kind of species that are just, quote, ancillary.

If you're not taking a gag trip or you're not taking a vermilion snapper trip because of the regulations and because of closures and everything in the last couple of years, well, you're not encountering these other lesser species you would have encountered with them. It is about as thorny a situation like this can get. It's a real tough one to try and draw from when it was sustainable out of these types of trends, for sure. Given some time, obviously, we can go through and create a little figure like this for each one of those complexes if you wanted to look at them if we think there is value to that?

DR. CIERI: That's actually kind of helpful. You look at this on there and it looks like it is highly variable with no trend across the time series for the most part unless you're taking the most recent time series, for example, for silk, but outside of that it looks like it is highly variable but without trend. Now, what you do with that, I don't know.

DR. BELCHER: Do folks feel that would be helpful?

MR. CARMICHAEL: You know, everybody could do one. We have the data sheet that was – the landings that are in the data that Kari sent out that are in your attachment, whichever one it is that just has the data. Well, no, I think we're better off using that for these trends because they have that. You have the table of the groupings and you have the listing of the data. You could go through with the data that we have and that you were provided by species which has passed our confidentiality situation and you could plot it yourselves.

MR. COLLIER: Since we have landings for each species individually and then we're going to maybe use an indicator for the overall groupings, would it be better just to have the indicator species up there and then use our graphs here and compare that visually? That way we don't have to do every grouping independently.

DR. BARBIERI: Yes, have we made that decision yet because I think we should have that perhaps for the record at some point that we made the decision not to – I thought that the discussions in January – those were based on my personal meeting notes and what I had sent to

John – were that we had decided that whenever possible our first choice or preference of methods for data-poor species will be to use the DCAC whenever suitable or possible.

Then for a species for which we couldn't do that, then we use a percentage, you know, proportion of average landings – have we made that decision yet; do we have any feelings? I mean, I can tell you seeing what some of the other SSCs are doing nationally, several of them are adopting the DCAC.

Of course, they have better data than we do to be able to come up with meaningful estimates. Otherwise, if people decide let's go just to the median of landings over a time period and we apply – you know, that will be the estimate of OFL and we will apply the data-poor control rule and reduce from there, that's fine as well. We had discussed at the January conference call potentially use a DCAC, and this is why Kari actually went through the trouble of coming up with natural mortality estimates and looking at the depletions and calculations and came up with the results for the DCAC values for each one of the species.

My understanding – and that is just me personally because it was just a conference call that we had back in January, but my understanding is that we had chosen the DCAC as our preferred method whenever suitable based on being able to identify the period when the catch was stable, number one; and, two, having reliable natural mortality estimates and mortality estimates that was within the range recommended – less than 0.2 as recommended by Alex MacCall.

For species for which we couldn't use the DCAC, then we would default to mean or median of landings over a period of time and then take a proportion of that based on life history attributes I guess or vulnerability. Some of the discussion was, well, maybe we just do 75 percent of the mean or median. Are we still considering the DCAC or now we just as a group here decided not to go that way?

DR. WILLIAMS: I think we should still consider it. I think it's a viable method. I think we just have to be cautious about the inputs that that method requires and how we're choosing those and what we're basing those choices on. That's why I say looking at the groupings, looking at the assessed species maybe that can help inform us on what would be appropriate values for some of the DCAC input. It would help if we had maybe a presentation on DCAC stuff that Kari put together because there are some other caveats that I forget that we have to be careful of. I think M needs to be like below 0.2 or something; otherwise, we run into problems and things like that.

MS. FENSKE: The original paper does suggest that M is less than 0.2. A couple of the other assumptions in the table that I have in Attachment 18, all of the Delta values are listed as 0.6, looking for your input. The other assumptions involved in the MacCall method are that the C value – they're assuming there is a relationship between Fmsy and natural mortality.

Currently in the spreadsheet I have C listed as 1, which is assuming that Fmsy equals natural mortality, but that could change. I think he recommends 0.8. They also assuming – I think one of the strong assumptions inherent in the method is that the biomass at maximum sustainable yield is equal to 40 percent of virgin biomass.

DR. WILLIAMS: That latter one is a reasonable assumption. I'm not worried about that one.

MR. CARMICHAEL: The general approach that we came up with was the default M of 0.2. Well, basically the default treating it is if the Fmsy is 0.2, so it is setting the scaler from Fmsy to M at 1 and setting the Fmsy at – the M at 0.2 for all the unknown stocks and then found the value for the biomass trajectory scaler that resulted in a 75 percent – and an ABC at 75 percent of the average catch, just because we had no information really on the trajectory of any of these stocks.

We don't have independent data or anything, so the thought was, well, 75 percent is the rule of thumb that is out there, let's start with the default scaler that reduces everything to 75 percent; and then if you know some more information like you can go in and adjust that trajectory scaler, then you can do that; or if you know the actual – if you know something about the M, you can put the M in there; and if you decide that the Fmsy should be some amount from whatever percentage of M, then you can adjust that parameter as well. The parameters can be adjusted based on the knowledge that is known.

We just came up with a default parameter values that resulted in ABC at 75 percent of OFL, which is pretty ad hoc and I think it really gets you into having to have the discussion is all of that complexity getting you anywhere, or would you be better off just being straightforward and using some percentage of ABC. I tend to think you're probably better off acknowledging that you don't know really anything about that and just pick the 75 percent for these species; again remembering sort of the magnitude that you're dealing with and where these species fall and all of that.

DR. WILLIAMS: I think that would be too inconsistent with what we just went through with all those other species. We need to do something a little more complex than that. I don't know how much more complex to –

MR. CARMICHAEL: The DCAC is inconsistent, too.

DR. WILLIAMS: Yes, I think so.

DR. BELCHER: Okay, we've put together those trends for each of the groupings, and this is just from the headboat, right, headboat groupings that Erik and Kyle put together just to get an idea of all of those landings that are represented in each. What it is, is it says blank series in there. I just turned them off so that you would see the action ones.

DR. CIERI: But it certainly says something; doesn't it?

DR. BELCHER: It is one of the things that you can't quite understand and you want to see which are the highest species, but we can usually find that one, but I thought it was more or less to see how much these trends follow one another within a group.

DR. CIERI: That is kind of cool.

DR. BELCHER: This is based on the headboat groupings. It includes whatever the landings were that John has, total landings.

DR. BARBIERI: Total landings, yes.

DR. BELCHER: That's actually the years 1986 forward. What is the terminal year; 2008, 2007? This is all the species that were in each of your groupings; so if there was an assessed species in there, it is in there. I could make it look nicer if people want to continue with it. Like I said, for the surface of whether trends were consistent in the group, I just put the series on and shut other ones off.

DR. BOREMAN: It looks like the last ten years they look stable almost through all the different groups.

DR. BELCHER: Well, Group 1 is kind of tough because with the assessed species you've got black sea bass in there, gag is in there, red porgy is in there, red snapper is in there, vermilion snapper is in there.

MR. CARMICHAEL: Red porgy is highlighted; there is red porgy.

DR. REICHERT: And those are the years?

MR. CARMICHAEL: And this says that '81 to '86 is not all the data sources. I think one of them we didn't kick in until '86. I would sort of discount that and look at '86 forward. In other words, some of this slope upwards is an artifact of a data set not being there for those first few years.

DR. REICHERT: Just as a general reference, if that is red porgy, what was the number – Chip just gave it some other numbers?

MR. CARMICHAEL: From the one we sent you from the SERO that says non-confidential, red porgy is one of the species that got kicked out as potentially being confidential on the commercial so I don't think that has the commercial data on the sheet that you have.

DR. REICHERT: So even during the stringent regulations, the total catch was just under 4 million? Just as a reference, I'm trying to figure out what we're looking at.

DR. CIERI: So the stringent regulations; is that '99? Moratorium on possession? So that's all bycatch discards?

DR. REICHERT: Discards are part of this graph.

DR. WILLIAMS: I don't trust this; something doesn't look right. That correlation between those is way too high. Yes, they're mirror images and something is not right. Something has been plotted incorrectly.

DR. BELCHER: Like I said, I have no control over what was in squares. All I did was go in and delete the data that was there to shut off those series that weren't part of that grouping. That's all I did. Nothing got sorted, nothing got calculated, it just came straight out of the table that was in front of me.

DR. JIAO: Maybe you can try to recalculate it again. It doesn't match the figure we get from the excel spreadsheet.

DR. BELCHER: Like I said, all I did was just – as you can tell, the lines are there. All I did was just delete the information that was in the – in essence shut them off on the worksheet. That was the only thing I did do. How do we want to proceed?

DR. BARBIERI: Well, we still don't know what happened.

DR. BELCHER: It's apparently something with the way the – I didn't delete anything like in essence of kicking a row out. That's why I don't understand how that would have happened.

MR. CARMICHAEL: Do you just want to drop yellowtail as an assessed stock out of this plot, but it's a potential indicator. Of course, yellowtail and red grouper are entirely different statuses. Do you want me to delete this, too, delete the assessed stock?

MR. COLLIER: I thought we hoped the idea was we could use something that was assessed as kind of an indicator of what direction these were going and maybe some of the regulatory history.

DR. WILLIAMS: I hate to create more work, but the way I envision this is if you could plot – I mean, this shows all the species, but maybe just break it into assessed and unassessed within that group and then right next to it the average F over Fmsy and B over Bmsy for those assessed stocks and that wouldn't take – I just did it for the whole complex. I don't know what it tells us, but it suggests some things. That was where I was going with all this.

DR. BELCHER: Do you want to show it, Erik?

DR. WILLIAMS: Yes, but this is for the whole complex, and we can look at the patterns and see what it suggests.

DR. JIAO: I think based on what Erik just said and also based on the size of the data that are available to us, we will need to make a decision based on the catch history anyway, but I think we can borrow the fisheries data based on the assessed species and also based on the assemblages from the cluster analyses if this seems the appropriate to go forward.

MR. CARMICHAEL: In this case you've got yellowtail and red grouper. Yellowtail is not overfished and not overfishing and has been crunching along pretty fine, and you're got red grouper which you just decided is overfished and overfishing. That is where the status will get tough because we have different statuses when more than one species is assessed.

DR. JIAO: Another thing that I realized, I remember two years ago when we faced with those data per species. They were effort and a catch-per-unit effort data provided so we would get some sense of the trend of the population abundance. Even though everybody said it was of low credibility, but there is still some information there. The landings here are of low confidence anyway. This is something I wanted to mention.

MR. CARMICHAEL: You all ruled out all the CPUE at that meeting, and we haven't gotten back to it. No one came out wanting it at any of the subsequent meetings, so no requests were made for those analyses.

DR. WILLIAMS: This is the whole complex. It separates assessed into unassessed. For starters one thing I noticed is the premise that the unassessed accounts for a really small fraction of the total landings. It is not that small. It looks like it is almost half unless I've got some of the unassessed and assessed mislabeled, but I don't think I do.

The other thing you notice is the assessed show this total downward trend whereas the unassessed are actually either going up or leveled off. Here is from the assessed species, which I don't think I have all of them in here – I know for a fact I don't have yellowtail snapper in here, but this is sort of the average F over Fmsy and B over Bmsy.

The F over Fmsy I took a geometric mean because F tends to be a non-linear response variable. I included red snapper which would have thrown this whole thing off. Here is the general pattern is you see that overfishing probably reached its peak in the early nineties and has just been going down ever since.

There has been improvement in reducing overfishing, but the problem is on average – which still assessed species are on average still overfishing and still overfished in the terminal year. Yes, they're both headed in the right direction, which is good news. It would be nice to maybe look at this for each of those species groups; these two kind of plots where you have the assessed and unassessed landings and then the stock status. I don't know; I don't want to create work if people don't think that is going to be that informative.

DR. BARBIERI: Your suggestion is doing this for each one of those groups? Yes, I think it would be informative.

MR. COLLIER: One thing that was brought up was in the first one where we had yellowtail snapper – or the second grouping where we had yellowtail snapper and red grouper, they're going in different directions. However, if you go over to the commercial, red grouper is in with vermilion snapper, black sea bass, gag, red porgy, all of which have showed an overfished trend. So picking which one is going to be the correct one is going to have an influence on how we decide.

MR. WAUGH: Just one observation about yellowtail snapper; I wonder if that's a good one to use because oftentimes it's almost talked about as you're dealing with extensive aquaculture. All the baiting and chumming that goes on with those – I know I've heard statements made that

they're probably at a higher biomass now than naturally because of all the chumming that is going on. I just offer that for your consideration when you think about yellowtail.

DR. BELCHER: What about issues as far as co-occurrence? Yellowtail, too, is in that kind of an area restricted – it's more of a Keys population in terms of its exploitation and all where you have some of these other species that are more widespread from North Carolina south.

DR. WILLIAMS: Right, and that is why I attached that second paper because we kind of addressed that spatial issue to some degree, too.

DR. REICHERT: Can you run over the data series of the top series to give us a quick view of what species they are, because I think the species' names pop up, right?

MS. FENSKE: Do you want me to delete red porgy, red snapper, black sea bass, gag? Yes. Greater amberjack?

