MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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M E M O R A N D U M

DATE: September 26, 2011

TO: Richard B. Robins, Jr., Chairman, Mid-Atlantic Fishery Management Council

FROM: John Boreman, Ph.D., Chairman, MAFMC Scientific and Statistical Committee

Subject: Report of September 2011 Meeting of the MAFMC Scientific and Statistical Committee

The Scientific and Statistical Committee (SSC) of the Mid-Atlantic Fishery Management Council (MAFMC) met on 21-22 September 2011 primarily to review stock assessment information and develop acceptable biological catch (ABC) recommendations for spiny dogfish. Additional topics on the agenda (Attachment 1) included an update on preparations for the upcoming National SSC Workshop, a review of the MAFMC Five-Year Research Plan, a presentation by Jonathan Phinney (NMFS-HQ) on incorporating a programmatic EIS into the Council's ecosystem-based fishery management planning efforts, and a presentation by Mike Wilberg on the final report of the ABC Control Rule MSE Study. A total of 11 of the 18 SSC members were in attendance, which represented a quorum as defined by the SSC standard operating procedures. Also in attendance were representatives of the MAFMC, MAFMC staff, Northeast Fisheries Science Center (NEFSC) staff, ASMFC staff, the Garden State Seafood Association, and the National Coalition for Marine Conservation (Attachment 2).

Spiny Dogfish

1) The materials considered in reaching its recommendations:

- MAFMC staff memorandum from Jim Armstrong to Chris Moore: "Spiny dogfish ABC and Management Measures for 2012," dated September 15, 2011. 12 pp.
- Rago, P., and K. Sosebee. 2011. Update on the status of spiny dogfish in 2010 and initial evaluation of alternative harvest strategies. Unpublished manuscript. Northeast Fisheries Science Center. 36 pp.
- Rago, P., and K. Sosebee. 2011. Addendum to update on the status of spiny dogfish in 2011 and initial evaluation of alternative harvest strategies. Report to Mid-Atlantic Fishery Management Council Science and Statistical Committee. September 14, 2011. 5 pp.
- Rago, P., and K. Sosebee. 2010. Biological reference points for spiny dogfish. Northeast Fisheries Science Center Reference Document 10-06. 55 pp.

- Rago, P. 2011. Estimation of an F_{MSY} proxy reference point for spiny dogfish. Report to Mid-Atlantic Fishery Management Council Science and Statistical Committee. August 10, 2011. 34 pp.
- Memorandum from John Boreman to Rick Robins: "Report of September 2010 Meeting of the Scientific and Statistical Committee," dated October 4, 2010. 18 pp.
- Wilberg, M. 2011. Uncertainty of the overfishing limit for setting ABCs. Presentation to SSC on July 27, 2011.

2) The level (1-4) that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the version of the proposed Omnibus Amendment submitted to the Secretary of Commerce:

The SSC determined the dogfish assessment to be a **Level 3** assessment. The justification for this decision relates to the lack of a credible estimate of uncertainty in the OFL and uncertainty related to stock structure.

3) If possible, the level of catch (in weight) associated with the overfishing limit (OFL) based on the maximum fishing mortality rate threshold:

The F_{msy} proxy is calculated from a projection model for which the finite rate of population increase = 1.0. For spiny dogfish, the F_{msy} proxy = 0.2439. This is equivalent to a catch of **25,131 mt (55.5 million pounds)**, based on the projected biomass in 2012 and the assumption that the catch in 2011 will be equal to 10,250 mt (the average of the last three years).

4) The level of catch (in weight) associated with the acceptable biological catch (ABC) for the stock. The ABC will be selected based on the overfishing definition contained in the FMP, and will reflect the level of scientific uncertainty inherent in the stock assessment such that the recommended ABC is less than or equal to the overfishing limit consistent with the Council's risk policy described in the Omnibus Amendment, the Act, and the National Standard 1 Guidelines to the Act:

The SSC recommends a 1-year specification of ABC. The SSC applied the Council's risk policy for a typical life history[1], an estimated B_{2012}/B_{msy} ratio > 1, and a CV of the OFL distribution of 100%. Using these parameters, the Council's risk policy implies a P* = 0.40. Applying this P* to the OFL produces an ABC = **20,352 mt (44.9 million pounds)**.

