

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

SOCIO-ECONOMIC PANEL OF THE SCIENTIFIC AND STATISTICAL COMMITTEE



SEP Meeting Overview

May 3, 2016

**Town and Country Inn
2008 Savannah Highway
Charleston, SC**

PURPOSE

This meeting is convened to:

- Discuss definitions of Optimum Yield (OY)
- Review the economic decision tool for Snapper Grouper Amendment 37 (hogfish)
- Provide input on red snapper management
- Discuss recent and upcoming council actions in the South Atlantic region

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DOCUMENTS

Attachment 1a: Excerpt on Optimum Yield from NMFS guidance on National Standard 1

Attachment 1b: 2016-2020 Vision Blueprint for the Snapper Grouper Fishery

Attachment 1c: Background Information on OY in the Snapper Grouper and Dolphin Wahoo FMPs

Attachment 1d: Background on Bering Sea and Aleutian Islands (BSAI) Groundfish OY

Attachment 2a. Overview of Snapper Grouper Amendment 37

Attachment 2b. Economic Methods for Economic Decision Tool

Attachment 2c. Presentation on the Snapper Grouper Amendment 37 Economic Decision Tool

Attachment 3: Red Snapper Management and Data Synopsis

Attachment 4: Recent and Developing Council Actions

1. Introduction

1.1. Documents

Agenda

Minutes, April 2015

1.2. ACTIONS

- Approve Agenda
- Approve April 2015 Minutes
- Introductions

2. Discussion on Defining Optimum Yield

2.1. Documents

Attachment 1a. Excerpt on Optimum Yield from NMFS guidance on National Standard 1

[Full NS1 guidance available here:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_1_cfr.pdf

Attachment 1b. 2016-2020 Vision Blueprint for the Snapper Grouper Fishery

This is the guiding document generated by the Visioning Process, which includes the overall management goals, objectives and actions. Public input on problems and solutions in the snapper grouper fishery were an integral part of this three-year project. More details about the Visioning Process available here: <http://www.safmc.net/resource-library/council-visioning-project>

Attachment 1c. Background Information on OY in the Snapper Grouper and Dolphin Wahoo FMPs

This document includes information on the optimum yield for some snapper grouper species, and for dolphin, and was compiled following discussion at the March 2016 SAFMC meeting. Dolphin is primarily a recreational species.

Attachment 1d. Background on Bering Sea and Aleutian Islands (BSAI) Groundfish OY

This document was provided by David Witherell, North Pacific Fishery Management Council. The BSAI Groundfish is managed with a multi-year, multi-species OY, and a total allowable catch (TAC) for each species in the BSAI Groundfish complex.

Additional references for the discussion:

Patrick, W.S., and J.S. Link. 2015. Hidden in plain sight: Using optimum yield as a policy framework to operationalize ecosystem-based fisheries management. *Marine Policy* 62: 74-81.

Healey, M.C. 1984. Multiattribute analysis and the concept of optimum yield. *Can. J. Fish. Aquat. Sci.* 41:1393-1406. Available at: <http://web.who.edu/seagrant/wp-content/uploads/sites/24/2015/01/WHOI-R-84-014-Healey-M.C.-Multiattribu.pdf>

Dichmont, C.M., et al., 2010. On implementing maximum economic yield in commercial fisheries. *PNAS* 107(1):16-21. Available at: <http://www.pnas.org/content/107/1/16.full.pdf>

2.2. Overview

The Magnuson-Stevens Act defines *optimum yield* as:

...the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems; that is prescribed on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor; and, in the case of an overfished fishery, that provides for rebuilding to a level consistent with producing the MSY in such fishery. OY may be established at the stock or stock complex level, or at the fishery level.

With the variety of resource users and desired outcomes for fisheries management in the South Atlantic and other regions, it is common for the Council to encounter conflicting management goals. An example is the consideration of changing recreational/commercial allocations, with which the definition of the optimum yield for a fishery creates challenges for the Council.

The concept of OY has been used in fisheries for several decades and is still required by the MSA. NMFS guidance instructs that OY is based on the defined maximum sustainable yield (MSY) for the fishery and must not exceed the MSY level. However, fisheries management has adapted to the acceptable biological catch (ABC) and annual catch limit (ACL) system mandated by the 2006 Reauthorization of the MSA, which may broaden the potential definition of OY by removing the need for the association with MSY. Additionally, ecosystem-based management and managing for multi-fishery participation—looking at the bigger picture—may help to construct a new approach to defining OYs and overall management goals.

