

**PROCEEDINGS OF THE**  
**ATLANTIC STATES MARINE FISHERIES COMMISSION**  
**SOUTH ATLANTIC STATE/FEDERAL FISHERIES MANAGEMENT BOARD**

**The Westin Alexandria**  
Alexandria, Virginia  
**May 5, 2016**

**Approved August 2, 2016**

Proceedings of the South Atlantic State/Federal Fisheries Management Board Meeting  
May 2016

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**INDEX OF MOTIONS**

1. **Approval of Agenda** by Consent (Page 1).
2. **Approval of Proceedings of February 2016** by consent (Page 1).
3. **Move to approve the stock assessment and peer review for management advice** (Page 21).  
Motion by Wilson Laney; second by John Clark. Motion postponed (Page 23).
4. **Move to postpone the approval of the stock assessment and peer review for management advice until the following tasks can be completed by the Technical Committee and Stock assessment Committee:**
  - Evaluate if current biological reference point types and values are appropriate for red drum, given the species life history.
  - Investigate the feasibility of an F-based reference point for juvenile red drum.
  - Evaluate how red drum life history and fishery management measures affect the validity of age-based models.
  - Evaluate whether the South region continuity run of the statistical catch-at-age model can be made informative for management; and if yes, complete a continuity run.
  - Evaluate if a North region continuity run of the statistical catch at age model would be informative for management purposes; and if yes, complete a continuity run.
  - Evaluate tag return rates for each region and determine if tag return data should be incorporated into a new run of the SS3 model.

(Page 23). Motion by Robert Boyles; second by Lynn Fegley. Motion carried (Page 28).
5. **Motion to adjourn** by Consent (Page 29).

**ATTENDANCE**

**Board Members**

Adam Nowalsky, NJ, proxy for Asm. Andrzejczak (LA)	Robert Boyles, SC (AA)
Russ Allen, NJ, proxy for D. Chanda (AA)	Patrick Geer, GA, proxy for Rep. Nimmer (LA)
John Clark, DE, proxy for D. Saveikis (AA)	Jim Estes, FL, proxy for J. McCawley (AA)
Craig Pugh, DE, proxy for Rep. Carson (LA)	Spud Woodward, GA (AA)
Lynn Fegley, MD, proxy for D. Blazer (AA)	Nancy Addison, GA (GA)
Ed O'Brien, MD, proxy for Del. Stein (LA)	Martin Gary, PRFC
Chris Batsavage, NC, proxy for B. Davis (AA)	Wilson Laney, USFWS
Doug Brady, NC (GA)	John Carmichael, SAFMC

**(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)**

**Ex-Officio Members**

**Staff**

Toni Kerns  
Robert Beal

Megan Ware  
Mike Waive

**Guests**

Derek Orner, NOAA

Kelly Denit, NMFS

The South Atlantic State/Federal Management Board of the Atlantic States Marine Fisheries Commission convened in convened in the Edison Ballroom of the Westin Hotel, Alexandria, Virginia, May 5, 2016, and was called to order at 10:022 o'clock a.m. by Chairman Jim Estes.

#### **CALL TO ORDER**

CHAIRMAN JIM ESTES: I would like to call the South Atlantic Board to order please, if everybody can find their seats and take your conversations outside if you need to. My name is Jim Estes, I am the Administrative Commissioner from Florida, and I am going to try to facilitate the meeting today.

#### **APPROVAL OF AGENDA**

CHAIRMAN JIM ESTES: We all have an agenda. Are there any additions or changes suggested for the agenda? Seeing none; are there any objections to the approval of the agenda? Seeing none; the agenda is approved as written.

#### **APPROVAL OF PROCEEDINGS**

CHAIRMAN JIM ESTES: You all have proceedings from our February, 2016 meeting. Are there any suggested changes from those proceedings? Seeing none; are there any objections to approving those proceedings? Seeing none; those proceedings are approved.

#### **PUBLIC COMMENT**

CHAIRMAN JIM ESTES: I don't think that we have any folks that have signed up for public comment on items not on the agenda. Is there anyone in the gallery over here that would like to speak on items not on the agenda? Seeing none; we'll get right to our program. This is going to be a little bit unusual today.

We're going to have a couple presentations, and one of our presenters, Mike Murphy, could not make it here last night because of weather. The planes were flying around in circles apparently over Tampa, and he couldn't make it. We're going to try to have him on the phone

to make his presentation via a webinar. Be patient with us, because we may have some audio issues.

### **2016 RED DRUM BENCHMARK STOCK ASSESSMENT REPORTS**

#### **NORTHERN STOCK**

CHAIRMAN JIM ESTES: Maybe we can start out with Jeff. Can you present the red drum stock assessment for the northern region?

MR. JEFF KIPP: I'll start by going off just a little overview and background information. Then I'll get right into the results for the northern stock assessment. Then we'll continue on with Mike presenting on the southern stock assessment. Just to start off, I would like to thank the board for their patience as we've waited for these stock assessments for the red drum stocks. But just a little background on this red drum process. We did go to a SEDAR 44 review workshop with assessment models using stock synthesis statistical framework in August, 2015.

We were experiencing some issues in developing stable models. The objective of that review workshop changed a little bit; to receive recommendations from the Peer Review Panel so that we can improve and achieve stable models to be reviewed later for management advice. The Peer Review Panel during that process did endorse our transition to stock synthesis, and the information on that review workshop and the original stock assessment models are provided in SEDAR 44 stock assessment report, which was provided in your meeting materials. Following that review workshop we did work to make those recommendations and implement them into the stock synthesis models. Once we had achieved our final preferred models, those were evaluated in a desk review for the purpose of advising management of the red drum stocks.

The information on those final preferred models is in Addendum II to the SEDAR 44 stock assessment report, which was also provided in

meeting materials. Some quick background on assessment history, the red drum stock originally as a coastwide unit was assessed in 1990; and there were a couple other assessments through the nineties, using mostly per recruit analyses and virtual population analysis.

The most recent update of virtual population analysis was done in 2000. The most recent assessment was SEDAR 18 in 2009, when there was a transition from a virtual population analysis model to a statistical catch-at-age model. With that SEDAR 18, the peer review did note some limitations and concerns with the model used in that assessment.

First off the plus group was 6 plus for the stocks, and that includes 90 percent of the age structure in the northern stock, and 83 percent of the age structure in the southern stock. Therefore, there were no reliable abundance or biomass benchmarks coming from that assessment for either stock.

They did note that the plus group abundance is estimated in the initial population in those models was unexpectedly large; given the estimates of abundance in the younger age classes. In previous meetings with this board it was noted that a primary goal for management of these stocks was to declare an overfished or not overfished status.

For that to be done there was the need for reliable biomass estimates and a biomass benchmark. Also, the northern model specifically was fit to external tag-based F estimates in some published literature. This estimate was highly dependent on these estimates, which indicated some inconsistencies between those fishing mortality estimates and the other data sources in the model.

The peer reviewers did also note a lack of tagging program sampling design, and a potential for some areas being under sampled and others being over sampled; and therefore

for those F estimates in the model, not necessarily representative of the entire stock unit. The catch-at-age data in that model was developed externally.

The peer reviewers noted that some of that data, specifically in then earlier years, was developed with sparse biological data and often pulled over the different fleets in the model. Also, the model structure was noted as a major source of uncertainty in the estimates of the stock status indicators. That structure was very sensitive to the scalars that were specified for selectivity at age in that model.

The southern stock estimates, all estimates including the SPR estimates out of that model, were too uncertain to make quantitative statements about stock status; and were used more for a qualitative in general determination of stock status for the southern stock. These limitations led us to stock synthesis framework. It is a supported peer reviewed framework for calibrating population dynamics models; and it serves as a platform moving forward for future stock assessments. It is widely used in the stock assessment community. It is highly flexible and customizable to many data types and stock characteristics. A lot of these options already built in to this framework were great for addressing some of the existing concerns noted in SEDAR 18 with the statistical catch-at-age model used in that assessment.

It is also a comprehensive proposition and quantification of data uncertainty, and provides model diagnostics for model misspecification. The red drum stocks are defined as two management units, a northern stock and a southern stock split at the North Carolina/South Carolina border. That is consistent with SEDAR 18 and some of the earlier virtual population analysis assessments done.

This split is supported by differences in genetics, life history characteristics, habitat use, and tagging data. Getting into the results of the northern red drum model, the age structure modeled in this model is from age zero; which

are fish spawned the previous fall, to 41 plus. Now there is a 41 plus, plus group as opposed to a 6 plus, plus group.

Just to clear up some confusion ahead of time, any time you see an age reference now with this under the stock synthesis framework, it is different than the definition under the old catch-at-age model. That is just because of how stock synthesis is configured. Age 0 in the stock synthesis model is Age 1 in SEDAR 18.

Any time you see a SEDAR 18 age referred to, just subtract one from that and that would be equal to the stock synthesis age structure. In this model there is an initial population estimated, and that would be in January, 1989, when the model starts. Those initial population estimates are informed by previous removals and also recruitment deviations.

Annual abundance and biomass are then projected forward from the initial population, from 1989 to 2013, our terminal year in our model; as a function of Age 0 recruitment, growth, maturity, natural mortality and fishing mortality. I did mention that we made some revisions to the assessment model following the SEDAR 44 review workshop, and just a quick overview on some of those changes that were made.

The model start year was changed from 1950 to 1989. We originally tried to bring some more historic information into the model. However, generally the peer reviewers noted that there was really only removals data prior to 1989; so there was really no information on the length compositions or any type of indices of abundance.

They suggested using 1989 as a start year, which is actually consistent with SEDAR 18. Fishing mortality parameterization was changed. The selectivity functions for the harvest fleets were simplified from a 6 parameter functional form to a 3 parameter functional form. There were also some

selectivity changes that were excluded, relative to the model in the previous configuration.

Also the tag recapture sub-model was excluded from the base model in the new revised model. This is a figure with the input data used in the model by year and type. You've got year on the X axis and the data sources on the Y axis. There is catch from four different sources, there are two commercial fleets; one with gillnet and beach seine gears, and another commercial fleet with other types of gears. I think it is mostly fixed gears like pound nets.

There is a recreational harvest fleet, and then there is a recreational release fleet, which is assumed discards to the fish that are released alive in the recreational fishery. There were five abundance indices used in this model; the first in North Carolina JAI, which is their seine survey and would be Age 0 fish.

