Joint Meeting of the Mid-Atlantic Fishery Management Council &

Scientific and Statistical Committee

Wednesday, October 5, 2022

4:30 P.M. – 5:30 P.M.

Dewey Beach, DE (in-person and remote)

AGENDA

4:30   Welcome/Introductions

4:35   Overview of 2023 SSC activities (B. Muffley, Council staff)
- Review planned meeting topics, work group activities, and other SSC commitments

4:50   Developing ecosystem information for science and management (S. Gaichas, Ecosystem Work Group Chair)
- Update from SSC Ecosystem Work Group: review work group objectives and priorities, progress made to date, and future plans
- Council feedback on work group plans and application to support management

5:10   Providing economic advice for management application (G. DePiper, Economic Work Group Chair)
- Research Set-Aside case study: lessons learned and areas for improvement
- Areas of engagement of the Economic Work Group in 2023

5:25   Future joint Council/SSC meetings

5:30   Adjourn

M E M O R A N D U M

Date: September 22, 2022

To: Council
              Scientific and Statistical Committee

From: Brandon Muffley, staff

Subject: Background Information for 2022 Joint Council-SSC Meeting

Introduction:

On Wednesday, October 5th, the Mid-Atlantic Fishery Management Council (Council) and its Scientific and Statistical Committee (SSC) will meet jointly to discuss ongoing and planed SSC activities in support of Council priorities[1]. The Council and SSC have been holding these joint meetings annually since 2019 to provide an opportunity to discuss pertinent issues and foster greater dialogue and build relationships between the Council and SSC given the limited interaction between the two groups.

At their July and September meetings, the SSC discussed a number of potential topics for the joint meeting. Three topics were prioritized and additional background material for each agenda item is provided below and were developed by members of the SSC and Council staff. This information is intended to provide an introduction to the topic and hopefully stimulate discussion between the Council and SSC and offer feedback on the future direction and approach for these topics.

There will also be time at the end of the agenda for the Council and SSC to discuss the timing, structure, and scope of future joint meetings. As mentioned above, this will be the fourth consecutive joint meeting and, with this experience, provides an opportunity to evaluate the benefits and performance of these joint meetings to ensure we are maximizing their value and addressing the intended goals. For example, holding these joint meetings less frequently (e.g., every other year) may allow for additional time on a Council agenda to address more topics or further develop those topics on an agenda. More time on the agenda might also encourage greater participation, particularly in person, and provide for additional opportunities for Council and SSC member interaction.

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[1] See the joint Council-SSC meeting agenda included in the October 2022 briefing book for the topics to be covered during the meeting.

Overview of 2023 SSC activities:

One of the primary roles of the SSC is to provide the Council with acceptable biological catch (ABC) recommendations for all managed species that are intended to prevent overfishing which the Council cannot exceed. Developing new and reviewing previously approved ABC recommendations accounts for a significant portion of the SSC workload within any given year and 2023 is no exception (Table 1). In 2023, the SSC will review the results and outcomes of three research track assessment and seven management track assessments, all of which will be used to set multi-year ABC specifications.

In addition to ABC recommendations, the SSC plays a critical role in assisting the Council with providing scientific information during the development of fishery management plans, offering science advice regarding bycatch, habitat, socioeconomic impacts and fishing practices, as well as input on research priorities. Given the broad role in providing scientific advice to the Council, the SSC has been engaged in and provided input on a variety of topics recently, including: recreational management, ecosystem/EAFM development, habitat and recreational modeling approaches, and the Research Set-Aside program. There are a number of similar topics and areas of engagement anticipated for 2023 (Table 1). This list likely represents a minimum number of topics and is anticipated to change and increase as Council priorities and stock assessment and science needs arise throughout the year.

Table 1. Preliminary planned topics for the four Mid-Atlantic SSC meetings scheduled in 2023.

