SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SOCIO-ECONOMIC PANEL OF THE SCIENTIFIC AND STATISTICAL COMMITTEE

SEP Meeting Overview

February 6-7, 2018

Crowne Plaza Hotel
4831 Tanger Outlet Blvd.
North Charleston, SC

PURPOSE

This meeting is convened to discuss and provide input to the SSC and Council on:

- The Citizen Science Program
- Recent and developing Council actions
- Wreckfish Individual Transferable Quota Review
- Trip metrics used to estimate the economic impacts of recreational fisheries for SAFMC managed species
- Results from a socio-economic profile of the commercial snapper grouper fishery in the South Atlantic
- An outline of socio-economic report for SAFMC managed fisheries
- Analysis methods used in Snapper Grouper Amendment 27
- Snapper Grouper Amendment 46 (Recreational Reporting)

CONTENTS

DOCUMENTS

Attachment 1. SAFMC Citizen Science Action Team Progress Summary

Attachment 2. Recent and Developing SAFMC Amendments

Attachment 3a. Draft Wreckfish Individual Transferable Quota Program Review Report
Attachment 3b. Presentation slides for the Wreckfish Individual Transferable Quota Program Review
Attachment 3c. Wreckfish Individual Transferable Quota Program Review Report, 2009

Attachment 4a: Draft report on economic impacts of fisheries for SAFMC managed species
Attachment 4b: Presentation slides for SEP discussion on economic impact report

Attachment 5. Presentation slides for findings of Snapper Grouper Socio-Economic Profile Report

Attachment 6a. Outline for socio-economic profile of fisheries for species managed by the SAFMC
Attachment 6b. Presentation slides for SEP discussion of socio-economic profile outline

Attachment 7a. Excerpt from Regulatory Amendment 27 Impact Analysis
Attachment 7b. Excerpt from October 2017 SSC report
Attachment 7c. October 2017 SSC meeting minutes

Attachment 8a. Revised Snapper Grouper Amendment 46 Options Paper
Attachment 8b. MyFishCount 2017 Red Snapper Mini-Season Report
Attachment 8c. Draft survey on recreational reporting

1. Introduction

1.1. Documents

Agenda
Minutes, April 2017

1.2. ACTIONS

- Approve Agenda
- Approve April 2017 Minutes
- Introductions
- Opportunity for public comment

2. Update on the Citizen Science Program

2.1. Documents

Attachment 1. SAFMC Citizen Science Action Team Progress Summary

Additional reference for discussion:
1) Details about the Citizen Science Program are available on the Council's website at: http://safmc.net/citizen-science-initiative/

2.2. Overview

For many years, the Council has grappled with the challenge of ensuring adequate and timely science to support management despite limited resources, a multitude of species to manage, and a complex and highly diverse ecosystem. Discussions of data shortcomings and the resulting scientific uncertainties often lead to offers from fishermen to provide their vessels as research

platforms, collect samples and record their own observations to help increase scientific knowledge and 'fill the gaps'. The Council recognizes the desire of constituents to get involved and the need to have a well-designed program and accompanying sampling protocols to ensure that information collected through such efforts is useful. To meet this growing need, the Council is developing a comprehensive Fishery Citizen Science Program. Amber Von Harten, the SAFMC Citizen Science Program Manager, will brief the SEP on the recent actions of the SAFMC Citizen Science Program (***Attachment 1***).

2.3. Discussion

Amber Von Harten, SAFMC staff

2.4. ACTIONS

No specific action is being requested of the SEP, but interested SEP members are encouraged to become involved with the SAFMC Citizen Science Program.

SEP RECOMMENDATIONS:

The SEP suggested, and received confirmation from Council staff, that the Citizen Science volunteers could be used for administering and collecting social and economic survey data, and that undergraduate students could participate in Citizen Science programs as part of their academic programs.

3. Recent and Developing Council Actions

3.1. Document

Attachment 2. Recent and Developing SAFMC Amendments

3.2. Overview

Council staff will provide a briefing on recent and upcoming amendments and actions (***Attachment 2***). The briefing will go into specific details on the proposed Snapper Grouper for-hire permit moratorium (Amendment 47), the Snapper Grouper visioning amendments (Vision Blueprint Regulatory Amendments 26 and 27), recreational reporting amendment (Amendment 46).

Snapper Grouper Amendment 47 (For-Hire Permit Moratorium)

At several recent meetings, the Council has discussed establishing a limited entry permit for the for-hire sector of the Snapper Grouper fishery. Currently, the for-hire permit is open access, with approximately 1,400 to 1,600 active permits. In June 2017, the Council instructed staff to begin work on an amendment that would explore a moratorium on the for-hire component of the snapper grouper fishery. The Council discussed an options paper at their December 2017 meeting and decided to revisit the topic at their March 2017 meeting.

Snapper Grouper Vision Blueprint Regulatory Amendment 26 (Recreational Management Measures)

In June 2016, the Council directed staff to begin development of an amendment to address items identified in the Vision Blueprint addressing recreational management measures. In September 2016 the Council reviewed an options paper and directed staff to prepare a scoping document. Scoping meetings were held in late January/early February 2017 and the Council reviewed public comments and gave direction to staff at their March 2017 meeting. In June 2017, the Council provided further guidance but did not approve the amendment for public hearings. Actions in the amendment include modification to the composition and limits of the recreational aggregates, measures to reduce discards, establishment or modification of recreational seasons, and gear restrictions/modifications. During the September 2017 meeting, the Council approved an alternative approach for structuring the amendment that would better reflect the Council's Vision and how the fishery currently operates. Because of this change, the Council also approved a revised timeline for amendment development with formal approval expected in September 2018. The Council revised actions and alternatives in the amendment at their December 2017 meeting. Actions being considered in this amendment are listed below:

1. Modify the species composition of the recreational aggregates
2. Specify recreational management measures for the deep-water species aggregate

