SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

SSC Meeting Report

October 24-26, 2017

Town & Country Inn
Charleston, SC

VERSION
FINAL
November 15, 2017

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PLEASE NOTE

The text in italics constitutes the SSC report. The text in regular font is from the Briefing Book overview and is included for context, but is NOT based on the SSC discussions and recommendations.

1. INTRODUCTION

1.1. Documents

Agenda
Attachment 1. Minutes of the April 2017 meeting
Attachment 2. Minutes of the September 2017 webinar meeting

1.2. Presentation

Briefing on access to Council's public comment process: Cameron Rhodes, SAFMC staff

1.3. **SSC RECOMMENDATIONS**

- Introductions
- Review and Approve Agenda
  - *Agenda approved by the Committee.*
- Approve Minutes
  - *The April and September meeting minutes were approved by the Committee.*

2. PUBLIC COMMENT

The public will be provided an opportunity to comment on SSC agenda items as they are being discussed during the meeting. Comments will be taken after any initial presentations are given on a particular topic, but before the SSC begins their discussion of the topic. There will also be an opportunity for comment at the start and end of the meeting. Those wishing to make comment should indicate their desire to do so to the Committee Chair.

3. SSC/COUNCIL REVIEW PROCESS

3.1. Documents

Attachment 3. SSC/Council review process presentation
Attachment 4. NS 2 Guidelines

3.2. Presentation

SSC/Council Review Process: Gregg Waugh/John Carmichael

3.3. Overview

The Council values the advice from the SSC and generally sends all technical analyses to the SSC for their review. Some amendments and analyses are more general in nature and are not routinely sent to the SSC for detailed discussion. Concern was expressed by the SSC during the September 5, 2017 webinar about the red snapper emergency action

and Snapper Grouper Amendment 43. We want to clarify the Council's actions on these two items:

A. Emergency Action – emergency action requests are not provided to the SSC for review. By their nature timing is very critical. Usually, the Council discusses an issue with at most some background information and makes a request to NMFS to take action via an emergency rule. In the case of red snapper, the only way to preserve the Council's ability to make a request, and have it implemented in 2017, was for the Council and NMFS staffs to prepare a document for consideration at the September 2017 meeting. To maximize the chance that action would be implemented if the Council did request and emergency, the document also included a preferred alternative. This document was included in the Council's briefing book for the September 2017 meeting. The Council had flexibility to request or not request emergency action and to change the preferred alternative. The Council approved Alternative 4 as their preferred alternative and requested it be implemented via emergency action. Preferred Alternative 4 sets the ACL equal to the landings in 2014, the last time the fishery was open under a mini-season, with the rationale that the population has continued to rebuild after that level of landings in 2014 and whatever level of discard mortality occurred during and after 2014. The Council used the trap index, recent data from research projects in Florida, and observations shared through public testimony to support their conclusions that the population is continuing to rebuild and that the risk that limited harvest will result in overfishing or jeopardize stock rebuilding is minimal.

B. Amendment 43 – the SSC reviewed Amendment 43 in April 2017, including the following documents and presentations:

    Attachment 19. SEDAR 41 RS Base Run Correction Erratum

    Attachment 20. SEDAR 41 RS Base Run Correction Presentation

    Attachment 21. Red Snapper Guidance Request

    Attachment 22. Amendment 43 Options Paper

    Attachment 23. Index Based ABC Options Paper

    RS Assessment Correction Presentation: Dr. Erik Williams, SEFSC

    Red Snapper Amendment Overview Presentation: Dr. Chip Collier, SAFMC Staff

    Index Based ABC Presentation: Dr. Chip Collier, SAFMC Staff

    Our understanding of the outcome of the SSC discussions was that the SSC could not provide an updated ABC using the information available at that time, and that the SSC is willing to work with the SEFSC to use the index-based analysis to provide an updated ABC at some point in the future.

    Based on this guidance from the SSC, the Council decided at their June 2017 meeting to pursue an interim ACL through Amendment 43 for 2018 onwards and continue work on red snapper through Amendment 46 at the December 2017 meeting. The Council's intent was to address the updated ABC recommendations

from the SSC in Amendment 46 if one was provided in time. If not, the Council would address your updated ABC recommendation when it is provided. The Council provided guidance to staff, at the June 2017 Council meeting, that Amendment 43 did not need to be reviewed by the SSC given the review of the index-based ABC options paper in April 2017, and the one action in the amendment is to set an interim ACL that is a Council decision.

3.4. **SSC RECOMMENDATIONS**

- Provide clarification on the desired role of the SSC in reviewing methods for setting ACLs.
  - *Most of the discussion focused on the Red Snapper ABC and the recommendation made by the SSC are specific to Red Snapper. However, some of the recommendations are applicable to other species and processes also.*
  - *Recommend that the Council request the Southeast Fisheries Science Center to continue work on an index-based approach to monitoring the Red Snapper population and aid the Committee in developing an ABC.*
  - *Although some members expressed concern that they felt it is not the job of the SSC to develop (analytical) methods, the SSC can do that, as long as a review is part of the process. For example, having a working group of SSC members develop a method to recommend an ABC and bring it back to the full Committee for review.*
  - *Recommend formation of a working group using the SSC working group outline approved by the Council. Having a sub-committee of the SSC working with the Science Center is beneficial in terms of buy-in, idea formulation, and productivity.*
  - *Working group Committee addressing the ABC for Red Snapper:*
    - *Members: Amy Schueller (Chair), Robert Ahrens, Scott Crosson, Luiz Barbieri, Genny Nesslage, Eric Johnson.*
    - *Task: To collate data, analyses, stock assessments, and any other background information on red snapper in order to determine an Acceptable Biological Catch (ABC). If necessary, work on additional analyses for providing an ABC or tracking an ABC.*
    - *Terms of Reference:*
      1. *Collate and evaluate the most recent available information on red snapper necessary for determining an ABC.*
      2. *Determine if an ABC can be established from existing information.*
      3. *If an ABC cannot be determined from existing information, provide a plan of action for moving forward to determine an ABC. This plan of action should include evaluation of index based methods for tracking*

ABC, as well as consideration of the index based method can be used to determine an ABC.

4. *Assess to the extent possible newly developed methods providing strengths and weaknesses of each method.*
5. *Provide a final ABC recommendation and include any viable alternatives in order of priority based on the available science and data.*

- *Possible ToR: Document historical events relating to Red Snapper and how the SSC handled each task requested of the committee.*
- *Proposed working group time-line:*
  - *November 6- Council review the ToRs.*
  - *2nd or 3rd week of November – scoping call*
  - *2nd week of December – All current information pulled together and vetted. Brainstorm ABC determination ideas. Brainstorm ideas for tracking the ABC. Assign ideas to workgroup members*
  - *3-4th week of January – Vet all analyses and ideas assigned to the workgroup members. Determine which are sufficient for providing an ABC. Prioritize a list of best possible options for providing an ABC. Report progress to SSC. Continue work in February and March.*
  - *2nd week of March – Finalize work from January and February, and prepare materials for distribution to the SSC.*
  - *April 1 – all materials provided to SSC for sufficient time for review*
  - *Note that working webinars may be scheduled as needed, but no recommendation or decisions will be made.*

- Provide any other suggested modifications to the SSC and Council review process.
  - *SSC should evaluate the efficacy of management actions related to Red snapper, and recommend possible changes and modifications where appropriate.*
  - *Clearer communication of the Council's priorities would help guide the Committee in their response and actions to each agenda item. For instance, it would be helpful to designate critical Action items as "must be addressed" so that it is clear that the committee cannot to move to the next agenda item until has fully addressed that item.*
  - *A refresher on the SSC decision-making process would be helpful. Items such as setting the agenda, creating working groups and sub-committees, procedures as to if and how the SSC can request analyses, and the overall process. Much of this is currently in the SSC Operating Procedures document.*

- *Reinstituting the SSC orientation would help to clarify many of these points and clarify the role of the SSC. The committee is in favor of a general orientation refresher at, or prior to, the April 2018 meeting. Details can be worked out in the next few months (see also under "other Business" below).*
- *It would be helpful to the Committee to get briefing materials as soon as they become available to allow more time for review.*

4. 2016-2017 LANDINGS AND ACLS

4.1. Documents

Attachment 5. Landings update presentation
Attachment 6. Landings trends 1986-2015

4.2. Presentation

Landings and ACLs: Mike Larkin, SERO, via Webinar

4.3. Overview

The SSC will be provided an update on 2016 and 2017 landings, catch limits, and application of accountability measures.

4.4. **SSC RECOMMENDATIONS**

- Review and comment, with attention toward any ABC recommendation updates.
  - Emphasis should be placed on Level 4 and 5 stocks which have concerning landings trends as compared to their ABC values.
    - *Multi-year specifications of OFL and ABC are fine as long as there is a feedback mechanism for situations where the ABC and/or OFL is exceeded.*
    - *SSC requests a list of all managed stocks, their ABC CR level, AMs, and trends relative to ABC.*
- Consider assessment schedule and research plan implications
    - *See SEDAR Activities below for discussion and recommendations.*

5. SEDAR ACTIVITIES

5.1. Documents

Attachment 7. SEDAR Steering Committee Report
Attachment 8. Cobia Stock ID Workshop Schedule and ToRs
Attachment 9. Greater Amberjack & Red Porgy Assess Schedule & ToRs
Attachment 10. New SERFS Combined Index Methodology
Attachment 11. Long Term Assessment Scheduling Approach

5.2. Overview

SEDAR Projects statuses are summarized below. Specific action items are noted with each project.

SEDAR Steering Committee Report (Attachment 7)

The SEDAR Steering Committee met on September 26, 2017. The Steering Committee supported conducting Scamp as a research track pilot. The SEFSC will develop a work plan including TORs and a project schedule for review by a group of Gulf and South Atlantic SSC representatives prior to consideration and approval by the Councils. The SSC is asked to provide 2 representatives for the plan review, to be held via a webinar meeting before the end of 2017.

The Steering Committee approved SAFMC assessment priorities for 2019 and tentative projects for 2020-2022. SSC feedback is desired on the type of assessment

SSC RECOMMENDATIONS

- Provide 2 representatives for the Scamp work plan review group.
  - *Luiz Barbieri, Rob Ahrens*

SEDAR 48, Southeast Black Grouper, Benchmark

A benchmark assessment of Black Grouper was scheduled to be prepared during 2017 with Florida Fish and Wildlife Conservation Commission providing the analytical team. This is a jointly managed stock with the GMFMC so both Councils made appointments and approved the schedule and Terms of Reference. The SAFMC made appointments and provided approvals in December 2016. The Data Workshop was held March 15-17, 2017 in St. Petersburg, FL. A variety of issues were identified during the data stage of this process and the FWC decided to halt the development of the assessment at that point. A Data Workshop report has been prepared, documenting the state of the data through the post- DW webinar. It is available on the SEDAR website at the following link: http://sedarweb.org/sedar-48.

- *The SSC had no additional comments.*

SEDAR 58, Atlantic Cobia, Benchmark (Attachment 8)

Atlantic Cobia was originally scheduled as a Research Track assessment. However, at their May 2017 meeting, the SEDAR Steering Committee recommended conducting cobia as a Benchmark assessment, including a Stock ID evaluation based on the process developed by the Steering Committee in September 2016. Planning is underway for the Stock ID portion of the assessment. A Cobia Stock ID Organizing Committee was established. Members were appointed by their relevant SEDAR Steering Committee representatives and include representatives from the SEFSC, SERO, and staff from the SAFMC, GMFMC, ASMFC, and SEDAR. The Cobia Stock ID Organizing Committee has developed draft Stock ID Terms of Reference and a Stock ID Project Schedule for the SEDAR Steering Committee's consideration. The South Atlantic SSC and ASMFC provided feedback on the Cobia Stock ID ToRs via email. The Gulf SSC will be providing feedback on the ToRs during their October webinar meeting.

The preliminary schedule has the Stock ID Workshop being held in April 2018 and the Stock ID Review Workshop in June 2018. Following the Review Workshop, there will be a joint

Cooperator technical review via webinar (similar to joint SSC webinar convened by SEDAR for Blueline Tilefish) followed by a Science and Management Leadership call, if necessary. The final Stock ID resolution is scheduled to be complete by August 2018. Planning for the remaining stages for this assessment (Data, Assessment and Review) will get underway in early 2018.

SSC RECOMMENDATIONS

- Identify SSC representation for Cobia Stock ID Process. SSC participation is requested for the Stock ID Workshop, the Stock ID Review Workshop, and the joint Cooperator technical review. To help ensure independence, representatives may not participate in multiple stages of the Stock ID process.
  - *Stock ID Workshop: George Sedberry, Jeff Buckel*
  - *Stock ID Review Workshop: Church Grimes*
  - *Joint Cooperator Technical Review: John Boreman, Eric Johnson. John Boreman will also coordinate participation by the MAFMC SSC.*

SEDAR 59, South Atlantic Greater Amberjack, Standard (Attachment 9)

Planning is underway for the South Atlantic Greater Amberjack assessment. A standard assessment was requested to allow consideration of the SERFS video index data and headboat at-sea observer index, and to reconsider the use of age and length composition data. The terminal year will be 2016 and assessment webinars will be held spring through fall 2018. Draft ToRs and a project schedule have been developed in consultation with the SEFSC. The draft schedule provides the assessment for SSC consideration in April 2019 and Council consideration in June 2019. The Council will be asked to make appointments for the assessment panel and approve the schedule and TORs at the December 2017 meeting.