Meeting	Anticipated Topics
March	Review/modify 2023 *Illex* ABC 2024 ABC review: Golden and Blueline Tilefish 2023 State of the Ecosystem report Update from SSC Ecosystem Work Group Summer Flounder management strategy evaluation Short-term forecasts of species distributions research Review potential updates to the OFL CV guidance document Update from Constant/Average ABC Work Group
May	2024 ABC review: Surfclam and Ocean Quahog 2024 ABC review: Chub Mackerel and Butterfish Finalize process to provide constant/average ABC recommendations Introductory overview of research track assessment results: Bluefish, Spiny Dogfish, and Black Sea Bass

July	Management track assessment results and OFL/OFL recommendations for:
	    Longfin Squid
	    Atlantic Mackerel
	    Spiny Dogfish
	    Summer Flounder
	    Scup
	    Black Sea Bass
	    Bluefish

September	Offshore wind discussion Biennial review of 2020-2024 research priorities Update from the SSC Ecosystem Work Group EAFM risk assessment review and update

In addition to the topics and tasks associated with the four planned meetings in 2023, the SSC will have at least four active working groups (Ecosystem, Economic, Constant/Average ABC, and OFL CV) developing a variety of work products in 2023. SSC members will also be engaged in a number of stock assessment related activities such as chairing and serving on stock assessment peer reviews and serving as members on a variety of Northeast Regional Coordinating Council (NRCC) stock assessment working groups.

Council feedback and questions:

Below is a list of questions and areas for potential feedback from the Council associated with this topic.

- Are there additional topics or areas of interest the Council would like the SSC to consider at any of the planned 2023 meeting?
- Are there specific areas the Council would like the SSC to offer advice and input that is currently not provided?
- Does the Council have any thoughts on the role or types of advice the SSC can provide regarding offshore wind development?
- Is there interest in having a Council member liaison to the SSC?

Developing ecosystem information for science and management:

At the joint Council/SSC meeting in October 2022, the SSC Ecosystem Working Group will provide an update on current work, and seeks Council feedback on priorities for development and use of integrated ecosystem-level indicators within existing or new Council processes.

Review of SSC Ecosystem Working Group Objectives and Intended Outcomes

The MAFMC SSC Ecosystem Working Group (WG) was established in May 2021 to assist the Council in developing short term and long term objectives to advance the operational use of ecosystem information in management decisions. As reported in September 2021, and in March 2022 the WG has identified three general objectives:

1. Expanding and clarifying the ecosystem portion of the SSC OFL CV determination process (short term objective)

2. Developing prototype processes to provide multispecies and system level scientific advice appropriate for Council decision making, in particular where there are multispecies and multifleet tradeoffs linking directly to economic and social outcomes (long term objective)

3. Collaborating with SSC species leads, stock assessment leads, and relevant working groups in developing the stock-specific Ecosystem and Socio-economic Profiles (ESP) process to specify stock- specific Ecosystem ToRs that are impactful and can be integrated into assessments (moderate-term objective)

Objectives 1 and 3 aim to integrate appropriate ecosystem information at the stock level of management decision making, while objective 2 applies to current Council EAFM processes and potential future multispecies and system level objectives.

Intended outcomes of WG work for the Council include:

- An OFL CV process that makes better use of ecosystem information in determining the ABC
- Evaluation of multiple ecosystem indicators and potential development of thresholds for use in a revised EAFM risk assessment and/or other Council processes
- Increased range of opportunities for relevant ecosystem information to be considered in management decision processes

Progress

Since March 2022 the WG has met twice (28 April, 18 July) and is scheduled to meet 30 September 2022.

In April, the WG outlined simulation work addressing Objective 1 and reviewed current ecosystem over- fishing indicators addressing Objective 2. In July, the WG reviewed a method addressing Objective 2 presented by John Walden (NEFSC). See details by Objective below. The WG also prioritized the re- quest list for current and proposed ecosystem indicators to be worked on by the State of the Ecosystem (SOE) production team. This prioritization was used, along with priorities identified by selected MAFMC members, to outline work for the 2023 SOE reports at the August 2022 planning meeting.

In addition, WG member Sarah Gaichas participated in the SCS7 meeting in August 2022 and gave an overview of Ecosystem WG objectives and progress, as well as current MAFMC EAFM efforts. The combined MAFMC approaches were represented in Keynote #2, Using Ecosystem Information in the Stock Assessment and Advice Process. SCS7 meeting materials include many case studies for integrating ecosystem information into assessments and management from around the US.

Objective 1: OFL CV and ecosystem effects

This project will enhance the SSC's current OFL CV process, and therefore fits within existing Council decision processes.

