



New England Fishery Management Council

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MEMORANDUM

DATE: January 21, 2019
TO: **EBFM Committee**
FROM: Andrew Applegate, EBFM PDT chair
SUBJECT: **Progress toward developing EBFM management approaches**

Listed below is a complete summary of key outcomes and motions from previous EBFM Committee meetings. Committee members may find this information useful for discussing how to further develop EBFM.

Many of the previous meetings and motions set forth a process to guide NEFMC EBFM development up to this point. This information is also relevant to how we continue progress, whether to re-commit to previous guidance or to change guidance and future direction. Up to this point, the Council has studied EBFM approaches taken by other Councils and countries, identified an approach to develop an example Fishery Ecosystem Plan (eFEP) that describes a framework and issues to be considered, and with our partnership with the Northeast Fishery Science Center, conducted an independent peer review of a worked example using several operating models. Much of our work during 2017 and 2018 has focused on the worked example and the independent peer review conducted during May 2018 (postponed from January 2018 due to a government shutdown), with results presented to the Council in September 2018.

The PDT has also developed and presented advice about potential strategic goals and objectives, a framework for catch management, and has begun developing other components of an eFEP. For today's meeting, my intent was for the PDT to complete documents that provide more details about potential ways to set ecosystem catch limits, potential ways to address overfished stocks that are part of a managed stock complex, and a discussion document on spatial conservation management measures. Unfortunately, this work has been affected by the government shutdown and postponed.

Today's meeting includes a rough draft eFEP that incorporates the draft strawman outline of a prototype eFEP and rough of related discussion documents for many components of an eFEP. The PDT has also presented a draft New England ecosystem risk assessment and a draft forage fish management paper.

For this meeting, it is very important for the Committee to clearly articulate specifically which eFEP components the Committee needs to develop next, or analyses that the Council needs in order to understand potential approaches to EBFM. It is also important that the Committee identify and recommend a process for the Council to use for EBFM development over the next year or two, setting realistic goals for the work that accounts for the amount of effort involved

and resources that can be dedicated to it. In the near term, this effort could involve a transition from developing a general approach, or eFEP, to focus discussion and beginning a Management Strategy Evaluation (MSE) process to evaluate and identify viable strategies to achieve objectives.

In addition to the meeting summaries listed below, committee members and public may also consult the following material that may be helpful in this regard:

1. DRAFT NER EBFM Implementation Plan
https://s3.amazonaws.com/nefmc.org/7_Draft-Northeast-EBFM-Roadmap-Implementation-Plan.pdf
2. Presentation: eFEP outline and timeline
https://s3.amazonaws.com/nefmc.org/5_eFEP-Outline-and-Timeline.pdf
3. A Framework for Providing Catch Advice for a Fishery Ecosystem Plan (FEP)

January 2017: <https://s3.amazonaws.com/nefmc.org/Document-2b.-Providing-catch-advice-for-a-fishery-ecosystem-plan-eFEP.pdf>
September 2017: <https://s3.amazonaws.com/nefmc.org/Catch-Advice-Framework-for-an-eFEP.pdf>
4. List of Commonly Used EBFM Terminology:
<https://s3.amazonaws.com/nefmc.org/Glossary.pdf>
5. List of Georges Bank Species by Feeding Guild
<https://s3.amazonaws.com/nefmc.org/Stock-complex-table.pdf>
6. Example Application of Operating Models for Georges Bank Ecosystem
<https://s3.amazonaws.com/nefmc.org/Document-3.-Example-application-of-operating-models-for-Georges-Bank-ecosystem.pdf>
7. Independent Peer Review of Ecosystem Modelling
<http://www.nefsc.noaa.gov/ecosys/modeling/modeling-review.html>
8. “Updates and Thoughts on Panel Recommendations: External Peer Review of Ecosystem-Based Fishery Management Strategy” NEFSC August 2018
https://s3.amazonaws.com/nefmc.org/4_Updates-Thoughts-on-Panel-Recommendations-External-Peer-Review-of-EBFM-Strategy-NEFSC-Aug2018.pdf

Committee meeting summaries:

Ecosystem Based Fishery Management (EBFM) Committee

Omni Hotel, Providence, RI

May 22, 2014

(<http://www.nefmc.org/calendar/may-22-2014-ecosystems-based-fisheries-management-meeting>)

KEY OUTCOMES:

- The Oversight Committee received presentations about National policy and science, a summary of US regional Fishery Ecosystem Plan (FEP) development, background about EBFM work by the NEFMC during and before 2012, and some possible choices to develop a New England FEP. The committee discussed several relevant process issues including how to manage additional public input and scientific information.

