



New England Fishery Management Council

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MEMORANDUM

DATE: September 18, 2012
TO: Herring Committee/Council Members
FROM: Lori Steele, Herring PDT Chairman
SUBJECT: **SSC Recommendations Re. Atlantic Herring Acceptable Biological Catch (ABC) for 2013-2015**

The Council's Scientific and Statistical Committee (SSC) met on September 12-13, 2012 to review the results of the recent Atlantic herring benchmark stock assessment (SAW/SARC 54, June 2012) and develop recommendations regarding the acceptable biological catch (ABC) specification and ABC control rule for Atlantic herring for the 2013-2015 fishing years. At this meeting, the SSC considered information provided by the Herring Plan Development Team (PDT) describing issues related to scientific uncertainty and exploring two possible approaches for specifying ABC for 2013-2015 (see *Draft Discussion Document: Atlantic Herring Fishery Specifications for the 2013-2015 Fishing Years*).

The SSC considered the ABC approaches outlined by the Herring PDT, discussed other possible approaches, and agreed to support both PDT approaches as alternatives for ABC and the ABC control rule for the 2013-2015 fishing years. The first approach specifies ABC for all three years based on fishing each year at 75% F_{MSY} . The second approach specifies ABC at the same catch level for all three years (i.e., a "constant catch" approach). The SSC concluded that because of the current ("rebuilt") status of the Atlantic herring resource, these two approaches for setting ABC for 2013-2015 are nearly equivalent from a biological perspective, i.e., both approaches are expected to produce similar SSB values in 2015. Additional information will be provided in the SSC Report from this meeting.

While both approaches to specifying ABC are nearly equivalent from a biological perspective, there may be pros and cons to consider, and the outcome under one approach versus the other may be more preferable for the operation of the fishery. The Herring Committee and Council should review the PDT information, consider the SSC advice, and select one of the ABC alternatives for the 2013-2015 fishing years. Additional discussion and projections based on the overfishing limit (OFL) and ABC under both approaches are provided in this memo as well as the Draft Discussion Document for the 2013-2015 Specifications.

1. Setting ABC as Projected Catch at $F=75\% F_{MSY}$

This approach has been a default ABC control rule utilized by the SSC in some cases to address scientific uncertainty. ABC would be set each year as the projected catch associated with fishing at $75\% F_{MSY}$ (rounded to the nearest thousand mt). Under this approach, scientific uncertainty is addressed by applying a fishing mortality rate (i.e., $75\% F_{MSY}$) in each year that is less than the rate associated with the OFL (i.e., F_{MSY}). A consequence of this method is that the buffer for scientific uncertainty is distributed among the three years, with ABC always less than OFL.

75% F_{MSY} APPROACH

YEAR	2013	2014	2015
OFL (mt)	169,000	127,000	104,000
F	0.2	0.2	0.2
SSB (mt)	523,243	409,309	354,559
ABC (mt)	130,000	102,000	88,000

**OFL values are derived from a unique projection that assumes catch associated with F_{MSY} is taken in every year (see SAW 54 Assessment Summary Report).*

OFL and ABC values have been rounded to the nearest thousand mt.

- In the short-term, this approach may result in more fishing pressure on the 2008 year class than the constant catch approach (described below) because the ABC for 2013 is higher using this approach. The 2008 year class is the largest on record and one of the primary sources of uncertainty associated with the SAW 54 assessment.
- The $75\% F_{MSY}$ method takes less catch over the three year period and therefore has a lower probability of exceeding F_{MSY} in 2015 than the constant catch approach.

2. “Constant Catch” Approach

This is similar to the approach that was utilized for setting ABC during the 2010-2012 specifications (average catch 2006-2008). In this application, however, ABC would be set for 2013-2015 at the catch level that is projected to produce a probability of exceeding F_{MSY} (i.e., overfishing) in 2015 that is equal to 50%. Under this approach, scientific uncertainty is accounted for by establishing a relatively large buffer between the OFL and ABC during 2013-2014, but no buffer in 2015.

CONSTANT CATCH APPROACH

YEAR	2013	2014	2015
OFL (mt)	169,000	136,000	114,000
F	0.17	0.22	0.27
SSB (mt)	533,289	411,951	338,957
ABC (mt)	114,000	114,000	114,000

**OFL values are derived from a unique projection that applies F_{MSY} in every year but assumes that catch in prior years is 114,000 mt (projection provided by the Herring PDT to support the SSC recommendations).*

OFL and ABC values have been rounded to the nearest thousand mt.

- Constant catch may allow for better business planning and more stability in the fishery and may be possible given the current (rebuilt) status of the stock. There may be economic trade-offs to consider, as catch is foregone in earlier years to allow for more catch in later years.
- In the short-term, this approach may result in less fishing pressure on the 2008 year class than the 75% F_{MSY} method because the ABC is lower in 2013. This reduced fishing pressure in 2013, however, is traded-off against slightly higher catches than the 75% F_{MSY} over the three year period, and consequently a higher probability of fishing at a rate higher than F_{MSY} in 2015. The probability that the stock size decreases below the biomass threshold, however, is very near zero across all three years for both approaches.

Summary of Trade-Offs

- The 75% F_{MSY} method takes less catch over the three years and therefore has a lower probability of exceeding F_{MSY} in 2015 than the constant catch approach. The constant catch approach, however, takes less catch in 2013 and therefore does more in the short-term to buffer against uncertainty regarding the size of the 2008 year class. In summary, the 75% F_{MSY} method has less “risk” in the long-term while constant catch has less “risk” in the short-term. Selection of the preferred method will involve consideration of these tradeoffs.
- Catches from the 75% F_{MSY} method are variable from year to year while the constant catch approach provides stable yields. Again, however, the stable yields of the constant catch method come at the cost of a greater probability of exceeding F_{MSY} in 2015 than the 75% F_{MSY} method. Constant catches may be preferable to the fishing industry and could be chosen if the risk of exceeding the overfishing threshold is determined to be acceptable.

