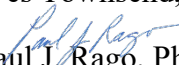**Mid-Atlantic Fishery Management Council**
800 North State Street, Suite 201, Dover, DE 19901
Phone: 302-674-2331 | FAX: 302-674-5399 | www.mafmc.org
P. Weston Townsend, Chairman | Michael P. Luisi, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

M E M O R A N D U M

Date: May 30, 2024

To: Wes Townsend, Chairman, MAFMC

From: Paul J. Rago, Ph.D., Chair, MAFMC Scientific and Statistical Committee (SSC)

Subject: Report of the May 14-15, 2024 SSC Meeting

Executive Summary

The Scientific and Statistical Committee (SSC) received updates on peer reviews of recent Research Track Assessments (RTAs) from several scientists from the Northeast Fisheries Science Center (NEFSC). The Woods Hole Assessment Model (WHAM) was reviewed as part of the RTA on State Space Models in January. WHAM uses more realistic model formulations that allow environmental covariates to be included. Such covariates should allow for quantification of the effects of environmental and ultimately climate changes. WHAM-based assessments generally have smaller retrospective patterns and more realistic projections that account for the correlations among model parameters. The SSC notes that the transition from earlier statistical catch-at-age models to WHAM will entail a learning curve for itself, the Council, and the Council's committees.

New assessments for Black Sea Bass and Golden Tilefish were also recently peer-reviewed in RTAs. Management Track Assessments for these species will be reviewed in June and delivered to the SSC at its July meeting. Black Sea Bass is modeled as a spatially distributed population comprising northern and southern areas. Age-specific fishing and discard mortality rates are estimated for commercial and recreational fisheries in both areas. The updated fishing mortality reference point is not readily comparable to previous estimates. The complexity of disaggregating fishing mortality across regions and fisheries highlights that a single scalar estimate of fishing mortality is insufficient to describe the force of mortality. This issue will be described in further detail in July.

Golden Tilefish is considered a data moderate assessment owing to the lack of a fishery-independent index of relative abundance and limited age-frequency in the catch. When random effects were included in the model, the perceived status of the resource varied widely. The full consequences of the model will not be known until the MTA is complete. The SSC noted that this is the first application of WHAM to a data-moderate stock and care should be exercised to find the appropriate balance between data and parameter estimates in model identification.

Two separate fishery-independent longline surveys were summarized. The South Atlantic Deepwater Longline (SADL) survey is conducted by commercial vessels under the direction of the Southeast Fisheries Science Center and South Carolina Department of Natural Resources. The survey traditionally extends from NC to FL over a depth range of 76-366 m. In 2023, the SADL survey was extended northward from the VA/NC border to Delaware Bay. A similar survey has been conducted by commercial Golden Tilefish harvesters in the MidAtlantic. Three Golden Tilefish surveys have been conducted since 2017. The SADL and Golden Tilefish surveys are relatively new and full inclusion into stock assessments has not occurred. The SSC encouraged continuation of both surveys.

The SSC reviewed recommendations of the SSC Sub-Group on the Coefficient of Variation (CV) for the Overfishing Limit (OFL). The OFL CV is currently derived by the SSC via consideration of nine separate criteria. The OFL CV is used in conjunction with the Council's risk policy to determine the difference between the OFL and the Acceptable Biological Catch (ABC). As part of an ongoing review of the efficacy of this process, the SSC recommends reduction in the number of criteria from nine to six. It also recommends that a two-tiered approach be applied in which factors related to data quality, model selection, and model performance establish the lower bound for the OFL CV. A recent comprehensive review of stock assessments worldwide suggests that stock assessments with CV<60% are rare. These results corroborated earlier simulation studies. Together, these results suggest that application of a 60% CV by the SSC for future ABC determinations will be less common (but will not be excluded).

Fishery management specifications and recent fishery performance data for *Illex* Squid, Longfin Squid, and Chub Mackerel were reviewed. Available evidence did not support changes to existing regulations. Continuation of previously specified 2025 ABC was recommended for all three species.