WG member Mike Wilberg's lab (U. Maryland) is collaborating with John Wiedenmann's lab (Rutgers U.) to simulate an environmental effect on stock recruitment and test how it impacts assessment uncertainty. Implications of choosing both the appropriate OFL CV based on an environmental effect linked to recruitment and an inappropriate OFL CV will be evaluated using an updated MSE framework. The group is conducting a mini-review on environmental drivers in the region to get an idea of trends, periodicity, autocorrelation to inform the analysis. A simulated species based on Summer Flounder is the initial case study, with extension to a simulated species based on Atlantic Mackerel proposed for future work.

Objective 2: Multispecies and system level ecosystem advice

These projects can be used to inform the existing Council EAFM process, or new Council decision processes at the multispecies or ecosystem level.

Ecosystem overfishing indicators Andy Beet (NEFSC) and Sarah Gaichas presented detailed information on current ecosystem overfishing (EOF) indicators at the April meeting. These indicators (Figs. 1 and 2) were presented in the 2021 SOE.
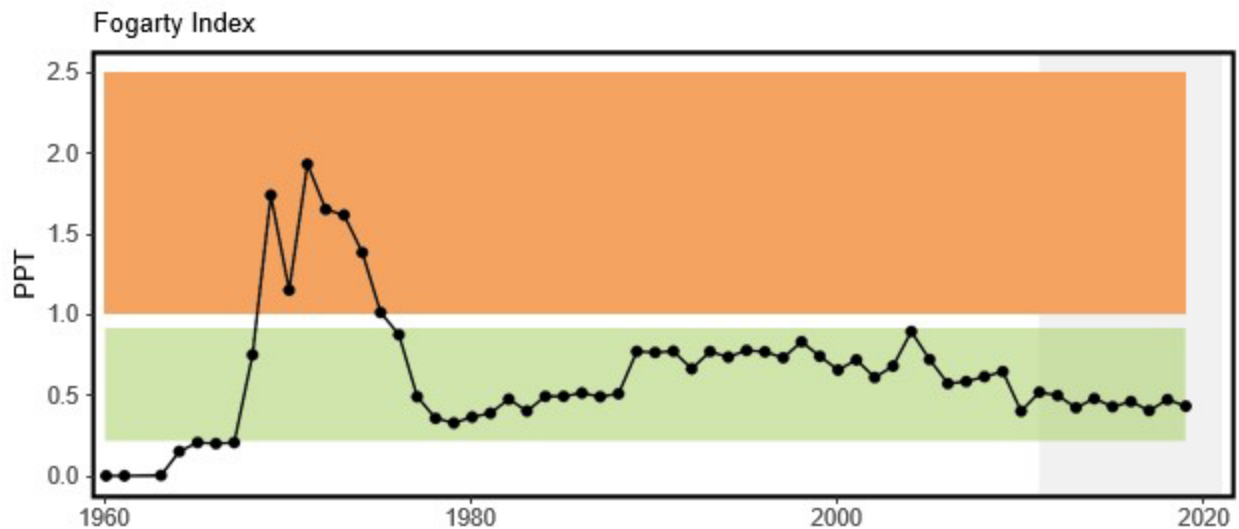
Figure 1. Fogarty Index; the ratio of total landings to total primary production in the MAB. Link and Watson (2019) give an optimal range (green shading) of the Fogarty ratio of 0.22 to 0.92 parts per thousand (PPT). Previous work suggested that index values exceeding 1 to 2 PPT (orange shading) led to ecosystem tipping points.
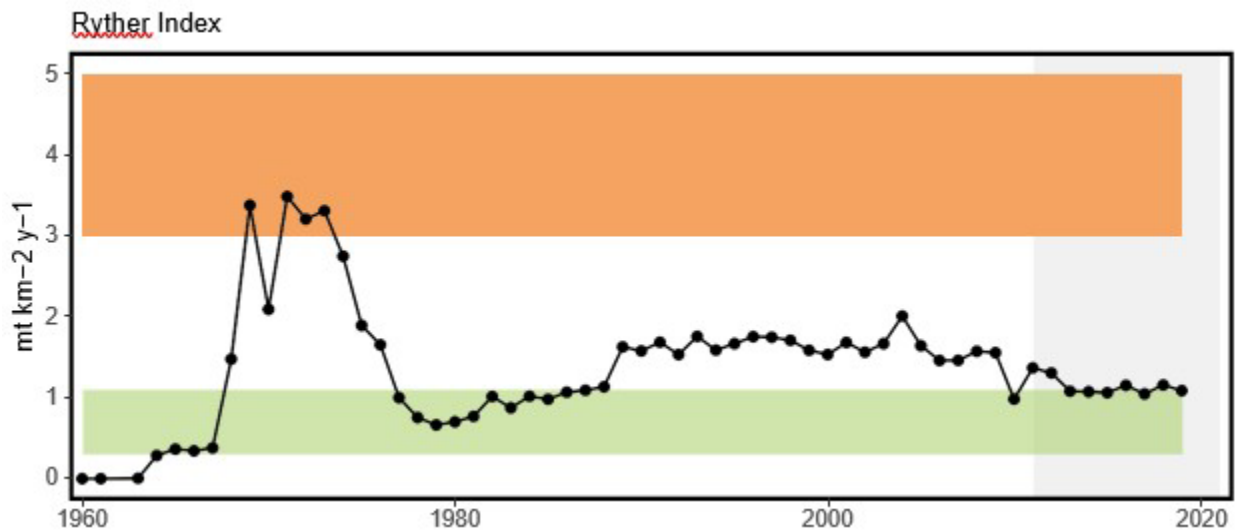