DR. REICHERT: Well, I was just thinking how to proceed and should we quickly go through these species and see what we should do in terms of potentially looking at years where we consider landings?

DR. BELCHER: The first thing technically we have to do is truncate the time series because of not all data series being represented in the early years.

MR. CARMICHAEL: You can evaluate the trend but it doesn't mean – you know, you could include those earlier years if you want. The data can be there for calculating ABC.

DR. BARBIERI: Well, should we start with the white grunt, then, since it's up there a little separately, because if then you pull that one out, you will extend the other one from the mean and we get to see those in more detail?

DR. WILLIAMS: The concern with this group is the ones that were assessed, other than greater amberjack, are all in overfishing or overfished. In fact this group more than any probably has a higher bunch of overfished and overfishing species in it. Then the question is given that, what does that tell us about, if anything, what is an appropriate time period over which to compute average landings.

DR. BELCHER: Well, some of the concern is a shift in pressure towards these underutilized species, then as you're looking at the ratcheting down in your assessed species, your biggest concern was in the latter years is there an upward trend in the other species, correct? Wouldn't that be one way of looking at it?

DR. WILLIAMS: Yes, it is one. There are a lot of concerns. Are the landings – if the landings are mirroring the assessed species, then there is a chance that they're overfishing at the same rate that the assessed species are overfishing at, so any landings we choose could potentially be overfishing landings level; or, it could be the opposite.

Like you said, if there is this increase, there could be species switching going on because within this group the overfished species are fewer in number and so the other species are being caught more, in which case, again, the landings might be then entering into an overfished status because you're switching species. I don't know how it informs us yet if it does at all.

DR. BELCHER: I guess some of what I was thinking was to what we were using, and maybe this is just my error in thinking of the rule that we were developing in terms of are they depleted or being at risk of depletion. I was just thinking that if there was any kind of upward trend in – a stable trend as we discussed stable trends and what the impact of the stable trend is. If there is an issue where the assumption is, is as you shift away from one and they're caught simultaneously, and you're throwing back one, but there is a chance they're going to keep the others – I don't know; I'm just trying to think of ways to look at it.

DR. WILLIAMS: One issue you have to keep in mind with this group, which we didn't have as much trouble with the previous groups, is these are longer lived; so in order to say something about a level trend in landings, it has got to be a lot longer time period that it is level for us suggest that it is a sustainable level because the age structure is so much bigger for these that you could have four, five, six, ten years of seemingly level landings, but that could be overfishing the entire time and you wouldn't pick that up just from the landings.

DR. REICHERT: We have, of course, fishery-independent information for some of these species, quite good fishery-independent information, bank sea bass, knobbed porgy, tomtate, white grunt in this group, and I can go down the list with some of the other species. The data is available.

DR. WILLIAMS: Again, more frustration is being expressed here. Why wasn't the MARMAP data – that is seemingly our best shot at trying to understand what is going on with these species – summarized and presented as part of the briefing book and put into this whole mess? This seems like that is very valuable data.

DR. BELCHER: Because we didn't ask for it.

DR. REICHERT: While I don't have the minutes in front of me, but I remember offering – I mentioned that MARMAP has data of a bunch of these species available.

DR. BUCKEL: If we just looked at what we have here in front of us and their discussion with you, Carolyn, about if you could use the trends in the assessed species and say you know that one of these is overfished – or several in the group are overfished, and the ones that are unassessed, could you apply that status, too, and I think Erik mentioned, well, two different way you could take it.

I think if you saw the increase in landings in the unassessed species, if those mirror each other and it wasn't just a switch – it wasn't just, okay, white grunt were low early on and then just popped up in the last five or ten years; so another way to cluster these data, I think in the paper it is all pooled across years. Another way is you can cluster by the time series.

Not to add more work, but that's another way to get at if it has the same trend, then that would tell you. You may be more confident of the assigning a status to another set of stocks for one that is assessed. Looking at that, white grunt and greater triggerfish look like they mirror some of the other assessed stocks that are in that group, and I think we could probably make the argument from the fishery-independent data, too, that those are overfished.

MR. CARMICHAEL: You have the MARMAP status of stocks from 2007. It is Attachment 27. If there is a more updated version, I don't have that from MARMAP.

DR. REICHERT: There is not; we're working on that.

MR. CARMICHAEL: So you have it; you have the data?

DR. REICHERT: The data is available.

MR. CARMICHAEL: It was distributed to the committee, Attachment 27, the MARMAP status of the stocks from 2007.

DR. REICHERT: Yes, and on Page 26 is the white grunt. That is why I was saying we have fishery-independent information.

DR. BELCHER: So how do we interpret that trend?

MR. COLLIER: The peak in the species for white grunt – the peak in the CPUE appeared to be about the same time the peak in the landings was and then decreased after that. You can kind of take that as an indication of overfishing.

DR. BELCHER: There is size data, too. I don't know if that is helpful for anybody to look at as far as trends in average size of the fish. That is Page 37 in the PDF document. Sorry, it is the MARMAP.

DR. WILLIAMS: Yes, one thing to be aware of, though, with that data is that traps do tend to be dome-shaped selection, so the mean length over time might not be any indicator of stock changes.

DR. BELCHER: Well, I was just pointing it was available, and we had mentioned about looking at that before.

DR. JIAO: Well, I just want to make the procedure really to be moved forward. I can think of two possible ways that we can go forward. One is to use the DCAC approach developed by Dr. MacCall. In that approach there is a reduction in biomass sort of relative depletion parameter there. We can develop that based on the relative abundance data provided by the MARMAP fishery-independent survey data so we instead of using a constant value of developing the strategy, that we change the value for each species based on the MARMAP data. That is one approach that I can think of.

Another approach is the one that we developed yesterday based on the data-poor species. If you look at the value you used, the 75 percent, all year averages is very close to the DCAC estimated approach. Then we can plug in the fisheries data based on the relative abundance data to help us to fill out the values on the fisheries data, and I would assume that we know the life history stuff for the other categories. Those are two possible approaches that I can think of.

MR. CARMICHAEL: One caveat, the DCAC that we put together comes out at 75 percent because that's how the default values were configured, so that's an intended result and not an outcome.

DR. JIAO: Yes, so that's basically the two approaches will end up at a similar result once you have the relative abundance, because DCAC now you assume all the species have the same reduction rate, all the depletion rate; the same thing that way, yes, and now you change that rate for each species.

Then for another protocol we developed yesterday, we have different values for different species because different species can have different fisheries figures in life history. I hope we get a consistent result from both approaches because really they used the same idea to develop those two approaches.

DR. BELCHER: So how do we proceed?

DR. BARBIERI: I mean, is it realistic for us to do it this afternoon, in the next couple of hours, right? Well, I mean to do the DCAC – Yan, I don't think that is an option for today, right?

DR. JIAO: I agree. I'm not that comfortable to recommend the reduction rate this afternoon.

DR. BELCHER: Well, here is a question; if you had to punt and put a placeholder so that we could end up with DCAC approaches, if that is an alternative, what would you offer up? Would you come up like with what we've done – where we talked earlier where instead of giving the actual number, we've given the procedural outline of how we want to get that number and take the median of the time series and then 75 percent, 65 percent, 55 percent, whatever, is how we get the ABC?

Is that something that is a possibility to offer up for these species or saying in the situation of certain issues we would prefer the DCAC approach with the following inputs once they have been calculated to generate the – I mean, I don't know, I'm just trying to come up with a way that if nothing else it is a placeholder, but it's one that we're all comfortable with offering, with the caveat that we will get a better estimate to put in there. Well, I mean, like I said, we've offered up a few right now that we've said that the methodology is put there. We just don't have the time to put into the number crunching of it.

MR. CARMICHAEL: If you're going to start place-holding, then why wouldn't you just pick some average landings and call that ABC and set up a two-year limit or something and then try to get more information.

DR. BELCHER: That's kind of what I was going after.

MR. CARMICHAEL: And do that and do something simple to get out of the hole for this immediate slump that you're in and think about the discussion or risk to the stock. Some of these stocks, nothing has really been looked at them for 30 years. They're still there now. Their ten-year average landings carried forward for two or three years is not going to probably pose additional risk and maybe we'll get a number that people feel like they can stand behind with scientific basis and solve the immediate problem for this large number of stocks that has not been assessed and devote more of the attention in the remaining meeting to something like golden tile, which has an assessment and we haven't done recommendations.

I guess yellowtail snapper; it is not an overfished and not overfishing stock. It is something we need to talk about in terms of a recommendation. Wreckfish, there has been a workshop on wreckfish and a bit of information there, but it is a real challenge because you need characteristics of the stock. We have a couple of species that occupy some attention outside of all these for which we just have landings. If you want, we can scroll through a bunch of these species if you want to see the different groupings and how their trends look, but most of them are pretty much all over the place so it is going to be hard to infer from them.

DR. JIAO: I think it is variable to look at the species groups that is developed from Alex's group and the percentage values developed from the approach yesterday, all the percentage reductions based on the MARMAP data and see whether they're actually close. If they are close, that is good. It means we get consistent results from different sources and then we will feel more comfortable to give a recommendation of the percentage of the average catch, average landings, so I think that is variable to do it.

MR. CARMICHAEL: I think before we get there we have to decide what is the average period that you're going to use and that has stymied the group for a year or better now just agreeing on a period over which to do average landings. We can't begin to compare results based on an average until we know the period.

DR. REICHERT: But if we go through the species, because I feel that will vary by species – if we go through the species, can we decide it by species?

MR. CARMICHAEL: That's where we were and then we started to go by the groupings, so now are you proposing going through individual species or do we still want to talk about going through each grouping, and did we reach any conclusion on the first groups that we've devoted quite a bit of effort to now Group 1.

I would tend to think if we can't reach an agreement on a small group of species that have been merged from a grouping's analysis of having some similarities and knowing that a couple of those stocks have actually been assessed, then I'm very hesitant to think that we're going to go through species by species individually and pick out – because every one that you see, well, it is going down, well, there might be an explanation because of effort or there might be an explanation because of regulations, and we don't know. A lot of these are subject to the

comprehensive regulations on group bag limits and things of that nature that they're going to make even more complicated.

DR. BARBIERI: One other potential suggestion here would be just like what we did for the first group, you know, after you plot it up there and you put it up there, you can pick which species – after we remove the assessed species, which ones sort of dominate in terms of landings – in this case it is white grunt – and we pay a little more attention to those species that have higher landings; you know, be a little more careful on how we evaluate those because, of course, those are being removed at a higher rate than the other ones.

Right, at a higher level than the other ones, but the removals are larger for those; and for the other ones, I think the only practical thing that we can do for the rest of the afternoon is decide on 75 percent of average landings and take another year to develop something a little more carefully prepared and provide revised recommendations next year. I mean, isn't that an option, John?

MR. CARMICHAEL: Whatever you put in place stands for a year; and you just decide if you're going to do something like that, it stands until you change it essentially, so you have to decide whether you use 75 percent of average landings, whether you use the average landings, and what will be the period that you're going to use?

DR. BOREMAN: I don't know; we have a lot of options we can go to. There is a consistency issue but here these are unassessed stocks. The fact that they're unassessed to me means that they might be less of significance to management. They're species that are not as – don't hold the interest of the managers as much. I like John's idea of just doing an average of the last ten years for stocks.

The ones that are more abundant in each species group in terms of catch, that would be a signal that if we are going to do assessments let's start with those or collect data, start monitoring, let's start monitoring those. Those seem to be the important ones controlling the catch of those particular groups.

There are a number of different ways that we can go, and it seems like each way is going to be inconsistent with what we've done previously. At this point I agree that taking the last ten years across the board for each of them and average. You know, 75 percent, we could do that, too, if they all appear to be going a little downhill, but I didn't see that from up there. They seemed to be just varying around a mean value or median value.

DR. BARBIERI: Or perhaps, just to add to what John just mentioned, if we look at species like white grunt that seem to be – you know, landings seem to be going up for the last three, four, or five – I mean, maybe for those we do something a little different and we crimp it down to 75 percent, but I think with the other less exploited species we just do the –

DR. WILLIAMS: I don't think we can go with 75 percent by any means because all of these species tend to fall in that high risk category in the PSA alone, and then there is going to be a

bunch that we would have to say that the depletion level is unknown, so that right there is 35 points right off, so at best we're looking at 40 percent for some of these.

DR. CIERI: Yes, just to echo Erik's comments, if we're going to go through and not make choices on individual species and really take a hard look at them, that is a lot of uncertainty associated with that.

MR. CARMICHAEL: If you do that, should you try to look at a time rather than the last ten? To me, they're sort of a tradeoff with the peer review pick versus what you do with it after that fact. If you pick a period when landings were relatively high, but it appeared somewhat stable, as we've talked about before, then it seems to me you're in a more defensible position to then reduce versus more of the – you know, you're at this stable point and you don't know what it says relative to the OFL level.

DR. BOREMAN: Again, think of the implications of going through and taking the average landings for the past X number of years and cutting them by half or more; what is the council going to do with that other than add another bunch of regulations to reduce fishing on those stocks as well. I know that is not something we should worry about too much, but still what are the implications of our advice to the managers? What are they going to do with it?