The SSC has formed a Sub-Group to assist in the development of alternatives to be considered as part of the Recreational Measures Setting Process Framework/Addenda. The Sub-Group will work with the Fishery Management Action Team (FMAT) to address potential improvements and SSC recommendations to the alternatives previously considered as part of the Harvest Control Rule framework/addenda. Suggestions included consideration of F-based measures and evaluation of bases for binning variables. A closely related issue is the magnitude of Recreational Harvest Limit (RHL) changes induced by transitions between bins. Planned work related to Management Strategy Evaluations (MSE) will be particularly helpful. The SSC

emphasized that the proposed timeline to summarize and evaluate these measures by July is perhaps too ambitious.

Background

The SSC met in person and via webinar on May 14-15th 2024 in Baltimore, MD, to address the following topics:

- Woods Hole Assessment Model (WHAM)
- Black Sea Bass Research Track Assessment
- Golden Tilefish Research Track Assessment
- South Atlantic Deepwater Longline (SADL) survey
- 2023 Golden Tilefish survey
- Review of *Illex* and Longfin Squid Specifications
- OFL CV update
- Recreational Measures Setting Process Framework/Addenda

See Attachment 1 for the meeting's agenda. An Executive Summary provides a quick summary of the primary conclusions of the SSC.

Almost all SSC members were able to participate in the two-day meeting (Attachment 2). Other participants included Council members, Council staff, NEFSC and GARFO staff, and representatives of industry, stakeholder groups, and the public. The SSC appreciates the many contributions of NEFSC scientists who led the sessions on the WHAM, Black Sea Bass, and Golden Tilefish. A special thanks to Brandon Muffley who coordinated the presentations, guided the SSC's work, and provided his excellent meeting notes. I also thank members of the SSC and Council staff for their comments on an earlier draft of this report.

All documents referenced in this report can be accessed via the SSC's meeting website https://www.mafmc.org/ssc-meetings/2024/may14-15. This report uses many acronyms: a comprehensive guide is listed in Attachment 3.

Woods Hole Assessment Model (WHAM)

Tim Miller, NEFSC, presented a comprehensive overview of the Woods Hole Assessment Model (WHAM). WHAM is a flexible stock assessment modeling approach based on state-space methodology. WHAM is programmed in R and Template Model Builder (TMB) and is available on GitHub (https://github.com/timjmiller/wham). The WHAM methodology differs from earlier statistical catch-at-age models such as ASAP in the way it treats parameter estimates. Specifically, WHAM has the ability to treat recruitment, survival between age classes, natural mortality (M), selectivity, catches, and movement between spatial units as random effects. The overall consequence of using random effects is that the model parameters are more "flexible" since a given parameter is treated as a realization of an underlying distribution of values, rather than a point estimate. In general, this flexibility reduces the retrospective pattern in models and

improves the estimates of the variability for key model outputs. An important feature of WHAM is its ability to incorporate environmental covariates in the modeling framework. A full description of the WHAM's features may be found in the documentation and peer review of the Research Track Assessment (RTA) (https://www.mafmc.org/s/a_Draft-Report-of-the-Research-Track-Working-Group-for-Applying-State-Space-Models.pdf). Tutorials and example problems are also available online.

The transition from ASAP to WHAM has important implications for providing scientific advice. The SSC notes that there will be a learning period as the Council, its committees, and the Regional Office become more familiar with the new methodology and terminology.