The North Carolina Independent Gillnet Survey for Age 0s and then also for Age 1s, the North Carolina Longline Survey, which is probably the most notable addition to the data sources from SEDAR 18; which covers the mature spawning portion of the stock, and a recreational CPUE from the MRIP data.

There is also length composition data that is fit to in the model for each of the fishing fleets, and then for indices of abundance that are aggregated over age; so that would be the North Carolina Longline Index and the recreational CPUE. Then there are also age-at-length compositions for the harvest fleets and also the North Carolina Longline Survey.

These are the removals for the northern stock from the commercial fleets. As you can see it is highly variable and dominated by the gillnet beach seine fleets. Most of those removals generally come from North Carolina. The gillnet beach seine fleet does include estimated discards. Those discards are observed as either discarded dead or discarded alive.

They include all the discarded dead fish and 5 percent of the discarded alive fish that are assumed to die post release. These are the recreational removals in the model; again highly variable, but you can see that there has been an increasing component of recreational release mortalities over time. Again, most of these removals generally come from North Carolina from year to year; I think with a notable exception in 2012, there is quite a large catch in Virginia.

Just a note, there is an assumed 8 percent mortality rate of the fish that are released alive in the recreational fisheries. These are the model fits to the indices of abundance; the four that cover the young-of-year or the sub-adult fish. The top left hand panel is the North Carolina seine survey, which is Age 0 fish.

Next to that in the top right hand panel is the independent gillnet survey, indexing Age 0 fish. In the lower left hand panel is the independent gillnet survey for the Age 1 fish, and in the lower right hand panel is the fit to the recreational CPUE index; which covers several age classes, which are informed by the length composition and the input age data.

You can see that these are quite variable across these age specific indices; and there does appear to be a slightly increasing trend over the recreational CPUE. This is the adult North Carolina Longline Index; starting at 2007 we have information from that through 2013. Again this covers multiple age classes informed by the length composition for that survey and the age data collected from that survey.

These are the selectivity estimates at length from the model. The three strongly dome shaped selectivity patterns in the middle of the figure are the harvest fleets. You can see that the harvest occurs within the slot limits between roughly 45 and 70 centimeters. The broader dome shaped selectivity patterns are from the recreational CPUE and the recreational discards that cover, mostly those sub-adult fish and then decline as those fish immigrate from

the estuaries and are also protected by the upper end of the slot limit. Then the gold logistic or flat-top shaped selectivity curve is from the North Carolina Longline Survey. These are the fishing mortality estimates from the model for Ages 0 through 5 by fleets, with the gold line is the fishing mortality estimates for the recreational harvest fleet to the highest fishing mortality over the time series. The blue is from the commercial gillnet beach seine fleet.

The green line is fishing mortality for the commercial other fleet, other gears; and the red line is the fishing mortality of recreational releases or the discard mortality of those fish. You can see that there is generally a declining pattern in fishing mortality over all those fleets, with the exception of the recreational discard fleet; which does increase over that time.

These are just the annual fishing mortality estimates over all fleets for ages 0 through 5. You can see the fishing mortality declines through the nineties, and then generally becomes relatively stable through the remaining time series. These are the numbers estimated at age. You've got age class going up the Y axis with year along the X axis.

You can see that recruitment is quite variable and be able to look at that also in the next figure I have. The red line is the mean age of the population in that given year. You can see a slight decreasing trend in the mean age of the population. There are some older year classes you can see moving through the population; and those year classes are generally informed from that longline survey and the age data collected from that longline survey.

You can see in the lower right hand corner there does appear to be a response to that decreasing fishing mortality; although at a low rate. These are just the recruitment estimates, so just the Age 0 recruits in thousands of fish. You can see the solid blue dot is the average recruitment. Then the other recruitment estimates generally fluctuate around that average recruitment value with a notable large

year class in 2012; which are actually fish spawned in the fall of 2011.

The reference points looked at in this assessment was carried over from the last assessment and from Amendment II to the red drum fishery management plan; which are static spawning potential ratios. The SPR target identified in Amendment II is a 40 percent SPR, and the threshold is a 30 percent SPR.

Annual SPR values below the threshold indicate overfishing on the stock. These SPR values are a measure of reproductive potential, in terms of spawning stock biomass produced by a cohort over time. Here it is interpreted as the amount of spawning stock biomass that would make it through the population under the current fishing mortality, relative to if there was no fishing mortality occurring.

These are the SPR estimates for the northern stock. On the top figure are the annual SPR estimates, with 95 percent confidence intervals. You can see that the model is estimating SPR values that are below the threshold of 30 percent SPR throughout the time series. In the figure below that are the running three year averages, which the peer reviewers in SEDAR 18 noted as more informative due to the inter-annual variability in SPR.

You can see that decrease in fishing mortality reflected in the SPR values where SPR is decreasing over the early nineties. Then it increases after that and becomes relatively stable in the 2000s; looking at the three year running average. This is the spawning stock biomass level that is associated with that 40 percent SPR target. If the stock was fished for a long period of time under that SPR, the fishing mortality associated with that SPR level, this spawning stock biomass is the biomass that would be expected to be in the population. You can see here again the spawning stock biomass is estimated to be below that target level associated with a target SPR level throughout the model time series.

Looking at uncertainty of the model estimates, we did a retrospective analysis where you peeled years of data off and reran the model to try and identify if there is any kind of inconsistent bias in the estimates, as you peel that data off and go back in time. There is some slight variation in some of the population estimates; but there was no consistent pattern.

We also looked at sensitivity analysis, and we looked at quite a few different sensitivities. There is more information on each of these within the Addendum II. We looked at catch-at-age being input directly for the North Carolina Longline Index instead of length compositions. We looked at some different selectivity assumptions and functions.

We looked at a higher recreational release mortality rate of 16 percent. We tried estimating the natural mortality within the model, variance adjustments to the way the data are weighted within the model. We excluded the recreational CPUE index in a model run. We also included the North Carolina Independent Gillnet Age 2 Index.

We looked at including the base tag recapture sub-model that was originally in the stock synthesis model that went to the SEDAR 44 peer review workshop; and we also looked at an iteration of that with the tag reporting rates not estimated but fixed, at a value from the literature. Then also because some of the concerns we've seen that we'll get into coming up in the discrepancies between the estimates coming out of the stock synthesis model, and what was estimated in SEDAR 18.

We developed this alternative, what we're calling here a catch-at-age model where we input catch-at-age directly, which was much more similar to the inputs in SEDAR 18; to build sort of a bridge between the stock synthesis model and the old catch-at-age model used in SEDAR 18. These are plots of the SPR estimates from those different sensitivity model runs.

In the upper left hand panel you can see those are all the sensitivities that we included on the list before. You can see that most of them fall below the SPR threshold, with an exception of the sensitivity run with the tag-recapture model and the reporting rates fixed to 49 percent. We're assuming that 49 percent of tags are reported.

In the base model with the tag reporting rates estimated, those reporting rates were being estimated at 9 to 10 percent; so much lower than what is fixed from the literature, and that model is predicting a much larger stock with much lower fishing mortality. In the lower right hand corner is just the comparison without that tag reporting sensitivity run to look more closely at the other sensitivity runs.

The base model run is the dark bolded black lines; so that you can see how the other sensitivities fall around that base model. There was a lot of concern in obviously that tag recapture model and how to treat it and incorporate it into stock synthesis. We originally estimated the tag reporting rates within the model, and then went back and considered fixing that reporting rate; because during the peer review workshop we identified that as having a significant effect on the scale of the population estimates. I put together this table here to try and highlight some of the differences in the tag reporting rates, and how they're interpreted in stock synthesis and those that are available in the literature; to try and get at why some of these discrepancies are occurring, why there are some differences between what is estimated in stock synthesis with the other data sources, and what is available in the literature.

In the top row are the estimates from the base stock synthesis model with the tag recapture model; and as I mentioned the reporting rates are being estimated from 9 to 12 percent, depending on the fleet. This covers Ages 0 to 16, and these reporting rates are reported as fleet specific reporting rates; so they are estimated as fleet specific reporting rates.

The time period of fish tags used in the model is from 1989 to 2004. Released fish, so fish captured and released in the recreational fishery are not included in our model; due to how that model is configured. Some of the differences, these are all papers published by Bacher, et al. with some reporting rate estimates.

The first is estimated at 18 percent, and that is closer than the others to the estimates coming out of the stock synthesis model. Those estimates are for, again the entire age range, so 0 to 3 plus is the way they have the age structure in that paper. But this reporting rate is for all fleets combined; so if there is variation in reporting rate by fleet, which we expect, then there would be differences between those reporting rates.

Also, the time period of tags used in that paper to estimate those reporting rates include the years 2005 and 2006, which are years when high reward tags were released into the population for a higher reward tag recapture study. There is likely the potential for increased reporting rate of also low reward tags; the original reward tags that are included in the earlier tag data.

In the Bacher, et al. 2009 paper, there are some additional reporting rate estimates; these are much higher and that is the value that we used in the sensitivity run was the 0.49, so we're assuming that approximately 50 percent of tags were reported. These estimates were only for Age 1 fish. Those are the only ages used in this analysis.

Again, if there are differences in reporting rates across ages, particularly for those that fall outside the slot limit with these Age 1s mostly falling inside the slot limit; then those would lead to differences in reporting rates. Also some of the fleet designations are a little different. The reporting rates are for either all fleets combined, or the recreational and commercial fleets alone.

These estimates also include the years when there was high reward tags released into the population. These reporting rates in Bacher, et al. in 2009 were estimated based on an assumed 100 percent reporting rate of high reward tags, which is a typical assumption in high reward tag studies. However, if that is not an accurate assumption and the reporting rate of those high reward tags is lower; that would bias the tag reporting rate of the low reward tags high.

There are some differences and I think these are to try and get at explaining why the differences are coming from the stock synthesis model, and the estimates reported in the literature. Also in addition to that these are the abundance estimates coming from SEDAR 18; which I'll get into in a minute. The stock synthesis base \*model in blue and then the reporting rate alternative, with that reporting rate fixed. You can see the reporting rate estimate fixed essentially just scales the population up. The trends are exactly the same as the base model, it is just scaling the population estimates up for abundance; and that is going to result in a lower fishing mortality with the same catch levels going in. You can see here that those abundance estimates in the top left hand corner are Age 0 recruits.

Next to that are the Ages 0 through 5, abundance aggregated, and then in the lower panel are Ages 6 plus; so the plus group abundance. You can see that those abundance estimates coming from that tag reporting rate sensitivity run are consistently inconsistent with the estimates coming out of the stock synthesis model, and also SEDAR 18.

