



Mid-Atlantic Fishery Management Council

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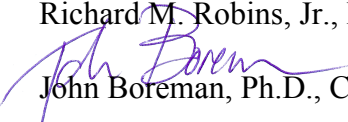
Richard B. Robins, Jr., Chairman | Lee G. Anderson, Vice Chairman

Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: 2 October 2012

TO: Richard M. Robins, Jr., MAFMC Chairman

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

SUBJECT: Report of the September 2012 Meeting of the MAFMC SSC

The SSC met in Baltimore on September 26th and 27th primarily to develop an ABC recommendation for spiny dogfish. Additional topics on the agenda (Attachment 1) included a special Ecosystems Subcommittee meeting (attended by all SSC members present) to continue development of SSC advice on ecosystems-based fisheries management, further development of proposed rules for setting multi-year ABCs, a presentation by MRAG America on their fisheries monitoring report to the Environmental Defense Fund, and continued discussion of setting research priorities for species managed by the MAFMC. A total of 13 SSC members attended the meeting, which constituted a quorum, as well as representatives from the NMFS Northeast Fisheries Science Center, fishing industry, the Pew Foundation, Rutgers University, the NMFS Office of Habitat Conservation, and MRAG (Attachment 2).

ABC Recommendation for Spiny Dogfish

All presentations and documents used in the SSC's deliberations are posted on the SSC's website. Paul Rago led off the ABC discussion by presenting the most recent updated assessment information. Jim Armstrong (MAFMC staff) then presented his summary of the stock's status, comments from the Advisory Panel, and his recommendations for consideration by the SSC. The SSC species lead then provided comments. Following comments from the public, the SSC species lead for biology led the SSC discussion on selection of an ABC for the upcoming fishing year and beyond. Once the discussion was completed, the SSC developed the following consensus statements in response to the terms of reference provided by the MAFMC.

1) *The materials considered in reaching its recommendations:*

- MAFMC staff memorandum from Jim Armstrong to Chris Moore: "Spiny dogfish ABC and Management Measures for 2013," dated September 21, 2012. 10 pp.
- MAFMC Staff. 2012. Spiny dogfish AP information document – 2012. 13 pp.
- Rago, P., and K. Sosebee. 2012. Update on the status of spiny dogfish in 2012 and initial evaluation of harvest at the F_{msy} Proxy. NOAA/NMFS Northeast Fisheries Science Center, Woods Hole, MA. 44 pp.
- Rago, P., and K. Sosebee. 2012. Supplemental Material for Consideration of Multi-year Specifications for Spiny Dogfish with Harvest Rates Corresponding to a Pstar of 40%.

NOAA/NMFS Northeast Fisheries Science Center. 7 pp.

- Rago, P., and K. Sosebee. 2012. Spiny dogfish update 2012. Powerpoint presentation. NOAA/NMFS Northeast Fisheries Science Center, Woods Hole, MA. 36 slides.
- MAFMC staff memorandum from Jim Armstrong to Chris Moore: “Supplemental Spiny dogfish ABC and Management Measures for 2014-2017,” dated September 24, 2012. 3 pp.
- SSC Statistical Uncertainty Subcommittee. Proposed Methods for Setting Multi-year Acceptable Biological Catch Limits. Draft document, dated September 10, 2012. 7 pp.

All materials are available on the MAFMC SSC website.

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:

Level 3. The assessment provides plausible estimates of the absolute levels of biomass and abundances, and the assessment also provides a plausible set of reference points that together represent the best available science.

The SSC notes that the biological reference points were calculated outside of the assessment model. The SSC also believes that important sources of uncertainty were not incorporated into estimates for the biological reference points. Both concerns prevent this assessment from achieving a higher rank.

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

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 30,652 mt, based on the projected biomass in 2013 and the assumption that the catch in 2012 will be equal to 20,352 mt (the ABC = ACL from last year).

4) The level of catch (in weight) associated with the acceptable biological catch (ABC) for the stock:

The SSC applied the Council's risk policy for a typical life history¹, an estimated B_{2013}/B_{msy} ratio > 1, and a CV of the OFL distribution of 100% assuming a lognormal distribution. Using these parameters, the Council's risk policy implies a $P^* = 0.40$. Applying this P^* to the OFL produces an ABC = 24,709 mt.

The SSC notes that the stock biomass is projected to decline in the future because of poor recruitment in earlier years, before recovering again. Current projections suggest that the ratio of (median $B_{current}$)/ B_{msy} may be <1 for 2018-2023. As a result, the P^* value developed by the Council's risk policy will be lower, thereby leading to a reduced ABC for these years.

