



## **Joint Meeting of the Mid-Atlantic Fishery Management Council & Scientific and Statistical Committee**

Tuesday, October 6, 2020

3:00 P.M. – 4:30 P.M.

via Webinar

### **AGENDA**

- 3:00 Welcome/Introductions
- 3:05 Review and direction to SSC Economic Work Group
  - Presentation on Work Group recommendations (G. DePiper, Economic Work Group Chair)
- 3:45 Discuss science considerations due to missing 2020 data
  - Overview of SSC deliberations and input (P. Rago, SSC Chair)
- 4:15 Discussion and provide feedback on possible risk policy considerations for Ocean Quahog (P. Rago)
- 4:30 Adjourn



## Mid-Atlantic Fishery Management Council

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# MEMORANDUM

**Date:** September 25, 2020

**To:** Council  
Scientific and Statistical Committee

**From:** Brandon Muffley, staff

**Subject:** Background Information for Joint Council-SSC Meeting

## Introduction:

In August 2019, the Mid-Atlantic Fishery Management Council (Council) and its Scientific and Statistical Committee (SSC) met jointly for the first time to discuss and number of topics and issues<sup>1</sup>. Outside of leadership, there is typically limited interaction between the Council and SSC and the joint meeting not only provided an opportunity to address pertinent issues, it also presented an opportunity to foster increased dialogue and build relationships. A number of outcomes and results were achieved in 2020 as a result of the first joint meeting, including: new SSC membership with a focus on socioeconomic expertise, formation of an SSC economic work group, and increased focus and discussion by the SSC on Council activities and priorities (e.g., MRIP, offshore wind, ecosystem/habitat, and management actions).

Given the overall success of the first meeting, it was decided to convene a second joint meeting to allow for continued communication and development of SSC activities in support of Council priorities. Below is additional background material for each agenda item for the joint Council-SSC meeting developed by the SSC Economic Work Group and Paul Rago.

## Review and Direction to SSC Economic Work Group:

### *Work Group Members:*

Lee Anderson, John Boreman, Geret DePiper (Work Group Chair), Sarah Gaichas, Mark Holliday, Jorge Holzer, Yan Jiao, Paul Rago (SSC Chair)

### *Overview:*

The SSC recommended the formation of the Economic Work Group<sup>2</sup> at its July SSC meeting during their deliberations regarding acceptable biological catch (ABC) recommendations for

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<sup>1</sup> More information on the 2019 joint Council-SSC meeting, including agenda and meeting materials, can be found at: <https://www.mafmc.org/briefing/august-2019>.

<sup>2</sup> The work group was originally named the Socioeconomic Work Group, but changed its name due to the fact that the only social scientists on the SSC are economists, and the work group's focus will be limited to that discipline.

Council-managed fisheries. The SSC noted a variety of topics and issues on which this workgroup could provide helpful advice and information to the Council.

The concept of the Work Group and potential areas of development were presented to the Council at their August 2020 meeting. The Council was supportive of forming the Work Group but requested additional details on the types of topics and potential products the Work Group would work on and develop. The Work Group has since met twice via video conference to work on these details, on Monday, August 31 and Friday, September 19, 2020. The Work Group also consulted with the full SSC during their September 8-9 meeting<sup>3</sup>.

Over the course of its two meetings, the Economic Work Group has developed the following proposal for consideration by the Council.

*Work Group Proposal:*

The Economic Workgroup is proposing the development of a case study as an example of the added value it can provide the Council. The Work Group proposes to focus on programmatic issues versus *ad hoc* issues. Here, "programmatic" is defined as a process that can be applied broadly to inform Council actions, rather than to a single decision point in the process such as a Term of Reference during ABC deliberations, or to unique analyses such as the Commercial/Recreational Allocation Model for Summer Flounder recently developed for the Council. While the Work Group recognizes the utility of *ad hoc* analyses such as the Economic Trade-Offs of ABC Control Rules for Summer Flounder and Implications for Scup and Butterfish<sup>4</sup>, it believes a programmatic approach is likely to generate the greatest value to the Council, as it allows for a consistency in the application of information and advice delivered to the Council across actions and deliberations. Nevertheless, the Work Group expects *ad hoc* analyses may play an important role in generating actionable information to the Council on an as-needed basis and the SSC will serve in whatever role the Council determines is best.