Figure 2. Ryther index; total landings presented on a unit area basis for the MAB. Theoretical estimates (Link and Watson, 2019) imply the index should range from 0.3 - 1.1 mt per sq km annually (green shading) with a limit of 3 mt per sq km annually, above which tipping points could occur in fished ecosystems (orange shading). Expected system-wide MSYs can be in the range of 1 to 3 mt per sq km (unshaded).

Work is in progress to improve the current indicators, including updating landings estimates to include non-federally managed species such as Atlantic menhaden, and including discard estimates for all species. The WG gave helpful suggestions on additional sources of discard information for the indicators.

The WG suggested that maximizing social benefits may be a good way to measure outcomes. Ecosystem overfishing reference points could be used to identify states we don't want the system to go into. The goal of the threshold would be to define "safe operating space" rather than pretending we can control the ecosystem by fishing it into an optimal state to meet our needs. The thresholds should define the bounds where fishing causes poor system performance (as defined using multiple Council objectives), but also ideally identify tradeoffs across species within the safe zone of fishing. The WG suggested that an analysis should give insight into the specific advice we should offer if we are exceeding a threshold. Conversely, if the indicator is in the good range what does that mean? What are the implications for the ecosystem?

The WG agreed that to be used in the regional operational management context, more regional analysis of EOF thresholds and detail on regional productivity is important. For example, some issues to address include how to deal with migratory species in the region vs resident species, how to identify what species can be backed off on to correct any overfishing–is it wise to reduce landings on one or two species or equally across all? Where is the biggest bang for your buck to the ecosystem and which managers should do it? The WG recognized that this is more complex than MAFMC management, and begins discussion of how to move forward more broadly with other management partners.

Index Numbers for ecosystem performance John Walden (NEFSC) presented an overview of Index Numbers at the July meeting, which evaluate sets of environmental indicators and management output indicators to determine system performance. The approach combines important management outputs

linked to objectives (e.g. commercial revenue, recreational days fished, right whale abundance) and likely ecosystem drivers of change in these outputs (e.g., chlorophyll a, zooplankton, aggregate fish biomass) into an analysis evaluating aggregating inputs and outputs into single indicators used to determine whether system performance has improved over time relative to a reference year.