¹ The SSC notes that the assessment for spiny dogfish has been structured to account for many aspects of the unique life history of this species

5) Specify the number of fishing years for which the OFL and/or ABC specification applies and, if possible, identify interim metrics which can be examined to determine if multi-year specifications need adjustment prior to their expiration:

The Draft SUN Committee report on setting multi-year ABCs permits multiyear ABC setting if the

stock is not experiencing overfishing and if the stock is not subject to an upcoming assessment. Dogfish is therefore a candidate for multiyear ABC setting.

The SSC recommends a 3-year ABC specification. The SSC recommends that ABC be calculated based on a constant F policy, which translates to ABC in the subsequent years of: 24,709 mt (2013), 25,154 mt (2014), and 25,057 mt (2015).

The SSC will examine spiny dogfish discard rates, survey abundance trends (size composition, sex ratio and pup size), average size and sex in commercial landings, agreement between observed and predicted catch and survey forecasts, changes in Canadian landings, and the spatial distributions of catch and survey abundances each year of the specification to determine if the multiyear ABC should be abandoned.

6) If possible, the probability of overfishing associated with the OFL and ABC catch level recommendations (if not possible, provide a qualitative evaluation):

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

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

- The assessment relies heavily on an assumed efficiency of the survey gear in developing minimal swept area estimates of biomass.
- Inter-annual differences in availability of the stock to the survey gear.
- F_{msy} proxy is based on a projection model that relies on a time-invariant selectivity estimated from data up to 2008. The assessment assumes selectivity has not changed subsequently, but may be variable.
- Both the F_{msy} proxy and the projections rely on a model that assumes constant pup survival and pup production rates. Empirical evidence suggests pup survival correlates positively with maternal size.
- Inconsistency between the estimation model and the projection model.
- Potential changes in fishery selectivity. Large increases in catches could induce changes in the overall selectivity pattern in the fishery.
- Potential inconsistency between the life history-based estimates of fishing mortality rates and the biomass reference points derived from the Ricker stock recruitment curve.
- Total discard estimates and estimated mortality of discarded dogfish.
- The revised estimate of biomass reference point is uncertain with an asymptotic CV of about 30%.

8) Ecosystem considerations accounted for in the stock assessment, and any additional ecosystem considerations that the SSC took into account in selecting the ABC, including the basis for those additional considerations:

No explicit or specific ecosystem considerations were included in the assessment. Furthermore, no additional ecosystem considerations were applied in calculating the ABC.

9) List high priority research or monitoring recommendations that would reduce the scientific uncertainty in the ABC recommendation:

- Revise the assessment model to investigate the effects of stock structure or distribution, sex ratio,

and size of pups on birth rate and first year survival of pups.

- Continue large scale (international) tagging programs, including 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 by using experimental research or supplemental surveys.
- 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).
- Evaluate ecosystem effects on spiny dogfish acting through changes in dogfish vital rates.

10) 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.

Ecosystem Approach to Fisheries Guidance (EAFMG) Document (Ecosystems Subcommittee)

The SSC discussed the EAFMG Document. A presentation by Rich Seagraves (available for viewing on the SSC website) started the discussion and provided background and context for the SSC's ESC efforts the past two years. The majority of the discussion focused on the scope and intent of the document and its content. There was consensus that this EAFMG document should be thorough, covering major topics influencing fisheries, but not exhaustive nor serve as a source document.

The SSC discussed the Council's desire to begin the EAFM effort by identifying the most important topics, which can reasonably be addressed in the short to mid-term. It was noted that a number of other ecosystem-based efforts have focused on social and economic considerations, especially in Australia. The SSC then discussed the experience many members have had in the Chesapeake Bay Ecosystem planning effort. A notable problem is the one of scale - what is the extent of the ecosystem plan with respect to scale? For some species/issues, the entirety of ecosystem considerations are encompassed within the Mid-Atlantic ecosystem(s), while for others many of the ecosystem drivers act outside of the Mid-Atlantic. In addition, climate and other drivers may cause stock distributions and/or productivity to shift or change, so the current baseline can be expected to change as well. However, there are examples of topics that can be addressed and are within the control and scope of the Mid-Atlantic Council - e.g. habitat for black sea bass.

