SOUTH ATLANTIC FISHERY MANAGMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

SSC Meeting Report

April 28 - 30, 2015

Crowne Plaza
North Charleston, SC

Version: FINAL with Addenda
May 27, 2015

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*** Indicates documents not available for the first Briefing Book. These will be distributed as they become available.**

TABLES:

SAFMC PUBLIC COMMENT PROCESS

Written comment:

Written comment on SSC agenda topics is to be distributed to the Committee through the Council office, similar to all other Council briefing materials. Written comment to be considered by the SSC shall be provided to the Council office no later than one week prior to an SSC meeting. For this meeting, the deadline for submission of written comment is 12:00 pm Tuesday, April 21, 2015.

SAFMC
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Oral comment:

Two opportunities for comment on agenda items will be provided during SSC meetings. The first will be at the beginning of the meeting, and the second near the conclusion, when the SSC reviews its recommendations. Those wishing to comment should indicate such in the manner requested by the Chair, which may be through a show of hands or a written list if the number of interested parties is extensive, who will then recognize individuals to come forward and provide comment. All comments are part of the record of the meeting.

1. INTRODUCTION

1.1. Documents

Agenda
Attachment 1. Minutes of the October 2014 meeting

1.2. Action

- Introductions
- Review and Approve Agenda
- Approve Minutes

The SSC meeting was called to order at 1:00p.m., as scheduled.

The agenda was adopted without change and the minutes of the October 2014 meeting were adopted without further comment or changes. Member introductions were made. The Chair reviewed the agenda and outlined the general format and conduct of the meeting as discussed in the overview document.

2. PUBLIC COMMENT

The public will be provided two opportunities to comment on SSC agenda items during this meeting. The first at the start of the meeting, and the final will be provided at the end during the review of recommendations. Those wishing to make comment should indicate their desire to do so to the Committee Chair.

Accordingly, at this point in the meeting the Chair opened the floor for the first opportunity for public comment. Public comments were provided by Captain Russell "Rusty" Hudson (Directed Sustainable Fisheries).

3. 2014 LANDINGS AND ACLS

3.1. Documents

none

3.2. Presentation

Landings and ACLs: Mike Larkin, SERO, via Webinar

3.3. Overview

The SSC will be provided an update on 2014 landings, catch limits, and application of accountability measures.

3.4. Action

- Review and comment, with attention toward any ABC recommendation updates.
- Consider assessment schedule and research plan implications

SSC RECOMMENDATION:

The SSC received a report on the 2014 landings, catch limits, and application of accountability measures by Dr. Mike Larkin, NMFS-SERO. The Committee did not have any specific comments or suggestions regarding this item.

4. SPINY LOBSTER REVIEW PANEL RECOMMENDATIONS

4.1. Documents

Attachment 2. Spiny Lobster Review Panel Report

4.2. Overview

Spiny Lobster Amendment 10 (2011) designated the spiny lobster OFL at 7.9 million pounds (mp) and the ACL at 7.32 mp. The accountability measure for spiny lobster was to convene a review panel if landings exceeded the annual catch target of 6.59 mp. In the 2013-14 fishing year, spiny lobster landings were 7,923,969 lbs.

In February 2015, the Spiny Lobster Review Panel met to review landings, discuss fishery conditions, and make recommendations to the Councils. Additionally, NMFS notified the South Atlantic and Gulf Councils that spiny lobster landings had exceeded the OFL in 2013-14, but were not projected to exceed the OFL, ACL or ACT in 2014-15. The letter directed the Councils to closely monitor landings and consider changing the management measures if the ACL is exceeded more than once in a four-year period.

Council staff will present recent spiny lobster landings in addition to the recommendations from the spiny lobster review panel.

4.1. Action

- Consider assessment schedule & research plan implications

SSC RECOMMENDATION:

The SSC reviewed the Spiny Lobster Review Panel report. The Committee did not have any specific comments or suggestions regarding this item.

5. MRIP CALIBRATION AND TRANSITION UPDATE

5.1. Documents

Attachment 3. MRIP Calibration Workshop II Report

5.2. Overview

MRIP Calibration Workshop II was held September 8 – 10, 2014, to address changes in the APAIS component. The final report was recently completed. MRIP is also conducting an intensive planning effort addressing transition to a new effort survey methodology during the next several years.

5.3. Action

- Consider assessment schedule and research plan implications

SSC RECOMMENDATION:

The SSC received an overview and update on the September 2014 MRIP Calibration Workshop as well as the current effort to transition to a new MRIP effort survey methodology. The Committee appreciated the update, overview and discussion but did not have any specific comments or suggestions regarding these items.

6. GEOGRPAHIC RANGE OF THE SEDAR 32 TILEFISH ASSESSMENT

6.1. Documents

Attachment 4. SEDAR 32 blueline tilefish assessment
Attachment 5. Landings update/compilation (from Mike E)
Attachment 6. MAMFC Emergency Rule Request
Attachment 7. Blueline Tilefish Population Dynamics Report to VMRC

6.2. Presentations

Data overview for the Northeast Region: Kevin Craig, SEFSC & Jason Didden, MAFMC
ODU life history Study: Cynthia Jones, ODU

6.3. Overview

In response to information put forth through the Mid-Atlantic council, and recent landings developments in the mid-Atlantic region, the Council directed that the SSC consider the geographic range represented by the SEDAR 32 blueline tilefish assessment, by approving the following motion in March 2015:

DIRECT THAT THE SSC DETERMINE, AT ITS APRIL 2015 MEETING, THE GEOGRAPHIC RANGE COVERED BY THE SEDAR 32 ASSESSMENT. IF WARRANTED, REQUEST EMERGENCY ACTION TO EXTEND

REGULATIONS PROPOSED IN AMENDMENT 32, ONCE THE AMENDMENT IS APPROVED, TO THE AREAS THAT THE SSC CONSIDERS ARE REPRESENTED BY THE STOCK ASSESSMENT.

To support this discussion, the committee is provided with:

- the SEDAR 32 assessment,
- A recent report on Blueline tilefish population dynamics conducted by ODU and submitted to the VMRC. Note that authors will also be providing a presentation at the meeting
- A letter from the MAMFC requesting Emergency Action on blueline tilefish, which includes their justification to support the request.
- A summary of stock structure discussions during SEDAR 32 and post-assessment landings information prepared by Council staff

6.4. Action

- Recommend stock geographic range represented by the SEDAR 32 assessment.
- Consider assessment schedule and research plan implications

SSC RECOMMENDATION:

The SSC reviewed the background documents and presentations provided for this agenda item and after much discussion concluded that the SEDAR 32 assessment applies to the entire coast-wide blueline tilefish stock and that the SEDAR 32 assessment is considered the best scientific information available (BSIA) at the time it was produced.

The most compelling piece of information in support of this decision is evidence that recent commercial landings reported in areas north of North Carolina were harvested from the same fishing areas as landings from earlier years included in the stock assessment (i.e., the areas of harvest are similar even though landings locations have changed).

Comments and discussion points brought up during the SSC meeting included:

- *Since the shift in the location of landings in 2014 still corresponds to the same fishing locations pre-2014 the perceived higher fishery productivity north of North Carolina does not seem to be due to a different blueline tilefish stock but rather to a shift in landings locations. In other words, the issue seems to be more of a jurisdictional nature than scientific or biological.*

- *The SSC recommends that the SEDAR 32 blueline tilefish assessment be updated, to better understand how landings since the terminal year are impacting the stock. The update should consider changes in the fishery that could be causing changes in selectivity and catchability. Future assessments will likely face additional uncertainty due to the lack of sampling in the Mid-Atlantic area and the strict*

regulations in the South Atlantic area, and the assessment approach may have to be modified if there are changes made to the management unit. The SSC notes that including 2015 data in an update could pose a challenge to the existing schedule. The Committee suggests that MAFMC SSC members be invited to participate in the next assessment review.

- *Due to concerns over the magnitude of the blueline tilefish 2014 preliminary landings relative to the landings used in the projections as well as the value of MSY estimated by the assessment the SSC would like to further discuss the projections prior to the 2015 June Council meeting. Accordingly, a webinar meeting has been scheduled for June 3rd.*

7. SEDAR ACTIVITIES

7.1. Documents

Attachment 8. SEDAR schedule & 2016 Plan
Attachment 9. SEDAR Data Best Practices Project Overview
Attachment 10. SEDAR Updates package
Attachment 11. FWC project proposals*

7.2. Overview

Planning is underway for A SEDAR procedures workshop to develop best practices for data. The workshop will be held June 22-25 at the SEFSC in Beaufort, NC. SSC participation, 1-2 representatives, is desired on the Best Practices Panel. Members may also participate in the Technical groups.

SEDAR 41, South Atlantic red snapper and gray triggerfish, is underway with a data workshop scheduled for August 4 – 6. A report on the headboat data evaluation will be provided later in this meeting.

FL FWCC will conduct the next assessments of black grouper, yellowtail snapper and Goliath grouper. Black grouper and yellowtail snapper are being considered for transition to another software package. The SSC will receive a report from FWCC on the process and decisions necessary for the change in model package, and is asked to consider whether the change can be accommodated using the standard process, or whether a benchmark is required. The Steering Committee has authorized Council SSCs, as the peer review body for standard assessment and the group charged with making fishing level recommendations based on assessments, to determine when the changes proposed for a standard process are excessive and therefore a benchmark process should be applied.

