Mid-Atlantic Fishery Management Council
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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
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M E M O R A N D U M

Date: September 25, 2020

To: Michael P. Luisi, Chairman, MAFMC

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

Subject: Report of the September 8-9, 2020 SSC meeting

The SSC met via webinar on September 8th and 9th 2020 to address the following topics: (1) update previously recommended ABC for Spiny Dogfish for 2021 and recommend ABC for 2022 and adjust for revised Council Risk Policy, (2) review previously recommended ABC for Chub Mackerel for 2021, (3) discuss potential effects of missing data for 2020 on SSC deliberations in 2021 and beyond, (4) discuss the scope of work of the socio-economic workgroup, (5) discuss a variety of topics related to wind energy development, and (6) review and comment on the Mid-Atlantic State of the Ecosystem report (Attachment 1). The SSC benefited from the opportunity to discuss several topics in detail including the wind energy presentations from BOEM, RODA, ROSA and the NEFSC.

Nineteen of the 20 of the SSC members participated in the meeting (Attachment 2). All participation was via webinar owing to travel and health concerns. Members of the public also attended the sessions, but only those who spoke are listed in Attachment 2. Technical support of Council staff, as in previous meetings was outstanding. SSC members appreciated the new web feature to obtain all of the meeting materials in a single downloadable file. https://www.mafmc.org/ssc-meetings/2020/september-8-9

The meeting proceeded under the usual format of an initial presentation, followed by questions from the SSC, and then members of the public. Subsequent discussions followed a similar pattern and deliberate efforts were made to ensure all attendees had an opportunity to contribute. For Spiny Dogfish and Chub Mackerel, the discussions were guided by the SSC's species leads, Yan Jiao and Gavin Fay, respectively. To ensure accurate and transparent decision making, a rapporteur (Gavin Fay) summarized the Spiny Dogfish decisions. Neither Spiny Dogfish nor Chub Mackerel required the SSC to evaluate an updated coefficient of variation for the Overfishing Limit.

I acknowledge and appreciate the contributions of all the SSC members and in particular those who contributed text to this report directly: Yan Jiao and Gavin Fay for spiny dogfish, Dave Secor for wind energy, Sarah Gaichas for providing her meeting notes, and Brandon Muffley for overall support and preparation of the Attachments. Tom Miller, Ed Houde, and John Boreman provided useful comments on an earlier draft. I also thank all of the representatives from BOEM (Brian

Hooker), RODA (Annie Hawkins), ROSA (Lyndie Hice-Dunton) and NEFSC (Wendy Gabriel, also MAFMC SSC) for their excellent presentations on wind energy development.

Spiny Dogfish

Jason Didden began with an overview of the current specifications, a review of the previous year's data update from the NEFSC, and a summary of the Fishery Performance Report from the Advisory Panel. No data update from the Northeast Fisheries Science Center (NEFSC) was available for this meeting. The NEFSC Spring Bottom Trawl survey, a pivotal component in the assessment, was not conducted in 2020 due to COVID concerns. Spiny Dogfish specifications for 2021 will be the last year of a 3-year package. A Research Track assessment will be conducted in 2022 but those results may not be available for consideration by the SSC when it meets that year. To compensate for that time lag, staff recommended continuation of the ABC for 2021 into 2022. Application of the Council's updated risk policy increased the 2021 ABC by about 1,500 mt to 17,498 mt because the P* (the acceptable probability of overfishing) increased from 0.296 to 0.333.

The seasonal pattern of dogfish catches in 2020 have been similar to 2019 despite initial lags due to COVID concerns. Prices have been below $0.20/lb for the past 3 years. Weak demand, availability of processors and low trip limits (6,000 lb) constrain landings. Some AP member expressed concerns about underestimation of Spiny Dogfish abundance while others noted that stability is needed to maintain prices rather than expand markets.