The envisioned timeline of the proposed programmatic work is outlined in Figure 1. If agreeable, the Work Group will outline 2-3 case study alternatives between the October and December Council meetings, focusing on 2021 Council-identified priorities considered in the draft 2021 Implementation Plan. These outlines will include details of the expected benefits derived from SSC engagement in each of the 2-3 priority actions, and metrics by which to gauge success. The Council would then decide during their December 2020 meeting which one, if any, of the case studies to move forward.

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<sup>3</sup> The Economic Work Group report to the SSC can be found at:

[https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5f5279d50218c80cf9697331/1599240661463/a\\_SSC+Socioeconomic+WG+Meeting+Summary\\_08\\_31\\_20\\_final.pdf](https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5f5279d50218c80cf9697331/1599240661463/a_SSC+Socioeconomic+WG+Meeting+Summary_08_31_20_final.pdf)

<sup>4</sup> This analysis was used as part of the risk policy framework action and the report can be found at:

[https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5de522ae7b2acb00e7f08106/1575297715160/T\\_ab04\\_Risk-Policy-FW\\_2019-12.pdf](https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5de522ae7b2acb00e7f08106/1575297715160/T_ab04_Risk-Policy-FW_2019-12.pdf)

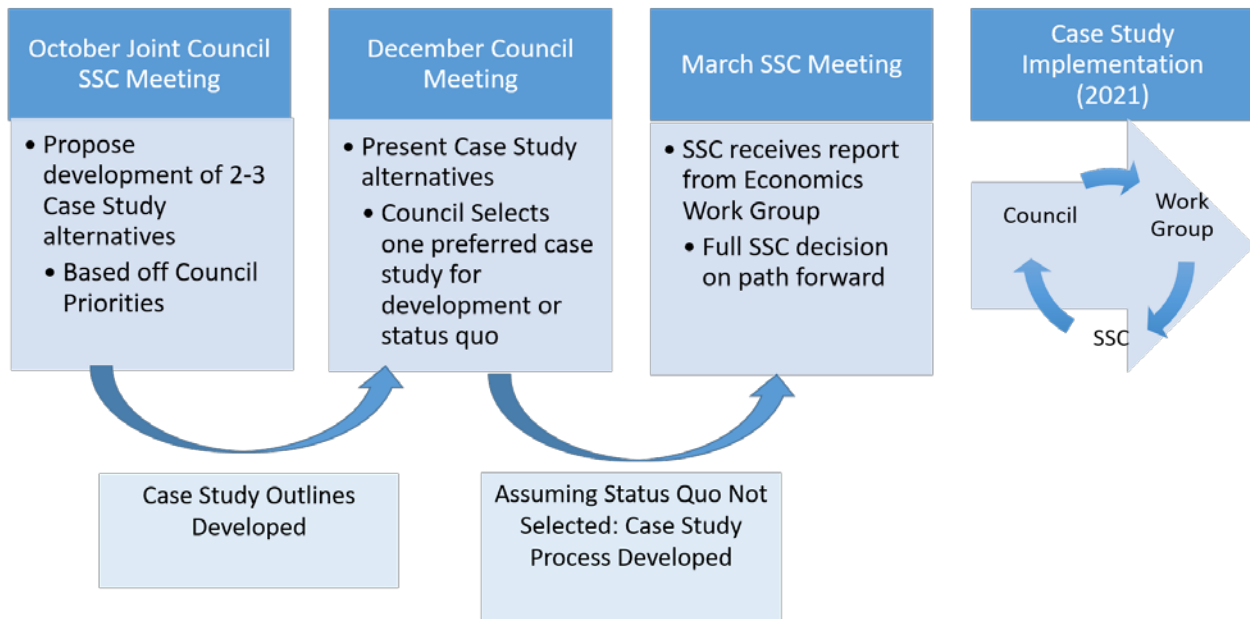


Figure 1. Proposed Timeline for the Economic Work Group to develop a case study

The Work Group envisions this exploratory process to be iterative and collaborative between the SSC and the Council, similar to the process employed with the Ecosystem and Ocean Planning Committee to develop the Ecosystem Approach to Fishery Management Risk Assessment and Summer Flounder Conceptual Model. This iteration of work between the SSC and the Council will ensure that the Work Group develops actionable information with the greatest value in supporting Council decision-making. The iteration also allows the selection of the case study, input on alternatives, and resulting analyses to be made in a fully transparent fashion. Consistent with the broader role of the SSC, the Work Group envisions its role as advisory: helping to guide and review products developed through existing Council processes, such as through Fishery Management Action Teams.

The Work Group is also cognizant of time and resource limitations that constrain the types of analyses that might realistically be developed in support of management actions. We will address these constraints in the proposed case study by working with Council Staff to:

- Identify and prioritize the information and analyses that could realistically be developed to inform the management action case study, given existing constraints on time and resources.
- Identify the added costs and benefits of increased resources that could be brought to bear on the issue in the near term.
- Identify issues that cannot be addressed given existing information gaps, but could be addressed in future Council actions given a systematic data development investment, including consideration of Council research programs, NOAA Fisheries recordkeeping and reporting requirements, and cooperative industry initiatives, including the relative costs of the additional investment (e.g., a gap analysis).

