Atlantic Menhaden Technical Committee
February 8, 2005

Meeting Summary

The Atlantic Menhaden Technical Committee met on February 8, 2005 in Alexandria, VA. Alexi Sharov from the Maryland Department of Natural Resources was elected Vice-Chair of the Technical Committee (TC). The TC met to address a number of charges from the Management Board meeting in November 2004. Below are the charges (in bold) as well as the responses from the TC.

Advise the Management Board on likely causes for low recruitment in Chesapeake Bay and a comparison of recruitment trends in other estuaries along the coast.

Some likely causes for low recruitment in no specific order are:
- Low spawning stock biomass, however, this is unlikely given data from tagging studies (i.e. no apparent relationship between resident fish in Chesapeake Bay and the following years recruitment).
- Larvae not being brought into Chesapeake Bay (transport).
- Poor survival to at least several months old (unfavorable conditions of salinity, or temperature, mismatch of food, disease).
- Predation.
- There is emerging evidence that climate forcing may play an important role.

Given reduced recruitment of menhaden in the Chesapeake Bay due to changing environment, there may be an impact on the future spawning stock biomass, if not compensated for by other areas. There is some suggestion of an increase in recruitment in the northern areas, no trend in North Carolina and no indices in the Mid Atlantic. The trend in other forage species in Chesapeake Bay showed a similar decline.

Review the Stock Assessment model; evaluate the issues of inverse catchability, weighing factors for recruitment indices, and total morality and advise the Management Board on the inclusion of ecological reference points in the model.

The model does not explicitly include inverse catchability, however it is included implicitly through catch age composition.

Weighting of Indices
The model is heavily driven by the age composition of the reduction fishery, and the weighting schemes of indices will have less of an effect on model output on reference points.

Total Mortality (Z)
In the current configuration of the stock assessment model, natural mortality is constant across years and cannot be used to determine changes in total mortality in response to predation. A level of predator abundance cannot be estimated in the current single species

model and therefore calculations of ecological reference points are not feasible at this stage. Ecological reference points may be addressed by the Multispecies Virtual Population Analysis (MSVPA) after it is peer reviewed.

Evaluate Ecological Reference points and recruitment indices for Chesapeake Bay and advise the Management Board on the incorporation of Chesapeake Bay values in the stock assessment model or whether a separate stock assessment model can be developed for Chesapeake Bay.

Given the lack of information on stock structure (i.e. stock exchange rate, assumption of closed population), the TC believes a separate stock assessment model cannot be developed for the Chesapeake Bay at the present time. Modeling can be done in theory, but the current data does not support it. In the current assessment model, catch and size composition is strongly represented by Chesapeake Bay data, and juvenile and adult indices used to tune the model are primarily weighted in the Chesapeake Bay. Ecological reference points can be developed coastwide using total mortality after successful peer review of the MSVPA scheduled for Fall 2005.   It should be recognized that Menhaden reference points will be contingent on management decisions for the predators involved. Management can set ecological reference points without MSVPA analysis as an allocation issue. Other important forage species are managed using this approach both in the U.S. and other countries.

Advise the Management Board if localized depletion of menhaden stocks in Chesapeake Bay is occurring or likely to occur under current management of the coastwide stock of menhaden

There is a concern about localized depletion of age 0 menhaden in the Chesapeake Bay (juvenile abundance indices). This depletion is on a long-term scale from year to year and is driven by reduced recruitment and possible increased predation. Catch at age data shows that fishery removals on this age class in the Chesapeake Bay is not a potential cause for depletion. There is a lack of reliable data to determine if localized depletion within season for all ages and annually for ages 1s and 2s is occurring. There is currently no apparent link between the number of age 2 and 3 resident menhaden and the following years recruitment to the Bay.

Evaluate whether the effects of time and space openings/closures of fishing harvest caps in Chesapeake Bay and coast wide can be modeled, measured or monitored well enough to be considered for management tools.

The MSVPA model can be used to develop a coastwide multispecies maximum sustainable yield (MSY) level. Optimum yield (OY) can be decided by the Management Board and area specific TACs can be derived from historic catch. This MSY cannot be specified using the single species approach. Setting an OY coastwide that can be taken from a smaller geographic area is extremely risk prone. Likewise, setting a specific catch cap for a particular area and not for other areas is also risk prone.