Atlantic States Marine Fisheries Commission

Atlantic Menhaden Stock Assessment Subcommittee Conference Call Summary
June 7, 2012

Attendance
TC/SAS – Micah, Jeff, Rob, Alexei, Behzad, Derek, Jay, Joe Grist, Erik, Amy, Joe Smith
ASMFC Staff – Mike W, Genny
Public – Ron L, Mike P, Steve M, Bill G, Teresa L, Dick B, Lynn, Ben L, Shawn G, Jamie B

Sensitivity Runs
- 1 new run: dome-shaped selectivity (1994-2011) for both reduction & bait fisheries
    - Amy – model fit was *very* domed for both fisheries, steep decline in selectivity with increase in age; reduction fishery was fully selected at age2; bait fishery at age 3
    - Behzad – can someone refresh my memory…why did we select just 1994-2011?
    - Joe Smith– 1993 was last year the Russians operated in Maine. There hasn't been a significant fishery north of New Jersey since then
    - *[Amy shows plot comparing new sensitivity run to the base run]*
        - *Full F – 1994-2011 much lower than base run*
        - *Recruits – changes a little from the base run, but not much*
        - *Biomass – 1994-2011 much higher than base run, but still a declining trend*
        - *Fecundity – 1994-2011 much higher than base run, higher than even 1950s levels*
        - *JAI fit – similar to base run*
        - *PRFC fit – fit is different than the base run and other sensitivity runs, but it is still a poor fit.*
    - Genny – dome shaped selectivity was modeled as a double logistic? Did you estimate all 4 parameters?
    - Amy – yes, all 4 parameters are freely estimated
    - Behzad – are there any bounds on anything?
    - Amy – in ADMB, you have to specify bounds…but there are no priors, and it's not running up against the bounds
    - *[Amy shows plots of sensitivity runs in relation to Benchmarks]*
        - *F/Fmed (old threshold) - 1994-2011 lower than base run (>1 in terminal yr)*
        - *F/F15% (new threshold) - 1994-2011 lower than base run (>1 in terminal yr)*

- - *F/F30% (new target) – 1994-2011 lower than base run (>1 in terminal yr)*
  - *FEC/FECthresh (old threshold) – 1994-2011 much higher than base run (> 1)*
  - *SSB/SSB15% (new threshold)- 1994-2011 much higher than base run (> 1)*
  - *SSB/SSB30% (new target)- 1994-2011 much higher than base run (> 1)*
- Behzad – did you re-calculate the benchmarks? Or re-use the same benchmark values calculated for other sensitivity runs
- Amy – the same values as with other sensitivity runs
- Behzad - even when you omit the JAI, there is still a poor fit to the PRFC. what is driving the fit?
- Amy – the age comps are the only other significant input data
- Rob – it appears there is a lack of congruence in the data sources…one of the data sources is not capturing the population dynamics
- Rob – The model appears highly sensitive to the selectivity pattern. While this sensitivity run appears to be unrealistic…it may be a function of the choices we've made (dome-shaped selectivity starting in 1994)
- Erik – selectivity estimation is tricky in this model…F and the dome-shaped selectivity are confounded. Therefore, using metrics like AIC to identify the best model can be misleading.
- Rob – agreed, need to decide whether to let the data/model-fit guide the process or to use our knowledge of the fishery/system to parameterize the model & proceed from there
- Erik – results of this run do not pass the red face test…particularly with Fecundity coming out above 1950s level
- Alexi – the break in selectivity pattern 1993/1994 appears to have an abrupt affect…what about applying dome-shaped selectivity for both fisheries on full time series?
- Genny – keep in mind why these selectivity runs were originally selected…the collapse of the northern reduction fishery in 1994.
- Rob – agreed, shouldn't let model fits alone guide our path here
- Erik – as rob said, choice of selectivity function appears to have profound effect on status determination…need to decide whether the model can be used to provide management guidance
- Genny – this will be a huge undertaking to figure out the proper way to deal with this. If the board is worried about this issue, it can task us to work on this right away. But, at this point we need to complete the update process
- Amy – could look at a likelihood profile for this run…there may be little to no information guiding this fit
- Genny – this is a good idea