SSC RECOMMENDATIONS

- Review the ToRs and schedule for Greater Amberjack and recommend changes or additions as appropriate.
  - *Recommend the following ToR be added to all assessments: Review, evaluate, and report on the status and progress of all research recommendations listed in the last assessment, peer review reports, and SSC report concerning this stock.*
  - *The SSC recommends that the stock assessment scientists specify (create a list of) the expected changes to be made to the modeling framework. This will help the SSC determine what type of assessment is most appropriate to be conducted. The SSC requests clarification on when the decision is made on the type of assessment therefore requiring the information on the types of changes being proposed.*
  - *Due to the age of the current Greater Amberjack assessment (SEDAR 15), running a comparable model to SEDAR 15 may be problematic. If a continuity run cannot be constructed, the committee recommends that this should be a trigger for conducting a Benchmark as opposed to a Standard assessment.*
  - *Recommend including the revised MRIP data.*

- *Recommend an exchange of calibration sets between all agencies or programs that contribute ages to the Greater Amberjack assessment. This should be done as soon as possible. If results of this inter-laboratory age comparison indicate issues with the ages, an Aging Workshop should be organized to resolve the age issues. It is recommended that this be done before routine aging commences.*
- *The SSC recommends an added webinar or in-person workshop to address the potential changes in the modeling framework if needed.*
- *The SSC recommends removing the third sentence ("Provide a model consistent with the SEDAR 15 assessment configuration and revise configurations as necessary to incorporate and evaluate any changes in model inputs or parameterization approved during this assessment") from the current ToR. The SSC felt the task of providing a model that was truly "consistent" with such an old previous model would be an impossible task. The latter wording in ToRs 2 and 3 should suffice to ensure the assessment team tracks all necessary changes to the benchmark approach approved by the panel, and assesses the impact of those changes.*

- Identify SSC representation for Greater Amberjack.
  - *Anne Lange, Fred Serchuk*

SEDAR 60, South Atlantic Red Porgy, Standard (Attachment 9)

Planning is underway for the South Atlantic Red Porgy assessment. A standard assessment was requested to allow consideration of new video index data. The terminal year will be 2017 and assessment webinars will be held summer 2018 through winter 2019. Draft ToRs and a project schedule have been developed in consultation with the SEFSC. The draft schedule provides the assessment for SSC consideration in April 2019 and Council consideration in June 2019. The Council will be asked to make appointments for the assessment panel and approve the schedule and TORs at the December 2017 meeting.

SSC RECOMMENDATIONS

- Review the ToRs and schedule for SEDAR 60 Red Porgy and recommend changes or additions as appropriate.
  - *Propose the following ToR be added to SEDAR 60: Review, evaluate, and report on the status and progress of all research recommendations listed in the last assessment, peer review reports, and SSC report concerning this stock.*
  - *The SSC recommends including the revised MRIP data.*
  - *The SSC recommends an in-person workshop to address the changes in the modeling framework as being the most efficient means of accomplishing the task.*
  - *The SSC recommends removing the third sentence ("Provide a model consistent with the SEDAR 15 assessment configuration and revise configurations as necessary to incorporate and evaluate any changes in model inputs or parameterization approved during this assessment") from the current ToR 1.*
- Identify SSC representation for Red Porgy.
  - *Fred Scharf, Marcel Reichert, Scott Crosson*

SEDAR 55, South Atlantic Vermilion Snapper, Standard (Attachment 10)

A standard assessment was requested to allow consideration of the new SERFS video index data and to reconsider error distributions for fitting age and length composition data. The Project Schedule and Terms of Reference were finalized in June 2017 and the terminal year of the assessment will be 2016. A data scoping call was held in August 2017. An Assessment Scoping webinar is scheduled for October 2017 and a series of Assessment Webinars are scheduled for November 2017 through February 2018. The assessment is scheduled to be complete at the end of March 2018, to be considered by the South Atlantic SSC in late April 2018, and recommendations provided to the Council in June 2018.

The data deadline for this project was September 18, 2017. Hurricane Irma impacted many data providers' ability to meet this deadline. A memo was sent to the SEFSC and SAFMC leadership on Sept 27, 2017, notifying them of the impact of Irma on data submission. At this time, it is unknown how, or if, this will impact the overall timeframe of the assessment.

On the August 2017 Data Scoping call, the analytical team identified additional changes for consideration during SEDAR 55 that were not included in the Terms of Reference. The SEDAR 55 Panel discussed these issues and supported the following items be considered for use during this standard assessment: alternative method to estimate recreational historic catch that has been used in recent SEDAR assessments (FHWAR method); use of all available ages (SEDAR 17 used a sub-sampling method to select otoliths for aging due to time constraints); use of number of batches by size/age in reproductive analyses; and new method to combine SERFS video and trap indices. This information is being provided to the SSC to ensure the Committee is comfortable with these changes being considered in the SEDAR 55 standard assessment framework.

SSC RECOMMENDATIONS

- Determine if the SSC supports the additional changes (described above) being considered in the SEDAR 55 standard assessment framework.
  - *The revision of the recreational time series, as well as several of the other changes, have the potential to have large impacts on the assessment and may not be appropriate for a Standard framework.*
  - *The SSC recommends the use of the Standard framework as long as the SSC can provide an appropriate review of the changes and methods being proposed in the assessment.*
  - *The Committee can approach these changes by either reviewing each proposed method individually and independently from the assessment or it can use a sub-committee during the assessment to perform an in-depth review within the context of the assessment.*
  - *Added webinars or in-person meetings can be used to increase SSC involvement and review.*
- Consider whether any additional guidance is needed regarding analyses the Committee would like to see in order to evaluate these changes.
  - *The Committee did not request any additional analyses to evaluate these changes.*

- *To allow a review of the delayed Vermilion Snapper assessment at its spring 2018 SSC meeting, the Committee recommended having this meeting May 1-3. Note that this was discussed under "Other Business".*

SEDAR 56 South Atlantic Black Seabass, Standard

A standard assessment was requested to allow consideration of new video data and to reconsider the use of length and age data. The assessment originally had a terminal year of 2015 and was scheduled to occur over a series of webinars between February and August 2017. On May 1, 2017, the analytical team requested a six-week delay in the assessment due to late data submissions. With the requested delay, the SEDAR 56 assessment would not be available for review at the October 2017 SAFMC SSC meeting. The SEDAR Steering Committee discussed the requested delay at their May 2017 meeting, approving the delay but requesting the SEFSC report back on of the feasibility of advancing the terminal year of the assessment. After consultation with the SEFSC and other data providers, the terminal year for the assessment was advanced to 2016 and the schedule was revised extending the series of webinars through February 2018. The assessment is now scheduled to be complete at the beginning of April 2018, to be considered by the South Atlantic SSC in late April 2018, and recommendations provided to the Council in June 2018.
A new discard mortality paper (Rudershausen et al. 2014) was published after the last Black Seabass assessment (SEDAR 25). Consideration of new information on discard mortality was not included in the SEDAR 56 ToRs, however, the analytical team and SEDAR 56 Panel would like to consider this paper for potential use in the assessment. This information is being provided to the SSC to make sure the Committee is comfortable with this change being considered in the SEDAR 56 standard assessment framework.

SSC RECOMMENDATIONS

- Determine if the SSC supports new information on discard mortality being considered in the SEDAR 56 standard assessment framework.
  - *The SSC supports the use of the new discard mortality study (see Rudershausen et al. 2014) being used in SEDAR 56.*
- Consider whether any additional guidance is needed regarding analyses the Committee would like to see in order to evaluate this change to SEDAR 56.
  - *The SSC does not have any other analytical suggestions to evaluate the changes due to the new discard mortality study being used in SEDAR 56.*

SAFMC Future Assessment Priorities

Future priorities identified by the Council are show in Table 1. The Council requests feedback from the SSC on the type of assessment.

Golden Tilefish: In April 2017, the SSC stated: "The SSC strongly supports the Council's request to undertake as soon as possible a new Standard assessment for Tilefish that incorporates changes in selectivity, differences in modeling techniques, and perceived changes in recruitment since the last update".

- Are there any other justifications for the standard approach to assessing Golden Tilefish?
  - *Issues with selectivity were discussed previously, which has the potential to significantly impact the assessment (see previous SSC reports).*
  - *The data from the Cooperative Research Project (Cooperative Bottom Longline Survey to Augment Fisheries Independent Reef Fish Data Collection in the Deep-water Snapper-Grouper Fishery of the South Atlantic United States, NOAA/NMFS Award Number NA15NMF4270342) looking at different gear types for sampling Tilefish is now available. Note that if the committee and others are to review and use this project report, a reply from the collaborator Dr. Walter Bubley should be taken into account.*
  - *There is the possibility that a FATE project (NOAA's Fisheries And The Environment funding program for fisheries oceanography research) will be conducted over the next few years (pending federal budget) that would explore the effect of environmental factors on fishery independent CPUE indices and simulation test alternative methods for incorporating that information in tilefish (northern and southern) assessments.*
  - *The SSC had considerable discussion about criteria for Benchmark vs. Standard vs. Update assessments and made a general recommendation under agenda item 5.3 below.*
  - *The SSC recommends leaving this assessment as a Standard and adding an in-person workshop to allow more stakeholder involvement and a higher level of input.*
  - *The SSC suggests that the SEDAR steering committee consider coordinating this assessment with the 2020 Mid-Atlantic assessment.*

Snowy Grouper: Scheduled for 2019 as a standard. The last assessment was a standard, conducted in 2013 (SEDAR 36), including data through 2012. In April 2014, the SSC recommended conducting the next assessment as an update within 5 years.

- Does the SSC still recommend an update for the next Snowy Grouper Assessment in 2019?
  - *The SSC still recommends an Update for the next Snowy Grouper assessment.*

Spanish Mackerel: Scheduled for 2020, type TBD. The last assessment was a benchmark conducted in 2012 as SEDAR 28, including data through 2011. In April 2013, the SSC recommended conducting the next assessment as an update in 2017.

- Does the SSC still recommend an update for the next Spanish Mackerel Assessment in 2019?
  - *The SSC recommends a Standard for the next Spanish Mackerel assessment due to the change in the MRIP data series.*
  - *Due to the change in the recreational landings data series, the SSC recommends that Spanish Mackerel, a species with significant recreational landings, be assessed under the Standard framework until these data have been accounted for.*

Gag: Scheduled for 2020, Type TBD. The last assessment was an update, conducted in 2013, including data through 2012. In April 2014, the SSC recommended conducting the next assessment as "at least a standard" within in the next 3-4 years, and noted that the addition of video index data and exploring alternative approaches to index development could justify a benchmark. Another concern raised by the SSC at that time was use of a fixed steepness value.

- Does the SSC still recommend a standard for the next Gag Assessment in 2020?
  - *There remain concerns that the issues with Black Grouper identification will affect a Gag assessment also. See April 2017 SSC report.*
  - *Since the proposed changes have been reviewed for previous stock assessments, the Committee still recommends a Standard assessment for Gag.*
  - *The SSC would like to have comments from the assessment team regarding the proposed changes, and from the reviewers of the Black grouper assessment regarding assessment complications in order to make a decision on the assessment type.*

Long Term Assessment Approach (Attachment 11)

Council and SEFSC staff have been developing an alternative approach to assessment scheduling and information delivery. The intent is to provide more timely information on the primary or "Key" stocks in the fishery, a more measured and methodical approach to assessment scheduling, and implement 'rumble strip' and 'indicator' concepts discussed in recent years.

We are interested in SSC feedback on the approach and potential indicator or key stocks.

SSC RECOMMENDATIONS

- Provide guidance on the long-term assessment approach and candidate key stocks.
  - *This process increases efficiency, but decreases flexibility. Throwing species into the mix at the last moment is very disruptive to a process such as this. However, there should be less need for the Council to adjust the schedule if new data are continually submitted on a regular schedule.*
  - *The interim analysis in this process is designed to inform the SSC as to whether the stock is responding as expected from management measures implanted after the most recent stock assessment and the resulting projections. The SSC would like to see what type of analyses are envisioned for the interim information.*
  - *This process can reduce the amount of emergency actions the Council will have to take. The stocks that are often in need of emergency action will be regularly assessed, and thus management will be able to respond in a timely manner.*
  - *Because most of the assessments in this proposed framework will be Updates, the level of stakeholder transparency will normally decrease. However, the SSC recommends continued engagement with stakeholders to maintain transparency of the Update process while maintaining overall structure and efficiency.*
  - *The SSC supports this approach and would like to discuss this topic further at its next meeting.*

Table 1. SAFMC SEDAR Projects October 2017

Plan Year	SEDAR #	Stock	Approach	Terminal Data	Assessment Complete	Lead Agency
2017	50	Blueline Tilefish	Benchmark	2015	October 2017	SEFSC
	55	Vermilion Snapper	Standard	2016	April 2018	SEFSC
	56	Black Sea Bass	Standard	2015	Oct 2017	SEFSC
	48	Black Grouper	Benchmark	2015	halted	FL FWCC
2018	B	Yellowtail Snapper	Benchmark	2016	Spring 2019	FL FWCC
	RT	Atlantic Cobia	Benchmark	2016	Mid-2019	SEFSC
	S	Greater Amberjack	Standard	**2016**	Jan 2019	SEFSC
	S	Red Porgy	Standard	2017	Jan 2019	SEFSC
	B	King Mackerel	Benchmark	TBD	TBD	SEFSC
	R	MRIP Revisions[1]	Revision	varies	Late 2018	SEFSC
2019	RT	Scamp, Gulf + SA	Research Track	2017	Mid-2020	SEFSC
	S	Snowy Grouper	Standard	2017	Late 2019	SEFSC
		golden Tilefish	Standard?	2018	Late 2019	SEFSC
2020	O	Scamp, Gulf + SA	Operational	2018	Late 2020	SEFSC
	B	Red Snapper	Benchmark	TBD	TBD	SEFSC
	S	Spanish Mackerel	Standard?	2017	Late 2019	SEFSC
	S	Gag	Standard?	2018	Early 2020	SEFSC

1. MRIP revisions: Red Grouper, Blueline Tilefish, Black Sea Bass.

Note that the underlined bold year for Greater Amberjack is a correction from the original briefing book.

