

# Description of New England and Mid-Atlantic Region Stock Assessment Process

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## Overview

The Northeast Regional Coordinating Council (NRCC) developed the enhanced stock assessment process described here with the goals of (a) improving the quality of assessments, (b) allowing more improvement to occur within the routine assessment process, and (c) providing more strategic and longer-term planning for research and workload management. The process described here lays out two tracks of assessment work: a management track that includes the more routine assessments but with more flexibility to make improvements than in the past, and a research track that allows comprehensive research and development of improved assessments on a stock-by-stock or topical basis. The process provides clear opportunities for input and engagement from stakeholders and research partners, and the process also provides a longer term planning horizon to carry out research to improve assessments on both tracks, but particularly the research track. A key aspect of this process is the NRCC's development and negotiation of long-term management track cycles for each stock (i.e., how often each stock is assessed and in what years) as well as a five-year research track schedule, which will be updated through time by the NRCC.

## Roles and Responsibilities

### Northeast Regional Coordinating Council

The Northeast Regional Coordinating Council (NRCC) consists of members from the Atlantic States Marine Fisheries Commission (ASMFC), Greater Atlantic Regional Fisheries Office (GARFO), Mid-Atlantic Fishery Management Council (MAFMC), New England Fishery Management Council (NEFMC), and Northeast Fisheries Science Center (NEFSC). The NRCC fulfills several functions, and, in the context of stock assessments, the NRCC's primary roles and responsibilities focus on setting priorities and scheduling of assessments. With respect to assessment priorities, the NRCC (a) sets long-term (five-plus year) schedules for both the management and research track, (b) reviews and adjusts those schedules as needed, and (c) recommends priorities among complex management track assessments (i.e., assessments requiring expedited or enhanced peer reviews) in situations where more complex assessments are proposed than can be accommodated. Designated deputies from each NRCC member organization form the "NRCC Deputies" panel, which reviews and approves research track stock assessment working groups as well as external experts nominated to serve on management track or research track peer review panels.

## **Assessment Oversight Panel**

The Assessment Oversight Panel (AOP) consists of four members (a) the Chief of the Populations Dynamics Branch, NEFSC, or his/her designee, who serves as Chair of the AOP, (b) the Chair of the NEFMC SSC, or his/her designee, (c) the Chair of the MAFMC SSC, or his/her designee, and (d) the Chair of the ASMFC Assessment Science Committee, or his/her designee.

The primary responsibilities of the AOP are to (a) review and approve management track assessment plans in the context of guidelines for permissible changes under each level of management track peer review, (b), in the near term if they have not yet been developed and reviewed in a prior assessment peer review, review and approve plans for any alternative (i.e., "Plan B") approach to be used if the peer review finds primary management track assessment is not suitable for providing management advice, (c) review and approve revisions to management track assessment plans developed in response to new data or based on advice from the AOP generated from review of the original plan, noting that any changes that would require upgrading or downgrading the assessment tier would require NRCC consultation; and (d) provide a summary report to the NRCC on an annual basis of AOP actions taken.

Assessment Oversight Panel meetings are open to the public. Council, Commission, and GARFO staff are welcome to participate, and those staff with lead responsibilities for stocks under consideration will be requested to serve as invited participants. At least one staff representative should participate from GARFO and each Council and Commission with stocks under consideration.

## **Northeast Fisheries Science Center**

Fish stock assessment scientists from the NEFSC support both management and research track assessments. NEFSC assessment scientists have primary responsibility for planning and carrying out management track assessments for all federally-managed stocks, as those assessments are conducted on a routine basis and require consistent capacity and expertise. As part of the management track process for stocks with NEFSC lead responsibility, NEFSC assessment scientists develop initial plans for assessments and alternatives (i.e., "Plan B") in advance of upcoming assessments and revise those plans if necessary in response to new data; where possible, alternative approaches should be developed in advance in prior research track assessments. NEFSC assessment scientists provide initial management track assessment plans for review by the AOP, which in turn reviews and provides recommendations to the NRCC. In unusual situations where more assessments are proposed for expedited and enhanced peer review than can be accomplished in the time available for peer review, then the NEFSC consults with the NRCC to determine which assessments to "downgrade" to a lower assessment level and peer review. NEFSC assessment scientists, as well as other NEFSC scientists and other federal, state, academic and other non-governmental scientists participate in research track assessments.