With this information and the inconsistencies in the tag reporting rates and how to treat that; the Stock Assessment Subcommittee made the decision to exclude the tag recapture model from the base model being presented to the desk reviewers for evaluation. Then this is a comparison to some of the estimates from past assessments.

There is a gold line that estimates spawning potential ratios from the virtual population analysis back in the nineties and 2000 by Vaughn and Carmichael, and it estimates SPR over a blocked period for two periods. Those SPR estimates are more in line with the catch-at-age alternative that we put together to bridge between stock synthesis base model and the SEDAR 18 results.

Then the SEDAR 18 results are much higher than what's being estimated in the stock synthesis base model, the stock synthesis catch-at-age alternative, and also the Vaughan and Carmichael SPR estimates. I'll go through a couple of slides here to explain why some of those differences are occurring.

The first is the selectivity; SPR values are highly dependent on selectivity estimates and highly sensitive to selectivity estimates. You can see that there are some differences in the selectivities being estimated by fleets from the SEDAR 18 model, the stock synthesis base model in orange, and the catch-at-age alternative model; which was built to bridge kind of the gap between those two models.

In the top left hand corner is the selectivity in the most recent years for the commercial gillnet beach seine fleet. In the panel next to that in the top right is the commercial other fleet. In the lower left hand corner is the recreational harvest fleet. Next to that on the lower right hand corner is the recreational discard mortalities. What you can see here is that the stock synthesis model tends to estimate selectivity at age higher for some of the older ages typically associated with above the slot limit than SEDAR 18, and also in some cases the catch-at-age alternative.

I will note that for SEDAR 18, again that was noted as a major model uncertainty was how to specify the selectivity estimates. Those estimates for some of the older ages had a constraint on them that would pull those estimates closer to a central value. In stock

synthesis the selectivity over the ages is estimated freely for all the ages.

There has been some note about the selectivity comparing to some selectivity estimates out of, again these Bachelier et al. papers that look at selectivity estimates through a tag recapture study. But I will note that in 2010, Bachelier et al. published a paper updating some of the selectivity estimates; which resulted in an increase in selectivity at age for some of those older ages above the slot limit. What I have in these figures is selectivity at length, which is how selectivity is estimated in stock synthesis. The stock synthesis estimates are the green lines, so again going by fleet in the top left hand corner is the commercial gillnet beach seine fleets; next to that is the commercial other fleet. In the lower left hand corner is the recreational harvest fleet, and next to that is the recreational discard fleet.

The stock synthesis selectivity estimates at length are in green and the Bachelier et al. 2010 selectivity estimates are in blue. You can see that they do match up quite well with the selectivity estimates from the stock synthesis model. The black lines indicate the management slot limit currently in place.

These shifts that they found in selectivity at length, these revisions, they also translate to higher selectivity at age for some of the intermediate ages. They showed the comparison to some of their estimates in their 2008 paper, and showed that they're estimating a higher selectivity at age for some of the ages above the slot limit.

Then this is a comparison of fishing mortalities from the Bachelier et al. 2008 paper in black, the stock synthesis base model in blue, and the SEDAR 18 model in red. Something to note here is, going back again as I noted before, the SEDAR 18 model fits to fishing mortality estimates from this Bachelier et al. paper.

As we would expect, it is fitting closely to those fishing mortality estimates and essentially

treating those F estimates as data. Those F estimates are not included in stock synthesis. The hope was that the tag recapture data would be incorporated through the tag recapture model, but as I mentioned before that is not included in the base model.

The SEDAR 18 results are strongly influenced and driven by the fishing mortality estimates out of that Bachelier et al. paper, whereas the stock synthesis model does not incorporate those fishing mortality estimates. There is also a slight difference in the maturity schedules being used in stock synthesis relative to what was used in SEDAR 18.

In the data workshop we went back and reanalyzed some of the maturity data. This is all maturity data from a paper Ross et al. from 1995 and we were able to pull the data from that paper and found that the classification of developing fish was immature. Going by a more recent publication by Brown and Peterson and also et al. in 2011, which has been widely accepted as a standardized reproductive methodology paper, those fish were reclassified as mature.

This led to a slight increase in maturity at age, most notably for Age 3. The SPR estimates are also a function of the mature fish; so with the increase in maturity there is going to be a slight decrease in SPR relative to SEDAR 18, because more fish are vulnerable to the fishing mortality. Again just noting the abundance estimates, the primary difference between SEDAR 18 and stock synthesis base model is the plus group.

You can see that the Age 0 abundance in the upper left hand figure is quite similar for SEDAR 18 and stock synthesis; with the abundance aggregated over Ages 0 to 5 in the upper right hand figure. SEDAR 18 in the black line is estimating a little bit more of a response, it is estimating lower fishing mortality and estimating a little bit more of a response of the abundance of those age classes; but follows a similar trend to the stock synthesis base

estimates. If you look in the lower figure that is the abundance of the plus group. Again this, I think, goes back to the concern noted by the peer review in SEDAR 18 that the abundance of the plus group was highly uncertain; almost to the point of being uninformative. Whereas, stock synthesis makes an improvement on this by incorporating some catch information before the model times series, and also some recruitment deviations from the data included in the model to estimate a more accurate initial age structure.

Some recommendation from the peer reviewers, the most noted was probably to continue exploration and incorporation of that tag recapture sub-model in the stock synthesis model. Increased temporary resolution of model time step, right now it is an annual time step and there is some thought that because of fast growth of red drum throughout the year that we're finding the temporal resolution to a more seasonal model may improve the estimates of age and length.

Also a recommendation to further evaluate the data weighting within the model, and some recommendations from the Technical Committee, which has constantly been a concern is to collect size composition data from the recreational releases; to inform the size structure of those fish vulnerable to recreational discard mortality, and to further investigate the discard mortality rates of those fish.

### **SOUTHERN STOCK**

CHAIRMAN JIM ESTES: That concludes the presentation on the northern stock, and I think we're going to transition over to Mike Murphy to present on the southern stock.

MR. MIKE MURPHY: I am going to go over a quick synopsis of the southern red drum assessment. Jeff has introduced a lot of the process in the review. Before reviewing some of the more important data inputs, I would like

to also go over a quick review of previous assessments; if I could have the next slide.

Prior to 1996 red drum were managed as a single stock on the Atlantic Coast by the council and by the Atlantic States Marine Fisheries Commission, and '96 is recognized as two stocks for the reasons Jeff just outlined. Since then there have been assessments that have estimated static spawning potential ratio and a series of management benchmarks have been set up.

Early on Vaughan, in 1996, in Vaughan and Carmichael assessments found very low static SPRs, and the Commission went with a first-step approach of trying to recover the stock to a 10 percent SPR level. Then with that second assessment it was noted that that recovery on that first step had occurred in the early nineties.

An update of the assessment methodology to a statistical catch-at-age resulted in a marked change in the estimated spawning potential ratio at SEDAR 18. As you can see while it was very uncertain, and as Jeff mentioned the final review was that only qualitative information could be taken from that assessment, the general upshot was that the red drum exceeded some of the management thresholds at the time, but that there was an obvious declining trend in the SPR.

The current assessment, SEDAR 44, is for the years '89 through 2013. Early versions of this assessment attempted to use data back through 1950, but in general reviewers discouraged that work because of the very sparse data prior to the late eighties; in terms of age structure and the uncertainty in the catch.

I'm just going to go over some important model inputs here pretty quickly. First the removals, the different fleets included in the service stock model are all exclusively recreational right now. There was a small commercial and still is a small commercial fishery in Georgia, and there was one in South Carolina. However, the Committee determined that the size structure

and landings of these were really equivalent to the recreational harvest; so small, commercial harvest was just included in the recreational harvest estimates. As Jeff mentioned, for the analysis of the live release deaths, that is the fish that are released in a live condition that eventually die, we assumed an 8 percent release discard mortality rate for the base model.

The graph shows that there has been a sharp drop in landings that the model didn't use, if you look at the early landings from the mid eighties down to 1989. Since then there has been a general overall increase in the total kill, which would be the green lines. The landings have been fairly flat, although recently they've increased; and the live release deaths have increased slowly over time.

Just as an aside, the red dash lines are actually the model fits to these data; so you can see that the model essentially replicates the landings that we input as data. The catch composition of each of the fleets is important to the stock synthesis model, and here I've just pulled out the 2011, 2013 averages showing the actual data in the black lines of the length frequencies for the different fleets in the assessment, and then the red dash line is the model predicted values.

I've also superimposed on these graphs the minimum and maximum sizes for the different states in green. You can see in all states the harvest fleets generally capture a lot of fish close to the minimum size limit. In particular Georgia, most of the catch is quite close to the minimum size limit; whereas in South Carolina and Florida a lot of the harvested catch is spread out throughout that slot limit.

There was a lot of effort to establish the sizes of released fish for this assessment. Jeff mentioned how really that is still a recommendation for more information. What the committee decided to do in the end was to use the tag and recaptured fish reported by anglers; as to have been released at the time of

recapture as a proxy for the lengths of released fish in the recreational fishery.

In addition to that Florida that has a logbook that had some information from volunteer anglers on the sizes of their released fish. In general the data were almost exclusively from those South Carolina tag recapture-released animals. You can see the sizes of those fish are generally centered around the upper size limit, if not above the upper size limit.

Many of the releases in the red drum fishery are for large sub-adult fish with a minor proportion of them being at the lower end of the slot; according to the data used in the analysis. Now these of course infer ages within the analysis, the growth estimated in SS3 is used to convert the length composition data that is input into ages.

You can see from here again just a summary slide of the most recent average. Most of the harvest in South Carolina are Ages 0 to 1, in Georgia Age 0 and 1 also; with the predominance of Age 0s, and in Florida Age 1 and 2. The live releases are a much larger size age range from say, mostly Age 1 through Age 3 or 4.

Now, in addition to these removals there are several scientific surveys of red drum that we use to guide the determination of red drum abundance trends. Overall most of these indices supported the other indices that used gear that captured similar sized fish. Here I show four of the young-of-the-year or Age 0 indices; these are in orange, the South Carolina stop net. In blue the South Carolina trammel net survey from '94 onward. In black the Florida seine survey from '98 onward, and then the Georgia gillnet survey from 2003 onward. You can see the coherence in the trends.