MRIP Transition
The MRIP program is in the process of transitioning the effort survey from telephone to mail approach. A multi-agency transition team has met regularly over the last 6 months to develop a transition plan, which was recently submitted to agency leadership for

consideration. The plan recommends side by side data collection for 3 years (2015-2017), development of calibrations for the new survey method by 2017, and incorporation of calibrated values into assessment and regulations processes beginning in the latter part of 2017. Assessment scheduling in the latter half of 2017 through 2018 is expected to be affected by this change, with effort potentially directed toward updates of those stocks most affected.

The current schedule of South Atlantic assessments is provided in Table 1. This differs from the version last provided to the Council in March 2015, by including changes in the timing of red grouper, Goliath grouper and black grouper requested by SEFSC and FL FWCC. The Committee is also advised that the Council has recommended conducting stock identification studies before conducting first time benchmark assessments, which could affect plans for scamp and gray triggerfish.

Table 1. SAFMC Assessment Project Schedule, based on latest SEDAR planning update.

Plan Year	SEDAR #	Stocks	Approach	Terminal Data	Assessment Complete	Lead Agency
2013	U	Mutton snapper	Update	2012	April 2015	FL FWCC
2015	41	Red snapper & Gray triggerfish	Benchmark	2014	April 2016	SEFSC
2016	U	Blueline tilefish	Update	2015	Jan 2017	SEFSC
		Red grouper	Update	2015	Jan 2017	SEFSC
	47	Goliath grouper	Benchmark	2014	Jun 2016	FL FWCC
	48	Black grouper	Standard	2014	Aug. 2016	FL FWCC
Future Priorities – 2017 and Beyond						
2017	U	Tilefish*	Update	2015	TBD	SEFSC
	B	Scamp & Gray snapper 2017	Benchmark			SEFSC
	U	Vermilion*, GAJ	Update			SEFSC
	S/B	Yellowtail Snapper	TBD	2016	Mid-2018	FL FWCC
*	Indicates stocks prioritized for assessment sooner than scheduled here, should an opportunity arise.					

7.3. Action

- Review the revised SEDAR 41 schedule and consider if changes are needed in SSC representation.
- Review red grouper update TORs
- Review black grouper and yellowtail snapper proposals and TORs, recommend whether these assessments are conducted through the standard or benchmark process
- Consider SSC representation at the SEDAR Data Best Practices Procedure Workshop
- Review SAFMC assessment priorities and provide guidance

SSC RECOMMENDATION:

The SSC reviewed and approved the SEDAR 41 project schedule.

Steve Cadrin volunteered to replace Jim Berkson on the SEDAR 41 Review Workshop Panel.

The SSC reviewed TORs for the red grouper update. The Committee discussed the pros and cons of including video survey data and conducting this assessment as an Update or a Standard. Considering that red grouper are well sampled by chevron traps and that a longer time series of chevron trap data already exists, the Committee recommended conducting red grouper through the update approach as planned. TORs were approved as provided.

To address the recent addition of video data, the Committee recommended convening a workshop to develop standard methods for incorporating video survey information into multiple species. The workshop should consider methods to calibrate video and trap surveys, use of ancillary information such as catchability available from the video, and the potential to derive combined indices that integrate both survey gears.

Carolyn Belcher volunteered to serve as an SSC representative in the SEDAR Data Best Practices Procedure Workshop.

8. SOUTHEAST REEFFISH SURVEY UPDATE

8.1. Documents

Attachment 12. SERFS Report*

8.1. Presentation

SERFS Sampling Update: Marcel Reichert, SC DNR

8.2. Overview

The Committee will receive an update on SERFS sampling effort and results through 2014.

8.3. Action

- No specific actions required.

SSC RECOMMENDATION:

The SSC appreciated the update and overview of the latest developments and results regarding the Southeast Reef Fish Survey provided by Marcel Reichert. The Committee did not have any specific recommendations or suggestions regarding this item.

9. SOCIO-ECONOMIC PANEL REPORT

9.1. Overview

Attachment 2. SEP Agenda

9.2. Documents

The SEP will meet prior to this SSC meeting. A general report will be given on the meeting, while specific recommendations will be discussed under the appropriate SSC agenda item.

SSC RECOMMENDATION:

The SSC received a brief verbal report by SEP Chair John Whitehead. Recommendations of the Social and Economic Sciences Panel (SEP) are presented in the SEP written report attached to the end of this report (Appendix 1).

10. SEFSC HEADBOAT DATA EVALUATION

10.1. Documents

NONE

10.2. Presentation

Evaluation effort and progress: TBD, SEFSC

10.3. Overview

The Committee will receive a progress report on SEFSC efforts to evaluate and address concerns raised regarding the reliability of historical headboat data records.

10.4. Action

- None required

SSC RECOMMENDATION:

The SSC received an overview presentation on the status of the headboat data evaluation by Amy Schueller, NMFS-SEFSC. Although the Committee appreciated the presentation by Dr. Schueller, the group felt that a presentation by a SEFSC staff person more involved in the headboat data evaluation process would have been more informative.

11. SEFSC ASSESSMENT PROGRAM REVIEW

11.1. Documents

Attachment 13. SEFSC Assessment Program Peer Review Report
Attachment 14. SEFSC Response to Peer Review

11.2. Overview

A review of the SEFSC assessment program was conducted in July 2014.The peer review report and SEFSC response is available, and is provided to the committee for review and comment

11.3. Action

- Review and comment on the findings and response

SSC RECOMMENDATION:

The SSC reviewed and discussed the SEFSC Assessment Program Peer Review Report. The most relevant comments, concerns, and discussion points brought up during the SSC meeting included:

- *The SSC recommends improving communication with the SEFSC in regards to stock assessments and the ABC Control Rule.*
- *The SSC strongly supports adopting peer reviewed methods that can be used to develop pre-approved, standard operating procedures that can be used routinely as part of SEDAR assessments. This could help reduce much of the assessment review process (CIE especially) saving both time and money.*
- *The review panel's suggestion that management strategy evaluation (MSE) be incorporated in the SEDAR process is well taken. However, since these more detailed analyses would be conducted by the same SEFSC analysts doing the routine assessments it is likely that this would lengthen and slow down the SEDAR process (which is already considered by some as too long and slow).*
- *The review panel suggested incorporation of environmental data in the routine assessments. The SSC agrees and suggests expanding this effort to also include habitat variables such as sediment type, bottom ruggosity, etc.*
- *The SSC suggests that SEFSC hold annual meetings with the SSC to compare and discuss respective research and data need priorities, as was done in the past.*

12. MUTTON SNAPPER ASSESSMENT REVIEW

12.1. Documents

Attachment 15. Mutton Snapper Assessment

12.2. Overview

An assessment of mutton snapper was recently completed by the FL FWCC. The SSC is asked to review the assessment and provide fishing level recommendations. The stock is managed jointly by the Gulf and South Atlantic Councils.

The assessment was reviewed by the Gulf SSC in March 2015, at which time they accepted it as best available scientific information. Since 82% of the mutton ABC is allocated to the South Atlantic jurisdiction, the Gulf SSC consents to the SAFMC SSC taking the lead on developing fishing level recommendations, and plans to review the SAFMC SSC recommendations at their next meeting in May.

12.3. Presentation

Assessment Overview: Joe O'Hop, FL FWCC

12.4. Action

- Review the assessment and consider whether it represents Best Scientific Information Available.
- Identify and discuss assessment uncertainties
- Provide fishing level recommendations

SSC RECOMMENDATION:

The SSC reviewed the mutton snapper SEDAR 15A assessment update conducted by Florida FWC. The Committee consensus was that the update represents the best scientific information available and can, therefore, be used to provide management advice.

Specific comments and discussion points brought up during the SSC meeting included:

- *The SSC expressed concern that, despite improvements in the data streams and the fact that the analytical team tried to follow CIE reviewer recommendations from the previous assessment, a few problems either developed or worsened during the update:*
    - *Patterns in residuals for some of the indices and the commercial discards.*
    - *Poor fit to the age composition.*
    - *Problems estimating selectivity for some of the fleets.*
- *However, the change in magnitude of the MSY estimate between the prior and this assessment seems to reflect improvements in how the update model handles fishing mortality and selectivity (i.e., improved selectivity estimates prevent the assumption of a large cryptic biomass as observed in SEDAR 15A).*

Since this assessment falls under Tier 1 of the SAFMC ABC control rule, ABC was obtained according to a P value. A summary of results from applying the ABC control rule is presented below:*

1. *<u>Assessment Information</u>: Tier 2 (-2.5%): an SPR-based proxy was used for MSY benchmarks.*
2. *<u>Uncertainty</u>: Tier 3, medium (-5.0%): many of the uncertainties are well documented but did not seem to take into account problems with fitting the indices and the age comps.*
3. *<u>Stock Status</u>: Tier 2, Not Overfished, No Overfishing is occurring but stock may be in close proximity to benchmark values (-2.5%).*
4. *<u>Productivity-Susceptibility Analysis</u>: High Risk (-10%): based on the MRAG report.*

In total, these results provide for an adjustment score of 20%, and a P of 30%. The SSC recommends using 5-year projections at P*=50% for OFL and at P*=30% for ABC.*

The SSC pointed out that this assessment still has to go to the Gulf SSC to be finalized before actual fishing level recommendations can be implemented.