## **Atlantic States Marine Fisheries Commission**

ASMFC Technical Committee and Assessment Science Committee members may support both management and research track assessments. The ASMFC has primary responsibility for planning and carrying out management track assessments for several state-managed stocks, several of which require substantial NEFSC staff engagement and are managed according to the assessment process described here. As part of the management track process for jointly managed stocks with ASMFC lead

responsibility, the relevant ASMFC Technical Committee develops initial plans for assessments and alternatives (i.e., “Plan B”) in advance of upcoming assessments and revises those plans if necessary in response to new data. The Technical Committees’ initial management track assessment plans are reviewed and approved by the Assessment Science Committee, which then provides those assessment plans to the AOP for its review and subsequent recommendations to the NRCC. In unusual situations where more management track assessments are proposed for expedited and enhanced peer review than can be accomplished in the time available for peer review, then the ASMFC consults with the NRCC to determine which assessments to “downgrade” to a lower assessment level and peer review. For ASMFC managed stocks that are scheduled following the process described here, ASMFC may opt to follow the AOP and management track peer review process, or use traditional ASMFC planning and review processes, though care must be taken to coordinate with the management track process to avoid any work or review conflicts. ASMFC Technical Committee members, as well as NEFSC scientists and other federal, state, and academic scientists participate in research track assessments.

## Peer Review Panels

Peer review panels are convened to review expedited (level 2) and enhanced (level 3) management track assessments and research track assessments. Peer review panels review the assessment(s) for technical merit and provide recommendations to the relevant Agency, Council(s), and or Commission on the whether the assessment should or should not be used for management. For management track assessments, the peer reviews will be conducted by a small panel of relevant SSC members with additional external experts if/as needed; reviewers will be nominated by the relevant Council(s) and/or Commission and confirmed by the NRCC Deputies. When nominating and confirming membership for management track peer reviews, consideration should be given to providing some continuity from one peer review to the next, to promote consistency in decisions across peer review panels. For research track assessments, peer reviews will likely, but not exclusively, be provided by the Center for Independent Experts (CIE). In some cases, it may be preferable to convene a research track peer review panel outside of the CIE process; in those cases, the relevant Council(s) and/or Commission will nominate panelists, which will be reviewed and confirmed by the NRCC Deputies. Consideration should be given to including SSC members in the peer review, including the possibility of having an SSC member chair the peer review; this approach has been helpful in the past to provide some continuity across the peer review and subsequent SSC review.

## Scheduling Process

During 2016-2017, the NRCC developed a process for scoring and prioritizing stocks for both management and research track assessments, and the resulting information was used to inform the development of the initial management and research track schedules. The scoring and prioritization process built off of the process described in the National Marine Fisheries Service’s [“Prioritizing fish stock assessments”](#). An NRCC working group evaluated the scoring process and factors recommended by the NMFS report, selected the factors that were most relevant to NRCC stock assessment scheduling, modified the factor descriptions and scoring rubrics, and added entirely new factors as needed. The working group then organized these factors into six categories: management needs, fishery importance,

stock status and trend, ecosystem importance, assessment information, and stock biology. The resulting scoring factors are described in [*insert scoring document as link or appendix*]. Briefly, and generally speaking, NRCC working group members scored each stock within their jurisdiction for each factor<sup>1</sup>, and then those scores were averaged across all members for each factor, averaged across all factors for each category, and then averaged across categories for each stock, resulting in one overall score for each stock. A different suite of factors was used to calculate the final score for management track vs research track assessment priorities, and a few factor or category scores were provided independent of the overall score because they were deemed particularly important for developing assessment schedules.

With the resulting scores as information, the NRCC working group developed initial strawman schedules for both management and research tracks. Those strawman schedules, prioritization scores, and other information were used by the NRCC to develop an initial five-year schedule of research track assessments and an initial schedule of management track assessments, with each management track assessment assigned a starting year and a certain cycle or periodicity ranging from annual management track assessments to 6-year intervals between management track assessments. The resulting schedules were informed, but not driven, by the prioritization scores; final decisions regarding the schedules were made through NRCC negotiation.

In order to maintain a five-year research track schedule each year, as what had been the fifth year becomes the fourth year, the NRCC will consider the existing research track schedule, research track scores, and other information and identify which stocks or topics should be addressed in the new fifth year of the schedule. The NRCC will also consider any changes to the existing research or management track schedules as needed. In the absence of changes, the management track schedule will continue with the same periodicity for each stock.

The prioritization scores developed for both research and management tracks in 2016-2017 may degrade in terms of relevance over time. When the NRCC feels those scores are no longer relevant for informing scheduling discussions, the scoring process will be conducted again to provide fresh scores to inform the scheduling process. Because the scoring process is laborious, the NRCC anticipates refreshing the scores on an infrequent basis, perhaps once every 5-7 years.

## **Management Track Process**

Management track assessments are designed to provide routine, scheduled, updated advice to directly inform management actions. Management track assessments are designed to be simpler, quicker, and more efficient than research track assessments. However, the management track provides some flexibility to allow assessments to improve over time by building off the previously accepted assessment, without requiring a research track assessment for every step along the way. The modifications allowed within the management track are intended to provide the analyst with the flexibility needed to improve

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<sup>1</sup> NMFS working group members scored all stocks; GARFO scored factors related to management and regulations, and NEFSC scored factors related to science. The Councils and Commission scored their respective stocks.

the science and update a previously accepted assessment when issues arise or new data become available.