The SSC notes that the stock biomass is projected to decline in the future because of poor recruitment in earlier years. This trend will mean that the ratio of $B_{current}/B_{msy}$ will become <1. As a result, the P* value developed by the Council's risk policy will be lower, thereby leading to a reduced ABC in future years.

[1]The assessment for spiny dogfish has been structured to account for many aspects of the unique life history of this species.

5) If possible, the probability of overfishing associated with the OFL and ABC catch level recommendations:

Based on the method applied, the probability of overfishing associated with the ABC is 40%, conditional on the assumed lognormal distribution of OFL with an associated CV = 100%.

6) The most significant sources of scientific uncertainty associated with determination of OFL and ABC:

- The assessment relies heavily on an assumed catchability of the survey gear in developing minimal swept area estimates of biomass.
- Inter-annual differences in availability of the stock to the survey gear.
- Considerable uncertainty exists in the level of discards in this stock – discard estimates are available for a small portion of fishery and are expanded to the entire stock.
- The F_{msy} proxy is based on a projection model that relies on an assumed pattern of selectivity. Empirical evidence suggests that this pattern of selectivity is highly variable.
- Both the F_{msy} proxy and the projections rely on a model that assumes a constant pup survival. Empirical evidence suggests pup survival varies substantially with the size structure in the population.

7) Ecosystem considerations that the SSC took into account, beyond those already incorporated into the stock assessment, in selecting the ABC, and the basis for those considerations:

No additional ecosystem considerations were applied in calculating ABC.

8) A certification that the recommendations provided by the SSC represent the best scientific information available:

To the best of the SSC's knowledge, these recommendations are based on the best available scientific information.

Research Recommendations

- Quantify the consumption pattern of dogfish;
- Revise the assessment model to investigate the effects of stock abundance, sex ratio and size of pups on birth rate, and first year survival of pups;
- Initiate a large scale [international] tagging program consisting of conventional external tags, data storage tags, and satellite pop-up tags to help clarify movement patterns and migration rates;
- Investigate the distribution of spiny dogfish beyond the depth range of current NEFSC trawl surveys, possibly using experimental research or supplemental surveys;
- Initiate aging studies for spiny dogfish age structures (e.g., fin 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, NCDMF, Canada DFO, other interested state agencies, academia, and other international investigators with an interest in dogfish aging (US and Canada Pacific Coast, ICES);
- Investigate population genetic structure with emphasis on identifying discreet breeding populations and the extent of mixing;
- Quantify the male contribution to broods to evaluate the impact of distribution on mating systems;
- Evaluate temporal and taxonomic variability in spiny dogfish diets and distributions to evaluate potential ecosystem and economic impacts of management decisions for spiny dogfish; and
- Understand the reasons behind the decline of Canadian landings to include interactions between market and biological processes.

The SSC also decided to ask the Scientific Uncertainty Subcommittee to draft criteria that would need to be met in order for the committee to set multi-year ABCs for species in general. The criteria could include factors such as: stability of the stock and fishery, life history characteristics, periodicity of

updated and benchmark assessments, and ABC control rule level.

MAFMC Five-Year Research Plan

In a discussion led by Rich Seagraves, the SSC members reviewed the latest draft of the plan, focusing attention on the general research and information needs. Rich suggested, and the committee agreed, that the overall goal of the plan should be to move species to the next lower level, as defined in the ABC control rules. For future research planning efforts, the committee agreed to begin by characterizing the socioeconomic circumstances of the fisheries managed under the purview of the MAFMC. Understanding the value of the fisheries, the degree of participation, and the degree to which the fisheries are dependent on individual species will help the SSC set priorities for filling gaps in research and monitoring needs. Marty Smith volunteered to have a multi-disciplinary team of Masters-level graduate students at Duke conduct a rapid assessment of the MAFMC fisheries. The students do not need funding and are seeking projects such as this to fulfill their graduate program requirements. The SSC members suggested the Duke team also document bycatch species and include an ecosystem function component in the rapid assessment.

