



## New England Fishery Management Council

50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116  
John F. Quinn, J.D., Ph.D., *Chairman* | Thomas A. Nies, *Executive Director*

### MEETING SUMMARY

#### HERRING PLAN DEVELOPMENT TEAM

October 4, 2016

The Herring Plan Development Team (PDT) met on October 4, 2016, primarily to discuss alternatives and analyses being prepared for both Amendment 8 and Framework 5 to the Atlantic Herring Fishery Management Plan (FMP).

**MEETING ATTENDANCE:** Ms. Deirdre Boelke (Herring PDT Chair); Dr. Rachel Feeney (Council staff); Mr. Tim Cardiasmenos, Mr. Daniel Luers, Mr. Brant McAfee, Ms. Carrie Nordeen (NMFS GARFO staff); Dr. Jonathon Deroba, Dr. Min-Yang Lee, Ms. Sara Weeks (NEFSC staff); Ms. Renee Zobel (NHFG) Dr. Matthew Cieri (MEDMR); and Mr. Micah Dean, (MADMF).

About ten members of the public attended.

Absent: Dr. Madeleine Hall-Arber (MIT Sea Grant)

#### **KEY OUTCOMES**

- The PDT provided input about ways to present MSE control rule output analyses at Workshop #2 scheduled for December 7-8, 2016.
- The PDT reviewed analyses to support development of alternatives in Framework 5, an action to potentially modify GB haddock accountability measures. A range of draft alternatives were developed, but more analyses will be prepared by a subset of PDT members to further refine the ideas generated to date.
- The PDT reviewed preliminary analysis of the initial range of alternatives developed to date to address localized depletion.
- The PDT briefly reviewed an outline of a Draft Affected Environment being developed for both Framework 5 and Amendment 8. Staff will work with individual PDT members to complete analyses planned.
- The PDT discussed the current provision in the FMP that would allow herring TAC from one area to be moved to another area in-season. The PDT plans to prepare a background memo for the Committee to answer some questions that came up about this provision at the August 2016 Committee meeting.

#### **REVIEW OF UPDATED MSE/CONTROL RULE ANALYSES AND INPUT ON POTENTIAL PRESENTATION APPROACHES FOR WORKSHOP #2**

Staff announced the workshop dates and location, December 7-8 in Portsmouth, NH. There may be an ASMFC Menhaden Technical Committee meeting during that time that could be a conflict for a couple PDT members, but there is no flexibility to move the workshop dates due to other NEFMC meetings. Dr. Jon Deroba presented an update of the MSE work and the PDT provided several suggestions for presenting all the results at the workshop and several take homes were agreed to.

1. The workshop should focus on considering the results of 4 operating models that do *not* assume assessment bias. Currently, stock assessments undergo a review process to determine their acceptability for setting catch advice. Thus, choosing a control rule by focusing on the operating models with assessment bias would be redundant with the assessment review process. Assessment bias is a valid concern; however, and so the performance of some of the preferred control rules should be presented with and without assessment bias to give a sense of the difference.
2. The recruitment and natural mortality operating model characteristics for Atlantic herring are linked and will be presented as a “high” and “low” productivity state as a way to simplify presentation and increase understanding.
3. Out of all the possible combinations of control rules and operating models tested, less than 10% lead to overfishing scenarios. The proportion of years the fishery would need to close is also 10% or less, except under extreme situations. Thus, these and some other metrics are not informative for selecting harvest control rules, but values should be reported for these metrics when some preferred control rules are identified. The most informative output metrics are Yield/MSY, SSB/unfished SSB (or /SSBmsy), and interannual variation in yield. These more informative metrics generally do not vary much among the operating models for a given control rule. Consequently, results could be presented for a single operating model (Status Quo was suggested: high natural mortality, low steepness, and recent slow weight), and then once some preferred control rules are identified, their performance among all operating models could be compared to ensure robust options are selected.
4. For the most part about 60-70% of the population is expected to be Age 1 and age 2 herring no matter what control rule is selected. Because the fishery does not target year1 fish there is not much variation. Thus, this output metric is not informative for selecting preferred control rules.
5. The MSE is analyzing six generic control rules, as recommended by the attendees of Workshop #1: biomass based, biomass based 3-year block, biomass based 5-year block, biomass based 3-year block but catch cannot change more than 15% per year, and constant catch, and conditional constant catch (cannot fish harder than 50% of F at MSY). The Status Quo control rule is a special case of the biomass based 3-year block variety. Above 50% of SSBmsy, catch is equal to that corresponding to 90%Fmsy (a value consistent with the average target F rates during the last two specification cycles). Below 50%SSBmsy, catch is specified corresponding to a target fishing mortality rate that declines linearly to a target of 0.0 at 0 biomass. Thus, the Status Quo control rule never closes the fishery, which is intended to allow for some inevitable amount of bycatch and incidental mortality.
6. In general biomass based control rules have more flexibility, can get higher yields compared to constant catch. For constant catch control rules, yield never exceeds 80% of MSY and that is a tradeoff of more constant catch from year to year.
7. Results should be presented in relative terms (e.g. yield/MSY, SSB/unfishedSSB) and in absolute terms (e.g. yield and SSB in metric tons) to contextualize for the workshop attendees.
8. It would be helpful if the workshop could identify outcomes that are considered unacceptable.
9. Plotting the results in color would improve readability.
10. Clearly identify what region of each plot is considered desirable (e.g. high and right are control rules that produce high yield and biomass)
11. The workshop should focus on considering scenarios that meet legal requirements. Scenarios that produce conditions that would be illegal should be separated out, yet described sufficiently so that illegal conditions can be avoided.

