Development of an in-season discard estimation methodology for monitoring of Northeast groundfish stocks

In February 2010 the Northeast Fisheries Science Center (NEFSC) and Greater Atlantic Regional Fisheries Office (GARFO) developed a new method for estimating in-season discards. The initiative was prompted by large-scale changes to the in-season monitoring of the Northeast United States groundfish fishery brought about by Amendment 16 to the Large-Mesh Multispecies Fisheries Management Plan (FMP) and the national transition to Annual Catch Limits (ACLs). The revised method was tested against the established 35-day rolling average, through a range of simulation studies. The revised cumulative method is a simple, robust, and unbiased way of calculating discards and also, importantly, minimizes the difference between the quota monitoring method and the estimate used in assessments. Since the methodology would have impacts on the process used for estimating in-season rates for New England and the Mid-Atlantic fisheries, it was important that the methodology underwent a peer review. A summary of the peer-review terms of reference and contributed working papers are provided below. Additional information on the peer-review can be found at http://www.nefsc.noaa.gov/groundfish/discard/.

Terms of Reference

1. Compare and contrast the performance with alternative estimators of total discards with respect to precision and accuracy.
2. Evaluate impacts of trimming observations (e.g., large discard events) on the magnitude of bias and measures of precision.
3. Examine the cumulative method and temporally stratified cumulative method (with various time steps and discarding patterns) and recommend a preferred method with consideration of the following:
    a. Within-year pattern of precision and bias, including a review of historical data used to estimate landings and discards (precision/accuracy).
    b. Feasibility/practical aspects, particularly implications of stratum size for small sectors and the ability to derive obtain fine-scale measures of total discard and its uncertainty.
    c. Estimate the probability of premature closure.

4. Provide guidance of methods to measure uncertainty of the preferred method (e.g., asymptotic vs. bootstrap estimates of variance).
5. Provide guidance on risks of alternative manage ment actions given the uncertainty and/or behavior of the preferred discard estimation method. In particular, consider the costs to industry/sector from premature cessation of fishing and the risk to the resource from excess harvests.
6. Consider implications of finer-scale stratification on performance of estimators that might be required for sector-specific discard rates and will be required for multi-stock species.

List of working papers

1. Susan Wigley (NEFSC, PDB). Methods to determine discards from observed trips, 18p.
2. Paul Nitschke (NEFSC, PDB). Estimating in-season discards from the Northeast United States groundfish fishery: Discard estimator performance simulation study (Part I), 45p.
3. Michael Palmer (NEFSC, PDB). Estimating in-season discards from the Northeast United States groundfish fishery: an investigation of the separate ratio method (Part II), 43p.
4. Fishery Statistics Office (GARFO). Review of the coefficient of variation (CV) for the moving average discard estimation methodology, 6p.
5. Fishery Statistics Office (GARFO). Transition discard rate methodology summary, 5p.
6. Michael Lanning (GARFO). Transition discard adaptive alpha method, 7p.
7. Susan Wigley (NEFSC, PDB). Assumed discard rate analysis, 34p.
8. Michael Palmer (NEFSC). A standard method to apportion groundfish catch to stock area for the purpose of real time quota monitoring under Amendment 16, 37p.