SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

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1.2. Presentation

MRIP Data Overview: Dr. Mike Errigo, SAFMC

1.3. Overview

Traditionally, recreational fishing effort data have been collected by NOAA Fisheries through the Coastal Household Telephone Survey (CHTS). The CHTS utilizes a list-assisted, random digit dialing (RDD) telephone survey approach to contact residents of coastal county households and collect information on fishing activities that occurred within a two-month reference period (wave). A 2006 review by the National Research Council (NRC) noted that the CHTS design suffers from inefficiency due to the low rate of saltwater angler participation among the general population, as well as potential coverage bias due to the survey's limitation to coastal county residences and landline-based telephone numbers. In addition, response rates to the survey have declined considerably over the past decade, increasing the potential for nonresponse bias.

An alternative to the CHTS is to identify and contact anglers through a dual-frame mail survey design. MRIP initially tested the feasibility of a dual-frame mail survey design in NC in 2009 and conducted a follow-up study aimed at enhancing response rates and the timeliness of responding in NC and LA in 2010. The methodology is described in Andrews et al Mail Survey Method (Attachment 11). These previous pilot tests were very informative and provided the basis for a revised design. The revised design again uses a mail questionnaire to collect data from households, but also addresses weaknesses identified in the prior studies. This is the design that has been implemented fully in 2018 and is now known as the Fishing Effort Survey (FES) and fully in use today. The methodology is also described in 2012 FES Pilot Review and Comments (Attachment 11). The pilot showed that the overall response rate from the FES was over 40% compared with just over 14% for the CHTS. For estimates of effort, the FES estimated 6.1 times as much effort in Shore mode as the CHTS and 2.6 as much effort in the Private Boat mode as the CHTS overall (2012 FES Pilot Review and Comments, Attachment 11).

The sizable differences in effort estimates suggested a calibration would be necessary to switch from using the CHTS to the FES. After 3 years of side-by-side running of both surveys, a calibration model was developed, and peer reviewed in June of 2017 (Report of FES Calibration Model and FES Calibration Review Report, Attachment 11). This model was used to calibrate all the effort data back to the beginning of the MRIP time series, which is 1981.

At the same time, MRIP has been working on developing a calibration model for the updated Access Point Intercept Survey (APAIS) design, which was implemented in 2013 (APAIS Calibration Approach, Attachment 11). The calibration model was peer reviewed in March 2018, after collecting over 3 years of data to inform the calibration model. Both calibrations were

applied to the MRIP data simultaneously, each having a different type and magnitude of effect (Briefing on MRIP Transition SA SSC, Attachment 11).

The change from the original APAIS design and the CHTS over to the new APAIS design and the FES, along with the subsequent calibrations of the original data back to the beginning of the time series, have had varying effects on the recreational catches (Attachments 12 and 13). In most cases, the catches have increased due to the increased estimates of effort from the FES survey (Attachment 12). There have also been changes to the catch trends for some species due to either a differential change over time in the effort estimates or changes in the proportion of the catch coming from the charter fleet (which is not affected by the change to the FES survey). The differential change in effort over time has been attributed to decreases in response rates to the CHTS and what has been called the "Wireless Effect". The Wireless Effect is the phenomenon of more and more people completely abandoning land lines in favor of using mobile phones only for communication, which are not sampled by the CHTS. This has had a secondary effect of causing the average age of the sampled population to become significantly older than that of the actual population, presumably because older people are more likely to still have a land line than younger people are.

The SSC is asked to review the effects of the calibrations to catches of species managed by the South Atlantic Council and identify if there are any patterns to the changes and what may be causing those patterns. Trends of particular concern to the Committee should be highlighted so that further investigation may be conducted. If there are stocks the Committee would like to investigate further, the SSC is asked to identify those and develop a process for conducting those investigations.

These newly calibrated catches change the time series of data used when developing ABC recommendations for unassessed stocks managed by the Council (Attachment 13). This has potentially large consequences to those ABCs because the SSC used catch-based methods to develop those recommendations. Therefore, the SSC is asked to evaluate the effects of the changes to the recreational catches from these calibrations with respect to setting ABCs for unassessed species. In order for the SSC to apply the same ABC Control Rule decisions to the stocks now, they would have to confirm several key pieces of information:

- Does the stock still fall within the same Control Rule Tier? (ORCS vs. Decision Tree)
- Is the reference period still a viable time period to use?
- Is the landings trend similar to what it was originally?
- If an ORCS stock, does the stock still fall within the same exploitation category?