Focusing the case studies on 2021 Council priority actions will allow the Work Group to engage throughout the entire action, from initial scoping through final action, depending upon the type of action or priority being developed. This will improve the sometimes infrequent channels of communication among the SSC, technical teams, and Council, and facilitate input of SSC scientific expertise at key decision points throughout the process, including scoping and alternative development. Engagement throughout the entire action will also allow the SSC to develop a process that minimizes additional administrative burdens and allows the SSC to gauge its capacity to engage more broadly in supporting economic analyses for Council decision-making.

The exact benefits derived from engaging the Work Group expertise will depend on the case study selected. However, by applying the scientific principles of economics it is likely that behavioral responses to management alternatives will be revealed. It would be important for the Council to know if these responses either reinforce or risk undermining the successful attainment of Council management objectives. In particular, the following are likely to be important considerations:

- What aspects of single-species management either spill over or are affected by the broader economic environment in which these decisions are made?
- What are the distributional implications of management alternatives, including differential impacts across fleet segments and communities (e.g., gear; vessel size; sectors/user groups; ports)?
- How do you develop static decisions that are robust to fishing behavior changes within a dynamic environment (e.g., over time, changes in: operating costs; local and international supply and demand; environmental/ climate/pandemic impacts on effort)?
- What economic information is most valuable to managers, and how is that information attained in the most efficient manner possible?

Below are two examples for the economic value of information to managers, which are provided to better illustrate the types of benefits that could be derived within a case study. Broadly, fishermen often have information on the state of the environment that can help inform management decision-making. Economics can play a role in integrating this information into the management process to attain outcomes that objectively outperform those that can be attained without this information.

### **1. The value of recreational fishing**

With over 60 million recreational fishing trips (14 million in the Mid-Atlantic region) taken annually by 10 million marine anglers, the recreational sector is an important player in the management of fisheries resources (NOAA, 2016). In these circumstances, understanding the impact of regulatory actions on the value of anglers' fishing experience is critical to the efficient use of the resource. Assessing the economic value anglers attach to fishing trips requires not only information on the characteristics of the trip, but also on information about the anglers themselves (whether this is done using so-called revealed or stated preference approaches; McConnell and Haab 2003). This information, combined with an analysis of the trade-offs involved in a trip, allow economists to assess changes in benefits derived from alternate fisheries policies (e.g., bag limits vs. size limits; when in the year to close the fishery, etc.). Anglers' incentives to provide this information hinge on the fact that representation in the management

process is partly driven by the economic importance of each sector, and this information is valuable to both managers and anglers.