Table 2. Currently identified future assessment priorities.

Year	Stock	Approach
2021	Gray Triggerfish	Benchmark
	Black Sea Bass	Update or Standard
	Red Grouper	Update or Standard
2022	White Grunt	Benchmark

5.3. SSC RECOMMENDATIONS

- *In addition to recommendations above under the individual sub-items above, the committee has the following general recommendations relative to stock assessments:*
  - *Considerable discussion centered on what would trigger a certain type of assessment in the current approach. The SSC recommends developing or*

clarifying a list of criteria for the Committee to use in determining what constitutes a Benchmark vs. a Standard vs. an Update assessment.

- *The Committee proposes the following ToR be added to all current and future assessments: Review, evaluate, and report on the status and progress of all research recommendations listed in the last assessment, peer review reports, and SSC report concerning this stock.*
- *Due to the ongoing revisions to the recreational catch estimates in response to survey changes, the SSC recommends all species with significant recreational landings be assessed under the Standard approach when the revised data are included.*

6. RED GROUPER PROJECTIONS

6.1. Documents

Attachment 12. SEDAR 53 projections
Attachment 13. SEDAR 53 SAR, Red Grouper
Attachment 14. ABC Control Rule
Attachment 15. Red Grouper Fishery Performance Report

6.2. Presentation

Projections Overview: Dr. Erik Williams, SEFSC

6.3. Overview

The Committee is asked to review the most recent set of projections for Red Grouper prepared through SEDAR 53 and provide fishing level recommendations (Attachment 12).

Red Grouper was assessed through the SEDAR 53 Standard assessment, and was determined to be overfished and experiencing overfishing. Red Grouper has been in a rebuilding plan since 2011 and was projected to be rebuilt in 2020. However, the results of SEDAR 53 showed that rebuilding would not be possible by 2020 even at F=0 and would take until 2030 to rebuild at F=0 (Attachment 13). The SEFSC explored the possibility of two different recruitment scenarios, high and low, which could explain the differences in the stock status between SEDAR 53 and SEDAR 19. Therefore, the Council requested a new set of projections at 75% F_{MSY} and at F_{MSY}.

6.4. **SSC RECOMMENDATIONS**

- Review the projections and determine if they are best scientific information available and useful for management.
  - *The SSC considers these projections as BSIA and useful for management.*
  - *The Committee expressed concern regarding the assumption that discards are constant over time. This is due to recruitment and selectivity remaining unchanged throughout the projections.*

- *Clarification was provided with regards to the recruitment scenarios used in the projections. Assessment result indicated that recruitment in recent years was lower than average. Projections were done under average and low recruitment.*

- Apply the ABC control rule and provide fishing level recommendations.
  - *Reports on the water and the fishery independent index both suggest no change in the low recruitment trend of Red Grouper. Therefore, the SSC recommends using the low recruitment projection scenarios for fishing level recommendations.*
  - *The SSC recommends the projections at F_{MSY} under low recruitment for the OFL.*
  - *The SSC recommends the projections at $F_{Rebuild}$ under low recruitment for the ABC.*
  - *These projections should be considered for the short-term (5 years) as recruitment may increase at some unknown point in the mid-term or long-term future.*
  - *The SSC noted that the difference between in the fishing mortality rate applied under the F_{MSY} and $F_{Rebuild}$ rebuild scenarios was very small.*

Table 3. Projection results at $F=F_{MSY}$ and under the low recruitment scenario (SSC recommended OFL) for 5 years starting in 2018 in lbs. whole weight. From Appendix 1, Table 1.

Year	Landings	Discards
2018	183,000	38,000
2019	191,000	40,000
2020	202,000	42,000
2021	212,000	42,000
2022	223,000	42,000

Table 4. Projection results at $F=F_{Rebuild}$ and under the low recruitment scenario (SSC recommended ABC) for 5 years starting in 2018 in lbs. whole weight. From Appendix 1, Table 2.

Year	Landings	Discards
2018	139,000	29,000
2019	150,000	31,000
2020	162,000	32,000
2021	176,000	33,000
2022	189,000	33,000

7. SEFSC REPORT ON GRAY TRIGGERFISH ASSESSIBILITY

7.1. Documents

Attachment 16. SEFSC Gray Triggerfish Report

7.2. Presentation

SEFSC Report on Gray Triggerfish Assessibility: Dr. Erik Williams, SEFSC

7.3. Overview

In the South Atlantic, multiple attempts to assess the stock of Gray Triggerfish have failed to produce advice useful for management (ex. SEDAR 32, SEDAR 41). This contrasts with the Gulf of Mexico Gray Triggerfish population, which has been successfully assessed multiple times (ex. SEDAR 9, SEDAR 9 update, SEDAR 43) and those assessments have been used to inform management decisions. At their June 2017 meeting, the Council requested that the SEFSC provide an evaluation of prior assessment efforts for Gray Triggerfish, including a comparison with the successful Gulf assessments, for the SSC to review. Gray Triggerfish is preliminarily scheduled to be assessed in 2021.

7.1. **SSC RECOMMENDATIONS**

- Review the Gray Triggerfish Assessibility report.
  - Identify any differences between the South Atlantic and Gulf stocks that could account for the differences in assessibility.
    - *The Gulf stock has a much different exploitation history from the Atlantic stock, as well as different indices of abundance.*
  - Identify any factors which may have caused the South Atlantic stock assessments to be rejected.

- *Other than the issues identified in Attachment 16 of the Briefing Book document and covered in the SEDAR Assessment Review Report, the SSC did not identify any additional factors.*

- Discuss future alternatives and provide direction for assessing Gray Triggerfish in the South Atlantic.

  - *The SSC was updated on an ongoing age validation study at this meeting. The next assessment should consider those findings and whether they improve the ability for the species to be assessed successfully.*

  - *The SSC suggests assessing Gray Triggerfish by itself or paring it with a comparable species, instead of assessing it simultaneously with a species with complex assessment and management issues such as Red Snapper.*

  - *The SSC agrees with the conclusions of Attachment 16 that the issues with assessing Gray Triggerfish have to do with the data inputs. Once these have been resolved the committee sees no reason to move away from an age structured assessment modeling approach as was used in the last assessment.*

  - *An evaluation of the method described in Attachment 10 of the BB on integrating historical trap catches with more recent trap catches combined with video data may be beneficial to the assessment.*

- Suggest research topics that could improve the next Gray Triggerfish assessment.
  - *The SSC supports the research recommendations listed in the attached document (Attachment 16 of the Briefing Book), but specifically highlighted resolving the age issues, looking at the 1990 fishery independent data point to assess the effect of hurricanes on the population, and assess research of stock structure of Gray Triggerfish relative to juvenile movement and recruitment. A lack of full understanding of stock structure issues may be an additional reason why Gray Triggerfish assessments have failed review.*
  - *The lack of contrast in the data (no effect on abundance indices when landings increased) and the question of how much to up-weight the MARMAP trap index both remain unresolved issues that need to be addressed before attempting another assessment.*

8. UPDATE ON SEFSC RESEARCH EFFORTS

8.1. Documents

None.

8.2. Overview

The Committee will be updated on research projects currently ongoing within the SEFSC, with a particular focus on those directly affecting stock assessments.

8.3. **SSC RECOMMENDATIONS**

- *The SSC agrees with the index approach presented by Dr. Erik Williams, which uses an independent index of abundance to project status and yield streams forward in time, and recommends that the Southeast Fisheries Science Center continue work on this method.*
- *The SSC recommends looking at using indices and evaluating how well they can be used to estimate ABC values using historical data. Run a simulation study on key stocks (Red Snapper, Blueline Tilefish, Black Sea Bass) using historical time series and evaluating ABC value determined by several different methodologies.*
- *The SSC would like to see an overview of "index-approach" methodologies (e.g. Pacific northwest) that have been used across the country to develop catch advice when the SEFSC presents its approach*
- *An approach such as this can help management be more timely by updating analyses to the time when management is taking action.*
- *Application of this approach to Red Snapper can be considered by the Red Snapper ABC working group.*

9. SEDAR 50 BLUELINE TILEFISH ASSESSMENT REVIEW

9.1. Documents

Attachment 17. SEDAR 50 SAR, Blueline Tilefish
Attachment 18. Assessment Overview Presentation
Attachment 19. Letter from MAFMC

9.2. Presentation

Assessment Overview: Dr. Erik Williams, SEFSC

9.3. Overview

The Committee is asked to review the Blueline Tilefish Benchmark assessment prepared through SEDAR 50 and provide fishing level recommendations (Attachment 17). The SEDAR 50 Review Workshop report completion was delayed due to Hurricane Irma and won't be available when the briefing materials initially go out, however it will be provided when it becomes available.

Blueline Tilefish was first assessed in SEDAR 32, including data through 2011. The stock was found to be not overfished but it was undergoing overfishing. Blueline Tilefish had several unique issues, making it difficult to assess. First, the stock extends up into the Mid-Atlantic, where it has not historically been managed. Due to the lack of formal management, almost no sampling data was available from that region.

The inclusion of data through the Mid-Atlantic region led to SEDAR 50 being a joint assessment between the Mid-Atlantic and the South Atlantic. SEDAR 50 will be reviewed by both of the regional SSCs since a portion of the fishery, and therefore a portion of the decided upon ABC, falls into the Mid-Atlantic's jurisdiction (Attachment 19).

The second issue was the large spatio-temporal change in how the fishery operated in the terminal years of the assessment. Landings in recent years were higher than any seen in the time series. This spike in landings is coupled with a change to directed targeting for Blueline Tilefish and an increase in interest from Mid-Atlantic fishermen.

The final issue is related to ageing. It was determined that age determination was too uncertain to be used in the assessment, therefore making a catch-at-age model (as was used in SEDAR 32) an unlikely candidate for obtaining information that is useful for management. Therefore, a number of data-limited methods were employed to assess this stock for the current assessment, including production models and the DLM Toolkit.

Due to these issues, and the many attempts at addressing these issues, the overview presentation is still preliminary (Attachment 18). It is an amalgamation of presentations given at the various SEDAR 50 workshops and is a bit disjoint and cumbersome. However, a revised version is being prepared and will be distributed to the Committee as it becomes available.

9.4. SSC RECOMMENDATIONS

Table 5. Blueline Tilefish Recommendations for South of Hatteras only. Reference points and OFL projections from Briefing Book Attachment 17, ABC projections from Appendix 2.

Criteria	**Deterministic**	**Probabilistic**
Overfished evaluation ($B/B_{MSY)}$	1.06	1.16
Overfishing evaluation (F/F_{MSY})	0.92	0.86
MFMT (F_{MSY})	0.146	0.148
B_{MSY} (1000 lbs.)	1,467	1,452
MSST (1000 lbs.)	1,100	1,080
MSY (1000 lbs.)	212	216
Y at 75% F_{MSY} (1000 lbs.)		
ABC Control Rule Adjustment	20%	
P-Star	30%	
M	0.17	

OFL RECOMMENDATIONS		ABC RECOMMENDATIONS	
Year	**Landed LBS**	**Year**	**Landed LBS**
2017	232,000	2017	167,000
2018	230,000	2018	172,000
2019	227,000	2019	175,000
2020	225,000	2020	178,000

- *Note that OFL recommendations are projections at $F=F_{MSY}$, and the ABC projections are at P*=0.3. The ABC projections were provided to Council staff after the completion of the meeting.*

  - Assessment review
    - Does the assessment address the ToRs to the SSCs satisfaction?
      - *Yes*
    - Does the assessment represent Best Scientific Information Available?
      - *Yes*
    - Does the assessment provide an adequate basis for determining stock status and supporting fishing level recommendations?
      - *Yes, for the south of Hatteras area. See below for the area south of Hatteras.*
  - Identify, summarize, and discuss assessment uncertainties
    - Review, summarize, and discuss the factors of this assessment that affect the reliability of estimates of stock status and fishing level recommendations.

