



New England Fishery Management Council

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MEETING SUMMARY

Ecosystem Based Fishery Management (EBFM) Committee

Radisson Airport Hotel, 2081 Post Road, Warwick, RI 02886

September 12, 2017

The EBFM Committee met on September 12, 2017 in Warwick, RI to receive and evaluate a report from the Plan Development Team (PDT) on providing ecosystem catch advice and on applying operating models to evaluate management strategies. The committee also discussed how and when the next phase of example Fishery Ecosystem Plan development would proceed.

MEETING ATTENDANCE: John Pappalardo (Chairman), Dr. Michael Sissenwine, Dr. Michael Armstrong (substituting for Dr. David Pierce), Richard Bellavance, Mark Godfroy, and Eric Reid; Andrew Applegate (NEFMC staff, PDT chair) and Dr. Rich Bell (PDT). In addition, eight members of the public attended, including Megan Herzog (CLF), Greg Wells, Morgan Callahan (PEW), George LaPointe (FSF), Debra Duarte (NEFSC), Erica Fuller (EJ), Sally McGee (TNC) and Dave Wallace.

Presentations and background documents are available on the Council's EBFM web page (<http://www.nefmc.org/calendar/sept-12-2017-ebfm-committee-meeting>).

KEY OUTCOMES:

- The committee thought that the proposed catch advice framework and worked example were clearer than before, but some of the terminology was dense and could be simplified. The committee developed guidance for the PDT to continue developing the example Fishery Ecosystem Plan (eFEP), asking it to focus on:
 - Identification of and response to an overfished condition, which is related to ecosystem risk and addresses the root cause of the biomass declining below a threshold value.
 - Applying operational models to do hindcasting and evaluate how EBFM would have produced different results than had occurred under single-species management.
 - Maximum retention policies with incentives to target more productive stocks and disincentives to target more vulnerable stocks.
 - Evaluate how fishery dependent data could improve performance of ecosystem management policies.

- Investigating the role of consumption of pre-recruits on system productivity.
- The committee thought that the worked example was a good demonstration, but additional elements of the eFEP require more development, before we are ready to begin a Management Strategy Evaluation (MSE) process in Phase III. Many committee members thought that a joint Committee/PDT meeting would be helpful in this regard.
- The committee received the final meeting summary and terms of reference for a planned independent review of the catch advice framework and supporting science. Dr. Sissenwine thought it is important to involve a chief scientist from NOAA Fisheries, such as Dr. Werner, in the review.

Introduction

Mr. Pappalardo opened the meeting by indicating that it would start with a summary presentation by the PDT chair on a more quantitative example of a catch advice framework for a fishery ecosystem plan (FEP) (Agenda Item 1). This would be followed by a discussion about next steps and further guidance to the PDT toward developing an example or prototype fishery ecosystem plan, labeled an eFEP (Agenda Item 2). The meeting would conclude with some discussion of the final meeting summary and Terms of Reference for a planned Center for Independent Experts (CIE) review (Agenda Item 3).

AGENDA ITEM 1–PROVIDING CATCH ADVICE FOR A FISHERY ECOSYSTEM PLAN (EFEP)

Presentation

Mr. Applegate began by recognizing that quite a bit of time had passed since the last committee meeting. He said that there were some procedural matters that had to be resolved, relating to the need for peer review before the Center provides management advice. Also during the late spring and early summer, there had been additional model development and calibration to provide example model results that are appropriately scaled and comparable with historic yields. He added that Council staff had worked with the Center to prepare for the planned CIE review of the developing ecosystem management strategy and supporting science.

Mr. Applegate briefly reviewed the last guidance that the committee had given to the PDT, which follow a previous presentation on operational models. The committee wanted the PDT to continue focusing on a more quantitative worked example that could be more easily understood and that could be compared with historic yields from Georges Bank. During its last meeting (<http://s3.amazonaws.com/nefmc.org/Document-1-Jan-23-2017-meeting-summary.pdf>), the committee gave the following guidance:

“The Committee continues to believe that a detailed “worked example” of the approach using actual current estimates is a necessary next step to improve general and public understanding, identifying both opportunities, challenges, and issues with a new management approach. This worked example should be more

comprehensive (than the 10-species demonstration presented) about how stock complex control rules would be applied and also be clearer about how an ecosystem catch cap is derived from and is based on measures of primary productivity.”