Follow-up discussions by the SSC focused on utility of the partial year of data for the 2020 spring survey (first leg only), and the potential benefits of updating earlier projections with the actual catch estimates from 2019. Kathy Sosebee, Spiny Dogfish assessment lead, reported that the earlier projections for 2022, under the previous risk policy, was 20,660 mt, or roughly 3,000 mt greater than the staff recommendation for 2022. This reassured the SSC that the continuation of the 2021 quota into 2022 would not, in and of itself, pose a significant risk to the population. SSC discussions noted the importance of Spiny Dogfish as predators and potentially as prey, although relatively little is known about these predator-prey relationships. The influence of temperature and salinity on the distribution of Spiny Dogfish has been summarized in the literature but its utility for adjusting abundance estimates for availability has not been evaluated.

The SSC's responses to the terms of reference provided by the MAFMC (in italics) are as follows:

1. *Specify a revised ABC for the 2021 fishing season based on the Council's recently approved changes to the risk policy. If revising the 2021 ABC with the new risk policy is inappropriate, specify an alternative ABC for 2021 (e.g., previous recommendation) and provide any supporting information used to make this determination;*

   The SSC recommends a revision of the 2021 ABC upwards to **17,498 mt** for the 2021 fishing season, based on the Council's revised risk policy (P* = 0.333). This recommendation agrees with the Council Staff recommendation.

The SSC notes that the estimated 2019 female biomass was above the biomass threshold, the 2019 data update indicated little evidence to suggest that stock condition has changed substantially from what was indicated in the 2018 benchmark assessment, and there are no biomass or trend updates for 2020 because the NEFSC spring trawl survey was not conducted in 2020.

2. *Specify an ABC for the 2022 fishing season the SSC deems most appropriate with the information given;*

The SSC recommends a 2021 ABC of **17,498 mt** extend to the 2022 fishing year.

A research track assessment for Spiny Dogfish is planned for March 2022, that will reveal new scientific information about the status of the stock.

The SSC is concerned about the uncertainty caused by the lack of the 2020 NEFSC spring trawl survey and reliance on the longer-term projection from the 2018 assessment. However, based on the stock projection from the 2018 benchmark assessment the SSB is expected to continue to increase given the estimated MSY proxy level. Slow growth, late age of maturity, low fecundity, and high age of recruitment create inertia in the stock dynamics and therefore reduce interannual fluctuations in forecasts. Coupled with the way the index information is used in the assessment, reliance on a projection may then be less sensitive for Spiny Dogfish than for some other stocks. If index data from the 2021 NEFSC spring trawl survey becomes available these could provide an opportunity for revision if needed.

3. *Provide any relevant data and/or assessment considerations for the 2022 research track assessment.*

The SSC agrees with the recommendations from the 2018 assessment, with some revision to recommendations 4 and 7.

1. Revise the assessment model to investigate the effects of stock structure, distribution, sex ratio, and size of pups on birth rate and first year survival of pups.
2. Explore model-based methods to derive survey indices for Spiny Dogfish.
3. Consider development of a state-space assessment model.
4. Compile and examine the available data from large scale (international) tagging programs, including conventional external tags, data storage tags, and satellite pop-up tags, and evaluate their use for clarifying movement patterns and migration rates.
5. Investigate the distribution of Spiny Dogfish beyond the depth range of current NEFSC trawl surveys, possibly by using experimental research or supplemental surveys.
6. Continue aging studies for Spiny Dogfish age structures (e.g., fins, spines) obtained from all sampling programs (include additional age validation and age structure exchanges), and conduct an aging workshop for Spiny Dogfish, encouraging participation by NEFSC, Canada DFO, other interested state agencies, academia, and other international investigators with an interest in dogfish aging (US and Canada Pacific Coast, ICES).
7. Evaluate the ecosystem context of Spiny Dogfish including quantifying their role as predator and prey, and effects of climatic factors such as changes in temperature and salinity on the distribution, growth and survival, as they impact both population dynamics and reference points.