The SSC is asked to discuss a procedure for tackling this demanding task. Since any new ABC from the Committee will not be able to be implemented without the Council first addressing sector allocations, there is some time for this task. However, the Council will most likely want the SSC to have final recommendations at their Spring meeting, if not earlier. Therefore, this may require work outside of the normal SSC meeting times, suggesting it may be a suitable candidate for the workgroup approach (Attachment 14).

1.4. Action

- Review the calibrated MRIP effort and catch estimates for all SAFMC stocks.
  - Identify any stocks that the SSC would like to investigate in further detail and develop a process for conducting such investigations.
    - *Red Porgy*
      - *Red Porgy was in a category of the MRIP calibration not having much of an effect on the catch, along with other species of very low intercept rates. However, Red Porgy has a fairly high rate of intercepts compared to all the other species in this category, which does not follow the pattern.*
      - *Examine potential causes of this observed pattern in the lack of effect of the MRIP calibrations on the catch of Red Porgy given the large number of intercepts.*
    - *Black Sea Bass*
      - *Examine potential cause of large increase in discards in recent years*
      - *Possibly incorporate into upcoming revision webinar*
    - *Look at sources of info to help interpret pattern*
      - *MRIP intercept data*
      - *Effort expansion data*
    - *Add an evaluation of the calibrated MRIP estimates and how using them vs. the old estimates will affect the assessment or analysis as a ToR for all upcoming assessments and analyses.*
  - Identify any general patterns in the calibrated estimates that may indicate new or increased biological, social, or economic concerns that the Council should be aware of.
    - *Will the lag in delivery time of MRIP estimates for a Wave using the mail data increase as compared to the delivery time observed in the past using the telephone data?*
      - *If so, in-season monitoring may be more difficult, and Council may want to consider increasing the buffer between ACL and ABC for species that are at risk of overages*
      - *The SSC recommends staff ask MRIP to address this issue of lag time and its effects on management.*
    - *Some of the problems the SSC identified in the original MRIP estimates remain the same as the original dataset (e.g., low number of intercepts for certain species of interest to the Council, low offshore intercepts, etc.)*
    - *The increase in the effort expansion due to the MRIP catch calibration may be exacerbating the problems seen with the original MRIP catch spikes.*
      - *Spikes in the original MRIP data are amplified and often the low points around them are not increased proportionally to the increase seen in the spike, magnifying the difference.*

- *The SSC has discussed in the past how much (or little) data (e.g., number and location of intercepts) and variability is acceptable for use in assessments and for ACL monitoring.*
- *The SSC noted that an increase in recreational effort may have occurred when "baby boomers" entered the fishery and recommends looking further into the "baby boomer" effect. This effort may increase in near future and there may be data from other studies available to look at this.*

➢ *Intrasector differences in new MRIP estimates may cause interpretation and allocation conflict issues for Council.*

- *FES changes in Private and Shore modes, not Charter or Headboat modes*
- *The changes caused by switching to the FES from the CHTS only affect the Private and Shore modes, not the Charterboat and Headboat modes. Conflict within the recreational sector may arise between modes about who should get a bigger piece of the increase from the FES calibration.*

o Review the calibrated MRIP data with respect to changes to the ABC recommendations for unassessed stocks.

➢ *The SSC recommends reviewing the years used for the ORCS/Decision Tree (99-08) ABC recommendations.*

- *Evaluate the appropriateness of these years in light of the changes in the MRIP data due to the recent calibrations.*

• Discuss the procedure for updating the ABC recommendations for unassessed stocks.

➢ *The committee felt it needed some dedicated time for this.*

➢ *There was some concern about how the new ABC CR affects setting ABCs for unassessed stocks. This needs to be evaluated to avoid making several ABC recommendations, each which may need management changes.*

➢ *The Committee recommends forming an SSC Workgroup to do preparatory work for a workshop to discuss ABC recommendations prior to the Spring 2019 SSC meeting.*

➢ *The Committee recommends involving the SEFSC in the process. It may be good to reach out to others, such as former SSC members who were involved in the original ABC recommendations of these stocks.*

➢ *With the guidance of the SEFSC, review the proposed alternative methods for setting ABCs for unassessed stocks and incorporate these into the new ABC CR as appropriate.*