Questions and Comments by the SSC included:
- Does the model incorporate uncertainty of observations, such as survey indices? Measures of uncertainty for individual observations within a survey are not directly used. Instead, an overall measure of uncertainty is assigned to the time series as a whole.
- What are the implications of using Vector Autoregressive Spatio-Temporal (VAST) model estimates of relative abundance in a WHAM model?
    - The VAST approach has been used to combine indices derived from surveys with both overlapping and non-overlapping spatial domains. Such combinations are considered plausible if the multiple surveys are conducted at roughly the same time. Combining surveys that span multiple seasons within a year are considered less justifiable because the differences in relative indices may reflect true differences in abundance as a population moves from inshore to offshore or if seasonal fishing depletes the stock.
    - Presently, it is not clear if the VAST model is sufficiently generalized to handle the diversity of survey indices used in Northeast stock assessments. In some cases, retention of individual indices may be appropriate.
- Does the flexibility of model parameterization have implications for estimating parameters that influence estimates of population size, specifically, M and catchability (q)?
    - Analyses suggest use of random effects for M can create problems of convergence.
- In general terms, it has been difficult to identify the effects of environmental covariates. This may be due to lack of strength in the hypothesized relationship or simply that the variation in other model parameters overwhelms the environmental covariate.
    - In view of potential model misspecification, inclusion of covariates should be based on specific hypotheses rather than data-mining techniques (i.e., screening large numbers of variables to find relationships).
- The WHAM model focuses on reducing process error misspecification. How does it handle observation error misspecification?
    - Cross calibration tests suggest some ability to detect process errors.
    - Specification of stanzas or blocks of parameter estimates have been important aspects of fitting models (ASAP). Estimates from WHAM are fundamentally different such that identification of stanzas will not be straightforward. It is anticipated that the basis for forecasts will change.
- What aspects of model projections are most important to focus on?

o It's generally thought that WHAM provides more realistic measures of uncertainty. Some of this has been supported by ensemble and self-testing simulations. As various assessments are updated over time, it is anticipated that estimates of true uncertainty will improve but it is too soon to draw concrete conclusions.

Black Sea Bass Research Track Assessment

Kiersten Curti, NEFSC, provided an overview of the Black Sea Bass RTA. The RTA required 42 scheduled meetings in plenary and additional meetings among individual investigators. In addition, she noted a high level of stakeholder involvement with 16 separate meetings as part of the process.

The revised model, implemented in WHAM, partitions the population into northern and southern regions, split approximately around Hudson Canyon. The regions are linked by a migration matrix wherein the transitions between areas occur instantaneously at the end of the fishing season (or calendar year). This formulation is consistent with the available tagging data that was judged to be insufficient to support a more detailed seasonal migration pattern. In previous models, fishing fleets were divided into trawls and non-trawls. In the revised model, the north-south spatial units align the recreational and commercial gear differences. Fishing mortalities due to recreational landings and discards are estimated in both regions. Model improvements also include a new commercial CPUE series based on the Coonamessett Farm Research Foundation BSB Research Fleet.

The partitioning of fishing mortality estimates among four fleets results in a total F (=1.02) that is higher than expected and cannot be directly compared to previous estimates. Fishing mortality at a given age is the sum of Fs at age across fleets. The total F corresponds to the maximum fishing mortality at age for the summed fleets. The force of F on the populations is determined by the vector of Fs at age; the maximum value alone is insufficient to characterize this quantity.

Survey indices are standardized using VAST. This included combining ten surveys with small spatial footprints, but seasonal differences between spring and fall surveys were not combined.

A guild analysis was used to compute recreational CPUEs. Guild analysis, which assumes that total effort is a reflection of multiple target species (e.g., Summer Flounder, Scup, and Black Sea Bass), typically results in lower CPUE estimates because it includes trips that did not catch BSB but caught other species in the guild. Efforts to attribute differences in abundance between northern and southern regions to shelf water volume were unsuccessful. Compared to previous assessments the retrospective pattern was greatly reduced for both northern and southern areas.

Questions and Comments by the SSC included:

- What is the relative uncertainty in the terminal year biomass estimates? Did it increase?
  - Abundance estimates appear to have coefficients of variation on the order of 30 to 40%;

- Why were pot (non-trawl) vs trawl fisheries combined in this model? Previously these were separated.
  - It was assumed that the use of market category differences captured some of these differences and aliased differences between Northern and Southern stock areas.
- Reviewers suggested dropping minor surveys from VAST. What was the effect?
  - NEFSC and NEAMAP surveys had the greatest effect.
- How was sex transition handled?   What is true SSB?
  - The same conventions used in previous assessments were applied.