## **Management Track and Peer Review Levels**

The flexibility in management track assessments allows for different levels of complexity and extent of changes that can be applied when conducting a management track assessment. These different levels of complexity and extent of changes, in turn, call for different levels of peer review and public engagement. For consistency sake, the levels of peer review, extent of public engagement and changes allowed under each management track level are described below. Generic terms of reference for management track assessments are also provided below.

When developing the list of permissible changes, it was recognized that all possible changes that would warrant consideration could not be anticipated given the evolving nature of science and assessment methods. Consequently, the following lists represent specific changes that are permitted under each level but should not be considered exhaustive. 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.

During and prior to the assessment planning stage, stakeholders will be able to provide input on all assessments. During the “input” phase of management track assessments (described below), NEFSC, ASMFC and NRCC partners will work together to engage with stakeholders, academic and state partners to solicit new data and ideas for any and all levels of upcoming management track and research track assessments. Additional stakeholder engagement would occur during the public comment periods of the AOP meeting (described below) where the assessment plans presented by NEFSC and ASMFC analysts will be reviewed. Opportunities for public engagement during assessment reviews are specific to the assessment level and are described below.

## **Data Updates**

In some cases, data updates may be requested by a Council or Commission between scheduled Management Track assessments. Data updates are just that, summaries of new data that have become available since the last Management Track assessment. Data updates do not involve rerunning any assessment model and in most cases do not provide a formal update of stock status. The NEFSC is actively working to automate much of the assessment data processing, with the goal of being able to provide standardized data updates through an automatic reporting system. Previously, some requested data updates were quite extensive and required data processing and manipulation that would be challenging to automate, and in some cases those requested data updates required as much work as what would be considered a Level 1 assessment in the current process. In addition to cases needing additional work beyond updating available data, cases where data must be acquired from sources outside of the NEFSC (e.g. state index datasets) may take additional efforts and may not be possible in a data update framework. If such extensive data examinations are requested in the future, they would need to be added to the Management Track schedule to account for the workload requirements. However, requests for standardized, automated data updates would not need to be added to the Management Track schedule because they could be provided at very low cost in terms of staff time.

During the, hopefully short, timeframe while NEFSC develops the automated data update system, any data update requests will need to be negotiated through the NRCC.

Standardized, automated data updates are not formally considered as Management Track assessments and do not undergo any peer review, just normal quality assurance and control procedures. The intent of data updates is to provide reassurance that multi-year specifications set based on the most recent Management Track assessment are still appropriate, without requiring a new assessment. Such updates are most useful when they are formally accounted for within a fishery management plan with clear decision rules on what action should be taken if a data update implies a strong change in stock status. Without such decision rules, data updates may just highlight a concern that cannot be addressed without a formal management track assessment, which would require adding an assessment to the schedule on short notice, or waiting for the next scheduled assessment.

### **Level 1: Direct delivery**

A level 1 management track assessment is essentially a simple update of the previously approved assessment with new data. This level of assessment update will be delivered directly from the NEFSC to the appropriate Council or Commission technical body (e.g., SSC) and will not undergo peer review beyond that conducted by those technical bodies. Furthermore, although there will be opportunities for public input on assessments in advance during the input phase described below, there will be limited opportunity for public engagement during the assessment review, which will occur during the public comment period of the technical body's meeting. Given the limited peer review and public engagement, only minor changes, such as those detailed below, are permissible.

- Model that 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)
- Incorporation of updated data from recent years in the estimation of biological information (growth, maturity, length-weight relationship)
- Evaluating effects of delayed seasonal surveys or missing strata on fishery-independent measures of abundance
- If adding or revising data reveals problems in model performance, analyst should identify concerns that may need further analyses and/or review
- Standard QA/QC procedures employed by the NEFSC

### **Level 2: Expedited review**

A level 2 management track assessment can involve a little more flexibility for deviations from the previously accepted assessment, but that flexibility is limited to allow for efficient peer review of multiple assessments in one peer review meeting, similar to what previously had been carried out for groundfish operational assessments for the NEFMC. Level 2 assessments will undergo a formal, but expedited (1-2 hour maximum), peer review by a small panel of SSC members from the relevant Council(s), along with additional external experts if desired, before submission to the appropriate Council or Commission technical body. In addition to opportunities for public input on assessments in advance, opportunities for public engagement will occur during the public comment periods of the

public review meeting and the subsequent meeting of the Council or Commission technical body. Given the moderate level of peer review and engagement, level 2 assessments will generally use the same assessment structure and data as the previously accepted assessment, but some changes are permitted (detailed below) that warrant review by an external body. In this level, the cumulative impacts of the number of changes should also be considered; any individual change may be minor, but if there are several changes, the overall impact could be substantial and may warrant shifting an assessment to level 3 and providing enhanced peer review. Changes permitted in level 2 assessments include those noted in level 1, and:

- Updated discard mortality estimates, when based on peer-reviewed experimental evidence
- Evaluating effects of delayed seasonal surveys or missing strata on fishery independent measures of abundance if significant analysis is required to characterize the effects
- Recalibrated catch estimates (e.g., transition to Marine Recreational Information Program, area 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
- Retrospective adjustment to management metrics following established retrospective adjustment protocols
  - Technically, when either the rho-adjusted SSB or F (point estimate / (1 + Mohn's rho)) falls outside the 90% confidence interval of the terminal year estimate, the retrospective adjustment is applied for both status determination and to the starting population for projections.
- 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
- Calculate new values for the existing BRPs

### **Level 3: Enhanced review**

A level 3 management track assessment will permit more extensive changes than a level 2 assessment and therefore requires a more extensive peer review (one-half to a one full day). The flexibility in level 3 provides an opportunity to make progress within the management track toward the Next Generation Assessments envisioned in the [Stock Assessment Improvement Plan](#), by including more detailed spatial, temporal, environmental and species interactions within existing model frameworks. It is important to note, however, that full achievement of Next Generation Assessments will likely require research track efforts as well. As in level 2 assessments, public engagement opportunities will occur during the public comment periods of both the public review and the subsequent meeting of the Council or Commission technical body, as well as during the input phase of the assessment process as described below.

Level 3 assessments will be reviewed by a small panel of SSC members from the relevant Council(s) as well as additional external experts as needed; any external reviewers outside of the SSCs will be nominated by the Council or Commission and confirmed by the NRCC Deputies. Given the enhanced

peer review, changes to most assessment elements, with the exception of stock structure, would be permitted in level 3 assessments; however, cumulative impacts should be considered when making a determination between the changes permissible within the “enhanced review” level and changes that would require switching to the research track process. Changes permitted in level 3 assessments include those noted in levels 1 and 2, and:

- Inclusion of new or alternate interpretations of existing indices
- Changes to estimation method of catchability, including but not limited to:
  - Empirical estimations
  - Changes in habitat/availability/distribution on catchability
  - Use of informed priors on catchability in a model
- Updating of priors based on new research if done on a previously approved model
- 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.)
- Updating of historical selectivity stanzas
- Changing recruitment option used, meaning using a stock-recruitment relationship, or cumulative distribution function, etc.
- Changes to selectivity functional form (i.e. such as a new selectivity model) if supported by substantial empirical evidence.
- Changes to fleet configuration
- Changes to natural mortality (M)
- 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. Through research track topics focused on methods, new models could be implemented in parallel with an accepted model and provide a basis for eventual shift to a new model through a level 3 management track assessment. This would allow model evolution, technical innovations, and testing without the penalty of forgoing research on stock dynamics until a new Research Track process is scheduled.

### **Management Track Assessment Terms of Reference**

Generic Terms of Reference (TORs) for assessment updates that will be used directly for management (Management Track assessments) are provided below. They include the TORs necessary for updating the necessary input data (catch and survey), assessment model, biological reference points and short-term projections but do not include the research-oriented TORs that are included in Research Track assessments.

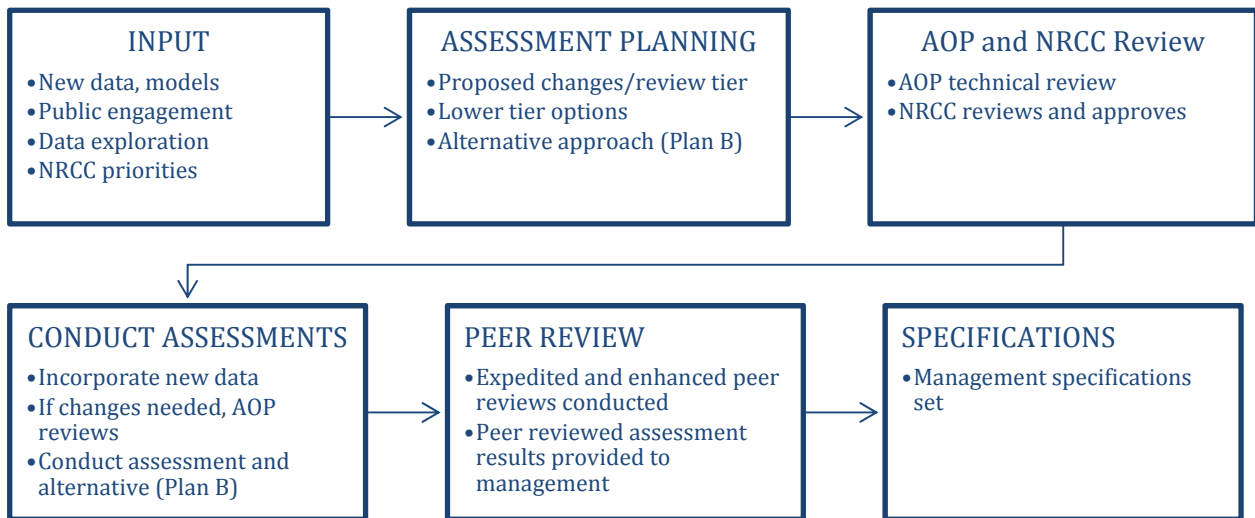
1. Estimate catch from all sources including landings and discards.
2. Evaluate indices used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.).



3. Estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) as possible (depending on the assessment method) for the time series using the approved assessment method and estimate their uncertainty. Include retrospective analyses if possible (both historical and within-model) to allow a comparison with previous assessment results and projections, and to examine model fit.
  - a. Include bridge runs to sequentially document each change from the previously accepted model to the updated model proposed for this peer review.
  - b. Prepare a “Plan B” assessment that would serve as an alternate approach to providing scientific advice to management if the analytical assessment were to not pass review
4. Re-estimate or update the BRP’s as defined by the management track level and recommend stock status.
5. Conduct short-term stock projections when appropriate.
6. Respond to any review panel comments or SSC concerns from the most recent prior research or management track assessment.

## Management Track Process and Logistics

### Management Track Process Flow Chart



#### Step 1: Input

Throughout the year data come in and new ideas are generated. As part of the new management track assessment process, the NEFSC and ASMFC will work with NRCC partners and others to engage with stakeholders, academic and state partners to solicit new data and ideas. This engagement strategy will involve ongoing, regular two-way communications with stakeholders and partners using a variety of approaches, which could include, but not be limited to, social media and web interactions as well as face-to-face stakeholder engagement meetings convened by NRCC members or hosted by stakeholder groups. The engagement strategy will adapt as needed to improve two-way communications, but at a

minimum will involve biannual engagement efforts to provide updates on the most recent management and research track assessments and to seek input on upcoming assessments. This engagement will solicit input on all levels and types of assessments, but will particularly focus on research track assessments where there are not only more opportunities for change and improvement but also opportunities for joint research planning and direct collaborative research efforts with stakeholders and partners, which the NRCC is particularly interested in fostering. All input received will be provided to the assessment leads to support development of their assessment plan. Six months or more in advance of a scheduled management track assessment, the NEFSC or ASMFC assessment lead for the stock compiles available input and does initial exploratory work to determine how complex the next management track assessment should be in terms of new data streams or model changes incorporated.

### **Step 2: Assessment planning**

Following data input and exploration, and based on the explicit management track guidelines, the assessment lead proposes to the AOP the extent of assessment changes to be explored and the associated level of peer review. The assessment lead also provides proposals for assessment complexity under lower levels of peer review, to provide options for consideration. In the case of ASMFC led stock assessments, this initial proposal is developed by the relevant Technical Committee and reviewed by the Assessment Science Committee before being proposed to the AOP. The resulting assessment plans should indicate what input was considered and how it will be addressed, included or excluded, in the assessment; this provides the explicit connection between public or other input and the assessment plan.

### **Step 3: AOP and NRCC review**

After data have arrived and exploration has occurred, the AOP is convened to provide technical review of the proposed management track assessment plans for the upcoming year. For any assessment proposed for level 2 or 3 peer review, the AOP considers the changes suggested (and “Plan B” if not previously vetted by a research track or prior management track assessment) and approves those changes (and Plan B) and applies the peer review level guidelines to confirm the level of peer review for the most complex proposed version of assessment (i.e., levels 2-3 above).

At the completion of the AOP review, the NEFSC, which manages the logistics of the peer review process, reviews the AOP approved suite of assessments to ensure that the peer review logistics are feasible. In unusual situations where more assessments are proposed for expedited and enhanced peer review than can be accomplished in the time available for peer review, the NEFSC consults with the NRCC to determine which assessments to “downgrade” to a lower assessment level and peer review. The resulting recommendations from the AOP, modified if needed and approved by the NRCC, are then implemented by the NEFSC and ASMFC assessment leads.