DR. BELCHER: Should it be handled similar to what we recommended for Spanish where we don't give them an OFL because we don't know what OFL – unknown. Erik is shaking his head, but I don't know what other alternatives we're –

DR. CIERI: If we're going to sit here and treat a whole suite of species all the same because we're out of time, then we need to come up with something. There is a lot of uncertainty there.

DR. BELCHER: The goal to me wasn't that; it was just the idea if we have to – we have to put something forward. It is not end all be all, but what can we all agree to as far as a placeholder? Maybe it is not the best terminology, but a placeholder for the time being so that we can have the ability to get DCAC runs or whatever these other approaches are and be able to break and tease apart the time series. It is obviously not going to happen today.

It just gets us the opportunity to get us through. Again, default to 75 percent of the average landings. It's there. I'm throwing that out. I'm not saying that is the thing, but that is what I'm thinking; what is the best thing that we can concur with for right now and not just drop it and leave it and walk away from it and never revisit it. It is just for now because we have to get these numbers forward.

DR. CROSSON: I definitely agree with that idea. I don't see any other options other than this coming across. I don't think we can really set OFL levels for a lot of these species, and so treating them as a group and knowing also that the combination of all the rather severe restrictions that are coming down in the snapper grouper complex in the South Atlantic are probably not going to allow anybody to get near whatever ABC levels we set, I'm not really that worried that we're going to just decimate a stock if we just go with the median value of the catch

levels for the past five or ten years or something along those lines. There are other species that we have more information on that I think we should probably go ahead and move towards before the day is over.

DR. WILLIAMS: If we're going to triage this, I would agree with the last ten years, but I would also agree that the last years is probably representative of OFL and not ABC because most of these stocks on average are still overfishing or overfished of the assessed stocks, so really the last ten years is more like OFL, if anything, and not anywhere near ABC.

I would say we go with that as OFL and then we look at our data-poor control rule and come up with a one size fits all reduction based on where the average unassessed stock fall in the PSA, where the average unassessed stock falls with our knowledge about depletion and all of that and see where we end up.

DR. CROSSON: To that point, Erik, if we come up with a number after we have set an OFL level like you said that's at 60 percent of whatever, and then we go through the process of the control rule and we knock it down to 20 or 30 percent of the average catch, you're comfortable with doing that given the information; I mean, knowing what the impacts are going to be for doing that in an hour?

DR. WILLIAMS: Not knowing the impacts but knowing all the uncertainty that we're throwing into this thing by lumping species together and adding that additional source of uncertainty; yes, yes. Again, incentives, people, we've got to create incentives for collecting more data, doing the analysis properly to get the right numbers. If we put something out there that they can live with, those species will never get assessed, they will never get better data collections systems because there is no incentive then.

DR. CIERI: Basically to that point, if it's a placeholder for one year and they're not going to reach it anyway because of the other management options going in –

MR. CARMICHAEL: That argument can swing both ways just as easy. I think that's sort of where we seem to be torn right now. The other side of the coin is if it is a placeholder for one year, why not just use the average landings and buy one year?

DR. CIERI: And the flip side, if it is going to be just for one year, then what is the big deal?

DR. WILLIAMS: Except that it would be inconsistent with what we just did the rest of this meeting; the previous part of this meeting.

DR. BELCHER: Well, here is the other thing, though. If you're concerned about removals, if they're not landing them, they're discarding them, then what are the chances that the discards aren't going to be equal to what the landings were? You're still losing a fish.

DR. WILLIAMS: Again, management implications we're not concerned about.

DR. BELCHER: But my point is you're not gaining anything by setting it to zero anymore than you're leaving it at – if we apply our rule we're banking up from zero, but the idea being if you were to set it to zero, you're still losing a fish regardless.

DR. BUCKEL: I think these are the same arguments that were going back and forth yesterday in terms of where the OFL should be set. Yesterday we ended up for golden crab and several others, there were several of us that weren't excited about this, like Scott is mentioning now for the snapper grouper, but as a group we ended up moving forward with those values as OFL and we backed off quite a bit for ABC.

To stay consistent with what we've done for the last couple of days, we would go with a description that Erik provided. Again, for the last ten years the assessments that have been done, it's over 90 percent of the assessments, I would say, for these snapper grouper species have all overfished or overfishing is occurring, so that's probably a good bet that the average landings for the last ten years is more similar to OFL than ABC.

DR. CIERI: I'm just done with this discussion. This is the same discussion we had yesterday, and it just comes down to separate philosophies as to what the Magnuson-Stevens Act says.

MR. CARMICHAEL: Let's settle that core question instead of just relying on consistency of a narrow, narrow consensus yesterday. I wouldn't want it to come across as looking like in this meeting, well, you made a decision on the first day and by the end of the day it's like, well, just go along with what we chose, so let's try and settle that question on its own merit.

DR. WILLIAMS: Well, answer this question; do we think that the assessed stocks are some kind of indicator for the stock status of the remaining complex?

DR. CIERI: And if they are; then we're dealing with long-lived species that are in an overfished condition. No, I said I was finished with this particular discussion.

MS. LANGE: I had a comment relative to something that Erik had said earlier. It's not on exactly this issue, but the thought that we're trying to provide incentives, I don't think that's what we're supposed to be doing. I think the way it was phrased is sort of pulling the politics and the management and everything else into our decision-making, and I would not want someone to say, well, this SSC is deciding to clamp way down so that we can force the powers to be to fund more research. That is how it could be interpreted, I think.

DR. WILLIAMS: Incentive is my interpretation but what the Act is telling us to do is increased uncertainty should we to increase precaution. I don't think there is any denial that is in the Act.

DR. CIERI: When you're dealing with a long-lived species that are in an overfished condition, the majority of them within a complex or species grouping, and you're not even looking at individual species, that's pretty uncertain.

DR. BUCKEL: Isn't there language in there about the least productive species when you have this mixed species fishery, that you should be managing based on the least productive so I'm just thinking, Matt, when you were making those comments about, well, they're long lived; that's definitely not true for all 73, but it certainly is true for many of the assessed and many of the others that are not assessed.

If those are the least productive, you don't want to say, well, okay, bank sea bass are shorter lived, highly productive, so you can go ahead and keep fishing those. Well, if they're out there fishing for bank sea bass, they're going to catch these other lower productive species and have this issue with the discards that Carolyn mentioned. That is something to keep in mind, too.

DR. BARBIERI: By the way, to that point, Jeff, this is the way that in the Gulf we are handling this. Basically after touching base with the science center, I guess the conclusion was there would be no time to really get all the data in the shape that it needs to be on a species-by-species basis and actually come up with average landings and landing trends and CPUE and all the other information

So the decision was, okay, let's try to get some species groupings, try to integrate that with some vulnerability assessment; and then for that suite of species you're going to have to set the bar for the most vulnerable species and set for that group what catch levels will be based on the most vulnerable species. If you do this on a short-term basis, in the meantime you can be actually trying to develop more detailed methods and you come up something that you know is precautionary in the meantime.

DR. BELCHER: So how do we want to proceed with it? Again, I've been asked politely that we move on to golden tilefish; it's two o'clock; so within the next ten minutes, is there anything we say or do to –

DR. WILLIAMS: So the proposal I put forth is not –

DR. BELCHER: Well, that is what I'm asking; I don't know; I'm asking.

DR. WILLIAMS: I think we take the median from the last ten years of each species and set that equal to OFL and then we run through our ABC control rule for the data-poor species, keeping in mind that this time that for each criteria we're trying to basically come up with an average for all of those species and then use that as the reduction to ABC.

MS. LANGE: So we would come up with the OFL value for each species and then create a generic table, a criteria table that says 65 percent or whatever, and apply that to each of them?

DR. BARBIERI: Well, that could work. My only issue here is vulnerability. You know, to have tomtate and gag in the same group, we're talking about completely different vulnerability levels; so either we have to go with the most vulnerable per group –

DR. WILLIAMS: Except that we have a PSA for all of these species. I'm pretty sure, yes, I think for the remainder of the snapper grouper complex we have PSA values for those, so that part doesn't become so – I mean, other than we can either use for those individual species or we could actually come up with an average PSA score for all of them, but, yes, that's where we could diverge.

DR. BARBIERI: Well, in that case we may not even need the actual groupings then because we have the landings for each species, we have the PSA for each species, so then we just work them through the – right – we just work them through that control rule and we're there.

DR. WILLIAMS: I think we would have to come up with some average on a couple of the other criteria, like whether the depletion is unknown or bad. I think we could assume for all of them that it is probably at least unknown or not in a good state given that all of the assessed species are not in a good state in general. Then the only other category we have to address is the reliability of OFL, and maybe we can come up with a single value for that.

DR. BELCHER: Okay, so if we're going to do that, we've got a list to run through, so I don't know how best to proceed. I personally don't –

DR. WILLIAMS: We don't have to run through the list. Can't we just decide that is the method and then let the calculations be done?

DR. BELCHER: Well, is that how we want to proceed? We've said that we could do that, but is that something –

MR. CARMICHAEL: Yes, we have the medians and all that.

DR. BELCHER: So we want the average landings from the last ten years –

DR. BARBIERI: No median.

DR. BELCHER: Sorry, median landings from the last ten years.

DR. WILLIAMS: Or, yes, there are indications depleted but the score would be zero there, I think, across the board. And then are these ecosystem critical species, I think we give the full points for that because they're not in general, so I guess they get 15 for that. The next one is the PSA; that's where we pull the species-specific PSA from the PSA analysis and see where it falls in low, medium or high. Then the last category, reliability of OFL, that's probably all we need to discuss then at this point. I would say that is probably – I don't know if it is high, but I would say 20 is probably not out of reason for that.

DR. BELCHER: Okay, so let's have the discussion about the reliability of the OFL; is everybody comfortable with it being put forward as 20 percent? Well, that's the discussion we need to have is relative to the reliability of the OFL. Erik is proposing that we give it the full amount of 20 percent – I thought I said 20 percent.

UNIDENTIFIED SPEAKER: You said the full amount.

DR. BELCHER: Sorry, 25; so 25 percent – give it 20 out of 25, sorry.

DR. BOREMAN: Why 20 out of 25 and not 25 out of 25 because it seems like the types of data we're dealing with here are similar to the other species where we were giving 25.

DR. WILLIAMS: Right, I think the only issue we might have is we haven't looked at effort trends. There is some species identification issue with some of the lesser species potentially; just some little small factors that I think we wouldn't want to give it the full 25. That's up for discussion.

MS. LANGE: That is consistent with what we did in the past, what we said in order to keep it in the context that these are data-poor stocks.

DR. BELCHER: Okay, so that means we will be passing on to John that we're going to assume that it is an unknown depletion threshold. We're giving it 15 because it is not ecosystem forage or habitat. Then the PSA, we're looking to the average –

MR. CARMICHAEL: I think we may have them for all the snapper groupers from this PSA analysis.

DR. REICHERT: And if not, we can probably fill in the ones that we don't have.

DR. BELCHER: Okay, so we're using the exact PSA values to determine the range for each species.

MS. FENSKE: We do have it for every snapper grouper.

DR. CIERI: Can you give us a quick average?

DR. BELCHER: What is the most frequent; are they high or mediums?

DR. CIERI: Yes, just give us a clue.

DR. BELCHER: So then the last category we're giving it 20, so at a minimum it is going to be 35 percent.

MR. CARMICHAEL: And at a max it is going to be –

DR. BELCHER: So at a maximum 55 percent of the average landings.

MR. CARMICHAEL: The median landings 1999-2008, and so adjusted by 35 plus whatever the PSA is.

DR. BELCHER: So is everybody comfortable with, as Erik was calling it, the triage approach for now to deal with snapper grouper? Anne.

MS. LANGE: With a statement that we will revisit this as soon as any additional data are available.

DR. BELCHER: So is everybody in agreement with that, as long as that is the caveat as to its being used for that purpose? Okay, now we need to discuss golden tilefish.

**MR. CARMICHAEL: You should discuss the stocks that have been assessed for which you have not recommended ABCs but which were not overfished or overfishing and therefore not in 17A. I get those 17's confused.

DR. BELCHER: Okay, this is your reference table, S-1.

MR. CARMICHAEL: That's your overfished and overfishing recommendations.

DR. BELCHER: But that has the non-specified for golden tile.

MR. CARMICHAEL: Yes, that does have the golden tile one on there.

DR. BELCHER: So you said what other one, wreckfish?

MR. CARMICHAEL: Wreckfish, yellowtail snapper.

DR. BELCHER: Yes, sorry, it has only got one species on it that is germane at this point, so golden tile and wreckfish are the last two?

MR. CARMICHAEL: Yellowtail snapper.

DR. BELCHER: Yellowtail snapper.

MR. CARMICHAEL: Yellowtail snapper has an assessment and I'm presuming you don't wish to apply this rule to yellowtail snapper, but I don't know that we have a P-star evaluation for yellowtail snapper.

DR. BELCHER: We don't. Yellowtail was done, when, in 2003. It probably isn't going to want to do it. Those are the three, golden tile, wreckfish, yellowtail. Okay, John is going to check the list.

MR. CARMICHAEL: Red porgy is under a rebuilding plan. Is red porgy in 17B?