Chub Mackerel

Information on Chub Mackerel was summarized by Julia Beaty (Council Staff). The status of Chub Mackerel is unknown. Both the commercial and recreational fisheries have been characterized by generally low levels of catch (<250 mt/yr) with intermittent spikes up to ~2,400 mt as in 2013; causes of such spikes are unknown. Chub Mackerel is a fast swimming fish that usually is caught by more powerful vessels such as those used to harvest *Illex* squid. Fishermen reported that Chub Mackerel may serve as an alternative species for these vessels when *Illex* are unavailable. Fewer than 5 vessels and 3 dealers accounted for 95% of the landings in 2019. It was noted that misidentification of Chub Mackerel with other species may be a problem in recreational fisheries. Just about every aspect of this resource is characterized by high uncertainty. Recent aging research, supported via industry, and the collection of length samples are valuable starting points for development of a future stock assessment

Discussions by the SSC highlighted many of the sources of uncertainty including forage fish considerations, the influence of availability to the fishing area, and opportunistic fishing activity. Chub Mackerel has a very large range from New England to the Gulf of Mexico. Reliance on information from other areas may help fill knowledge gaps.

The SSC provides the following summary of its deliberations on Chub Mackerel:

> The SSC recommends continuing the ABC recommendation of 2,300 mt for Chub Mackerel. Given the paucity of data it is impossible to refine this estimate further or to distinguish whether the high catches were the result of opportunistic fishing, increased availability or presence of a strong year class in the stock area. The SSC noted the high concentration of catch by statistical area and the limited numbers of vessels and processors in the reported landings.
>
> The ongoing initiatives by industry and the Council to collect biological information were commended. Members noted that these data are the primary sources of information, and although sparse should allow for improved understanding of this resource. Changes in the size composition over the past 12 years will be valuable inputs to any future stock assessments. The SSC suggested coordinating data with fishing companies and throughout the South Atlantic and Gulf of Mexico where possible.

Potential Effects of Missing Data on Scientific Uncertainty

I opened this discussion with an overview of the types of data that may be missing in 2020, the many different ways in which the omissions could be handled, and most importantly the potential responses of the SSC to the expected increase in uncertainty of the OFL. No NEFSC bottom trawl surveys will be conducted in 2020 and most of the state surveys have been canceled as well. Commercial landings data are being recorded but observer coverage used to estimate discards is likely to be very low for the year as a whole. MRIP sampling has been intermittent and their staff have been proactive in developing ways to handle the omissions. Importantly, the NEFSC and GARFO are coordinating to identify the expected data gaps and consequences for individual stocks. Missing data have both short and longer-term impacts on assessments. Often these effects are 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 affected less than index-based assessments or models with convergence issues. Unfortunately, some of these impacts will only be knowable in the rearview mirror.

The SSC's response to this dilemma must be objective, but concerns will be relayed to managers. For stocks in the middle of multiyear specifications, the consequences will be less acute. 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 catches exceeded ABCs, could lead to a need to revise the projected OFLs accordingly.

Discussions by the SSC 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. There was a general consensus among the SSC members 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.

Ancillary information, such as commercial CPUE monitoring or predictive environmental relationships may be useful adjuncts to the stock assessment process. It was noted that the Atlantic Mackerel, Black Sea Bass, Bluefish, Golden Tilefish, Scup, and Summer Flounder management track updates in 2021 will have missing data for 2020. As a final cautionary note, it was noted that COVID-related health concerns may not be restricted to 2020 if ways to conduct surveys cannot be found by 2021.

Members of the public expressed similar concerns, and encouraged a broad overview of potential impacts by species. The magnitude of catch shortfalls (i.e., catches below ABCs) should also be considered as this reduces the uncertainties about future catch levels. It was noted that the conservative approaches taken by the MAFMC and ASMFC over the past decade should provide some buffer against the negative impacts of the missing data.