Ecosystem Based Fishery Management (EBFM) Committee

DoubleTree Hotel, Danvers, MA

July 31, 2014

(<http://www.nefmc.org/calendar/ecosystem-based-fisheries-management-ebfm-meeting>)

KEY OUTCOMES:

- The Committee took the reports on EBFM perceptions and climate change under advisement. Dr. Hare will present the final vulnerability assessment report at a future meeting.
- The Committee gave Dr. Fogarty helpful feedback and advice on a draft ecosystems indicator report. Dr. Fogarty will present a revised draft at a future meeting. He asked the Committee to have the PDT review a preliminary Georges Bank multispecies assessment to give him and staff feedback and advice. This work will be presented at a future EBFM PDT meeting later in the fall when the draft assessment is ready.
- The Oversight Committee will recommend that the Council write a letter to Dr. William Karp, NEFMC Director, to have staff work closely with a NEFSC working group on EBFM terms of reference. The Oversight Committee recommends that the Council forward a draft EBFM term of reference for NEFSC consideration.
- The Committee decided that an Advisory Panel (AP) could facilitate development of a Fishery Ecosystem Plan or Ecosystem Management Planning Document, but it was too early at this point in time for the AP to begin work, after the Council decided on an approach to develop EBFM policies and EBFM goals.

The Committee decided that the chair and staff should develop a meeting agenda at the next opportunity.

Ecosystem-Based Fisheries Management Committee

Holiday Inn by the Bay, Portland, ME

March 30-31, 2015

(<http://www.nefmc.org/calendar/mar.-30-31-2015-ebfm-committee-meeting>)

MOTION 1: Dr. Sissenwine moved (seconded by Mr. Blount): that the NEFMC prepare

1. a policy describing goals and objectives, and approaches, for taking account of ecosystem processes in fishery management, and
2. an example of a fishery ecosystem plan that is based on fundamental properties of ecosystem (e.g., energy flow and predator/prey interactions) as well as being realistic enough and with enough specification such that it could be implemented. The example should not be unduly constrained by current perceptions about legal restrictions or policies.
3. With respect to number 2, it is understood that the example might not be implemented, but it should make clear what an fishery ecosystem plan would actually entail and it should focus debate. To the extent practicable, these documents should be completed in about one year. In consideration of these documents, the Council will adopt a plan for implementation. The the Ecosystem Based Fishery Management Plan Development Team will have the technical lead in developing these documents and the EBFM Committee will recommend the documents for Council consideration.

Ecosystem Based Fishery Management (EBFM) Committee

Fairfield Inn, New Bedford, MA

November 10, 2015

(<http://www.nefmc.org/calendar/nov.-10-2015-ebfm-committee-meeting>)

KEY OUTCOMES:

- The EBFM Committee discussed the Draft NOAA Fisheries Ecosystem Based Fishery Management Policy document. The committee decided to develop comments based on previous Council comments on National Standard 1 guidelines from June 2015. Staff was instructed to work with the committee chair to develop a draft letter for Council review at the December 2015 meeting.
- The PDT chair gave a report on the development of an example Fishery Ecosystem Plan (eFEP) framework, with strawman goals and objectives. The committee was asked to provide feedback and guidance at this early stage, so that the PDT could continue work to develop a draft eFEP by June 2016. In general, the committee thought it was a good comprehensive start to develop a place-based ecosystem management plan. The committee provided some general comments on the strawman goals and objectives, as well as the structure of the eFEP framework, but did not comment on the management specifics (section 4 in the eFEP framework document). Some of the main comments

during the meeting were:

- The committee liked the main goal and the six strategic goals, but were not so keen on the goal to “Optimize Intrinsic Value”.
 - The committee recognized not only would it be impossible to “maximize” the values listed in the goals, but that it would also be very difficult to “optimize” them. Some additional discussion will help explain what we mean by “optimize”. The committee will be looking for examples and a demonstration through some sort of MSE analysis.
 - That the goal to “optimize food production” should also include catching fish for bait (and probably protein for feed) to catch or produce fish for food.
 - The committee generally liked the tiered approach in the eFEP framework, with one or more management units (MUs) within a much larger EPU. They will be looking for more details about what these MUs would look like and how they would function. One key element in this will be how vessels would be qualified to fish in specific MUs and how the EPU catch limits would be allocated between the MUs and allocated to fishermen (vessels).
 - More details (or examples) are needed about how catch limits would be estimated and specifications would be set, i.e. by guild, stock, etc.
 - More details are needed about how MSY would be defined for the EPU and how it would relate to yield derived from individual species or stocks.
 - There were some questions regarding what would happen if a stock was deemed overfished. How would that situation be managed if catch allocations were made at the guild level? Would there be a rebuilding schedule? If there is no target biomass for a stock, but only an overfished threshold, what would be the rebuilding goal?
 - Some discussion of how we would transition from the present form of stock-based management to place-based ecosystem management is needed.
- The committee will review the 2010-2014 management priorities and develop a new list at its next meeting.
 - The committee thought that an Advisory Panel would be useful for reviewing and discussing a draft FEP during the latter half of 2016, but the committee was undecided about the AP composition or whether to form APs according to putative Ecosystem Production Units (EPUs) or whether one AP would be better. The committee will take up the issue again at its next meeting.

Ecosystem Based Fishery Management (EBFM) Committee

Hotel 1620, Plymouth, MA 02360

April 14, 2016

<http://www.nefmc.org/calendar/apr-14-2016-ebfm-committee-meeting>

KEY OUTCOMES:

No motions were made during the meeting, but the committee developed consensus recommendations for the EBFM Plan Development Team (PDT), made changes to the draft

strawman example FEP goals and objectives, and discussed the function and timing of a potential Advisory Panel.

PDT guidance to focus eFEP development on the following steps (tasked by consensus):

1. Describe a trophic web area based operating model that specifies:

- an ecosystem area
- species present in the area that will be dynamically model
- species present in the area that will be treated as externalities (they participate in the food web, but their numbers and biomass is determined outside the model- e.g., mammals, birds, most benthic invertebrates)
- feeding models that account for preference, suitability and availability
- matrix of production attributable to ecosystem area (incorporating seasonality)
- stochastic nature of these relationships- could use Bayesian approach

2. Test alternative approaches to management including

- current single species approach
- guild (trophic level) approach
- Total ecosystem productivity approach

3. For each approach, specify:

- criteria for overfishing
- rebuilding strategy
- mechanism to protect most targeted or vulnerable stocks (min, biomass, but not necessarily linked to B_{MSY})

The committee discussed and revised the strawman goals and objectives in the FEP components document. These changes will be prepared for further discussion at the April Council meeting.

The committee also discussed the timing and function of a future Advisory Panel to assist the Council with evaluating an example FEP for Georges Bank.

Ecosystem Based Fishery Management (EBFM) Committee

DoubleTree Hotel, 50 Ferncroft Road, Danvers, MA 01923

September 19, 2016

(<http://www.nefmc.org/calendar/sept.-19-2016-ebfm-committee-meeting>)

KEY OUTCOMES:

After hearing reports from Andrew Applegate and Dr. Fogarty on the draft Operational Framework document, the committee provided feedback about the next steps that the PDT should pursue. To this end, the committee passed the following motions to a) support a peer review of the application of operating models to the Georges Bank Ecosystem Production Unit (EPU), using worked examples with control rules that meet some illustrative goals and objectives and b) accept the proposed approach to set EPU catch caps and functional group catch

allocations although more work is needed to define the species in the functional groups. This progress and the draft Operational Framework document will be reported at the September Council meeting.

1. MOTION: Mrs. Tooley / Dr. Sissenwine moved:

To recommend to the Council that a broad-based peer review be conducted on the proposed Georges Bank operating models (e.g. described in document 2b) and supporting data, incorporating the appropriate national and international reviewers, upon completion of operating models and worked examples of control rules for Georges Bank.

MOTION #1 The motion carried 6-0.

2. MOTION: Dr. McKenzie / Dr. Armstrong moved:

That the committee recommend to the Council that the approach include establishing an EPU catch cap and developing methods of setting catch limits by functional groups of species defined by trophic interactions represents an acceptable approach for further development as an example.

MOTION #2 The motion carried 6-0.