The SSC also agreed to schedule a mid-Winter SSC meeting, in conjunction with an anticipated meeting to review the outcome of the black sea bass benchmark assessment, to begin establishing criteria for consolidating and ranking research and information needs. A working group, consisting of the members of the Socioeconomics Subcommittee and biologists from the general SSC membership, will begin planning for the workshop. The intent is to do as much of the work as possible through the development of working papers prior to the workshop, so the time spent during the workshop can be devoted formulating advice to the MAFMC.

Programmatic EISs and EBFMs

Dr. Jonathan Phinney, on detail to the NMFS Office of Sustainable Fisheries, spent an hour with the SSC discussing his proposal to develop a programmatic EIS as a tool for the MAFMC to use as it moves towards ecosystem-based fisheries management (EBFM). The programmatic EIS covers many of the same bases in the planning process that would be necessary for EBFM, and would satisfy NEPA requirements. Once the EIS is developed and vetted, all future management actions by the MAFMC can be "tiered off" of it. Dr. Phinney believes the MAFMC is in the best position of any regional council to serve as the test case for developing the EIS. His presentation will be posted on the SSC webpage, and the Ecosystems Subcommittee will be requested to consider Dr. Phinney's proposal.

MSE Study Final Report

Dr. Mike Wilberg presented the draft final results of the MSE analysis that he, Dr. John Wiedenmann, and Dr. Tom Miller conducted on the ABC control rules. The report still needs to be peer reviewed, and Mike has suggested that members of other SSCs, who understand the ABC-setting process and the science behind it, would be the best people to perform such a review. He will be looking for reviewers during the upcoming National SSC Workshop in Williamsburg, VA.

Attachments

cc:
MAFMC SSC Members, R. Seagraves, J. Coakley, J. Armstrong, Lee Anderson, C. Moore

Mid-Atlantic Fishery Management Council
Scientific and Statistical Committee Meeting
21-22 September 2011
Agenda

Wednesday September 21, 2011

1300 2012 OFL/ABC recommendations for spiny dogfish (Rago/Armstrong)

1600 Review MAFMC Five-Year Research Plan (Seagraves)

Thursday September 22, 2011

0830 Programmatic EIS for EBFM (Phinney)

0930 MAFMC Research Planning (Seagraves)

1000 National SSC IV Workshop Discussion (Boreman/Tomberlin)

1130 Peer review of MSE Study Final Report (Seagraves/Wilberg)

1200 Adjourn

ATTENDANCE
Scientific and Statistical Committee Meeting
21-22 September 2011

Rich Seagraves	MAFMC Staff
Jim Armstrong (9/21 only)	MAFMC Staff
Lee Anderson	MAFMC Vice Chair
Rick Robins	MAFMC Chair
John Boreman	SSC Chair – NCSU
Tom Miller (9/21 only)	SSC Vice-chair, UMCES/CBL
Mike Wilberg	SSC Member, UMCES/CBL
Mike Frisk (9/21 only)	SSC Member, Stony Brook Univ
David Tomberlin	SSC Member, NMFS/ST
Wendy Gabriel	SSC Member, NMFS/NEFSC
Mark Holliday	SSC Member, NMFS/F
Rob Latour	SSC Member, VIMS
Doug Vaughan	SSC Member, NMFS (ret.)
Marty Smith	SSC Member, Duke
Doug Lipton (9/21 only)	SSC Member, UMCP
Paul Rago (9/21 only)	NMFS/NEFSC
Chris Vonderweidt (9/21 only)	MC Member, ASMFC
Jonathan Phinney (9/22 only)	NMFS – HQ
Ken Hinman (9/22 only)	National Coalition for Marine Conservation
Greg DiDomenico (9/21 only)	Garden State Seafood Association