Golden Tilefish Research Track Assessment

Three separate presentations covered the development of the Ecosystem and Socioeconomic Profiles (ESP), new stock assessment data sources, and an overview of the stock assessment model.

Sarah Salois, NEFSC, provided an overview of the Ecosystem and Socioeconomic Profile (ESP). The ESP is a comprehensive synthesis of biology, key environmental drivers at different life stages, and management of a species, coupled with a thorough review of the underlying economic factors and their effects on communities. Sarah highlighted many valuable interactions with fishermen, including issues of hook competition, fuel costs, and market prices.

Jose Montanez, MAFMC, provided an overview of new data sources considered in the RTA. The Catch Accounting and Monitoring System (CAMS) provides a single source of landings and discard information based on an iterative updating throughout the year. The model-based LPUE index for the commercial fleet was supplemented by a new CPUE index based on VTR from party/charter vessels and data from the Large Pelagics Survey. Voluntary reporting from recreational anglers through the MAFMC mandatory permit and reporting system is very low and not yet useful. Commercial discards are generally very low. Longline surveys have evolved over time and tested effects of hook size to potentially inform the selectivity pattern.

Kristan Blackhart, NEFSC, summarized implementation of the assessment model in WHAM. An overview of the various model formulations reviewed by the Peer-Review Panel was provided. WHAM has the advantage of allowing incorporation of environmental covariates, but for this stock model outcomes were very sensitive to inclusion of random effects, such that status determination varied significantly depending on the parameter configuration.   Model results ranged from low fishing/high abundance to high fishing/low abundance. The range of outcomes may be due in part to the limited age frequency information in the catch and the absence of a long-term fishery-independent survey. Golden Tilefish can be characterized as a data moderate species and is the first such assessment to be implemented by using WHAM.

Questions and Comments by the SSC included:
- Impressed by quality of work and quantity, but differences arose with respect to the following topics

- o Selectivity—flat top vs domed in early vs later time blocks.
        - o What are the effects of data limitations (notably, age estimates) on WHAM performance?
        - o Peer reviewers did not recommend a base model. No sweet spot!
        - o Recommended focusing on diagnostics rather than past performance.
    - Challenges of not having abundance at age?
        - o Big gap in CAA and ALK pooling effects
        - o Full random effects not useful, may violate assumptions that have been useful in more data rich assessments.
        - o Many model configurations had bad diagnostics, especially when random effects and first-order autoregressive processes (AR1) were included. Models did not converge, even when starting conditions were "jittered" very slightly.   If model selectivity is not domed, then stock may be badly depleted. Adding a second stanza of selectivity creates a more optimistic picture based on reduced F and higher ages. However, this "cryptic biomass" has not been observed as expected in fishery independent surveys.
    - How is a preferred model identified? Is AIC sufficient?
        - o Model performance improved with less retrospective pattern and improved characterization of uncertainty and improved projections, BUT it was sensitive to random effects.
        - o Comparisons with previous ASAP model formulations are not straight forward and WHAM could not be configured to replicate earlier ASAP models. Some of these differences are related to the treatment of recruitment and starting conditions.
    - There was some minor disagreement on principles for model identification and selection. This topic is likely to be revisited at MTA in June.
    - Concerns were expressed about the dangers of using a *post hoc* justification to identify the final model. Consistency with previous perceptions of stock abundance is not a sufficient basis. Instead, model selection should be driven by various diagnostics related to goodness of fit and retrospective patterns. The effective degree of parameterization relative to data inputs was suggested as a possible diagnostic to address potential overfitting.
    - Industry members noted the importance of industry observations and perspective.

SSC discussions continued to recognize that the transition from ASAP to WHAM would entail growing pains and require development of a new vocabulary for both scientists and managers.