Specify seasonal prohibition for the deep-water species aggregate

-Remove the recreational minimum size limits for certain deep-water species

-Specify the aggregate bag limit for the deep-water species aggregate

-Specify gear requirements for the deep-water species aggregate

3. Specify management measures for species in the shallow-water grouper aggregate

-Modify the seasonal prohibition for red grouper in the Exclusive Economic Zone off South Carolina and North Carolina

-Specify the aggregate bag limit for the shallow-water grouper aggregate

4. Specify management measures for the other shallow-water species aggregate

-Reduce the recreational minimum size limit for gray triggerfish in the exclusive economic zone off east Florida

-Specify the aggregate bag limit for the other shallow-water species aggregate

5. Specify the aggregate bag limit for the snapper grouper species aggregate

Snapper Grouper Vision Blueprint Regulatory Amendment 27 (Commercial Management Measures)

In June 2016, the Council directed staff to begin development of an amendment to address items identified in the Vision Blueprint addressing commercial management measures. In September 2016 the Council directed staff to prepare a scoping document and scoping meetings were held in late January/early February 2017. The Council reviewed public comments and gave direction to staff at their March 2017 and June 2017 meetings. Actions include commercial split seasons and/or trip limit adjustments for several species/complexes; re-evaluation of the shallow water grouper closure, and gear restrictions/modifications. The Council revised alternatives at their September 2017 meeting and approved the same timeline for development as that for the recreational amendment (see above). At their December 2017 meeting, the Council further revised actions and alternatives in the amendment. Actions being considered in this amendment are listed below:

1. Establish a commercial split season and modify the commercial trip limit for blueline tilefish

2. Establish a commercial split season for snowy grouper
3. Establish a commercial split season and modify commercial trip limit for greater amberjack
4. Establish a commercial split season and modify commercial trip limit for red porgy
5. Modify the commercial trip limit for vermilion snapper
6. Implement a minimum size limit for almaco jack for the commercial sector
7. Implement a commercial trip limit for the Other Jacks Complex
8. Modify the seasonal prohibition on commercial harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina
9. Remove the commercial minimum size limits for deep-water snapper species
10. Reduce the commercial minimum size limit for gray triggerfish in the Exclusive Economic Zone off east Florida

Snapper Grouper Amendment 46 (red snapper and recreational reporting)

In June 2017, the Council instructed staff to move actions formerly in Amendment 43, except an action to specify a red snapper ACL in 2018, to Amendment 46. The amendment would specify OFL/ABC/ACL for red snapper, address 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 (action formerly included in the Visioning amendments). OFL/ABC/ACL for red snapper based on SEDAR 41 (2017) have not been adopted through the amendment process; however, the SEFSC could not provide new projections due to the time since the last amendment, uncertainty in recreational landings and discards, and upcoming changes to recreational landings estimates. During their meeting in October 2017, the SSC formed a workgroup whose task is to determine an approach to obtain an ABC for red snapper. The Council reviewed an options paper for Amendment 46 at their December 2017 meeting and provided guidance on further developing the amendment.

South Atlantic For-Hire Electronic Reporting Amendment

During the March 2015 meeting, the South Atlantic Council approved actions and alternatives to require weekly electronic reporting by charter vessels, patterned after headboat electronic reporting requirements. The South Atlantic and Gulf of Mexico Councils reviewed the amendment at the Joint Council meeting in Key West in June 2015. In September 2015, the South Atlantic Council directed staff and the IPT to revise the amendment to apply to charter vessels in South Atlantic fisheries only. In December 2015, the Council approved the amendment for public hearings, which were held in January/February 2016. At the March 2016 meeting, the Council revised the expected timeline for the amendment, to allow time to develop core data elements. The Council reviewed the revised amendment in June 2016, developed a list of core variables and scheduled final approval for December 2016 to allow consideration of preliminary feedback from the SAFMC-ACCSP electronic reporting pilot study. In December 2016, the Council approved the amendment for formal review. The Gulf Council approved the CMP portion of the amendment at their January/February 2017 meeting. The amendment was transmitted for formal review on March 4, 2017.

3.3. Presentation and Discussion

John Hadley, SAFMC staff

3.4. ACTIONS

Discuss and make recommendations as appropriate. In general, this agenda item is meant to brief the SEP on potential Council actions that may be presented to the group for review later in the meeting or at a future SEP meeting.

SEP RECOMMENDATIONS:

The SEP recommendations for Snapper Grouper Amendment 46 are further below. The SEP had no other recommendations for these items.

4. Wreckfish Individual Transferable Quota (ITQ) Review

4.1. Documents

Attachment 3a. Draft Wreckfish Individual Transferable Quota Program Review Report
Attachment 3b. Presentation slides for the Wreckfish Individual Transferable Quota Program Review
Attachment 3c. Wreckfish Individual Transferable Quota Program Review Report, 2009

Additional reference for discussion:

1) T. Yandle, S. Crosson. Whatever Happened to the Wreckfish Fishery? An Evaluation of the Oldest Finfish ITQ Program in the United States. Marine Resource Economics, Volume 30, Number 2 (2015) 193–217.

4.2. Overview

In May 2016 the NMFS issued draft guidance intended to ensure the reviews of Catch Share Programs are comprehensive, conducted in a coordinated and transparent fashion, and meet the statutory requirements. The Wreckfish Individual Transferable Quota (ITQ) Program is the only program implemented in the South Atlantic that will need to undergo review under the current guidance. The wreckfish ITQ program has been in place for over two decades and has been examined multiple times throughout its existence (***Attachment 3c*** and *additional reference material*). The current review is ongoing, with a draft report planned for the Council to review at the March 2018 and subsequent updated reports at the June 2018 and September 2018 meeting.

4.3. Presentation

Brian Cheuvront, SAFMC staff

4.4. ACTIONS

SAFMC staff will provide a presentation with background information on the Wreckfish ITQ program and the review (***Attachment 3a and 3b***). The SEP will be asked to provide feedback on research and data going into the review process as well as how the review will be structured.