The SSC is hopeful that the NRCC will address this topic as well as provide results of the synthesis of missing data items by NEFSC and GARFO.

Socio-Economic Working Group

Geret DePiper, chair of the SSC's Socio-Economic Working Group, led the discussion on the future role of the SSC's economists. Some key points included discussion of a strategy for engaging the Council and to build programmatic support for Council decisions. As with the SSC role in stock assessments, the socio-economic function would have a long-term focus and act in an advisory role rather that in the creation of new analyses. It is envisioned that the group would engage with the Council and its Committees iteratively, and ideally, from project conception to completion (i.e., end to end). Key points of connection would include pre-scoping, management alternative development and management alternative assessment. One way of demonstrating how

this might work is to select one or more Council priorities for 2021 and develop a case study for each.

Discussions following the presentation focused on the logistics of preparing for the upcoming Council meetings in October and December. Several webinar meetings of the Working Group were proposed to refine the message and coordinate the work. The Working Group is envisioned to be conceptually similar to the OFL CV Working Group, which had a long-term commitment to iteratively refining a product and policy advice aligned with Council goals and objectives. Some overarching concerns included the need to be specific, to avoid creating bottlenecks in decision making, and to emphasize unanticipated behavioral responses that could undermine efficacy of management decisions. The South Atlantic Fishery Management Council has an economics subgroup that operates similarly to the broad outline described above.

Additional resources for virtual meetings may be required over its duration. The magnitude of these resources is unknown but will be contingent on decisions made by the Council in December.

Review of 2021-2025 Assessment Schedule

The 2021 Management Track assessments will include Atlantic Mackerel, Black Sea Bass, Bluefish, Golden Tilefish, Scup, and Summer Flounder. Research Track assessments will be conducted for Butterfish and *Illex*. Since many of these assessments will arrive simultaneously at the July 2021 meeting, consideration of an increased duration of the SSC meeting may be necessary.

Management Track and Research Track Assessments are planned through 2025. Research Track assessments are considered fixed over the next three years but flexibility in later years is possible if conditions warrant. For example, the SSC noted that Longfin Squid might require an earlier benchmark if changes recommended by the most recent Management Track review were to be implemented. A candidate trade-off might be to swap Golden Tilefish with Longfin Squid in 2024, should conditions warrant.

Members of the public requested additional clarification on the future role of the Council's *Illex* Working Group for the 2021 Research Track assessment. The *Illex* Working Group will be meeting at 11:00 AM October 5, 2020 prior to the Council meeting.

Joint Meetings of the SSC and Council

Brandon Muffley reminded the SSC to participate in the upcoming joint meeting of the SSC with the full Council from 3:00 to 4:30 PM on Tuesday, October 6. Topics to be addressed include the Socio-Economic Working Group, missing data for 2020, and the relationship between the Council Risk Policy and Ocean Quahog.

MAFMC Research Priorities

Brandon Muffley updated the SSC on the Council's 2020-2024 research priorities and noted the value of SSC inputs for refinements of this document. The SSC commended Brandon for ensuring that the document remained active and responsive to evolving needs, especially upcoming Research Track assessments. The Research Plan provides valuable guidance to the Council for funding critical studies for decision making.

Public comments included interest in the upcoming Illex benchmark and the value of continued industry involvement.

Offshore Wind

David Secor coordinated a series of presentations on offshore wind energy development by Council staff (Julia Beaty), Bureau of Ocean Energy Management (BOEM) by Brian Hooker, Responsible Offshore Development of Alliance (RODA) by Annie Hawkins, Responsible Offshore Science Alliance (ROSA) by Lyndie Hice-Dunton, and the NEFSC by Wendy Gabriel. The presentations were informative, well received by the SSC, and generated considerable discussions.