Fishery Independent Longline Surveys

South Atlantic Deep Water Longline (SADL) Survey
Kevin Craig, SEFSC, described the SADL survey, which is based on a stratified random design. Stations extend from NC to the FL Keys over a depth range of 76-366 m. Strata are defined by ½ degree of latitude intervals. The survey is strongly supported by industry, which provides the

vessels and staff. The survey, first conducted in 2020, has continued since then with incremental improvements. In 2023, with input and support from the MAFMC, the survey was extended north from the VA/NC border to off of Delaware Bay. The survey typically begins in late July and continues to early October. Each station set consists of a three-mile longline with 150 hooks per mile. Initially the survey consisted of a mixture of fixed and random stations but now includes only randomly selected stations.

Questions and Comments by the SSC included:
- The SSC expressed concerns about extended duration of survey and suggested that a shorter survey period would avoid conflation of relative abundance with migration and fishing mortality effects.
- Has power analysis been considered as a way of determining least detectable true differences? This has not been done but considered a good suggestion for future work.
- The SSC noted that, since this is a multispecies survey, it is not generally possible to optimize station allocations since patterns vary by species.
- Has modeling of survey design been considered to allow borrowing of data in years when execution of survey is compromised? This will be investigated.
- The SSC appreciated the potential of the SADL survey to provide an alternative measure of relative abundance and its potential utility for characterizing northward shifts in stock distributions.

Golden Tilefish Longline Survey
Jill Olin, Michigan Technological University, presented an overview of survey results for 2023. The Golden Tilefish survey, first conducted in 2017 as a pilot, initially sampled habitat for both Golden and Blueline Tilefish at 194 stations and tested three different hook sizes (small, medium, and large). Based on a peer review of the 2017 pilot survey, the second survey in 2020 focused primarily on Golden Tilefish and sampled 115 stations and used two hook sizes (small and medium). The 2023 survey employed the same design with 115 stations sampled over 14 days. Smaller hooks caught more fish, but the "industry" hooks (medium) capture a larger size range. Size selectivity patterns have not been fully quantified; such quantification is necessary before drawing conclusions about the likelihood of high abundance of "cryptic" biomass. Cryptic biomass is the term used in stock assessment to describe a fraction of the population with low catchability. Larger fish are often less vulnerable to fishing gear because of differences in habitat or catchability, such that reductions in catch can be interpreted in terms of reduced vulnerability rather than mortality. Such selectivity patterns are generally called "domed selectivity."

The SSC appreciated the evolution and improvements in the survey design. The SSC recommended more formal analyses of hook size selectivity to help interpret survey results. High catch rates of non-target species (e.g., dogfish) can further complicate interpretation of differences among years due to gear saturation. In other words, hooks occupied by other species reduce the potential capture of Golden Tilefish and could suggest trends unrelated to their true abundance. Returns of empty and baited hooks should continue to be counted. Differences in

timing of surveys are also considered important for survey standardization. Additional analyses of doming should be done, as well as confirmation that size differences are not being conflated with depth effects.

Squid: *Illex* and Longfin Review

Jason Didden, MAFMC, provided a succinct summary of fishery performance in 2023 for both species. Although *Illex* catches were low, there were no major changes in the fall survey index that would suggest a change in stock condition. No issues were raised by the SSC and no changes to existing 2025 catch specifications were warranted.

Chub Mackerel Review

Julia Beaty, MAFMC, provided an overview of the current specifications for the Chub Mackerel ABCs for 2025-6. No new data were available to support changes to the current specifications. SSC members highlighted the data lacunae and suggested a feasibility study for conducting an assessment in the future. In particular, recent growth studies by Robert Leaf (University of Southern Mississippi) may allow application of a new assessment model (LIME, see Rudd and Thorson, 2018). The feasibility study could also highlight approaches used elsewhere in the world for this ubiquitous species.

OFL CV Guidance Document

Paul Rago provided an overview of the recommendations of the SSC's OFL CV Sub-Group. These recommendations reflect the iterative refinement of recommendations over multiple meetings that began in March 2023. The primary recommendations were:
1. Empirical and theoretical evidence suggest that the 60% CV level should be rare.
2. Reduce the number of criteria used to derive the OFL CV from nine to six.
3. Create a tiered system for evaluating criteria in which data, model selection and model performance are primary factors for determining the OFL CV. Confirmation by empirical studies, inclusion of ecosystem factors, and specification of appropriate stanzas of recruitment are considered secondary factors which can increase, but not reduce, the OFL CVs derived in the first tier.

