Atlantic States Marine Fisheries Commission

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Atlantic Menhaden Stock Assessment Subcommittee
Conference Call Summary

May 9, 2014

Stock Assessment Subcommittee Members: Amy Schueller, Matt Cieri, Genny Nesslage, Alexei Sharov, Micah Dean, Joe Smith, Behzad Mahmoudi

ASMFC Staff: Mike Waine, Genny Nesslage

Public: Will Smith, Ron Lukens, Andre Bucheister, Bob O'Boyle, Aaron Kornbluth, Mike Prager, Ken Hinman, Jud Crawford, Erik Williams

1. Reviewed state implementation of Amendment 2 as it relates to biological sampling. Not all samples taken were ten-fish samples. For example, for PRFC, a total of 85 fish were aged. But 7/11 samples had <10 fish. Not all legible. May be OK if we stick with coastal/annual time step, but finer scale use may be problematic.

2. Update on tagging model (Will Smith)
   a. Data restricted to time when fishery occurred in all areas. Seasonal time step. Incorporated more of the re-entered raw data. M is fixed across space, F has spatial component.

   b.
   c. Limited to Sept/Oct and can test if southward migration is more likely in the fall and northward migration more likely in spring and summer
   d. Re-entered data had missing section – appears to be lost data (not key entry mistakes). Using all re-entered data except where binders lost and those gaps were filled in with the Coston report data.
   e. Age 1 probably not accurate (too high ~4.5). Assumptions being violated – tag loss and tagging mortality. 90% of tagged fish never seen again. 17% of fish might lose tag in tank over 1 month. Or fish may be migrating outside spatial domain of this model, although this is not typical for age 1s.
   f. Most age 1 fish are tagged in one of our boxes and don't move up north, so might be interpreted by model as mortality. If all age 1s tagged in south in spring, then expect number recovered in north in fall and model may think mortality. Describe/examine seasonal/spatial age distribution of tagged fish - **Will**.

g. Effect of prior on estimates of M. Developed from 2012 MSVPA estimates. Little effect of prior on age 1, more on age 2-4. Also looked at informative vs. uninformative priors and for every age, estimates using an uninformative prior are higher than estimates using an informative prior.

h. Discussed how to use in model/assessment: acknowledge age1 M biased by tag loss/mortality and use to scale Lorenzen where M plateaus in older ages (not use for age 1s), and use migration rates for spatial model. Note movement rates significantly increase if age1 M lowers.

i. Lambda (magnet efficiency) estimates were estimated weekly by factors and should be compared with estimates from model - **Joe**. Model is using salted tag data in model.

j. Look into fixing rho (tag loss parameter) in model at tank study value and also try borrowing other similar species tag return/loss and mortality estimates - **Will**.

k. Duration of study limits tag loss estimates. Model estimates covers both loss and mortality.

l. Plan to fix tag retention model issues first by looking into some of the topics discussed above. If those actions fail, then try estimating M externally and fix in tag return model, which is the backup plan if estimating internally doesn't work.

3. M backup plan (if MSVPA can't be fixed)
   a. We have produced Lorenzen curve scaled to the Dryfoos tagging estimate of M so far.
   b. Prefer to use Lorenzen curve scaled to tagging model once finalized.

4. Coastwide index methods
   a. Aligned by latitude and lagged timing relative to ChesBay.
   b. Tried logging data but didn't affect correlations in significant way.
   c. NC and NEFSC censored. NEFSC censored because of extremely rare occurrence of menhaden, and because the time series was not continuous; also, most sampling locations too far offshore, esp for age0s. NC reported problems with the use of their data for developing an index.
   d. SAS supported use of area weighting as proxy for productivity.
   e. YOY
      i. Option 1 (preferred at moment): area as proxy for productivity composite indices– use as base method. Create one index for 1990+ all indices and another MD-only 1959 to 1989.
      ii. Option 2: Conn method applied to all years and surveys
      iii. Option 3: glm of glms with area and gear as factor, 1990+. Use to test if/how gear differences and area weighting have effect.
      iv. Plan to bring all 3 to June and discuss. Incorporate in models as much as we can get done in time. Can revisit later.
   f. Adult indices
      i. Highly varying length of time series makes Conn method attractive. Not as interested in productivity differences among areas as in YOY index.
      ii. Censored FD indices and use FI sources in their stead. Lump trawl surveys together - correlated. VA shad censored because small area and not correlated

with other indices. Censor SC trammel and NC gill net because different gears and shorter time series than trawls overall.

      iii. Decision: use trawl indices and Conn method. Generated LF from 1986-2013 due to low #samps in previous years. Do PCA to group indices by selectivity of length comps. Combine those length comps. Create aggregate indices/LFs based on how they group.

5. Model development update (Amy/Genny)
   a. BAM - single, coastwide model ready to go once replace with final index inputs
   b. BAM - Fleets as Areas Model (FAM) close to ready.
   c. BAM - FAM with seasonal resolution in progress/development along with spatial model. Working through recommendations/ideas for major issues like
      i. Ref pts with spatial model.
      ii. Annual F for seasonal model.
      iii. How determine prop N in each season
   d. SS3 – building coastwide model, will try FAM but may not be done by June

6. Review Tasks to Prepare for Assessment Workshop
   a. Write-ups due June 13th
   b. Coordinate travel to assessment workshop
   c. BERP meeting end of month to decide on M

7. Public comment
   a. Mike Prager – model-based index is interesting and potentially informative even if not used in assessment. Conn method is good application.