Ecosystem Based Fishery Management (EBFM) Committee

Sheraton Harborside Hotel, 250 Market Street, Portsmouth, NH 03801

January 23, 2017

(<http://www.nefmc.org/calendar/jan.-23-2017-ebfm-committee-meeting>)

KEY OUTCOMES:

After hearing reports from Mr. Applegate and Dr. Fogarty on the draft Operational Framework document, the committee discussed the PDT report and reached the following conclusions:

- The Council is pursuing a fundamentally different EBFM approach relative to other Fishery Management Councils and management authorities. Unlike other EBFM approaches, the NEFMC is focused on place-based management and trophic guilds (i.e., energy production units) as management units rather than managing fish stocks using independent harvest control rules. The new approach addresses the implications of both biological interactions (i.e., predator/prey) and fishery interactions (bycatch and mix species fisheries).
- While the scientific underpinning of the Council approach has been advanced over several decades, full management applications are rare and incomplete. Such fundamental management changes will require a long-term commitment to address unresolved scientific, management and legal issues, as well as improving general and public understanding of the approach.
- It is only natural to question if the effort required for such a fundamentally different management approach is worthwhile, or if it will actually be successful. The Committee's response is that real positive change is always challenging and risky, but it will be worth it

if it results in:

- A more scientifically defensible underpinning for fishery management,
 - A framework for managing mixed stock fisheries,
 - A simpler and robust approach with fewer biological reference points that constrain management options but yet provide sufficient conservation and protection for individual stocks, and
 - Management procedures that are potentially based on simpler stock assessment methods that are less susceptible to problems plaguing current stock assessments.
- 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.

Ecosystem Based Fishery Management (EBFM) Committee

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

September 12, 2017

(<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.

Ecosystem Based Fishery Management (EBFM) Committee

Hilton Garden Inn, 100 Boardman Street, Boston, MA 02128

June 21, 2018

(<http://www.nefmc.org/calendar/jun-21-2018-ebfm-committee-meeting>)

KEY OUTCOMES:

- The committee received a report from the PDT about its work since the last EBFM committee meeting in September. Most issues had been deferred for the CIE review and for consideration during a management strategy evaluation. The PDT also met and discussed an initial draft Ecosystem Risk Assessment for Georges Bank document.
- The committee received an update on a summary of the CIE review of the EBFM worked examples and operating models. Since the final CIE report was not yet available, the committee would review it in more detail at a subsequent meeting. It was assumed that the final CIE report will be transmitted to the NEFSC, who would post it on the website. Questions were raised about how quickly the Northeast Fishery Science Center (NEFSC) could respond to the CIE recommendations and how it would fit into the Council's eFEP timeline. The committee will discuss the CIE recommendations when the report becomes final.
- The committee received a draft strawman eFEP framework, which included a problem statement, a vision statement, and key features of an eFEP. The framework was intended to help focus development efforts on the "nuts and bolts" of how an FEP could work. Mr. Applegate also reviewed additional Council questions and responses from NMFS leadership about how proposed EBFM catch management could meet National Standard 1 requirements, using MSY reference points to define overfishing for stock complexes. He thought that the new guidance could allow the Council to develop a FEP using stock complexes to define overfishing limits, biomass thresholds for individual stocks and management measures to rebuild or prevent them from becoming overfished, and catch allocations (e.g. Annual Catch Limits, or ACLs) to fishery functional groups (FFGs, i.e. species caught together in a fishery).

The committee agreed to use the document going forward and made some modifications to it. Committee members were urged to review the document in detail and forward comments and suggestions for revisions to Mr. Applegate.

- The committee received a rough draft timeline for eFEP development. Following customary procedures, the expected completion date to complete the eFEP draft and begin the management strategy evaluation (MSE) phase was June 2018. Mr. Applegate was looking for ways to quicken the pace and will work with the PDT to complete identified milestones. The committee agreed that the next step should focus on Overfished stocks, status determinations, and rebuilding measures for overfished stocks managed in a stock complex.

- The committee received an overview presentation of a draft Northeast Regional Implementation Plan from Mr. Ruccio, GARFO. Staff saw the plan as a good step toward supporting the effort of the New England and Mid-Atlantic Council efforts to develop ecosystem management. The committee will focus on the details of the plan at its next meeting to prepare a draft letter commenting on the plan. In the meantime, committee members were urged to provide their thoughts to Mr. Applegate to develop a draft for the next committee meeting.
- An initial draft of a Georges Bank Ecosystem Risk Assessment, prepared by Dr. Sarah Gaichas, was presented to the committee by the PDT. There were two possible uses for the report and it would determine how it might develop. One use would be as a decision support tool for a MSE for the eFEP. This use would require modification to focus on managed and non-managed species on Georges Bank, regardless of who has management authority. The other use would be as a risk assessment for NEFMC-managed species, including stocks in the Gulf of Maine and Southern New England. The committee agreed that the former use would be preferable to develop in the context of supporting a MSE for ecosystem management. The committee agreed with the PDT that the latter use for the risk assessment would be more comprehensive, take longer to develop, and could sap resources from eFEP development.