It is essential for policy makers to utilize scientifically appropriate analytical tools and methods when evaluating policy options to ensure their decisions will meet National Standards and pass judicial review. This requires specifying the collection of appropriate economic data from each affected sector to ensure comparable and defensible analyses. The Work Group case study, for example, could help identify and potentially close any data vulnerabilities for any upcoming Council recreational priority it identifies.

## **2. Collaborative data-collection efforts**

There are plenty of examples of the fishing industry voluntarily provisioning information to support fishery management. For instance, in 2012 the National Marine Fisheries Service was able to develop a combined survey method for Pacific hake and sardine thanks to the industry's proposal to piggyback a hake survey onto the regularly scheduled sardine survey, and its willingness to provide a private ship to participate in the acoustic-trawl survey. This new procedure could allow for more frequent abundance estimates for both species and may lead to better managed hake and sardine fisheries. In the past, due to the high costs of administering each survey, NMFS had alternated between hake and sardine surveys. In the Northeast and Mid-Atlantic, the Northeast Cooperative Research Study Fleet Program, voluntary biological sampling for squid and chub mackerel, as well as the collaborative management efforts within the shortfin squid and butterfish fisheries are all examples of proactive provisioning of valuable information to fisheries scientists and managers.

The information industry volunteers may improve stock assessment models and provide more precise estimates of overfishing limits and biomass. This improved precision, in turn, translates into a reduction in scientific uncertainty (i.e., the Overfishing Limit coefficient of variation) and may lead the SSC to recommend lower precautionary buffers and higher ABCs, ultimately increasing industry profits. Similarly, real-time electronic reporting may allow managers to implement in-season policy adjustments that increase compliance, reduce management uncertainty, and lead to higher Annual Catch Targets. For example, in the Maryland Blue Crab fishery, daily electronic reporting had been identified as a possible solution for improving harvest data records, a prerequisite set by Maryland DNR (MDNR) before agreeing to discuss regulatory flexibility with the industry (e.g., flexible day off, flexible start time, etc.). In 2012 MDNR conducted the Blue Crab Accountability Pilot Program, an industry-led initiative that tested the feasibility of adopting e-logbooks in the fishery, which relies on paper reports (<http://blogs.edf.org/edfish/2012/07/16/maryland-crab-pilot-aims-to-modernize-reporting/>). Similarly, the squid industry has expressed interest in the potential for real-time data acquisition as a basis to improve management of this valuable resource, and economics can play a role in assessing both the benefits and costs of such a program.

In each of these instances, additional information may translate into benefits to the industry in the form of additional harvest. However, the benefits from providing this type of information is not always clear to industry. By clearly illustrating the manner in which industry-provisioned information can translate into more flexibility in fishing and/or higher catches, economics can play a role in facilitating the flow of information from industry to managers. Economics can help identify conditions under which industry's investment in voluntary data collection efforts will generate a positive return to fishermen and create incentives for collaboration with management.

There are other ancillary benefits to collaborative data-collection efforts. They may create a sense of shared ownership of information, as well as a greater understanding of scientific data.

More generally, cost information, detailed effort information, and other economic data can greatly increase the ability to assess the impacts of management alternatives on industry prior to implementation. This information allows for more informed management decision-making, but is often an afterthought in the gathering of fishery-related information. The Economic Work Group can play an important role in highlighting the value of industry-provided information in the management process.

In closing, we are requesting the Council agree to the Economic Work Group outlining 2-3 alternatives in support of the Council's 2021 priorities for development into a case study. These outlines would be presented to the Council at their December 2020 meeting for their consideration and approval with the goal of more directly engaging the economic expertise of the SSC.

### *References*

Johnson, T.R., and W.L.T. van Densen. 2007. Benefits and Organization of Cooperative Research for Fisheries Management. *ICES Journal of Marine Science* 64 (4): 834–40.