The presentation (http://s3.amazonaws.com/nefmc.org/Document-2b-Presentation-of-Catch-Advice-Framework-for-an-eFEP_170911_160229.pdf), began with a definition from NOAA Fisheries' EBFM Strategic policy and an outline of steps that could be followed initially to develop an eFEP and which could be used as part of a planned MSE process. He pointed out that identification of spatial management units and stock complexes, with specific management objectives, reference points, and harvest control rules would be key components of an eFEP and would be modified through the MSE process as objectives and performance of various strategies are evaluated, before eventual implementation as a Fishery Ecosystem Plan. Related to scope of the eFEP, Mr. Applegate displayed maps of the NE region, which illustrated how Georges Bank is defined by bio-physical characteristics as well as fishing activity. He also showed how the 76 stocks that were commonly caught together on Georges Bank could be classified into functional groups.

For an historical context, Mr. Applegate showed that there has been an imbalance between actual and target exploitation rates, essentially imperfect implementation. Landings for the 10 groundfish species since 1977 have averaged about 75,000 mt. These 10 stocks are included in the simulation models that were later presented. As another comparison, the catch (discards and landings) for all species on Georges Bank have averaged about 150,000 mt since 1980.

Mr. Applegate showed a diagram of the PDT's proposed method for testing potential management procedure. In a previous presentation, the operational model could include several types of ecosystem models including "Hydra", "Ecosym/Ecopath", and "Atlantis", but for this meeting the presentation focused on the "Hydra" model to provide catch advice.

The "Hydra" model examples included three types of biomass-based harvest control rule,s including constant exploitation and two forms of a ramped exploitation when biomass is below a specified threshold (for demonstration, the threshold was 40% of unfished biomass with no yield allowed when biomass was below 20% of unfished biomass). The example performance metrics included total biomass, total catch, and the mean proportion of 'overfished' stocks for each of thirteen control rules. He explained that the threshold and potential control rules could be varied and evaluated relative to a wider set of performance metrics which were associated with desirable objectives.

In a previous presentation, the PDT suggested setting an ecosystem catch cap that would be derived from measurements of primary productivity. At the time, it was not clear to the committee how catch limits for species not in the model would be derived. It turned out that converting primary productivity (measured as grams carbon, or gC) was not easily converted into biomass of harvestable species, involving a number of assumptions and uncertain parameters about energy transfer efficiency. Instead, the PDT is recommending using the models to test harvest control rules that apply to stock complexes to achieve the optimum yield, taking into account the tradeoffs between desirable objectives. Those derived exploitation rates would then

be applied to expanded biomass estimates of other species and aggregated to specify a species complex catch limit. The total of those catch limits would then serve as an ecosystem catch cap. These expanded catch estimates could come from single or multi-species assessments, or survey biomass indexes adjusted for catchability, but the appropriate exploitation rate takes into account trophic interactions to achieve optimum yield.

Mr. Applegate finished the presentation with a series of questions about whether the operational framework for testing management procedures was clear, whether we are missing critical elements required by managers, and whether managers thought that this would be a viable and acceptable approach.

Discussion

The committee discussed whether and how this framework would fit into the existing ABC/ACL system, where the ACL is addressed at a higher level of aggregate stocks than they do now. Questions were asked about identification of lower biomass limits for individual stocks and how remedial action would apply to what could become a “choke stock”.

Mr. Applegate suggested that there would be added flexibility in the proposed catch framework, because species that were caught together would be managed as a functional group, reducing the potential for discarding.

Dr. Sissenwine thought that more exploration and evaluation should address the root cause of a stock being below a threshold, or biomass floor. He thought that the action might be different for various circumstances, giving cod (high fishing mortality with low biomass) and yellowtail flounder (low fishing mortality with low biomass) as an example.