The sense of the SSC was that, as a practical matter, we could not escape the fact that we are currently operating under a single species assessment/management framework. Thus, the starting point is to examine each ecosystem issue relative to the current single species approach. It was suggested that a reasonable approach would be to focus on areas where immediate progress can be made, while still identifying the range of issues that need to be addressed in a comprehensive fashion. It was generally agreed that a way forward would be to develop a comprehensive list of ecosystem considerations and develop a transition plan to move towards EBFM, starting with a few key issues that can be addressed now or in the near future. A key outcome is the identification of the information necessary to support an ecosystem approach to fisheries management. A risk analysis should be conducted to help prioritize the order in which ecosystem issues are addressed. This will require a collaborative/iterative approach among the Council, the SSC, and the public.

The SSC emphasized the need for a short, focused document, which outlines each issue and potential approaches to address them (1-2 pages per issue). It is also important to note that some issues are scientific in nature while others are strictly grounded in policy - these are critical distinctions that need to be made. The SSC then went through an exercise to identify the universe of ecosystem considerations and to identify where in the current process they should be addressed. Each issue was also binned as to whether it could be addressed in the short-, mid-, or long-term. It may be necessary to create new processes to address some of these issues and the Council will most likely be required to modify and/or expand its current risk policy in this regard. In terms of priorities, the SSC identified the following as important areas to begin addressing: assessment and management considerations for forage/low trophic level species; species interactions (predation, competition, etc.) and their effects on reference points and management objectives; and social/economic considerations. The issue of shifting species distributions as a result of systematic changes in oceanographic conditions within the ecosystem(s) (due to climate change) was also discussed, as well as the need to coordinate management efforts with other Councils, the states, and other nations.

A spreadsheet (also available for viewing on the SSC website) was explored with each of the rows highlighting major issues that could affect or be affected by Mid Atlantic fisheries. The issues range from classical single-species approaches, to EBFM approaches, to full on EBM issues. In the spreadsheet, probable timelines and levels of effort are noted. Also noted is where in the scientific-management process each issue could be addressed (columns). The SSC modified or added several items. These items are now understood to form the basis for a table of contents (TOC) for the document.

Major action items include:

- Review issues and places to address them, updating or adding to them as need be;
- Change each x in the table to x and y, noting what we can do now (x) and what could be done (y) in the future;
- Map the main issues to each of the stocks that the MAFMC manages (second tab of spreadsheet);
- Set up a risk analysis/qualitative ranking approach (vis-à-vis the Australian examples from National SSC IV) to help prioritize issues (criteria are TBD (but many examples are extant), but see third tab of spreadsheet; this is to be done via correspondence at first, but will likely require another meeting before priorities can be noted);
- Categorize issues cognizant of the Millenium Assessment;
- Develop a 1-2 page précis to note the main intent and direction of document, capturing the items noted above in the discussion; and
- Identify those features that are scientific concerns and those that require policy direction, as implemented procedurally.

Timing for these tasks is prior to the December Council meeting, a face-to-face meeting to discuss the risk approach for prioritization will occur early in 2013.

The SSC has the following questions for the Council to help clarify its efforts:

- The SSC is understood to be the primary reviewer of this document, albeit providing guidance as to its contents as the document develops. Who should be the development team?
- The SSC chose to be comprehensive, but not exhaustive, in the development of the draft TOC, based upon guidance from Council leadership. This was in response to how the Council wants to implement the approved forage protocol, i.e., to be placed in a broader context. The SSC concurs with the need to be thorough and simultaneously not exhaustive. The Council needs to

clarify which approach it prefers: a fully developed EAFMG document, or identification of one or two other issues (in addition to forage protocol) to implement in extant processes.

- Many of these issues noted can be addressed in current protocols, but some require a change in the Council's risk policy in order to be implemented. The SSC can identify these protocols relative to the issues noted, but wanted to highlight that a process should be considered or developed (similar to evaluating risk policy) to address any potential procedural changes.

SUN Subcommittee Report - Multi-year ABCs

Mike Wilberg presented the Scientific Uncertainty Subcommittee's next iteration on proposed rules for setting multi-year ABCs for stocks managed by the MAFMC. The draft document prepared by the subcommittee describes the potential trade-offs inherent in providing multi-year ABC recommendations, proposed methods for implementing multi-year ABCs, items to consider when providing multi-year ABCs, recommendations for situations in which the SSC would and would not make multi-year ABC recommendations, and recommendations for situations when the SSC would consider changing multi-year ABCs before their full term. For assessment levels 1-3 (as defined in the current MAFMC ABC control rules), the subcommittee recommends that a multi-year ABC should achieve a *constant fishing mortality rate*, maintaining a constant P* approach consistent with single-year ABC recommendations. For level 4 assessments, the subcommittee recommends that a multi-year ABC maintain a *constant catch*, with the level of constant catch dependent on the information available, as has been done by the SSC in the past for setting single and multi-year ABCs. Multi-year ABC recommendations would not be considered for stocks experiencing overfishing or when an assessment is scheduled within the upcoming year.