McConnell, K., and Haab, T. 2003. Valuing Environmental and Natural Resources. Edward Elgar Pub.

NOAA, Fisheries economics of the United States 2016 (available at: <https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2016> )

## **Science Considerations Due to Missing 2020 Data:**

### *The Issue:*

Health concerns related to the COVID pandemic have resulted in the cancellation of most fishery independent surveys in 2020 and compromised data collection activities for fishery dependent programs including MRIP. Collectively, these data gaps are likely to increase uncertainty about the efficacy of current harvest limits and create problems for future assessments. The SSC will need to address these concerns in 2021 with upcoming management and research track assessments.

### *Background:*

A national response to the COVID pandemic began in earnest in mid-March 2020. The NEFSC bottom trawl survey was completing the first of four legs. All subsequent legs were canceled and the fall survey was also canceled. Most state surveys and NEAMAP were also canceled resulting in the almost complete omission of fishery-independent survey data in 2020. Similarly, observer coverage on commercial vessels ceased and has only recently resumed but at greatly reduce levels. Such coverage is essential for estimation of discard rates. Commercial fishing operations were initially impeded but has returned to somewhat normal levels depending on their reliance on restaurant markets. Recreational fishing, monitored through MRIP, has been affected but the scope of this is unknown. Major gaps in data collection via the angler intercept program have occurred. Monitoring of commercial fisheries, through the collection of VTR and Dealer records has continued with relatively little impact. Collection of VMS data is also unaffected.

The consequences of these data gaps for stock assessments are largely unknown at the present time. The potential consequences for uncertainty of the OFL and subsequent ABC are also unknown. Conventional wisdom would suggest that uncertainty will increase across all species. Species with longer term ABC specifications, such as Ocean Quahog, may not be affected at all. Other species, for which 2020 data will be the terminal year data in the assessment may be affected strongly. Atlantic Mackerel, Black Sea Bass, Bluefish, Golden Tilefish, Scup, and Summer Flounder management track updates in 2021 will have missing data for 2020.

Staff from the NEFSC, GARFO, and MRIP are all addressing the potential consequences of missing data on future stock assessments. NEFSC and GARFO are coordinating efforts to identify all of the gaps and the potential effects on a stock by stock basis. Various technical responses to data gaps are underway although this cannot be completed until the full scope of data gaps are known. Similarly, MRIP staff are engaging their consultants to develop robust methods for incomplete data in 2020. The findings of these efforts will be critically important for future work of the SSC.

#### *Options and Considerations:*

Recent SSC discussions focused on the potential negative effects of creating “borrowing” or imputation methods for missing data, whether such procedures are ad hoc or more formal model-based methods. The reliability of such methods would generally need intensive testing, both with existing and simulated data.

Ancillary information, such as commercial CPUE monitoring or predictive environmental relationships may be useful adjuncts to the stock assessment process. However, derivation of predictive relationships are usually the products of longer-term research efforts and would not likely be available for 2021 deliberations. Methods for gap filling, whether based on formal or informal imputation approaches were viewed with some skepticism by the SSC. Creating a cure that’s worse than the disease is something to be avoided.

Missing data effects are often most acute when the last year of assessment data are missing. In these cases, modern modeling approaches can handle the missing data but often at the expense of increased variance and potential bias. Stocks with well performing models are likely to be less affected than index-based assessments or models with convergence issues. Unfortunately, some of these impacts will only be knowable in the rearview mirror.

There was a general consensus among the SSC that use of the assessment model itself would be the most appropriate way of integrating the various factors. The SSC further concluded that stocks that rely heavily on MRIP data, such as Bluefish, could have problems with determination of scale (i.e., population size overall and fishing mortality in the terminal year) if effort and catch patterns in 2020 are significantly different from historical patterns.