Table 2. Mutton Snapper recommendations

Criteria	**Deterministic**	**Probabilistic**
Overfished evaluation	Not overfished: SSB/MSST=1.12	
Overfishing evaluation	Not overfishing: $F/F_{30\%SPR}$=0.65	
MFMT ($F_{30\%SPR}$)	0.18	
$SSB_{30\%SPR}$ (lbs females)	4,649,200	
MSST (lbs females) (1-M(SSBmsy); M=0.11)	4,137,700	
Y at $F_{30\%SPR}$ (MSY proxy, lbs)	912,500	
Y at $F_{40\%SPR}$ (lbs)	874,000	
ABC Control Rule Adjustment		20%
P-Star		30%

OFL RECOMMENDATIONS				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number
2014	664,876	30,708	113,300	17,341
2015	664,877	44,496	125,245	25,215
2016	713,492	54,005	148,995	29,298
2017	751,711	55,962	164,150	29,660
2018	793,823	56,994	173,656	30,071
2019	835,318	58,170	180,716	30,430
2020	850,077	58,857	184,868	30,780

ABC RECOMMENDATIONS				
Year	Landed LBS	Discard LBS	Landed Number	Discard Number
2014	664,900	30,700	113,300	17,300
2015	664,900	44,800	125,800	25,400
2016	692,000	52,800	145,400	28,600
2017	717,200	53,700	157,500	28,400
2018	746,800	53,900	164,500	28,300

2019	774,400	54,400	169,300	28,300
2020	798,300	54,500	172,700	28,300

13. RIGHT WHALE MONITORING AND BIOLOGICAL OPINION

13.1. Documents

None

13.2. Presentation

Monitoring and Biological Opinions: SERO/Protected Resources via webinar

13.3. Overview

At the previous meeting, the SSC directed that a representative of the protected resources branch attend this meeting and brief the SSC. It was requested that the presenter provide clarification on the Biological Opinion process including the types of analyses considered, as well as the role of the SSC and types of recommendations and peer review that are expected of the SSC with regards to the analyses that support Biological Opinions and Council actions which may impact protected resources.

13.4. Action

- None required.

SSC RECOMMENDATION:

The SSC appreciated the overview presentations provided by NMFS Protected Species staff. The Committee did not have any specific recommendations or suggestions regarding this item.

14. SNAPPER GROUPER REGULATORY AMENDMENT 16

14.1. Documents

Attachment 16. Regulatory Amendment 16 Summary
Attachment 17. Evaluation of RA16 alternatives – March 31, 2015
Attachment 18. Whale Wintering Habitat Model

14.2. Overview

Regulatory Amendment 16 includes two actions to address the prohibition on the use of black sea bass pots that was implemented through Regulatory Amendment 19 and became effective on October 23, 2013. The first action has alternatives that modify the closure based on variations of time, area, and depth. The second action modifies black

sea bass pot gear strength and marking requirements that could make the gear less likely to get entangled with northern right whales, as well as be able to identify gear as South Atlantic black sea bass pot gear if it is recovered from a whale. Scoping meetings were held in January 2014 and the Council reviewed alternatives at the March 2014 meeting and provided guidance on changes and additional alternatives to include. The SSC reviewed a presentation of the alternatives evaluation in October 2014 and provided comment. The Council reviewed revised analyses in December 2014 meeting, and received a background and process presentation from the Protected Resources Branch. At the March 2014 meeting the Council reviewed additional biological and economic analyses of the alternatives. They did not review the revised SERO analysis of the alternatives. Public hearings will be held in August 2015, and the amendment will most likely be approved for submission to the Secretary of Commerce at the Council's December 2015 meeting. The SSC is asked to provide technical review of the revised analyses prepared by Southeast Regional Office staff, as well as the biological and economic analyses of the two actions.

SSC recommendations from October 2014 regarding Regulatory Amendment 16:

The SSC reviewed the analysis of Regulatory Amendment 16 alternatives conducted by SERO staff. The most relevant comments, concerns, and discussion points brought up during the SSC meeting included:

- The SSC expressed concern about the lack of detail in uncertainty characterizations in the analysis. Several sensitivity runs were conducted to evaluate major uncertainties. However, the Committee expressed concern with the ability to discern differences between management alternatives given the information provided. The Committee advised that further exploration and reporting of within-model uncertainties would improve insight into the variability associated with model parameters and help to distinguish between the different alternatives considered. The SSC recognizes that conducting a more complete, in-depth uncertainty characterization would provide a more robust picture of the proposed management alternatives given the amount of uncertainty in model outputs. At the very least it would be useful to explore uncertainty in a subset of runs and give a better picture of how well this analysis can distinguish between alternatives.
- Dr. Nick Farmer explained that rerunning the original model using bootstrapping or MCMC technique is not feasible given the current timeline for the amendment. However, the SSC recommended clearly defining this particular deficiency in the analysis such that the Council understands that the ranking of considered alternatives might not hold true if a full uncertainty analysis was undertaken.

Overall, the SSC felt the presentation was informative. The approach of ranking the alternatives on a relative scale was supported. Inferring that the analysis evaluates and quantifies risk to whale encounters was not supported. With some refinement, directed at providing information on error associated with estimated scalar values for the alternatives, the analysis could allow the Council to distinguish between the different alternatives.

The SSC cautioned that assuming model output of co-occurrence between black sea bass pot effort and whale sightings is a proxy for whale interaction or entanglement overstates model and data capabilities. The Committee recommended presenting the scalar as a dimensionless value to avoid potential misunderstandings and misuse of the term 'risk'.
In terms of next steps regarding this issue the SSC provided the following recommendations:

1. Convene an SSC ad hoc sub-Committee to advise Dr. Nick Farmer (SERO) on uncertainty analyses to more reliably distinguish between alternatives.

2. The SSC recommends an analysis of relative sea bass gear-whale sighting encounter scalar values (relative to alternative 2) that consider historic as well as current levels of effort.

3. The SSC also requested that a staff member from NMFS Protected Resources Division attend the next SSC meeting to address Committee questions and clarify how these types of analyses are used to create a Biological Opinion and guide management.

14.3. Presentation

Analysis of RA 16 Alternatives: Nick Farmer, SERO, via Webinar
Amendment Overview: Brian Cheuvront, SAMFC Staff

14.4. Action

- Consider whether SSC comments of October 2014 are addressed in the revised alternatives analysis
- Recommend whether the revised SERO analysis of RA16 alternatives represents BSIA
- Comment on biological, social and economic analysis in RA16.

SSC RECOMMENDATION:

The SSC reviewed and discussed the revised analyses of RA16 alternatives provided by Dr. Nick Farmer. Regarding the three action items listed above the SSC provides the following recommendations:

- *The revised analyses address concerns raised by the SSC during the Oct 2014 meeting.*
- *The SSC agrees that this analysis should be considered BSIA.*
- *The SSC agrees that the analysis only characterizes the co-occurrence of whales and black seabass pots as relative risk, not actual risk or percent risk of entanglement.*

Further, the SSC suggested that a characterization of the nature of how the black seabass pot fishery is processed should be done and included in the amendment. The SEP has specific recommendations in its report (Appendix 1 to this report) to that

effect regarding pricing and behavior. The Committee also suggested that the Council be provided with the analysis done by Council staff of the empirical data to supplement the analysis done by SERO staff.

15. SNAPPER GROUPER AMENDMENT 36

15.1. Documents

Attachment 19. Amendment 36 Public Hearing Document

15.2. Overview

The Council is considering the following actions in Amendment 36:

- Specify a process for identifying spawning sites for snapper grouper species, including speckled hind and warsaw grouper, based on the characteristics of sites important for spawning (bottom topography, current systems, etc.).
    - Purpose: Document spawning events in protected areas and characterize these protected areas in terms of bottom topography, habitat, fish occurrence, fish spawning, oceanography, etc.)
    - How measure success/working? By documenting spawning events in the protected areas using a combination of citizen science and fishery independent sampling (e.g., MARMAP)
- Currently Spawning SMZs would only consider prohibiting fishing for and/or possession of snapper grouper species (species in the snapper grouper fishery management unit). Transit would be allowed; anchoring would be prohibited
- During public hearings, the public is encouraged to suggest sites that could be considered. The scoping document did not include any proposed sites/areas. The public hearing draft includes sample sites/areas (based on public input from scoping, as well as additional information), and the final amendment would specify proposed Spawning SMZ sites.
- Explore placement of artificial reefs on appropriate bottom type within existing MPAs to target warsaw grouper, speckled hind, and other snapper grouper species.
- Action 7 proposes to move the Existing Charleston Deep Artificial Reef MPA 1.4 miles to the Northwest to match the boundary of the permitted site.

The Spawning SMZ approach would not make any changes to the existing MPAs. The Council is developing a System Management Plan (SMP) to specify the outreach, law enforcement, and monitoring/research projects (with cost estimates) necessary to effectively monitor and evaluate the existing MPAs. The goal of the plan is to protect spawning fish and allow them to spawn.

15.3. Presentation

Public Hearing Document: Gregg Waugh, SAMFC

15.4. Action

- What monitoring should be specified in the SMP to document spawning?
- What research should be specified in the SMP to characterize these sites?