Olaf Jensen summarized a comprehensive meta analysis of assessments worldwide (Bi et al. 2023) to illustrate how infrequent OFL CV at or below 60% were. Low CVs were often associated with constancy of methodology and frequent updates that did not allow for introduction of major innovations. Higher OFL CVs were typically associated with new modeling paradigms and revisions in underlying data bases (e.g., recalibrated catch series, inclusion of discard estimates) or revised model parameters (e.g., natural mortality). Results of simulation analyses previously considered by the SSC support the Bi et al. (2023) empirical patterns.

Low OFL CV estimates in a given assessment are more likely to reflect a more thorough characterization of the underlying uncertainty for a given model rather than finding the "true" value. SSC members noted that all such estimates from empirical studies should be considered minimal estimates since they only address variation of the estimates but not its potential bias.

A review of SSC reports over the past four years suggests several criteria are outdated, difficult to interpret, or aspirational rather than operational. The Sub-Group recommended deletion of the following three criteria:

- o Criteria 7—Informed by prediction error
- o Criteria 8—Assessment accuracy under different fishing pressures
- o Criteria 9—Informed by simulation analyses or full MSE

The Sub-Group noted that factors related to these criteria can be addressed within the existing criteria, as appropriate.

The OFL CV ultimately relies on a measure of the overall productivity of the stock. Separating the joint effects of fishing from environmental effects is always challenging, but becomes more so with improved management that shifts the balance from factors that are controllable (fishing mortality) to those that are less controllable (environment). A draft revision of the OFL CV guidance document along with a revised example was made available for review by the SSC. The revised document is included in the Council's briefing material under Tab 8.

Members of the public expressed concerns about the possible increase in the OFL CV estimates and the economic consequences of lowered ABCs on commercial fisheries. Consideration should be given to the consequences of overages in recreational harvests and their consequences for commercial harvest.

Recreational Measures Setting Process

Recent progress of the FMAT/PDT for the Recreational Measures Setting Process Framework/ Addenda was summarized by Julia Beaty, MAFMC. The FMAT/PDT will be updating the measures originally developed under the Harvest Control Rules Framework approved in 2022. That Framework sunsets at the end of 2025 and the Council will refine those measures in response to the FMAT/PDT and guidance from the SSC. The SSC has formed a Sub-Group chaired by Tom Miller to lead that effort. The Sub-Group has met once and has an ambitious series of meetings before the July 2024 meeting of SSC. Tom summarized progress from the first meeting in April. He noted that the RHL does not necessarily affect the ABC in a given year, except when projecting the catch in the terminal year of the assessment. To be clear, the assessment is typically completed a year before the specifications are set. The catches that are expected to occur in the interim year are usually assumed to be equal to the previously specified ABC. However, a consistent pattern of over or under achieving of the RHL could be considered when estimating potential Overfishing Limits (OFL) for the new specification period. Tom further noted that the existing binning and adjustment measures in the current plan have

unknown consequences for preventing overfishing. Consequently, the Sub-Group is looking forward to learning more about the work on MSEs from the FMAT.

Gavin Fay noted that MSEs for Summer Flounder are underway and would be available for review by early July. Unfortunately, the timeline for MSE work and other tasks of the FMAT/PDT will not leave much time for SSC responses. Among the other tasks are various approaches for considering the implication of RHL on the fishing mortality rate for the population. Paul Rago summarized work by Michael Celestino (NJDEP) and Samuel Truesdell (NEFSC) that illustrates the development of fleet-specific reference points and their utility for interpreting RHL Paul Rago further summarized work conducted in collaboration with Andrew Carr-Harris and Scott Steinback (NEFSC) on linking outputs from the Recreational Demand Model with age-structured assessment models. Both of these projects were reviewed by the SSC Sub-Group on May 20. Additional meetings of the Sub-Group have been scheduled and a draft summary report will be delivered at the July SSC meeting.