The SEP discussion should include but is not limited to:

- different ways to define OY
- different ‘levels’ of OY and how they would interact, such as sector OYs and an overall fishery OY (see BSAI Groundfish example (Attachment 1d))
- considerations for OY decisions- social, economic, ecosystem-based, etc.
- applications of OY in management decisions and long-term goals (e.g., the Snapper Grouper Vision Blueprint).

2.3. Presentation

Kari MacLauchlin, SAFMC staff

2.4. ACTIONS

Discuss and provide guidance to the Council on revising the definition of optimum yield.

SEP RECOMMENDATIONS:

“different ways to define OY”

The SEP distinguishes between the long term goal of a fishery (OY) and the mechanisms for achieving it (ACL and allocation to different sectors). OY may include a number of different and potentially conflicting standards such as

- maximum economic yield (MEY),
- tradeoffs between economic efficiency and employment,
- social indicators of dependent communities (see Jepson and Colburn’s work)
- the preservation of working waterfronts,
- economic impacts on communities (e.g. as measured by I/O modeling)
- the distribution and availability of seafood to the non-fishing public,
- fishing opportunities (as measured by the likelihood of encountering fish)

“different ‘levels’ of OY and how they would interact, such as sector OYs and an overall fishery OY (see BSAI Groundfish example (Attachment 1d))”

OY as applied in the North Pacific is solely a commercial concept, but in the Southeast determining OY is complicated by the multi sector fisheries, data limitations, and allocation discussions. One approach is to be to think of OY as existing in three “buckets”:

- commercial value, measurable by the landed or consumer value minus harvest cost
- recreational value, measurable by willingness to pay minus harvest cost
- reserve value, which is the biomass left in the ocean, measurable by non consumptive value and its contribution to increasing the likelihood of encountering fish and reducing harvest cost in future fishing seasons.

The long term goal is to equalize the value per fish across the three buckets. This per fish value will change year to year as consumer demand for seafood and recreation, harvest costs such as gas prices, bad year classes, etc affect CPUE and sector values. The value per fish would also include the impact to fishing communities and the money spent in community by recreational anglers. If a sector is not catching its portion of the ACL, and another sector is harvesting 100% of its portion of the ACL, then it is possible that reallocating unharvested fish to between sectors could increase the overall value of the fishery. However, the reserve value of unharvested fish is not zero—if unharvested fish are reallocated to a sector that harvests them, then the number of fish in reserve is reduced, which can reduce the likelihood of encountering fish and increase search/harvest costs for all sectors the following year. Any reallocation of fish between sectors should balance the value per fish in each of the three "buckets" as the fishery moves towards long-run OY.

“ considerations for OY decisions- social, economic, ecosystem-based, etc.”

“ applications of OY in management decisions and long-term goals (e.g., the Snapper Grouper Vision Blueprint)”

The SEP recommends the Council consider the following when attempting to move towards OY, especially in the context of reallocating between sectors:

- 1) How certain is the assessment of the stock?

- 2) What is the longevity and productivity of the species? Can it quickly rebuild?
- 3) Move fish between sectors incrementally. Leave some fish in the “reserve” sector to maintain lower search/harvest costs and higher encounter rates.
- 4) Long term shifts between sectors need increasingly better justification to move towards OY.
- 5) Be aware of relative timing between commercial and recreational demand or between different geographical regions in the SAFMC jurisdiction.
- 6) Commercial benefits are more immediately measureable than recreational benefits, but recreational benefits exist even if not measured. The shadow value (the opportunity cost of fish in reserve in the water) is also a value that should be counted.
- 7) Are regulations a significant factor in a sector not catching its allocation of the ACL?
- 8) How elastic is the commercial fishing market for the species?
- 9) Be aware of the placement of fish in trip landings portfolio for both sectors. The marginal value of additional fish makes or breaks many commercial trips.

3. Hogfish Decision Tool for Snapper Grouper Amendment 37

3.1. Documents

Attachment 2a. Overview of Snapper Grouper Amendment 37

Attachment 2b. Economic Methods for Economic Decision Tool

Attachment 2c. Presentation on the Snapper Grouper Amendment 37 Economic Decision Tool

3.2. Overview

In response to the outcome of the SEDAR 37 (2014) assessment, the Council began development of Amendment 37 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (SG-37). SG-37 proposes different ABCs, annual catch limits (ACLs), annual catch targets, minimum size limits, trip limits, and bag limits for the FLK/EFL and GA-NC hogfish stocks. Recreational and commercial decision tools were developed to simulate the impacts of various combinations of proposed management measures to support SG-37.

Myra Brouwer (SAFMC staff) will provide an overview of Amendment 37, including a summary of the rationale, actions and alternatives. David Records (SERO) will review the economic decision tool.