SSC RECOMMENDATION:

The SSC received an overview presentation on Snapper-Grouper Regulatory Amendment 36 from Gregg Waugh. The most relevant SSC comments, concerns, and discussion points included:

- *The SSC asked the objective of establishing SMZs (monitoring/research should be aimed at whether or not the objective is met). Gregg's reply was that the objective was to detect and protect spawning fish.*
- *The current sample size is small (i.e., the number of sites and trips surveyed for spawning activity), but sampling needs to continue and should be expanded. The smaller the area the more difficult it will be to obtain samples.*
- *North of the Florida Keys, spawning by snapper-grouper species seems to be characterized by groups of individuals, not 'true spawning aggregations.' This needs to be properly articulated to stakeholders and the public so expectations of success are not unrealistic.*
- *The SSC suggests that intensive/high resolution ichthyoplankton sampling be conducted in cooperation with MARMAP at the SMZ sites during the spawning season of target species to detect the presence of spawning. Also, deploy satellite-tracked drifters for a better understanding of circulation on the Spawning SMZ sites. This will allow evaluation of where the larvae are being transported to or retained for the site, and to put circulation at the site in the larger regional circulation context.*
- *Exercise caution when organizing a citizen science program to ensure that valid collection procedures are followed.*
- *Continue multi-beam sonar mapping to connect these regions by mapping the reefs between them.*
- *WHOI and UMASS Dartmouth have a lot of experience using underwater camera equipment to monitor marine resources, as well as underwater ROVs.*
- *Interview people who were around when speckled hind and Warsaw grouper were more abundant to get an idea of where they were historically caught to focus monitoring efforts.*
- *Physical oceanographers and SECOORA have autonomous underwater vehicles for monitoring ocean characteristics and may be willing to put passive devices on their AUVs to help monitor fishery resources.*

16. NMFS STOCK STATUS DETERMINATION PROCESS

16.1. Documents

None

16.2. Overview

The Committee requested that the agency provide clarification on stock status determinations, with attention to the role of the SSC, Peer Review panels, and the agency in evaluating assessments and other sources of information to determine status.

16.3. Presentation

Stock Status Determination: Mike Larkin, SERO & Karen Greene, HQ

16.4. Action

- None required

SSC RECOMMENDATION:

The SSC received an overview presentation on NMFS stock determination process from Dr. Mike Larkin, NMFS-SERO. The most relevant SSC comments, concerns, and discussion points included:

- *There is an issue of how to apply the ABC Control Rule if the SSC does not actually determine the stock status, NMFS does.*
- *Perhaps the SSC needs to wait until a final letter is sent from SERO with the official stock status determination before the P* and ABC are calculated.*
- *Alternatively, SSC can proceed as they have been, and if they are overruled in terms of stock status, then that would be grounds for the Council to rescind the ABC for SSC reconsideration.*

17. HOGFISH PROJECTIONS

17.1. Documents

Attachment 20. Hogfish assessment
Attachment 21. Hogfish projections*

17.1. Presentation

Hogfish projections: Dustin Addis, FL FWCC

17.2. Stock Status Determination: Mike Larkin, SERO Overview

The SSC reviewed assessments for the GA/NC and SE/FL Keys stocks of hogfish in October 2014, and concluded that the Southeastern Florida/Florida Keys stock was overfished. Council requested rebuilding projections for the East Florida/Florida Keys stock of hogfish.
The Gulf of Mexico Council SSC reviewed hogfish in October 2014, and accepted the assessment of West Florida Hogfish as best scientific information. Since only a small portion of the SE/FL Keys stock extends into GMFMC jurisdiction, the Gulf SSC voted to allow the OFL and ABC discussion for this stock to be led by the South Atlantic Council.

17.3. Action

Review the hogfish projections and consider

- Do the projections represent BSIA?
- What are the projection uncertainties, and how might they affect rebuilding efforts and strategies?
- Does the SSC have any other guidance for the Council on rebuilding strategies?

SSC RECOMMENDATION:

The SSC reviewed the hogfish projections produced by the Florida FWC as a follow up to the SEDAR 37 assessment. The Committee consensus was that these projections represent the best scientific information available and, therefore, can be used to provide management advice.

Specific comments and discussion points brought up during the SSC meeting included:

- *As with all projections, these rebuilding times are dependent on management decisions, the stability of the assumed selectivities, and the stability of the population dynamics estimated by the model.*
- *Also, recruitment and discard rates may not be as assumed in the projections, which will affect the projected rebuilding timeline.*
- *Spatial and temporal changes in the fishery due to management, etc. may affect the dynamics assumed in the projections (Baranov catch equation).*
- *Projections are always uncertain in the long-term, especially beyond 5 years.*

A report presenting detailed projection results is attached at the end of this report (Appendix 2).

18. CONSIDERATION OF STOCK TRIGGERS OR RUMBLESTRIPS

18.1. Documents

Attachment 22. Scientific Uncertainty Subcommittee Report

18.2. Overview

At the March 2015 meeting, the Council requested that the SSC consider application of stock triggers or rumble-strips for South Atlantic stocks. The topic was raised during the mackerel committee, but the consideration should be extended to all managed species.

18.3. Presentation

Overview: Mike Errigo

18.4. Action

- Review and provide guidance the use of triggers or other indicators

SSC RECOMMENDATION:

The SSC received an overview presentation on stock triggers and rumble-strips provided by Mike Errigo as well as a summary discussion about the development and potential use of rumble-strips in the Mid-Atlantic by John Boreman. Regarding the action item listed above the SSC provided the following recommendations:

- *The MAFMC is working on the development and application of this concept and determined it only works on stocks with quantitative assessments that have data sets/indices of abundance that are somewhat reliable indicators of the reference point(s) of interest.*
- *The SSC pointed out that besides serving as stock triggers and indicators rumble-strips might also help monitor the effectiveness of catch level recommendations (i.e., provide an objective way to help monitor stocks between assessments).*
- *The Committee also discussed the fact that considering the large number of species managed by the SAFMC as well as the challenges we face in terms of assessment throughput it might be beneficial for us to explore the use of this approach to also help monitor unassessed stocks.*

19. ABC CONTROL RULE WORKSHOP REPORT

19.1. Documents

Attachment 23. DRAFT ABC control rule workshop report

19.2. Overview

The SSC held a workshop on the SAFMC ABC control rule prior to its last meeting in October 2015. The final report is offered for consideration and approval.

19.3. Action

- Review and approve report

SSC RECOMMENDATION:

The SSC discussed results of the ABC control rule workshop held in October 2014. The main comments, issues, and recommendations discussed by the Committee included:

- *There is renewed interest by the SSC in adding flexibility to the control rule as to accommodate individual species situations as well as socio-economic information that may not have been properly taken into account during the assessment and catch level recommendation process.*
- *However, given the extent of the topics to be discussed and the difficulties associated with having a productive discussion with such a large group the SSC suggested that a smaller sub-committee or working group be established to develop a draft proposal for SSC review and discussion at its October 2015 meeting.*
- *The Committee is extremely appreciative of Steve Cadrin's offer to Chair that sub-committee. Other members who volunteered to participate in this process are:*
    - *John Boreman*
    - *Amy Schueller*
    - *Tracy Yandle*
    - *Eric Johnson*

20. 2015 NATIONAL SSC WORKSHOP

20.1. Documents

Attachment 24. National SSC Draft Agenda

20.2. Overview

The National SSC group met February 23 – 25 in Honolulu. The workshop theme was "Providing ABC specifications in the face of uncertainty: from data to climate and ecosystems". Discussion topics included evaluating current ABC control rules, setting ABCs in data limited situations, and incorporating ecological, environmental, and climate change considerations into stock assessments.

SSC RECOMMENDATION:

The SSC was given a brief overview of the theme, agenda, and main recommendations of the National SSC Workshop held in Honolulu this past February by SSC members who attended the workshop. The main comments, issues, and recommendations discussed by the Committee included:

- *The National SSC Workshop provided valuable information as well as an opportunity for discussion of important topics. However, SSC members felt that the theme or topics covered were too broad and, therefore, lacked the focus needed to generate more specific, useful recommendations.*
- *Further, the workshop suffered from too many presentations (some very long) and the lack of more time for interaction and exchange among SCC's.*
- *As part of the discussion regarding the main themes covered by the National SSC Workshop (ecosystem and environmental factors, climate change) the SAFMC SSC considered whether it would be beneficial to have presentations and discussions on the use of environmental variables/ecosystem modeling in fisheries assessment and management. Some SSC members felt that it may be more appropriate to just look at different environmental variables that are not currently used in assessments and discuss how the SSC can incorporate those in the setting of ABCs. Other members felt that it might be better to have presentations and discussions on how to incorporate environmental variables into model projections for management advice.*
- *Overall the Committee felt that these discussions would, at the very least, start a dialogue with the group at the Science Center now working on ecosystem models and the incorporation of environmental factors in the assessment process.*
- *The MAFMC SSC has an ecosystem-based fisheries management working group that will have reports coming out in the near future. We might be able to use these reports as a starting point for discussion of similar issues in our region.*

21. 2015 NATIONAL STANDARDS REVISION

21.1. Documents

Attachment 25. NS revisions proposed rule

21.2. Overview

NOAA Fisheries recently issued a proposed rule for revisions to National Standard 1. The Committee will be provided a presentation on the revisions and process.
There is a website dedicated to the NS revisions http://www.nmfs.noaa.gov/sfa/laws_policies/national_standards/ns1_revisions.html

21.1. Presentation

National Standards Revisions: Wes Patrick, NMFS, Via Webinar

21.2. Action

- Review and provide comments.

SSC RECOMMENDATION:

The SSC received an overview presentation on proposed rule for revisions to National Standard 1 by Wes Patrick, NMFS, Office of Science and Technology. Although the Committee greatly appreciated the update it did not have any specific recommendations or suggestions regarding this item.