### **Step 4: Assessment conducted**

This step may include several phases. First, each assessment lead evaluates any new data that have arrived since they developed the original proposal for assessment complexity and level (see step 2). If any changes to the approved assessment plan are needed in response to new data, the assessment lead proposes those revisions. If those proposed revisions could result in changes in the peer review level,

then the AOP provides technical review and applies the management track peer review guidelines to determine the appropriate level of peer review, likely via conference call or virtual meeting. In unusual cases where such changes could result in substantive changes to the overall suite of planned peer reviews, the NRCC would be consulted with respect to priorities. The assessment leads then carry out the management track assessment within the scope of the approved assessment plan for each stock.

### **Step 5: Peer review**

Expedited and enhanced (levels 2 and 3, see above peer review levels) management track peer reviews are scheduled and convened, as described below, seeking to combine peer reviews as appropriate for efficiency and to optimize the ability to provide timely peer reviewed results to as many fishery management action processes as feasible. Outputs of peer reviews are provided as expeditiously as possible to the appropriate Council or Commission technical bodies and then to the Councils and/or Commission to inform management action (Step 6 in the management track process flow chart). These outputs will be provided in the form of summary reports and will address the assessment terms of reference (see above). For the usual situation where multiple management track assessments are reviewed at one time, the summary reports would likely be compiled as chapters in one overall summary report, and the peer review comments and recommendations would likely be incorporated within each chapter. In all cases, associated data and analytical details will be accessible. Early in the implementation of this process, the NRCC will develop and approve standard report templates for each level of management track assessment (and data updates).

### **General Timing of Management Track Process**

Two management track peer reviews for level 2 and 3 assessments will be conducted each year to accommodate the variation in fishing year among stocks and minimize the time lag between the final year of the assessment model and the subsequent implementation of new specifications. Each peer review could include both level 2 and level 3 assessments, and the peer review panel would be composed appropriately with SSC members from the relevant Council(s) and any additional experts as needed. For the majority of stocks, the fishing year starts at the beginning of January or May. Consequently, a peer review will be conducted during the beginning of September for those stocks with fishing years around May 1 and another peer review will be held at the end of June to accommodate stocks with fishing years beginning around January 1 (see table below). This timing is designed to ensure that products from the assessment review can be provided in time to meet the associated management timelines. Assessment models examined during the September peer review will incorporate data through the end of the previous year. For the suite of stocks that undergo peer review in June, it will be difficult to incorporate fishery catches through the end of the previous year due to timing constraints of data availability; it is likely that assumptions may need to be made for the terminal year catch. Assessment reviews for transboundary stocks carried out under the auspices of the Transboundary Resources Assessment Committee will continue to be scheduled based on bilateral negotiation.

Level 1 management track assessments will be delivered directly to the appropriate Council or Commission technical body and are not evaluated as part of the two peer reviews. If desirable, some level 1 assessments can be prepared and delivered throughout the year according to the Councils' and Commission's current delivery schedules. If, upon incorporating the most recent year of data, a level 1

assessment needs to be upgraded to a higher level that requires peer review, delivery of the assessment will be delayed until the next peer review, typically resulting in a delay of weeks to a few months. In such situations, the relevant Council or Commission would be consulted to discuss the needed changes and the resulting delay. In some situations, changes may be required to provide valid scientific advice to management. In others, the changes may be needed to provide improvements to the quality of the advice, in which cases the relevant Council or Commission may prefer to maintain the original delivery timeline while sacrificing the improvement. Furthermore, as the management track schedule comes into effect and workloads, timing, and demands shift, one way to enhance the efficiency of the process may be to simplify the delivery system to have most or all level 1 assessments coincide with the timing of the peer reviews, eliminating the need for some additional consultation and sacrifices.

### Fishing year and peer review dates for each species or fishery management plan (FMP)

| Species or FMP                  | Beginning of Fishing Year | Management track peer review |
|---------------------------------|---------------------------|------------------------------|
| Tilefish                        | November 1                | End of June                  |
| Northern Shrimp                 | December 1                | End of June                  |
| Bluefish                        | January 1                 | End of June                  |
| Mackerel/Squid/Butterfish       | January 1                 | End of June                  |
| Fluke/Scup/Black sea bass       | January 1                 | End of June                  |
| Surf clam / Ocean quahog        | January 1                 | End of June                  |
| Atlantic herring                | January 1                 | End of June                  |
| Striped bass                    | January 1                 | End of June                  |
| River herring / Shad            | January 1                 | End of June                  |
| Red crab                        | March 1                   | End of June                  |
| Scallop                         | April 1                   | Beginning of September       |
| Spiny dogfish                   | May 1                     | Beginning of September       |
| Monkfish                        | May 1                     | Beginning of September       |
| Groundfish (NE multispecies)    | May 1                     | Beginning of September       |
| Hakes (Small mesh multispecies) | May 1                     | Beginning of September       |
| Skates                          | May 1                     | Beginning of September       |
| American Lobster                | July 1                    | Beginning of September       |