Attachments 2a/2b are still under review and will be provided as soon available. The economic decision tool (Excel file) will be available soon, and posted in the SSC briefing book:

http://safmc.net/SSCMeeting_BriefingBook05_2016.

3.3. Presentations

Snapper Grouper Amendment 37 Overview – Myra Brouwer, SAFMC staff

Review of the Economic Decision tool – David Records, SERO staff

3.4. ACTIONS

Discuss and make recommendations as necessary.

- Consumer surplus (CS) estimates were used to calculate the economic effects for the recreational sector. There is no specific CS estimate available for hogfish. The CS value for a snapper (\$12.37 in 2014 \$) was used as a proxy. There is a CS value for grouper, but it is much higher (\$134.73 for a first grouper, \$103 for a second grouper, \$69 for a third and so on). There is also a CS estimate for catching a red snapper of \$140.23. Does the SEP agree that using the CS for harvesting a generic snapper is the most appropriate, or should another value be used?
- Estimates of value for the commercial fishery used an average price per pound for hogfish. Using an average hogfish price is an important assumption because it assumes price will not change in response to changes in hogfish supply. There are many substitute species for hogfish that would suggest high price elasticity. Additionally, there has been low fluctuation in price over time and the overall quantity of commercial hogfish landings relative to other snapper grouper species is low. Is it appropriate to use the average price per pound for commercial economics effects?
- SARIMA modeling was used to forecast baseline commercial landings for the EFL/FL Keys sub-region. Does the SEP feel that using this model was the most appropriate approach? If not, what other modeling approaches would be better?
- Are there other aspects of the economic models that the SEP would like to comment on?

SEP RECOMMENDATIONS:

Consumer surplus (CS) estimates were used to calculate the economic effects for the recreational sector. There is no specific CS estimate available for hogfish. The CS value for a snapper (\$12.37 in 2014 \$) was used as a proxy. There is a CS value for grouper, but it is much higher (\$134.73 for a first grouper, \$103 for a second grouper, \$69 for a third and so on). There is also a CS estimate for catching a red snapper of \$140.23. Does the SEP agree that using the CS for harvesting a generic snapper is the most appropriate, or should another value be used?

There is explicit consideration of uncertainty about recreational hogfish landings but none about the consumer surplus (CS) values. In Haab et al. (Marine Res Econ 2012) the CS estimates for a generic snapper range from \$9 to \$25 with confidence intervals around each estimate. The recreational analysis chooses the lowest estimate and inflates it to \$12 in 2014 dollars. It is not clear why the lowest estimate was chosen, especially since these values are from the boat mode with hook and line gear and hogfishing trips are very different with mostly spearfishing gear. The estimate of consumer surplus for generic snappers is the most appropriate measure from among those presented to the SEP.

However, the economic value of the marginal fish could be very different when bag limits are reduced from 5 fish per trip to 1 fish per trip. The recreational analysis could use the demand curve from grouper provided in the “SEP Meeting Overview” document (SERO should include the reference for these estimates) as a benefit function transfer to hogfish for bag limit reductions. The grouper values are the bold numbers in the table. The CS for grouper catch #4 and #5 are estimated with the linear trend from fish 1-3. Assuming that the \$12 per fish CS point estimate is a good number for the median hogfish CS and the hogfish bag limit generates a demand curve similar to grouper, the marginal values would be approximately:

Fish #	Grouper	Hogfish
1	135	23
2	103	18
3	69	12
4	36	6
5	3	1

This demand function would be a good candidate for sensitivity analysis in recreational and commercial-recreational allocation analysis. The consumer surplus lost from not catching fish numbers 2-5 is about \$36 which is less than under the assumption that the marginal value is equal to the average, \$48. The assumption that \$12 is the appropriate CS for fish #3 is key to this estimate, so the SEP recommends a sensitivity analysis under uncertainty. The SEP does not know the correct CS number for hogfish (other than recommending the generic snapper CS is the best place to start) but statistical (confidence intervals +/- ~25% from Haab et al. and ranges 9-25 before the required adjustment for inflation) and diminishing marginal values should each be considered in order to gain more confidence in the recreational economic analysis.

Estimates of value for the commercial fishery used an average price per pound for hogfish. Using an average hogfish price is an important assumption because it assumes price will not change in response to changes in hogfish supply. There are many substitute species for hogfish that would suggest high price elasticity. Additionally, there has been low fluctuation in price over time and the overall quantity of commercial hogfish landings relative to other snapper grouper species is low. Is it appropriate to use the average price per pound for commercial economics effects?

The SEP concurs with the use of average price per pound as a proxy measure of marginal value for the commercial fishery.