- *There were no age data available. The growth parameter estimates come from length information that is sparse. The estimate for M is from a meta-analysis. It is unclear if the uncertainty of these age estimates is fully carried forward in the model. In absence of age information, the committee recommends a model that is more appropriate for the available data.*
- *Maturity information was based on very few samples and added to the uncertainty*.
- *Having the indices end 7 years before the terminal year of the assessment turns these most recent years into projections with known catch. The model is deducting removals from the estimated production. Sensitivity analyses were run in order to address this uncertainty.*
- *The growth curve estimated in the Review Workshop (RW) Age Structured Production Model (ASPM) was quite different than that from the Data Workshop, which the SSC found to be concerning.*
- *Although the ASPM allows for further exploration of uncertainties, this is not a sufficient reason to select the ASPM over the ASPIC. Using the ASPM added model complexity that was not well justified given the problematic ageing data and an estimated growth curves that did not mirror empirical curve.*
- *The ASPM fixes the CVs for the indices at 0.2, which can artificially change the relative weighting of the indices in the model.*
- *The additional uncertainty (increased CVs on the indices) was added to account for process error that was not taken into consideration during the GLM fitting. It was pointed out that this inflation of uncertainty does not have the same effect as estimating recruitment anomalies.*
- *The SSC is concerned over the lack of any indices at the end on the time series with which to track recent and current stock status.*
- *Results of the ASPM and all the sensitivity runs indicate this model is sensitive to many of the assumed parameter values and there is a very large amount of uncertainty in this model.*
- *Although use of the ASPIC allows for less explicit accounting for uncertainties, it produced more conservative estimates of productivity by ignoring the age structured dynamics of the stock.*
- *There were concerns about the use of the headboat index, which is being used in the ASPM Review Workshop base run. When the headboat index was removed from the ASPM during an exploratory run during the AW, the results were very similar to the ASPIC runs with the two commercial indices.*
- *The SSC supports the decision to remove the headboat index from the model.*

- *The growth curve estimated from the ASPM was different from the empirical growth curve. The difference arises because the ASPM is modeling the growth of individuals captured in the fishery and is not representative of the population as a whole.*

- Describe the risks and consequences of the assessment uncertainties with regard to status and fishing level recommendations.
- Are methods of addressing uncertainty consistent with SSC expectations and the available information?
  - *Given the available information, the uncertainties were addressed to the Committee's expectations.*
- List (in order of the greatest contribution to risk and overall assessment uncertainty) and comment on the effects of those assessment factors that most contribute to risk and impact status determinations and future yield predictions.
  - *No age data.*
  - *No fishery independent index.*
  - *Questionability of catch; i.e. possible misidentifications in the early landings, including the magnitude of the spike in landings in the early 1980s, which may be due to distinct species all being recorded as generic "tilefish". However, the committee noted that the spike in the catch occurred before it was seen in the relative abundance data, and was demonstrated to have only minor influence on the model parameters.*
  - *There was insufficient information to support full characterization of life history parameters. E.g. there were no ages at maturity, few immature fish in the samples, and unknown sources of recruits. Certain life history information used was borrowed from Golden Tilefish.*
  - *Amount of recruitment from the Gulf of Mexico is unknown and could affect stock dynamics along the southeast Atlantic coast.*

- Provide fishing level recommendations
  - Apply the ABC control rule and complete the fishing level recommendations table.
    - *The SSC recommends use of the Assessment Workshop ASPIC model for stock status and fishing level recommendations for the area south of Hatteras. This is the model which best fits the available data. The Committee felt that although the ASPM seemed to be able to explicitly incorporate more detailed life history information, the lack of data on BLT required parameters for this model to be based on meta-analyses or some other form of 'borrowing' from other species. Therefore, the SSC felt this added additional uncertainty to the assessment and chose to proceed with results from ASPIC.*

- *P* calculation for South of Hatteras.*
  - *Dimension I: Assessment Information – Tier 1 (0%)*
  - *Dimension II: Uncertainty Characterization – Tier 4 (7.5%)*
    - *Many uncertainties not accounted for in a surplus production model*
  - *Dimension III: Stock Status – Tier 2 (2.5%)*
  - *Dimension IV: PSA – Tier 3 (10%). The SSC review the PSA score and did not see any reason to change the score at this time.*
  - *Correction = 20%*
  - *P* = 30%*
- *ABC north of Hatteras*
  - *Focus on Mean Length estimators due to strong signal.*
  - *Average the modes of each ML estimator could possibly be used to determine ABC.*

- Comment on any difficulties encountered in applying the Control Rule, including any required information that is not available.
  - *The SSC is struggling with the use of the current ABC CR for the stock north of Cape Hatteras with issues that have been pointed out by the Committee.*
  - *The SSC recommends sending representatives to the MAFMC SSC meeting where Blueline will be addressed.*
  - *The SSC recommends that a joint working group be created of members from the SAFMC's and the MAFMC's SSCs. Task of this working group should include:*
    - *Determine data upon which a split of the ABC between the Council jurisdictions for the area north of Hatteras can be based.*
    - *Confirm or refine the ABC recommendation from the SAFMC's SSC.*
  - *The SSC further recommends that this Working Group:*
    - *Includes a member of the assessment team.*
    - *Includes an in-person meeting due to the complexity of the tasks.*
    - *Have a webinar or conference call to bring the MAFMC SSC representatives up to speed on this issue.*
  - *The ToRs will be constructed by the working group (of both SAFMC and MAFMC SSC members). The expectation is to have this workshop completed prior to the MAFMC SSC's meeting (likely in March of 2018), and brought back to the Committee via email.*

- *SAFMC's SSC members for this Blueline Tilefish Working Group: Scott Crosson, George Sedberry, Robert Ahrens*

- Provide advice on monitoring the stock until the next assessment
  - What indicators or metrics should the council monitor and could the SSC evaluate to evaluate the stock until the next assessment?
  - Is there a recommended trigger level for these metrics? How should the Council respond if a trigger is activated?
    - *Persistent changes in mean lengths in the catch, particularly a decrease, should trigger a re-examination of the utility of the current assessment, as the changes may imply a truncation in the size/age composition of the stock. Further, substantial changes in landings might indicate changes in the fleet or stock distribution and should warrant a closer look as well.*
- Provide research recommendations and guidance on the next assessment
  - Review the included research recommendations, and indicate those most likely to reduce risk and uncertainty in the next assessment.
    - *Addressing issues/discrepancies in aging.*
    - *Life history information, particularly maturity and fecundity, and growth parameters.*
    - *The extent to which recruitment is contributing to each geographic area from other areas (even outside the system), in other words, larval advection vs. self-recruitment.*
    - *Improvements in fishery dependent and independent indices.*
    - *All of these factors need to be looked at in terms of the entire biological stock.*
  - Provide any additional research recommendations the SSC believes will improve future stock assessments.
    - *Development of a fishery independent index of abundance.*
    - *More detailed spatial information of the catch location. This will assist with interpreting landings data and will assist in dividing ABC between jurisdictions.*
  - Provide guidance on the next assessment, addressing its timing and type.
    - *Type and timing will depend on if and when additional information becomes available.*
    - *Resolving issues with age determination and estimates of natural mortality will decrease model uncertainty and increase the likelihood of a successful next assessment.*

- *An attempt should be made to use all data poor methods available to assess the biological stock as one unit.*

10. REVISED GOLDEN TILEFISH ASSESSMENT

10.1. Documents

Attachment 20. Revised Tilefish Update SAR
Attachment 21. Revised Tilefish Assessment Presentation

10.2. Presentation

Revised Tilefish Assessment Overview: Dr. Kyle Shertzer, SEFSC

10.3. Overview

At the May 2016 meeting, the Committee reviewed the SEDAR 25 Update for Tilefish and found it to be best scientific information available (BSIA) and useful for management. There were several differences in this update as compared to the SEDAR 25 Benchmark. One of these changes, which has received a lot of discussion and consideration, is the use of a robust multinomial likelihood function, in place of the standard multinomial likelihood, for estimating the age and length compositions. This change, along with several others, was the apparent cause of a large shift in the status of the Tilefish stock.

Since that time, subsequent SEDAR assessments have found that neither the original multinomial likelihood, nor the robust multinomial likelihood is truly appropriate for estimating composition data. Instead, a new function, known as the Dirichlet multinomial, has been deemed as BSIA and is currently in use for all ongoing assessments.

Due to the assessment schedule, a new Standard assessment for Tilefish will not be able to be conducted until 2019. Therefore, at their June 2017 meeting, the SAFMC requested that a revision to the 2016 Tilefish Update be conducted using the new Dirichlet multinomial likelihood function in place of the robust multinomial likelihood function. The results of that revision are presented in Attachment 20.

10.4. **SSC RECOMMENDATIONS**

SSC RECOMMENDATIONS:

- Review the revised Tilefish assessment
  - Is the application of the new likelihood adequately documented, evaluated, and described?
    - *This revision was very informative regarding the use and limitations of the Dirichlet Multinomial likelihood. The report adequately documented the analyses and results.*

- Is the new likelihood fitting approach appropriate for this assessment?
  - *The Dirichlet Multinomial has not been sufficiently tested using composition data obtained from sparse sampling, which is present in the Tilefish assessment. Also, most runs of this revised model did not converge on a solution. Due to this uncertainty and poor model performance, the SSC recommends not using the revised assessment for management advice.*
- Does the SSC recommend basing stock status and fishing level recommendations on one of the new assessment runs? If so:
  - *The SSC does not recommend basing stock status and fishing level recommendations on the new assessment runs. The SSC recommends using the base run of the updated assessment for the determination of the ABC, which was previously specified.*
- Can the SSC provide any additional advice or recommendations on fitting algorithms for future assessments?
  - *The SSC recommends a simulation study comparing all available likelihood approaches for fitting composition data to help resolve this issue, recognizing that adequate characterization of the true distribution of tilefish age/length data will be a significant challenge to implementation and interpretation of such a study. Simulations based on larger sample sizes than what are typically collected from the tilefish fishery may not provide adequate guidance for determining the appropriate multinomial likelihood for use in data spares situations such as tilefish.*
  - *The SSC strongly recommends implementing a fishery independent survey for this species.*

11. MODIFICATIONS TO THE ABC CONTROL RULE

11.1. Documents

Attachment 22. ABC Control Rule Decision Document
Attachment 23. Application of the ABC CR to Example Stocks

11.2. Presentation

Overview and Update: John Carmichael, SAFMC Staff

11.3. Overview

The Committee has reviewed and commented control rule modifications over several years, through both meetings and dedicated workshops. Control rule development and the changes now under consideration are described in Attachment 22. The current version of this document incorporates SSC recommendations from April 2017 and Council discussions of September 2017. The Council will hold a meeting via webinar on November 6, 2017, to discuss the ABC Control Rule.

Both the Council and SSC support modifying the rule allow the Council to specifically establish risk tolerance levels and incorporate additional flexibility allowed under the MSA. Discussions at this point should now start to consider details and the specifics of how risk tolerance is determined for different stocks, how chosen risk tolerance levels are applied to assessment results (including uncertainty) to provide ABC values, and the details of the provisions allowing additional flexibility.

The September 2017 SAFMC discussion focused primarily on Action 3 – methods of specifying risk tolerance, with recommendations summarized in the document. The Council prefers the categorical approach to risk determination, as detailed in Alternative 4. An additional sub-Alternative is proposed in the current document, based on different groupings of stock biomass. The SSC is asked to focus on these groupings, and consider appropriate biomass categories and risk tolerance bounds.

A new action 10 is added, addressing possible accountability measure changes. Accountability measures have become inconsistent across stocks and FMPs over time. The Council is particularly interested in addressing AMs the require in-season adjustment of recreational regulations based on MRIP monitoring.

Based on decisions and comments made by the Committee at their April 2017 meeting, some examples are presented for the Committee to review and further refine their recommendations for modifying the ABC Control Rule, specifically addressing how assessment uncertainty is quantified (Action 4, Attachment 23).

11.4. SSC RECOMMENDATIONS

- Are there additional items to include in the purpose and need statements?
  - *The SSC suggests the use of the term "data limited" in place of "data poor" throughout the ABC CR documentation. "Poor" data may indicate data quality, while the term "limited" is more clearly related to quantity.*
- Are any modifications or changes suggested to the Action 1 alternatives, describing assessment categories?
  - *There should be more generalization built into the categories so they are not too prescriptive.*
  - *Suggest removing the "Data" descriptor from the categories and using qualitatively vs. quantitatively assessed stocks, and incorporating uncertainty characterization in those categories.*
  - *Form 3 general categories with characteristics for placing stocks in each of these categories.*
- Are there any other alternatives to consider for Action 2?
  - *Recommended that the Council develop their risk tolerance in consultation with the SSC.*
- Comment on Action 3 – risk determination
  - Are the categories in Alternative 4 reasonable and appropriate?

- *There is concern that this table doesn't explicitly account for the uncertainty in the biomass estimates.*
- *The SSC recommends acknowledging management uncertainty in these values and not using 0.5 as the max value, especially for species with a recreational fisheries component. This also runs the risk of triggering severe accountability measures.*
  - *Management uncertainties should be taken into account when setting the ACL. Specific guidance could be provided by the SSC's Socio-Economic Panel. Also, the history of how often the OFL was exceeded might help inform an appropriate management risk level.*
  - *Stocks with higher risk of overexploitation have a biological risk of overfishing causing the biomass to drop below MSY levels, therefore a larger buffer (lower P*) should be introduced for these stocks. Careful consideration should be given to how quickly a species might progress from B_{MSY} to MSST.*
  - *The time interval between assessments needs to be considered when determining the risk. Stocks with longer time intervals between assessments should have a higher buffer (lower P*) as uncertainty in the (original) projections increases wit time.*
  - *The SSC should look at the ACL recommendations more explicitly in the future to help the Council to incorporate management uncertainty. This is an area where SSC's social and economic expertise can be utilized.*

- How might risk of overfishing be impacted by the different biomass categories suggested in the new and original approaches to alternative 4?
- What are appropriate minimum and maximum risk values?
- Should PSA scoring be used to assign stocks to broad risk categories? If so, should the NMFS, MRAG, or another scoring process be used to assign scores?
  - *If PSA scores are used in the risk assessment, the SSC recommends that these be evaluated by the SSC when TORs for an assessment as reviewed, so that a recommendation can be provided prior to the start of the assessment.*

- Consider approaches for evaluating uncertainty in Action 4.
  - *The SSC would like to see Alternative 3 carried forward for consideration as one of several alternatives as the ABC CR is discussed.*
- Comment on how different periods proposed for Action 5 could affect risk and uncertainty, and suggest ways multi-year specifications can be calculated.
  - *Additional comments and recommendations were made in April (see April 2017 SSC report), and should be incorporated.*

- Consider further guidance on details of alternatives in Actions 6 – 9
  - *Action 6:*
    - *Council needs to think about how much of a change justifies a phase-in, and recommendations from the SSC's SEP could provide further guidance.*
    - *Must be regimented and reach the ultimate ABC goal by the end of the pre-determined time period.*
  - *Action 7:*
    - *There are many reasons why a fishery is not reaching its ACL and these need to be considered before implementing a carryover provision.*
    - *There should be biological constraints considered before allowing a carryover. A consistent underage of the ACL may suggest a change in stock status.*
- Provide comments on the measures proposed in Action 10.