- *What is an appropriate catch statistic for unassessed stocks in the Decision Tree (e.g. 3rd highest year of landings)?*
- *Consult Carruthers analysis*

- *Evaluate assumptions from Carruthers analysis and Decision Tree approach*

- *Investigate variance of landings estimates*
  - *How does that figure into setting ABCs?*
  - *How to track ACLs?*
- *Discuss if some species can be designated Ecosystem Component species and would therefore not need an ABC.*
- *Workgroup members:*
  - *SSC: Carolyn Belcher, Jeff Buckel, Eric Johnson*
  - *Workgroup leader?*
  - *Invitees: Steve Cadrin*
  - *SEFSC: Erik Williams*
- *The SSC recommends contacting neighboring SSC's (e.g. via Luiz Barbieri and John Boreman) to see how they are approaching this.*

2. MRIP ASSESMENT REVISIONS

2.1. Documents

Attachment 5. MRIP Revision Assessments Report
Attachment 6. MRIP Revision Assessments Overview Presentation*

2.2. Presentation

Revision Assessments Overview: Dr. Erik Williams, SEFSC

2.3. Overview

Due to the changes in the MRIP catch data described in the previous Agenda item, stocks with assessments will need to have their assessments revised using the newly calibrated MRIP data to update their catch level recommendations. Presented here is a report (Attachment 15) containing the revised assessments for four recently assessed South Atlantic species: Blueline Tilefish, Red Grouper, Vermilion Snapper, and Black Sea Bass.

Blueline Tilefish

A benchmark assessment for Atlantic Blueline Tilefish (SEDAR 50) was completed in October 2017, with data through 2015. Due to a large spatio-temporal change in how the fishery operated in the latter part of the assessment and the fact that age determination was too uncertain to be used in the assessment, the Blueline Tilefish stock had to be assessed as two separate units and by different assessment methods for each unit. This unique approach to assessing this stock made it impossible to determine stock status at this time.

Some of the biggest concerns for this stock were the lack of data and the splitting of the recreational data at Cape Hatteras (where the 2 units were split). There were very few intercepts of Blueline Tilefish, resulting in odd landings and discard spikes in the data. One such data point,

charter discards from NC for 2007, was so out of line with the surrounding data that it was replaced with the average of the surrounding years.

The unit south of Cape Hatteras was assessed using an age aggregated Production Model and the ABC for that portion of the stock was determined using traditional projections with OFL recommended at $F=F_{MSY}$ and ABC at P*=0.3 through 2020.

A workgroup of both South Atlantic and Mid-Atlantic SSC members was formed to develop a method for determining an ABC for the unit north of Cape Hatteras and developing a means of splitting that ABC between the South Atlantic and Mid-Atlantic jurisdictions. The OFL and consequently ABC was determined using Mean Length estimators from the DLMTool. A pilot trawl survey was used to allocate that ABC between the South Atlantic and Mid-Atlantic. The ABC was determined as being at P*=0.125 and the MAFMC:SAFMC split was determined to be 56%:44%. The SSC recommended this ABC for no longer than 3 years.

Table 1. OFL and ABC of Blueline Tilefish in South Atlantic waters from the original SEDAR 50 in pounds whole weight.

Year	South Hatteras		North Hatteras		Total South Atlantic	
	OFL	ABC	OFL	ABC	OFL	ABC
2018	230,000	172,000	103,985	78,980	333,985	250,980
2019	227,000	175,000	103,985	78,980	330,985	253,980
2020	225,000	178,000	103,985	78,980	328,985	256,980

Red Grouper

A SEDAR standard stock assessment for South Atlantic Red Grouper (SEDAR 53) was completed in February 2017, with data through 2015, that indicated the stock was overfished and undergoing overfishing. The results of the assessment showed that rebuilding would not be possible by 2020, which is the terminal year of the current rebuilding plan, even with no fishery present (F=0) and the stock would likely take until at least 2030 to rebuild at F=0. The SSC reviewed SEDAR 53 at their April 2017 meeting and stated that the assessment is based on the best scientific information available.