The red line is the model fit to this age group. You can see that this includes small year classes that are consistently recorded for, say year 2000, and then another small year class in 2005, and some larger year classes like 2003 and a

more recent 2010 year class. If you look at this closely without a lot of these confidence limits, recruitment has shown a very slow increasing trend in the southern region.

Likewise we have relative abundance indices for Age 1, and these show the same coherence in general; a little bit less agreement between the indices, but you do see those same small year classes, just over the next year obviously, so for 2001 and then for 2007 of the small year classes I just mentioned.

A difference here in the most recent years in South Carolina we see a fairly strong downward trend from 2010 onward. This trend is not picked up in the Florida hull seine data; and I just mention that as really some reasoning behind sensitivity I'll mention in a minute. Finally for indices, we had a number of surveys on older age classes.

The MRIP Survey, which is a total catch rate for anglers that is standardized as an index of the overall abundance of the fish available to the recreational fishery. It is shown from 1991 to 2013 in the graph on the left in black. Superimposed on that is the Age 2 survey from Florida, which is the oldest age specific survey.

That may not actually capture the exact same age classes as the MRIP survey, but it was just convenient to throw on the slide. One thing I'll note here is that the MRIP survey had fairly tight confidence limits compared to the other indices. It has a strong impact on driving the trends and abundance for use in the model, and as opposed to what we saw for South Carolina these last three years or four years for the MRIP index actually indicates an increasing trend in abundance.

On the right we had a number of longline surveys that are being used to monitor the relative abundance of the adult portion of the stock. The fits to these are actually not great in the model because of the number of age classes involved. The dynamic changes in the surveys, for instance seen on the right with the South

Carolina one mile survey that was conducted for a while in the mid-nineties and early 2000s that dynamics cannot be picked up by the analysis; because that generally is a sum of about 40 year classes that dominate in that group.

What the model is predicting is an increasing trend in abundance early on, which is seen a little bit in the later years of that survey; and then more of a leveling of the abundance in the surveys that you see on the right there, which are the Georgia longline in blue, and the South Carolina one-third mile longline, which is a revision of that one mile longline that was conducted earlier.

Jeff really went over well the assessment development and review process. I'm not going to mention anything further on that. What I'm going to do though is quickly go over the revised base model and the findings for changes in biomass, fishing mortality, recruitment, and the result in SPR. In these I'm going to include graphs that include the trends in those characteristics for the different sensitivities that were run. Sensitivities were run for different levels or different ways to estimate natural mortality, either within the SS3 model or external to the SS3 model; different levels of steepness, different levels of the release mortality. That 8 percent was bumped up to 16 percent as a sensitivity.

Whether the MRIP Index was included or whether it was excluded from the model, as I've mentioned that difference between the MRIP trend and some of the other indices caught the eye of the panels of that sensitivity, and then whether the tag/recapture data are included in the model or not.

I'm not going to really mention the retrospective analysis, but that was also conducted for the 2009 through 2012 terminal years. There was some indication of a retrospective effect on the total biomass, but not on fishing mortality or other features. Here is a slide of the assessment findings, the total

biomass and the spawning stock biomass, which much of that nearly doubled between 1989 and 2008; but then has remained flat through 2013

You can see that in the reflection of the fits to those longline indices. A sensitivity run using the lower steepness value of 0.8 can be seen as that green line that is well outside of the upper 95 percent confidence limit for spawning biomass. That sensitivity indicated a much larger stock. Another sensitivity of steepness at 0.9 also indicated a stock level that was at the 95th percentile confidence limit, so those were both influential in determining or influencing the models estimate of the total biomass.

When we excluded the MRIP Index it predicted much lower starting values of starting biomass; so that is that lower dotted line there. But the biomass recovered to about the same level as seen in the base model. You can see if you look at recruitment that upward trend that I mentioned earlier on when we were looking at the Age 0 indices.

Just for the sake of time, the sensitivities generally fell within the 95 percent confidence limits of the base model estimates with the sensitivity with the lowest steepness value which indicated the higher biomass; also indicating a higher level of recruitment. Now the summary average fishing mortality rates show the decreasing trend from the early nineties through the late nineties, and then a flat period a more recent increasing trend.

Again the sensitivities that were superimposed on the fishing mortality, the sensitivities for the higher biomass and recruitment of course indicated that the catch taken from that biomass resulted in a lower fishing mortality rate; and vice versa for the sensitivities that indicated a lower biomass or a lower recruitment.

Now the SPRs of course are quite related to the estimates of fishing mortalities; essentially in an inverse kind of way. The SPRs also showed, the base model showed a trend around the 30

percent threshold through the late nineties; bumping up above those levels for a little while, and then descending back to that area of 30 percent, until about 2010 when the SPR levels are estimated to be quite a bit lower than the threshold levels set as the benchmarks.

Now looking at the spawning potential ratio a little closer, again I indicated the sensitivities which indicated a higher biomass and lower  $F_s$  also showed a higher static SPR. That's what you can see as the green. In addition the sensitivity to the two X release mortality or the 16 percent release mortality indicated a much steeper drop off in SPR over time; which would be expected. As you've seen the number of released fish that subsequently died at 8 percent has increased through time; so that increasing catch is exacerbated if you assume that there has actually been the 16 percent release mortality.

That has a stronger impact on reducing the spawning potential ratio. Now I was just going to sort of end this summary talk with some graphs indicating how SPR has changed across analyses. Often we do within analyses retrospectives, but this is sort of an across analyses retrospective for SPRs.

I've showed this one already where the earliest estimates of SPRs were quite low, but based on much different data than we have available now; and then the SEDAR 18 estimate, which was highly uncertain but indicated at least a base level that was much above the 40 percent target. For SEDAR 44, we also developed a continuity model, which I would actually call a pseudo continuity model.

Where we used the SEDAR 18 model framework, but had to make some modifications to accommodate the new datasets that were used. It wasn't really just a continuation of the data that were used in SEDAR 18, but it was actually a replacement of those data with the newly adjusted MRIP information; and any other updates we had.

As you can see, if you use that and look at the continuity, we see a trend that is just below the SEDAR 18 line and continues on; but also with a decreasing trend in SPR. Superimposed on this is the SEDAR 44 base model. Here we see this marked depression in the estimate of SPR. Really the question out now is what can we attribute this to?

Here I've taken away the 95 percent confidence limits for the old SEDAR 18 model and then put the confidence limits on the new SEDAR 44 assessment model. One of the things we were interested in is to see if the aging of fish through the growth function in SS3 had a strong impact on the results.

What the green dotted line is is an externally generated age structure for the catches; as was done as import data for the continuity model, but applied to the SS3 model. It seems to for most of the time series, seems to indicate that SS3 and continuity approach are showing or giving fairly similar age structure data.

Some of the hope that may be going to a seasonal model and capturing growth in a better way; that may not really change the level of the SEDAR 44 assessment, because it seems to be consistent in terms of converting lengths to ages with the findings of the continuity model. But there are some differences in the weight at age, and as Jeff mentioned in maturity and all of those things put together could have certainly an impact on this level of SPR, this change that we're seeing.

Jeff mentioned in more detail than I'm going to mention, the continuity model selectivity functions were quite different than are used in SS3; and relied on some very simplified assumptions of relationships of selectivity between ages. There was some compression and some scaling issues that certainly made, at least when we started this process for a new assessment, made it clear to the assessment panel I think for the most part that it was time to move to another platform that would really eliminate some of that more subjective area of

that analysis. Another thing that may be important here is that since we are beginning in 1989, the initial condition of the stock can have a very big impact on essentially this level of SPR.

Jeff hinted at that when he showed some of the 6 plus group biomass estimates, and how much different they were between the continuity in the SS3 model runs. I think some work needs to be done to investigate how that plays into setting this level of SPR.

Really with that, that is the information I wanted to provide for the southern stock. I'll end it there, and wait until after Jeff Brust's presentation for questions. Thank you.

#### **PEER REVIEW PANEL REPORT**

MR. JEFF BRUST: Thank you very much, my name is Jeff Brust. I was Chair of the Peer Review for both the northern and southern stocks of the red drum stock assessment. As Mike and Jeff have mentioned, this was a multi-step review process. The initial plan was for the completed models to go through the SEDAR 44 review in August of 2015.

The Peer Review Panel for that workshop was myself as Chairman, Gavin Fay with U. Mass, Dartmouth, and then three reviewers from the Center for Independent Experts. The CIE; Sven Kupschus, Carmen Fernández and Jamie Gibson, they are all very active in the CIE review process, and so you've probably seen their names before with other ASMFC related species.

As Jeff and Mike mentioned, the models were not complete at the time of the SEDAR review, so the objectives of that meeting was changed to provide guidance to the assessment team on how to continue the development of those models to establish stable and converged models. Following the SEDAR the assessment team went back, followed up on a lot of the suggestions that that the SEDAR panel suggested.

They completed the models in March of this year, and then the second step of the review process was a desk review that happened late March and early April. The reviewers for that were myself and Dr. Fay. There were ten terms of reference for this review listed up here. Because we did not have final models during the SEDAR review, we were not able to address all of the terms of reference during that review; so this is just a table of which terms of reference were addressed during which of the portions of the peer review.

Terms of Reference 1 and 2, they were addressed at the SEDAR. Term of Reference 3, this is the meat and potatoes of the assessment itself. Because we didn't have finalized models the panel was only able to provide guidance on this Term of Reference 3; the model structure and the parameterization.

Then the desk review this spring finalized the review of that as well as Terms of Reference 4, 5, 6, 7 and 8 and Term of reference 9 and 10, they were addressed mainly by the SEDAR, so again providing guidance on how to move forward both with the modeling and for future assessments. Our general conclusions are that both panels agree with the shift from the statistical catch-at-age framework to the SS3 framework.

It provides a lot more flexibility and incorporates a lot of the types of analyses that were being done externally before. I did want to mention, both panels felt that the assessment team put in an amazing amount of effort. They did a fantastic job, not only switching the model from the statistical catch-at-age framework to the SS3, developing the new input files; adding all the new bells and whistles that they weren't able to do in the SCA, as well as addressing the inquiries and the recommendations from the panels to develop these stable models. I wanted to make that known that we appreciate the work that they put in and we think they did a fantastic job. The panels both agree, while primarily the desk review, the preferred models as presented by

Jeff and Mike, these represent the best available science that incorporates the scientific knowledge of the assessment team and the technical committees.

The overall finding that both northern and southern stocks are below the SPR 30 percent threshold, we support that. It is not on this slide, but overall we do recommend that these models are the ones that are used for management. We see them as suitable for management. Specifically for each of the Terms of Reference, the Term of Reference 1 is to evaluate the thoroughness of the data used in the models.