OFF MIKE: Yes.

MR. CARMICHAEL: When will we address red porgy? It is no longer overfishing so it will be in the Comprehensive ACL, so it is continuing on its rebuilding plan?

OFF MIKE: Correct.

MR. CARMICHAEL: All right, red porgy has an assessment and it's currently under a rebuilding plan so your default recommendation would be that you continue under the rebuilding plan. Is there any objection?

DR. WILLIAMS: No objection but just a notation that is an old rebuilding plan that is not –

DR. BELCHER: It's not a P-star.

DR. WILLIAMS: Yes, it is not an adjustment for uncertainty as a probability of recovery for that one 50 percent.

MR. CARMICHAEL: It kind of just missed that. It was last updated in 2006 and it is scheduled to be updated again in 2012, so we will be looking at it before too long. Red porgy is checked. Vermilion snapper is in this one, right?

DR. BELCHER: Yes.

MR. CARMICHAEL: That's in 17B. Black sea bass is in 17B. King mackerel is done. Goliath grouper and hogfish. Goliath grouper is currently listed as no removals at this point, so is that what you guys intend to carry on with until the results of an assessment come in?

(Responses of "yes".)

MR. CARMICHAEL: Hogfish was assessed but the assessment really didn't get off the ground. There were a number of issues with it and it is on the schedule to be assessed again, so would you apply this default rule you just developed for hogfish?

DR. BARBIERI: I don't really remember the – I guess that assessment was completely rejected, right? Yes, right.

DR. BELCHER: How do you want to proceed with hogfish?

DR. BARBIERI: Yes, we have to go with this for hogfish. We have an assessment that was rejected by the SEDAR review process, and that means we don't have an assessment that is accepted.

DR. REICHERT: But does that mean it is data poor? Okay.

DR. BELCHER: We end up having to fall back to the landings' data because the assessment – even though it was done and it may be at one of the higher tiers it has been rendered basically useless.

MR. CARMICHAEL: There are extreme data issues within the assessments and methodologies interpretation and challenges with the CPUE and series in all that were conducted so there has really been nothing more done since then, so it probably still falls in that boat.

DR. REICHERT: Okay, I'm comfortable with that.

DR. BELCHER: So hogfish is going to fall under the default rule that we developed for the remaining snapper grouper species as well.

MR. CARMICHAEL: Amberjack is also scheduled for an update in 2012.

DR. BELCHER: So four species; greater amberjack, yellowtail, wreckfish and golden tilefish; which one do you want to start with?

DR. BARBIERI: Well, let's start with the yellowtail. We don't have a recent assessment. We did one way back when – I guess 2003 was the outcome when it came out; maybe early 2004, but was not overfished, not undergoing overfishing, and our trends report, our independent monitoring program all indicate really high levels of abundance.

I know because we had some questions coming from some groups in Florida and we actually looked at the status and trends of yellowtail and there was no indication – now, again, this is not an assessment result, but there is no indication that we have any issues with yellowtail. I don't know if in this case we kind of assume the same sort of a procedural step like we did with Spanish?

DR. WILLIAMS: I think we do a little more than that. I think since we have the stock assessment we would want to look up the MSY value and get some sense of the uncertainty about it and adjust the ABC according to that uncertainty. I don't know if it can be very prescriptive. We can't do an actual P-star analysis but we can come close.

MR. CARMICHAEL: The SSC recommended the MSYs and stuff that came out of the assessment, and they said they accepted Table 2 from Appendix 3, and it actually had an ICA and fleet-specific model, and there was later discussion at the full SSC about averaging the results of those two. I think it was the May 2004 SSC meeting.

Basically, the MSY was an average 9,461,388, I believe. It looks like that is metric tons. They used Definition 2 of OY. You had an MSY and an OY recommended at that time, and there has been no additional work done. What else do we want? It is actually in the summary, too; it's a summary table. It's Page 5 of the summary.

The question is whether or not people feel like revisiting what you guys have put in place before. Here is the table. The motion was accept Table 2. This is Table 2. Both were put forward. There was an averaging that was done at some point, but the SSC never included the actual numbers in the motions they made at that time. Is there any objection to just the MSY and OY that were recommended in 2004; so, status quo from 2004? We will verify what that was and find the numbers.

DR. BELCHER: How does the group feel with that recommendation to carry forward with the MSY and OY recommended back in 2004?

MR. CARMICHAEL: With the OY becoming the ABC and they used Definition 2. I just don't know what Definition 2 was, probably.

DR. CIERI: Sure, as a one-year placeholder if we've got an impending assessment.

DR. BELCHER: Anyone else have any comments or discussion they'd like to put forward on that?

OFF MIKE: John, can you read us those numbers?

MR. CARMICHAEL: No, because I need to go back and do some ciphering and see what the SSC actually recommended because my recollection is they averaged those two values, but that is not in the motions that came from the bio-assessment subcommittee. They put forth that whole table, but I think when the SSC actually made their stuff they averaged those two.

That is why at this meeting, from your report we want to see the actual numbers that accompany your recommendations because this is part of the scavenger hunt we've had to do to try and find out what was actually recommended. Perhaps that was never done because Kari seemed to have a hard time ever finding that.

DR. BELCHER: So everybody is okay to move forward on to greater amberjack?

MR. CARMICHAEL: A good bit of this information is actually in your Attachment 14. Golden tilefish, you recommended MSY of 336,425 pounds and an OY of 326, 554 pounds, so I guess the default is the OY becomes ABC.

DR. BELCHER: You're looking at golden tile.

MR. CARMICHAEL: Yes, isn't that what we're talking about?

DR. BELCHER: Greater amberjack.

MR. CARMICHAEL: Oh, we're talking about greater amberjack. Do you want to talk about golden tile?

DR. BELCHER: Not now.

MR.. CARMICHAEL: Greater amberjack, the MSY was 2,005,000 pounds and the ABC was 1,968,000 pounds. It is the yield at 75 percent of Fmsy, which you had recommended in greater amberjack. Greater amberjack, I see you talk about again in 2012, so this would be in effect until the 2012 assessment update results come in. It has been effect since – I don't think this has actually been put in yet; is that correct, Gregg? Has this been acted on? No. The OY recommendation the SSC provided was 1,968,000 pounds. This is all summarized in Attachment 14, so any objection to that for the ABC? Okay, one question.

DR. WILLIAMS: From the assessment there is at least a figure that shows MSY and the distribution about it. I'm thinking if I even have those numbers with me, but just a visual inspection would suggest that –

MR. CARMICHAEL: Do you have the figure you're looking at?

DR. WILLIAMS: Yes, it is PDF Page 283 of the assessment document.

MR. CARMICHAEL: All right, PDF 283, SEDAR 15.

DR. WILLIAMS: So if our MSY is that value that is right around 2 million and then our ABC would be 1.9 something; that's –

MR. CARMICHAEL: It's pretty close.

DR. WILLIAMS: – really close to the – I guess it's the mean or whatever, but this distribution suggests that if we even have a P-star say of 30 percent or 40 percent, it should be something less than that. I don't know if I have the numbers that we could compute that exactly, and I don't know if it changes anything because this may just be sort of a placeholder because it is coming up again in the assessment cycle. I just note that given the uncertainty in MSY from the assessment that the OY may not be appropriate as a proxy for ABC.

MR. CARMICHAEL: Do we get by of caveating it and perhaps suggesting that at this time and noting, though, that since it is going to be assessed pretty soon, but perhaps if for some reason it does not get assessed as planned, then next year when we talk about these again, you will have made this point clear and say, well, if the assessment gets delayed, then we might have to look into it and ratchet that thing down for the passage of time.

DR. BELCHER: So is everybody comfortable with that for greater amberjack, then?

DR. BARBIERI: It sounds good to me especially when we're pending –

DR. BELCHER: Okay.

MR. CARMICHAEL: So now do you want to do golden tile?

DR. BELCHER: All right, so we'll move on to the next species, which is golden tile.

MR. CARMICHAEL: Golden tile is also in Attachment A-14 with the recommendations that we have had in the biological reference points. OFL was set at yield at MFMT, 336,425. Then you had a comment about your ABCs at the time. The comment was at the SSC you said the assessment was too old and current abundance unknown, so no ABC was set in December 2009. I think there was a memo from the science center with some distributions about golden tile that we provided, but since you had all those pending ABC work you didn't actually act on that, so I guess we need some guidance as to what you want to now do for golden tile.

DR. WILLIAMS: Do you have the memo? What was the date of that request, roughly? I have got it here. It is one page and a long table. Anyway, it has got basically the PDF about MSY broken down by 1 percent intervals, so we could actually apply a P-star to this. We might want to run through our full-blown ABC control rule. Actually, I have the sub-report for that. Gag, then vermilion, then tilefish should be Table 3. Unfortunately, all I have is what I sent to Bonnie, which then probably got tweaked a little bit and then sent on to you guys. Let me see what the date is on mine. I have May 5, 2009. The memo was sent April 15, 2009.

MR. CARMICHAEL: This is from your June 2009 meeting. It was a memo from the science center on golden tilefish, vermilion snapper and gag, so here was the quantiles of MSY.

DR. WILLIAMS: So in this case the 50^{th} percentile is equal to MSY, which is the 336,040 which is what we established for the MSY; and so if we run through our P-star analysis, then I think we can just pull off the percentile off of here and that would be our ABC.

DR. BELCHER: So Dimension 1 is your assessment. Level 1 or Tier 1 –

MR. CARMICHAEL: Had MSY, right?

DR. BELCHER: So it is a number one; includes MSY-derived benchmarks; where two is reliable measures of exploitation or biomass –

MR. CARMICHAEL: Proxy reference is for Level 2.

DR. BELCHER: So it's a one, so that is a zero. Uncertainty characterization; complete; high determinant includes environmental conditions, obviously, no.

DR. WILLIAMS: No, I would say two.

DR. BELCHER: High key determinant reflects more than just uncertainty in future recruitment, 2.5; stock status, neither overfished nor overfishing, so it is a 1. PSA, we have to look that one up; it's a number 3, so it's a high risk, so it gets a 10 percent; so the penalty is 12.5 percent; so 37.5 is he P-star.

MR. CARMICHAEL: Extrapolation between 140.78 and 141.64.

DR. WILLIAMS: That's the metric ton column. I don't know if you want to look at the pound column next to it.

MR. CARMICHAEL: Yes, 310,037 and 312,026.

DR. BELCHER: 311.

MR. CARMICHAEL: 311,000 pounds. For the note taker; who is taking notes on this one?

DR. BELCHER: Whoever was snapper grouper, I guess. I didn't assign anybody to this because I wasn't thinking this was separate from – I didn't know it was another group.

MR. CARMICHAEL: Taken from the May 5, 2009, memo from the science center, distribution of golden tile MSY –

DR. REICHERT: What year again?

DR. BELCHER: 2009, May 5, 2009.

MR. CARMICHAEL: It's also included in your June 2009 meeting briefing materials.

DR. BELCHER: The OFL for golden tile is going to be equivalent to the MSY value, which is 337,000 pounds. It's 336,400 but I rounded it up. OFL is MSY. For the sake of keeping it clear and rounding, however people want to do it, is 336,400 pounds. The ABC level, which is coming from the May 5th memo, is an ABC of 311,000 pounds. So everybody is good to go on golden tile?

**Okay, so that leaves us with wreckfish. Part of the problem we have with wreckfish was it was managing it on a region, but the last assessment was done to be inclusive of the whole South Atlantic; wasn't it?

MR. COLLIER: South Atlantic and Atlantic.

DR. BELCHER: And the Caribbean, too, I thought, like there is a bigger piece. The wreckfish isn't the whole population; it's just a sub-component.

DR. WILLIAMS: Yes, it covers the whole North Atlantic gyres. There all the way up off Europe, off Spain and off the African coast and all the way around.

DR. CIERI: So the assessment was all of them?

DR. WILLIAMS: That is the problem is the assessment only includes those harvested in the South Atlantic, and that's only a piece of the whole population.

DR. BELCHER: So how do we proceed?

DR. CIERI: Well, actually, yes, when you think about it, if you only have one population and your assessment is only in the U.S. portion, the Magnuson-Stevens Act actually has an out for that; doesn't it?

DR. BARBIERI: Well, is this managed by an international agreement?

DR. BELCHER: Well, Doug did the assessment, didn't he, and it was all-inclusive; wasn't it?

DR. WILLIAMS: That's why he swore never to do it again.

DR. BELCHER: I had that flow backwards. I was thinking it was all over and we were trying to partition for our section of it.

DR. CIERI: Do we have any landings; can we see them?

DR. BELCHER: I was going to say we received the presentation from the fishermen in June of 2009.

DR. CIERI: So basically you tell the less than three individuals who harvest it that it is whatever the last ten years was minus X amount. If the data is going to be confidential, then we're not going to be able to –

MR. CARMICHAEL: They're trying to get a waiver signed by the fishermen so that you can see the data. Now of as of last week I don't they had received any of those waivers yet, but the fishermen did get them. There was a workshop with wreckfish fishermen at the council office two or three weeks ago, and they were handed out those waivers, but they haven't come back in.