12. SOUTH ATLANTIC ECOSYSTEM MODEL REVIEW

12.1. Documents

Attachment 24. Ecospace Model Webinar
Attachment 25. Ecosystem Model Presentation

12.2. Presentation

Ecosystem Model Presentation: Dr. Tom Okey, UVIC; Dr. Howard Townsend, NMFS

12.3. Overview

The Council, using the Essential Fish Habitat Plan as the cornerstone, adopted a strategy to facilitate the move to an ecosystem-based approach to fisheries management in the region. This approach required a greater understanding of the South Atlantic ecosystem and the complex relationships among humans, marine life, and the environment including essential fish habitat. To accomplish this, a process was undertaken to facilitate the evolution of the Habitat Plan into a Fishery Ecosystem Plan (FEP), thereby providing a more comprehensive understanding of the biological, social, and economic impacts of management necessary to initiate the transition from single species management to ecosystem-based management in the region.

To help facilitate this transition, the Council worked cooperatively with the University of British Columbia and the Lenfest Sea Around Us project to develop a straw-man and preliminary food web models (Ecopath with Ecosim) to characterize the ecological relationships of South Atlantic species, including those managed by the Council. This effort was envisioned to help the Council and cooperators in identifying available information and data gaps while providing insight into

ecosystem function. More importantly, the model development process provides a vehicle to identify research necessary to better define populations, fisheries, and their interrelationships.

A second collaboration built on the initial Ecopath model developed through the Sea Around Us project for the South Atlantic Bight with a focus on potential changes in forage fish populations in the region that could be associated with environmental or climate change or changes in direct exploitation of those populations.

A new South Atlantic ecosystem modeling effort funded by the South Atlantic Landscape Conservation Cooperative (SALCC), is being conducted to engage a broader scope of regional partners. This effort is drawing on existing ecosystem and other supporting models to facilitate development of a suite of ecosystem models ultimately providing evaluation tools for the SSC and Council. A new Ecopath model is under development and supporting model inputs through regional partners to refine links between the SAFMC FEP II and other regional conservation planning efforts.

12.4. **SSC RECOMMENDATIONS**

- Review and provide comments on the use of this Ecosystem Model.
  - Provide feedback as to possible direction of the modeling efforts.
    - *The SSC notes a concern about the spatial and temporal differences in diet composition for some species. This may be explored using EcoSpace.*
    - *Recommend more research on diet composition to inform this model.*
    - *The SSC is concerned over the data needs required by this type of modeling framework and whether these needs can be met. Given the potential for these models to be highly uncertain with respect to the nature and magnitude of the trophic interactions, careful consideration must be given to the nature of the questions explored. It is unlikely that such model are sufficiently certain to be used to quantify absolute changes in biomass of functional groups but can be useful when exploring directional change. Ecosystem model also have a utility in revealing counter intuitive changes that can occur in the systems.*
    - *The EwE suite of models (Eco-path, sim and space) offer the potential to: quantify trophic characteristic of a system, explore the system level impact of perturbations (both natural and anthropogenic), assess the economic impacts of policy changes, explore ecosystem level optimizations with respect to harvest removals under a suite of management objectives, perform management strategy evaluation considering ecosystem level impacts, and explore iterations and optimizations under temporal and spatially dynamic scenarios.*
    - *There is a lot of uncertainty associated with these models and their output that must be communicated to stakeholders effectively.*
  - Discuss how this could assist the SSC in providing recommendations to the Council in the future.

- *This will be further discussed in upcoming meetings. SSC members may be asked to provide specific suggestions and recommendations as to how this tool to can be used to assist the Committee with making recommendation to the Council.*
- *The SSC would like to see a list of the data inputs and parameters along with their levels of uncertainty to identify where effort should be focused.*

13. SNAPPER GROUPER AMENDENT 46 – RED SNAPPER

13.1. Documents

None.

13.2. Presentation

Amendment 46 Presentation: Dr. Chip Collier, SAFMC Staff

13.3. Overview

Snapper Grouper Amendment 46 will include many of the actions moved out of Amendment 43 (ACLs for red snapper). The Council will receive an options paper in December 2017. Actions likely included in Amendment 46 will be specify OFL/ABC/ACL for red snapper, recreational permitting and reporting for private recreational fishermen, best fishing practices (also include an option to remove circle hook requirements for snapper grouper fishing), and removing powerhead restrictions in special management zones off South Carolina. Since the Council has not received the options paper, actions included in the amendment will likely change. OFL/ABC/ACL for red snapper based on SEDAR 41 have not been adopted through the amendment process; however new projections based on SEDAR 41 could not be provided by the SEFSC due to the time since the last amendment, uncertainty in recreational landings and discards, and upcoming changes to recreational landings estimates. Recreational permitting and reporting could aid in improving private recreational catch estimates of snapper grouper species. Different alternatives for recreational permitting and reporting have been developed. The Council is waiting on results of the NMFS work on an index-based method that the SSC could use to provide a current ABC estimate. Should that updated ABC be provided by the SSC during development of the amendment, the Council will incorporate it into Amendment 46. Best fishing practices include options to require descending devices and/or venting tools for commercial and recreational fishermen, require the use of single hook rigs, and options to alter circle hook rig requirement (including an alternative to remove circle hook requirements). At the September Council meeting, removing the powerhead restriction in the special management zones off South Carolina was requested to be included. Regulations vary by state for special management zones and powerheads are prohibited in most South Carolina special management zones.

13.4. **SSC RECOMMENDATIONS**

- Review and provide comments.
  - *Other than the comments provided elsewhere in this report and what the SSC provided in the April 2017 SSC meeting, there were no further comments at this time.*
  - *The SSC will have an opportunity to further review this amendment in its April 2018 meeting.*

14. WRECKFISH ITQ REVIEW

14.1. Documents

Attachment 26. Wreckfish ITQ Review methodology

14.2. Presentation

Wreckfish ITQ Review methodology: Dr. Brian Cheuvront, SAFMC staff

14.3. Overview

In June of 2017 the Council directed staff to begin a review of the Wreckfish ITQ program. This is the first review of the program. In a review of this type, the Council does not consider actions to modify the program, but could consider actions through FMP amendments. Staff met with shareholders in August 2017 to discuss their concerns about the program. The Council would like the SSC to discuss the methods that will be used to conduct the review. The SSC should expect to see a "close to completed" version of the review document in April 2018 and will be asked to provide comments at that time on the entire document. Arrangements are being made for the SEP to meet in February 2018 to discuss the ITQ and provide input on the program and potential modifications that could come as recommendations in the report for future action.

14.4. **SSC RECOMMENDATIONS**

- Provide comments on the data and methods for reviewing the Wreckfish ITQ system.
  - *In order to show and work with confidential data, the confidential data can be standardized to some grand mean, making all values comparable across regions and individuals.*
  - *The SSC discussed the use of rolling averages as one way to protect confidentiality of landings, if needed. The SSC can assign members with confidential access to review whether there are significant differences between the actual values and rolling average values, therefore alleviating some of the concerns regarding confidentiality issues.*

    Scott Crosson and Amy Schueller volunteered to review the confidential data when needed and report back to the SSC.

- *If there are enough clean records of co-occurring species, a model can be developed to predict the co-occurrence of species on tickets that do not have accompanying data. The SSC recommends looking at the raw vs. standardized landings data to evaluate the effect of including the confidential data or not. However, the SSC feels that the sample size is likely too small to be able to build a viable co-occurrence model.*
- *The SSC offered a suggestion to report the data from each data source individually, especially if there is difficulty in determining co*-occurring species.
- *If the point is to look at what else is being caught while fishing for Wreckfish, then it is unlikely any of the recorded species (except perhaps for blackbelly rosefish) are co-occurring with Wreckfish but simply being caught on the same trip. The SSC recommends summarizing available data by length of trip to help identify portions of trips identified as targeting wreckfish vs. reports of longer trips that included directed fishing on other species.*

15. SNAPPER GROUPER VISIONING AMENDMENTS

15.1. Documents

Attachment 27. Reg Amendment 26: Recreational Visioning Amendment
Attachment 28. Reg Amendment 27: Commercial Visioning Amendment
Attachment 29. Reg Amendment 27: Appendix J

15.2. Presentation

Amendment Overview: Myra Brouwer, SAFMC staff

15.3. Overview

At their September 2017 meeting, the Council reviewed options for actions/alternatives for both Visioning Amendments to the Snapper Grouper FMP. Regulatory Amendment 26 (Attachment 27) addresses management of the recreational fishery and Regulatory Amendment 27 includes changes to the management of the commercial sector. The Council is still considering how best to structure actions in Regulatory Amendment 26; analyses conducted to-date, therefore, will undoubtedly change as the amendments moving along the development process. The Council refined actions and alternatives in Regulatory Amendment 27 (Attachment 28) but the modifications were minor. Hence, preliminary technical analyses conducted to date on that amendment would benefit from SSC review. In particular, the SSC should comment on the appropriateness of the two methodologies used to predict landings under various scenarios. Analyses were performed by NMFS SERO staff and are contained in Attachment 29. Completion of the two Visioning amendments is scheduled for September 2018. The SSC will have another opportunity to review any technical analyses for these amendments, as needed, in Spring 2018.

15.4. **SSC RECOMMENDATIONS**

- Review and comment on the use and uncertainties of the two methods used in Actions 1-6 of Reg Amendment 27 to analyze the effects of the alternatives.
  - Is one methodology more appropriate for use in these analyses?
    - *The complexity of the SARIMA model makes it less favorable as a management tool.*
    - *The last 3 years of data are likely more representative of the current fishery than using the entire data series.*
    - *The number of data points in the time series is sufficiently large enough to split the time series into two parts, using the first part to predict behavior of the second part, then using the actual values in the second part to determine how well the SARIMA model works.*
    - *Explore sensitivity to smoothing kernel/range.*
    - *Important to try and understand the changes in behavior of the fishing effort to different management perturbations.*
  - Do either of these approaches provide clearer management advice to the Council?
    - See above.
  - Are there differences in relative risk or uncertainty between the two methods?
    - See above.
- Comment on any other Actions or items as appropriate.
    - *No further comments were provided*

16. COUNCIL WORKPLAN UPDATE

16.1. Documents

Attachment 30. SAFMC Work Plan, September 2017
Attachment 31. SAFMC Amendments Overview, September 2017

16.2. Overview

These documents are provided at each meeting to keep the Committee informed of Council activities. Regular detailed reviews of each amendment are no longer requested of the SSC as amendments are developed; instead the Committee is asked to comment on specific technical items that may arise. However, members are welcome to review any ongoing amendments and to provide comments and suggestions directly to staff. Current versions of each amendment are included in the Council Briefing Books distributed to SSC members. Questions or comments about specific items should be addressed to the staff assigned to each FMP, as summarized below.

- Coastal Migratory Pelagic – Christina Wiegand
- Corals – Chip Collier
- Fishery Ecosystem Plan – Roger Pugliese
- Snapper Grouper – Myra Brouwer
- Snapper Grouper Amendments 43 & 46 (Red Snapper) – Chip Collier
- Snapper Grouper Commercial and Recreational Visioning Amendments – Myra Brouwer
- Spiny Lobster – Christina Wiegand
- Golden Crab – Brian Cheuvront
- Dolphin-Wahoo – John Hadley
- South Atlantic For-Hire Reporting Amendment – John Carmichael
- Wreckfish ITQ Review – Brian Cheuvront
- Snapper Grouper Amendment 38 (Blueline Tilefish) – Roger Pugliese

16.3. **SSC RECOMMENDATIONS**

- *The SSC acknowledges the issues with PSEs for many of the assessed stocks in the MRIP dataset, and encourages the Council and OST to continue to work on methods that reduce PSEs.*

- *The SSC is concerned about large PSE values being used for the revised MRIP estimates and would like to be informed of what the PSE values are and how these were derived and used.*

- *The SSC would like to encourage research into how best to smooth or interpolate the MRIP data in those cases where the data are particularly noisy.*

- *The Committee feels that addressing the issues of high PSEs and rarely encountered species be a high priority, and encourages NMFS to make this a high priority for funding and research.*

- *The Committee recommends organizing a SEDAR workshop or on a national scale, such as at an upcoming NSSC workshop, to address the PSE issue in recreational landings.*

- *The SSC would like to discuss this topic again at its spring 2018 meeting and possibly form a working group to address issues of high PSEs and rarely encountered species.*

17. PUBLIC COMMENT

The public is provided an additional opportunity to comment on SSC recommendations and agenda items.