An initial case study using the SOE indicators identified above was presented, evaluating whether system performance changed after the passage of the Sustainable Fisheries Act (SFA). Both outputs and environmental conditions improved post-SFA, but the overall performance of the ecosystem did not (Fig. 3; red line is combined index of system performance).
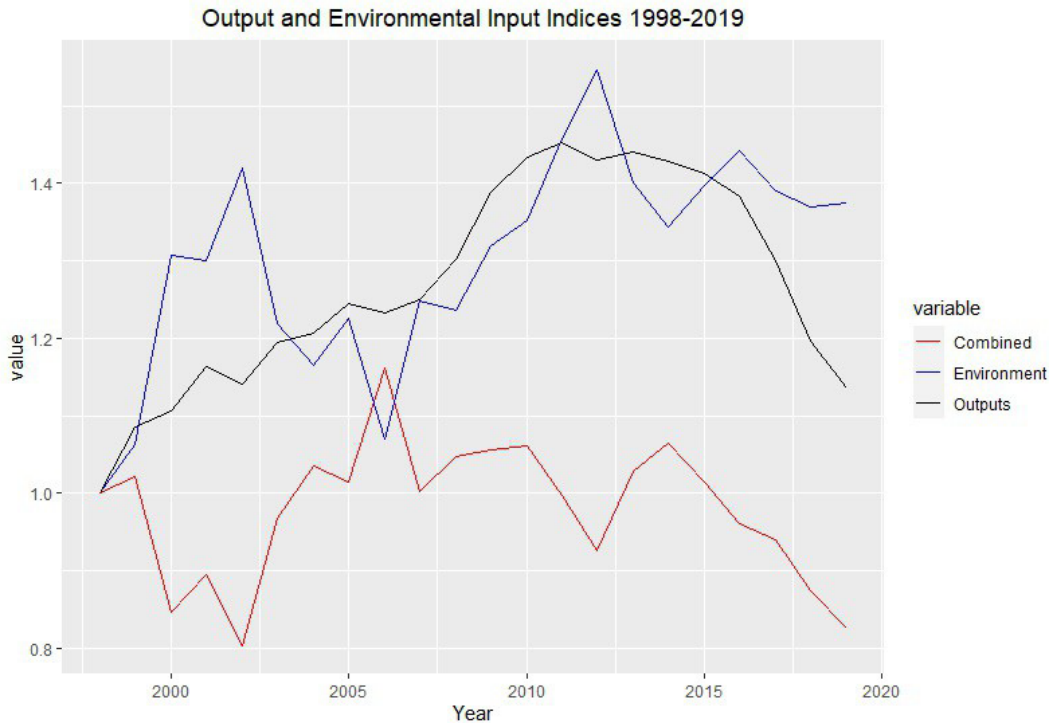
Figure 3. Example index numbers approach, where Environment includes chl a, zooplankton, and aggregate fish biomass, and Outputs include commercial revenue, recreational days fished, and right whale abundance.

A second case study focused on Mid-Atlantic region indicators of commercial revenue and recreational days fished as outputs, and regional zooplankton and survey aggregate fish biomass as inputs. Several other examples have been developed focusing on Mid-Atlantic indicators and objectives.

The WG saw considerable promise in this method. It has the potential to create one or a few different system level index(es) by integrating multiple individual indicators. The point of the presentation and work so far was to demonstrate the utility of the approach and not prescribe the specific inputs and outputs used, which is best determined in discussion with the Council. We could Consider developing a model for commercial landings and one for recreational landings as opposed to a full ecosystem performance model.

The WG seeks Council feedback on how Index numbers might be used. This will help design sets of inputs and output indicators for practical management use.

WG members Geret DePiper and Sarah Gaichas plan to meet with other SOE leads to explore how to bring Index Numbers forward in the upcoming SOE cycle.

Objective 3: Collaboration and integration of ecosystem information into stock assessments

Development of Ecosystem-Socioeconomic Profiles in Research Track assessment working groups facilitates the inclusion of ecosystem information within the current stock assessment process, and therefore fits within existing Council decision processes.

Ecosystem and Socioeconomic Profiles (ESPs) are used within the North Pacific stock assessment process as a structured way to include stock-relevant ecosystem information within stock assessments. An overview of the North Pacific ESP development process is available here. An example conceptual model of ecosystem interactions with Eastern Bering Sea Pacific cod demonstrates pathways for ecosystem indicators to enter the assessment process (Fig. 4, source: https://www.fisheries.noaa.gov/alaska/2021- alaska-fisheries-science-center-year-review#ecosystem-and-socio-economic-profiles).
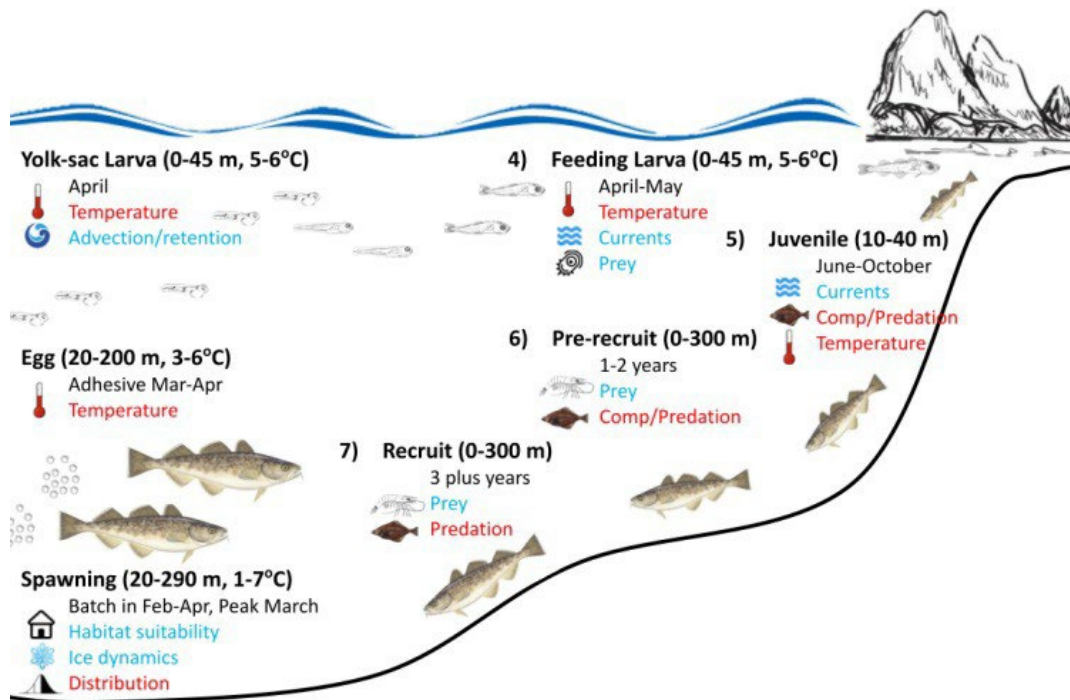