Other Business

- The eighth national meeting of the regional SSCs will be held August 26-28 in Boston. NEFMC will host the meeting and focus on the application of ABC control rules in a changing environment. Ecosystem and social science factors will be considered with respect to their implications for rebuilding plans. Four SSC members per Council will attend; Sarah Gaichas will be one of the case study speakers.
- Management Track Assessments for Black Sea Bass, Atlantic Surfclam, and Butterfish will be externally reviewed as Level 2 assessments (Expedited Review) in June. The MTA for Golden Tilefish will also be externally reviewed as a Level 3 assessment (Enhanced Review). All four assessments will be considered by the SSC in July.

References

Bi, R., Collier, C., Mann, R., Mills, K. E., Saba, V., Wiedenmann, J., & Jensen, O. P. (2023). How consistent is the advice from stock assessments? Empirical estimates of inter-assessment bias and uncertainty for marine fish and invertebrate stocks. *Fish and Fisheries*, 24, 126–141. https://doi.org/10.1111/faf.12714

Merrill B. Rudd and James T. Thorson. 2018. Accounting for variable recruitment and fishing mortality in length-based stock assessments for data-limited fisheries. *Canadian Journal of Fisheries and Aquatic Sciences*. **75**(7): 1019-1035. https://doi.org/10.1139/cjfas-2017-0143

Attachment 1

Mid-Atlantic Fishery Management Council

Scientific and Statistical Committee Meeting

May 14-15, 2024

Royal Sonesta Harbor Court (550 Light Street, Baltimore, MD)
<u>or</u> via Webex webinar

This will be an in-person meeting with a virtual option. SSC members, other invited meeting participants, and members of the public will have the option to participate in person at the Royal Sonesta Harbor Court or virtually via Webex webinar. Webinar connection instructions and briefing materials will be available at Council's website: https://www.mafmc.org/council-events/2024/ssc-may-14-15.

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AGENDA

Tuesday, May 14, 2024

9:30   Welcome/Overview of meeting agenda (P. Rago)

9:35   Overview of the Woods Hole Assessment Model (WHAM) (T. Miller, NEFSC)
- Outcomes from the Applying State-Space Models Research Track peer review

10:45 Break

11:00 Introductory overview of the Black Sea Bass Research Track stock assessment information (K. Curti, NEFSC)
- Overview of new modeling framework, survey data advancements, and ecosystem considerations
- Research Track peer review findings and recommendations

12:00 Lunch

1:00   Introductory overview of the Golden Tilefish Research Track stock assessment information
- Ecosystem and Socioeconomic profile (S. Salois, NEFSC)
- New fishery dependent and independent data sources (J. Montañez)
- Overview of modeling framework development (K. Blackhart, NEFSC)

2:00   Review of 2023 South Atlantic Deepwater Longline (SADL) Survey (K. Craig, SEFSC and W. Bubley, SC DNR)
● Survey background, 2023 survey expansion and results, future survey plans

3:00   Break

3:15   Review of 2023 Mid-Atlantic Golden Tilefish Longline Survey (J. Olin, Michigan Technical University)
● Review of 2023 survey results and future survey plans and application

4:15   Longfin Squid ABC data and fishery update; review of previously recommended 2025 ABC (J. Didden)

4:45   *Illex* Squid data and fishery update; review of previously recommended 2025 ABC (J. Didden)

5:15   Adjourn

Wednesday, May 15, 2024

8:30   Potential updates to the OFL CV guidance document
● Review SSC sub-group recommendations (P. Rago)
● Approve revised OFL CV guidance document for Council consideration

9:45   Chub Mackerel data and fishery update; review of previously recommended 2025 ABC (J. Beaty)

10:15   Break

10:30   Recreational Measures Setting Process Framework/Addenda
● Overview and anticipated timeline of action (J. Beaty)
● SSC Sub-Group – work plan and initial feedback (T. Miller)
    o MSE and F-based analyses – overview and progress update