18. OTHER BUSINESS

- *SSC Spring meeting data change due to the delay in the Vermillion Snapper assessment: see page 13 of this report.*

- Potential extra meeting
  - *The committee discussed several options to have more time for discussions and formulating recommendations to the Council.*
  - *Starting with the two current meetings meeting on Tuesday morning was an option the committee discussed. However, this will likely add materials to the already very large briefing book and is therefore not a preferred option. The committee also discussed possibility for Tuesday morning sessions to discuss special topics such as ABC control rule (as was done in the past) or orientation (as has been proposed at this meeting).*
  - *The SSC's preferred option is to have a third meeting, but the Committee would like more input on the agenda. This third meeting may help reduce time delays on time sensitive items. It could also accommodate setting more time aside to discuss more complex (general) issues such as the ABC control rule, PSE in recreational catches, assessment of data limited stocks, etc. Therefore, the SSC is requesting that the Council consider allowing for a third SSC meeting each year.*
  - *Furthermore, the SSC is in favor of occasionally (once every few years) meeting concurrently with the Council. This will facilitate communications between SSC and Council members, but cautions that the agenda for that meeting should not result in the Council having to wait during its meeting for SSC recommendations.*

- Update on the National SSC meeting
  - *The Committee Chair, Vice-Chair and Chair of the SEP will attend the National SSC meeting in January 2018. In addition, Drs. Boreman and Barbieri will be attending as representatives of the Mid-Atlantic and Gulf of Mexico SSCs. A 4th slot if available and members were asked to contact the Chair if they are interested. Their name will be forwarded to the Council leadership and subsequently the meeting organization. The participants will provide the Committee with a report in the spring 2018 meeting.*

19. REPORT AND RECOMMENDATIONS REVIEW

The Committee is provided an opportunity to review its report and final recommendations.

The Final SSC report will be provided to the Council by 9 am on Tuesday, November 14, 2017 for inclusion in the first briefing book for the December Council meeting.

20. NEXT MEETINGS

20.1. SAFMC SSC MEETINGS

2018 Tentative Meeting Dates

April 24-26, 2018 in Charleston, SC

Note the change to May 1-3 meeting (see page 13 of this report)

October 23-25, 2018 in Charleston, SC

Note the change to October 16-18 (addressing issues on page 38)

20.2. SAFMC Meetings

2017 Council Meetings

December 4-8, 2017 in Atlantic Beach, NC

2018 Council Meetings

March 5-9, 2018 in Jekyll Island, GA

June 11-15, 2018 in Fort Lauderdale, FL

September 17-21, 2018 in Charleston, SC

December 3-7, 2018 in Kitty Hawk, NC

SSC RECOMMENDATIONS:

- *The Committee would like to have the SEDAR Steering Committee meetings added to this list.*

ADJOURN

Red Grouper Projections

Prepared by NMFS Southeast Fisheries Science Center

Issued: August 2017

Introduction

In a memorandum dated June 23, 2017, from Gregg Waugh to Dr. Bonnie Ponwith, The South Atlantic Fishery Management Council requested revised red grouper projections (Appendix A). This report fulfills that request. Specifically, the requested projection analyses included the following:

1. Yield and stock conditions to 2030 based on fishing mortality rates of F_{MSY} (OFL) and 75%F_{MSY} ($F_{REBUILD}$), with recruitment based on the "low" recruitment scenarios presented in the assessment.

2. Yield and stock conditions projected to the year when the stock is rebuilt ($SSB>SSB_{MSY}$) based on fishing mortality rates of F_{MSY} (OFL) and 75%F_{MSY} ($F_{REBUILD}$), with recruitment based on the predicted values from the Stock-Recruitment relationship.

Methods

Except for modifications to accommodate the request, the projection methods were identical to those used in the SEDAR53 stock assessment of red grouper. In these revised analyses, fishing mortality rates take effect in 2018, and landings in 2016 and 2017 apply the same values used in the original projections. For item 2 above, the $F_{REBUILD}$ scenario achieves rebuilding ($SSB>SSB_{MSY}$) with probability of at least 50% in 2031, and thus these two projections (F_{MSY} and $F_{REBUILD}$) are extended through that year. The four projection scenarios are defined,

- Scenario 1: F_{MSY} with low recruitment, extended to 2030
- Scenario 2: $F_{REBUILD}$ with low recruitment, extended to 2030
- Scenario 3: F_{MSY} with long-term expected recruitment, extended to 2031
- Scenario 4: $F_{REBUILD}$ with long-term expected recruitment, extended to 2031

Results

Results are tabulated in Tables 1–4, and presented graphically in Figures 1–4.

Table 1. Scenario 1 projections results with F= F_{MSY} starting in 2018 and low recruitment. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = landings expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), D = dead discards expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), and pr.reb = proportion of stochastic projection replicates with SSB ≥ SSB_{MSY}. The extension "b" indicates expected values (deterministic) from the base run; the extension "med" indicates median values from the stochastic projections.

Year	R.b	R.med	F.b	F.med	S.b(mt)	S.med(mt)	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.base(w)	D.med(w)	pr.reb
2016	144	121	0.21	0.23	860	817	33	34	365	368	35	33	70	71	0
2017	144	120	0.23	0.25	797	752	34	35	365	367	38	36	81	78	0
2018	144	120	0.12	0.13	766	718	18	18	188	183	21	18	44	38	0
2019	144	120	0.12	0.13	800	752	19	19	196	191	22	19	46	40	0
2020	144	118	0.12	0.13	841	789	21	20	207	202	22	19	47	42	0
2021	144	119	0.12	0.13	884	826	22	21	219	212	22	19	48	42	0
2022	144	121	0.12	0.13	925	861	23	22	230	223	22	19	48	42	0
2023	144	120	0.12	0.13	963	895	24	23	239	232	22	19	48	42	0
2024	144	120	0.12	0.13	996	926	24	23	248	239	22	19	48	43	0
2025	144	119	0.12	0.13	1024	953	25	24	255	246	22	19	48	42	0
2026	144	121	0.12	0.13	1047	977	25	24	261	252	22	19	48	42	0
2027	144	121	0.12	0.13	1066	999	25	24	266	257	22	19	48	42	0
2028	144	121	0.12	0.13	1082	1017	25	25	270	261	22	19	48	42	0
2029	144	120	0.12	0.13	1095	1031	26	25	273	265	22	19	48	42	0
2030	144	121	0.12	0.13	1105	1044	26	25	276	268	22	19	48	42	0

Table 2. Scenario 2 projections results with F= $F_{REBUILD}$ starting in 2018 and low recruitment. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = landings expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), D = dead discards expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), and pr.reb = proportion of stochastic projection replicates with SSB ≥ SSB_{MSY}. The extension "b" indicates expected values (deterministic) from the base run; the extension "med" indicates median values from the stochastic projections.

Year	R.b	R.med	F.b	F.med	S.b(mt)	S.med(mt)	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.base(w)	D.med(w)	pr.reb
2016	144	121	0.21	0.23	860	817	33	34	365	368	35	33	70	71	0
2017	144	120	0.23	0.25	797	752	34	35	365	367	38	36	81	78	0
2018	144	120	0.09	0.09	773	725	14	14	143	139	16	13	33	29	0
2019	144	120	0.09	0.09	831	782	15	15	154	150	17	14	36	31	0
2020	144	118	0.09	0.09	897	844	17	16	167	162	17	15	37	32	0
2021	144	119	0.09	0.09	965	906	18	17	181	176	17	15	37	33	0
2022	144	121	0.09	0.09	1032	965	19	18	194	189	17	15	37	33	0
2023	144	120	0.09	0.09	1094	1021	20	19	206	200	17	15	37	33	0
2024	144	120	0.09	0.09	1150	1072	21	20	217	210	17	15	37	33	0
2025	144	119	0.09	0.09	1198	1117	21	21	226	219	17	15	37	33	0
2026	144	121	0.09	0.09	1239	1158	22	21	234	226	17	15	37	33	0
2027	144	121	0.09	0.09	1274	1194	22	21	240	233	17	15	37	33	0
2028	144	121	0.09	0.09	1303	1226	22	22	246	239	17	15	37	33	0
2029	144	120	0.09	0.09	1328	1253	23	22	251	244	17	15	37	33	0
2030	144	121	0.09	0.09	1349	1274	23	22	255	248	17	15	37	33	0

Table 3. Scenario 3 projections results with F= F_{MSY} starting in 2018 and long-term expected recruitment. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = landings expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), D = dead discards expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), and pr.reb = proportion of stochastic projection replicates with SSB $\geq$ SSB_{MSY}. The extension "b" indicates expected values (deterministic) from the base run; the extension "med" indicates median values from the stochastic projections.

Year	R.b	R.med	F.b	F.med	S.b(mt)	S.med(mt)	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.base(w)	D.med(w)	pr.reb
2016	323	266	0.21	0.23	860	817	33	34	365	368	56	50	92	89	0.000
2017	318	259	0.23	0.25	839	793	35	35	365	367	77	70	144	134	0.000
2018	315	253	0.12	0.13	884	834	22	21	204	198	45	38	93	79	0.000
2019	320	254	0.12	0.13	1036	974	28	27	244	236	48	40	101	86	0.001
2020	334	268	0.12	0.13	1218	1138	34	33	293	282	49	42	106	90	0.003
2021	346	279	0.12	0.13	1412	1312	39	38	344	331	51	43	109	93	0.008
2022	357	288	0.12	0.13	1604	1481	44	42	393	377	53	45	113	97	0.016
2023	365	299	0.12	0.13	1788	1642	48	46	440	422	55	47	117	101	0.027
2024	372	307	0.12	0.13	1960	1792	51	49	484	463	56	48	120	104	0.041
2025	377	312	0.12	0.13	2117	1930	55	52	524	501	57	49	122	107	0.060
2026	381	316	0.12	0.13	2261	2059	57	55	560	535	58	50	124	109	0.082
2027	385	320	0.12	0.13	2389	2178	60	57	593	566	58	51	126	111	0.104
2028	387	326	0.12	0.13	2503	2290	62	59	622	594	59	51	127	112	0.128
2029	390	327	0.12	0.13	2603	2387	64	61	647	619	59	52	128	113	0.152
2030	391	330	0.12	0.13	2690	2480	65	62	670	642	59	52	129	115	0.174
2031	393	332	0.12	0.13	2766	2561	66	64	689	661	60	53	129	116	0.198

Table 4. Scenario 4 projections results with F= $F_{REBUILD}$ starting in 2018 and long-term expected recruitment. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = landings expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), D = dead discards expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), and pr.reb = proportion of stochastic projection replicates with SSB $\geq$ SSB_{MSY}. The extension "b" indicates expected values (deterministic) from the base run; the extension "med" indicates median values from the stochastic projections.

Year	R.b	R.med	F.b	F.med	S.b(mt)	S.med(mt)	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.base(w)	D.med(w)	pr.reb
2016	323	266	0.21	0.23	860	817	33	34	365	368	56	50	92	89	0.000
2017	318	259	0.23	0.25	839	793	35	35	365	367	77	70	144	134	0.000
2018	315	253	0.09	0.09	893	841	17	16	155	151	34	29	70	60	0.000
2019	321	254	0.09	0.09	1075	1012	22	21	191	185	37	31	78	67	0.002
2020	337	270	0.09	0.09	1295	1214	27	26	235	227	38	32	82	70	0.006
2021	351	282	0.09	0.09	1536	1433	32	31	283	273	40	34	86	73	0.019
2022	363	293	0.09	0.09	1782	1653	37	35	331	318	41	35	89	77	0.041
2023	372	305	0.09	0.09	2023	1866	41	39	377	363	43	37	93	80	0.076
2024	379	314	0.09	0.09	2252	2068	44	42	421	405	44	38	95	83	0.122
2025	385	319	0.09	0.09	2468	2262	47	45	463	444	45	39	97	85	0.175
2026	389	324	0.09	0.09	2667	2439	50	48	501	481	45	39	99	87	0.235
2027	393	328	0.09	0.09	2848	2611	52	50	536	515	46	40	100	88	0.300
2028	395	333	0.09	0.09	3012	2768	55	53	567	544	46	41	101	89	0.363
2029	398	335	0.09	0.09	3159	2910	56	54	595	572	46	41	102	91	0.425
2030	399	339	0.09	0.09	3289	3040	58	56	620	597	47	41	103	92	0.484
2031	401	339	0.09	0.09	3403	3159	59	58	642	620	47	42	103	92	0.538

Figure 1. Scenario 1 projections results with F= F_{MSY} starting in 2018 and low recruitment. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.