### ***REVIEW OF ANALYSES TO SUPPORT DEVELOPMENT OF ALTERNATIVES FOR FRAMEWORK 5***

Staff reviewed the potential range of alternatives discussed by the PDT via conference call in September. Mr. Brant McAfee presented an initial look at how the AM alternatives would perform under the current monitoring system using observed haddock catch rate data from observed herring tows from 2011-2015. These analyses attempt to quantify the estimated outcomes of the AMs, in terms of whether the fishery would be able to stay open longer, by how much, and would haddock catch levels be lower or not. Several constraints of the data were explained, primarily that the simulations assume that the same amount of herring catch ( $K_{all}$ ) could be harvested in remaining areas post trigger of an AM.

In summary, while the krigging exercise suggested that there are significant differences in haddock catch rates by area and season, in practice the AM alternatives may not substantially reduce the estimate of haddock catches compared to No Action because of how the TAC is monitored, the timing of AMs, and the nature of monitoring an in-season TAC in a high volume fishery. Therefore, even though the krigged models show that bycatch rates of haddock are much higher in GF closed areas, the bycatch rate calculated by the cumulative method for the closed areas is lower than the average bycatch rate for the entire GB stock area, which is counter to the previous analysis. Because it is a cumulative rate, what these analyses could be showing is that there could be some trips with low rates within the closed areas at the start of the fishing year, then some with high catch rates in the middle of the season when catches tend to increase in the summer, but because the rate is cumulative the higher catch rates are diluted by the earlier trips. While this may be masking changes in catch rates, this is how the system would work in practice as the sub-ACL is currently monitored. The PDT struggled with the best way forward; one analysis is identifying relatively clear signals of seasons and areas with higher bycatch rates, but the analysis that would be used to actually monitor the sub-ACL suggests the estimate of haddock catch may actually be higher than No Action because the impact of the AM may be truncated.

The preliminary analyses show that under the cumulative method, a new discard rate would need to be calculated after the AM is triggered in-season, so if higher discards were observed in the beginning of the year, that estimate would stay fixed and never come down when more data is added with presumably lower bycatch rates later in the season. The PDT discussed that it was difficult to tease out trends in haddock bycatch from the analyses, because the results could be drowned out by the way data from the previous year needs to be used at the beginning of the season; the burn in of observed bycatch rates from the previous year. Also, the nature of these data make an in-season estimate of bycatch very challenging. The bycatch data are very noisy; there are many records with very low bycatch and a handful with relatively high bycatch. Therefore, the rate can jump up very quickly; because this is a high volume fishery, the pace of  $K_{all}$  coming into the system is very fast; a small change in the incidental catch rate can have a very large impact on the estimate of catch. Because of these monitoring constraints, it may be more straight forward to split the TAC if allowing a winter fishery is positive for the herring fishery, and positive for the haddock resource because bycatch rates are lower in the winter.

The PDT plans to complete several more analyses for this subject. First, bycatch rate inside versus outside each of the AM alternatives (Micah). Second, bycatch rate from historical observed tows through time, but not using cumulative method, instead just tracking the rate, not a cumulative estimate (Brant). Third, evaluate split of sub-ACL for No Action and maybe one more alternative? (Brant). Forth, should

we look at a higher sub-ACL since it is increasing in 2017? Fifth, what do we do about closed area stratification issue the PDT brought up? If these rates are higher and they are sampled more often how do we address that?

***REVIEW PRELIMINARY ANALYSES OF INITIAL RANGE OF ALTERNATIVES TO ADDRESS LOCALIZED DEPLETION IN AMENDMENT 8***

Staff summarized the initial range of alternatives and Dr. Min-Yang Lee presented preliminary estimates of prior herring landings from inside versus each closure alternative outside by month. The same VTR-observer data/maps were used to summarize landings in mt/year and percentage terms for three separate time frames: 2001-2005, 2006-2010, and 2011-2015. Landings within the 6 mile area in Area 1A have shifted seasonally. The largest effect of this alternative would be in May based on the most recent years, about 16-17% of all herring landings have occurred in this area for that season, showing the beginning of the Area 1B fishery. In general, that area TAC is harvested relatively quickly.

Next, Dr. Lee summarized the results relative to Alternative 2 – closure of Area 1A to MWT gear. The results for this alternative do not fit in the same time blocks as well based on the seasonal restriction put on MWT vessels on March 12, 2007; the area is closed from June 1 – Sept 30. For 2006-2010 MWT landings in Area 1A took place in April – November, and for some of those years MWT gears were prohibited in the area for 4 months (June-Sept). Since 2011, the only time MWT gear is in the area is October and November based on these data, about 85% of MWT fishing takes place in Area 1A.

