



*Conserving Ocean Fish and Their Environment  
Since 1973*

MEMORANDUM

**To:** Members & Staff,  
Herring Oversight Committee, New England Fishery Management Council  
**From:** Ken Hinman, President *KH*  
**Date:** March 13, 2009

**RE: NS1 Guidelines**

As you know, the National Marine Fisheries Service (NMFS) issued new Guidelines effective February 17, 2009 for implementing annual catch limits consistent with the Magnuson-Stevens Act's National Standard 1 and new provisions of the Act as reauthorized in 2006.<sup>1</sup> Each Regional Fishery Management Council is responsible for revising its existing Fishery Management Plans to specify annual catch limits consistent with the Guidelines, by 2010 for fisheries experiencing overfishing, and by 2011 for all others.

The New England Council is currently engaged in preparing Amendment 4 to the Atlantic Herring Fishery Management Plan (Herring FMP) and, included in this process, will be developing and compiling Annual Catch Limits (ACL)/Accountability Measures (AM) alternatives.

Of particular relevance to the Herring FMP, the NS1 Guidelines for the first time provide the councils with specific guidance on considering ecological factors in specifying the Optimum Yield (OY) from a fishery. OY is established to provide the greatest benefit to the Nation, which now specifically identifies benefits to the marine ecosystem resulting from "maintaining adequate forage for all components of the ecosystem." [600.310(e)(3)(iii)(C)]

Among the ecological factors to be considered in setting ACLs are impacts on forage fish stocks and predator-prey interactions. These factors are to be "quantified and reviewed in historical, short-term and long-term contexts. Even where quantifications of...ecological factors is not possible, the FMP still must address them in its OY specification." [600.310(3)(iv)]

Further, "(s)pecies interactions that have not been explicitly taken into account when calculating MSY should be considered as relevant factors for setting OY below MSY. In addition, consideration should be given to managing forage stocks for higher biomass than  $B_{MSY}$  to enhance and protect the marine ecosystem." [600.310(e)(3)(iv)(C)]

<sup>1</sup> 50 CFR Part 600. Magnuson-Stevens Act Provisions; Annual Catch Limits; National Standard Guidelines; Final Rule. Department of Commerce. January 16, 2009.

Based on the above cited changes to the National Standard 1 Guidelines, the New England Council should review and evaluate its Herring FMP and identify needed changes to conform to the new guidance, and these changes should be adopted into the FMP through Amendment 4.

In reviewing the Herring FMP and the Amendment 4 Draft Discussion Document, which provides information on how herring is accounted for as a forage fish in the current specification process, we note the following changes should be considered and implemented by the Council:

- 1) The Council should explicitly take into account impacts of the fishery on forage fish stocks and predator-prey interactions in its OY/ABC specification. The estimate of the natural mortality rate (.2), which has been used in all herring stock assessments since the FMP was completed in 1998, attempts to quantify what portion of the standing stock is consumed by predators under prevailing conditions. It does not account for predator demands or needs over time and space. It also does not account for changing predator biomass, which is an issue of particular relevance to the Gulf of Maine-Georges Banks regions where predator populations of demersal fishes and marine mammals are changing substantially.<sup>2</sup> In other words, natural mortality rate estimates assist in determining what fishing mortality rate is allowable in order to prevent overfishing and achieve the plan's targets, both reference points developed in a single-species context. What they do not do is determine whether or not adequate forage is available for all components of the ecosystem, especially components that are rebuilding. New, ecological reference points should be developed that identify the biomass of herring necessary to provide adequate forage for populations of all significant predators at their optimum levels. (see also #3 below)
- 2) We applaud the Council for acknowledging the importance of accounting for herring as a forage fish in determining OY in the Herring FMP objectives (revised in Amendment 1):

Objective 5 - Provide for long-term, efficient, and full utilization of the optimum yield from the herring fishery while minimizing waste from discards in the fishery. Optimum yield is the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, taking into account the protection of marine ecosystems, including maintenance of a biomass that supports the ocean ecosystem, predator consumption of herring, and biologically sustainable human harvest. **This includes recognition of the importance of Atlantic herring as one of many forage species of fish, marine mammals, and birds in the Northeast.**

Even in the absence of a quantifiable determination of ecosystem needs, such as predator demands, the Guidelines require that the Council explain how it is addressing these ecological factors in its OY specification. The Council should specify what ecological factors it has considered in setting OY; set the target

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<sup>2</sup> Overholtz, W. J. and Link, J. S. 2007. Consumption impacts by marine mammals, fish, and seabirds on the Gulf of Maine-Georges Bank Atlantic herring (*Clupea harengus*) complex during the years 1977-2002. ICES Journal of Marine Science, 64: 83-96.

population sufficiently higher than  $B_{MSY}$  to enhance and protect the species' role in the marine ecosystem; and, in establishing a buffer between OY and MSY (and/or between the ACL and ABC), explicitly describe the buffer as a precautionary measure to maintain adequate forage for the ecosystem.

The plan should not simply subsume accounting for ecosystem needs under the current catch-all umbrella buffer between MSY and OY that is primarily aimed at addressing uncertainty in the stock assessment. (There are two kinds of uncertainty used to set the catch lower than the overfishing limit. The first is scientific uncertainty, which is the buffer between the OFL and the ABC determined by the SSC. This is typically uncertainty about the accuracy of the stock assessment and the estimate of MSY. The second is management uncertainty – the ability of management measures to ensure the ABC is not exceeded - which is the buffer between the ABC and the ACL determined by the council. Neither explicitly addresses uncertainty about predator needs, now or in the future.) One way for the Council to address this would be for the SSC to quantify to the extent practicable predation in its assessment and then include in its recommended buffer an additional set-aside either based on uncertainty in predation needs or as a contribution to rebuilding of predator populations to optimum levels.

- 3) The corollary to maintaining a forage population higher than  $B_{MSY}$ , as the Guidelines recommend, is to set the overfished threshold higher than  $\frac{1}{2} B_{MSY}$ . This threshold was established in order to preserve a minimum population (usually spawning stock) for use in rebuilding the stock should it become overfished. The Guidelines specifically single out forage species as needing to be maintained at higher levels because of their unique role in the ecosystem. (Biological Reference Points for Atlantic herring change dramatically when predation is explicitly taken into account, with the biomass target ( $B_{MSY}$ ) increasing by a factor of 1.6, from 896 kt to 1,452 kt, based on a study led by William Overholtz of the Northeast Fisheries Science Center.<sup>3</sup>) Setting a minimum stock threshold strictly on the basis of the stock's ability to rebound after overfishing allows fishing to continue until the population is as low as one-fourth an un-fished population ( $\frac{1}{2} B_{MSY}$ ), which would have significant adverse impacts on predators. The Council should amend the Herring FMP to set higher targets *and* thresholds “to enhance and protect the marine ecosystem.”

Thank you for your consideration. I or NCMC executive director Pam Lyons Gromen would welcome the opportunity to discuss these recommendations with the Herring Plan Development Team, the Herring Oversight Committee, and the Council.

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<sup>3</sup> Overholtz, W.J., L.D. Jacobson, and J.S. Link. 2008. An Ecosystem Approach for Assessment Advice and Biological Reference Points for the Gulf Of Maine-Georges Bank Atlantic Herring Complex. North American Journal of Fisheries Management 28:247-257.