In June 2017, after SEDAR 53 was reviewed by the SSC, the Council requested that the Southeast Fishery Science Center (SEFSC) produce rebuilding projections for Red Grouper based on SEDAR 53. The Council's SSC reviewed four rebuilding projections produced by the SEFSC at their October 2017 meeting. The projections were based on fishing mortality rates of F_{MSY} and $F_{Rebuild}$, each with long-term expected recruitment and low recruitment scenarios. Due to poor recruitment trends for the stock in recent years, the SSC recommended the projections at F_{MSY} and the low recruitment scenario for the overfishing limit, and projections for $F_{Rebuild}$ under the low recruitment scenario for the ABC, for the short term (next 5 years). The SSC noted that recruitment could increase in the future and become consistent with long-term levels that the stock is predicted to produce.

Table 2. Red Grouper OFL and ABC projections at low recruitment scenario from the original SEDAR 53 in pounds whole weight.

Year	OFL	ABC
2018	183,000	139,000
2019	191,000	150,000
2020	202,000	162,000
2021	212,000	176,000
2022	223,000	189,000

Vermilion Snapper

The SSC reviewed the Standard assessment for Vermilion Snapper prepared through SEDAR 55 at their May 2018 meeting. SEDAR 55 was completed in April 2018, with data through 2016, and found that the Vermilion Snapper stock in the South Atlantic was neither overfished nor undergoing overfishing. The SSC did comment on several uncertainties, such as the headboat index dropping dramatically in 1992, when there is a management change, and most likely not tracking the population abundance as it did prior to that time. Also, there was an issue fitting the CVID index, especially at the end of the time series, due to a disconnect between the age comps from the CVID index and those from the landings. The SSC recommended projections for the OFL at $F=F_{MSY}$ and for the ABC at P*=0.4 for no more than 5 years.

Table 3. Vermilion Snapper OFL and ABC projections from the original SEDAR 55 in pounds whole weight.

Year	OFL	ABC
2019	1,810,000	1,579,000
2020	1,614,000	1,478,000
2021	1,486,000	1,408,000
2022	1,412,000	1,362,000
2023	1,371,000	1,336,000

Black Sea Bass

The SSC reviewed the Standard assessment for Black Sea Bass prepared through SEDAR 56 at their May 2018 meeting. SEDAR 56 was completed in April 2018, with data through 2016, and found that the Black Sea Bass stock in the South Atlantic was neither overfished nor undergoing overfishing. However, the SSC noted that the terminal Spawning Stock Biomass (SSB) was only slightly above Minimum Stock Size Threshold (MSST) and trending downward. Recruitment (R) was also trending downward in the last few years.

The SSC commented on several uncertainties for Black Sea Bass. In the terminal year of the assessment, the total fishing mortality of all fleets had a selectivity pattern that differed from all other years in the time series with apical F at age 3, which was significantly lower than all other years in the time series. Looking at a different F metric, other than apical F, may give a very different picture of what is happening in this fishery. Apical F changes to different ages as selectivity changes through time. An F metric that is insensitive to changes in selectivity may

show a different pattern in the exploitation history of this fishery than what is seen by using apical F.

The SSC also mentioned the lack of all fishery-dependent indices at the end of the time series, where the fishery-independent index indicated the largest changes have occurred in population size. Also, that the selectivity of the Chevron trap vs. the video index may differ, especially under situations of high R.

The SSC did have concern over which R was to be used for projections. The R estimated from the Stock-Recruitment relationship was significantly higher than the realized R in the latter part of the assessment, especially since the terminal SSB was so close to the MSST. Ultimately, the SSC recommended using the average R from 1991 to the terminal year for projections to determine the ABC. The OFL was recommended as standard projections at $F=F_{MSY}$. The ABC was recommended as projections using the R pattern from 1991 to the terminal year with a P*=0.375. These values should be in place for no longer than 3 years.

Table 4. Black Sea Bass OFL and ABC projections from the original SEDAR 56 in pounds whole weight.

Year	OFL	ABC
2019	818,000	760,000
2020	718,000	669,000
2021	703,000	643,000

2.4. Action

General SSC Recommendations

- Are the revised assessments recommended as Best Scientific Information Available?
  - *Given the level of analyses and the degree of peer review, the Committee concurred with the findings of the National Marine Fisheries Service and the peer reviewers that the new MRIP estimates are BSIA.*
  - *Would like to see some evaluation of the impact low levels of sampling have when changes in MRIP estimates (derived from FCAL/ACAL scaling vectors) result in a major change in stock status or model diagnostics.*
    - *These MRIP estimates did not go through a data workshop, as had the MRFSS data before being included in the previous assessments. It is possible a data review would have resulted in modifications of some estimates, as occurred with the MRFSS estimates.*
    - *Although the same intercept data as was used as in the past (i.e., number of samples unchanged), the revised effort data that resulted in a new time series of landings/catch may have amplified the effects of low intercepts in some cases.*
  - *The information provided in the Revision Assessments did not allow the SSC to evaluate if the new MRIP estimates may warrant data decisions that differ*

from previous SEDARs or if estimates of key parameters and model inputs have been affected by the change.