The next suite of alternatives was discussed together, buffers in Area 1B, 2, and 3 at different distances from shore. In general, the MWT fishery focuses in Area 2 in the winter, landings are low in April, the summer fishery concentrates on GB and Area 1B, with a spike in landings in October when Area 1A opens to the MWT fishery. Overall, the plots are showing that fishing within 12 nautical miles is most important to the fishery during late fall and winter, which is not when user conflicts are expected to be highest for recreational fisheries, which tend to be highest in the summer. Herring MWT landings within 12 miles are highest during the months of November – February; therefore the highest impact of a closure would be the winter months, especially November and December. If there is an area closure during those months effort will likely shift spatially or temporally. The PDT discussed that effort shifts can have different impacts on bycatch species that will have to be considered, especially river herring and shad. For example, a buffer closure could have negative fence effects that could shift all inshore effort and concentrate it just outside the boundary, if that boundary happens to overlap an important ocean feature, the impacts could be intensified, e.g. the great south channel. The timing of the closure could have very different impacts on bycatch and other fisheries as well.

One PDT member noted that Area 1B landings may be getting drowned out because the areas are all together in this analysis (Area 1B, 2, and 3). There are other measures that affect this story as well, the TAC for Area 1A is usually harvested by November, and there are some restrictions on MWT gear in state waters already. The same general pattern exists for 25 miles and 50 miles, just a bit higher, and there are errors in the model that need to be recognized. The PDT discussed that there are no real differences between the 12, 25, and 35 mile buffers based on these analyses; and suggested it may be useful to see on one plot. A member of the public requested that alternatives be presented with fishery data together to

show the overlap better and better define what features would be inside and outside of different alternatives.

Next, the PDT discussed the potential of a fishery overlap analysis. Dr. Min-Yang Lee presented several methods that could be considered that compute an overlap metric. The PDT plans to start with the groundfish fishery because the data are also VTR based, and the food habits database could be queried to find the species that feed on herring, e.g. cod and pollock. The time period to select is challenging as well. The PDT discussed that a historical analysis could show areas and seasons where there are fishery overlaps, but other management measures have been implemented that could have confounding effects. Before identifying the time period, the PDT would need a better sense of the problem the Committee is trying to address, whether to characterize fishery overlaps in the past or present. If the aim is to solve current fishery conflicts the PDT recommends the focus be more near-term. Dr. Lee explained that VTR data goes back to 1996, but there are data limitations. For example, mandatory reporting for herring only began in 2000. Another PDT member recommended that two time periods be done, because so many changes have happened, current 2010/2011 to present, and historical going back to 2000, but they should not be lumped together.

Next the PDT discussed tuna and striped bass. The PDT has requested data from GARFO, monthly commercial tuna catch by broad reporting area and port. This will be very coarse, but may be the best available information. It may be possible to speak with stakeholders about fishing areas for tuna and there were some comments during scoping that identified most important areas, but some concern was expressed about how that information could be integrated. The PDT discussed that there could be some confounding effects, because the spatial scales of the fisheries may be very different, so you just end up seeing where one or the other fishery operates. Ultimately, if the mapping effort does not provide a meaningful spatial alternative, a fallback position could be a seasonal restriction if the data is not in the resolution needed. Mr. Dean suggested that maps could probably be defined for both the MA commercial and recreational striped bass fishery, but asked if the boat trips are the center of the conflict, or would shore fishermen be included as well. Rhode Island has a commercial fishery as well, Maine and NH do not, but they do not allow MWT fishing in state waters.

#### ***DISCUSSION OF DRAFT AFFECTED ENVIRONMENT SECTION FOR FRAMEWORK 5 AND AMENDMENT 8***

The PDT decided to discuss the Affected Environment via email. Two different sections will be prepared, with more sections needed for Amendment 8. The list of affected communities will be updated based on updated criteria, a sub-set of PDT members are working on that.

#### ***DISCUSSION OF THE CURRENT PROVISION TO ALLOW IN-SEASON TRANSFER OF HERRING TAC***

The PDT discussed the provision and decided to draft a memo back to the Committee explaining how this measure would work, the intent, and what would be involved. The PDT discussed that one of the original goals of the FMP was to limit overexploitation on smaller subcomponents. The area quotas are in line with that and because there is a mixture of fish at different times of year the TACs help reduce impacts on one spawning stock over another. In the fall the inshore and offshore stocks segregate to spawn, and in late spring/summer they mix. The PDT discussed that moving fish will have differential impacts on the subcomponents. The regulations do allow it but it would not be easy or fast. An EA is probably required

because the prior analysis is old, proposed and final rule required, and Council input. The PDT discussed that it would never be a static number that could be assessed upfront, so may not be possible to set it up in advance. The contribution of each stock changes every year, and it has changed over time. The next benchmark assessment may look at adding a spatial component, but it may not be functioning well enough to be considered for setting specs. There was a comment from the audience that quota should not be moved from area to area on a fast track basis; that would be opposed by many.

***FUTURE MEETINGS***

The PDT did not schedule a future meeting. After the October 20 Committee meeting a conference call may be scheduled.