DR. CIERI: That's really uncertain for a long-lived species. If it is that small they don't even see – that you can't see the landings, I don't know what to do other than – I mean, you're sort of left with confidential and zero.

DR. CROSSON: This is under an ITQ, right? What is the TAC, what is all the quota shares together, what are they worth? They must set this right now, right? I'm sorry, not worth – I was thinking dollar terms.

MR. CARMICHAEL: What is the current –

DR. CROSSON: Yes, what is their current TAC for the quota shares?

MR. CARMICHAEL: There is one in there, 2 million. The OFL is 2 million pounds?

DR. CROSSON: That seems reasonable to me.

DR. CIERI: About as far as you go; I guess we run it through the control rule, correct? Let's run it through the control rule.

DR. REICHERT: Remind me where that total allowable catch was based on again because this goes back to the conversation we had earlier, the point that Erik brought up, although we don't know if it is not overfished and the OFL is actually higher than the total allowable catch, so we are not setting it at the current level and deduct for uncertainty that we don't have any – can anyone remind me what that number was based on again?

MR. WAUGH: That was when the fishery was developing, we had some landings' information and the council used its judgment to set an TAC of 2 million pounds. Now it had more discussions subsequent to that and looking at the results from the stock assessment that you all have, and the feeling was that the long-term yield would be less than 2 million pounds; how much less we don't know.

The council never lowered the TAC from 2 million pounds because it is an ITQ fishery and that would have triggered the existing two to three boats that were fishing, then they would have to go out and purchase additional shares in order to maintain their landings; so sort of with the understanding that landings were around, I don't know, somewhere around half a million pounds, the council didn't feel there was a biological need at that time to lower the TAC from the 2 million pounds. I would feel that if landings were to start to approach 2 million pounds, the council would lower it.

DR. CROSSON: Okay, that's fine, then use the 2 million pounds as the OFL and then we'll apply the control rule. This seems like a perfect situation in which to apply the control rule.

DR. REICHERT: I agree.

DR. WILLIAMS: Except from what Gregg just described to me, that TAC was based on nothing biological whatsoever. I mean, where is the analysis to suggest that is an OFL level other than it seems like it is a number that was created to accommodate the current level of landings, and it is set arbitrarily high because certain permits were not fishing and was to account for permits that were fishing. It just seems totally out of line as an OFL.

MR. WAUGH: Just to clarify, when the council set that, there were landings higher than that. That represented a reduction from landings that were occurring before, but, yes, it was done before a stock assessment. It was just using the landings' data and what limited biological information that we were able to compile on similar species or that species in other parts of the Atlantic where it occurs.

DR. CROSSON: I wasn't here for this, obviously. I don't think many of us were here for this, if any.

DR. BELCHER: Well, we did receive a presentation last year about some of it. Yes, the TAC, I completely understand that.

DR. WILLIAMS: The one thing to consider here biologically is although it is a fraction of the total population, the area they fish is one small area. That is where all the fishing occurs. It is just right off of Charleston, and so localized depletion issues do come to mind.

DR. CIERI: You're sort of left with whatever they've allocated in the past is some measure of OFL or zero.

DR. CROSSON: Yes, exactly, in my mind I don't want to start with zeroes. I'd rather start with those 2 million pounds and apply the control rule and then go from there. As far as localized depletion, again, that to my mind is a management issue and not something that we're supposed to be incorporating.

DR. CIERI: That was biological, but, yes, we're left with either starting with 2 million pounds and ratcheting it down to 15 percent of that or basically just having a zero and just basically having and there is no possession.

DR. WILLIAMS: No, we have more options than that. I mean, just because we don't have the landings time series before us, we do know, as Gregg just described, that the landings historically were maybe above the 2 million and they came down quite a bit and the council wanted to bring them down – why not recommend OFL equals the median from the last ten years, then?

DR. BELCHER: Luiz is going to show you one of the slides from the presentation in June that has the history of the fishery and what the pounds were up until 2001.

DR. REICHERT: And although we don't have the landings' data, can anyone tell us if the landings past 2001 are approximately similar to '97 through 2001?

MR. WAUGH: Yes, there has been no huge change in recent landings.

DR. BARBIERI: The next one I have is something on the number of vessels and the shareholders is something that they emphasized, too, that the fishing fleet was progressively decreasing at the time.

DR. REICHERT: Gregg, currently it is only three vessels, right?

MR. WAUGH: There may be a few more now. With all the other snapper grouper regulations, we're seeing some activity in the permit transfers. Could you go back to the landings, please? That high year of 1990 was when they were fishing during the spawning season as well, and there is a spawning season closure that was put in – I think it is like January – I can check the dates; January 15th to maybe April 15th, something like that.

MR. COLLIER: There has been some indication of expansion of the fish because there are guys off Cape Hatteras that are starting to get permits for wreckfish, so obviously they're starting to see them up there.

DR. WILLIAMS: I don't know if I'd call that an expansion of the range as much as an expansion of the fishery because they're catching them off Southern Virginia now, too, but that is also because they're just now starting to exploit some of that deep water off Southern Virginia. That's why they're pulling record snowy grouper and tilefish out of there.

DR. CIERI: Given that it looks pretty stable around 200,000 pounds since 1998, that seems to be a fairly stable time series with the same number of boats.

DR. CROSSON: Yes, but you have to realize this is a very difficult fishery to operate in. To my mind there are some similarities with golden crab here. This is not an easy fishery to get into. Considering you basically are selling these things in the same category as a lot of the groupers that are much easier to catch, or at least they were until the past couple of years when all the new amendments are coming down pike, that's the reason a lot of guys got out of this, I think.

There is an economic factor in here that going 40 or 50 miles offshore and trying to fish in extremely deep water for a fish that they can't find and for something that doesn't show up on the fish finders; isn't there something about this with wreckfish? Does anybody remember this? This is sticking in my head right now, that it is not something that you can detect the same way that you can detect some of the other species, so keep that in mind.

DR. BARBIERI: And here from that same one-day workshop that we had remember back I guess it was June of last year together with the golden crab, Gregg had put together this summary of life history information, and maybe we can go over in a little bit – if we go and apply the control rule, we have some information here – yes, life span.

DR. WILLIAMS: Does anyone know if wreckfish are being exploited in other parts of the Atlantic? Obviously, we talked about some are being caught off Hatteras and Virginia, but anywhere else in the Atlantic?

MR. CHESTER: Erik, I've heard on the Eastern Atlantic, they'll get the young ones up in the surface areas, but I'm not sure of the extent to which – I think off Portugal and places like that, but I don't know of the extent.

DR. CIERI: So I propose the last ten-year average and run it through the control rule.

DR. CROSSON: I feel that is unnecessarily low. I understand the concerns about this species with all the other ones, but I don't think the decline that we've seen is anything biological. I think setting the OFL equal – as a starting point and then ratcheting the control rule through it, I don't think this is going to be – again, I just feel this is unnecessarily punitive for these fishermen that are managing the fishery in a very conscientious way. The presence of the ITQ is something that is quite different than the other stuff that we were seeing derbies begin on. I don't want to start with 200,000 pounds or something in that area.

DR. WILLIAMS: Well, throw out an alternate number.

DR. CROSSON: I mean, obviously, I was comfortable with the 2 million, but I don't think I'm going to get a lot of support for that from everybody here. I don't know if we want to cut the baby in half or wherever we want to go on this stuff, but there is a big spectrum between 200,000 and 2 million.

DR. BELCHER: When is it up for assessment; is it up for assessment? I guess that's more the germane question; when is wreckfish – so 2013 is what Julie has indicated for a potential assessment for wreckfish.

DR. WILLIAMS: This could be another Spanish mackerel case. I understand Scott is – he is correct that those recent landings are probably more affected by just participation and so forth rather than actual population size, so the question then is OFL remains just completely unknown, so maybe the average in the last ten years is more appropriate for an ABC value. We're back to that Spanish example. Even though I said that might not ever come up again, it just did.

DR. CROSSON: I'd find that as being acceptable. I would like to hear what Marcel has to say, but I would find it to be an acceptable compromise just to set that as the ABC.

DR. CIERI: The reason why that worked for Spanish is Spanish is a relatively short-lived species that is doing okay, and that is not the case here.

MR. CHESTER: The other thing is I can't remember this for sure because the data are not in front of me, but I remember I think the average length for the fish that are caught have stayed pretty constant through this entire fishery.

DR. BUCKEL: Yes, I'm fine with considering the last ten years as an ABC and not an OFL, but if we do that here then I would like to – I think we're going to have to think about the golden crab issue again because the same concerns were brought up there.

DR. CROSSON: I would actually be in favor of that for golden crab again, but that's up to the group to decide.

DR. WILLIAMS: Again, I think there are some differences here. We know that this is just a fraction of the population. I know golden crab we suspect was a fraction of the population. I wasn't sure what the evidence was that there was this huge abundance in the northern area. The other thing going on here, though, is we've seen landings of almost 4 million pulled out of the spot, and now we're talking only 200,000. That is a mere fraction of what was pulled out. Granted, it was only one year, but still the fact that much was pulled out of that spot suggests to me that there is a huge potential there, so that is another indicator to me.

DR. CIERI: That is a lot of risk for a deepwater, long-lived fish species. Just really seriously think about what you're doing. I mean, I'm willing to go along with the group, whatever you guys decide, but the truth of the matter is that is a lot.

DR. WILLIAMS: And I think the other line of evidence that gives me a little bit more comfort is that catch per hour figure and the average length not changing at all; in fact, almost going up slightly. Again, little signs, but you're right, this is a – well, this presumably will account for that in our ABC control rule. Well, I mean –

DR. CIERI: No, because if you set it at ABC, that's it.

DR. WILLIAMS: Yes, I don't know. There are some doubts here; put a big asterisk by it.

DR. CROSSON: Again, I don't know; I'm trying to think what else to say here. I did speak personally to one of the guys. After we had the golden crab and the wreckfish guys talk to us last summer, there was one guy who was a wreckfish fisherman there, and he got into the details and talking about – because to my mind there was a lot of mythology – not a mythology but there were a lot of stories that I had heard about wreckfish and what happened with the population after the derby and then what was happening with it recently; mostly because I kept hearing it as an example of what would go wrong with an ITQ system.

Again, he is a fisherman; he has a particularly biased view because he goes out and fishes for these things, but he is one of the only guys that was going out there and doing it. His perspective was that the stocks were not – again, I don't think he was willing to go back to the days of the derby, but he felt that it was an extremely difficult fishery to operate in.

He talked about why he was probably one of the only guys that was going out and still doing this and trying to survive in the marketplace, bringing these fish all the way in. but he was having – you know, what he was speaking to me about were that the fish that he was pulling out for the past five, six, seven years were pretty consistently the same size, and he wasn't seeing any notice of a localized depletion where he was going.

When were talking about the risks, you know, coming down with setting whatever levels, we're not talking about going back to the 4 million pounds of 1990. We're talking about kind of keeping consistent with what we've had the past few years. When you talk about two or three fishermen at most that seem to be going after and catching this, the fact that you're not going to see a derby because of the management system that is in place with the ITQ, I don't see what the danger is here with this.

DR. CIERI: That depends. We've got reports of people starting in on the wreckfish fishery from different locations. Like I said, I'm willing to go along with whatever the group decides with just that big old asterisk next to it. This is a long-lived species that lives in deep water. We need to be really careful about this.

DR. CROSSON: I seem to remember they're off Africa as well. Do they actually go back and forth across the Atlantic or am I being just confused with something else?

DR. CIERI: That would be one hell of a trip.

DR. BELCHER: In retrospect, thinking about what the TAC is right now, you're literally bringing it down to 10 percent of the TAC by using the average landings or right around 10 percent, right? If there are new people coming in, I would still think there is going to be some issue with grandfathering in those folks who are established. I don't remember enough of how the fishery works with new folks or whatever coming in, but I'm just thinking, you know, again relative to what the current operation is. I'm just throwing that forward. Scott.

DR. CROSSON: Sorry, this just occurred to me. How much quota share is out there? Right now there is 2 million pounds of quota share and a lot of it is sitting latent, so we're talking about the guys that are actually out there are going to get ratcheted down to just whatever quota shares they have right now. Is that what would happen? If we set an ABC of 200,000 pounds and there is only – I'm just trying to think of the management implications of this, because, again, it's managed under an ITQ.

MR. WAUGH: Yes, those individuals, in order to maintain their current level of landings, would have to go out and purchase additional shares.

DR. CIERI: And that's with setting your ABC –

DR. CROSSON: At 200,000 pounds.

DR. CIERI: But, still, a species like this can hit ESA listing faster than you can say, Oh, my God.

DR. BELCHER: And I'm going to refer back because my total recollection on the ITQ systems and all and how that works, especially with new folks coming into a fishery; what impacts does that have for the current fishermen that are in there?

DR. CROSSON: Well, again, there is only a few guys that are active in there, but what I'm understanding from Gregg is that a lot of the quota shares that are out there are not currently being used. The fishermen have been but because of the difficulty of operating in that fishery, they're not using them, so the guys that are going out there – the handful of guys that are going out there are only using a portion of the catch shares.