In summary, the SSC’s response to this dilemma must be objective, but it will be important to relay concerns to managers. For stocks in the middle of multiyear specifications, the consequences will be less acute. Insufficient information might simply lead to *status quo* recommendations. There will likely be a greater reliance on updated projections wherein actual catches will be incorporated into earlier projections that previously assumed the ABC was taken in the forecast period. In instances where the catches have been below the ABC this updating may provide some assurance that continuation of existing quotas is prudent and less likely to induce overfishing. The converse, where actual catches exceeded ABCs, could result in a decrease in the projected OFLs and ABCs.



The SSC is hopeful that the NRCC will address this topic at its fall meeting and looks forward to the results of the joint NESC and GARFO team. Staff from MRIP will also be contacted regarding measures that might be used for their estimates. Depending on the findings, it may be useful to have an intersessional meeting of the SSC before its next scheduled meeting in March 2021 to plan for the management track assessment outcomes and discuss the potential application of missing data and the resulting implications.

## **Risk Policy Considerations for Ocean Quahog:**

### *The Issue:*

The new Council risk policy may not be appropriate for a long-lived species like Ocean Quahog.

### *Background:*

In July, the SSC developed ABC specifications for Ocean Quahog using the new Council's risk policy and the recently approved nine-step process for estimating the level of scientific uncertainty associated with the OFL. The SSC accepted the OFL from the most recently updated assessment and determined that a CV of 100% was appropriate for Ocean Quahog. The resulting ABC has a 49% probability of exceeding the overfishing level.

The SSC expresses concern that the removal of the "atypical life history" category from the Council's risk policy may have resulted in a recommended ABC associated with a higher level of risk of overfishing than intended for this species. Ocean Quahog is believed to live an extraordinarily long time, with maximum age in excess of 500 years – perhaps 10 times longer than most species with which the Council works. As a result, if we do exceed the true overfishing level, it would take a long time for us to recognize declines in the stock, and the stock may take an extraordinarily long time to recover.

The previous Council risk policy had provisions for "atypical" life histories in recognition that the risk of overfishing should be tempered by the degree of scientific understanding of the resource. Atypical life histories can include complex migrations, large difference in growth, maturation and survival between sexes, and longevity. Longevity is of course, the greatest concern for Ocean Quahog. Parenthetically, the SSC notes that scientific investigations to date span about 5% of the maximum age and understanding of recruitment dynamics is limited.

### *Options and Considerations:*

The biological concerns of the SSC were raised at the August meeting of the Council. In July the SSC was reluctant to revise the determination of its CV level for the OFL to accommodate the concerns about the fishing mortality rate allowed under the risk policy. To do so would compromise the integrity of the scientific process used in the OFL CV methodology and undermine the decisions made for other species. An arbitrary adjustment would also conflate determinations that should remain separate: 1) the uncertainty of the estimated OFL and 2) the acceptable level of risk for harvest.

The SSC recommended flexibility in the risk policy to account for the unusual characteristics of this species. In the ensuing discussions with the Council, it was noted that the risk policy was just recently improved and that it would be difficult to revise to include consideration of an atypical life history. Accordingly, the Council recommended that the SSC attempt to accommodate these concerns within its existing capabilities.

One way to address this concern would be to increase the estimated uncertainty of the OFL for the atypical life history. This would, in effect, represent the addition of an “override” option in which this factor would trump all other considerations. However, Ocean Quahog currently has a  $B/B_{MSY}$  ratio greater than 1.5 which allows for a probability of overfishing of 0.49. Under these circumstances, even an increase in the OFL CV to 500% would decrease the ABC by only 3%.

Another option would be to reject the OFL determination provided in the stock assessment. As such determinations are the end products of many individuals and an extensive review process, this option oversteps the responsibilities of the SSC to derive an ABC from a given OFL. Such an approach would undermine the relationships among agencies and create divisions within the scientific community.

Thankfully, the current biomass status of Ocean Quahog does allow for some time to address this concern. The six-year projections used by the SSC for its specifications suggested almost no chance of overfishing during this period. The SSC will continue to address this issue by working with the Council and assessment scientists at the NEFSC to determine other options consistent with Council policy and NOAA Fisheries regulations. The SSC will update and seek direction from the Council in the future as it develops potential options.