Discussion Questions:

1. Does the SEP have input on the data and confidentiality issues beyond what the SSC has already discussed?

2. If SERO is unable to obtain waivers from all past fishery participants (from the time series in consideration, does the SEP have suggestions for providing additional detail other than annual aggregates?

3. Based on the draft review document in the briefing book, what recommendations does the SEP have for this Wreckfish ITQ Review regarding:
    a. Eligibility and Participation
    b. Sector Allocation
    c. Share Transferability
    d. Share Caps
    e. Price Analysis
    f. Catch and Sustainability
    g. Safety at Sea
    h. New Entrants into the Fishery
    i. Monitoring and Enforcement
    j. Privilege Duration & Subsequent Distribution

4. Are there other topics the SEP recommends covering in the ITQ review?

5. While the review is not yet complete, does the social and economic information provided in the outline review represent the best available information to profile the performance of the fishery?

SEP RECOMMENDATIONS:

Council staff opened the discussion with a brief overview of the wreckfish fishery and its history of management. Periodic reviews of the wreckfish ITQ program are mandated to ensure that management of the fishery is running efficiently. This review will focus on the fishery and its management beginning with the 2009/2010 fishing year. The first three fishing years, 2009/2010 through 2011/2012, will serve as a baseline period to be compared with more recent fishing years from 2012/2013 through 2016/2017.

There have been several important changes to the management program since 2009. In 2011, the SSC reduced the ABC to 235,000 pounds, with 95% allocated to the commercial fishery and 5% to the recreational fishery. In 2012, inactive shares were revoked and a 49% cap on share ownership was established. In 2015, the SSC increased the ABC=ACL to 433,000 pounds, and specified that it should decline by about 2% per year until 2020 and then remain constant for subsequent years. During the 2016/2017 fishing year, the fishery consisted of 6 shareholding entities, 6 vessels, and 5 dealers.

1) ***Does the SEP have input on the data and confidentiality issues beyond what the SSC has recommended?***

A comprehensive and quantitative review of the ITQ program is hampered by its small scale. Hence, almost all data are confidential and cannot be revealed without obtaining special waivers from fishery participants. Qualitative conclusions are possible without revealing confidential data, but the review would be less robust.

2) ***If SERO can't get waivers for all the past fishery participants, what suggestions does the SEP have that could help provide more detailed information?***

Discussion: Why is confidentiality an issue? What are the important management questions that are more difficult to answer because of confidentiality?
The SEP was informed that confidentiality waivers will not be obtained, so the inability to release confidential data is indeed an issue. As a result, the wreckfish fishery can only be discussed in aggregate. This means that important detail can be lost or not sufficiently analyzed. For example, there is a geographic distribution of interests in the program/fishery, with the SC contingent of the fishery sometimes in disagreement with the FL contingent. The ITQ review needs to provide the most accurate description and analysis of the fishery, but without the ability to report confidential data, the existence of the geographic sub-fisheries can be noted but not analyzed.

Discussion: Recommendations of strategies for dealing with confidentiality limitations
The SSC considered the value of using models to fill in missing data. However, multiple SEP members have concerns that the number of participants is so limited that regression modeling along these lines would be meaningless.

The SEP instead recommends a strategy for dealing with confidentiality by combining qualitative information with a mix of annual fishery totals and ratios that do not violate confidentiality constraints. For example, aggregate pounds landed, ex-vessel revenues, numbers of participating vessels, and numbers of trips and/or days fished do not appear to violate confidentiality constraints. The paper by Yandle and Crosson[1] used ratios such as catch per unit of effort to make inferences about fishery performance over time. In addition, the distribution of owner share percentages apparently is not confidential and can be reported over time to make inferences about consolidation in the fishery.

The SEP also recommends that the ITQ review incorporate inferences about the financial state of the fishery that can be derived from analyses of ex-vessel prices, share prices per pound, and annual quota (coupon) prices per pound. Most of the theoretical benefits of an ITQ program stem from economic incentives that are reflected in (permanent) share prices and (annual) quota prices. With well-developed markets for shares and quota, share prices and quota prices provide market-based incentives for fishermen to operate in a manner consistent with management objectives. Quota prices per pound should approximately equal the marginal cost per pound of harvesting wreckfish, and share prices per pound should reflect the fishery's optimism about profitability in the

[1] Tracy Yandle and Scott Crosson. 2015. "Whatever happened to the wreckfish fishery? An evaluation of the oldest finfish ITQ program in the United States." Marine Resource Economics 30(2):193-217.

future. Caveats are warranted because the markets for wreckfish shares and quota are not well-developed, which means that shares are not bought/sold often and that coupon purchases/sales usually are not recorded.

3) Based on the draft review document in the briefing book, what recommendations have the SEP for this Wreckfish ITQ Review regarding:

Eligibility & Participation

Greater participation in the wreckfish fishery would reduce concerns about the confidentiality of data and improve the quality and usefulness of market prices for shares and annual quota in future ITQ reviews.

Council staff reviewed the eligibility requirements to participate in the wreckfish fishery. In particular, the requirement to own both a wreckfish permit and a snapper-grouper permit appears to constitute a significant barrier to enter the fishery, especially since new entrants must purchase two existing SG1 permits and retire one. In a later discussion about the development of a socio-economic profile of the snapper-grouper fishery (agenda item 6), the SEP learned that current asking prices for SG1 permits range from $60,000 to $80,000, and asking prices for an annual lease of SG1 permits range from $6,000 to $8,000. Thus, there is a significant financial barrier to enter the wreckfish fishery for boats that do not already own an SG1 permit, and the Council may wish to consider removing/changing permit requirements to encourage an increase in the number of active participants in the wreckfish fishery. The Council removed latent (excess) fishing capacity when it revoked inactive shares.

