

Summary of Assessment Oversight Panel Meeting

May 20, 2020

Via Video Conference

The NRCC Assessment Oversight Panel (AOP) met to review the operational stock assessment plans for 2 Atlantic Cod stocks and reviewed the revised management track stock assessment plan for Black Sea Bass on May 27, 2020 (original plan was reviewed during the February 25th AOP meeting). The Black Sea Bass stock assessment will be reviewed during the Spring Management Track peer review meeting from June 28-30, 2021 and the Atlantic Cod stock assessments will be reviewed during the Fall Management Track peer review meeting from September 13-15, 2021.

The AOP members were:

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

Gary Nelson, Massachusetts Division of Marine Fisheries, 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 Details:

This meeting implemented the stock assessment plan reviews outlined in the NRCC stock assessment guidance document. Three background documents were provided to the Panel: (1) an updated prospectus for each stock; (2) an overview summary of 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 reflected both the past assessment and initial investigations.

At the 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 one case (Georges Bank Atlantic Cod), the assessment was already being assessed using an “index-based” or “empirical” approach.

Major Recommendations for Review of Individual Stocks:

The AOP recommended several revisions to recommended review levels as summarized below:

Stock	Lead	Recommended Review Level	Major Comments and Recommendations
Atlantic Cod Gulf of Maine	Charles Perretti	Level 3 Expanded Review	Research Track peer review is planned for March 2023. Examine the impact of following through with a Rho adjustment. Potentially explore, possibly through a sensitivity analysis, the inclusion of the GOM long line survey as an index. Investigate developing a separate set of reference points for the MRAMP model. Investigate the hinge point for the recruitment model and see where we currently are in relation to it. Catch assumptions for projections need review.
Atlantic Cod Georges Bank	Chris Legault	Level 2 Expedited Review	Research Track peer review is planned for March 2023. Perform a retrospective examination of missing data points and how a modified Plan B performs.
Black Sea Bass	Gary Shepherd / Kiersten Curti	Level 2 Expedited Review	Research Track peer review is planned for November 2022. Look into discards to see if there are any trends in recent years. Catch assumptions for projections need review, impact of large cohort entering plus group could use review, and retrospective adjustments could use additional review.

Individual Stock Discussion Summaries:

Atlantic Cod – Gulf of Management (AOP: Jason McNamee)

The current stock assessment for GOM cod uses the ASAP assessment software program. There are two variations of the model used that differ based on the natural mortality assumptions. In the past these two models have been averaged to produce catch advice as a way to account for scientific uncertainty. The assessments exhibit retrospective patterns that have worsened over the past several updates of the model.

The assessment will be updated with 2019 catch and survey indices, with no other modifications proposed. Since the last benchmark of the assessment during SAW 55, the retrospective has gotten progressively worse with each update. It is unknown if that pattern will persist, however if it does, the retrospective would likely warrant a Rho adjustment. Rho adjustments have not been performed to date as they were not used for the SAW 55 assessment, and that procedure had been followed in each update since. The overall magnitude and impact of the retrospective pattern is not known for the current management track assessment but concerns about the need for potential Rho adjustments suggest an additional level of peer review was appropriate.

The AOP recommended that the GOM cod assessment be increased to a Level 3 review.

Several aspects of the assessment update were discussed by the AOP. Although the NRCC agreed that use of incomplete catch or survey data for 2020 would not be used in the 2021 update assessments, both the 2020 catch and assumptions about 2021 catch must be used when conducting projections. The typical assumption that the bridge year catch would be equal to the ABC is not a viable assumption for 2020 due to the impacts of the pandemic, and due to the fact that two bridge years are needed in this case, an estimate for 2020 and projection for 2021 must be supplied. Generating recreational catch estimates for 2020 is another uncertainty that can be attributed to generating catch estimates during the pandemic year. The Plan Development Team will likely offer some bridge year catch options for consideration. These choices warrant additional review.

Additionally, the key finding from the Index-Based Methods Working Group and Review was that Rho-adjusted age-based models typically outperformed all of the candidate index-based methods. Should the current GOM cod models continue to exhibit large retrospective patterns, rather than defaulting to the alternative index-based model, a Rho-adjusted ASAP model could be used for stock status and for initializing projections per these findings. The choice of using a Rho adjustment versus an alternative assessment warrants additional review.

The AOP also discussed the addition of the GOM long-line survey into the assessment with the analyst, though he stated his preference would be to leave that for an upcoming benchmark assessment. And finally, the AOP discussed the difficulty the NEFMC SSC has had with generating catch advice for this stock due to the complexity of having multiple models. Whether or not unique reference points could be generated for each model was discussed and whether that might provide additional information into the catch advice process. The only way this could be accomplished would be through a level 3 review. Collectively, these uncertainties and discussions at the AOP meeting compelled the AOP to recommend a Level 3 Review as the most appropriate level of review for this stock.

Atlantic Cod – Georges Bank (AOP: Gary Nelson):

Available catch data include U.S. commercial and recreational landings and discards, and Canadian commercial landings and discards will be updated through 2019. The Georges Bank Atlantic Cod assessment will employ a PlanBSmooth approach which fits a log linear regression

to the last three years of LOESS smoothed values of the average of the NEFSC spring (t+1) and autumn (t) survey index updated through 2019. The slope parameter of the regression is then back-transformed to obtain a multiplier which is applied to the average catch of the three most recent years to obtain the ABC.