## Research Track Process

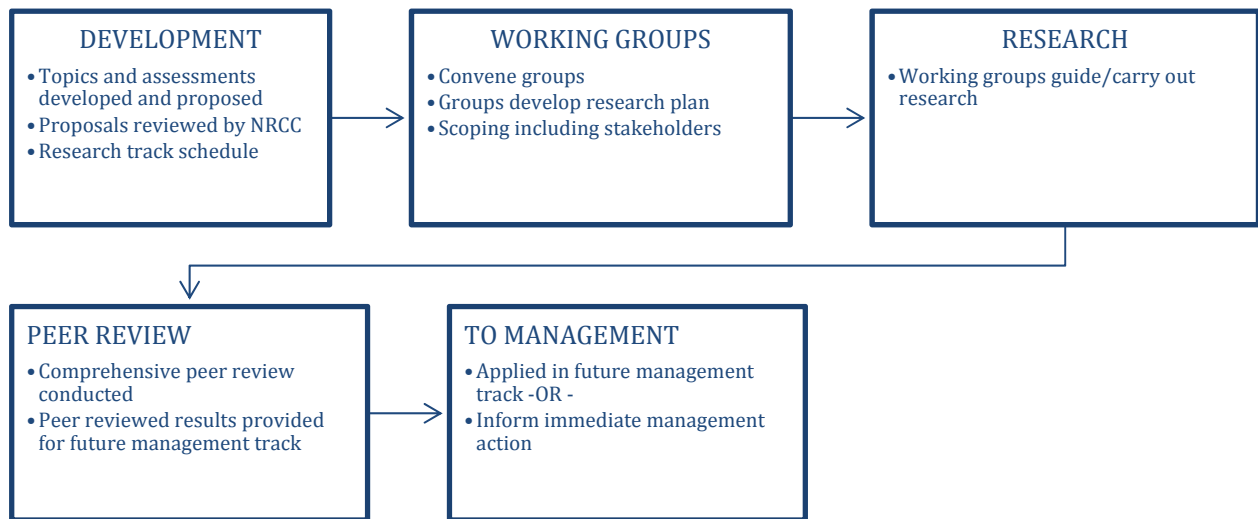
### Research Track Assessments and Topics

Research track assessments and topics are complex scientific efforts focused either on (a) assessments of individual stocks with comprehensive evaluation of new data streams and model changes or (b) research topics that apply to assessments of several stocks. Generally speaking, applied scientific efforts in the fish stock assessment arena lie along a continuum from “research” to “research track” to “management track,” with each step informing the next and getting closer to directly informing management decisions. Generic “research” may be designed to inform the research track, but typically is not designed to directly inform the management track. Research track efforts, on the other hand, are designed to directly inform future management track assessments, but may not immediately inform

management decisions. Research track efforts can inform management track assessments by, among other things, (a) direct examination and development of an assessment or (b) tackling analytical, data, or other issues facing multiple assessments.

## Research Track Process and Logistics

### Research Track Process Flow Chart



#### Step 1: Research Topic and Assessment Development

Initial research track topics and assessments are developed and proposed to the NRCC via individual NRCC members. These proposals can derive from ideas or recommendations proposed to or developed by Councils or Commission, through ideas or proposals developed by NEFSC or ASMFC scientists, or through ideas or proposals submitted through the NEFSC or GARFO. NRCC member organizations will work together to develop effective stakeholder engagement processes to solicit ideas (see Management Track – Step 1 above for more on input), which in turn could develop into research assessment or topics that would be proposed by one or more NRCC members. These proposals are then evaluated through the scheduling process described above.

#### Step 2: Working group(s)

Once a research track assessment or topic is scheduled, NEFSC and/or ASMFC assessment lead(s) are assigned and reach out to stakeholders, academics, and NRCC and management partners, etc., and consult existing sets of research recommendations (e.g., from past assessments or Council or Commission research priorities) to identify research needs to inform a given research track effort. This outreach effort could include formation of a working group or steering committee to carry out the outreach, or that working group or steering committee could be formed after the initial outreach and focus primarily on developing the plan for the research track effort.

Given the potential long-term nature of research track efforts, in some cases a steering committee to guide work may be established initially. The purpose of such a steering committee would be to identify

research needs and provide guidance for the research that is undertaken, to ensure that the eventual research outputs are useful and able to be considered within the eventual research track assessment or topic. Given that purpose, members of a steering committee should be recognized experts in fields of study relevant to the priority research needs for a given research track assessment or topic; this could include federal, state, and academic scientists as well as industry or non-governmental experts engaged in developing or guiding cooperative research studies. Membership of a steering committee could be somewhat dynamic and change through time for longer term research track efforts, as research progresses and different expertise is needed to provide research guidance. Steering committee members would be nominated by NRCC members as well as solicited through public outreach; steering committee membership would be reviewed and confirmed by the NRCC Deputies, with a focus on ensuring that all members have significant, relevant expertise. Care should be taken to avoid any perceived or real conflicts of interest, for example if steering committee members advocate for research that would be conducted by their host institution. A steering committee chair would be nominated and approved by the NRCC Deputies from the suite of steering committee members, and that chair would guide the overall work of the steering committee and seek to avoid conflicts of interest.