It is our conclusion that the assessment team conducted a thorough search of the available datasets. They evaluated each of the datasets, they had I think seven or eight specific criteria against which each of the datasets were evaluated. They did a thorough job against that. The panel supports the justifications for which indices and which datasets were included and how they were used in the model.

There were a couple of datasets that we suggested could get more evaluation. I think the northern model included a sensitivity run of one of the indices that was originally excluded; was recommended as possibly being included, so I believe that was included in the sensitivity runs. But overall they did a thorough job. We agree with the data sources that were used and how they were evaluated.

Term of Reference 2 is stock structure. The assessment team maintained the structure that has been used since 1996 or so, this is the split at the North Carolina/South Carolina border. This split is based on life history differences. There is some information from tagging data that there is limited movement across this border and there is some recent genetic work as well that supports this.

The panel concurs that this split is appropriate and should be maintained. Term of Reference 3 is to evaluate the methods and models used to

evaluate the population. Again, we agree that the shift to the SS3 was an appropriate move. Jeff mentioned a lot of the issues that SEDAR 18 had with the statistical catch-at-age the SS3 framework is more flexible, it is well tested, it is well supported, and it is used widely throughout the fisheries management.

There are a couple of new modules; the tagging module in particular. It is relatively new to the SS3 framework. It has gotten a lot of review at the beta testing level. I am not aware of it being used in practice a lot, so I think there is a growing body of evidence on how to use that module. The data that were being used for both the north and south in that module will definitely need some more exploration; particularly as we've seen that at least the northern model is sensitive to how those data are used.

The recommendation from the August workshop, the SEDAR workshop was to greatly simplify the models. The assessment team had extended the time series back to 1950; they had incorporated a number of selectivity time blocks. Because of the problems that we were seeing in the model stability and convergence, the panel recommended to greatly simplify the model get converged models that are working that are relatively realistic and then start adding complexity back in. The assessment team, they did that. They did a phenomenal job. They tracked down what appeared to be causing the major issues with the models that we saw back in August. They did significant dozens of sensitivity runs to evaluate the uncertainty in the model; and so the preferred models that were just presented now, we think they are a significant improvement over what was presented back in August.

There is still potential to add some complexity. The models were greatly simplified since August. Some of that complexity has been added back in for these preferred models. There is still some ability possibly to again, maybe extend the time series back prior to the 1989 start year. Term of Reference 4, evaluate

the diagnostics, again I mentioned they did dozens of sensitivity runs; many of which were presented here.

The models are robust to most of the assumptions that are used for the data and the model framework. For those that are more sensitive, such as the tagging in the northern region, the panel agrees with the parameterization that was selected. It seemed based on the available information, particularly the tagging module; the way the tagging data is used in the preferred model is what we see as the best way to move forward at this time.

As both of them, Mike and Jeff mentioned, there are no consistent patterns in the retrospective pattern. Term of Reference 5 is to evaluate the methods used to characterize uncertainty in the estimated parameters. Again, both regions did a thorough job. They looked at a number of different ways to characterize uncertainty, likelihood, profiles, bootstrapping and a number of different ways.

In most cases the results were consistent among these different methods. There was some uncertainty. There was an error in some of the bootstrap runs that was noticed after it was too late to correct the model and get it out to the panel in time for review in the southern region; but overall we didn't feel that that was a debilitating aspect of the uncertainty characterization.

There were a couple other runs that we thought might be important to run; such as a sensitivity over the tag reporting rate. There were two that were done, possibly using the value from the Bachelier, 2008 paper of 0.18, or even doing a whole profile over a range of different values would have been very informative to see how the estimated parameters would change with those different values.

Essentially what level of reporting rate is critical to change from that overfishing to not overfishing status in terminal years? Term of Reference 6 was minority reports; there was no

minority report so that one was pretty easy. Term of Reference 7, recommend the best estimates of stock biomass and other biological parameters.

As I said, the panel concurs that the assessment reports as presented here, they incorporate the expert knowledge and best available science and so we conclude that the assessment reports represent the best estimate of population and fishery dynamics for both regions. Term of Reference 8, evaluate the choice of reference points.

The reference points that are used for this assessment were established under Amendment II back in 2002. The target is an SPR of 40 percent and a threshold of 30 percent. No alternative reference points were presented for this assessment, and the panel saw no reason why they should be changed. In recent years the average values for both the north and the south were below the threshold SPR value of 30 percent. Here you've seen these plots before. The top left is the northern SPR relative to both the target and the threshold, and the lower right is the south relative to the target and the threshold.

Term of Reference 9 is to review the research recommendations. The research recommendations generally fell out into two main categories; those for better understanding the life history of red drum and those that were relative to the model performance. During the SEDAR review the recommendation in the short term was to address the ones that could help us understand model performance.

The SEDAR panel also included or suggested additional research recommendations; which as I've mentioned the assessment team, they addressed a lot of those research recommendations in the short term. There are some life history ones that should be looked into. Jeff mentioned a couple, Mike mentioned a couple; in terms of release mortality rates and things like that.

There were a few recommendations within the desk review, but those were more investigative model performance kind of things for future assessments; rather than data collection type research recommendations. Term of Reference 10, recommend timing of the next benchmark, back in August this was addressed by the SEDAR panel. Back in August when we didn't have a complete model, the recommendation was to complete the models and do the next benchmark as quickly as possible.

I believe under the ASMFC process that is what this desk review was; so I believed we have addressed that one. Then following the next benchmark the timing of updates in the next benchmarks are, given the life history of this species and the long lived nature and the slow response possibly of the increase in biomass and SPR because of their long lived life history, the five year trigger is probably the minimum.

We might be able to go longer given the life history of this critter before we do the next benchmark. That is not withstanding any information that we get on life history or model performance or things like that that might be impetus for an updated benchmark. But based just on life history, five years at the very minimum is probably realistic. Just one conclusion, yes so again it was an impressive performance by the assessment team both in the north and the south. They've done a lot of work.

It is very impressive what they've done. The new modeling framework is an improvement over the statistical catch at age used during SEDAR 18. Both the northern and the southern models are well described and appropriately parameterized. They've adequately evaluated the uncertainty in the model structure and the data that was used for it. The results of both models are robust to most of the assumptions that are used. Again, the panel recommends both model are suitable for use in management. That Mr. Chairman is my presentation.

CHAIRMAN ESTES: Thank you, Jeff, Jeff and Mike. Obviously a whole bunch of work was done with this. I'm reminded of, I think it was the late 1990s when I did a simple VPA on black croppery in Lake Okeechobee and I thought I was on the cutting edge. I don't know what has happened to the world. Everything has gotten a lot more complicated, obviously.

I think what we'll do now is before we have questions maybe we'll have lunch, and during lunch you can chew your sandwich or whatever it is and chew the information that you just heard, and so we'll come back from lunch in a half hour at 12:15 and reconvene, if that is all right with everybody. Thank you.

(Whereupon a recess was taken.)

CHAIRMAN ESTES: What I originally thought that we would do with the questions, and I think there are going to be quite a few questions; because this was pretty complex. First of all, do we have Mike back on the phone yet? Hang on just a second, we'll call Mike back. Okay here we go.

I thought originally that it would be simpler to ask questions about the northern model and questions about the southern model and questions about the review. But I think after hearing all the information that we got today, I think it is just throw it open. Do we have questions about the assessment or the review?

MR. CHRIS BATSAVAGE: I guess going back to the information on the tagging data that was for the northern stock. There was obviously difficulty in estimating the reporting rate. They I guess tried the estimate of the reporting rate that was derived from the model and then the one from Bacheler et al. which is 0.49.

It was discussed here in the presentation that the 0.18 was considered but wasn't tried, and some of that was due to the concerns of that time period covered a couple years where there were high reward tags; so there might have been a little bias in the reporting rates. But I

guess a question that I have about that is I think just even thinking forward as far as trying to use tagging data in the future.

With tagging studies part of your success in the reporting rate is just the outreach that you do to get the word out to the fishing community about the tags, and make sure that you are turning them in to the right group. That has come and gone over the years, as far as the amount of effort. If I guess more outreach is done in future tagging studies, could that also cause concerns regarding bias for trying to determine what an appropriate tag reporting rate might be for either looking at this further or future use down the road for the red drum assessment?

MR. BRUST: Yes, so currently one of the limitations of the tag recapture model within stock synthesis is that recording rates by fleet are not allowed to vary with time. This was one of the recommendations because of those releases of high reward tags and the expected increase or the potential increase in reporting rate of even low reward tags; due to the advertisement of those high reward tags in the population.

This was a primary recommendation by not only the stock assessment team, but also by the peer reviewers that we pursue incorporating a time varying tag recapture reporting rate into the model. Our hope is that that is something that can be incorporated down the road; and as I mentioned earlier, one of the reasons to moving to stock synthesis is that it is supported and peer reviewed and used in the assessment community. Kind of the authors and the leaders on that project are responsive to incorporating some of these bells and whistles or changes in options to the model; to incorporate some of these unique situations. If that was in the future plans to increase outreach, to try and increase reporting rate and buy-in of the tagging programs; that hopefully down the road could be incorporated through a time-varying tag reporting rate.

CHAIRMAN ESTES: Wilson, I think you were next.

DR. WILSON LANEY: I've got two questions. The first one is for Jeff and Jeff and Mike, I guess; and that is, do you all think that it could be because of the difficulty in sampling the full range of the population that that is a contributing factor to why the SPR is so apparently low? That is question one.

Then question two is, I know from some of the work that Julie Harris has done at NC State that there is a way that you can do some genetic evaluation on juveniles and get an estimate of the number of adults in the spawning population that had to produce that juvenile or those juveniles. It seems to me that we have an opportunity, possibly, to use that approach to get sort of an independent reality check on the SPR estimate, and especially since Robert in South Carolina.

South Carolina has selectively stocked some areas with juvenile red drum, and we would know in that case exactly how many parents they had. I mean you could do the genetics on the stocked fish; and determine that that estimate of parentage coincides with the numbers that you used to propagate those fish.

But then you could also do it on wild fish, and maybe that would be sort of a supplemental approach to our standard assessment techniques, to try to get an independent idea of what the spawning stock population size really is. Just any comments or thoughts you might have on that second question would be welcome as well. Thanks again guys for a super job on using all the data to the maximum extent you could, and doing a great job on the assessment.