- o Erik – Basically, we're done tinkering with the model at this point. We need to articulate the caveats we have with the model update…and determine whether we want to support the model for further management utility
  - o Alexei – where is the break in the process? When are we finished with the update, and when do we move on to the benchmark process of fully exploring all of the issues we've identified
  - o Erik – the update process is very scripted…there is little wiggle room in our ability to modify the model. Need to tell the board whether the model is useful. And we need to tell them whether we think these problems can be solved in the next benchmark.
  - o Behzad – Is it possible to evaluate these issues in an interm process?
  - o Erik – don't think so… a full-on benchmark needs to be undertaken. We need to re-evaluate all data sources and the structure of model
- Retrospective – provided relative change plots from 2000-2010; added retro plots for benchmarks
  - o *[Amy shows plots of the relative change at each retrospective terminal year 2000-2010]*
    - *Full F – increasing (mohn's rho = 0.42)*
    - *recruits – decreasing (mohn's rho = 1.17)*
      - Amy – after consultation with northeast colleagues, this appears t be a pretty big mohn's rho. Although mohn's rho is probably more useful when the retrospective pattern is in one direction, not switching mid-way like ours
    - *Fecundity – decreasing (mohn's rho = 1.83)*
    - *Biomass – decreasing*
    - *JAI fit – decreasing*
    - *PRFC fit – decreasing*
    - *F/Fmed (previous benchmark)– increasing*
    - *FEC/FECthresh (previous benchmark) – decreasing*
    - *F/F15% - increasing*
    - *FEC/FEC15% - decreasing*
    - *F/F30% - increasing*
    - *FEC/FEC30% - decreasing*
  - o Alexei – last time we talked about communicating to board the retrospective pattern, but don't know what's causing it. I believe we need to try to identify the cause. Looking at last assessment retro plots, this same pattern was evident. A possible explanation is that changes occurred in the fishery catch-at-age. There was a significant increase in the harvest of age1 fish…from <10% in 2008 to >40% in last 3 years. This pattern is evident in both the reduction and bait fisheries. Is the fishery actively pursuing age1 fish? Or is this a change in the

population? The JAI index is flat, and therefore in conflict with the catch-at-age info…so it does not support this. The MD index, which is taken from different parts of bay…some of those locations *do* show an increase in recruitment. So some of the JAI components are in fact in congruence with the catch at age information…but we also don't want to "cherry pick" our data sources. Not saying this is the only explanation…but it is worth exploring. Should not just throw up our hands and say "I don't know"…we should explore the potential causes.

o Behzad – there is a need to explore this
o Genny – the pattern in the catch at age is troubling…was there a change in agers?
o Joe – same ager and same sampling protocol as always. But keep in mind that the Reedville plant had self-imposed quotas for several yrs (2008ish)…the amount of fish caught swamped the plant.
o Genny – with no new data, could we really expect a benchmark to fix the problem?…the problem is with data
o Rob – agreed…the northern JAIs are watering down the info from the Chesapeake/southern JAIs. If a southern JAI picks up an increase in recruitment, it is can be lost in the combined JAI, which includes the more erratic northern indices.
o Alexei – we should not be exclusively relying on Amy/Eric for analysis…there is a need for the other TC members to do some data investigation.
o Erik – at this point, we need to focus on getting this report to the board. We shouldn't bother with more investigative work until we get feedback from the board. Focus on the task at hand…describe the model issues, not solve them.
o Rob – everything points to the need for a new benchmark. We need to interpret the caveats carefully, and wait until the board weighs in.
o Alexei – Erik's concern is with writing report and formulating advice. He's looking for consensus from group on how to proceed. He's identified several problems. Personally, I don't see any new problems that didn't see 3 yrs ago. There a couple of important issues: 1) dome-shaped selectivity for both fleets 1994-2011…is this scenario true? We don't know.   There are multiple alternative model formulations to consider. This sensitivity identifies a potential issue with selectivity, not really evidence in support of a specific selectivity pattern. 2) retrospective – this is an important issue that requires investigation (I offered one possible explanation). What can be done in short term? Do an adjustment? What would the trend in status determination look like? It wouldn't be a final determination of the stock, but it would show what it *could* look.
o Erik – good points, but let's let Amy finish her presentation and loop back around to this