Dr. Sissenwine also thought that due to overlapping species distribution and fishing activity, the Council will face a decision whether to apply this catch framework to all areas, or for only one region. Mr. Reid questioned whether the Nantucket Shoal fisheries should be included in the Georges Bank Ecosystem Production Unit (EPU), feeling that the area is fundamentally different from the Bank itself. Mr. Applegate recognized that there were important differences, which have been and could be explored as different sub-units of a Georges Bank EPU. However, whether the Nantucket Shoals or other areas were retained in the Georges Bank EPU would not have a meaningful effect on the testing and evaluation procedure. Mr. Reid asked about how variations in plankton productivity could or would be translated into good year classes, taking account of this in the ecosystem models. Dr. Bell explained that the models do not apply a direct link between plankton production and year class strength, but that the applied mortality rates are derived from relative measures of productivity.

Mr. Reid thought that managing stocks individually is what gets us into trouble with imperfect implementation and choke stocks. He suggested that the Council begin to evaluate a maximum retention policy as an ecosystem strategy. Mr. Pappalardo also agreed that this type of policy should be in the conversation and evaluation.

Mr. Pappalardo asked whether “depleted” and “overfished” were synonymous, and how the terms related to a “biomass floor”. Mr. Reid thought that the worked example was clearer and helped to build understanding, but it is still complex and is a new concept. He found it helpful to focus on the 10 species and compare it with the existing management application. Dr. Armstrong also thought that the worked example was understandable, but still dense for the average person to understand. He felt that the use of terms was confusing, particularly terms like “guild”, “functional group”, and “stock complex”.

Mr. Applegate explained that each of those terms had a unique meaning and that the Council has a document on the EBFM web page, “Commonly Used EBFM Terminology” (<http://s3.amazonaws.com/nefmc.org/Glossary.pdf>). He said that he would review that document and keep it up to date as the terminology evolves. He further explained that “guild” refers to a group of species with similar diets, where as a “functional group” were similar species that are commonly caught together in a fishery. A “stock complex” had a different legalistic meaning that would be used for a group of stocks with a catch cap and harvest control rule, associated with an overfishing level.

Dr. Sissenwine agreed that the document had come a long way, but there were technical issues to address. These issues include the energetics of the stocks that are not part of the 10-stock example. He thought it is important to address the energetics of pre-recruits, which produce more biomass than the adults for the ecosystem, via consumption by higher trophic levels. This consumption of pre-recruits is a major factor in affecting recruitment levels. He said that simulations would be helpful to address the potential feedback of consumption on estimated recruitment.

Mrs. Fuller agreed that the Council should develop a maximum retention policy as part of EBFM. Mr. LaPointe commented that the current worked example was a good presentation and necessary, but that there were some legal issues that need to be addressed. He thought that further model development would be desirable and that it should be demonstrated for specific areas.

Dr. Sissenwine thought that the technical review will be a key next step, but suggested that the committee should proceed as if what is being done is a sound and viable approach. Dr. Sissenwine recommended transferring the worked example and modelling to do hindcasting, to compare the model results with actual outcomes. He thought that the PDT should evaluate rebuilding programs for an overfished condition in an ecosystem approach, suggesting that the remedial action may be different based on the cause of the problem. He agreed that an evaluation and comparison of a system with and without full retention would also be helpful. He asked about grouping species together that had different life histories and commercial catchabilities. He noted that New Zealand system should be examined, where full retention is required and there are incentives to target more productive species and disincentives to reduce targeting more vulnerable species. He felt that a full retention policy and incentive system could induce a positive change in the mindset of participating fishermen.

The committee thought that the PDT should next focus on how a biomass floor would apply and how it relates to an “overfished” condition for a stock. For example, what happens when a stock

reaches a biomass floor and when it becomes overfished. The committee agreed that the PDT could evaluate how a maximum retention policy would relate to ecosystem management. Mr. Pappalardo added that the role of fishery dependent data in setting EBFM policy should be discussed.

