

Summary of Assessment Oversight Panel Meeting

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February 25, 2020 (all species)
Woods Hole, Massachusetts

April 29, 2020 (Atlantic Herring only)
Via Video Conference

The NRCC Assessment Oversight Panel (AOP) met to review the operational stock assessment plans for 6 stocks/species on February 25, 2020. The AOP held at subsequent video conference call on April 29, 2020 to re-evaluate the review level for the Atlantic herring assessment. The stock assessments for these stocks/species will be peer reviewed during a meeting from June 22-25, 2020.

The AOP consisted of:

Jason McNamee, Rhode Island Department of Environmental Management, representing the New England Fisheries Management Council

Mike Celestino, New Jersey Division of Fish and Wildlife, representing the Atlantic States Marine Fisheries Commission

Paul Rago, Ph.D., member of the MAMFC Scientific and Statistical Committee, NOAA Fisheries (retired)

Russell W. Brown, Ph.D. (Chair), Northeast Fisheries Science Center, Woods Hole, Massachusetts.

Meeting Participants (February 25, 2020):

The participants in Woods Hole included: the AOP members (4), James Weinberg (Stock Assessment Process Chair), Michele Traver (Stock Assessment Process Lead), Ariele Baker (Communications Specialist), Alicia Miller (Rapporteur), Brian Stock (Rapporteur), Dan Hennen, Lisa Hendrickson, Kiersten Curti, Charles Adams, Jon Deroba, Kathy Sosebee, Dave Wallace, Tom Alshalt, Tara Trinko Lake, Larry Alade, Mark Terceiro, Chris Legault, and Tony Wood.

Remote participation included: Jessica Coakley, Jessica Blaylock, Doug Potts, Diedre Bolke, Andrew Jones, Cate O'Keefe, Brandon Muffley, Steve Cadrin, Alyson Pitts, Benjamin Galuardi, Doug Christel, Chris Kellogg, Janice Plante, Dave Bethany, and Renee Zobel.

Meeting Participants (April 29, 2020):

Participants on the video/conference call included: the AOP members (4), Michele Traver, Brad Schondelmeir, Brandon Muffley, Erica Fuller, Greg Power, Carrie Nordeen, Corrine Truesdale, Janice Plante, Jon Deroba, Alyson Pitts, Charles Adams, Chris Legault, Chris Weiner, David Bethany, David Richardson, Elizabeth Etrie, Erica Fuller, Gary Shepherd, Katey Marancik,

Kiersten Curti, David Musina, Diedre Bolke, Mary Beth Tooley, Maria Fenton, Mark Terceiro, Mathew Cieri, Megan Ware, Melanie Griffin, Pam Thames, Peter Kendall, Richard Klyver, Sarah Gaichas, Steve Cadrin, Susan Wigley, Zoe Goozner, Raymond Kane and Heidi Leaman.

Meeting Details:

This meeting included implementation of the newly approved NRCC stock assessment guidance document. Three background documents were provided to the Panel: (1) an updated prospectus for each stock; (2) an overview summary all the salient data and model information for each stock; and (3) the NRCC Guidance memo on the Operational Assessments. The NRCC guidance memo was recognized as particularly relevant during the deliberations of the AOP. Prior to the meeting, each assessment lead prepared a plan for their assessments. The reports were consistent across species and reflected both the past assessment and initial investigations.

At the February 25th meeting, each lead scientist for each stock gave a presentation on the data to be used, model specifications, evaluation of model performance, the process for updating the biological reference points, the basis for catch projections, and an alternate assessment approach if their analytic assessment was rejected by the peer review panel. In some cases stocks were already being assessed using an “index-based” or “empirical” approach.

At the April 29th meeting, the lead scientist for the Atlantic herring stock gave a short presentation outlining emerging issues and requesting a reconsideration of the recommended review level.

Major Recommendations for Review of Individual Stocks:

In general, the AOP approved the plans presented, but recommended several revisions to recommended review levels as summarized below:

Stock	Lead	Major Recommendations
Atlantic Surfclam	Dan Hennen	Level 3 – Enhanced Review Plan B – Swept area biomass estimate based on survey and median q from depletion studies
Ocean Quahog	Dan Hennen	Level 1 – Direct Delivery Plan B – Swept area biomass estimate based on survey and median q from depletion studies
Butterfish	Charles Adams	Level 2 – Expedited Review Plan B – LOESS smoothing of NEFSC fall survey indices to infer future catch increase
Doryteuthis (Longfin Squid)	Lisa Hendrickson	Level 3 – Enhanced Review Plan B – This assessment currently involves Plan B approach.