The rest of them are sitting latent, but they're set – they're designated as a portion of all of the pounds that are out there that are set through the – I guess the 2 million pounds that are out there. So if we suddenly say that we're going to knock it down to 200,000 pounds, you're talking probably you're actually going to knock it down much, much more than that, even forgetting the control rule. If we throw the control rule on top of it and the guys that are out there only have a small portion of the TAC, you're probably basically going to shut down the fishery. I mean, that's it and so you might as well set it to zero.

DR. BELCHER: So it is more a function they're represented by the proportion, so if they own 15 percent of the catch shares, that's what they're entitled to in terms of the catch; so if it is

ratcheted down to 200,000 pounds, they only get 15 percent of 200,000. It doesn't stay reflected to what they their poundage was; that is what –

DR. CROSSON: Right, exactly, because it is set as a portion of the TAC and it's not pounds that are just carried over from year to year regardless.

DR. CIERI: But that also certainly highlights the need and the reason to put in some kind of a cap because you could go from 200,000 to 2 million if everyone decides to go fishing.

DR. CROSSON: What this sets in mind is the fact that Kate Quigley has been trying to figure out what to do about the wreckfish ITQ for a couple of years now and she has got something in – I mean, she has been talking to the guys and trying to run surveys and trying to find out what is happening to some of this unused quota, but this is really going to throw a wrench into that.

I don't know; logically this is difficult because an ITQ, to my mind again, is a very responsible way of managing a fishery. All right, we may have been lucky. The 2 million pounds that is out there and it has not been fished, and biologically it probably would be a disaster, it sounds like, if we were to go out there and suddenly fished that 2 million pounds, so we have been lucky in that factor, but the fact remains is that it would be well managed if we could just take the unused allocation and proportion it back to the guys that are actively fishing it, but we can't do that. The council can do that; we can't do that. What we're talking about doing basically is shutting down some guys right now that are responsibly running a fishery.

DR. CIERI: I guess at this point that is probably something that we really shouldn't be considering at this point. If the council wished to go back and reallocate whatever unused quota to those fishermen, that's their business. We're supposed to give them the more biological technical aspects that come out of this. Like I said, just be careful. Like I said, this is a dangerous one because of the biology of the stock.

DR. CROSSON: I'm sorry, for Gregg or Brian or whomever, is there any way out of this like this could be handled quickly without going through the amendment process if we did this. You couldn't very quickly reallocate that quota to somebody who doesn't currently own it.

OFF MIKE: It has to be done through the amendment process.

DR. CROSSON: It has to be done through the amendment process, so we're stuck in a legal hole right here on this. It is either shut down the fishery or just let it continue the way it is right now, and I don't know what to do.

DR. CIERI: I wouldn't feel comfortable with the ability for the fishery to go up to 2 million pounds overnight.

DR. CROSSON: But I don't see a reason to suddenly shut down these guys' business when they're not –

DR. CIERI: But we're not shutting down; we're basically giving them the same amount of landings. The rest of it is a council allocation issue.

DR. LARKIN: Just a couple of points – and I almost Jim Waters were here because I know – I mean, it is not just Kate, but Jim – I tried to find it, they have given us some documents in the past because Jim was involved when they first put this program into place, and there have been a lot of studies on why – council even had staff, the woman who went and interviewed all these folks, but she didn't get a chance to summarize it. I forget where she went. Yes, Kathi did that.

I think there is more information out there and I feel bad that I can't remember all those details right now. I did find something related to seafood watch, you know, I mean as sort of one source, but about five years when they were rating what they thought about the species. They talk about a lot of the biology related to it, too, and why they didn't think that it was at any risk of being overexploited, I guess.

We've talking in the past about doing things for one year in a row. I don't know how it fits into our rules yet, but, you know, if you see landings come up one year; don't we have the ability to stop it the next year if things tip, if landings tip over? I guess one last point is the whole reallocation – I mean, council in their allocation can't take quota from somebody and give it to somebody else. They don't have the right to do that.

DR. CROSSON: No, I think Magnuson is pretty clear that is the reason they don't make it a property right. They actually can legally do what they want with it and take it back without having to compensate anybody. All right, legally they're allowed to do it. It is not quite the same as property. I think they have the ability to do that legally; I really do.

I think the way Magnuson is written, they have that ability. Again, right now I'm very wary of us going in here and fiddling with this program. When does the council meet again next? What is happening; I don't know. I don't want to shut down this fishery right now. I don't think we should be doing anything in terms of making a big radical change like this.

DR. BARBIERI: One thing to think about along those lines is that – I mean, the current TAC is 2 million pounds and they have been fishing at this other level. This is not like we're really about to expand the fishery, going from 200,000 pounds to 2 million. They're given the right to fish as a TAC, but they have been fishing much, much lower. I'm bringing this up that it doesn't look like to me that if we raise the actual OFL or ABC value here to be more in line with the current TAC that we're going to actually create an overexpansion.

DR. BELCHER: No, but what we were talking about –

DR. BARBIERI: We can, of course, we can.

DR. BELCHER: But the problem is it's an ITQ; it is not just hitting a TAC. These people buy some percentage of the catch; so if you drop it to 200,000, they're not guaranteed the poundage; they're guaranteed a percentage of the poundage.

DR. BARBIERI: I know.

DR. BELCHER: So in order for them to bump up to what they're catching, they would have to buy like a third of the catch where now they might only own 10 percent of the catch. Does that make sense so they have to buy an additional 30 percent to make their living. I mean, I know it's a management thing, but it is one of those things that it is different than the king mackerel, which is a TAC that you bump up against and close the fishery. This has a different implication. I know it is management. I know that is not the discussion, but this behaves differently.

DR. BARBIERI: Right, we're trying to evaluate whether we're going to cause the fishery to expand from what it is right now or not.

DR. CIERI: I guess we shouldn't beat this anymore than it is. The truth of the matter is we are not supposed to deal with management and allocation implications of these. That is up to the council to decide. The council can do what they want. The truth is that making the decision based on the fact that you're going to hurt three or four boats who may not have their allocation that they have been having all along and to make a decision based on that isn't our call to make. It is not what we're here for.

We're here to set biological relevant numbers for them to harvest on, and whatever happens and however the council wishes to allocate those things is entirely up to them. I certainly understand the argument that we'll be disenfranchising a certain number of individuals, but that is, again, something for the council to decide, not an SSC unless we can come up with a different number.

And getting to Luiz' point, very strange things happen when you put in hard TACs and you start fiddling with them and there is uncertainty. The next thing you know you have a lot of people going out and reporting and catching a large amount of their quota if they think it is going to go away because they haven't used it. That has happened in fishery after fishery after fishery.

DR. CROSSON: I'm sorry, Carolyn, but look, Matt, the council is actually trying to get something going on this. They have Kate Quigley investigating this whole process. She has been trying to track down – some of these quota owners, they can't even find anymore. They're not even sure what has happened to them because they have not touched their quota or their permits in years.

All right, there is a mess right now but the council has started a process – I even think they have attached an amendment number to this – somewhere down the pike, but again it's a slow process that Magnuson set up. In the meantime I can't go along with the consensus on this of ratcheting it down to something ridiculously low and shutting this fishery down.

I just can't go along with that consciously. We're painting ourselves into a logical corner if we go down that. I think that the ABC should be equivalent to whatever the TAC is for wreckfish and we need to start to Kate about this, but I don't think one year following the current program is going to cause any big collapse in this fishery. I just can't go along with any consensus that's going to knock that down.

DR. WILLIAMS: We're not painting ourselves in any corner. The council did this. The council is asking us for an ABC. They shouldn't have asked for the ABC to begin with if they knew that there were problems and if they were planning changes further down the road. The fact is they asked us for this ABC and they're going to get it.

DR. CROSSON: Fine, we give them an ABC but keep it equivalent to the current TAC. I just will not go along with any consensus on this. I'm sorry, but I feel strongly about this.

DR. WILLIAMS: Would you provide some good biological justification?

DR. BELCHER: So the recommendation then for the ABC; acknowledging that there is a lot of disparity in how this – I mean, again, it is difficult because I do understand from the standpoint of what we're doing, we're held to the biology as a beginning starting point, but it really does stink when you do start thinking about how this works relative to fisheries that are not set up ideally the way other fisheries are, and it is the painful process of it. John.

DR. BOREMAN: I want to get back to Matt's point. In terms of providing advice to the council, on ABCs I agree it has to be scientifically based, but the role of the SSC goes beyond that in terms of providing advice to the council. I'm looking at the Magnuson Act right now, "provides ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch" – that's ABC.

Then beyond that "preventing overfishing, maximum sustainable yield and achieving rebuilding targets and reports on impacts of management measures and sustainability of fishing practices." So it is within our scope to say that this is going to screw up your ITQ fishery. There is nothing wrong with that. But in terms of the ABC you've got to stick to the science side, but we can go beyond that and offer advice to the council on what the implications are; so this idea about we can't say anything, I disagree with that.

DR. CIERI: To that point, that wasn't my point. My point was that shouldn't factor into our ABC decision. I fully agree that the council needs to look at its ITQ systems; I mean, seriously, because if you're going to come up with something like this in other fisheries, and so you might as well address this problem now before you get into catch shares and lots of other things from an economic standpoint. I just didn't think fishery management allocation decisions should affect what we set as our ABCs and OFLs; that's all.

DR. BELCHER: On a brighter side to this, the one thing that I am happy about is at least the debate is showing that we're paying attention because in the past it is that perception that we're not paying attention to the impacts to the fishery; that we are working in a vacuum. Between golden crab discussions and wreckfish, we have pretty much shown that we're not doing this in a vacuum. We are recognizing in this situation this has a bigger implication.

Even though we're recognizing that this could be pulled down because of the structure that allows for this beyond what we do, there is a bigger problem to this, and it is not because of us. Without transferring blame or putting blame places, it is really not because of us. I mean, we're

working within the parameters of what the fishery is telling us is ideal, but because of the way those allocations are made it is not realistic.

DR. BOREMAN: Perhaps the longer-term answer to this dilemma that we're in is having the terms of reference that come from the council directing us to develop ABCs be a little more care in crafting those terms of reference; terms of reference for wreckfish, please keep in mind these are our objectives, how can we get an ABC yet obtain these objectives of maintaining the current ITQ system or something like that. Right now we're basically functioning on the terms of reference give us an ABC, period.

DR. BARBIERI: I'm just trying to kind of refresh my memory here. Erik, you may be the one that is most familiar because I'm not at all with the stock assessment that Doug did. I'm trying to assess here from a biological status of the stock, and he came up, you know, this is really – these are outcomes of his assessment, you know, recommendations, whatever came out of there, and I know that the assessment is old, but if there is a way for us to say, okay, we built our control rule in a way to deal with the old age assessments that were not to the SEDAR process and impose some penalties; but if we start from one estimate of MSY not that different from the process that we just did for yellowtail snapper, which was an assessment that came out in 2003.

DR. WILLIAMS: There is are some big differences between a yellowtail snapper assessment that has been through a SEDAR review and this one that has been through no review essentially. Doug, himself, were he here – I don't want to put words in his mouth – he would say he would not trust this assessment worth anything. That's why he will refuse to redo the assessment. He doesn't want to do it. He doesn't think it a trustworthy analysis.

DR. BARBIERI: Well, thank you. I mean, that's exactly what I was trying to get a feeling for because the assessment analysts will tell you right up front whether I trust what I put here or, no, I know that this has a lot of caveats. To me, to interpret what is coming out of this, having a true biological significance, I needed that.

DR. BELCHER: So, again, how does the group want to proceed? Are we still looking at the ten-year average as a starting-off point?

DR. CROSSON: I'm sorry, I don't agree with it, Carolyn. I mean, you're the chair of this SSC, but I don't go along with the consensus on this. I think this is a mistake. I think the ABC should set at the current TAC.

DR. LARKIN: Without having it in front of me, I feel a little bit reluctant, but I'm virtually positive that one factor that Jim Waters had investigated – and maybe it was published back in their papers that they had a number of years ago – was that part of the reason it wasn't being exploited – and they had scientifically proven it – was because of the lack of demand; so, not a stock status, nothing that would justify from that perspective a concern to reduce the TAC that far.

It just wasn't being exploited because it didn't have market value and not because of concern for the stock. I realize that leaves the potential for exploitation in the future, but we have no evidence to show that it is going that way either, so I don't we can argue that we're concerned about something that we don't have any basis to be concerned for. In fact, all the basis seems to show that there is no concern.

DR. BELCHER: Is it possible to offer up something along with an ABC value recommendation from the SSC relative to – and, again, I know it is outside of our purview, but at least pointing the council to consider the impacts of this under the current system.

DR. CROSSON: But, Carolyn, I don't see what else the council can do other than what they are currently having Kate Quigley do. They've already started this process so now what are we going to tell them, to try and ram something through that they legally can't do in one year.

DR. BELCHER: I'm not saying that, but I know a lot of this is LAPPs. If it is an LAPP, instead of having the two not working on current tracks, I don't know – I mean, like I said, I'm trying to find something that is going to make the group come to a middle line on it, because biologically I understand – like I said, to me, maybe I was wrong, but I know you guys have also been working this line because that is what you do. You're socio-economists and that is what you look at are those impacts to the structure of the population this is impacting.