Sector Allocation

The current allocation is approximately 20,000 pounds for the recreational fishery. If recreationally caught wreckfish weigh approximately 30-35 pounds each, this implies a recreational allocation of approximately 570 to 670 fish.

Council staff noted that landings of wreckfish by recreational fishermen are rare events in the recreational database. One suggestion to obtain an alternative count of recreational catches is to scan various social media for postings about wreckfish by recreational fishermen, with the caveat that duplicate postings and re-postings should be culled. Some of the recreational allocation could be re-allocated to the commercial fishery if the number of recreationally landed wreckfish falls far short of the current allocation of 5%.

Share Transferability

Two issues are discussed in conjunction here: share (permanent rights) transferability and annual catching rights (coupon) transferability.

With regard to share transferability, there was a major decline of share prices driven by Amendment 20A and the threat of latent shareholders losing shares. It forced a major sell-off at reduced prices. In the end, less than 5% ended up being forcibly reallocated. Since then the market has been extremely thin, to the point that it could be argued that there is not a truly functioning market for shares, perhaps partly due to stiff eligibility requirements that limit potential entrants. Reporting requirements for share transfers should include the percentage of shares transferred, and either the

total sales value of the transaction or the price per pound calculated as total sales value divided by total pounds transferred.
With regard to annual catch (quota/coupon) transferability, more data and analysis are needed. The SEP discussion included questions about evidence of coupon prices since there is no reporting requirement, and the timing of coupon transactions. In particular, the SEP wondered if swap contracts were possible in which one fisherman might agree to sell some of his coupons for next year in exchange for the use of another's coupons this year. In general, the SEP recommends looking at how coupons change hands and pricing.

Share caps
If the Council increased the ACL, how would that affect the distribution of share ownership given the 49% cap? The distribution would not change if the increase in ACL were distributed proportionally to all existing shareholders.

Should the share cap be revised if the ACL is increased, particularly if it is not feasible for the largest shareholders to take the extra trips that would be required to land their increased annual quota? The Council's original rationale for the current cap of 49% for share ownership would not change if the Council decided to change the distribution of shares or the total allowable catch. Shareholders could sell shares or sell annual coupons if they were unable to fish for their full allotments.

Aside from the issue of majority control, the ITQ review should investigate if market power arises from the consolidation of shares. If so, the Council may wish to change the share cap to a level for which market power does not occur.

New Entrants
Should an increase in the ACL be distributed to new entrants into the fishery? Traditionally, the Council would determine a formula for distributing quota for free. But other mechanisms (such as an auction) could also be used, which would generate some cost recovery for the ITQ program. In general, an increase in ACL would tend to encourage new entrants into the fishery, especially if established shareholders are already fishing at maximum levels.

The complex set of eligibility requirements to participate in the wreckfish fishery may serve as barriers to entry. If there is a desire to increase the number of participants in the fishery, then removing/changing permit requirements could encourage greater entry into fishery. New entrants might also be achieved by lowering the cap on share ownership, but this could create a forced divestiture since one shareholder owns close to the cap of 49%. Presumably, this would remove some of the current economic efficiency of the fishery.

Maximum entropy theory could provide a means to better estimates of geographic distributions of catch/landings in situations with missing/confidential data when data on totals/averages are available. [2]

[2] Robinson, Sherman; Cattaneo, Andrea; El-Said, Moataz. Updating and Estimating a Social Accounting Matrix Using Cross Entropy Methods. *Economic Systems Research*. March 2001, v. 13, iss. 1, pp. 47-64

Price Analysis

Whenever possible, tabulate or graph time series of average annual ex-vessel price per pound, share price per pound, and quota (coupon) price per pound. Also, calculate the ratio of share price per pound to ex-vessel price per pound, the ratio of quota price to ex-vessel price, and the ratio of share price per pound to quota price. Finally, graph annual average ex-vessel price against annual industry landings.

Catch & Sustainability

One theoretical benefit of ITQ programs is that fishermen have incentives to fish in a biologically sustainable way. The wreckfish stock is not currently overfished, there is no overfishing, and CPUE and size of caught fish have remained relatively constant over time. Nevertheless, anecdotally, the largest shareholder did not catch his entire quota last year, while other shareholders are not fishing and instead are leasing out. The ITQ review will not be able to analyze this type of information with no access to confidential data.

A decision to rescind or re-allocate unused shares might compel fishermen to fish for wreckfish even if moving to other fisheries would be economically justified. This would reduce incentives for biological conservation.

The TAC was reduced substantially in 2011, which was a reflection of a poor choice for TAC at the ITQ program's inception rather than a failure of the ITQ program to promote biological conservation and sustainability.

Safety at Sea

ITQs encourage safety at sea by allowing fishermen to choose when they go out. There was a derby fishery prior to implementation of the ITQ program. Now fishing occurs throughout the open season. Hence, the ITQ program has successfully reduced/eliminated the race for fish, and by choosing when to fish it is inherently safer. The ITQ review should note if fatalities or losses of boats in the wreckfish fishery have occurred.

Monitoring & Enforcement

The SEP noted that the existing reporting system of paper coupons was not as efficient as digital reporting, and that fishermen sometimes bemoan the requirement to hand-cancel a large number of 100 lb. coupons after their 500 lb. coupons had been used. A digital reporting system should be developed if the cost of development is not too great.

Originally, there were limited off-loading hours for the wreckfish fishery to facilitate OLE oversight of the new ITQ program. This requirement may not be as urgent now because the program is established and less interaction with OLE is needed, there are fewer shareholders, and the limited hours affect ability to land. Option to consider: Notification of OLE of time of landing rather than

---

Golan, Amos; Judge, George; Perloff, Jeffrey M. Estimating the Size Distribution of Firms Using Government Summary Statistics. *Journal of Industrial Economics*, March 1996, v. 44, iss. 1, pp. 69-80

Quirino Paris, Richard E. Howitt. An Analysis of Ill-Posed Production Problems Using Maximum Entropy. *American Journal of Agricultural Economics*. Vol. 80, No. 1 (Feb., 1998), pp. 124-138

reduced hours for offloading. This issue should be considered in concert with electronic reporting since electronic reporting would address coupon issues and reduce the need for in-person OLE interaction.