Atlantic Herring	John Deroba	Level 2 – Expedited Review (changed from Level 1 during the April 29 th meeting) Plan B – LOESS smoothing fit to mean of all survey indices
Atlantic Mackerel	Kiersten Curti	As a result of data availability issues the occurred after the February 25 th meeting, the NRCC approved delaying this assessment until Spring 2021.

Individual Stock Discussion Summaries:

Atlantic Surfclam:

Several significant changes are proposed for this assessment, the most notable of which is to assess the current stock areas (Georges Bank, everywhere else) within a single model. The proposed change is consistent with the peer-reviewed modeling approach used for ocean quahog. Currently surfclams are assessed with two separate models and the results are pooled to create a combined reference points and measure of stock status. The Panel endorsed this proposal and noted the improved efficiency of assessing the resource within a single model structure. Concerns were expressed about possible unforeseen problems with implementation, but the data streams and parameterization require only modest changes from those used for the separate models. The model will be implemented with the latest version of Stock Synthesis (3.30).

This assessment will also include new information from the redesigned abundance survey conducted on commercial fishing vessels. This will represent the first implementation of the new survey, although the survey itself has been conducted on commercial vessels since 2012. Results for Georges Bank appear to suggest a lower abundance on Georges Bank and much smaller confidence intervals. The potential influence of this terminal year change on model estimates is unknown. Additional review of patterns in commercial LPUE will be considered to determine if there is additional support for the changes in survey abundance. It was recognized that LPUE is an imperfect measure of total abundance as it is conflated with changes in area fished as harvesters move to more economically valuable fishing areas over time.

The Plan B proposal for use of swept area biomass, using previous depletion experiment results as a priors on catchability was endorsed by the Panel. Because the stock is lightly exploited overall, the model has difficulty defining absolute abundance. Catchability priors in the model tend to keep these estimates within reasonable bounds. It is anticipated that this will hold true for the revised two area model.

Owing to the cumulative proposed changes, the Panel recommended an Enhanced Review (Level 3) for surfclams.

Ocean Quahog:

The stock will be assessed using approaches from the most recent stock assessment (SARC 63) which includes two stock areas within one model. Details on the model structure and data sets were provided. No new survey data are available for this stock as the newly designed industry-based survey has focused on a survey of surfclams in its first two years. However, the existing survey data will be analyzed using the revised survey strata that had been previously reviewed by

the MAFMC SSC. The post stratified estimates are essentially the same as earlier estimates and the revised strata include 99% of the historical abundance regions. Hence no changes in trend are expected but precision of the estimates is expected to improve slightly.

No changes to the model parameterization or parameter values are anticipated as the only change will be the addition of commercial landings data through 2019. Reference points will be updated but no major changes are anticipated. The Plan B proposal for use of swept area biomass, using previous depletion experiment results as priors on catchability was endorsed by the Panel.

The Panel recommended a Direct Delivery review (Level 1) for ocean quahog.

Butterfish:

The assessment update will include an updated time series of discards, updated NEAMAP indicates using the NEAMAP age length key, and use of the time series mean (1989-2015) thermal habitat index for 2016-2019. The lead analyst indicated that the thermal habitat index will no longer be available going forward.

The same projection methodology as the last benchmark will be used. Biological reference points will be updated with new estimates of natural mortality estimated by the model. Little change in the estimated natural mortality rate is anticipated. While a change in natural mortality is permitted under a Level 3 review, in the present case, the natural mortality change is the result of a model update (estimated internally in ASAP 4) rather than a wholesale modification of the rate.

The entire time series of discards will be revised with either ADIOS estimates (if available) or the 2014 SAW 58 SBRM SAS code, with several incorrect settings restored to defaults. The AOP discussed that this was not a methodological change, simply a data retrieval change, and supported a level 2 assignment based on this criterion. The AOP agreed with the analyst that the change to ageing an existing index using data from that survey from which the index is derived is permissible under level 1. The analyst noted that the swept area abundance estimates and associated CV will remain unchanged.

The Panel recommended an Expedited review (Level 2) for butterfish due to the data input updates and a LOESS smoothing of the NEFSC fall survey as a Plan B approach.

Longfin Squid (*Doryteuthis*):

The lead analyst provided background information on the life history of the species as well as a description of fisheries. The AOP spent considerable time discussing the analyst's proposal to change the assessment from a combined season swept-area biomass approach (with single B_{msy} proxy), to keeping the seasonal swept area biomass estimates separate, and calculate separate B_{msy} proxies. The analyst represented that this would be consistent with how squid species are assessed and managed around the globe and is consistent with advice from the most recent peer review (SAW 51). The analyst was concerned that annualizing the seasonal cohorts does

not properly account for differences in cohort productivity, growth & maturation. This change would result in 2 B_{msy} estimates and hence 2 stock statuses. The AOP discussed that this is analogous to changing stock structure and was concerned that such a change is not permissible under management track assessments.