But to me, like I said, the fact that this is an ITQ system is an absolute total bummer for this fishery, but biologically, based on the data we have at hand, as biologists not looking to that next level of that, which obviously, again, as you've heard here, the general consensus is that is the management part of that. I'm trying to find something that will satisfy you and how do we fix it?

This is more a function – not so much that it is a TAC or a function of that; it's the fact of how that allowable catch is being portioned out. Do you know what I mean? It's a function of an ITQ system; and for this particular fishery, obviously that is not a good choice with the way that the ABCs have to be set. The landings really aren't changing dramatically. It is just the fact that what happens is because they only get a percentage of that amount.

DR. CROSSON: But this is what I mean when I'm saying you all are painting yourselves into a logical corner, and I don't mean this in any kind of – I enjoy being a part of this SSC and I like the people that I'm on this SSC with. I just feel like you're painting yourselves into a logical corner when you're pretending that there are no management implications to what you're doing when you know full well that the biological factors – you're trying to apply something that doesn't fit.

You're trying to use the wrong tool because there is obviously a whole different system set up here, and you're still trying to apply these biological criteria when it doesn't apply because of the way this particular fishery has been operating. You're spitting out a result that is needlessly – I mean, I enjoy working with fishermen, but if I felt that the biology of the stock – and I think a lot of the other stocks that we have discussed, I think there are some serious problems biologically with a lot of the fish in the snapper grouper complex.

I don't deny that; and if it comes down to having to make cuts, that is fine; and so a lot of these things that we've come down with, I didn't necessarily agree with the result, but I went along with the consensus on it, but this particular circumstance with this particular fishery and the way it is managed, I don't think you can ignore that.

I think if you try and apply this ABC rule blindly, pretending you don't know what is going to happen with that, you're making a huge mistake, and I don't think that one year – you know, just look at it, look at it. You have a different system here. You have a legal issue going on. You know the council is looking at it. You know that they have assigned staff to look at it. All right, so under those circumstances toss the process out the window for this one particular species, just go with the current system for at least the next year and move on.

DR. BOREMAN: If we know absolutely that decline that we're looking at over the past ten years, this 90 percent decline is due solely to economic reasons and not biology, would that change people's minds? What I'm saying is we don't have all the information in front of us or may not have all the information in front of us that we need at this point.

I'm hearing economics and I'm hearing biology, but which is the overriding factor or is it a combination of both or what? I would feel better voting one way or the other if I knew if it was totally market issues or not being able to get out there because you can't afford gas or is it really truly a decline because the fish aren't there anymore.

DR. BARBIERI: The peak was in '89 and then looking –

DR. BOREMAN: I'm just referring to the 200,000 versus the 2 million. I'm not looking at that peak of 4 million. We have a two-level argument here; either stick with the 2 million or drop it down by 90 percent.

MS. LANGE: You have catch-per-effort data; what was the timeline on that, the time series?

DR. BELCHER: It's '91 to 2008.

DR. BOREMAN: Isn't that the basis of the differences between Scott and whoever is disagreeing with Scott; is it biology or is it the economics that is driving that low 200,000 pound limit or catch in recent years?

DR. CIERI: Looking at that, the current catch level over the last ten years seems to be fairly stable. That is what that tells me; that it is fairly stable, but there is no – we've haven't caught 2 million pounds. We don't know what that looks like.

DR. BELCHER: Kari, how many of the years are confidential, starting from the current time period going back; like for us to get the full time series, not the numbers, because the point being is it gives you an idea of how many years you had fewer than three people operating in this fishery?

MS. FENSKE: Gregg is saying 2001 and on is confidential.

DR. BELCHER: So, in your time series you're proposing you basically have – if we wanted to look at it right now, we could only look at two years of data because there are so few people in this industry.

DR. CIERI: But we do have a rough counting of what their landings have been, and it has been around 200,000 pounds. They won't tell us an exact number, but that is what they'll tell us.

DR. BELCHER: But my point being in getting at this argument between biology and economics in terms of participants, I'm trying to get a handle for the fact if you look at how many years prior to that we had landings that we could visually see versus current. I'm trying to throw some other data points that we have available, which Luiz has the one slide that shows the number of boats coming down over the cascade.

DR. CIERI: We can certainly see that whatever the catch level in the last few years seems sustainable because you're looking at the CPUE index, but anything above that you don't really know.

DR. WILLIAMS: I think all of this went to our justification for why we can set this to ABC and not OFL.

DR. CIERI: I mean, when you think about it, what you're asking is to set an OFL that is closer to ten times whatever is currently caught right now, correct, and we know currently it is stable. It is not even going up; it's stable.

DR. BELCHER: I need help because I want to find a middle line on this. I mean, I really do. I apologized for having that epiphany at that moment I did, but obviously Scott was going to go along those lines and Sherry was because that is part of what you do.

DR. CROSSON: Also, though, Carolyn, I don't think this is an economics versus biology thing. I think this is, again, a logical thing and whether you're willing to go down this road or not.

DR. BELCHER: No, but what John was getting at are these declines and understand in terms of, you know, as we're concerned about this dropping it and bringing it down that far; is it because of biological concerns or are those declines a function of the fishery? They're two different questions.

DR. CROSSON: Well, even just looking at this one particular graph, I'm also thinking that this is based off of just a couple of boats probably because there is almost nobody involved in this fishery, and throw in the fact that this is a fishery that is executed 50 miles offshore in very, very deep water, and probably in the middle of the Gulf Stream from what I remember, off the Georgia coast, you're going to see some fluctuation in there.

I mean, just statistically I don't see any way of really – I mean, this is I guess encouraging but this is extremely a small sample size, and, you know, there is not a lot of – it is a difficult chart to interpret. I see it as a positive thing, but I also note statistically there are all kinds of holes you could shoot in it.

DR. CIERI: But I would certainly feel more comfortable had those three boats, which have been fishing for roughly the last ten years, started to see an increase in their catch-per-unit effort at 200,000 pounds.

DR. BELCHER: But there is only so much you can do as a person going that far out and spending X number of hours fishing, too.

DR. CIERI: Right, but it is extremely comforting that is not going down either, but I don't know what ten times that amount potentially would look like. It may not get up to that point, but in a lot of cases if you allocate it or if you put it out there they will come.

DR. BARBIERI: And this is the point; I mean it is already out there. That is why I was asking before what is the current TAC that has been available and the fishery has not expanded in terms – I mean if you look at the other graph.

DR. CIERI: And with all the other management actions that have been going on, there hasn't been a lot of incentive.

DR. BARBIERI: I'm sorry, what is the incentive coming up different?

DR. CIERI: I'm not sure it will increase, but it can; and if it does with a – and if this has been Spanish mackerel or a short-live specie I would roll the dice and take the risk, but with a long-lived species that you could do some major damage to even with going up to that level, yes, I mean that is a concern. You know how the biology plays out. You're much more willing to take that risk with a short-lived, highly fecund species.

DR. CROSSON: And I don't disagree with what Matt is saying. I'm just pointing out that the council is trying to address this issue, and they have the appropriate staff investigating it right now, so there is nothing else that I can think of the council can do at this moment other than what they are trying to do. Given that factor, I don't see a reason for shutting down this fishery, which is basically what is going to happen if you try and force a square peg into a round hole. Again, I don't think we should be trying to ratchet down this fishery by 90 percent or something ridiculous and shove these guys out the door.

DR. WILLIAMS: Well, I just think you're underestimating the creative powers of the council. I mean, I don't know, but I bet you could set an ACL in such a way that the allocation to those boats that are participating is still going to amount to 200,000 pounds. I don't know how you could legally word that, but I bet there is a way you could do it somehow. The council would have to just get a little creative because all they're worried about is setting an ACL and an AM that does not exceed our ABC. There is room there to do something.

DR. CIERI: And the problem is that it is not the SSC and whatever ABC we set that is going to have that onerous effect. It is the council's own LAP Program; that is the real kicker. We're not talking about having a dramatic drop in what landings are right now. The effect because of the management actions is what is going to cause that. In some ways, while the council is working on it, it is the council's allocation scheme; its LAPs that have sort of come back to sort of hurt the fishermen in the end rather than the actual setting the ABCs.

DR. CROSSON: Carolyn, what I'm basically hearing is – I'm trying to tell these guys that I don't think anything bad is going to happen if we set the ABC equivalent to the current TAC because there are already changes coming down the pike. They're not buying that. Okay, they're also telling me that the council can get creative and somehow fix this issue.

I don't believe that is the case either. I don't believe they can finish – I legally do not think that is possible by the end of the year knowing what I know about ITQs, LAPPs and the council process and Magnuson. I don't see any compromise that is possible here on this particular issue. I'm sorry, I understand your urge to try and find out – I don't even see any way of cutting the baby in half in this; I don't.

DR. BELCHER: No, and like I said, this is again – and John and I were just talking about that – is there any way – and I understand because we already know, the wheels of the process are a lot slower than we would ideally like them to be; and if things are not running on concurrent tracks, one is lagging behind the other, the benefit of the one is lost at the gain of the other.

I don't know; my hope was that somehow we could come to some middle ground where this ABC is biologically what folks want to see, which is around the 200,000 pound mark, but strongly, strongly putting language in there, understanding that because of the current system and the way it is set up, this is damning a fishery because of ITQs to either having to increase their catch shares or being locked to lower catch levels. That doesn't fix the problem but it – like I said, we're stuck between basically pleasing two masters in this situation.

DR. LARKIN: I will make one last point because we are running out of time and we have to go. It seems like a lot of – you know, when we're trying to use our science to predict these limits, we are making assumptions about how people are going to behave in the future. In most cases we know they're going to take a whole ITQ, so this is where this one is tricky for me because you don't think that they're going to get anywhere close – I mean, we know for the last 15 years they haven't come anywhere close and we have really good reason to believe that they're not going to get anywhere close.

I don't know how that fits in because to me that sort of seems a very implicit assumption and a lot of the framework we have is that that ITQ is going to be taken and that is going to continue out in the future and that's what we're trying to look for in the future. To me that is where the real disconnect is because here is a fishery where if we follow the rule, we're automatically cutting the landings way, way down and how does that factor into what we anticipate happening in the years ahead. I don't know what the solution is.

DR. CIERI: I'm just going to say I'm going to respectfully disagree with Scott. You and I come from different disciplines; no hard feelings, but I can't see setting it at the current TAC; I'm sorry.

DR. BELCHER: Like I said, there is no real need within the group to apologize for that. These are the debates that we're going to come across. But, again, for the sake of trying to reach a consensus – and like John said it may just be that we're just going to have to make sure that Scott's concerns and Sherry's concerns are really strongly reflected as we are putting that forward. I don't know else to rectify the problem that we're looking at.

Like I said, normally I don't always see – I try not to see as much of the outside involvement, where it goes beyond our room, but that one to me was just – like I said, it pretty much hit me square between the eyeballs. When we started talking about the ITQ, I was like that doesn't exactly work the way everything else does. It is not the same as king mackerel where a TAC is there and bringing a TAC down to a level that it really being exploited to. That system does not work in that situation.

DR. CIERI: And maybe we certainly can put something in. I still would suggest this, that the council really have a good, hard look at its allocation scheme and whether or not this fishery as set up is capable of taking what we set as an ABC.

DR. BELCHER: I was looking at Scott; does it help any?

DR. CROSSON: I don't know what to do unless you want to make it a vote. We still can do votes. That's the only way I would – is that feasible? Then I want to make a motion to set the ABC equal to the current TAC.

DR. BELCHER: With an impasse the way it is, I don't know how else to reflect it.

MR. CARMICHAEL: If you want to do this, I think if the committee were to make a motion that you take a vote, I think it is something you can consider doing or perhaps you can just decide, look, this was a consensus of the majority, but here is another opinion that is being stated. That is always an option within all of these recommendations to say here is another viewpoint. Here is what we said, but the council should be aware of this other viewpoint and this other possibility.

DR. CROSSON: John, I'm not sure who the majority is on this.

MR. CARMICHAEL: And I'm not sure either, but however you handle it, whether you take a vote and you have a winning side and a losing side or say here was the overall consensus and here is another position, you need to state both positions. It will do the council worse if they get a vote and it is just like, well, here is the group that won and then here is the other side and they lost, but we never heard their opinion. I don't necessarily think that a vote is necessary.

What is necessary is to say is the overall general group consensus that we will do "A"; but, some others feel like we really should do "B", then as long as both viewpoints are in there, that's far better than a vote that says, well, it came down to eight to five and here is the answer. That is why the council wished for you guys to get away from votes, because quite often it came down to in some cases not really strong majority votes, and they were sort of left saying, well, those who didn't win, what was their opinion? They want to know what your opinion is more than the outcome of a vote.

DR. BELCHER: Well, is it as simple as asking how many people support a consensus?

MR. CARMICHAEL: You should a raw poll I think and have people –

DR. BELCHER: Because, I mean, just the formality –

MR. CARMICHAEL: Just ask people to show their hands, if you would like.