The SSC was introduced to current efforts by regulators, fishery stakeholders, and scientists to adapt and coexist with the rapidly growing offshore wind energy industry within the GARFO region. The Council has been engaged in briefings, comment letters, and outreach. The SSC is embarking on a supportive role in the review of key issues such as altered surveys and associated data, changes in distribution of fishing effort and practices, and socioeconomic and ecosystem impacts. Presentations focused on, (1) current and future offshore wind development in the GARFO region by Mr. Brian Hooker (Biology Team Lead, Office of Renewable Energy Programs); (2) key issues for fisheries stakeholders and introduction to RODA by Ms. Annie Hawkins (Executive Director of Responsible Offshore Development of Alliance); (3) efforts to advance regional research and monitoring needs through the work of ROSA by Dr. Lyndie Hice-Dunton (Executive Director of Responsible Offshore Science Alliance); and (4) implications for NEFSC surveys and plans to adapt survey designs by Dr. Wendy Gabriel (Chief, Population and Ecosystems Monitoring and Analysis Division, NEFSC; and SSC member). Several issues and themes that emerged from discussion that included: the challenge of regulating such a rapidly expanding industry while also soliciting input from key stakeholders; the considerable overlap between key fishing grounds, NEFSC survey regions, and leased/planned offshore wind energy lease areas; and the need for coordinated and regional scale science and monitoring to understand impacts to the fishing industry, stock productivity, and survey data. Possible roles that the SSC can provide to assist the Council and fishing industry include input and review of current NEFSC efforts to simulate future options for survey designs, better engagement of fishery stakeholders through the Advisory Panel process, review of some of the socioeconomic aspects of offshore wind development, and review and endorsement of new metrics of wind energy-fisheries interactions in NEFSC's annual State of the Ecosystem Report.

Given the scope of proposed developments and the potential impacts wind energy development on resource utilization and monitoring, future consultations with BOEM, RODA, ROSA and NEFSC are anticipated. Wind energy development will have major consequences of the work of the SSC in the coming years.

Utility and Future Development of Mid-Atlantic State of the Ecosystem Report

Sarah Gaichas and Geret DePiper led the discussion of the 2020 State of the Ecosystem (SOE) Report prepared by the NEFSC. The SOE continues to evolve and its utility as an information source increases annually as comments from the SSC and other groups are incorporated. As an example, the preceding discussion on wind energy development led to proposals for various indices to track develop and potential impacts of such projects. One of the challenges is the need

to present generalized or "big picture" information to the general public and the need for detailed methodology and data details for research scientists. The SOE meets this objective by preparing a general document and live links to the underlying data. The SSC was especially appreciative of the responsiveness of the SOE team to suggestions for improvements.

With respect to wind energy some members of the SSC noted the utility of overlap metrics between fishing and sampling activity with planned developments. Given the differences in catchability among species, it was suggested that aggregating species groups would be less useful.

The cumulative effects of multiple developments will likely be hard to predict and often harder to detect in a timely manner. Tipping points may be more likely than continuous rates of change. Such changes might occur when nutrient cycling and secondary production changes cascade through a food web. For example, no estimates of overall productivity caps have been developed for fisheries in the Mid-Atlantic region. Such indices could be valuable for evaluating the effects of individual harvest quotas, especially if aggregate removals approach upper bounds. Risk scores, such as those related to marine heat waves, may prove valuable for consideration in the OFL CV matrix. Ideally, various metrics—biological, physical, and economic could be combined to create quantitative indicators for prediction.

Economic considerations, such as market prices could amplify changes. In the absence of an overall ecosystem model it is anticipated that evaluations of quantum changes in system state will be based on various measures of association among indices rather than premature identification of causal mechanisms.

A specific example of interrelations between economics and biology was the topic of fish condition factor and market price. Geret noted that fat content of fish is an important determinant of market price for some species, especially tuna. Multiple biological and ecological factors can give rise to changes in condition factor. For market prices this concept is addressed through hedonic price analysis, a method that examines the effects of multiple factors simultaneously to estimate intrinsic value. Ultimately it is hoped that analyses of factors such as copepod production, condition factor, and so forth could lead to development of leading indicators for market price in the following year.