Figure 4. Caption from Alaska Fisheries Science Center: In 2021, our scientists developed a working conceptual Ecosystem and Socioeconomic Profile model of Eastern Bering Sea Pacific cod stock showing various indicators impacting the Pacific cod populations. Credit: NOAA Fisheries.

ESPs are currently in development in the Northeast US for multiple Mid-Atlantic and New England stocks. Work under Objective 3 continues with the participation of several working group members in multiple Research Track assessment working groups:

- Gavin Fay, Black Sea Bass WG (ongoing)
- Sarah Gaichas, Bluefish WG (ongoing)
- Paul Rago, *Illex* WG (complete)

Providing economic advice for management application:
During the December 2020 Mid-Atlantic Fishery Management Council (Council) meeting, the Council selected the Research Set Aside (RSA) Redevelopment as a case study to explore how economic expertise residing within the SSC can be utilized in supporting Council decision-making. The process was meant to be collaborative between the SSC Economic Work Group, the

broader SSC, and Council staff, Committees and Members more broadly. Figure 5 presents the original outline of the proposed process, as presented to the Council in December 2020.
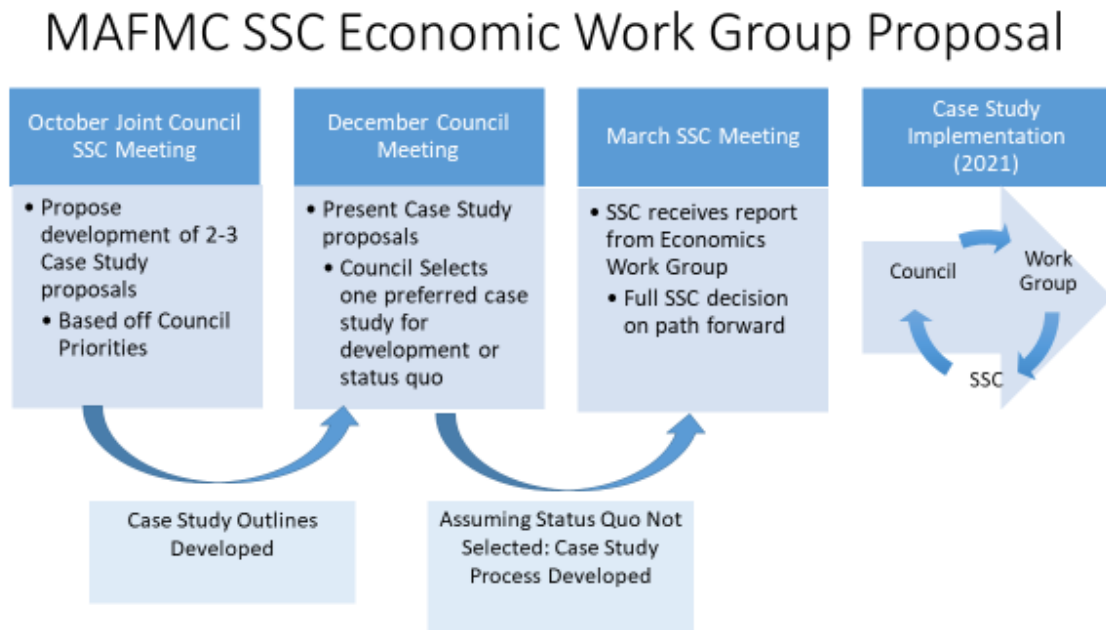

Figure 5. Original outline of the SSC Economic Work Group, as presented to the Council in December 2020.