- *Previous data decisions may no longer be applicable.*
- *The SSC would like the opportunity to examine all typical outputs before making an ABC recommendation.*

➢ *The SCC requests additional information in the form of full output and diagnostics, and further recommends that this be discussed in a webinar.*

- *The webinar should be scheduled prior to the Spring SSC meeting*
- *During this webinar, the SSC will:*
  - *review the Revision Assessments and the additional information to make a recommendation about BSIA,*
  - *discuss what projections will be requested to formulate ABC recommendations.*

- What impact did the revised data have on measures of assessment uncertainty?
  - ➢ *The revisions just used a scalar in catch; however, the trends in catch and discards changed for some species (e.g., BSB). The Committee may have a better idea of uncertainty after the additional information mentioned above is reviewed.*
  - ➢ *Trend in discards may cause differences in proportions at age* because *the size/age composition of discarded fish often differ from those in the landings due to minimum size limits, etc.*
    - *During the open season, discards mostly consist of smaller, younger fish. A trend in the discards changes the proportion of these younger fish in the population, therefore changing all the proportions at age. This can affect age compositions and apical F.*
  - ➢ *The new PSEs are higher, but more realistic, for the historical data.*
- General Recommendations
  - ➢ *The SSC recommends a consistent approach for using MRIP estimates in assessments.*

<u>Blueline Tilefish</u>

- Is the revised assessment recommended as Best Scientific Information Available?
  - ➢ *The Committee was unable to make a recommendation on BSIA at this point (see recommendations above).*
  - ➢ *The SSC requests an overview of the MRIP data decisions for Blueline Tilefish from SEDAR 50.*
  - ➢ *Explore addressing the issue of using proxies to calculate the scaling vector for the calibrated Blueline Tilefish MRIP data.*

- What impact did the revised data have on measures of assessment uncertainty?
  - *There is increased uncertainty originating from the use of data from golden Tilefish and Snowy Grouper to calculate the scaling vector for Blueline Tilefish.*
  - *During the webinar the SSC will explore the decision to use an average ACAL/FCAL ratio for Monroe County.*
- Provide fishing level recommendations
  - Apply the ABC control rule and complete the fishing level recommendations table.
    - *SSC will address revisions to the ABC at the Spring SSC meeting following the webinar.*
  - Comment on any difficulties encountered in applying the Control Rule, including any required information that is not available.
  - Identify and justify any changes in the ABC control rule application and outcome (i.e. P* value) as a result of the revised assessment.
- General Recommendations
  - *Since this is a species that the Mid-Atlantic SSC made an ABC recommendation for also, we should reach out to the Mid-Atl. SSC and discuss the implications of the new MRIP estimates for the stock portion north of Cape Hatteras.*

Table 5. Revised Blueline Tilefish Recommendations (South of Hatteras only)

Criteria	Original	Revised
Overfished evaluation (SSB/MSST)	1.41	
SSB/SSB_{MSY}	1.06	
Overfishing evaluation ($F_{Current}$/MFMT)	0.92	
MFMT (F_{MSY})	0.146	
B_{MSY} (1,000 lbs. total biomass)	1,467	
MSST (1,000 lbs. total biomass, 75% B_{MSY})	1,100	
MSY (1,000 lbs.)	212	
ABC Control Rule Adjustment	20%	
P-Star	30%	
M (scalar for age-specific M)	0.17	

OFL RECOMMENDATIONS (Revised)				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number

ABC RECOMMENDATIONS (Revised)				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number

Red Grouper

- Is the revised assessment recommended as Best Scientific Information Available?
  - *The Committee was unable to make a recommendation on BSIA at this point (see recommendations above).*
- What impact did the revised data have on measures of assessment uncertainty?
  - *During the webinar the SSC will explore the decision to use an average ACAL/FCAL ratio for Monroe County*
  - *A large change in F resulted from a relatively small change in catch toward the end of the time series. The SSC will explore this change during the webinar evaluation.*
- Provide fishing level recommendations
  - Apply the ABC control rule and complete the fishing level recommendations table.
    - *SSC will address revisions to ABC at the Spring meeting following webinar.*

- Comment on any difficulties encountered in applying the Control Rule, including any required information that is not available.
- Identify and justify any changes in the ABC control rule application and outcome (i.e. P* value) as a result of the revised assessment.

