

**RECOMMENDATIONS**  
**Scientific and Statistical Committee Meeting**  
**June 19, 2003**  
**Holiday Inn, East Boston, MA**

**SSC Attendance:** Andy Rosenberg (Chair); Patrick Sullivan; Vaughn Anthony; Jean-Jacques Maguire; Desmond Kahn; John Hoenig; Alexei Sharov (Victor Crecco and Brian Rothschild absent).

**Others in Attendance:** Bill Overholtz (NEFSC); Mike Armstrong (MA DMF, ASMFC Scientist); Mark Gibson (RI DFW, ASMFC Scientist); Chris Kellogg, Lori Steele, Mike Morin (NEFMC Staff); Matt Cieri and Lew Flagg (ME DMR); Eric Dolin (NMFS); Mary Beth Tooley (ECPA), Billie Schofield (NORPEL), Tom Swim (New London CT).

**Term of Reference #1: Provide management advice regarding appropriate reference points ( $MSY$ ,  $B_{MSY}$ ,  $F_{MSY}$ ) for the Council to utilize in the development of Amendment 1 to the Herring FMP.**

- The current estimate of  $MSY$  in the Herring FMP (317,000 mt) is too high and does not seem sustainable based on historical landings and stock status data. This reference point is not precautionary.
- Current estimates of  $F_{MSY}$  from the recent analysis of 0.20-0.25 are reasonable and do not appear to be as sensitive to the differences between the US and Canadian assessment models.
- While yields under  $F_{MSY}$  may not jeopardize the stock complex as a whole, special considerations must be made for individual spawning components. The areal distribution of the herring catch is very important in terms of ensuring that individual stock components will not be overfished under an overall yield that may not jeopardize the entire complex.
- A conservative (lower bound) estimate of  $MSY$  may be the average catch over the most recent 15-year period. However, expansion of the fishery beyond this level may be appropriate in some areas. To determine where expansion of the fishery is appropriate, a risk assessment should be conducted. The risk assessment should consider the historical distribution of the catch as well as the distribution of individual stock components based on the trawl survey. Expansion of the fishery may be appropriate in areas where the relative risk of overfishing an individual stock component is low.

**Term of Reference #2: Provide advice on the qualitative risk (low, medium, high) of a significant decline in herring biomass if projected levels of catch from the two TRAC assessments are removed during 2004 and 2005.**

- The SSC was not able to evaluate the risk associated with the individual projections from the two stock assessments.
- In general, for the stock complex as a whole, current catch levels appear to be producing a biomass that is at least stable, if not increasing over time.

- No severe declines in the stock complex should be expected by maintaining current levels of catches over the short-term; however, the current concentration of harvest in the inshore Gulf of Maine is of concern and may be excessive.
- The areal effects of the catch distribution and risks to individual stock components may overwhelm any potential risks to the resource as a whole. It is critical that the risk associated with overfishing a specific stock component be minimized.
- While there is little risk associated with maintaining current catch levels over the short-term, monitoring the movement of larger year classes through the fishery will be important to ensure sustainable catches over the long-term.

**Term of Reference #3: Comment on methods that might be used to resolve the discrepancies between the herring FPA and VPA models from the recent TRAC.**

- The herring stock assessment scientists are already pursuing the appropriate methods for identifying, if not resolving, the discrepancies between models. But a better understanding of the data and modeling issues involved will take time. The uncertainty reflected between model estimates may in part reflect the inherent uncertainty in the processes of herring growth, survivorship, and recruitment. Different models emphasize different components of the data and so reflect different aspects of that uncertainty. For now an acknowledgement that current harvest levels do not seem to be driving the stock down, that strong year classes may be supporting these current harvests, and that some stock components may be more heavily exploited than others should guide the development of management plans for this resource.
- It will be important to try to identify and track, as much as possible, the different stock components. Management by individual stock component may never be achievable, but developing indices of how different components respond to the management of the resource as a whole may be a step in the right direction.
- Additional tagging studies were suggested to explore uncertainties in stock structure and the impacts of harvest mortality on different components of the stock. Although tagging studies may be problematic for assessing survivorship for a species like herring, they may be helpful in identifying the stock components and the proportion of these components taken in the fishery on a seasonal basis.
- The retrospective pattern in the ADAPT estimates indicates that something is amiss. It is often difficult, however, to pinpoint just what the problem is. One problem may be in the uncertainty associated with ageing older fish. A number of suggestions were raised to explore this including adding more ages to the FPA model or pooling over more ages in the ADAPT. Weighting inputs to the model differentially, or even running the models with only individual indices, should help shed some light on model sensitivity to data inputs as well.
- The spikes in the strengths of certain year classes should be examined to determine what effect, if any, they have on model estimates and on the projected sustainability of the stock.
- The ADAPT VPA model might be calibrated to the biomass levels from the acoustic surveys to make the results more comparable to the FPA results.