MR. KIPP: Yes, I'll take a stab at those and let Mike jump in if he wants to add to it. One of the kinds of consistent uncertainties with red drum specifically is this selectivity of fish as they exit the slot limit and immigrate to the offshore population or the spawning population; and

what that selectivity is, because the SPR estimates are highly sensitive to those selectivities; because SPR is just a function of the fishing mortality and the selectivity at age of those fish.

Ideally you would have a fishery that has flat top selectivity, at least one fishery where it provides a lot of information on the removals of red drum; and that provides information on kind of the magnitude of those fish that exit the slot and the older mature fish. Yes that is something to consider is the low frequency of catch of the adult fish.

There is not a lot of information on estimating that selectivity as those fish kind of move into less vulnerable states. The second question you had, Wilson, was on the genetics. There was a genetics study; I think it was in South Carolina. It may have been Tanya Darden; I can't remember exactly who the author on that was. But they did something along the lines of what you are referring to, which is trying to get kind of a genetic estimate of the population size.

I recall just a line in that publication or that study that said that the estimates on the population sizes from those genetic analyses corroborated the population sizes; strictly speaking I think qualitatively that the southern stock is much larger than the northern stock. But I don't know that it got more in depth than that. Mike, if you have anything to add.

MR. MURPHY: I could hear some of that. I would just have to say that those are certainly important information going forward. If we can nail down any kind of an absolute estimate of abundance of adults that would really help the scaling in the stock assessments. I know we've done some work on the Gulf Coast where we've taken fin clips from individual adult red fish; and actually been able to identify them as individuals, and use that as a natural tag.

It is certainly plausible to do a large scale tag recapture program if you can get enough, I guess volunteers or scientists to submit those

kinds of samples to a lab and set up something in a scientific fashion. It might be possible to get an estimate of the adult stock; which would be a huge plus for the assessment.

Now that has certainly been something on the Gulf Coast where there is a federal fisheries management plan still in place; where they've thrown lots and lots of money into the traditional mark/recapture estimates programs to try to get an estimate of the adult population size. That and things like egg and larval surveys, which are fraught with other errors to sort of back cast what was the number of adults that produced those numbers of eggs. That's it.

MR. JOE CIMINO: I want to thank well everybody for all the hard work that they've done. I guess I'll start with, I appreciate what Wilson has said and Mike's response; because I have concerns with both the models and kind of this scale of where they are estimating this biomass to be and the SPR rates. I certainly support if any further work can be done on that it would be appreciated.

I have one specific question for the northern assessment model as well; and I guess it may be to both Jeff's. Correct me if I'm wrong, but I didn't hear it much in the presentation, but the talk about only one JAI going into the northern model; and conflicting signals when you have large catch with an assumption that maybe there was a stronger juvenile recruit coming through the Chesapeake Bay.

My question is I guess basically, were there any thoughts on a way to address that; perhaps weight the North Carolina JAI with any of the information that is available north of them? Because it seems like, and this is the part where I would ask you to correct me if I'm wrong, but it seems like the model is sort of penalizing SPR here because of high catches.

I'm assuming that those high catches are really just coming because the fish are available. Any thoughts on a way to address it, was it enough of a concern? It didn't seem to make the

presentation on one of the things to be addressed.

MR. KIPP: Yes that is something we saw, and I don't know if I can bring up a slide here just to illustrate. But right now there is only a North Carolina JAI in the model. There are no JAIs that we reviewed outside of that that we thought were useful for the model. We hoped that by bringing in the MRIP Index that that would incorporate some information outside of North Carolina. But that is something that we did see there. For example, in 2002 there was a large catch by the recreational fleet; both harvest and discard mortalities.

That is consistent with a large year class moving through the population. However, the indices if you look at the North Carolina JAI, the 2002 year class are the smallest over that entire index. If you look at the MRIP it is extremely large, but the model misses that signal coming through the MRIP Index and tries to kind of balance between that signal coming from the North Carolina Index and also from the MRIP Index; and essentially compromises between those indices and that conflicting signal.

There are some things we did with data weighting; there are things like iterative reweighting you can do that are built in within stock synthesis. Some of the sensitivities we did around that didn't suggest large differences in the population estimates. We didn't really pursue that any further than that; other than to note that there is the potential for pulses of fish that are missed through just having primarily North Carolina indices in the model.

MR. BRUST: To that point, Joe. I don't remember specifically if it made it into the research recommendations, but I do recall some discussion at the SEDAR workshop about only having one index. We know similar species there are regional variability among years. As this is showing, if they are not showing up in North Carolina where are they coming from? Having additional young-of-year indices from other regions would be very helpful to inform

the model, and help it figure out what is happening in years like this 2002 year class.

MR. CIMINO: Just a follow up. The JAI is a pipe dream for us, and hopefully eventually we will find a way to get a survey that captures these. I kind of was hoping to hear that there might be something else to explore that we could do to find a signal on these younger fish. My only thought is we did spend some time for a past assessment with this; doing length based stuff through our tagging program for smaller fish, and then kind of setting up ages based on seasonal length fins. I know North Carolina has done similar work, so just a thought.

MS. FEGLEY: I really recognize the challenges that this assessment has presented so kudos to the team for sticking with it and coming to this outcome. I do have a lot of questions. I always have some concerns when things look so different from benchmark to benchmark; although it does happen. I'm wondering, in particular I have some questions about the relationship between the spawning stock biomass and the SPR fishing mortality and recruitment.

I'm wondering can you pull up the graph of the SSB for the northern stock. I'm looking at Page 80 of the assessment; which has the SSB, the SBR and the recruitment all in one panel in the document. The question is it looks to me like the SSB, which is fairly flat through the recent part of the time series, and this speaks to this question of scale that Joe brought up. It looks to me like it's sitting right at about 1,000 metric tons. Is that right?

MR. KIPP: Kirby will bring this up. There was a slight error in the reporting of that spawning stock biomass in that figure that was provided in Addendum II. That was halved from what it should have been; and I apologize for not pointing that out earlier. This is the corrected. It is really just everything is just adjusted by 100 percent, so it is two times that in the spawning stock biomass plot. That's the only thing that was affected; trends, all the other estimates,

SPR and everything else were not. It was just a reporting into that figure that was incorrect.

MS. FEGLEY: It is at about 4,000 metric tons. Is that a realistic number? It is pretty low; it's a pretty low number for a fish that lives out to 40 years. Just to move on from there. Then in 2012, we had that very high recruitment and then the F goes through the roof and the SPR goes down. I am just trying to put together in my head. I am trying to put it all together and what would cause the F to go up so high in 2012; concurrent with that large year class? Is that discards of little fish? Is that what's going on?

MR. KIPP: Yes so that would be attributed to a very high discard event. There were a lot of discarded fish, and again 8 percent of those are assumed to die post release. That affects the fishing mortality, and I think this comes back somewhat to the indices again. There is some conflicting information in the indices that are included in the model; where it doesn't suggest that that was necessarily as big of a year class as would account for all of that increasing catch.

Therefore it is going to estimate a high F, large removal and not that necessarily big of a year class. It was big, obviously for this time period, but you can see in the indices of abundance some are overestimated and some are underestimated for that year class. Again it is a conflict in that year class across these indices; and trying to compromise that fit to those different indices.

It comes out with a year class and then that large removal event, and estimates a high fishing mortality; which is then spread over all of the age classes in the fishery as a function of the selectivity of those fish at that age. That is why it is leading to a low SPR; then the first part of your question, the spawning stock biomass.

Again one of the differences between stock synthesis and the old catch-at-age model is that that initial population is estimated as a function of previous fishing; which is in this case we took

a ten year average of the removals observed and used that as kind of a catch before the model period, to fish down that stock.

It fits to that catch and then fishes down the stock to get it to a point where it thinks it is, and then also incorporates some deviations of those age classes in that initial population structure; based on other information in the data. For example, we saw a big year class coming through some of the older ages in that abundance plot.

That is mostly driven by the age data collected in the longline survey, which would suggest that that year class was a very large recruitment event way back in, I think it was the seventies, '74. It is estimating a very, very depleted spawning stock biomass in that initial year; which would indicate intense fishing pressure for a long period prior to the start of the model year.

CHAIRMAN ESTES: Other questions. No more questions so we had a couple of stock assessments, so now we need to discuss any actions that we might need to take. Is everybody tired from dinner?

**DR. LANEY: Well, I guess one action Mr. Chairman would be to make a motion to approve or accept I guess in the terminology the assessment documents for management advice. I would move to make that motion.**

CHAIRMAN ESTES: Do I have a second? John Clark second. If I can have it up on the board I'll read it. Move to approve the stock assessment for management advice. Let's have some discussion about that if we might.

MR. ROBERT H. BOYLES, JR.: Motion to postpone. I understand there are some questions about the assessment that I think I could benefit from some advice from the Technical Committee.

CHAIRMAN ESTES: I need some parliamentary assistance here.

EXECUTIVE DIRECTOR ROBERT E. BEAL: You'll need a second for Robert's motion to postpone; and Robert is that for a time certain?

MR. BOYLES: Yes, and I'm not trying to be cute here with this. I think there are some things that I could use some technical advice for. Let me be clear, I think it is important to acknowledge the terrific work of the assessment. Please don't look at this as a negative. I just think there are some questions that I've got going over in my mind. I don't really want to postpone it, Wilson. But I'm not quite ready to approve the assessment just yet. I've got some questions for the TC.

**CHAIRMAN ESTES: Do we have a second? Lynn, a second from Lynn, now a discussion on the motion to postpone.**

MS. FEGLEY: I just have a question. At such time if the report is approved and the report is that we're overfished and overfishing is occurring, I agree with Mr. Boyles. The work here is phenomenal and it is a challenging case; but there are just so many questions that I think need to be answered. Can somebody clarify? Does the plan, would the board be obligated to take management action immediately? Is that how that would work?

MS. MEGAN WARE: Under Amendment II that would trigger management action, so whether that would be an addendum or an amendment, however the board would want to proceed.

MR. A. G. SPUD WOODWARD: Mr. Chairman, we've not received any guidance from our Technical Committee on this matter. I think there are some things that we could benefit from if they were to do some things. I think I actually have the text of a motion that I've given to Megan that at the appropriate time I would like to put up for consideration.

CHAIRMAN ESTES? Okay, let's deal with this one first. Robert, is there a timeframe for your motion to postpone?

