

Cod Stock Structure Planning

1/22/2021

Overview

In 2012, the Scientific and Statistical Committee of the New England Fishery Management Council (NEFMC) recommended that a study determine the biological stock structure of Atlantic Cod in New England waters. A phased approach was designed. Phase 1 culminated in a report of the Atlantic Cod Stock Structure Working Group (ACSSWG), delivered to the Council in June 2020. That report concluded that there were five biological stocks of cod, vice the two cod stocks that are currently managed.

As a result of this report, the approach of managing the fishery as two stocks is not consistent with the current understanding of stock structure. There are different ways that management and science could adapt to this new information. As an illustration, one approach might be to develop new stock assessments for each of the five biological stocks and implement the full range of management measures for each (ABCs, ACLs, commercial/recreational allocations, etc.). Management and science need to adapt to this new understanding in a coordinated manner. This is referred to as Phase 2.

As a result, the Council and the Northeast Fisheries Science Center (NEFSC) agreed to develop a two-pronged approach to incorporate the results into science and management. One effort would focus on evaluating the data available or needed to support the assessment of the five biological stocks. This effort would provide information that would be used by the Research Track Assessment Working Group. The other would identify the management issues that would need adjustment to implement a different stock structure. This group would report to the Council, providing information that would help in the development of management measures. The NEFMC and NEFSC will provide the financial and staff support for both efforts.

A planning team¹ was formed to coordinate these parallel efforts. The team delineated the tasks and responsibilities for the two working groups, which are described in the following sections. In both cases, the plan is to have a technical group prepare material that will inform discussions held with a broad range of participants. The results of those discussions will be provided to the Council (for management) and the Cod Research Track Assessment Working Group (for the assessments). The two groups will need to closely coordinate their efforts. One desired outcome of these two groups is to narrow the range of stock structure options that need to be considered by the Cod Research Track Assessment Working Group. The reason for this can be most easily described through an illustration: if the Council is unlikely to establish ABCs/ACLs for the Eastern GOM stock, it may not make sense to develop an assessment for that stock.

¹ Members were Dr. Jon Hare, Dr. Michael Simpkins, Dr. Rich McBride, Tara Trinko-Lake (NEFSC); Tom Nies, Chris Kellogg, and Dr. Jamie Cournane (NEFMC); Dr. Lisa Kerr (GMRI/SSC); and Dr. Steve Cadrin (SMAST).

The planning team also discussed a tentative timeline for incorporating the conclusions of the ACSSWG into science and management. Initial discussions focused on a May 1, 2024 target date for completing the matching of new assessment results with management changes. After discussion, however, a different timeline seems more realistic. The most difficult management issue that may need to be addressed would be if managers believe allocations need to be changed as a result of the new assessments. The assessments will not be completed until summer 2023, and it does not seem reasonable to expect the Council to adopt new allocations (should they be necessary) in less than six months. Other measures, of course, might be implemented even before the assessments are completed.

One issue that will need to be resolved is how, and when, a decision on management units is made. Prior to the expansion of sectors in 2010, the U.S. management units were identical to the biological stock structure used in the assessments (with the exception of the US/CA Resource Sharing Understanding on eastern Georges Bank). Changes in stock definitions had little impact on management. With the advent of the sector system there are implications to management that need to be carefully considered if the new stock structure is used in the assessment. This will take close coordination between the two working groups, the Cod Research Track Working Group, and the Council. While it would be ideal to settle on the assessment structure and the management units before the Cod Research Track Working Group begins its work, this is unlikely. The Council's choice on management units will be influenced by the assessment stock structure. In addition, it is always possible that the assessments for a new stock structure may not be approved in the final peer review.

Management Working Group Overview

The complexity of the management issues caused by the change in the understanding of stock structure hinge in large measure on how the cod stocks are assessed in the future. Some measures are likely to be independent of the assessment framework and could be adopted before the assessments are conducted in 2023. Others, however, may be critically dependent on the assessment framework. This is particularly the case for allocation decisions, which are closely linked to the ACL structure. Until the assessments are completed, it will be difficult to know with certainty if the allocation decisions will need to be revisited. This is the reason that the May 1, 2024 implementation of all science and management changes may prove difficult. As a result, a phased management approach may be appropriate. The schedule below accounts for these alternate approaches.