Privilege Duration & Subsequent Distribution
There was significant discussion of methods for clawing back and redistributing unused shares. While this can be a means of addressing an aging fishery, the SEP has significant concerns about the impacts of undermining the integrity of ITQ property rights, both to the market for ITQs and to the incentives to manage a resource sustainably for the long term.

Sunset provisions or use-it-or-lose-it provisions would adversely affect the development of markets for shares and annual quota, and hence limit the future achievement of theoretical benefits from the ITQ program.

Additional Issues: Paper vs. Digital Coupons and Cost recovery:
Ordinarily, ITQ programs are required to assess a cost recovery fee of up to 3%, but the wreckfish ITQ program is exempt because it was established prior to this requirement. Currently, a cost recovery fee has not been implemented because the effort to collect the fee is not considered worth its cost. However, a cost recovery system may be needed if the ITQ program switches from paper coupons to digital reporting. The Council and Regional Office need to compare the costs of developing an electronic reporting system vs. the cost of the current paper-based system given the relatively small number of participants.

5. Trip metrics used in estimating the economic impacts of recreational fishing

5.1. Documents

Attachment 4a: Draft report on economic impacts of fisheries for SAFMC managed species
Attachment 4b: Presentation slides for SEP discussion on economic impact report

5.2. Overview

As part of an ongoing effort to compile comprehensive information on SAFMC managed fisheries across species and throughout their range, a report has been drafted examining the economic impacts of fisheries for SAFMC managed species. The report is attempting to respond to the research question of "what are the economic impacts of fisheries for SAFMC managed species (both recreational and commercial)?", specifically focusing on jobs, income, value added, and business sales.

Council staff will provide an overview of the report **(*Attachment 4a*)**, the model used, and the type of recreational trip estimates provided by the Marine Recreational Information Program **(*Attachment 4b*)**.

5.3. Presentation

John Hadley, SAFMC staff

5.4. ACTIONS

Discuss and provide feedback to staff on appropriate recreational trip metrics to use when examining the economic impacts of recreational fisheries for SAFMC managed species.

Discussion Questions:

1. Given the various recreational trip estimates available, is there a specific metric that the SEP would recommend over what is currently used? Would a range between two of the trip types be better than a point estimate using one trip type as is currently practiced?

2. When presented with results of economic impact models, reactions often vary, with some reviewers feeling that numbers are inflated while others feeling that the numbers presented are too low. Given your knowledge of previous experience with I/O models and economic impact estimates of recreational fishing, do you feel the results provided in the report are within reason given the data that are available?

SEP RECOMMENDATIONS:

1. ***Given the nature of the various recreational trip estimates available, is there a specific metric that the SEP would recommend over what is currently used in the report ("directed trips"= targeted or harvested)? Would a range between two of the trip types be better than a point estimate using one trip type? Ex: Harvest and "Directed1" (targeted or harvested); Harvest and "Directed2" (targeted or harvested or released)***

Any attempt to present ranges of estimates is supported; sensitivity analysis is a crucial component of any economic analysis. Confidence intervals for the impact estimates would strengthen the report (note that the MRIP trip estimates have both mean and standard errors).

Since this is the initial study, the validity of estimates is rather open. For example, one might compare impact to those reported in Fisheries Economics of the United States (FEUS) in the report. One validity test might be to check that South Atlantic impacts are less than the FEUS with the same trip estimates. Further, other regional council impacts could be estimated to determine if the sum of the regional impacts is equal to the national impacts.

There seems to be a possibility for double-counting of trips. For example, consider a situation where there are 3 trips (1, 2, 3) and 3 and 3 target species (A, B, C). Including trips where A, B and C are either the primary or secondary target species would result in 6 trips. This is illustrated by the 6 cells in the table:

	Trips		
Target	*1*	*2*	*3*
Primary	*A*	*C*	*B*
Secondary	*B*	*A*	*C*

In addition to the potential for double counting with targeted trips, the study includes trips where a species is harvested and target plus harvested (directed). This seems to exacerbate the potential for double-counting. The report should make clear that trips are not double counted. Another potential for double-counting: if this study is also conducted by other councils, is the inclusion of impacts of South Atlantic species Northeast and Mid-Atlantic trips?

Solely using recreational trip expenditures to estimate the economic impacts for a specific species or group of species inherently underestimates the impacts generated by the fishing activity since durable goods expenditures are excluded, thus likely providing a lower bound estimate of the "true" economic impacts. Are there other methods or currently available data that the SEP would recommend to provide a more comprehensive economic impact assessment (jobs, income, etc.) of fishing activity specifically for SAFMC-managed species?

The report would be strengthened if (a) it includes definitions of the different impacts and what they mean and (b) the SERO economic impact tool is described. Dependent upon the correspondence with (a) and (b), staff may want to add tax impacts (sales, property, income, corporate profits--and separate local/state and fed level tax impacts) to the types of impacts reported from the economic impact model. IMPLAN can provide these tax results as a first-order approximation.

2. ***When presented with results of economic impact models, reactions often vary, with some reviewers feeling that numbers are inflated while others feel that the numbers presented are too low. Given your knowledge and previous experience with I/O models and economic impact estimates of recreational fishing, do you feel the results provided in the report are within reason under the constraint of using data that are currently available?***

There is some concern that impacts are overestimated. Staff may want to sort the angler trips fed into the economic impact model by whether the anglers are residents or non-residents of the study area region. The impacts associated with non-residents represent "new money" to the study area region, whereas the impacts associated with regional residents might not be considered as net impacts by some readers/observers. The staff may want to consider three levels of study area region: (1) the SAFMC multi-state region, (2) the coastal counties of the SAFMC multi-state region, (3) each state individually, (4) the coastal counties of each state individually. Within IMPLAN, the analyst can specify any set of U.S.A. counties as the study region.