The Council received a final report on the specific work undertaken by the SSC Economic Work Group during their June 2022 meeting, which we will not repeat here. Instead, this memorandum briefly outlines the process by which the Economic Work Group engaged in the RSA Redevelopment, to inform the discussion during the Joint Council/SSC meeting October 5. The aim of the discussion itself is to understand whether the Council recommends any changes to the process of Work Group engagement and work product development in order to better support future Council needs. In addition, the Work Group will briefly outline their expected engagement in Council priority actions over the course of 2023.

Table 2 identifies all interactions, or touch points, between the Economic Work Group and Council bodies during the RSA case study, from the selection of the RSA case study in December 2020 through the final report delivered in June 2022, grouped by Council body. Internal Work Group meetings are not listed for brevity, but each touch point with Council bodies necessitated multiple meetings of the Work Group for planning purposes. In addition, the Work Group held numerous meetings with Regional Council staff and other individuals associated with the original RSA program over the course of the case study which are also not detailed. Of note is that nearly every Economic Work Group discussion included the participation of Brandon Muffley, the Council's SSC staffer.

Table 2. Interactions between the Economic Work Group and Council bodies.

Council Body	RSC Committee Leadership	RSC Committee	SSC	Council Members	Council Stakeholders
March '21			Progress Report 1		
June '21		Joint Discussion on role of Economic Work Group			
July '21			Progress Report 2		Workshop 1 & White Papers
August '21	Workshop 1 Debrief			Progress Report	Workshop 2 & White Paper
September '21	Workshop 2 Debrief		Progress Report 3		
October '21					Workshop 3
November '21	Workshop 3 Debrief & Committee Meeting Support	Joint Discussion & Memo			
December '21	Planning Support				
January '22	Workshop 4 & Committee Meeting Support	Joint Discussion & Memo			
February '22					Workshop 4 & Memo
March '22	Workshop 4 Debrief		Progress Report 4		
April '22	Committee Meeting Support	Committee Meeting Attendance			
June '22				Final Report	

In addition to the direct Council updates identified in Table 1, the Council received periodic updates on the RSA Redevelopment as part of the standard SSC reports and as part of the

Research Steering Committee reports. Ultimately, the Economic Work Group participated in ten formal meetings including Committee and Council meetings and RSA workshops. In support of these, the Work Group drafted six written reports or memoranda, including working closely with Committee Leadership and Council Staff to draft a decision tree to help focus discussion on the most salient components of an RSA redesign. The Economic Work Group felt the process to be a success, in terms of its collaborative nature and value added to the discussions on RSA Redevelopment. The discussion at the Joint Council/SSC meeting is to ensure that the collaborative effort on this case study closes with feedback from the Council on the effectiveness of the process from their perspective.

Moving forward

The Economic Work Group anticipates that work across 2023 will arise more organically by aligning with the interest of individual members. This mirrors the engagement of SSC members in the majority of management actions in which they participate. However, the Work Group also recognizes that Council requests are an important manner by which Economic expertise can inform and engage in priority issues and will ensure capacity exists to engage in this manner. The Economic Work Group will continue to help coordinate engagement of its members in Council priorities. Currently, the work group expects to engage in Council priorities over the course of 2023 as follows:

1. Additional RSA aligned projects
2. Ecosystem Work Group and EAFM support
3. Annual Recreational Specifications for Summer Flounder and Black Sea Bass
4. Recreational Harvest Control Rule
5. Additional Council Priorities as appropriate

Council feedback and questions:

Below is a list of questions and areas for potential feedback from the Council associated with this topic.

- Whether the frequency of touch points for a project of this magnitude was appropriate
- Whether updates could be more efficiently delivered to the Council
- Whether the process allowed sufficient opportunity for Council feedback to the Work Group