22. COUNCIL VISIONING PROJECT

22.1. Documents

None

22.2. Overview

The Council began the process of developing a vision statement and strategic goals and objectives in December 2012. The four draft strategic goals (Science, Management, Governance, and Communication) and objectives (Attachments ??) have been developed over the course of the past two years with input from fishery stakeholders. The Council will collect public input on the draft strategic goals from June through September, review public input and finalize the draft goals and objectives in September, and prioritize short- and long-term action items during a Council workshop in October 2015.

22.3. Action

- None Required

SSC RECOMMENDATION:

The SSC received an overview presentation on the Council's Visioning Project by Amber von Harten. Although the Committee greatly appreciated the update it did not have any specific recommendations or suggestions regarding this item.

23. OCULINA TEAM EVALUTION REPORT 2015

23.1. Documents

Attachment 26. Oculina Team Evaluation Report

23.2. Overview

The SAFMC established a closed area off the *Oculina* Banks in 1982 and is now known as the *Oculina* Experimental Closed Area (OECA). The report completes a required 10-year evaluation of the OECA and tracks progress towards completing the objectives in

the Evaluation Plan for the OECA. The *Oculina* Evaluation Team did not recommend any changes to the regulations, size, and configuration of the OECA and recommended against a shrimp access area in OECA which was requested by the Deepwater Shrimp AP.

23.3. Action

- Review and comment on the report with special attention paid to the response to the shrimp access request.

SSC RECOMMENDATION:

The SSC provided the following comments/concerns in response to the shrimp access request:

- *The SSC agrees with the Oculina Evaluation Team recommendation against a shrimp access area in the OECA.*
- *In the past, destruction of coral has been attributed to shrimping. The closed area contains most of the remaining undamaged Oculina coral habitat along the east Florida shelf, and was originally established to protect the ecosystem as a whole, including areas outside of the main Oculina reef formation where foraging and larval settlement occur for a variety of species (area is identified as both an Oculina HAPC and EFH for snapper grouper species) . Given that the Oculina corals currently on site are very old, slow growing and extremely fragile, it would be a very risky to allow shrimping in these areas.*
- *An editorial suggestion was to remove the response letter from the Evaluation Report and making it a stand-alone document that should be submitted directly to the Deepwater Shrimp AP. If it is necessary to include the letter as part of the report, then it may be better suited to be in an Appendix.*

24. ANNUAL RESEARCH AND MONITORING PLAN

24.1. Documents

Attachment 27. Draft 2015 Research and Monitoring Plan

24.2. Overview

The Committee is provided an opportunity to review the annual research and monitoring plan.

24.3. Action

- Review and provide comments on the plan

The SSC reviewed the SAFMC draft 2015 Research Priorities document and found it to be satisfactory and in line with research priorities needed to address data and

assessment needs for management of South Atlantic stocks. Some comments, suggestions, and recommendations provided by the SSC included:

- *The mixing of Gulf and South Atlantic king mackerel is dynamic and should be monitored on a regular basis. In other words, although this issue does not need to be addressed in the short term and is not part of the current list the SSC suggests that it be added to the Council's Research Priorities in a few years.*
- *Recommend the Council examine the recommendations of the MARMAP-SEAMAP-SEFIS review report regarding the long bottom longline survey. The review raised concern with potential mismatch between previous sampling and core areas for the tilefish fishery. The review also suggested considering an industry-research partnership program for the long bottom longline survey.*
- *Add fishery independent derived measures of population abundance to the "Expanded Data Elements for Primary Species" section (fishery dependent measures of abundance are already on the list).*
- *Recommend that the SEFSC meet annually with the SSC to discuss research priorities and progress.*
- *The MAFMC is forming a working group that is looking at ranking the research priorities and consolidating them into a manageable list. The SAFMC SSC will review that list and evaluate whether we can apply this same approach to in our region.*

25. COUNCIL WORKPLAN UPDATE

25.1. Documents

Attachment 28. SAFMC Work Plan, September 2014
Attachment 30. SAFMC Amendments Overview, September 2014

25.2. Overview

The Committee is provided these documents at each meeting to stay 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 - Kari MacLauchlin
- Corals – Chip Collier
- Fishery Ecosystem Plan - Roger Pugliese
- Snapper Grouper - Myra Brouwer
- Snapper Grouper Regulatory Amendment 16 (BSB Pot closure) – Brian Cheuvront

- Snapper Grouper Regulatory Amendment 36 (Spawning SMZs) - Gregg Waugh
- Spiny Lobster - Kari MacLauchlin
- Golden Crab - Brian Cheuvront
- Dolphin-Wahoo - Brian Cheuvront

25.3. Action

- No specific actions required

26. OTHER BUSINESS

The SSC did not discuss any items under 'Other Business'

27. PUBLIC COMMENT

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

- *Public comments were made by Captain Russell "Rusty" Hudson (Directed Sustainable Fisheries).*

28. REPORT AND RECOMMENDATIONS REVIEW

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

The Final SSC report should be provided to the Council by 9 am on Tuesday, May 19, 2015 for inclusion in the first briefing book for the December Council meeting.

29. NEXT MEETINGS

29.1. SAFMC SSC MEETINGS

2015 Meeting Dates

Wed, June 3, 1-3 pm – Webinar discussing BLT projections
October 20 – 22 in Charleston SC.

29.2. SAFMC Meetings

2015 Council Meetings

June 8 - 12, Key West, FL
September 14 -18, Hilton Head, SC
December 1 - 5, New Bern, NC

30. ADJOURN

The SSC meeting was adjourned without incident.

Addenda

A pdf of the final SEP report and the hogfish projections report are to be attached here

SOUTH ATLANTIC FISHERY MANAGMENT COUNCIL

SOCIO-ECONOMIC PANEL OF THE SCIENTIFIC AND STATISTICAL COMMITTEE

SEP Meeting Overview

April 28, 2015

Crowne Plaza
4831 Tanger Outlet Boulevard
North Charleston, SC

PURPOSE

This meeting is convened to:

- Review economic analysis for Snapper Grouper Regulatory Amendment 16
- Review possible actions in Snapper Grouper Regulatory Amendment 23
- Provide guidance on social and economic evaluation measures in the draft System Management Plan
- Receive a briefing on the Snapper Grouper Visioning Project
- Discuss upcoming council actions in the South Atlantic region
- Discuss format of future SEP meetings

CONTENTS

DOCUMENTS

Attachment 1a. Snapper Grouper Regulatory Amendment 16 SSC Document
Attachment 1b. Draft Snapper Grouper Regulatory Amendment 16
Attachment 2. SEP Discussion Document for Snapper Grouper Regulatory Amendment 23
Attachment 3. Draft South Atlantic Council System Management Plan
Attachment 4a: Strategic Goals for Draft Vision Blueprints
Attachment 4b: Growth Potential for the Snapper Grouper Fishery/ Summary Stats
Attachment 5: Recent and Developing Amendments

1. Introduction

1.1. Documents

Agenda
Minutes, April 2014

1.2. Action

Approve Agenda
Approve April 2014 Minutes
Introductions

2. Snapper Grouper Regulatory Amendment 16- black sea bass pot closure

2.1. Documents

Attachment 1a. Snapper Grouper Regulatory Amendment 16 SSC Document
Attachment 1b. Draft Snapper Grouper Regulatory Amendment 16

2.2. Overview

Regulatory Amendment 16 includes two actions to address the prohibition on the use of black sea bass pots that was implemented through Regulatory Amendment 19 and became effective on October 23, 2013. The first action has alternatives that modify the closure based on variations of time, area, and depth. The second action modifies black sea bass pot gear strength and marking requirements that could make the gear less likely to get entangled with northern right whales, as well as be able to identify gear as South Atlantic black sea bass pot gear if it is recovered from a whale. Scoping meetings were held in January 2014 and the Council reviewed alternatives at the March 2014 meeting and provided guidance on changes and additional alternatives to include. The SSC reviewed a presentation of the alternatives evaluation in October 2014 and provided comment. The Council reviewed revised analyses in December 2014 meeting, and received a background and process presentation from the Protected Resources Branch. At the March 2014 meeting the Council reviewed additional biological and economic analyses of the alternatives. They did not review the revised SERO analysis of the alternatives. Public hearings will be held in August 2015, and the amendment will most likely be approved for submission to the Secretary of Commerce at the Council's December 2015 meeting. The SSC is asked to provide technical review of the revised analyses prepared by Southeast Regional Office staff, as well as the biological and economic analyses of the two actions.

2.3. Presentation

Brian Cheuvront, Council staff

2.4. Action

Please discuss the economic and social effects analyses for the two actions.

Action 1

Specific Questions:

1. Two time frames were used to calculate price per pound by month (ref. Figure 4.1.2.1). Would it be beneficial to include other time frames?
2. Table 4.1.1.1 uses information from an analysis by SERO that projects expected closure dates under various scenarios. Where there is a range of closure dates, it is due to estimated closure dates based on differences between three different scenarios that were used to calculate trap placement for each month. The analysis used for the economic effects only used one of the three modeled scenarios for where pots would be placed. Is there value in repeating the analyses for the other two pot placement scenarios?
3. Are there additional social or economic analyses that the SEP recommends be completed for this action?
4. What additional recommendations does the SEP have for **Action 1**?
5. Does this analysis represent BSIA?