12:00   Other Business
● Scientific Coordination Sub-Committee 8th National Workshop update
● Assessment Oversight Panel – 2024 Management Track recommendations

12:30   Adjourn

Note: agenda topic times are approximate and subject to change

Attachment 2

MAFMC Scientific and Statistical Committee
May 14-15, 2024
Meeting Attendance

<u>Name</u>   <u>Affiliation</u>

SSC Members in Attendance:

Name	Affiliation
Paul Rago (SSC Chairman)	NOAA Fisheries (retired)
Tom Miller	University of Maryland – CBL
Ed Houde	University of Maryland – CBL (emeritus)
Dave Secor	University of Maryland – CBL
John Boreman	NOAA Fisheries (retired)
Jorge Holzer	University of Maryland
Yan Jiao	Virginia Tech University
Rob Latour	Virginia Institute of Marine Science
Olaf Jensen	U. of Wisconsin-Madison
Sarah Gaichas	NOAA Fisheries NEFSC
Wendy Gabriel	NOAA Fisheries (retired)
Mike Wilberg (Vice-Chairman)	University of Maryland – CBL
Cynthia Jones	Old Dominion University
Gavin Fay	U. Massachusetts-Dartmouth
Alexei Sharov	Maryland Dept. of Natural Resources
Geret DePiper	NOAA Fisheries NEFSC
Mark Holliday	NOAA Fisheries (retired)
Mike Frisk	Stony Brook University

Others in attendance (only includes presenters and members of public who spoke):

Name	Affiliation
Tim Miller (May 14th only)	NEFSC
Jason Didden	MAFMC staff
Brandon Muffley	MAFMC staff
Kiersten Curti (May 14th only)	NEFSC
Julia Beaty	MAFMC staff
Jose Montañez	MAFMC staff
Sarah Salios (May 14th only)	NEFSC
Kristan Blackhart	NEFSC
Kevin Craig (May 14th only)	SEFSC
Wally Bubley (May 14th only)	SCDNR
Jill Olin (May 14th only)	Michigan Technological University
Laurie Nolan (May 14th only)	F/V Sea Capture
Meghan Lapp (May 15th only)	Seafreeze Inc.
Greg DiDomenico (May 15th only)	Lund's Fisheries
Mike Celestino (May 15th only)	NJDEP
Mike Waine (May 15th only)	American Sportfishing Association

Attachment 3. Glossary

ABC—Acceptable Biological Catch
ALK – Age-Length Key
AOP—Assessment Oversight Panel
ASAP—Age Structured Assessment Program
B_{msy}—Biomass at maximum sustainable yield
CAA = Catch at Age
CAMS – Catch Accounting and Monitoring System
CPUE – Catch Per Unit Effort
CV—Coefficient of Variation
DFO—Department of Fisheries and Oceans, Canada
ESP—Ecosystem and Socio-economic Profiles
EAFM—Ecosystem Approach to Fisheries Management
F—Instantaneous rate of fishing mortality
FSV—Fishery Survey Vessel
GARFO—Greater Atlantic Region Fisheries Office
HCR—Harvest Control Rule
LIME—Length-based Integrated Mixed Effects
M—Instantaneous rate of natural mortality
MRIP—Marine Recreational Information Program
MTA—Management Track Assessment
MSE—Management Strategy Evaluation
OFL—Overfishing Limit
P*—Probability of overfishing
q – catchability coefficient
RHL—Recreational Harvest Limit
RMSP—Recreational Measures Setting Process
RSA—Research Set Aside
RSC—Research Steering Committee
RTA—Research Track Assessment
R/V—Research Vessel
SADL – South Atlantic Deepwater Longline Survey
SOE—State of the Ecosystem
SSB_{msy}—Spawning stock biomass at maximum sustainable yield
SSC—Scientific and Statistical Committee
TMB—Template Model Builder
VAST – Vector Autoregressive Spatio-Temporal Model
WHAM—Woods Hole Assessment Model