Also, staff may want to sort the angler trips fed into the economic impact model by the primary purpose of the trip: fishing or some other purpose. The economic impacts of the trips for which fishing was not the primary purpose might not be considered by some as driven by fishing. (These trips might have occurred even in the absence of fishing. Examples of such trips would be trips to visit relatives at the coast which would have occurred even if fishing had not occurred.)

6. Results from the socio-economic profile of the Snapper Grouper fishery

6.1. Document

Attachment 5. Presentation slides for findings from the Snapper Grouper Socio-Economic Profile Report

6.2. Overview

As part of Vision Blueprint Regulatory Amendment 27 (Commercial Management Measures), the public was asked to comment on management approaches that would meet the needs of "traditional bandit boats." In addition, the Council expressed the need for an in-depth characterization of the fishery before considering substantial changes to how the fishery is managed. Hence, in March 2017 the Council directed staff to begin work on a socio-economic characterization of the commercial Snapper Grouper (SG) fishery. The SEP provided input on the work plan and outline for this project at their April 2017 meeting. Due to constraints on staff time, this analysis was contracted to former Council staff member, Dr. Kari MacLauchlin for completion by March 2018. Dr. MacLauchlin will provide the SEP with a presentation on results and findings from the report (***Attachment 5***).

6.3. Presentation

Kari MacLauchlin, report author and former SAFMC staff

6.4. ACTIONS

Discuss and provide feedback on the Snapper Grouper socio-economic characterization project. Additionally, this presentation will help provide background information for the next agenda item that seeks to expand on some of the work completed for this report.

SEP RECOMMENDATIONS:

The SEP would like to have permit purchase prices recorded when licenses change hands, but note that this may be problematic because of tax implications, and made no formal requests or recommendations. SEP members did express strong support for the project and considered the seasonal and geographic landings portfolios to be of very high value for describing the composition of the snapper-grouper fleets.

7. Socio-economic profile of fisheries for species managed by the South Atlantic Fishery Management Council

7.1. Document

Attachment 6a. Outline for a socio-economic profile of fisheries for species managed by the South Atlantic Fishery Management Council
Attachment 6b. Presentation slides for SEP discussion of socio-economic profile outline

7.2. Overview

This report is being pursued as part of an effort to further extend the work completed for the Snapper Grouper Fishery Management Plan and to provide comprehensive information on South Atlantic Fishery Management Council (Council) managed fisheries. At their December 2017 meeting, the Council directed staff to begin work on a socio-economic characterization of fisheries for Council-managed species. This report will include a description of fishing communities (demographics, engagement and reliance on fishing), fishing trends (effort, landings, fleet characteristics, seasonality of landings), competition from imported seafood, fishing infrastructure, and safety at sea. Council staff will provide an overview of the work plan, and timing for the project (***Attachment 6a*** **and** ***6b***).

7.3. Presentation

Christina Wiegand, SAFMC staff

7.4. ACTIONS

Discuss and provide guidance to the staff on the outline for the SAFMC fisheries characterization project (discussion questions included in ***Attachment 6a***).

SEP RECOMMENDATIONS:

1. ***The intent of this report is to provide a "snapshot" of SAFMC managed fisheries that would be updated annually or biannually. What sort of timeframe would be sufficient? Is the most recent 5 years sufficient?***

Use of the most recent 5 years of data is minimally sufficient. While a "snapshot" of the fishery at a given point in time may be interesting, it lacks the context of the longer time period during which an evolution in the fishery might be detected. It would be useful to include longer time series for data when available.

2. ***Are there other readily available (i.e., no primary research required) data sources that could be used to show the distribution of fishing infrastructure?***

The SEP discussed several methods to research fishing infrastructure, including an internet search for websites of different types of fishing-related businesses, contacts with Sea Grant for information about fishing-related infrastructure, and even a keyword search of real estate parcel data for property owned by businesses with names that indicate fish houses, fish dealers, etc. One caveat mentioned was that coastal development and the associated rising property values tend to displace traditional types of fishing-related businesses such as fish dealers. In some areas, boats now transfer their catches directly to trucks rather than at traditional fish houses. The Science Center is also currently cataloging infrastructure such as locations of docks, photos, links to other fishing-related businesses, etc.

3. ***Is there other readily available information not in the outline that could help better describe the social and economic characteristics of SAFMC managed fisheries?***

Suggestions included collaborating with local extension agents and Sea Grant offices, and police/arrest reports (looking for problems on boats/at docks).

4. ***Are there other analyses that could provide insight into the social and economic characteristics of SAFMC managed fisheries?***

In addition to traditional variables such as pounds landed and ex-vessel revenues, measures of productivity calculated as pounds and dollars per boat per year or per trip for each portfolio can provide useful insights about changes over time in economic performance of the commercial fisheries.

8. Analysis methods used in Snapper Grouper Amendment 27

8.1. Document

Attachment 7a. Excerpt from Regulatory Amendment 27 Impact Analysis
Attachment 7b. Excerpt from October 2017 SSC report
Attachment 7c. October 2017 SSC meeting minutes (see pages 233-236)

Additional references for discussion:

1) N. Farmer, J. Froeschke. Forecasting for Recreational Fisheries Management: What's the Catch?. North American Journal of Fisheries Management, 35:4, (2015) 720-735

8.2. Overview

In June 2016, the Council directed staff to begin development of an amendment to address items identified in the Vision Blueprint addressing commercial management measures. In September 2016 the Council directed staff to prepare a scoping document and scoping meetings were held in late January/early February 2017. The Council reviewed public comments and gave direction to staff at their March 2017 and June 2017 meetings. Actions include commercial split seasons and/or trip limit adjustments for several species/complexes; re-evaluation of the shallow water grouper closure, and size limit modifications. The Council revised alternatives at their September 2017 meeting and approved the same timeline for development as that for the recreational amendment. At their December 2017 meeting, the Council further revised actions and alternatives in the amendment.