Action 2

Specific Questions:

1. The Council has request that the SEP look at how **Action 2** is structured. Does the SEP have recommendations regarding this action?
2. Are there additional social or economic analyses that the SEP recommends be completed for this action?
3. What additional recommendations does the SEP have for **Action 2**?
4. Does this analysis represent BSIA?

SEP RECOMMENDATIONS:

Action 1

1. No. The SEP felt that no additional price analysis with other time frames is necessary. Additional analysis might add some variation but it would not be enough to change recommendations.
2. No. Additional analysis using other pot placement scenarios is not necessary because the SEP felt that there would probably be not much variation.
3. The SEP recommends that additional economic analysis be considered.
    a. For the price analysis, the SEP recommends using regression analysis to model the effects of regulatory measures in addition to temporal patterns. This may allow a more refined simulation of future regulatory measures, especially if price variation by market grade (fish size) can be incorporated.
    b. To consider efficiency, the SEP recommends predicting a change in the number of trips and change in predicted landings at the pot level and or trip level, especially seasonally. A more sophisticated analysis would model the trip-level decision process that also considers substitute target species but this could involve substantial effort.
    c. To incorporate changes in fishing costs, the SEP recommends considering a potential change in trip costs (e.g., due to a change in predicted landings) and

vessels needing to travel further distances (e.g., by calculating the change in distance and a standard estimate of additional fuel costs required).

d. Consider addressing the risk associated with expected returns, including localized depletion issues on other sectors of this fishery (e.g., recreational and commercial hook and line) and potential user conflicts with the recreational sector since the pot fishery has switched to the summer and early fall seasons, which is the time when recreational effort is generally at its highest level.

4. Yes. The SEP feels that this is the BSAI, but are interested in sensitivity analysis resulting from investigating variation in seasonal prices, prices by fish size and additional ways to capture changes in trip efficiency. Additional sensitivity analysis is not likely to fundamentally change the results of the economic analysis. But, additional sensitivity analysis would provide more confidence in the results.

Action 2

1. No. The SEP has no recommendation on how Action 2 is structured.
2. Yes. The SEP recommends that the analysis includes estimates for any potential loss in yield (and associated costs) from the potential gear changes that would result from this action (i.e., loss in CPUE or loss in traps, revenue and/or costs, respectively). Ideally, the gear would be tested for a reduction in breaking strength and diameter with trap weight to minimize potential costs or losses to the fishermen. In addition, the data sources for the costs used should be referenced (we understand that point estimates are sufficient since fishermen will likely use the least expensive alternative, but including those sites would be helpful).
3. To the extent possible consider the opportunity costs of re-rigging the gear, especially if there is a specified time period, and input from fishermen on how this would affect them.
4. No. The SEP feels that this will be the BASI after the addition of information on the potential cost of lost traps due to the gear requirements.

3. Snapper Grouper Regulatory Amendment 23- golden tilefish longline management

3.1. Document

Attachment 2. SEP Discussion Document for Snapper Grouper Regulatory Amendment 23

3.2. Overview

Snapper Grouper Regulatory Amendment 23 contains actions to address issues in the commercial golden tilefish fishery. The commercial sector for golden tilefish is managed as longline and hook-and-line components. The hook-and-line fishery has a trip limit of 500 lbs and longline has a trip limit of 4000 lbs. Also, 75% of the commercial ACL is allocated to the longline fishery, and 25% to the hook-and-line fishery (405,971 lbs and 135,324 lbs, respectively). A longline endorsement program implemented in 2013 (Snapper Grouper Amendment 18B) capped participation in the longline fishery at 23 vessels. The Council put these measures in place to address the early closures for commercial golden tilefish, primarily due to longline effort and rate of harvest.

Even with the limited participation and a trip limit, the longline fishery has reached its quota and closed in only a few months in recent years (5 March in 2014 and 19 February in 2015). The Council is exploring options to lengthen the longline season. While individual fishing quotas may be a viable option to address these issues, there is very little support for IFQs from longline endorsement holders, who would like to look at measures that do not include individual quotas. Additionally, the Council is considering changing the fishing year for the hook-and-line sector. Fishermen participating in the hook-and-line sector claim that the market is flooded early in the year so they would prefer to begin fishing on their quota after the longline sector has met its quota and closed for the year.

The SEP discussion document (***Attachment 2***) contains background information on the actions and about the commercial golden tilefish fishery, followed by preliminary alternatives for the Council's consideration. The discussion document also includes two appendices. Appendix A is an analysis for a previously considered action suggested by some longline fishermen for two weeks open and two weeks closed, to slow the rate of harvest and golden tilefish supply into the market (the Council decided to not pursue this measure). Appendix B is an additional economic description of the commercial golden tilefish fishery from a previous amendment.

3.3. Presentation

Kari MacLauchlin and Myra Brouwer, Council staff

3.4. Action

Discuss and make recommendations as necessary. Specific questions:

1) Pros and cons of the derby conditions for the golden tilefish longline fishery?
   - Is a derby always a problem?

2) What are the options---other than individual fishing quotas--- to extend the longline season and/or allow a more consistent supply? The longline sector is 23 vessels fishing under a 4,000-lb trip limit and a longline quota of 405, 971 lbs.

3) Comments on changing the hook-and-line fishing year?

4) Other recommendations?

SEP RECOMMENDATIONS:

The SEP has spent much time during previous meetings discussing the benefits of individual fishing quotas relative to derby fishing. In short, the SEP has consistently recommended IFQs as a system that would resolve problems associated with derby fisheries. Further, the SEP has consistently recommended that tradable IFQs would enhance efficiency.

1. Given that IFQs are not an option for the golden tilefish fishery at this point in time, the SEP limited discussion to the pros and cons of derby fishing. In terms of pros, the SEP discussed possibilities but could not conceptualize any substantive recommendations. In terms of cons, derby fishing can lower prices as buyers anticipate market gluts and could compromise

product quality. Derbies are problematic (for safety and other reasons) in crowded fishing grounds and lead to overcapitalization. The SEP concludes that a derby fishery is always problematic.

2. The SEP did not have any serious concerns about alternating open/closed seasons. Other options to extend the season could include:
    a. Having the boats stagger fishing times using sub-sectors by looking into natural breaks in fishing areas (although some fishermen would prefer status quo until after a stock assessment).
    b. TURFs would be another option, breaking the quota into different regions where smaller groups of fishermen could better coordinate effort (which may be possible given the small number of endorsement holders).
    c. Some fisheries have experimented with opening and closing fisheries in alternating weeks. The success on this varies. The Gulf red snapper fishery did not find this acceptable due to market disruptions and eventually switched to ITQ management. Summer flounder is managed this way, but the overall quota is broken into different state quotas, and the states try to coordinate with each other so that the market receives a more consistent supply that minimizes saturation and keeps prices from dropping due to oversupply. State managers can also use the down time to calculate how close they are to reaching their state quotas. There is limited anecdotal information from summer flounder fishermen and dealers that indicates implementing weekly fishing periods has at times led to the issue of buyers being able to anticipate the market gluts that can occur towards the end of the open fishing periods. In turn, this can depress the price received by the fishermen and dealers.
3. The effects of changing the hook and line fishing year should consider how ITQ-managed Gulf and Mid-Atlantic golden tile fisheries interact with the market for the South Atlantic golden tilefish (i.e., do the Gulf and Mid-Atlantic plan based on the South Atlantic openings, and does this lessen the derby conditions?)
4. The SEP recommends examining price on a monthly basis to determine if the derby fishing conditions are hurting the overall performance of the fishery.

4. System Management Plan

4.1. Documents

Attachment 3. Draft South Atlantic Council System Management Plan

4.2. Overview

A framework is in development for a System Management Plan (SMP) for the eight SAFMC Snapper Grouper Amendment 14 MPAs and to provide a foundation for potential future SAFMC MPA management plans in the southeast U.S. The SMP is currently in outline form, serving as a starting point to expand the development of adaptive and effective management of the SAFMC's array of protected areas. The SMP is intended to also increase the dialogue among the SAFMC and NOAA, commercial and recreational fishers, other members of affected communities, scientists, and additional agencies and stakeholders to achieve common goals to effectively monitor

and protect the resources intended by the Amendment 14 MPAs. Once the primary working outline structure is established, the component sections of the SMP will be populated and vetted through the SAFMC's public process.

To provide a foundation for the SMP, four steps for management actions are proposed: resource protection, research and monitoring, outreach and education, and administrative and financial. Additionally, management effectiveness evaluations are recommended as a fundamental component that the final SMP will contain to determine the status and utility of the MPAs in achieving the intentions set by Amendment 14. The final SMP expects to support the requirements of the reauthorized Magnuson-Stevens Fishery Conservation and Management Act (U.S. Public Law 109-479 2007) and aims to utilize MPAs in the southeast as a viable fishery management tool to protect and assess target resource populations and associated habitats.

Council staff will review the current status of the SMP. The SEP is asked to provide input on social and economic goals of MPAs, and to make recommendations for evaluation measures of MPAs. The SMP focuses specifically on the 8 deepwater MPAs established in Amendment 14, but will be expanded to apply to Spawning SMZs and future MPAs in the South Atlantic region.

4.3. Presentation

Kari MacLauchlin, Council staff

4.4. ACTIONS

- Provide input to staff on social and economic goals of MPAs.
- Recommend measures of evaluation of social and economic goals for the SMP.
- Provide input on types of projects that would be useful in evaluation of the MPAs.