MR. BOYLES: Let me ask this question again, not trying to be cute here. I guess I've got a procedural question. I would think that we could get the information from the TC that is in the text that Mr. Woodward just referred to, I would think by the August meeting; but I would look to staff for that.

Megan, if that is something you thought the TC, we could convene on a conference call or a series of conference calls perhaps. I guess my question; Mr. Chairman is if we accept the assessment for management advice, can we still ask this question? Again I am not trying to be cute with the motion to postpone. But there are some things that I would feel more comfortable if I had a better handle on with myself.

MS. WARE: I think that is really going to depend on what work you guys want the TC to accomplish. Before we were talking about the statistical catch-at-age model and potentially looking at runs with that. In speaking yesterday, if we came to the conclusion that if we were just to add the data, the extra years of data to that model, not adding the longline survey or any new data sources; that that might take four months to do runs for both northern and southern and get those all complete and ready to go.

I think if you want to add additional data sources such as the longline survey and kind of beef up maybe that model a bit, it would take more like six months; because we would then probably want to peer review that if you are interested in using this for management. Again, I think it is dependent on the goals of what you guys have, if you are interested in pursuing a different model that is going to take longer. If you want to beef up that statistical catch-at-age model that will take a bit longer.

MR. BOYLES: Mr. Chairman let me be clear. My motion is not intended to postpone indefinitely, based on our training we had yesterday. We certainly want to move through and move on issue that we will need to move on. Let me say,

Megan, when you said four months I was hopeful August. Let me say motion to postpone until the annual meeting.

EXECUTIVE DIRECTOR BEAL: We let Colette go about two hours too early I think. Robert, you asked a question earlier about if you approve the main motion to approve the assessment and peer review for management advice, what does that mean and can you change it? I think the short answer is no, you can't change it.

If you approve it for the document that you have in front of you now; the assessment and the results and the peer review for management advice that becomes the foundation for management advice, and the board will have to react to the information that is contained in that document. If this board is seeking additional technical work, one way to do it may be to – it gets tricky.

But modify the current motion that is on the board to postpone, and include the technical work that you guys would like to see. Move to postpone until the Technical Committee completes a certain list of tasks. Then the revisitation of that motion or the assessment is linked to when the TC finishes their work; it is not linked to a meeting of the commission. That may be one way to do it. That is up to the board. That may take a motion to amend your motion to postpone, but I think that is workable. We can stumble through that I think.

MR. BOYLES: I am not ready to approve this for management advice. I guess that is where I am. There are some questions that I've got. Having said that I recognize that there are some things we need to do. We've certainly got strong interest in this fishery in my state and some concern with my anglers about the status of the stock. We've worked ourselves into this so let me try this. Motion to postpone until the Technical Committee can review the information requested by the board and that information requested will be put up here shortly.

**CHAIRMAN ESTES:** Okay right now we didn't say this and I'm not probably going to do this right, but I'm treating this as a substitute motion for the original motion. Is there more discussion on that?

DR. LANEY: I'm scratching my head trying to remember our training yesterday, but from a parliamentary standpoint further anything if I was able to withdraw my motion; or would that just further confuse the issue?

CHAIRMAN ESTES: I'll look to Bob for help, but I think that we have another motion on the table, so I don't think that you can do that now. Is that correct, Bob?

EXECUTIVE DIRECTOR BEAL: Can you repeat the question, I was side barring with some folks.

CHAIRMAN ESTES: That's okay. Wilson asked if he could remove his original motion, withdraw it?

EXECUTIVE DIRECTOR BEAL: No, just because it is property of the board now and it's been debated and there are actually motions to amend it and change it that have been subsequently made. We're in an awkward spot. Robert started a second motion; you've got another motion to postpone. We need to sort the two motions to postpone out; I think is our first step.

CHAIRMAN ESTES: We cannot treat the second motion as a substitute motion for the first?

EXECUTIVE DIRECTOR BEAL: Yes okay, the wording is there now. You know the other option is to actually include the details of those tasks within this motion; if the board chooses to do that.

CHAIRMAN ESTES: I'm afraid to ask, but go ahead.

MR. ADAM NOWALSKY: Given that it's Mr. Boyles own motion, he would be within his realm of capability to amend his motion and

then if there is no objection from the board that would then become his motion. He has the right to amend his own motion; and then as long as there is no objection that becomes the motion up for debate.

CHAIRMAN ESTES: Okay is there any objection to Robert amending his motion? Seeing none; Robert do you have an amendment?

MR. BOYLES: Mr. Chairman where I am is acknowledging the great work of the stock assessment, but with a number of questions that I think are appropriate for the Technical Committee to review. Some of those questions I think there is language, Megan that you've got that perhaps you could display for the group.

MS. WARE: Yes, let me get Kirby to finish what he's working on and then we'll pull that up.

**MR. BOYLES:** Mr. Chairman, since we've received unanimous consent for me to amend that motion that is what I would like to do. But I would like for the body to see the amendment, so give us just a moment please.

**Mr. Chairman my motion is to amend the motion to postpone until the Technical Committee and the Stock Assessment Subcommittee can complete the following tasks. Evaluate if current biological reference point types and values are appropriate for red drum given the species life history. Investigate the feasibility of an F-based reference point for juvenile red drum. Evaluate how red drum life history and fishery management measures affect the validity of age-based models. Evaluate whether the South region continuity run in the statistical catch-at-age model can be made informative for management and if yes, complete that continuity run. Evaluate if a North region continuity run of the statistical catch-at-age model would be informative for management purposes, and if yes, complete a continuity run. Evaluate tag return rates for each region and determine if the tag return data should be incorporated into a new run of the SS3 model.**

CHAIRMAN ESTES: I believe we already have a second. I suppose I am supposed to read this again. Move to postpone; to move the task of the Red Drum Technical Committee and Stock Assessment Subcommittee. Are we changing? Excuse me.

EXECUTIVE DIRECTOR BEAL: Can I barge in here for a moment Mr. Chairman. I think since the board gave Robert the latitude to modify his motion to postpone. I think this motion is simply worded; move to postpone the approval of the stock assessment peer review until. Take out the words to amend on the screen.

If this becomes the motion to postpone until all these tasks are completed, whenever this is done is when the board will come back and revisit this. Under this scenario there are really only two motions in play; the motion to postpone and then the original motion that was made by Dr. Laney to approve the documents. I think that reflects where the board wanted to go and the latitude they gave Robert, and it may simplify things. There are only two motions in play now.

CHAIRMAN ESTES: Got it, so let me read the substitute motion. Motion to postpone the approval of the stock assessment and peer review until the following tasks can be completed by the Technical Committee and the Stock Assessment Subcommittee with the following: Evaluate if current biological reference point types and values are appropriate for red drum, given the species life history.

Investigate the feasibility of an F-based reference point for juvenile red drum. Evaluate how red drum life history and fishery management measures affect the validity of age-based models. Evaluate whether the South region continuity run of the statistical catch-at-age model can be made informative for management; and if yes, complete a continuity run.

Evaluate if a North region continuity run of the statistical catch-at-age model would be informative for management purposes; and if yes, complete a continuity run. Evaluate tag return rates for each region and determine if tag return data should be incorporated into a new run of the SS3 model; motion by Mr. Boyles, seconded by Ms. Fegley. Do we have any discussion about the motion?

MR. WOODWARD: I would just like to speak in favor of the motion. We don't have a crisis here. We've got a long-lived fish; we've got some metrics of the population that shows some stability. We don't have a depleted spawning biomass; at least we don't believe we do. What we've got is an indication of a trend that increasing fishing mortality that jeopardizes recruitment to this spawning stock biomass. I certainly support us taking a more deliberative and measured approach to make sure we gain as much confidence as we can before we consider making management changes.

CHAIRMAN ESTES: Other discussion?

MR. BOYLES: Again, I want to reiterate my appreciation and support of all the great work that has gone into this with the assessment. I think as Mr. Woodward suggested, this is something, there is a lot riding on this, particularly in the south. As I have indicated earlier, the data that we see in South Carolina certainly give us pause and we certainly want to make sure that we get this right; and find an appropriate management response forward.

I believe if these things, if we could get the TC and the SAS to help inform us on these things, then I would feel much more comfortable in moving forward with a management document. I want to be clear that I think at least from the anecdotal and scientific information from my state, there is strong interest and belief that we need to do something. But the standard to which we're held in our legislature requires that we make sure that we've got some of these

things sorted out, so thank you, Mr. Chairman, I would support the motion.

MR. BATSAVAGE: I also support the motion. Kind of adding to the previous comments, in terms of the Technical Committee review, I know obviously a lot of great work was done and it took a long time to get to where we are today; with all the data and the complexity of this model. I think this motion is kind of looking at some extra things to look at to kind of give us a clear picture of what the stock status is like.

But in kind of getting to where we are today. I understand that a lot of work was done in a short period of time; in order to kind of get to the May meeting. I think when this gets reviewed by the Technical Committee and the Stock Assessment Subcommittee that to try to give them the time necessary to accomplish these tasks.

This is a long list. Megan already kind of gave us a rough estimate of the time it could take to complete some of this stuff. I think it's just really important as Robert said to make sure we get this right, as far as what the stock status is. At the same time I understand as far as other tasks that this board and commission staff have, as far as stock assessments and all. This is going to maybe disrupt the schedule and that but I think this is important enough to try to be very thorough; as far as completing these to see what the stock status is.

CHAIRMAN ESTES: Other comments?

DR. LANEY: I certainly think that the list that Robert and presumably Spud have provided us; a worthy list and would certainly like to hear the answer to all of those evaluations myself. I just have a process question for Bob, I guess; and that is if we have assessments that have been done and we have a Peer Review Panel approval of those.

I guess we're not obligated to immediately go ahead and accept that. But it almost seems in some respects, and I can talk to Robert and

Spud about this and Chris offline. But it almost seems in some respects like we don't like the answer and we're looking for a better answer maybe.

EXECUTIVE DIRECTOR BEAL: You know it is a good point, Wilson. I think this is more of some technical questions to get the board more comfortable with the answers of the assessment. Are there responses that the Technical Committee and Stock assessment Committee can provide to the board to make them more comfortable with it; or are there other ways of looking at the signal that came out of that assessment?

This has been done in the past, where the board at the Commission have received stock assessments and peer reviews and not been immediately approved and some additional tasking for the Tech Committee has been given. This isn't the first time that the Commission has gone down this road; for better or for worse.