Technical analyses conducted to date on the amendment would benefit from SEP and SSC review. In particular, the SEP should comment on the appropriateness of the two models and methodologies used to predict landings under various scenarios. Analyses were performed by NMFS SERO staff and a sub-set of the results are included in ***Attachment 7a***. At their October 2017 meeting, the SSC discussed the preliminary results from both models and suggested using the results from the "Last 3" model instead of the SARIMA model (***Attachment 7b***). Despite

this recommendation, the SSC did have some questions on the SARIMA model that could not be answered during the meeting, as the analyst was not available to comment (***Attachment 7c***). Also, analyses have been revised and more analyses have been completed since the October 2017 SSC meeting. As such, the SSC will be discussing this topic again at their upcoming meeting in May 2018.

While the models generally agree for some analyses, divergent results presented by the two models under some circumstances (see red porgy analysis in ***Attachment 7a***) are at the crux of the request from the amendment's IPT for the SEP and SSC to provide guidance on the appropriate model results to use for the biological, economic, and social effects. The SEP's discussion is intended to help the IPT with the analysis of the social and economic effects for actions in the amendment as well as contribute to the SSC's upcoming discussion on the topic at their next meeting in May 2018. Council staff will provide an overview of the models used and the model results to facilitate the discussion.

8.3. Presentation

John Hadley, SAFMC staff

8.4. ACTIONS

Discuss and comment on the use and uncertainties of the two methods used in Snapper Grouper Regulatory Amendment 27 to analyze the effects of the actions and alternatives.

Discussion Questions:

1. Is one methodology more appropriate for use in these analyses?
2. Do either of these approaches provide clearer management advice to the Council?
3. Are there differences in relative risk or uncertainty between the two methods?

SEP RECOMMENDATIONS:

1. Is one methodology more appropriate for use in these analyses?

The Council asked the SEP to comment on the appropriateness of two models (the "Last 3 Years" model and the SARIMA model) and methodologies used to predict catches and closure dates under various management alternatives. The Last 3 Years model is based on average catch rates from the last three years whereas the SARIMA model is based on autoregressive methodology. Both models were applied to blueline tilefish and red porgy, and the results were presented to the SEP for comparision and consideration. The models generally agreed on closure dates for blueline tilefish, and disagreed for red porgy, with the Last 3 Years model predicting closures for red porgy whereas the SARIMA model did not. Divergent results presented by the two models for red porgy (see analysis in Attachment 7a) are at the crux of the request.

Regarding the appropriateness of the two models and methodologies used to predict landings under various scenarios, the SEP agreed that, in principle, the SARIMA method was superior to the "Last 3 Years" averaging method; however, the SEP recommends that the council be presented with results from both models, as both models have pros and cons. The "Last 3 Years" model is less complicated and easier to understand, but it puts perhaps too much weight on data from recent years at the expense of neglecting longer-run effects due to changes in year class abundance or environmental or policy shocks or cycles. The SARIMA model is more complicated but probably gives a better picture of the uncertainty involved in predicting landings through better modeling of the error term that incorporates the effects of factors left out of the model. Over time, as data availability and quality improve, the performance of the SARIMA model should improve relative to the "Last 3 Years" model.

In the particular application of the models to red porgy, the SEP recommends additional research to determine why their predicted outcomes differed with regard to management advice about potential future closures. Current regulations for red porgy include a closure from January through April which would be rescinded. The models may have differed in their predictions about future catches and closure dates in part (or even primarily) due to the way in which they predicted potential catches between January and April. The "last 3" method used adjusted historical data to predict landings from January through April, whereas the SARIMA model did not ("Jan-April catches were left blank"). If predicted landings between January and April by the SARIMA model were substantially smaller than with the "last 3" model, the discrepancy between model predictions might be resolved if the SARIMA model were re-estimated by using the same adjusted historical data for the January through April closed period as was used in the "last 3" model.

2. Do either of these approaches provide clearer management advice to the Council?

3. Are there differences in relative risk or uncertainty between the two methods?

More generally, because the SARIMA model is based on more years of data compared to the Last 3 Years model, and because there is typically greater variation in the data over longer periods of time compared to shorter periods of time, the confidence intervals produced by the SARIMA model will likely be wider than those produced by the Last 3 Years model. This does not mean that the the SARIMA model is producing less accurate forecasts compared to the other model; rather, the SARIMA model is providing a more accurate picture of the potential uncertainty in the forecasts. Presenting confidence interval estimates for alternative, lower confidence levels for each model (in addition to point estimates and 95% confidence intervals) might help the council compare the uncertainty in the results across the two models. It is expected that although the 95% confidence intervals might be quite different across the two models, 80% and 70% CI's, say, might be more similar. A hypothetical example of how this might be presented by staff to the Council is shown below:

In situations where the variation in the data is so great that the SARIMA model does not produce a (positive) point estimate, the staff could provide the council with the (upper) confidence interval estimates from each model. In this situation, it could be especially useful to provide 70% and 80%, say, confidence interval estimates (in addition to the 95%) in order to show that as the council's risk tolerance increases, the estimates provided by the two models become more similar (that is, 70% confidence intervals likely will be more similar across models compared to 95% confidence intervals).

Staff might want to use typical time series modeling methods to identify the significant lag lengths for the SARIMA model rather than using only one-month and 12-month lags. Although one-month and 12-month lags are typically important, other lag lengths related to the species' life cycle length or cycles in environmental parameters (water temps, prey abundance, predator abundance, etc.) might be significant.

Staff might want to compare existing SARIMA results with the results from running the SARIMA model with missing data for some years replaced with averaged or interpolated values from prior and subsequent years.

Staff might want to consider updating the SARIMA model estimates over time. As new data arrive each year, the SARIMA model could be run on a larger data set, improving model performance.