SARIMA modeling was used to forecast baseline commercial landings for the EFL/FL Keys sub-region. Does the SEP feel that using this model was the most appropriate approach? If not, what other modeling approaches would be better?

For the FLE-Keys area, there appears to be a pattern for landings to cycle, peaking every 3 or 4 years followed by several years of big declines. This could be related to the hogfish 3-5 year generation time, cycles in ocean conditions, or other factors. The SEP recommends a revised analysis that considers a 4-year lag to account for the apparent longer-term cycle that appears in Figure 1 of Attachment 2b in the SEP briefing book.

Are there other aspects of the economic models that the SEP would like to comment on?

Perform the analysis for minimum size limits first, and then perform the analysis for trip limits conditioned on the result for each proposed minimum size limit (MSL). This could be accomplished by

running the analysis on trip catches after applying the percentage reduction from each proposed MSL. The issue is that it may be harder for fishermen to reach the trip limit if a minimum size limit is already limiting the number of fish they can keep.

Table 2 in Attachment 2b: For FLE-Keys size limit alt 3e (stepped 14-16 inches)—the exposition could be improved if it showed two rows of results, one each for the 14 inch MSL in the first year of implementation and another for the 16 inch MSL for the second year.

Table 6 in Attachment 2b: For GA-NC size limit alt 2f (stepped 15-18-20 inches)—the exposition could be improved if it showed three rows of results, one each for the 15 inch MSL in the first year of implementation, 18 inch MSL for the second year and 20 inch MSL for the third year.

4. Red Snapper Management

4.1. Document

Attachment 3. Red Snapper Management and Data Synopsis

4.2. Overview

The stock assessment for red snapper (SEDAR 41) will be reviewed by the SSC at their May 2016 meeting, and the Council will receive the assessment results and SSC recommendations in June 2016. Red snapper in the South Atlantic are currently managed with no size limit, 1 fish per person bag limit, 75-pounds commercial trip limit, limited season, and annual catch limits (ACLs) based on acceptable biological catch (ABC) recommendations from the SSC.

Amendment 28 to the Snapper Grouper FMP was approved in 2013 and specified the process and formulas for setting commercial and recreational ACLs for red snapper during limited fishing seasons. NNMFS will not open a season if the previous year's harvest, including dead discards, exceeds the projected ABC level for that year. The red snapper seasons in recent years have been short: recreational seasons are 6-8 days and commercial seasons are between 3-7 weeks. In 2015, harvest of red snapper was not allowed due to total removals in 2014 exceeding the 2014 ABC.

The public and the Council are interested in revising management of red snapper, particularly because updated information from the recent stock assessment will be available. The overall management goal is to allow some harvest of red snapper, and the Council may consider standard measures such as bag/trip limits, seasons, and changes in minimum size limit.

Chip Collier, SAFMC staff, will provide a synopsis of red snapper data is being provided to inform Council discussions on potential red snapper management measures. The data include commercial and recreational landings, seasonality of harvest, size distribution of red snapper catch, and distribution of bag/trip sizes.

4.3. Presentation

Chip Collier, SAFMC staff

4.4. ACTIONS

- Provide input on potential actions to allow and lengthen the red snapper commercial and recreational seasons.
- Make recommendations for economic and social analyses considerations.

SEP RECOMMENDATIONS:

Regarding the incidental catch and discard of red snapper by fishermen who target other species, the SEP recommends the Council consider looking at red snapper as part of a larger complex with the goal of streamlining and reducing complexity within the whole regulatory regime. This may include unified seasonal opening and closing across the complex. Pew is currently conducting a study to measure the potential impact of unified seasons in the recreational reef fisheries in the Gulf of Mexico which may be applicable. The Council may also consider area closure of key core habitat, tailored to areas where they are most needed (e.g. Central and Northern Florida) as part of simplified regime, then allowing more fishing outside of those closed areas.

Regarding the concern about discard of red snapper by fishermen who target red snapper, the SEP recommends the Council consider a regime based on a limited number of tags tied to a specific bag limit (rather than brief seasonal opening) that are distributed based on auction or lottery.

Finally, the SEP recommends the Council consider opening the commercial season during the shallow water grouper spawning closure as an opportunity to supply a substitutable fish for the temporarily unavailable grouper species.

5. Recent and Developing Council Actions

5.1. Document

Attachment 4. Recent and Developing Amendments

5.2. Overview

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

5.3. Presentation and Discussion

Kari MacLauchlin, SAFMC staff

5.4. ACTIONS

Discuss and make recommendations as necessary.

SEP RECOMMENDATIONS:

The SEP had no specific recommendations

6. Other Business

7. Report and Recommendations Review

8. Next SEP Meeting

- Spring 2017, Charleston SC