



New England Fishery Management Council

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To: Paul J. Howard, Executive Director
From: Dr. Steve Cadrin, Chairman, Scientific and Statistical Committee
Date: June 23, 2009

Subject: Herring Amendment 4: Processes for Determining ABC, Annual Catch Limits and Accountability Measures

The Scientific and Statistical Committee (SSC) was asked to provide guidance on the process drafted by the Herring PDT and Herring Committee for specifying Acceptable Biological Catch (ABC) and for setting Annual Catch Limits (ACLs) and Accountability Measures (AMs) by management area, with consideration of the importance of herring as a forage species.

On May 1, 2009, the SSC reviewed two documents and associated presentations by the Herring Plan Development Team (PDT):

1. Amendment 4 to the Atlantic Herring FMP: ACL/AM Provisions (Draft).
2. Proposed Atlantic Herring Specifications, January 1, 2007 ó December 31, 2009

The SSC also heard the perspectives of several stakeholders on herring management issues, and a presentation entitled "How sensitive is the success of management of NW Atlantic herring to assumptions about stock structure and productivity?" ~~was presented~~ by Andy Rosenberg.

The PDT presented its proposed general specification process for determining ABC in the herring fishery management plan. More specific methods of deriving ABC will be considered after the updated stock assessment report is available from the Transboundary Resources Assessment Committee meeting (June 8-12, 2009, St. Andrews New Brunswick). In general, ABC will be less than the catch associated with overfishing (OFL) to account for scientific uncertainty. Major sources of scientific uncertainty are imprecise trawl survey indices, incomplete spatial coverage of acoustic surveys, estimates of natural mortality, and mixing of discrete stock components; all of which should be considered in the buffer between OFL and ABC.

The Annual Catch Limit (ACL) will be less than ABC, accounting for expected catches from state waters and Canada. Management uncertainty should be considered to avoid triggering Accountability Measures (AMs) for exceeding the ACL. Sources of management uncertainty include imprecise or biased estimates of catch due to limited observer coverage and in-season monitoring of catch. The proposed plan may provide for a closure of the fishery when catch equals 100% of the ACL. The SSC recommends that a fishery closure should occur at a lower percentage of the ACL to avoid overages associated with incomplete data or inaccurate estimates of in-season catch. For example, the current procedure of closing the directed fishery when 95% of the ACL is reached, and when 92% of ACL is reached in areas with a research set-aside or a similar approach, should be continued. Allocation of ACLs to management areas should incorporate information on connectivity among herring spawning components and proportion of biomass in each component.

The role of herring as a forage species can be considered in the management system in several ways. Optimum Yield (OY) is defined in the Magnuson-Stevens Act to be Maximum Sustainable Yield as reduced by ecological factors (and other factors). The current definition of Optimum Yield in the herring fishery management plan accounts for consumption by other marine animal populations. However, the SSC recommends that consumption should be accounted for in the stock assessment as well as the fishery management system. A more holistic approach to considering consumption would include consumption of other forage species and predation by herring simultaneously. A multispecies approach to forage should also consider bycatch of river herring in the Atlantic herring fisheries.

SSC Recommendations:

- 1. The general approach to specifying Acceptable Biological Catch for herring in the proposed Amendment conforms with-to the principles of the Magnuson-Stevens Act and National Standard guidelines.**
- 2. Management uncertainty should be considered to avoid Accountability Measures for exceeding the ACL, particularly the imprecision or bias associated with in-season monitoring of catch.**
- 3. Allocation of ACLs to management areas should incorporate information on connectivity among herring spawning components and proportion of biomass in each component.**
- 4. Consumption of herring by other species should be accounted for in the stock assessment as well as the fishery management system.**