Neither model is designed to inform decisions regarding the equitable geographic/spatial distribution of landings. If the historical average catch distribution across regions is applied to the results from each model, the models are not producing different estimates of the spatial distribution; rather, the models are simply providing different estimates of total catch that are then allocated to the different geographic areas using the same, given, historical landing distribuion across areas.

9. Red snapper management and recreational reporting

9.1. Document

Attachment 8a. Revised Snapper Grouper Amendment 46 Options Paper
Attachment 8b. MyFishCount 2017 Red Snapper Mini-Season Report
Attachment 8c. Draft survey on recreational reporting

Additional references for discussion:

1) MyFishCount feedback correspondence #1

2) MyFishCount feedback correspondence #2

3) K. Garvy. The Emergence and Use of Angler Self-Reporting Apps in Recreational Fisheries. Masters Thesis (2015).

9.2. Overview

The Council requested that staff begin development of Amendment 43 (red snapper) in June 2016 to address items related to management of red snapper and other directly and indirectly related items that would ultimately result in an adaptive management approach and respond to items in the Vision Blueprint (i.e., recreational stamp, recreational season, time-area closures, etc.). At their June 2017 meeting, the Council directed staff to finalize development of Amendment 43 with only one action: to remove the process currently in place to set ACLs and set an ACL for red snapper for 2018 and beyond in order to allow limited harvest. The remainder of the actions in Amendment 43 will continue to be developed in Amendment 46 in 2017-2018.

The Council is challenged with the quality of recreational data for red snapper and several other species occurring in the South Atlantic region. A primary management objective for the Council is to improve data streams for many recreationally caught species. The Council is considering alternatives for permitting and reporting for fishermen on private recreational vessels. One approach could be self-reported data from anglers. As such, staff is in the process of developing a mobile phone app, MyFishCount, that will allow anglers to electronically report information on landed and discarded fish caught during recreational trips. Another primary objective of the Council is to reduce the number of dead discards through regulations or through best release practices. Both self-reporting and implementing best management practices will benefit from the use of incentives if they are to become common practice among the recreational community.

Council staff will facilitate discussion on recently considered management options (***Attachment 8a***) to implement recreational reporting, improve the survival of released fish, and manage the dive fishery. Staff will give an overview of the catch reporting app and ask the SEP for further input on reports sent to anglers who used the MyFishCount, an electronic recreational reporting platform during the 2017 red snapper mini-season (***Attachment 8b***), and determining angler motivation and participation to recreational report through a survey-based approach (***Attachment 8c***).

9.3. Presentation

Chip Collier and Kelsey Dick, SAFMC staff

9.4. Actions

Discuss and provide recommendations to the Council and staff on potential ways to incentivize recreational reporting and best management practices.

Discussion Questions:

1. Literature indicates the importance of providing information and feedback to citizen science project participants. Is the MyFishCount report messaging and content clear and cohesive? Does the report provide information that would be of interest to anglers?

2. Limited literature and research exists on angler motivations to recreationally report or participate in recreational reporting projects. This information is important as it can guide outreach and messaging content to ultimately increase participants. Is the survey clear and cohesive? Does the survey aim to answer the research questions provided?

3. Are there other readily achieved social or economic approaches that could be used to incentivize anglers to regularly use the recreational reporting app?

SEP RECOMMENDATIONS:

1. Literature indicates the importance of providing information and feedback to citizen science project participants. Is the MyFishCount report messaging and content clear and cohesive? Does the report provide information that would be of interest to anglers?

The SEP recommends providing information on catch in numbers instead of percentages. The SEP encourages the SAFMC to continue to provide information and make clear that the feedback provides information that allows anglers to continue fishing.

2. Limited literature and research exists on angler motivations to recreationally report or participate in recreational reporting projects. This information is important as it can guide outreach and messaging content to ultimately increase participants. Is the survey clear and cohesive? Does the survey aim to answer the research questions provided?

The angler survey provides an excellent opportunity to collect information on red snapper fishing to support Amendment 46. Respondents could be asked about their behavior related to Amendment 46 alternatives, such as future fishing plans and willingness to purchase a special red snapper license and how many red snapper target trips would be taken under various conditions. The survey itself should follow the economics literature in terms of behavioral questions, including collecting continuous measures of trips or days fished (currently the draft survey includes categorical responses that mask potentially very informative variation within categories). Collecting zip codes for angler residence would allow estimation of an economic demand model to estimate the value of red snapper trips and catch.

3. Are there other readily achieved social, economic or marketing approaches that could be used to incentivize anglers to regularly use the recreational reporting app?

One suggestion was to move the app into the realm of social media, providing instant feedback about catch, linking it to twitter, etc.

Another suggestion was that various types of marketing incentives could be explored to encourage anglers to use the app. For example,

a. *Using the app could give the user a chance to receive a free or reduced-price fishing license the following year or a chance to "win" an increase in his bag limit that season, or the following season.*
b. *Sport fishing product manufacturers, for-hire fishing businesses, marinas, fishing centers, etc., could provide electronic discount coupons on the app that would simultaneously provide incentives to the app users and advertising opportunities for fishing-related businesses.*
c. *A business could donate a product or service (a fishing boat, or a fishing trip) to SAFMC (or a third party non-profit foundation) (which would perhaps be tax deductible for the business) that would be advertised on the app, and using the app would give the user a chance of winning the product or service (similar to a raffle or lottery).*
d. *If the zip code and catch history of the user are known, then marketing incentives could be auto-tailored/matched to a user's location and catch preferences; for example, if fishing trips were offered as prizes, the user could be shown fishing trips in his region rather than fishing trips in far-away regions, and if the user targets flounder, then the user could be shown ads or prizes that are flounder-related.*

10. Other Business

No other business was discussed.

11. Opportunity for Public Comment

There were no public comments.

12. Report and Recommendations Review

13. Next SEP Meeting

- Spring 2019, Charleston SC