The AOP discussed that the change to two-stock management may require quota reallocation and a host of associated changes associated with operationalizing such a change. One or members of the public pointed out that the annualized exploitation ratio suggested the stock was lightly exploited, but on a seasonal basis this might no longer be the case. All of which illustrated some of the structural changes to management that might be necessitated with a stock definition change. Nevertheless, the AOP pointed out that level 3 reviews allow for testing of new ideas and as such supported the analyst's proposal that level 3 enhanced review was appropriate. However, the AOP supported a status-quo model update (just lengthen the timeseries of index values) for stock status determination, but to also submit exploratory work fleshing out the seasonal approach to address biological differences between cohorts.

The panel recommended an Enhanced review (Level 3) to allow for exploration of seasonal cohort reference points and management, but status quo-based calculations for determining stock status would be presented. The panel endorsed a swept area biomass as Plan B (equal to status quo Plan A). The AOP discussed the idea of using seasonal cohort calculations as plan B but declined to support that option noting that the review panel will only see plan B if plan A is rejected.

Atlantic Herring: In February 2020, the lead analyst indicated that there were no new sources of information for this assessment, no changes anticipated to the assessment model, and no changes to the projection methodology. Based on those expectations, the AOP recommended a level 1 assessment (direct delivery). The analyst proposed a LOESS smooth to the mean of all survey indices with the justification that the proposed plan B is data driven, and although noisy, the indices are consistent for this species, and the approach is familiar in this region. The analyst also noted there was little basis to consider alternatives, and most data limited tools require a guess as to current depletion levels or some other quantity with which he was not comfortable making.

Step 4 in the guidance document (assessment conducted) indicates that if any changes to the AOP-approved assessment plan are needed in response to new data or model dynamics, the assessment lead will propose revisions, and if those revisions could result in changes to the peer review level, the AOP will reconvene to provide technical review. Such an event happened and the AOP reconvened in April 2020.

Preliminary modelling suggested a substantive change in selectivity used for the stock projections. This change, driven by a quick and drastic change in the proportion of relative harvest from the fixed gear fleet (largely Canadian, and historically < 10%, but in recent years approximately 50% of total removals) resulted in a dramatic change to biological reference points. The outcome is increased selection of younger fish, which are not generally selected by

the US mobile fleet. Using this combined fleet selectivity would result in a disconnect between fish actually selected by the US fleet relative to sustainable harvest suggested by updated BRPs. Consequently, the analyst proposed using the US mobile fleet selectivity for BRPs (so as to reduce influence of Canadian fleet on BRPs); since this is a change in methodology from that used in the previous assessment, the AOP recommended a level 2, expedited review. The AOP cautioned however that given the time spent discussing the change, as well as perhaps comparing results from the new method and old (potentially including calculation of ACL), some additional time outside of a typical level 2 assessment (1-2 hours) may be helpful.

Atlantic Mackerel: Substantive data availability issues (e.g., a critical fishery independent egg index, Canadian catch at age compositions) will prevent completion of this assessment in 2020. The lead analyst is proposing to postpone the assessment until 2021, at which time these issues are expected to be resolved. Rescheduling an assessment is outside the purview of the AOP, but the AOP was supportive of the proposed postponement as it would allow for resolution of data availability issues and would also synchronize timing with the Canadian assessment that is also scheduled for 2021. The lead analyst noted that heretofore, timing between US and Canadian assessments occur one year apart (e.g., US assessment in year y, Canadian assessment in year y+1); the AOP was supportive of any attempts to maintain synchrony between US and Canadian assessments (for data availability reasons, etc).

AOP Process Discussion and Summary:

The AOP held a pre-meeting call with NEFSC Assessment Leadership on January 14, 2020 to discuss ensuring consistency in the implementation of the NRCC assessment guidelines.

The NEFSC continues to seek meaningful stakeholder engagement in formulating stock assessment plans for management track assessments. Lead assessment biologists held discussions with the Mackerel, Squid, Butterfish advisory panel prior to the AOP meeting to elicit information relative to assessment related questions. There is an active group of stakeholders who regularly interact with Center scientists relative to questions related to the surfclam and ocean quahog stock assessments.

Several important process questions arose during the discussions. Each of these issues reflect a natural process of evolution as the assessment guidelines are implemented. We can expect such changes to continue in the future.