For stock-specific research track assessments, a formal stock assessment working group will likely be convened in addition to, or instead of, a broader steering committee. Those working groups would be formed following the process established for past [Stock Assessment Workshop working group protocols](#).

Research track working groups, both topical and stock-specific, will be tasked with developing and implementing the research plan and terms of reference based on scoping. The research plan should indicate which outputs will be applied, and how, to future management track assessments and/or management actions. This is most critical for research topics, where the terms of reference at the start should clearly indicate what outputs will inform future management track assessments, and how they would do so. For stock specific research track assessments, consideration should generally be given to development of alternative approaches to providing management advice if a research track or future management track assessment should be deemed unsuitable for use in management, i.e., development of “plan B” assessment advice approaches. In most, if not all cases, such “plan B” approaches would be evaluated by the peer review panel after the panel completed its review of the research track assessment; “plan B” approaches should be considered as backup plans for any future problems with an assessment, not an alternative to the developed research track assessment, unless of course that assessment is rejected for use in management advice. In situations where a “plan B” approach has been developed and approved through a research track peer review, the expectations are that approach would be applied in future management track assessments as a backup, and the AOP would not need to repeat the review and approval of that “plan B” approach.

### **Step 3: Research**

Once the research plan and terms of reference are established, the steering committee and/or working group guides and/or carries out the necessary research and compiles the results to inform the research track effort, incorporating public planning, data, and analytical meetings as appropriate. In some cases, funding, staff, or other resources may limit research efforts, and, in those cases, the steering committee or working group should set priorities and ensure the most critical research is accomplished. When

resources are limiting, the steering committee or working group should also inform the NRCC, whose members may be able to seek out additional resources to support the required work.

In order to promote an effective and innovative research track, topics and stock-specific assessments in this track typically will be carried out over longer time frames and with fewer requirements for using the most recent data, etc. In the two-track approach, the research track is intended to be the opportunity for extensive and comprehensive research and analysis, so it is helpful to remove timing constraints as much as possible. This is different than the management track, which is very much driven by the need to meet specific management timelines and apply the most recent data feasible. As appropriate and feasible, the research and management track schedules will be designed to have management track assessments for specific stocks immediately follow research track assessments for those stocks, which allows for the comprehensive and innovative research to occur with less limitations but ensures immediate application of the research results with the inclusion of the most recent data in a management track assessment.

#### **Step 4: Comprehensive peer review**

Research track peer reviews are considered to be “comprehensive” peer reviews, in contrast to the expedited and enhanced peer reviews carried out for management track assessments. These reviews generally require 1.5-4 days and are intended to consider all aspects of the research topic or stock-specific assessment and provide advice on the validity of the research and analyses conducted as well as provide recommendations as to whether the outputs are suitable for use in future management track assessments and/or to inform future management actions. Typically, but not exclusively, peer review panels would be provided through the Center for Independent Experts (CIE) and would include at least one relevant SSC member to provide continuity with later Council, Commission, and SSC reviews and actions. As mentioned previously, in some cases it may be preferable to convene a research track peer review panel outside of the CIE process; in those cases, the relevant SSCs, NEFSC, and/or ASMFC Assessment Science Committee will nominate panelists, which will be reviewed and confirmed by the NRCC Deputies.

Outputs of research track peer reviews are provided as expeditiously as possible to the NEFSC and/or ASMFC Assessment Science Committee for use in future management track assessments. These outputs will be provided in the form of an assessment summary report, a peer review report, and a comprehensive assessment document that covers the full suite of work carried out. The peer review report could either be one panel report, or a compilation of individual peer review reports along with a summary panel report. Working group papers, associated data, and background materials will be accessible if needed. If immediate management action is required based on the outcomes of a research track assessment, the outputs also will be provided to the appropriate Council or Commission technical bodies and then to the Councils and/or Commission to inform management action.

#### **Step 5: Translate to Management**

In many cases, research track outputs will be incorporated into future management track assessments, as indicated in the relevant initial research plan. In some cases, research track outputs may also be used to directly inform immediate management actions. This would typically occur when research track

outcomes indicate important or urgent changes in stock status that require immediate attention; otherwise, the expectation is that it usually will be more appropriate to take the research track outcomes and apply those with updated data in the next scheduled management track assessment to inform future management action.