Date	Action
February-June 2021	Management working group formed and meets to address actions detailed in the working group outline (attached).
May-June 2021	Working group updates Council groups (relevant advisory panels, plan development teams, committees) on progress. Council considers measures that could be adopted through a management action regardless of the assessment outcome (in either 2021 or a future year).
January 2022-June 2023	Once alternative stock assessment frameworks are identified, advisory panels and Groundfish Committee discuss whether management changes would be necessary. This would include a discussion of options for management units under the possible frameworks, and an exploration of allocation issues. It may require scoping for an allocation amendment that would be completed after the assessment is completed.
July 2023	Advisory panels and Committees review research track assessment outcomes and recommend appropriate management response.
September 2023	Council approves plan for management response. If necessary, actions are started to address allocation issues with a planned implementation date.

Science/Data Working Group Overview

The science/data timeline is anchored by the cod research track assessment planned for spring 2023. The assessment working group for that meeting should be formed by late 2021/early 2022 to provide sufficient time for necessary research/modeling work to be completed. Ideally, the research track work group should focus on a single new assessment stock grouping in addition to the current two stock model. This means that a determination of the biological benefits of a different grouping would need to occur in 2021. The planning group believes this could be better explored through an MSE approach, but a qualitative approach might need to be considered.

An MSE approach could model the population, assessment, and management while considering any data limitations identified by the science/data working group. This would help evaluate the strengths and weaknesses of a new assessment stock structure. This information would be provided to the Cod Research Track Working Group for consideration during the development of the assessments. The timeline below is allows for about six months for the MSE approach to complete its work. This is considered optimistic; either an earlier start or later completion date would help facilitate this effort.

With these considerations in mind, a rough schedule was outlined (see below).

Date	Action
February-June 2021	Science/data working group formed and meets. Goal is to identify quality of data inputs available to support cod stock assessments that are more consistent with the ACSSWG understanding of biological stock structure. Deliverable is an inventory of time series data available for each of the five stocks and the type of assessment model each could support.
June 2021	Cod Assessment Research Track Steering Committee formed. Cod stock assessment working group identified.
June-December 2021	Cod Assessment Working Group begins modelling efforts on existing two stock model.
June-December 2021	<p>(1) If funding available, MSE used to evaluate the biological benefits of alternative modelling frameworks that better reflect the revised understanding of stock structure. Modelling should consider results of the science/data working group. Goal is to identify the assessment stock framework(s) that provide more biological benefits than the existing two stock model.</p> <p>(2) Alternatively, if MSE funding is not available, the science/data work group characterizes the assessment stock frameworks that could be supported by the available data.</p>
January 2022	(tentative) The results of the previous step are presented to a review panel and a decision is made on the assessment stock framework(s) that will be modelled in the cod research track. The review panel will need to be identified, and could be the Research Track Steering Committee, a sub-panel of SSC members, the Assessment Oversight Panel, or independent experts.
January 2022-May 2023	Cod Assessment Working Group develops assessment models.
June 2023	Cod Research Track Assessment Meeting
August 2023	Cod Management Track Assessment (tentative). The timing of this assessment may depend on the assessment stock framework that is adopted. It is possible a framework different from the current two-stock model may require management changes that will not be ready for implementation by May 2024. In that case it may be better to conduct the management track assessments in 2024 and implement ACLs that result in May 2025.
May 2024	New ACLs based on Research Track Assessment (tentative)

Attachment 1

Atlantic Cod Stock Structure

Phase 2 – Management Working Group

1/22/2021

Phase II Description:

This working group develops background information that will help the Council identify and adopt management measures that may be needed as a result of the new understanding of biological cod stock structure. This group does not select or recommend specific management measures. A technical group will do initial data collection that will inform discussions at public workshops. A desired outcome is to provide information that will help the Council narrow the range of management unit options that need to be considered. Tasks for the Working Group:

Summarize the practical limitations of changing stock structure for both science and management; analyze the advantages and disadvantages of the status quo or adopting a different spatial configuration. Analyze the advantages and disadvantages of either maintaining the status quo or adopting different spatial configurations through simulation modeling. Provide a written report to the Council, through its Groundfish Committee.