DR. CIERI: Or go around the table.

DR. CROSSON: Just a show of hands, Carolyn. You're the chair; it's to your discretion of however you want to pose the question; whether the question is to maintain an ABC equivalent to the current TAC for the reasons – and, again, I don't think that current TAC is going to come anywhere near getting caught up and it also has not been for the past decade, but the recognition is any other action is going to severely affect the guys that are currently fishing.

DR. BELCHER: Well, here is the thought; I'm throwing this out to the group, then, along that vein. The recommendation from the group that we were discussing that we kind of – that we're walking parallel to, but quite away from – was to use the average landings over the last ten years – sorry, median landings over the last ten years as the ABC within unknown OFL. If that is the current recommendation, what I want to see is a show of hands who supports that current recommendation from the SSC. Is that a good way to handle that? Okay.

DR. BUCKEL: I just want some clarification on this would go into place January 2011; is that correct?

DR. BELCHER: Gregg is shaking his head.

DR. BUCKEL: So by 2012; do you think the – I guess the question with this wreckfish amendment would be completed where this new ABC value could be apportioned appropriately so we wouldn't run into issue that Scott is concerned about.

MR. WAUGH: Setting the ACL is being done in a Comprehensive ACL Amendment and that is scheduled to be approved for public hearings in December, and then we're shooting to have that finally approved by the council in June and submitted so that it becomes effective January 2012. Given our timeline in dealing with red snapper that had some tough decisions to be made, that is optimistic.

There is another amendment that is already being worked on looking at totally revamping the ITQ Program, even considering abolishing the ITQ Program, but that is not under a statutory deadline like the Comprehensive ACL Amendment, so it is on a little bit slower pace, but we're working on it. Kate is working on that, the region is working on it. I would anticipate that taking a little bit longer than the Comprehensive ACL Amendment. But, again, if the council sees this level of ACL, that may change their thinking and how they approach it.

DR. BELCHER: So, again, back to what I posed earlier, how many folks are in support of the recommendation to use the median landings from the last ten years as the ABC with the OFL being stated as currently unknown; can I have a show of hands of who is in support of recommending that? How many are against? What is the other option that folks would like? How do you best –

MR. CARMICHAEL: As I've heard there has been one other option proposed, the 2 million pound ABC, so take s straw poll here to judge where we stand on how many people stand on that.

DR. BELCHER: No, that was an OFL.

DR. CROSSON: No, my suggestion was ABC because, again, from my understanding of everything, that would be no change at least for the next year or so in the current management scheme that the council has in place for wreckfish and it wouldn't negatively affect the few guys that are going out there. That was my proposed alternative.

DR. BELCHER: So how many folks are in support of an ABC being set to the current TAC of 2 million pounds – in support of recommending an ABC of –

MR. CARMICHAEL: We don't need to be that specific. We're just trying to judge the consensus, so over half the group still seems to be of perhaps the thought that there is another alternative, so maybe someone would like to propose another alternative. Less than half of the group expressed an opinion toward either of these alternatives, so I think there is a large number that must have another thought in mind and it would be nice to hear it.

DR. BARBIERI: Well, I guess one other option would be – you know, if we keep the status quo, which is all that we would be doing, we are buying ourselves some time to request some other additional analysis be done. Status quo is the current TAC. The alternative is that this is a short-term – there is no indication from what I hear in terms of expansion of the fishery, major interest in fishers expanding the industry and exploitation on this species, and I don't see any harm – you know, if setting ABC we're trying to focus our rationale on the risk of overfishing, I think that we've discussed this.

We had other exceptions; we made other exceptions here today to other issues that we felt were reasonable to go under that exception. I think this one is one that the status quo, in my opinion, doesn't pose an imminent risk of over-exploitation and overfishing, and I feel that in the meantime we can consult with the center and request some additional analysis, put some more

time – give ourselves some more time to come up with options that are better than what we will decide right here right now.

DR. CROSSON: Brian is here and I'm sure this is – obviously, he can't speak for the council, but I'm sure that some fashion of this discussion will come up before the council and probably consult with the Southeast Regional Office Legal Counsel on some of these questions. I don't know; the council will probably talk about this quandary that we find ourselves in with the SSC and what legal options might be available for the council.

DR. BELCHER: So is there another alternation out there or not? Marcel.

DR. REICHERT: Wasn't there an initial proposal to use the TAC as the OFL and then apply the control rule?

DR. BELCHER: What does the group think about that as a possibility?

MR. CARMICHAEL: For that as a third alternative?

DR. BOREMAN: I don't think that addresses Scott's issue at all.

DR. CIERI: No, it is not. I mean, you mean wind up with less fish than 200,000.

DR. BOREMAN: Let me finish. What we're talking about is this pie we have. Let's say we have five fishers in here, each has 20 percent of the pie, and we're talking about what the size of that pie is going to be with the 200,000 level – and means there is some latent effort out there – some of those pie shares aren't being used, so we're taking the shares that are being used and now saying that is the new pie, but we're going to split that among all five people.

My understanding is that is what the argument is and is that proper or not. A latent effort issue is involved. With that, I really can't – I need more time to think about an alternative, then. I think we're all being pressed here. We're starting to get a little too silly on this and tired. This is an important issue because it has ramifications, too, all the way around.

DR. BELCHER: How does the rest of the group feel? Anne.

MS. LANGE: Well, I agree. We're supposed to look at the biology but we don't operate in a vacuum. I don't see that we've got evidence that the current TAC, given the way the fishery operates, is going to lead to – the current TAC is going to lead to overfishing. We have no evidence that the 2 million will be taken in the immediate future.

Given what Scott explained to us that is going on with the current studies – I agree with the 200,000 as being a reasonable ABC given the standard that we have applied to every other fishery, but again we're not operating in a vacuum. This is a totally different operation of a fishery.

MR. CARMICHAEL: And I don't know what would happen if you put a statement forward along those lines that said in the normal sense the SSC would put forward this at about 200,000 pounds. However, due to the issues raised within this fishery and the nature of the ITQ Program, the SSC does not put that forward as an official ABC because of the unintended consequences that it could have.

I mean, you would say something about what you would do, but you're not going to endorse that as the ABC because that is going to be the consequences. I feel there is, well, if it were just an open fishery and the people that are fishing could go catch the 200,000 pounds and people would be comfortable with that; it is the fact that the few people operating in it can't have access to all that because of decisions that were made 15 years ago. Maybe you can express that in some way and just acknowledge that couldn't reach an ABC on this fishery and leave it at that.

MS. LANGE: Well, again, that is part of the problem. Because of the way the fishery is operated, we don't have the catch stream that we potentially would have had in a fishery that was operated in a normal way. That is not to say I disagree with ITQs; it is just that it makes it very difficult in the position we are in right now with our mandate.

DR. CIERI: But if we're going to do something along those lines, we've got to come up with something different than what John said, because basically what John said is we would support an ABC except for the economic consequences.

DR. BELCHER: The type of fishery is the problem because of the management overlay. As John was saying it is not so much that you're – because of the way that the catch is allocated, we're shrinking their pie –

DR. CIERI: Right, you're not going to reach 200,000.

DR. BELCHER: – and if they were getting 200,000 pounds, but they're only getting 20,000 pounds now.

DR. CIERI: So, again, that's why I suggested having a statement in there that the council needs to really stringently look at its allocation scheme to make sure that they can take that as an OY.

DR. WILLIAMS: I knew it was a matter of time before some creative minds would come up with a potential solution, and I think John hit on it. We don't set an ABC; we just strongly recommend to the council that their ACL not exceed 200,000 pounds. That way we've got it all covered, I think, because then they can set the quota at a million, two million pounds knowing that only the current exercised effort is going to happen and the landings will remain at 200,000 pounds.

DR. CROSSON: Well, yes, sure, it is just a recommendation. The council can take it and read it and understand where we're coming from. They're not legally obligated to follow anything because we haven't set any kind of ABC level, so I'm perfectly fine with that, and it actually gets to the questions that we have raised here, so that's fine.

MR. CARMICHAEL: And you need to capture the discussion about biologically this is where the committee felt, but when the committee considered in depth the nature of this fishery and how it gets prosecuted and how it gets applied and how it differs so much from every other, that you realized that amount is not fully available to those who are participating and there was no way that anything close to that would necessarily be caught if you did this because of all these other circumstances; so recommend the ACL not exceed that; the ABC is unknown at this time.

DR. REICHERT: Since I'm trying to take notes and I sure hope that others did the same, can we recap that recommendation so we can get it on record correctly.

MR. CARMICHAEL: It is on the record; we may have to listen to the tape to flesh it out, but we will be glad to give you the recording if you want. Filling in the blanks on your recommendations from earlier on yellowtail snapper, it is a bit of an issue here in that we had the MSY that is the equilibrium MSY, but that stock is well above SSBmsy, like 50 percent above it, so your yield at Foy is actually a little bit higher. I think the best solution is to go back and see if there is a projection of yield at Fmsy and we'll try to fill it in with that for the OFL. Okay.

DR. BELCHER: We've pretty much covered everything. I appreciate everybody's input. Obviously, this wasn't an easy walk over the last three days, but I think we have some really good commentary as to how these numbers were calculated. Does anybody have any other business that they would like to bring up before we end? John, when is our next meeting going to be scheduled for; do we know?

MR. CARMICHAEL: Right now your next meeting is scheduled for November 8th, 9th and 10th. I think with all of the information that has come out of this meeting, I expect the council is going to be quite busy through the June and September meetings dealing with that. Now, if something were to come up in June that we need to get you all together before September, we would certainly try. We kind of planned on that earlier in the year.

That was before red snapper became a benchmark and spiny lobster and Goliath grouper got on a fast-track benchmark so the reality is we're kind of swamped with assessment webinars and workshops and everything else all summer and we really didn't think we could fit it another SSC meeting in, say, July or August or anything. Realistically we're looking at the November meeting. I suppose after that it is never too soon to start thinking, but does the April timeframe work pretty good for people? We'll probably think about the next one being again in mid-April of next year.

DR. BELCHER: Okay, for everybody who has notes, if you have taken them, I will accept them even if you were not a rapporteur. For those of you who were rapporteuring, get with the folks who were also rapporteuring for your combined effort of the writeup. If at all possible, I would like them no later than the close of business next Friday, so I can start putting things together. I have to get it to John by the 3rd of May. The meeting is adjourned.

(Whereupon, the meeting was adjourned on April 22, 2010.)

Certified By: _____ Date: _____

Transcribed By:
Graham Transcriptions, Inc.
May 10, 2010

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Table S-1. Overfishing Level (OFL) and Acceptable Biological Catch (ABC) Recommendations from SSC, Including the Annual Catch Limits In Place and Proposed In Amendment 17B.

Species	OFL Recommendation from SSC	ABC Recommendation from SSC	ACLs In Place	ACLs In Preferred Alternatives in 17B
Black grouper	None specified	None specified	None in place	Comm Aggregate ACL (black, red, & gag) = 662,403 lbs gw Rec Aggregate ACL = 648,663 lbs gw
Black sea bass	OFL = Yield at MFMT	ABC = rebuilding plan = 847,000 lbs ww or 717,797 lbs gw	309,000 lbs gw (comm.) 409,000 lbs gw (rec.)	No change proposed
Gag	OFL = Yield at MFMT	805,000 lbs gw (landed catch); 885,000 lbs gw (total kill)	353,940 lbs gw (comm.) 340,060 lbs gw (rec.)	KEEP 353,940 lbs gw (comm.) 340,060 lbs gw (rec.) IN ADDITION Comm Aggregate ACL (black, red, & gag) = 662,403 lbs gw Rec Aggregate ACL = 648,663 lbs gw
Golden tilefish	None specified	None specified	331,000 lbs ww (comm.) 295,000 lbs gw (comm..) (F_{MSY} level)	282,819 lbs gw (comm.) 1,578 fish (rec)
Red grouper	None specified	None specified	None in place	Comm Aggregate ACL (black, red, & gag) = 662,403 lbs gw Rec Aggregate ACL = 648,663 lbs gw
Snowy grouper	OFL = Yield at MFMT	ABC = rebuilding plan = 102,960 lbs ww or 87,254 lbs gw	82,900 lbs gw (comm.) 523 fish (rec)	No change proposed
Speckled hind	SSC Recommendation=Unknown	0 (landings only)	None in place	0 (landings only) comm. and rec.
Vermilion snapper	None specified	1,078,000 lbs ww (landed catch); 1,109,000 lbs ww (total kill)	315,523 lb gw (Jan-June) (comm.) 302,523 lbs gw (July-Dec) (comm.) 307,315 lbs gw (rec.)=TOTAL **925,361 lbs gw**	No change proposed
Warsaw grouper	SSC Recommendation=Unknown	0 (landings only)	None in place	0 (landings only) comm. and rec.

PLEASE SIGN IN

So that we will have a record of your attendance at each meeting and so that your name may be included in the minutes, we ask that you sign this sheet for the meeting shown below.

Scientific and Statistical Committee Meeting
North Charleston, SC
Thursday April 22, 2010

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Scientific and Statistical Committee Meeting
North Charleston, SC
Wednesday April 21, 2010

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