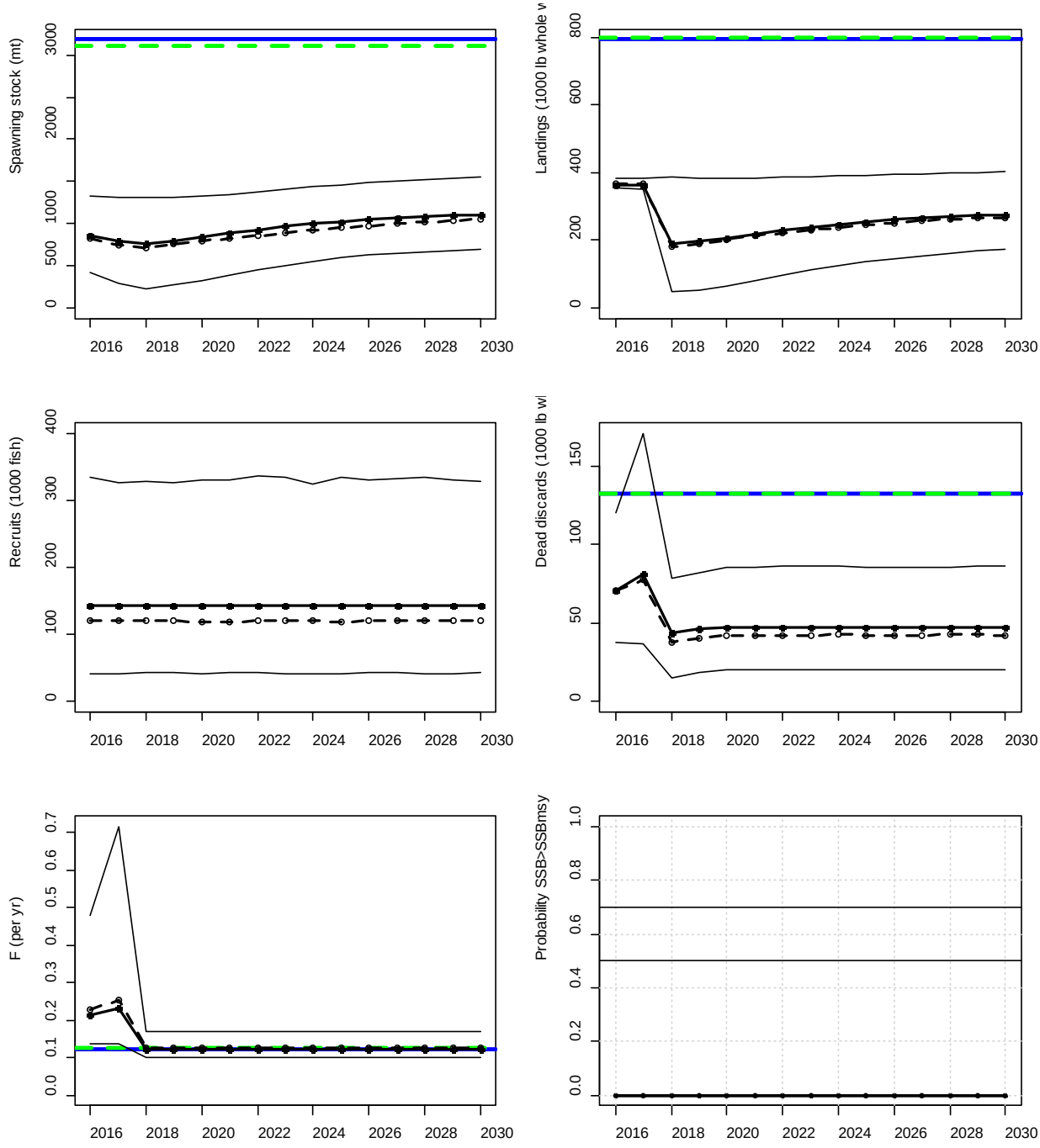


Figure 2. Scenario 2 projections results with F= $F_{REBUILD}$ starting in 2018 and low recruitment. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.

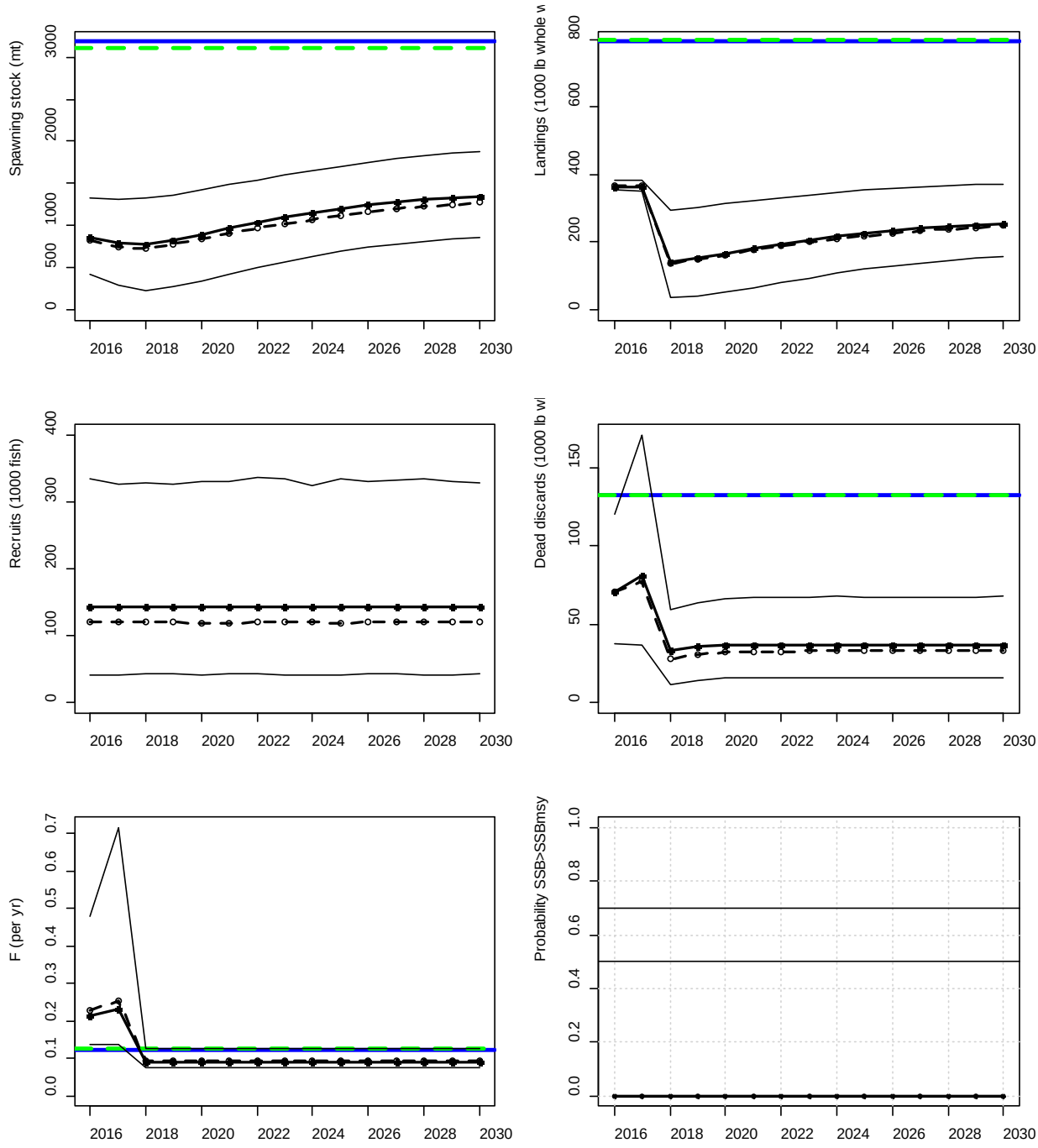


Figure 3. Scenario 3 projections results with F= F_{MSY} starting in 2018 and long-term expected recruitment. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.

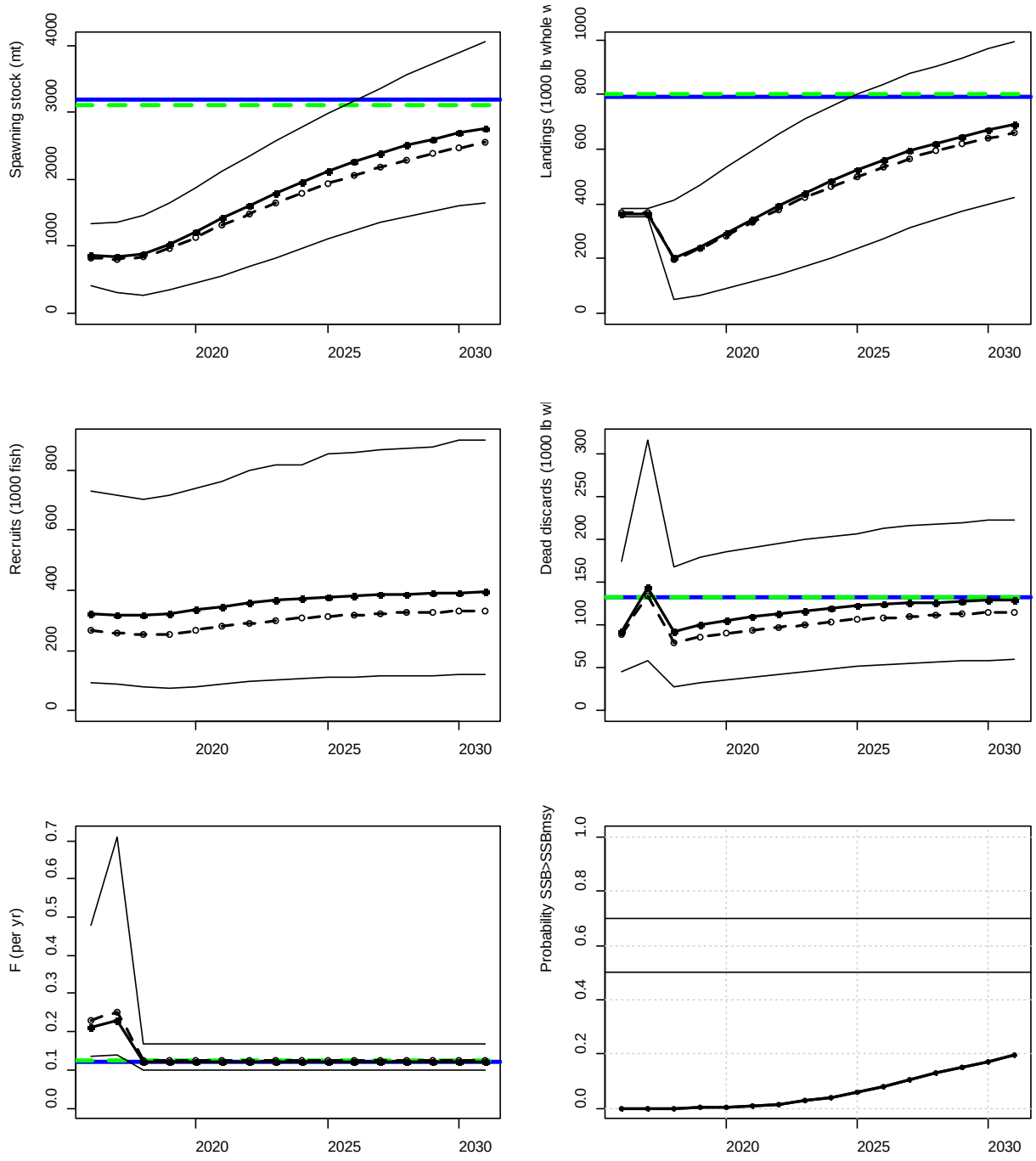
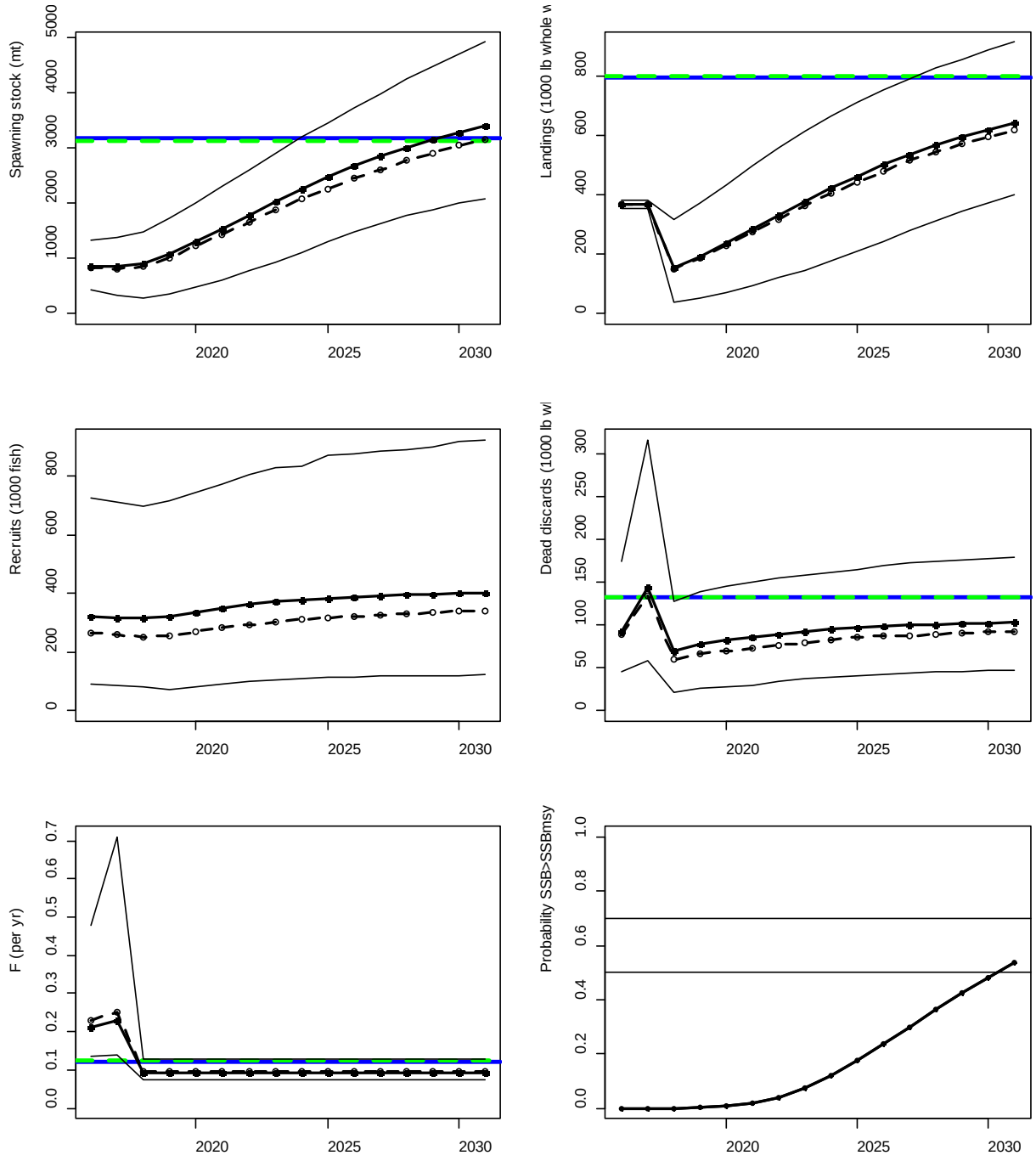


Figure 4. Scenario 4 projections results with F= $F_{REBUILD}$ starting in 2018 and long-term expected recruitment. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.