Tasks:

1. Compile overview on the management of mixed stocks from other fisheries and regions.
2. Identify status quo management measures (state and federal) that may be cod-stock specific. Examples shown below are not intended to be comprehensive.
 - a. FMP:
 - a. Status determination criteria
 - b. OFLs/ABCs/ACLs and AMs
 - c. Rebuilding plans
 - b. Commercial
 - a. Time-Area Management
 - i. Seasonal or spawning closures
 - ii. Year-round closures
 - iii. Regulated mesh areas (including measures specific to particular areas)
 - iv. Fishery exemption areas
 - b. Allocations
 - i. Commercial/recreational/other
 - ii. PSC and sector ACE
 - c. Size limits

- d. Common Pool trip limits/AMs
- c. Recreational
 - a. Time-Area Management (i.e. spawning or seasonal closure access)
 - b. Possession or bag limits
 - c. Gear restrictions
 - d. Size limits
- 3. Identify data needed to manage stock-specific measures. Specify if the data are needed in-season/real-time or not. Determine if existing data collection activities are adequate to meet the data needs.
- 4. Map the management measures identified in Task #1 to the revised stock structure. Identify whether information is available to adjust the measures for the new structure. Identify measures that could be adopted in advance of new stock assessments.
- 5. Identify impacts that would need to be evaluated for a new management structure, with a focus on socioeconomic impacts (under the assumption biological impacts will be addressed by the science working group).
- 6. List strengths and weaknesses of the status quo and new stock structure management approaches. (This assumes the science working group will compare biological impacts of using the status quo and or stock structure).

Participation:

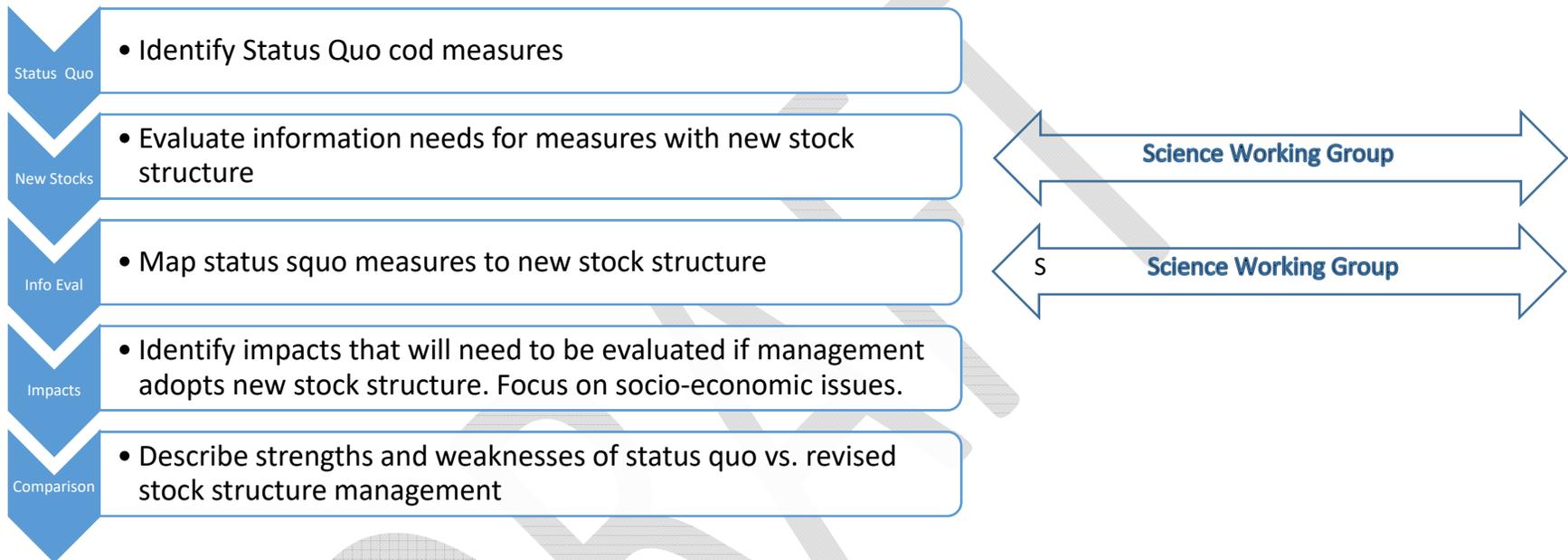
Technical group responsible for tasks #1 through #3 above:

Council groundfish staff
 GARFO staff (SFD and/or APSD)
 NEFSC staff

Additional invited workshop participants (pre-register):

Council Members
 Advisory Panel members
 Interested parties
 Canadian TMGC members
 Other: Professional facilitator

Timeline: Report to the council at the TBD Council meeting; report to plan development teams, advisory panels, and Committees in advance of the Council meeting



Attachment 2

Phase 2 – Science/Assessment Working Group

1/22/2021 Draft

Phase II Description:

This working group develops background information that will help the cod research track assessment working group adapt stock assessments to the new understanding of biological stock structure. The working group does not make decisions on the assessment structure. A desired outcome is provide information that will help the Cod Research Track Working Group narrow the range of stock assessment structure options that may be considered. A technical group will do initial data collection that will inform discussions at public workshops. Tasks will include:

Summarize the historical and current data availability and stock assessment prospects for the five spatial stock areas outlined in Phase I. Evaluate the adequacy of data for monitoring and characterizing commercial and recreational fisheries by the five stock areas. Evaluate potential assessment approaches and resulting management products based on data availability. Identify additional data that could be collected to improve the assessment and management prospects where appropriate.

Data Availability Tasks:

Surveys:

- NEFSC Bottom Trawl Surveys
 - NEFSC Spring (length and age sampling)
 - NEFSC Autumn (length and age sampling)
- Canadian DFO Spring (length and age sampling)
- State Bottom Trawl Surveys
 - Maine-New Hampshire (length and age sampling)
 - Massachusetts (length and age sampling)
 - Rhode Island (length and age sampling)
 - NEAMAP (length and age sampling)
- NEFSC Longline Survey (length and age sampling)
- Sentinel Hook Survey (length and age sampling)

Commercial Catch:

- Landings estimates (length and age sampling)
- Discards estimates (length and age sampling)
- Electronic monitoring data

Recreational Catch:

- Landings estimates (length and age sampling)

- Discards estimates (length and age sampling)

Identify additional sources of data that could be collected:

- Additional survey station coverage
- Biological sampling stratified on a finer scale
- New technologies and approaches (e.g. mixed stock analysis)

Analytic Possibilities:

- Availability of length and age sampling to:
 - Calculate catch at length and catch at age survey indices
 - Calculate commercial and recreational catch at length and catch at age

Evaluation of modeling prospects (e.g., statistical catch at age, length based, index based)

Management products prospects (e.g., status determination, projections, spatial management prospects)

Participation:

Responsible for data analysis:

Atlantic Cod Stock Structure Working Group members

NEFSC Assessment Personnel, Age & Growth, Ecosystem Dynamics and Assessment, Cooperative Research; MRIP data expert

NEFMC Groundfish Staff

GARFO Staff (SFD and/or APSD)

State Personnel (Maine, New Hampshire, Massachusetts, Rhode Island, New York)

Workshop Participants

Industry Stakeholders (Recreational and Commercial)

Canadian Managers/Stakeholders/Scientists

Conservation Organizations (e.g. Conservation Law Foundation, The Nature Conservancy, etc.)

Academic institutions

Reporting Responsibility:

- NEFSC has the lead

Preliminary Timeline:

March/April 2020: Virtual Workshop #1: Data Summaries and Data Availability (possibly break into two workshops)

April/May 2020: Report out to Management Working Group

June/July 2020: Virtual Workshop #2: Assessment Capabilities, Management Products, and New Data Collection Prospects

Throughout: Update reports to Recreational and Commercial Groundfish APs and Groundfish PDT, final report joint with the Management Committee to the full Council

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