SEP RECOMMENDATION:

The SEP recommends that SAFMC staff conduct literature reviews of (1) the National Marine Sanctuary program for evaluation and monitoring examples, (2) studies of perceptions of equitable access to the resource among the user groups, (3) changes in fishing pressure around the MPAs to determine the effect of MPAs on fishing opportunities, (4) experience with MPAs of similar size and scope as those in the South Atlantic and (5) positive and negative spillover effects. Also, socioeconomic Goal 1 should be described as "non-market" instead of "non-monetary" since existence values are typically measured in monetary units even though such analysis can be complicated. Finally, named MPAs can help people relate to the area and thereby promote stakeholder interest and participation.

5. Snapper Grouper Visioning Project

5.1. Documents

Attachment 4a. Strategic Goals for Draft Vision Blueprints

Attachment 4b. Growth Potential for the Snapper Grouper Fishery/ Summary Stats
For additional information, see http://www.safmc.net/resource-library/council-visioning-project.

5.2. Overview

Amber Von Harten, Council staff, will bring the SSC up to date on development of the Council's Vision Blueprint for the Snapper Grouper Fishery. The Council began the process of developing a vision statement and strategic goals and objectives in December 2012. The four draft strategic goals (Science, Management, Governance, and Communication) and objectives (Attachment 4a) have been developed over the course of the past two years with input from fishery stakeholders. The Council will collect public input on the draft strategic goals from June through September, review public input and finalize the draft goals and objectives in September, and prioritize short- and long-term action items during a Council workshop in October 2015.

5.3. Discussion

Amber Von Harten, Council staff

5.4. ACTIONS

Discuss and make recommendations as necessary.

SEP RECOMMENDATION:

The SEP was impressed with the Council staff's ability to get high attendance and feedback from stakeholders, but had no substantive comments.

6. Recent and Developing Council Actions

6.2. Document

Attachment 6. Recent and Developing Amendments

6.3. Overview

Council staff will provide a briefing on upcoming amendments and actions.

6.4. Presentation and Discussion

Kari MacLauchlin, Council staff

6.5. ACTIONS

Discuss and make recommendations as necessary.

SEP RECOMMENDATION:

The SEP had no recommendations.

7. Administrative Business

7.1. Document

None

7.2. Overview

Council staff will brief the SEP on recent changes for SEP term limits. The SEP will discuss future SEP meetings options. One option is to hold meetings via webinar a few weeks before the SSC meeting to allow time to work on the report to the SSC. In-person meetings could be held at other times, or on an as-needed basis.

7.3. Presentation and Discussion

Kari MacLauchlin, Council staff

7.4. ACTIONS

Discuss and make recommendations as necessary.

SEP RECOMMENDATION:

The SEP suggests that the SAFMC consider setting the SEP term limits to 3 or 6 years, instead of 5, so that it coincides with SSC appointment.

The SEP felt that it is difficult to stay engaged during a long webinar (e.g., 4 hours) with a detailed agenda. If there are several important issues then the SEP should meet in person. If there is a single or specific topic, particularly one requiring rapid turnaround, a webinar could work well. Of course, the SEP would agree to a webinar if the SAFMC preferred, but recommends in-person meetings. The SEP also finds that the availability of webinar for those unable to travel to meetings is an excellent supplement.

8. Other Business

The SEP selected Scott Crosson as the SEP Chair.

9. Report and Recommendations Review

10. Next SEP Meeting

- April 2016, Charleston SC (or webinar?)

Projections of the South Florida/Florida Keys Hogfish Stock under Various Rebuilding Scenarios

A report to the SAFMC SSC

April 2015

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Introduction

Projections of Hogfish biomass were approved by the SAFMC at its March 2015 meeting to develop alternatives for rebuilding the Florida Keys including the Dry Tortugas and Eastern Florida (FLK/EFL) hogfish stock. Preliminary projections indicated the stock can be rebuilt within 10 years under an F=0 scenario, so the maximum rebuilding time for projections is 10 years.

Methods

Interim Landings

The last year of data in the Hogfish assessment report (SEDAR 37, 2014) was 2012 and changes in regulations will impact 2016 landings for the FLK/EFL stock. Therefore, recent catch data were generated for commercial (2013, 2014, and the 2013-2014 average for 2015) and recreational fleets (2013, a 2012-2013 average for 2014, and a 2013-2014 average for 2015). The construction of landings and discard data follow methods within SEDAR 37 unless otherwise specified. Recent commercial catch data were based on landings from the FWC-FWRI Marine Fisheries Information System (Trip ticket) and discard logbook program discards (2013, a 2012-2013 average for 2014, and a 2013-2014 average for 2015). Recent recreational catch data were based on landings and discards from the Marine Recreational Information Program (MRIP) and Southeast Region Headboat Survey (SRHS) (2013, a 2012-2013 average for 2014, and a 2013-2014 average for 2015). In order to generate these landings within the assessment model, the level of fishing mortality rate (F) needed to project the annual total dead biomass (landings and dead discards) for 2013-2015 was estimated and used for all considered projection scenarios.

Projections

Projections for various F scenarios were completed using Stock Synthesis (SS3) base model configurations for the FLK/EFL hogfish stock (SEDAR 37, 2014):

- F=0: no directed fishing scenario (constant discard mortality)
- $F=F_{Current}$: total fishing rate was held constant during 2016-2026 at the geometric mean rate for 2010-2012

- Constant F at F=75% F_{MSY}: a constant fishing mortality rate at 75% of F_{MSY}
- Constant F at F=F_{MSY}: a constant fishing mortality rate at MSY
- Constant F that rebuilds to the spawning stock biomass at MSY level in 10 years and F's associated with 72.5% probability of rebuilding in 10 years
- Constant F that rebuilds to the spawning stock biomass at MSY level in 7 years and F's associated with 72.5% probability of rebuilding in 7 years

Projection results are based on year 1 = 2016 and extending through 2026, or to the point of stock rebuilding if a scenario did not result in rebuilding within 10 years.

Within SS3 forecasting, projections were run assuming that biology, recruitment, selectivity, and relative apical F's among fleets are the same as the last three years of the assessment (2010-2012). The predicted fleet (commercial: spear, hook-and-line, trap; recreational spear and hook-and-line) catch allocations reflected the average distribution of apical F's among fleets during 2010-2012. These allocations were also applied to 2013-2015 interim catch totals. Forecast catches within the projections were total dead fish (biomass or numbers) because hogfish discards were included in the landings in the assessment model. The predicted discarded portions of the forecasted total dead catches were estimated using observed landings and discards during 2010-2012. The base model estimates of 2010-2012 fleet-specific exploitation rates were partitioned into landed and discarded components by dividing observed discards by the total biomass or numbers to estimate fleet-specific discard exploitation rates. These discard rates were subtracted from the corresponding fleet-specific total exploitation rates estimated within all projections and applied to the stock biomass or abundance to calculate discards. Retained catch was then calculated by subtracting these predicted discards from the total dead biomass or numbers.

All projection analyses involved iterative searches used to solve for annual scalars applied to fleet-specific exploitations to match the target exploitation rate for each projection scenario. Similar iterative searches were run for rebuild projections but the F was found by matching to the target spawning biomass at MSY. These scalars changed through time to keep the overall force of fishing constant despite the changing age structure of the stock encountered by fisheries with different selectivity patterns.

Results

The total interim landings (2013-2015) including dead discards by fishery, year, and fishing gear are presented in thousands of pounds and numbers in Table 1. Projection results under scenarios: F_0, $F_{Current}$, 75% F_{MSY}, and F_{MSY} for 2016-2026 are presented in Tables 2,3,4, and 5, respectively in terms of fishing mortality rate applied, spawning stock biomass, annual stock biomass, and yield expressed in pounds (thousands) and numbers (thousands) for landings and discards. Projection results under rebuilding scenarios for constant F projections that rebuild in 10 years are presented for Prebuild=50% (Table 6) and Prebuild=72.5% (Table 7). Projection results under Prebuild scenarios for constant F projections that rebuild in 7 years are presented for Prebuild=50% (Table 8) and Prebuild=72.5% (Table 9).

References

SEDAR 37. 2014. The 2013 Stock Assessment Report for Hogfish in the South Atlantic and Gulf of Mexico. SEDAR, North Charleston, SC. 295 p.

Tables

Table 1. FLK/EFL Hogfish combined landings and dead discards for commercial and recreational fisheries by gear for 2013-2015.

