

New England Fishery Management Council  
Scientific and Statistical Committee  
Update for 2011 National SSC Meeting  
4-6 October 2011  
Williamsburg, VA

Since the last National Scientific and Statistical Committee (SSC) meeting, the New England Fishery Management Council (NEFMC) appointed a number of new members to their SSC, increasing the size of the committee to eighteen. The appointments were made in three groups of initial terms lasting from one to three years, with the intention of future appointments all lasting three years. This will facilitate an orderly transition and turnover on the SSC, while maintaining institutional knowledge within the group.

Given the focus of this National SSC meeting on ecosystem and socioeconomic issues, these topics will be highlighted in this update. Additional information is provided regarding recent activities related to Acceptable Biological Catch (ABC) uncertainty, a new process being implemented this winter to address update assessments, and the forming of a risk policy team.

At the request of the Council, the SSC developed a white paper on possible pathways toward ecosystem-based fishery management (EBFM) in the Northeast. This white paper was presented to the full Council three times during development: November 2010, February 2011, and April 2011. The final white paper describes ecological production units as possible management units to replace the current stock centric Fishery Management Plans (FMPs) and a transition strategy to move from the current management system to full EBFM. The paper describes an eight step process to implement full EBFM and the principal elements of the scientific approach to be used in the region.

At the September 2011 Council meeting, a strategy was outlined to develop EBFM in three phases. The first phase consists of establishing goals and objectives. Included in this phase is the definition of the specific ecosystem production units (EPUs) which will serve as the basis for management units. The second phase identifies management and scientific requirements to implement EBFM in the region. For example, the Northeast Multispecies, Skate, and Monkfish FMPs could be combined into a joint plan to account for biological interactions. This would require definition of new reference points based on new modeling efforts for the species complex. The third and final phase implements EBFM using quota-based management in all ecosystem production units. This requires allocating all fishery resources to each EPU. The many details of accumulation limits, transferability requirements, permitting, and monitoring requirements would all need to be defined. An environmental impact statement would be developed for the new plan during this phase as well. These phases would last one, two, and three years, respectively, for a total implementation time of six years.

There were no specific social science terms of reference this past year. However, with the addition of three new social scientists to the committee, there is expected to be increased attention given to a number of issues in the coming year. Specifically, risk and ABC buffers,

management strategy evaluations (MSE), the mixed stock exemption, and socioeconomic aspects of ecosystem based fishery management are all expected to be considered.

Currently the NEFMC does not have a general control rule to deal with risk. The risk policy team, described below, will be working to develop such a rule or process for addressing risk concerns. The Council decided that rules would be specific to different Fishery Management Plans (FMPs) to allow for specific factors within each FMP to be addressed directly. For example, in the Northeast Multispecies FMP, which covers 20 groundfish stocks, the default control rule is to use 75% of Fmsy when calculating ABCs to account for uncertainty. This is a simple and easy to apply control rule, but ignores the different amounts and types of uncertainties in the 20 stock assessments.

Risk considerations were explicitly raised by a report of the Massachusetts Fisheries Institute (MFI), which states that “Scientifically valid alternative reference points have been identified which can trigger increases in annual catch limits (ACLs) without sacrificing conservation.” The SSC was tasked with reviewing this report and concluded “the information in the MFI report does not justify revision of the ABCs recommended by the SSC and adopted by the Council.” However, the SSC acknowledged that the MFI report raised some issues that deserved consideration in the future, as seen in the following quotes from the SSC review report regarding MSE and the mixed stock exemption.

- The implicit management strategy described by NS1 Guidelines should be subjected to a Management Strategy Evaluation (MSE) designed to accommodate the range of assessment and management situations confronted. The MSE should consider performance in terms of biological, economic and social impacts. Further, the SSC recommends that the Council consider additional social and economic information in the development of ABC control rules and in setting ABCs (rather than relegated to secondary impact analyses). Such an evaluation would also identify potential problems of misspecification or inconsistencies in the Guidelines. While this is a significant research undertaking, it is both critically important and achievable.
- The mixed stock nature of NE groundfish and many other fisheries is a reality. Preventing overfishing of each individual stock in a mixed stock fishery is likely to result in forgone yield and potentially loss of net benefits to the Nation. In order to mitigate potential losses while maintaining safeguards to prevent irreversible damage to any individual stock, scientific analysis of the biological, economic, and social dimensions of the mixed stock exemption should be explored.
- The SSC recommends that the reasons for the unharvested commercial ACLs be explored.

As noted above, there is a large role for social scientists in ecosystem based fishery management. Virtually all definitions of marine EBM share at least three common elements: (1) a commitment to establishing spatial management units based on ecological rather than political boundaries, (2) consideration of the relationships among ecosystem components, the physical environment, and human communities, and (3) the recognition that humans are an

integral part of the ecosystem (NMFS EBFM brochure). The NEFMC SSC is well positioned to fulfill this role with the new social scientists on the committee.

During this past year, the NEFMC SSC has been tasked with addressing uncertainty when recommending acceptable biological catches for a number of stocks. The SSC has met with the plan development teams (PDTs) to provide methodological guidance on how to best address uncertainty in each situation. These interactions have been productive and informative to both groups. For the skate complex, a new discard mortality rate was used in both the stock assessment and the calculation of ABC. The need to consistently apply the same rate throughout all the calculations was clearly demonstrated in this case.

For the whiting stocks (red hake, silver hake, and offshore hake), the review panel rejected all analytical assessments, so no risk analysis was possible. This is because the trade-offs between future catches and changes in stock abundance could not be estimated. Instead, the uncertainty in the overfishing limit was characterized by the uncertainty in both the survey abundance and relative Fmsy. The ABC was then calculated for a range of risk tolerances relative to the probability of overfishing. These calculations led to ABCs which were much larger (5-9 fold) than recent catches. The SSC advised that a gradual increase in catch would be preferred to a large sudden increase in catch.

For the groundfish stocks in the Northeast Multispecies FMP, the PDT was augmented with additional members to address concerns about medium-term (5-7 years) projections. The augmented PDT conducted a number of simulation studies examining the performance of projections starting at earlier points in the recent assessments (retrospective peels). The results indicated that uncertainty in the initial population abundance at age estimates combined with incorrect future recruitment assumptions and changes in mean weights and selectivity at age caused poor performance of these medium-term projections. This led to the need for update assessments because the medium-term projections were not deemed sufficiently reliable to set ABCs.

The new update process for stock assessments will be applied this winter to twelve groundfish stocks which were last assessed in GARM III, which was held in 2008. The process has an assessment oversight panel consisting of the chairs of the NEFMC and MAFMC SSCs (or their delegate if the chair is a NMFS employee) and a senior stock assessment scientist from the Center. These three individuals will review plans provided by the NMFS lead scientists on how they will update the assessments. The key feature of these plans is the sequence of fallback positions if the standard "turn-the-crank" update fails for any reason. These fallback positions will only be examined as necessary. These update assessments will have reduced terms of reference and documentation requirements compared to the standard review process. It remains to be seen how the opposing needs of speed, openness, transparency, and inclusiveness are balanced.

Finally, the need for a risk policy team to address overarching questions regarding management under the new MSA has become apparent. This team is still being formed but will include

representatives from the Council, SSC, Council staff, Science Center, and Regional Office. The team will examine trade-offs between different types of risk, to both the stock and the fishery. This will require a holistic approach to address issues ranging from data collection to estimation of uncertainty to implementation of management actions. However, as noted above, the team is not expected to create a single rule to be applied to all FMPs, but rather a set of guiding principles that will be interpreted for each specific FMP.