Projections
- *Scenarios: constant landings in steps of 25mt from 75mt to 225mt*
- *Landings apportioned 75% reduction; 25% bait*
- *[Amy shows plots of Fecundity, Recruits, F, and landings out to 2030, for each scenario]*
- Amy – at constant landings of 225mt, it is pretty unlikely that we will be below the target *or* threshold
- Alexei – there is no feedback from the population to recruitment…some of these projections are somewhat unrealistic. If SSB increases 20-fold, you would expect some response in recruitment
- Alexei – are these projections any different from previous efforts?
- Amy – methods are the same…hard to recall if the results are very different
- Alexei – thinks the trends @ landings levels are similar

Additional Work?
- Erik – keep in mind we don't really have more time for additional modeling
- Behzad – Alexei's effort seems promising, should he work with Amy to address this issue?
- Erik – Amy has no time, but Alexei should feel free to work on this alone
- Jeff – what about a constant F approach, instead of constant landings? When presented to board in January, we offered this approach as a potential way forward.
- Amy – didn't realize board asked for this.
- Jeff – they didn't, we just offered this alternative method as a potential way forawrd
- Alexei – did the board specifically request a projection method (constant landings? Constant F?)
- Jeff – not really
- Mike W – currently working on draft Amendment 2…board will review in August to be sent out for comments. It's possible they will chose some different allocation scenarios to put out in that document. We may need to re-run projections with alternative allocation projection scenarios at that time.
- Alexei – what about Jeff's question about constant F? Variable recruitment is a problem. And with the need to come up with a stock size each year, there could be wild swings in the quotas. This was part of the reason why we steered in direction of constant landings. Are the constant F scenarios going to be useful?
- Erik – these are all good topics, but we need to wait till august to work on this. We can't squeeze in more projection work at this point.
- Behzad/Jeff – agreed
- Erik – any other additional work (other than projection discussion)?
- Rob – doesn't appear to be enough time to do any more

Timeline (Report writing)

- Erik – please read sections 10 & 11 that Genny sent and provide comments at end of week or Monday at latest so we can combine.
- Mike/Genny – deadline for all report section are next Wednesday 6/13
- Behzad – should we help the board by identifying the potential explorations that we could do in the interim between now and the next benchmark?
- Alexei – we should focus on producing this report to the best of our abilities…a benchmark may take 2-3 yrs to complete
- Erik – more like 1 yr…maybe 9 months
- Genny – lots of assessments currently underway over the next year. Menhaden would likely move to top of the list because it's a "hotbutton" issue, but it would be difficult to pull off in the next year.
- Erik – should the comments and discussion come from the SAS or the TC?
- Mike W – SAS should provide comments now (before 6/13), and the full TC will get to provide input prior to next TC meeting in Raleigh on 6/25
- Erik – should we say whether we think the model is useful for management in the report? Or just lay out issues with the model?
- Genny – we don't usually make those kind of comments in a report. There will be plenty of issues identified that will allow the board to make a decision as to whether the model is useful for management
- Erik – considering the Federal process, this way seems odd…to have the managers deciding whether the science is adequate for use.
- Genny – for better or worse, that's how ASMFC currently operates
- Erik – then that settles it…we won't make any thumbs-up/thumbs-down determination in the report…is this OK with the group?
- Rob/Alexei/others – agreed.
- Erik – are we agreed that a expedited benchmark is necessary?
- Everyone – agreed

Public Comment

- Shawn – when did the board adopt a new biomass reference point?
  - Eric – they didn't…we took it upon ourselves to calculate the corresponding SSB benchmarks to the new F benchmarks
  - Shawn – seems somewhat odd to have one BRP officially decided upon, and the other assumed.
  - Shawn – on the 25th you will be discussing lots of things, including the aerial survey. Want to make sure TC has a discussion as to what data would be helpful to improve assessments in the future.

- Lynn – would be helpful to see analyses that show impacts of altering allocation between bait/reduction on the reduction fishery.
- Mike Prager – good to hear the SAS have in-depth discussions about the problems with the assessment (retrospective patterns & impacts on projections). Assumptions about the distribution of older fish need to be considered.
- Ron Lukens – thankful that careful consideration is being given to these issues. Understand the precaution that the group sees, but is worried that if the SAS/TC doesn't provide advice about how to proceed, who will? Want to make sure that process doesn't trump product.