Table 6. Revised Red Grouper Recommendations

Criteria	Original	Revised
Overfished evaluation (SSB/MSST)	0.38	
SSB/SSB_{MSY}	0.29	
Overfishing evaluation ($F_{Current}$/MFMT)	1.54	
MFMT (F_{MSY})	0.12	
SSB_{MSY} (mt, total mature biomass)	3,183.3	
MSST (mt, 75% SSB_{MSY})	2,387.6	
MSY (1,000 lbs.)	794.3	
Y at 75% F_{MSY} (1,000 lbs.)	772	
ABC Control Rule Adjustment	22.5%	
P-Star	27.5%	
P-Rebuild	72.5%	
M (scalar for age-specific M)	0.14	

OFL RECOMMENDATIONS (Revised)				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number

ABC RECOMMENDATIONS (Revised)				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number

Vermilion Snapper

- Is the revised assessment recommended as Best Scientific Information Available?
  - *The Committee was unable to make a recommendation on BSIA at this point (see recommendations above).*
- What impact did the revised data have on measures of assessment uncertainty?
- Provide fishing level recommendations
  - Apply the ABC control rule and complete the fishing level recommendations table.
    - *The SSC will address revisions to the ABC at the Spring SSC meeting following the webinar.*

- Comment on any difficulties encountered in applying the Control Rule, including any required information that is not available.
- Identify and justify any changes in the ABC control rule application and outcome (i.e. P* value) as a result of the revised assessment.

Table 7. Revised Vermilion Snapper Recommendations

Criteria			Original	Revised
Overfished evaluation (SSB/MSST)			1.51	
SSB/SSB_{MSY}			1.13	
Overfishing evaluation ($F_{Current}$/MFMT)			0.609	
MFMT (F_{MSY})			0.41	
SSB_{MSY} (1e12 eggs)			18.3	
MSST (1e12 eggs)			13.7	
MSY (1,000 lbs.)			1,305.5	
Y at 75% F_{MSY} (1,000 lbs.)			1,288.2	
ABC Control Rule Adjustment			10%	
P-Star			40%	
M (scalar for age-specific M)			0.22	
OFL RECOMMENDATIONS (Revised)				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number
ABC RECOMMENDATIONS (Revised)				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number

Black Sea Bass

- Is the revised assessment recommended as Best Scientific Information Available?
  - *The Committee was unable to make a recommendation on BSIA at this point (see recommendations above).*
- What impact did the revised data have on measures of assessment uncertainty?
  - *During the webinar the SSC will explore the change in trend, especially in discards, at end of time series that changes status.*
    - *Discards ramp up since 1999, with a large jump in the last 4 years.*
- Provide fishing level recommendations
  - Apply the ABC control rule and complete the fishing level recommendations table.

- *The SSC will address revisions to the ABC at the Spring SSC meeting following the webinar.*

- Comment on any difficulties encountered in applying the Control Rule, including any required information that is not available.
- Identify and justify any changes in the ABC control rule application and outcome (i.e. P* value) as a result of the revised assessment.

Table 8. Revised Black Sea Bass Recommendations

Criteria			**Original**	**Revised**
Overfished evaluation (SSB/MSST)			1.15	
SSB/SSB_{MSY}			0.71	
Overfishing evaluation ($F_{Current}$/MFMT)			0.64	
MFMT (F_{MSY})			0.31	
SSB_{MSY} (1e10 eggs)			300	
MSST (1e10 eggs)			186	
MSY (1,000 lbs.)			935	
Y at 75% F_{MSY} (1,000 lbs.)			701.25	
ABC Control Rule Adjustment			12.5%	
P-Star			37.5%	
M (scalar for age-specific M)			0.38	
OFL RECOMMENDATIONS (Revised)				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number
ABC RECOMMENDATIONS (Revised)				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number