But while I had my hand up, I think the other thing, and Chris started talking about it briefly; which is the assessment folks that were involved in this assessment. Their work plans were pretty full and they were already moving on to, I know Jeff Kipp was working on croaker and spot for this board and some of the state folks that had some involvement were moving on to other species as well.

I am not speaking for or against this motion. It is probably worthy of some discussion that if the technical folks are asked to do these things, there may be some delays in other assessments that are before the commission as well. The plan right now, I think Megan can probably comment better than I can on the exact workload.

There are two ways out of this box, one is to find some other help to work on red drum or spot and croaker at the state level; or the other is things may have to be postponed. I think those are both reasonable options. But we just need to have an open discussion about that and

really control the expectations about all the workload really for these folks, probably through the end of the calendar year; if not into next year. I don't know if staff can comment. Megan may have some ideas on other workloads and other projects that are going on. It's probably worthwhile.

MR. PAT GEER: Bob covered part of what I wanted to touch on. But I also wanted to perhaps ask Mike and Jeff if any pieces or elements of the tasks onboard within the motion have been addressed in part. If there are any comments you guys could make relative to continuity runs that may have already been done.

MR. MURPHY: When I looked at these, when we did the original assessment for review when the SS3 models are not in adequate shape, we did have continuity runs for the north and south. I think as you saw in my presentation, we do have estimates of SPR. Now, the only thing in these statements that gives me a little pause is whether these continuity runs can be made informative for management.

That is really not something the Technical Committee is going to be able to decide. We can certainly make it technically as accurate and proficient as we can. But I think it would require a review to find out if it is informative enough for management. That's all I have.

MR. KIPP: Yes, I don't have anything to add. I agree with Mike.

MR. JOHN CLARK: I certainly agree with the motion to postpone. Pat pretty much asked what I was curious about, was how much of this had already been considered. Just curious as to what the process would be to kind of change the reference points for this species.

MS. WARE: I just wanted to get back to Bob's comment about changes that this might have down the road or implications for other workload. I think that if we pursue the statistical catch-at-age model, as I said that is

probably a four to six month endeavor; so that could delay croaker and spot assessments, which Jeff is currently working on.

It has the potential if it takes up to those six months to impact river herring and/or sturgeon. I just wanted to make sure the board is aware of that. That is fine if you guys want to prioritize red drum above those other assessments. I just wanted to make sure everyone kind of knows what the implications are moving forward.

John, to answer your question about reference points, we could task the TC to look at different options, come up with their recommendation. It would take an addendum to change the reference points, but I would recommend that if there is management action taken that that kind of all be included in one document.

CHAIRMAN ESTES: Any other comments or discussion?

MR. BOYLES: Again, maybe not to put too fine a point on it here. We have interest in South Carolina, as I've mentioned, with our fishery independent data as well as our fishery dependent data that give us pause about the status of our stock. As many of you have heard me talk about around the table, we are required to legislate management actions. We have as I said, a lot riding on this stock assessment, and our comments to some of our constituents, who have already approached our legislature about making management changes.

I don't want to have to do this twice. I think there are some things that clearly for the region that we need to make sure everybody is onboard; and so that is one of the motivations for my motion. Let's make sure we get this as tight and as right as we can for everybody to be onboard; so that I'll be confident in going to my general assembly and saying, hey we need to make some management changes and here's what we recommend.

MS. FEGLEY: Just a question for Bob or maybe Megan. If given the impacts of this on other assessments like sturgeon and herring. Would this have to go through the Policy Board at some point, or can this board just decide?

EXECUTIVE DIRECTOR BEAL: Lynn, that's a good point. We're kind of doing this on the fly, so it is hard to estimate exactly what the impacts would be to some of these other species. I know croaker and spot. Jeff was intending to kind of switch gears and to go over to both of those species and work on them directly between now and kind of the end of the year, or at least November; so Jeff, is that right, those two, if there is not additional assistance from the states.

Those two will be directly affected by this. I'm not sure about the other species that you mentioned, but there may be some impacts there as well. I think if this motion were to pass, it may make some sense for staff to go back and look at the timeline and the workload of other species, and get together on a conference call sooner rather than later with at least the state directors, if not the whole South Atlantic Board.

The state directors I say that because you folks are the ones that have control over the assessment folks in the states, and you can see what their workload looks like; and then come up with a plan for at least these three species that this board is working on. We can re-estimate the timing for spot and croaker and to get this red drum worked on, if that seems to make sense. Because you're doing this a little bit on the fly as well. You may not know exactly what the workload of all the assessment folks in your states are; and you may need to go back and talk to folks at home and see what horsepower is available from your states, and we can do some staff work to estimate timelines and other things and collateral damage. But we probably can't do all of that here today, and a conference call, seems to me anyway, to make a lot of sense to do in the next couple weeks if we can pull it off.

CHAIRMAN ESTES: Well, let's see where we're at. See if this all makes any difference. I think it is time for us to; all those in favor of the motion please raise your right hand. Let's back up, let me read it again. Motion to postpone the approval of the stock assessment and peer review for management advice until the following tasks can be completed by the Technical Committee and Stock Assessment Subcommittee.

Evaluate if current biological reference point types and values are appropriate for red drum, given the species life history. Investigate the feasibility of an F-based reference point for juvenile red drum. Evaluate how red drum life history and fishery management measures affect the validity of age-based models.

Evaluate whether the South region continuity run of the statistical catch-at-age model can be made informative for management; and if yes, complete a continuity run. Evaluate if a North region continuity run of the statistical catch at age model would be informative for management purposes; and if yes, complete a continuity run.

Evaluate tag return rates for each region and determine if tag return data should be incorporated into a new run of the SS3 model; motion by Mr. Boyles, seconded by Ms. Fegley. Having said that those in favor of the motion please raise your right hand, those not in favor like sign; abstentions, null votes. The motion passes 10 to 0. Now I think we have to go back and make this the original motion. I will read it again. I should probably have it memorized; motion to postpone the approval of the stock assessment.

MR. NOWALSKY: Point of order, Mr. Chairman.

CHAIRMAN ESTES: Yes, sir.

MR. NOWALSKY: It is not an amendment or a substitution that becomes the main motion, I don't believe. It was just a motion to postpone, so it is now done. Mr. Boyles as I recalled

modified his motion to postpone; which was accepted by the board. But that was the main motion. That is my belief of what transpired.

**MR. BOYLES: Yes sir, Mr. Chairman. That is my understanding as well. If you recall, I believe the history here, Dr. Laney suggested a motion to approve. My motion was to postpone. My understanding of our procedure is that motion to postpone is now dispensed with the main motion. I think we're on to other business, so thank you, Adam.**

CHAIRMAN ESTES: Thank you, Adam. Okay the next thing on our agenda was to discuss the next steps for management of red drum. I think that we can dispense with that agenda item right now. We don't need to go through all this again, I don't think.

#### **PROGRESS REPORT ON SPOT AND ATLANTIC CROAKER ASSESSMENTS**

CHAIRMAN ESTES: Jeff, if you would please talk about the stock assessment for spot and croaker.

MR. JEFF KIPP: I am just going to give a quick update to the board on the spot and croaker assessment progress. We did have our first stock assessment workshop in Charleston, South Carolina the week following the winter meeting; February 8th through the 10th, to discuss modeling approaches and some different analyses.

We are moving forward with a catch survey analysis as the model and a surplus production model for spot, and stock synthesis for croaker. We've had several progress calls since that assessment workshop; and we do have one coming up next week to review bycatch estimates. We will on that call schedule our second stock assessment workshop for later this summer. The review is currently scheduled for this fall; and that's all I had.

CHAIRMAN ESTES: Any questions for Jeff? Seeing none; we'll go on to our next agenda item.

MS. TONI KERNS: I don't have a question, do we need Mike? We hung up on him, okay. I was just going to say bye to Mike and we would hang up on him, so never mind.

#### **NORTH CAROLINA REPORT ON SPANISH MACKEREL POUND NET LANDINGS**

CHAIRMAN ESTES: The next agenda item is review of the North Carolina report on landings in the commercial pound net fishery. I think, Chris, you are going to make a presentation on that?

MR. BATSAVAGE: Just a verbal report that refers to basically the report that we provided. I think it was in the supplemental material for the South Atlantic Board; just a quick background. Addendum I to the Spanish Mackerel Fishery Management Plan allows states to reduce the commercial size limit to 11.5 inches forklength in the pound net fishery from July through September.

The report that we provided details the results of our sampling to monitor the impact on the harvest of Spanish mackerel in North Carolina. The pound net landings of Spanish mackerel last year in the state for pound nets were about 40,000 pounds; or 7 percent of the total commercial landings of Spanish mackerel.

Prior year landings from pound nets range anywhere from around 19,000 to over 38,000 pounds and accounted for about 3 to 4 percent of the total commercial landings in the state. When I talk about commercial landings in the state, by gear gillnets account for the vast majority of the landings; somewhere in the 90 percent range. Pound nets are a pretty small component of the landings.

The proportion of Spanish mackerel pound net landings in numbers of fish between that 11.5 and the otherwise 12 inch size limit during the

months of July through September was 7 percent in 2015, and has ranged from 8 to 16 percent since 2012. The proportion of Spanish mackerel pound net landings again in numbers of fish that were less than 11.5 inches during that July through September time period, were 15 percent in 2015; but that undersize rate has range anywhere from less than 1 percent to 16 percent since 2012.

Basically Spanish mackerel landings of fish less than 12 inches from the pound net fishery are very small. By that as an example, like last year it was around 5,000 pounds and in 2014 it was 1,100 pounds. You compare that to the total commercial harvest in the state it is fairly insignificant. Then finally, just so people are aware, if you read this report and compare it to the one from last year. There were a couple data corrections made from prior years. Those are described in the report, I basically wanted to just flag that to explain inconsistencies in the harvest proportions if someone was to look at last year's report and compare it to this one. That concludes the Spanish mackerel update.

#### **ELECT VICE-CHAIR**

CHAIRMAN ESTES: Do we have any questions for Chris? Okay we'll go to our last agenda item and that is elect a Vice Chair. Are there any nominations? Robert.

MR. BOYLES: I would like to nominate Pat Geer of Georgia to serve as Vice-Chair of the Board.

CHAIRMAN ESTES: Seconded by Russ, are there any other nominations? Is there any objection for Pat coming up here and replacing me? If not, congratulations, Pat.

#### **ADJOURNMENT**

CHAIRMAN ESTES: Meeting is adjourned.

(Whereupon the meeting was adjourned at 1:19 o'clock p.m. on May 5, 2016)