The session concluded with a general acknowledgement of the commendable work of the ecosystem team and enthusiasm for future development.

Attachment 1

Mid-Atlantic Fishery Management Council

Scientific and Statistical Committee Meeting

September 8 – 9, 2020 via Webinar

Webinar Information

(Note: same information for both days)

Link: http://mafmc.adobeconnect.com/sept2020ssc/

Call-in Number: 1-800-832-0736

Access Code: 5939710#

AGENDA

Tuesday, September 8, 2020

12:30 Welcome/Overview of meeting agenda (P. Rago)

12:35 Spiny Dogfish data and fishery update; review of previously recommended 2021 fishing year ABC and new 2022 ABC recommendation (J. Didden)

- Review of staff memo and 2021 and 2022 ABC recommendations
- 2021 and new 2022 SSC ABC recommendation with new Council risk policy (Y. Jiao)

2:00 Chub Mackerel data and fishery update; review of previously recommended 2021 ABC (J. Beaty)

3:30 Discussion and possible recommendations regarding scientific uncertainty due to missing 2020 catch and survey data due to COVID-19 (P. Rago)

4:30 Miscellaneous SSC topic updates:

- Socioeconomic workgroup
- 2021 and future stock assessment schedule
- Possible joint Council/SSC meeting topics and priorities
- Research priorities

5:30 Adjourn

Wednesday, September 9, 2020

8:30 Offshore wind discussion (D. Secor)

- Background/status of BOEM leases and activities (B. Hooker)
- Fisheries and wind coexistence (A. Hawkins, L. Hice-Dunton)
- Science implications and impacts to surveys (W. Gabriel)

10:30 Discussion on utility and future development of Mid-Atlantic State of the Ecosystem report (S. Gaichas, G. DePiper)

- Feedback on future synthetic products
- SSC application of report information

12:30 Other business

1:00 Adjourn

Note: agenda topic times are approximate and subject to change

Attachment 2

MAFMC Scientific and Statistical Committee

September 8 – 9, 2020

Meeting Attendance via Webinar

Name	Affiliation
SSC Members in Attendance:	
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)
Geret DePiper	NOAA Fisheries NEFSC
Lee Anderson	University of Delaware (emeritus)
Jorge Holzer	University of Maryland
Yan Jiao	Virginia Tech University
Brian Rothschild	Univ. of Massachusetts – Dartmouth (emeritus)
Olaf Jensen	Rutgers University
Sarah Gaichas	NOAA Fisheries NEFSC
Wendy Gabriel	NOAA Fisheries NEFSC
Mike Wilberg (Vice-Chairman)	University of Maryland – CBL
Alexei Sharov	Maryland Dept. of Natural Resources
Mike Frisk	Stony Brook University
Mark Holliday	NOAA Fisheries (retired)
Cynthia Jones	Old Dominion University
Gavin Fay	U. Massachusetts—Dartmouth
Others in attendance (includes presenters and members of public who spoke):	
Mike Luisi	MAFMC Chair
Tony DiLernia (Sept 9th only)	MAFMC/NYSERDA
Jason Didden	MAFMC staff
Julia Beaty	MAFMC staff
Brandon Muffley	MAFMC staff
Kathy Sosebee (Sept 8th only)	NOAA Fisheries NEFSC
Doug Christel	GARFO
Greg DiDomenico	Lunds Fisheries
Jeff Kaelin	Lunds Fisheries
Brian Hooker (Sept 9th only)	Bureau of Ocean Energy Management
Annie Hawkins (Sept 9th only)	Responsible Offshore Development Alliance
Lyndie Hice-Dunton (Sept 9th only)	Responsible Offshore Science Alliance
Jeremy Firestone (Sept 9th only)	University of Delaware