Due to the COVID pandemic, an update of the model is hampered by lack of NEFSC bottom trawl surveys and limited catch sampling in 2020. It was proposed that the 2019 autumn survey index represent the average survey value for 2020, and that the 2021 spring survey index represent the average for 2021. The LOESS smooth would be fitted through 2021. If the New England Fishery Management Council Plan Development Team can develop a catch estimate for 2020, the average catch from 2018-2020 would be used to determine the ABC; otherwise, only catches from 2018-2019 will be used. The PlanBsmooth approach does not produce biological reference points, so the OFL is unknown for this stock. The stock is considered overfished due to low abundance despite lack of a reference point. There is no alternative assessment plan for this stock.

The Assessment Oversight Panel recommends moving the assessment review to level 2 because they believe that retrospective analyses are required to examine the sensitivity of the model output to the proposed changes in calculation of the survey time series, and that the analytical results should be reviewed before the ABC for the Georges Bank cod stock is updated. *Note: shortly after the AOP meeting, a retrospective analysis was conducted and shared with AOP (available at https://github.com/cmlegault/PlanBsmooth_missing_data). The members of the AOP felt this analysis demonstrated that the PlanBsmooth approach produces similar results when both surveys in a calendar year are missing at the end of the time series compared to having these survey values.*

Black Sea Bass (AOP: Paul Rago):

The AOP had previously reviewed the Black Sea Bass (BSB) at its Feb 25, 2021 meeting. At that time a Level 1 review (direct delivery) was recommended but it was noted that the presence of the retrospective pattern was problematic, particularly if it increased above the levels observed at the previous assessment. Gary Shepherd, lead assessment scientist for BSB, notified the AOP of the emerging problem for the Northern component of the stock, which led to further consideration of the proposed review level by the AOP at this meeting.

The current stock assessment for BSB is based on Northern and Southern component models using the ASAP software. Both components exhibit retrospective patterns but they are in opposite directions. In the North a positive value of Mohn's rho indicated consistent over estimation of F whereas the opposite pattern held in the south. The derived average F for both areas was below the threshold F and overfishing was not occurring.

The updated assessment with 2019 catch and survey indices resulted in an increase in the magnitude of the retrospective pattern in the North. The overall impact of the increased retrospective pattern for status determination is not known but concerns about the need for potential adjustments to model structure or outputs suggest an additional level of peer review was appropriate.

The AOP recommended that the BSB assessment be increased to a level 2 review. Three other aspects of the assessment update are noteworthy. First, the 2020 recreational catch exceeded its catch limit. Although the NRCC agreed that use of incomplete catch data for 2020 would not be used in assessments, both the 2020 and 2021 catches must be used when forecasting the 2022 OFL. The typical assumption that the bridge year catches equaled the ABC is not tenable for 2020, so an overall estimate for 2020 and projection for 2021 must be supplied. Second, a key finding from the Index-Based Methods Working Group and Review was that the Rho-adjusted age-based model typically outperformed all of the candidate index based methods. Should the current BSB model be judged unacceptable due to its retrospective pattern, one could argue that an index based alternative model would be inferior to the Rho adjusted ASAP model. Third, the large 2011 cohort entered the plus group in 2019 for the first time. This resulted in a change in average weight at age for this group of fish of age 8 and older. Past experience suggests that entry of large year classes can induce changes in model behavior. Collectively, these considerations suggested a Level 2 Review was appropriate.

AOP Process Discussion and Summary:

The NEFSC continues to seek meaningful stakeholder engagement in formulating stock assessment plans for management track assessments. In summary, the meetings were productive and an effective implementation of the new assessment planning document. The peer review panel will meet from September 13-15, 2021 to complete their review.

Meeting Participation:

Russ Brown - AOP Chair, NEFSC

Gary Nelson - AOP member, MADMF

Paul Rago - AOP member, MAFMC SSC

Jason McNamee - AOP member, RI DEM

Michele Traver - NEFSC

Alex Dunn - NEFSC

Alex Hansell - MADMF

Anthony Wood - NEFSC

Cate O'Keefe -Fishery Applications Consultant

Charles Adams - NEFSC

Charles Perretti - NEFSC

Chris Kellogg - NEFMC

Chris Legault - NEFSC

Dave McElroy – NEFSC

Fred Serchuk – NOAA Fisheries (retired)

Gareth Lawson - Conservation Law Foundation

Gary Shepherd – NEFSC

Greg DiDomenico – Lunds Fisheries

Jacqueline O'Dell – Northeast Seafood Coalition

Jamie Cournane - NEFMC

Janice Plante - NEMFC
Jessica Blaylock - NEFSC
John Maniscalco - NY DEC
Julie Nieland - NEFSC
Kathy Sosebee - NEFSC
Kelly Whitmore - MADMF
Kiersten Curti - NEFSC
Liz Sullivan - GARFO
Lucy McGinnis - SMAST
Mark Grant - GARFO
Max Grezlik – SMAST
Melanie Griffin - MADMF
Paul Nitschke – NEFSC
Robin Frede - NEFMC
Steve Cadrin - SMAST
Susan Wigley - NEFSC
Tara Trinko Lake - NEFSC

Appendix 1: Assessment Oversight Panel related guidelines.

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	2			

allocation tables, conversion factors (whole to gutted weight))				
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 ○ Use of informed priors on catchability in a model 	3			
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.		