The committee thought that more clarity on the PDT approach to identify floors for stocks or stock complexes would be helpful. What are the differences between depleted and overfished? On what basis would the floors be established? Mr. Pappalardo recommended that, post-CIE review for the June Council meeting, a Cliff-Notes version of the concept would be useful, something more general and with less terminology.

AGENDA ITEM 2 – EXAMPLE FISHERY ECOSYSTEM PLAN DEVELOPMENT PROCESS

Presentation

Mr. Applegate reviewed the Council's plan for developing an example Fishery Ecosystem Plan (eFEP) or prototype for Georges Bank. The intent of the eFEP is to give people a clear idea about what EBFM would look like and identify issues that should be addressed. One of the clear outcomes of Dr. Biedron's dissertation (<http://s3.amazonaws.com/nefmc.org/1.-EBFM-Perspectives-Biedron.pdf>) was that many people were in favor of ecosystem management, but there was a very diverse picture of what it would look like or what it would take to implement this form of fisheries management.

Mr. Applegate thought that the worked example and simulation testing can address some aspects of EBFM, but there are additional considerations that need more development and explanation. These include how catch would be allocated, how fishermen would be authorized to fish in the EPU, and how habitat effects and forage fish would be managed to achieve ecosystem goals. He closed by asking the committee what components should the PDT focus on next (answered in part in the discussion above for Agenda Item 1) to develop the eFEP. Another question was how should the Council receive and respond to the outcome and recommendations from the CIE review.

Discussion

The committee agreed that more work is needed on the eFEP components before we would be ready to start an MSE process as part of Phase III. The worked example was a useful tool, demonstrating how a catch limit framework would be set up and how alternative management strategies (i.e. harvest control rules) could be tested and evaluated.

Many on the committee thought that it would be useful at this juncture to hold a joint PDT and Committee meeting, promoting dialogue between the two groups.

AGENDA ITEM 3 – EBFM MANAGEMENT STRATEGY REVIEW

Presentation

Mr. Applegate explained that the Executive Director and the Science Center Director finalized the Terms of Reference and Summary for a planned Center for Independent Experts (CIE)

review of an Ecosystems Based Fishery Management Strategy. This conceptual framework and the supporting models would be reviewed in late 2017 or early 2018, providing advice and input. The strategy would initially form the technical basis for an example Fishery Ecosystem Plan for Georges Bank, which the Council would formally develop through a Management Strategy Evaluation involving fishermen and the public. Mr. Applegate asked if there was any committee input on how the results of the CIE review would be applied, for example by the Council's Scientific and Statistical Committee (SSC) or by the Committee.

The CIE review meeting summary and Terms of Reference documents were available at: <http://s3.amazonaws.com/nefmc.org/Document-3b-Ecosystem-Based-Fishery-Management-Strategy-Review.pdf> and <http://s3.amazonaws.com/nefmc.org/Document-3c-Ecosystem-Based-Fishery-Management-Strategy-Review-Terms-of-Reference.pdf>.

Discussion

The Committee accepted the summary of the planned CIE meeting. There were no comments about how the CIE recommendations would be used by the Council, but committee members thought it would depend on the type of advice coming from the review.

Dr. Sissenwine suggested that in some cases, a high-level CIE review, was not needed for all types of scientific work at the Centers. He pointed out that a CIE review was often chosen because it was costless to the Centers, using a program that was established within NMFS headquarters. He felt that doing a CIE review for this purpose here was acceptable, but might be a bit overblown. That being said, he thought that it would be essential to invite or involve the NMFS scientific leadership to take part in the review, possibly including Dr. Cisco Werner, the new chief science advisor at NMFS. Doing this would help the dialogue between the Center, the Council, and NMFS leadership about whether the proposed catch advice framework was compatible and consistent with National Standard 1, or identify what modifications in the National Standard 1 guidelines would be needed to set and manage catch levels with new reference points based on trophic relationships among connected stocks.

The EBFM Committee meeting began at 10:10 am, did not take a lunch break, and adjourned at approximately 1:40 p.m.