The next step is for MAFMC staff to assemble time series of catch and abundance data for the managed species in time for the mid-winter SSC meeting. At that meeting, the SSC will review the series and determine what bounds are reasonable for each species, outside of which multi-year ABCs would need to be adjusted.

Guidelines for Fishery Monitoring

Bob Trumble, Vice President of MRAG Americas, gave a presentation on the project his company undertook for the Environmental Defense Fund, which culminated in guiding principles intended to assist fishery managers in designing effective monitoring programs for all fisheries. To quote from their report:

“Stakeholder involvement from the outset of planning a monitoring program is crucial in effectively garnering support from diverse constituents and in learning what is feasible and enforceable in a fishery. The design of a monitoring plan will have major impacts on fishermen and buyers; allowing industry to have a key role in determining the strategies that support the goals or requirements of the program will achieve the maximum buy-in from industry while still achieving scientific, management, and enforcement needs. Establishing and implementing effective goals are also necessary in planning for an effective monitoring program. The established goals will inform strategy development and the chosen monitoring techniques, which will depend on the needs and characteristics of a fishery. Monitoring programs should consider a comprehensive suite of monitoring options and should be as thorough as possible at the outset of the program.”

The report also stresses the importance of involving fishery enforcement early in the planning process. The report can be found on the MRAG Americas website (www.mragamericas.com).

MAFMC 5-Year Research Plan

Rich Seagraves distributed a revised draft of the MAFMC 5-year research plan, which was based on research recommendations identified by the SSC during the course of development of the most recent ABC specifications for each MAFMC managed species. The draft will be updated to include the research recommendations for spiny dogfish developed at the September SSC meeting and then will be distributed to the SSC for comment (comments to be received by Friday October 19, 2012). He will then work with Mark Holliday and his staff on refining the prioritization scheme used this past year to rank the RSA research priorities for the Council and have the decision tool ready in time to apply the ranking procedure to the updated 5-year research plan for consideration at the mid-winter 2013 SSC meeting.

Attachments

c: SSC members, Lee Anderson, Rich Seagraves, Jim Armstrong

Mid-Atlantic Fishery Management Council
Scientific and Statistical Committee Meeting
September 26-27, 2012
Agenda

Wednesday, September 26

0900 Ecosystems Subcommittee (Link, Seagraves)

1200 Lunch

1300 SUN Subcommittee Report - Multi-year ABCs (Wilberg *et al*)

1600 Spiny Dogfish ABC recommendations for FY 2013-2017 (Armstrong, Rago)

Thursday, September 27

0830 MRAG Americas Presentation on Fishery Monitoring (Trumble)

0900 Dogfish ABC continued

1100 MAFMC 5 year research plan (Seagraves, Holliday)

Adjourn

MAFMC Scientific and Statistical Committee Meeting
Baltimore, MD

September 26-27, 2012

SSC Members in Attendance

<u>Name</u>	<u>Affiliation</u>
John Boreman (SSC Chairman)	North Carolina State University
Tom Miller (SSC Vice-Chair)	University of Maryland – CBL
Mike Wilberg	University of Maryland - CBL
Brian Rothschild	University of Massachusetts
Doug Lipton	University of Maryland - College Park
Ed Houde	University of Maryland - CBL
Doug Vaughan	NMFS (retired)
Rob Latour	VIMS
Bonnie McCay	Rutgers
Mark Holliday	NMFS/HQ
Jason Link	NMFS/NEFSC
Mike Frisk	SUNY Stony Brook
Yan Jiao	Virginia Tech

Others in attendance

Rich Seagraves	MAFMC staff
Jim Armstrong	MAFMC staff
Greg DiDomenico	Garden State Seafood Association
Kristen Cevoli	Pew Foundation
John Manderson (9/26 only)	NMFS/NEFSC
Terra Lederhouse (9/26 only)	NMFS/Office of Habitat Conservation
Karen Abrams (9/26 only)	NMFS/Office of Habitat Conservation
Bob Trumble	MRAG Americas
Paul Rago	NMFS/NEFSC
Josh Kohut (9/26 only)	Rutgers
Laura Palamara (9/26 only)	Rutgers