Appendix A. Memorandum requesting revised red grouper projections.

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL
4055 Faber Place Drive, Suite 201, North Charleston SC 29405
Call: (843) 571-4366 | Toll-Free: (866) SAFMC-10 | Fax: (843) 769-4520 | Connect: www.safmc.net

Dr. Michelle Duval, Chair | Charlie Phillips, Vice Chair
Gregg T. Waugh, Executive Director

June 23, 2017

MEMORANDUM

TO: Bonnie Ponwith
FROM: Gregg Waugh *GTW*
SUBJECT: Request for Revised Red Grouper Projections

The South Atlantic Council reviewed stock status and SSC recommendations for Red Grouper at its June 2017 meeting. Projections in the assessment consider management changes taking place in either 2017 or 2019. The Council is considering actions that could implement revised fishing levels in 2018. Therefore, the Council requests updated projections based on management actions taking place in 2018, addressing the following projection conditions:

1. Yield and stock conditions to 2030 based on fishing mortality rates of F_{MSY} (OFL) and 75% F_{MSY} ($F_{REBUILD}$), with recruitment based on the "low" recruitment scenarios presented in the assessment.
2. Yield and stock conditions projected to the year when the stock is rebuilt ($SSB>SSB_{MSY}$) based on fishing mortality rates of F_{MSY} (OFL) and 75% F_{MSY} ($F_{REBUILD}$), with recruitment based on the predicted values from the Stock-Recruitment relationship.
3. These fishing mortality rates will take effect in 2018.
4. For landings in 2016 and 2017, apply the same assumed values used in the original projections.
5. For each recruitment scenario, provide the full suite of projection outputs as provided in the SEDAR 53 stock assessment.

Please provide the requested projections to Council staff by noon on August 21, 2017 for inclusion in the Briefing Book for the September 2017 SAFMC meeting.

We appreciate your assistance in addressing this request. Please contact John Carmichael if you have any questions regarding these items.

cc: Council Members and Staff
Jack McGovern and Rick DeVictor
Monica Smit-Brunello
Theo Brainerd, Trika Gerard, and Erik Williams

Stock Assessment of Blueline Tilefish in US waters with emphasis on the region from the Florida Keys to Cape Hatteras

SEDAR Benchmark Assessment: Additional Projections 1

Southeast Fisheries Science Center

National Marine Fisheries Service

Last revision: November 13, 2017

Appendix II

Introduction

The document describes projections based on the SEDAR 50 Assessment Workshop ASPIC Base model for South Atlantic Blueline Tilefish (south of Cape Hatteras) as requested by South Atlantic Fishery Management Council staff. It has been written to complement previous documentation. For additional information please see the SEDAR 50 Assessment Workshop Report.

Methods

Projections from the ASPIC AW Base model were run to predict stock status and yield up to five years after the assessment (2016–2020). These procedures were similar to those presented in §4 of the SEDAR 50 Assessment Workshop Report. Two sets of projections are provided in this document:

1. $F_{2016} = F_{\text{current}}$, $F_{2017-2020} = F_{\text{P}^*_{30\%}}$
2. $F_{2016-2017} = F_{\text{current}}$, $F_{2018-2020} = F_{\text{P}^*_{30\%}}$

The value $F_{\text{P}^*_{30\%}}$ is the F associated with $P^* = 0.30$, where P^* is the allowable probability of overfishing in any single year (Shertzer et al. 2010). Standard calculations from other SEDAR assessments (e.g. SEDAR 53) were used to estimate the shift (proportion; P^*_{shift}) in the bootstrap F_{MSY} distribution that provides $P^* = 0.30$. The estimate of P^*_{shift} was 0.71, thus $F_{\text{P}^*_{30\%}} = 0.71 F_{\text{MSY}} = 0.103$.

Uncertainty in future time series was quantified through stochastic projections that extended the bootstrap fits of the stock assessment model. The data input to the projections includes the F and B time series from the observed base run and each bootstrap run, and the corresponding B_{MSY} and F_{MSY} values from each. Using the AW Base run, a single set of projections was supplied with B and F data matrices (i.e. rows = bootstrap run, columns = year) merging all runs from separate bootstrap analyses of the handline and longline runs (i.e. bootstrap runs of 55 and 56), as well as average B and F series (annual arithmetic mean from runs 55 and 56). ASPIC estimates yield using equation 6 of Prager (1994). Further details of the projection procedure used by ASPIC are provided in detail by the ASPIC User's Guide (Prager 2015).

Central tendencies were represented by the deterministic projections of the average B and F series, as well as by medians of the bootstrap projections. Precision of projections was represented graphically by the 10^{th} and 90^{th} percentiles of the replicate projections.

Results

Under these projection scenarios, the stock is neither overfished nor undergoing overfishing for years 2016-2021, whether considering the expected value or the median of the projections (Figures 1 and 2). The probability of $B >$ MSST was always ≥ 0.95 (Tables 1 and 2). These results are very similar to those reported in the AW Report for ASPIC projections at $F_{\text{target}} = 0.75 F_{\text{MSY}}$.

Discussion

Projections should be interpreted in light of the model assumptions and key aspects of the data. Some major considerations are the following:

- In general, projections of fish stocks are highly uncertain, particularly in the long term (e.g., beyond 5–10 years).
- Projections conducted in ASPIC only included uncertainty in indices, based on bootstrapping residuals, and did not include structural (model) uncertainty.
- $F_{\text{current}}$was assumed to be equal to the geometric mean F from the last three years of the assessment period (2013-2015).

References

Prager, M. H. 1994. A suite of extensions to a nonequilibrium surplus-production model. Fishery Bulletin **92**:374–389.

Prager, M. H., 2015. User's Guide for ASPIC Suite, version 7: A Stock-Production Model Incorporating Covariates and auxiliary programs. Prager Consulting, Portland, Oregon, USA.

Shertzer, K. W., M. H. Prager, and E. H. Williams. 2010. Probabilistic approaches to seeting acceptable biological catch and annual catch targets for multiple years: Reconciling methodology with National Standards Guidelines. Marine and Coastal Fisheries **2**:451–458.

Table 1. Projection results with fishing mortality fixed at the F value that provides $P^* = 0.30$, starting in 2017. For 2016 , $F = F_{\text{current}}$. F = fishing mortality rate (per year), $P(B > B_{\text{MSY}})$ = proportion of stochastic projection replicates exceeding B_{MSY}, $P(B > \text{MSST})$ = proportion of stochastic projection replicates exceeding MSST, B_{median} = median biomass (1000 lbs) estimate among projections, B = deterministic biomass (1000 lbs) estimate, Y = deterministic yield (1000 lbs) estimate, Sum Y = cumulative sum of deterministic yield (1000 lbs). Yield includes landings and dead discards. Note that observed dead discards were 1, 13 and 40% of total removals from 2013 to 2015 respectively.

Year	F(per yr)	$P(B > B_{\text{MSY}})$	$P(B > \text{MSST})$	B_{median}	B	Y	Sum Y
2016	0.134	0.77	0.95	1702	1606	215	215
2017	0.103	0.76	0.95	1682	1603	167	383
2018	0.103	0.78	0.96	1714	1647	172	554
2019	0.103	0.80	0.96	1739	1685	175	730
2020	0.103	0.81	0.96	1757	1718	178	908
2021		0.82	0.96	1771	1746		

Table 2. Projection results with fishing mortality fixed at the F value that provides $P^* = 0.30$, starting in 2018. For 2016 and 2017 , $F = F_{\text{current}}$. F = fishing mortality rate (per year), $P(B > B_{\text{MSY}})$ = proportion of stochastic projection replicates exceeding B_{MSY}, $P(B > \text{MSST})$ = proportion of stochastic projection replicates exceeding MSST, B_{median} = median biomass (1000 lbs) estimate among projections, B = deterministic biomass (1000 lbs) estimate, Y = deterministic yield (1000 lbs) estimate, Sum Y = cumulative sum of deterministic yield (1000 lbs). Yield includes landings and dead discards. Note that observed dead discards were 1, 13 and 40% of total removals from 2013 to 2015 respectively.

Year	F(per yr)	$P(B > B_{\text{MSY}})$	$P(B > \text{MSST})$	B_{median}	B	Y	Sum Y
2016	0.134	0.77	0.95	1702	1606	215	215
2017	0.134	0.76	0.95	1682	1603	215	430
2018	0.103	0.74	0.95	1668	1600	167	597
2019	0.103	0.76	0.96	1705	1644	171	769
2020	0.103	0.78	0.96	1733	1683	175	944
2021		0.80	0.96	1750	1716		

Figure 1. Plots of F, F/F_{MSY}, B, B/B_{MSY}, Y, and B/MSST for five year projections from ASPIC for the South Atlantic region with fishing mortality fixed at the F value that provides $P^* = 0.30$, starting in 2017. Solid circles represent values projected by the assessment model while open circles represent values produced by the projection code. The solid and dashed lines are the deterministic estimates and medians of the bootstrap projections, respectively. The blue error bands indicate 10^{th} and 90^{th} percentiles of the bootstrap trials.

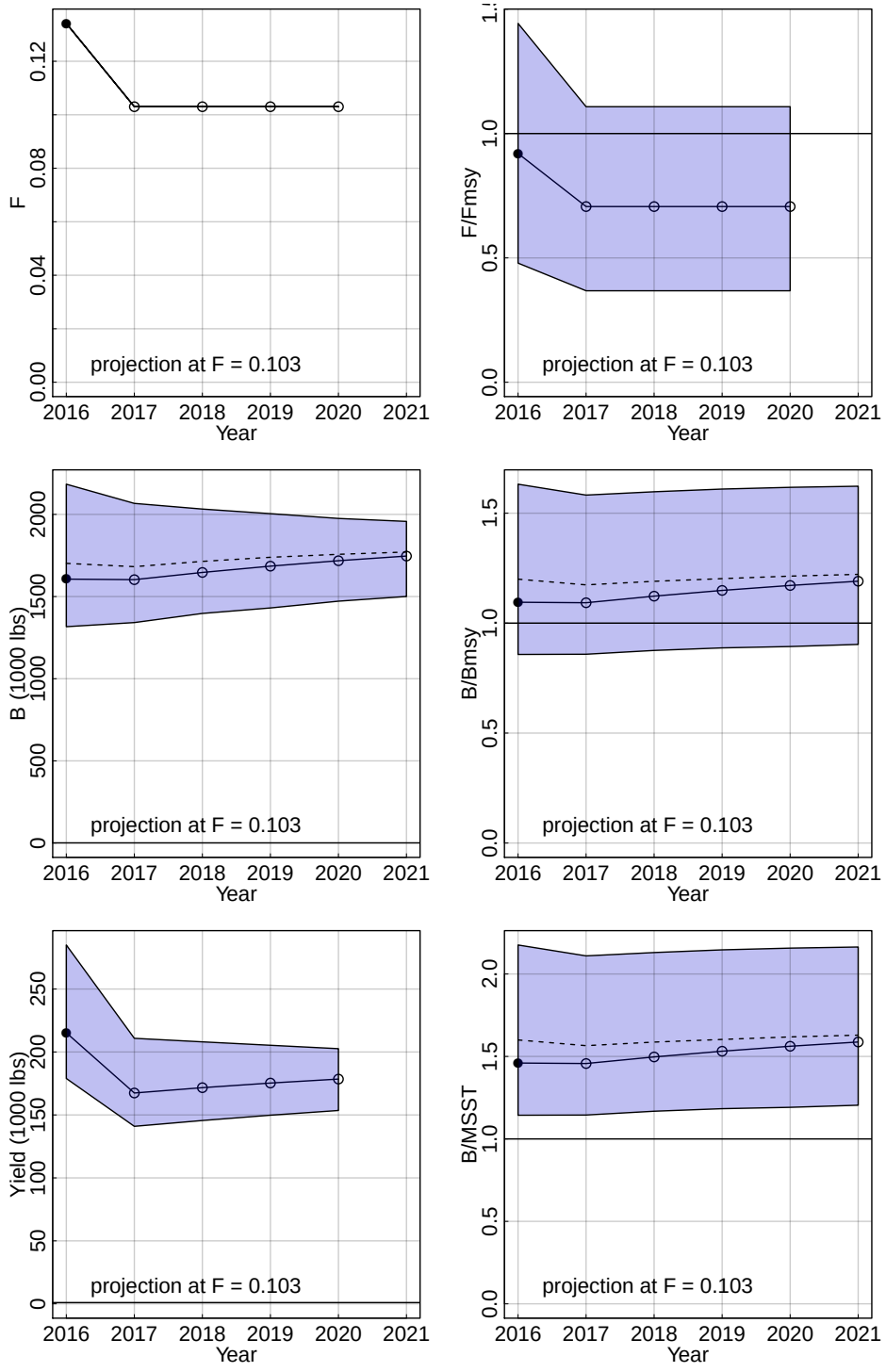


Figure 2. Plots of F, F/F_{MSY}, B, B/B_{MSY}, Y, and B/MSST for five year projections from ASPIC for the South Atlantic region with fishing mortality fixed at the F value that provides $P^* = 0.30$, starting in 2018. Solid circles represent values projected by the assessment model while open circles represent values produced by the projection code. The solid and dashed lines are the deterministic estimates and medians of the bootstrap projections, respectively. The blue error bands indicate 10^{th} and 90^{th} percentiles of the bootstrap trials.