Pounds in 1000's

Year	Commercial Spear	Commercial Hook/Line	Commercial Traps	Recreational Spear	Recreational Hook/Line	Total
2013	9.133	9.357	2.876	103.519	24.261	149.158
2014	17.064	18.042	5.590	192.288	44.278	277.264
2015	12.926	13.454	4.104	141.746	33.503	205.732

Numbers in 1000's

Year	Commercial Spear	Commercial Hook/Line	Commercial Traps	Recreational Spear	Recreational Hook/Line	Total
2013	3.339	2.943	0.808	40.549	11.484	59.123
2014	5.855	5.337	1.477	71.924	20.596	105.190
2015	4.658	4.165	1.109	55.873	16.652	82.456

Table 2. Projection results from the FLK/EFL stock for the F_0 rebuilding scenario. Pounds and numbers are in thousands. The calculated SSB_{MSY} = 2300.39

Year	F	SSB (pounds)	Annual Stock Biomass (pounds)	Yield (pounds)	Yield (numbers)	Discards (pounds)	Discards (numbers)
2016	0.001	806.96	928.37	0	0	0.93	0.39
2017	0.001	1054.40	1198.03	0	0	1.20	0.48
2018	0.001	1343.87	1508.43	0	0	1.51	0.58
2019	0.001	1671.36	1855.59	0	0	1.86	0.68
2020	0.001	2032.80	2234.93	0	0	2.24	0.78
2021	0.001	2423.16	2641.00	0	0	2.65	0.89
2022	0.001	2836.29	3067.75	0	0	3.08	0.99
2023	0.001	3265.90	3509.14	0	0	3.52	1.09
2024	0.001	3705.83	3959.19	0	0	3.97	1.19
2025	0.001	4150.59	4412.48	0	0	4.43	1.28
2026	0.001	4594.69	4863.63	0	0	4.88	1.36

Table 3. Projection results from the FLK/EFL stock for the $F_{Current}$ rebuilding scenario, where $F_{Current}$ is the geometric mean of the terminal three years (2010-2012). Pounds and numbers are in thousands. The calculated SSB_{MSY} = 2300.39

Year	F	SSB (pounds)	Annual Stock Biomass (pounds)	Yield (pounds)	Yield (numbers)	Discards (pounds)	Discards (numbers)
2016	0.220	806.96	928.37	203.59	85.08	0.93	0.39
2017	0.220	864.69	993.13	217.80	90.35	1.00	0.44
2018	0.220	921.64	1055.61	231.50	94.77	1.06	0.47
2019	0.220	974.37	1113.01	244.09	98.90	1.12	0.51
2020	0.220	1022.31	1164.91	255.47	102.74	1.17	0.54
2021	0.220	1065.37	1211.28	265.64	106.22	1.22	0.58
2022	0.220	1103.55	1252.23	274.62	109.31	1.26	0.61
2023	0.220	1136.97	1287.96	282.45	112.02	1.29	0.64
2024	0.220	1165.96	1318.88	289.24	114.37	1.32	0.66
2025	0.220	1190.93	1345.45	295.06	116.40	1.35	0.69
2026	0.220	1212.15	1367.97	300.00	118.13	1.37	0.71

Table 4. Projection results from the FLK/EFL stock for the 75% F_{MSY} rebuilding scenario. Pounds and numbers are in thousands. The calculated SSB_{MSY} = 2300.39

Year	F	SSB (pounds)	Annual Stock Biomass (pounds)	Yield (pounds)	Yield (numbers)	Discards (pounds)	Discards (numbers)
2016	0.104	806.96	928.37	95.38	39.71	0.93	0.39
2017	0.104	965.14	1101.65	113.18	45.90	1.11	0.46
2018	0.104	1133.82	1283.52	131.87	51.66	1.29	0.53
2019	0.104	1306.58	1468.17	150.84	57.52	1.47	0.59
2020	0.104	1479.65	1651.76	169.70	63.43	1.66	0.66
2021	0.104	1649.81	1830.97	188.11	69.19	1.84	0.72
2022	0.104	1813.95	2002.78	205.76	74.66	2.01	0.79
2023	0.104	1969.51	2164.80	222.41	79.75	2.17	0.84
2024	0.104	2114.57	2315.27	237.87	84.43	2.32	0.90
2025	0.104	2247.96	2453.08	252.03	88.67	2.46	0.94
2026	0.104	2368.78	2577.44	264.80	92.47	2.59	0.99

Table 5. Projection results from the FLK/EFL stock for the F_{MSY} rebuilding scenario. Pounds and numbers are in thousands. The calculated SSB_{MSY} = 2300.39

Year	F	SSB (pounds)	Annual Stock Biomass (pounds)	Yield (pounds)	Yield (numbers)	Discards (pounds)	Discards (numbers)
2016	0.138	806.96	928.37	127.49	53.14	0.93	0.39
2017	0.138	935.24	1069.36	146.85	59.93	1.07	0.45
2018	0.138	1067.98	1212.89	166.56	66.06	1.22	0.51
2019	0.138	1199.45	1353.95	185.93	72.14	1.36	0.57
2020	0.138	1327.04	1489.94	204.61	78.13	1.50	0.62
2021	0.138	1448.81	1618.89	222.31	83.83	1.62	0.68
2022	0.138	1563.00	1739.13	238.83	89.13	1.75	0.73
2023	0.138	1668.30	1849.51	253.99	93.95	1.86	0.78
2024	0.138	1763.94	1949.39	267.70	98.28	1.96	0.82
2025	0.138	1849.70	2038.61	279.93	102.12	2.05	0.86
2026	0.138	1925.46	2117.17	290.72	105.50	2.12	0.89

Table 6. Projection results from the FLK/EFL stock for the Rebuild 10 scenario, referring to a constant fishing rate that will rebuild the stock in 10 years associated with a probability of rebuilding (Prebuild) of 50%. Pounds and numbers are in thousands. The calculated SSB_{MSY} = 2300.39

Year	F	SSB (pounds)	Annual Stock Biomass (pounds)	Yield (pounds)	Yield (numbers)	Discards (pounds)	Discards (numbers)
2016	0.109	806.96	928.37	100.77	41.97	0.93	0.39
2017	0.109	960.98	1097.16	119.09	48.36	1.10	0.46
2018	0.109	1124.52	1273.55	138.24	54.27	1.28	0.52
2019	0.109	1291.24	1451.83	157.59	60.27	1.46	0.59
2020	0.109	1457.51	1628.31	176.75	66.30	1.63	0.65
2021	0.109	1620.29	1799.87	195.37	72.16	1.81	0.72
2022	0.109	1776.69	1963.71	213.16	77.71	1.97	0.78
2023	0.109	1924.32	2117.60	229.86	82.86	2.13	0.83
2024	0.109	2061.46	2259.96	245.32	87.56	2.27	0.89
2025	0.109	2187.10	2389.87	259.42	91.82	2.40	0.93
2026	0.109	2300.45	2506.67	272.10	95.63	2.52	0.97

Table 7. Projection results from the FLK/EFL stock for the Rebuild 10 scenario, referring to a constant fishing rate that will rebuild the stock in 10 years associated with a probability of rebuilding (Prebuild) of 72.5%. Pounds and numbers are in thousands. The calculated SSB_{MSY} = 2300.39

Year	F	SSB (pounds)	Annual Stock Biomass (pounds)	Yield (pounds)	Yield (numbers)	Discards (pounds)	Discards (numbers)
2016	0.097	806.96	928.37	89.83	37.40	0.93	0.39
2017	0.095	971.19	1108.18	105.17	42.61	1.11	0.46
2018	0.093	1149.35	1300.17	121.39	47.45	1.30	0.53
2019	0.092	1335.40	1498.88	138.02	52.43	1.50	0.60
2020	0.091	1525.60	1700.43	154.76	57.53	1.71	0.67
2021	0.090	1716.55	1901.28	171.32	62.57	1.91	0.74
2022	0.089	1904.79	2098.04	187.39	67.41	2.11	0.81
2023	0.089	2087.28	2287.82	202.76	71.96	2.30	0.87
2024	0.088	2261.57	2468.27	217.23	76.18	2.48	0.93
2025	0.087	2425.90	2637.76	230.68	80.05	2.65	0.98
2026	0.087	2578.74	2794.86	243.01	83.55	2.81	1.03

Table 8. Projection results from the FLK/EFL stock for the Rebuild 7 scenario, referring to a constant fishing rate that will rebuild the stock in 7 years associated with a probability of rebuilding (Prebuild) of 50%. Pounds and numbers are in thousands. The calculated SSB_{MSY} = 2300.39

Year	F	SSB (pounds)	Annual Stock Biomass (pounds)	Yield (pounds)	Yield (numbers)	Discards (pounds)	Discards (numbers)
2016	0.072	806.96	928.37	66.65	27.73	0.93	0.39
2017	0.072	992.83	1131.55	81.24	32.78	1.14	0.47
2018	0.072	1196.82	1351.03	96.99	37.61	1.36	0.54
2019	0.072	1412.36	1580.73	113.48	42.63	1.59	0.62
2020	0.072	1634.86	1815.86	130.36	47.81	1.82	0.70
2021	0.072	1859.95	2051.88	147.31	52.99	2.06	0.77
2022	0.072	2083.19	2284.43	164.00	58.01	2.29	0.84
2023	0.072	2300.61	2509.74	180.18	62.79	2.52	0.91

Table 9. Projection results from the FLK/EFL stock for the Rebuild 7 scenario, referring to a constant fishing rate that will rebuild the stock in 7 years associated with a probability of rebuilding (Prebuild) of 72.5%. Pounds and numbers are in thousands. The calculated SSB_{MSY} = 2300.39

Year	F	SSB (pounds)	Annual Stock Biomass (pounds)	Yield (pounds)	Yield (numbers)	Discards (pounds)	Discards (numbers)
2016	0.064	806.96	928.37	59.48	24.74	0.93	0.39
2017	0.063	999.53	1138.79	71.81	28.94	1.14	0.47
2018	0.062	1213.45	1368.86	85.23	32.95	1.37	0.55
2019	0.062	1442.51	1612.79	99.43	37.20	1.62	0.63
2020	0.061	1682.14	1865.80	114.17	41.64	1.87	0.71
2021	0.061	1927.80	2123.11	129.15	46.14	2.13	0.79
2022	0.061	2174.69	2379.98	144.11	50.56	2.39	0.86
2023	0.060	2418.36	2632.18	158.79	54.81	2.64	0.94