1. There is some ambiguity of interpretation for updating of BRPs in the level 1 assessments. Concerns were raised that any updates to the values of biological reference points would justify/trigger an Enhanced Review. The rationale is that such changes could be significant for management, especially when large changes occur. As this is generally unknown when the AOP meeting occurs, the default position under this premise would be that each assessment would be level 2 or 3. However, the direct delivery option (level 1) has no ambiguity in allowing projections to be updated with new model and data estimates. When mean weights, maturation or selectivity change in the projection, the BRP should also change in order to be consistent. Otherwise one is

comparing non-commensurate quantities. Clarifying the guidance on this issue could be a topic at the next NRCC.

2. There was also discussion about the need for a firewall between the current status and level of review. In other words, guidance on the level of an assessment should not be influenced by how controversial a stock is, or if it is near overfished or in a rebuilding program. However, given the potential for change in status for populations approaching overfished or nearing rebuilt status, it seems logical to consider such factors when considering the assessment review level. To do otherwise could be inefficient because a status change is likely to create a demand for another assessment review. Inserting another follow-up review is likely to be costly to implement, to disrupt the planning of future assessments, and to impede the Council and RO from acting on new information. Discussion of this topic by the NRCC may also be useful.
3. Finally, there was some discussion of formalizing the decision framework of the AOP. One option would be to use something like the “punch list” approach used by the MAFMC SSC for evaluating the CV level for deriving the ABC from the OFL. A sacrificial straw man option is provided below.

Overarching statement from the Guidance Document. “If a change proposed by an analyst is not detailed below, the AOP will determine whether the modification is permissible and which level of peer review would be required.”

Table elements in the columns 3 to 5 would be factors considered by the Panel. The Panel would put its comments in the most appropriate box irrespective of the Guidance Level (column 2). The final recommendation would be based on the preponderance of the evidence of comments in each column. A summary of the cumulative effects of within each Guidance Level is a row following each level. This would be an opportunity for synthesis of the evidence regarding the above factors.

Guidance Template for Deriving Recommended Level of Assessment Review

<i>Task</i>	<i>Guidance Level</i>	<i>Direct Delivery (1)</i>	<i>Expedited Review (2)</i>	<i>Enhanced Review (3)</i>
Model has been updated with revised data, with minor changes (such as small adjustments to data weights, fixing parameters estimated at bounds, correcting minor errors in previous model)	1			
Incorporation of updated data from recent years in the estimation of biological information (growth, maturity, length-weight relationship)	1			

Effects of delayed seasonal surveys or missing strata on fishery-independent measures of abundance	1			
Identification by lead analyst on potential problems of adding or revising data on model performance	1			
Cumulative Impact of Level 1 changes				
Updated discard mortality estimates, when based on peer-reviewed experimental evidence	2			
Evaluating effects of delayed seasonal surveys or missing strata on fishery independent measures of abundance if significant analysis is required to characterize the effects	2			
Recalibrated catch estimates (e.g., transition to Marine Recreational Information Program, area allocation tables, conversion factors (whole to gutted weight))	2			
Simple changes, corrections, or updates to selectivity, including but not limited to: --Changes to most recent selectivity stanza. --Changes to historical selectivity stanza if they are corrections or reinterpretations of previously used block timeframes	2			
Retrospective adjustment to management metrics following established retrospective adjustment protocols	2			
Adjustment of method for estimating biological information (growth, maturation, sex ratio, changes to length-weight relationships, etc.), when based on methods developed with sufficient peer review or justification for its use.	2			
Calculate new values for the existing BRPs	2			
Cumulative Impact of Level 2 changes	2			
Inclusion of new or alternate interpretations of existing indices	3			
Changes to estimation method of catchability, including but not limited to: <ul style="list-style-type: none"> ○ Empirical estimations ○ Changes in habitat/availability /distribution on catchability 	3			

○ Use of informed priors on catchability in a model				
Updating of priors on parameter estimates based on new research AND if done on a previously approved model	3			
Recommend significant changes to biological reference points, including but not limited to: --Change in the recruitment stanza --Number of years to include for recent means in biological parameters --Suggestions of alternate reference points if based off a similar modeling approach (e.g. age-based, length-based, etc.)	3			
Updating of historical selectivity stanzas	3			
Changing recruitment option used, meaning using a stock-recruitment relationship, or cumulative distribution function, etc.	3			
Changes to selectivity functional form (i.e. such as a new selectivity model) if supported by substantial empirical evidence.	3			
Changes to fleet configuration	3			
Changes to natural mortality (M)	3			
New modeling framework, if the new framework was evaluated during a previous research track topic investigation, and the species in question was one of the examples evaluated.	3			
Cumulative Impact of Level 3 changes. Determine if Research Track is warranted.				
Overall recommendation of Assessment Oversight Panel	xx	A pithy summary here.		

In summary, the meetings were productive and an effective implementation of the new assessment planning document. The peer review panel will meet from June 22-26, 2020 to complete their review.