

Atlantic States Marine Fisheries Commission

Menhaden SAS/TC Conference Call

5/29/12

Attendance

TC/SAS – Matt Cieri, Trish Murphy, Joey Ballenger, Alexei Shirov, Amy Schueller, Erik Williams, Joe Smith, Jeff Brust, Rob Latour, Behzad Mahmoudi, Micah Dean, Jay McNamee

ASMFC – Genny Nesslage, Mike Waine

Others – Judd Crawford, Dick Brame, Ron Lukens, Bill Goldsborough, Alison Fairbrother, Doug Butterworth, Shaun Gehan, Bill Windley, Helen T. , Jeff Kaelin, Mike Prager

Monte Carlo Bootstrap (MCB) Runs

- *[Amy reviews methods for full time series MCB runs]*
 - *uncertainty was added to: PRFC, JAI, reduction + bait landings, reduction + bait age composition*
 - *BRPs based on 1955-2011: $F30\% = 0.62$; $F15\% = 1.34$; $SSB@F30\% = 61,100$; $SSB@F15\% = 30,550$*
- *[Amy review plots of F/target & SSB/target]*
 - Rob – overfishing the entire time, but not overfished? What are your thoughts? Is this a model based thing, or is this a data thing?
 - Erik – caused by a choice of a proxy BRP
- *[Amy review plots of F/threshold & SSB/threshold -]*
 - Amy - majority of years are above F thresh (overfishing)...and majority of years below SSB thresh (overfished)
 - Matt – interesting choice of ref points...it seems odd that the BRP chosen by the board puts stock in overfishing/overfished state for almost entire time series
- *[Amy reviews MCB plots of F/target, SSB/target, F/thresh, SSB/thresh with at BRPs calculated from truncated time series]*
 - *[BRPs based on 1990-2011: $F30\% = 0.70$; $F15\% = 1.53$; $SSB@F30\% = 49,537$; $SSB@F15\% = 24,767$]*
 - Amy – with different BRP time period...results look pretty much the same.
 - Matt – appears there is a very long tail in the distribution of outcomes...any ideas?
 - Amy/Erik – F is getting really big in some cases. You see more variation in F than SSB, because of non-linearity at really high Fs...with big changes in F, there is a relatively minor increase in landings
 - Amy – we end up with $SSB/thresh > 1$ (not overfished) more often using this time period

- Alexei – should we also look at the old *F_{med}* benchmark as well, for comparability?
- Behzad – agreed...since this is an update, it would be helpful for continuity's sake
- [Amy shows *F/f_{med}* plot for full time series 1955-2011]
 - Behzad – shows overfishing occurring in 2010-2011...first time since 1999
 - Matt –the confidence bound still includes $F/F_{med} = 1$ (threshold) in 2010
- [Amy shows *F/F_{med}* for truncated time period 1990-2011]
 - Behzad – this looks less optimistic
 - Amy – I would expect a less optimistic outlook here because it doesn't include the larger biomass years
 - Matt – looks like overfishing/overfished is also occurring with the old benchmarks for 2010-2011
 - Rob – adding 3yrs is not all that much given length of time series...why is the status changing so drastically?
 - Amy – most things have been stable, except for increase in bait landings (2011 is highest on record)
 - Rob – So, it's more on the removal side, than a change in recruitment?
 - Amy – JAI looked pretty flat over last 3 yrs...really just the bait landings that had a trend
 - Behzad – can we see recruitment plot?
- [Amy shows *BAM recruits*]
 - Amy – recruits are low, but not any lower than it has been since the early 1990s
 - Rob – it does look like the last 3 years are decreasing
 - Matt – but it does look to be just about the lowest on record.

Sensitivity Runs

- [Amy reviews sensitivity methods]
 - omit JAI
 - omit PRFC
 - dome-shaped selectivity (1994-2011) for the reduction fishery; flat-topped selectivity for the bait fishery.
 - down-weight age compositions - use median effective sample size for catch-age comp for data in all years
 - retrospective (10 yrs)
- [Amy shows plot of Full *F* for selectivity runs compared to base run]
 - Matt – so we're at $F = 4+$ in terminal year?
 - Amy - yes
 - Behzad – so biggest difference comes from down-weight age comp run
 - Genny – is the median effective *N* the number of fish?

- Amy – no, it’s the number of 10-fish samples
- Behzad – what were the median sample size values?
- Amy – Reduction = 34.2; bait = 24.9
- Genny – can you refresh our minds as to why we did a median of the time-series, instead of annual medians?
- Erik – main reason is to address one of the major concerns of the review panel ...whether we were overweighting the age comps. This was a quick+dirty method of decreasing the likelihood weight of the age comp.
- Genny – that makes perfect sense...thanks
- *[Amy shows recruitment plot for sensitivity runs v base run...not a lot of change in any runs...some minor changes in later years. Largest change from “down-weight age comp” run]*
- *[Amy shows biomass plot for sensitivity runs v base run - biggest change from “down-weight age comp” run, but mostly small differences from base run]*
- *[Amy shows fecundity plot for sensitivity runs v base run ...biggest change again comes from “down-weight age comp” run. Slight changes with dome-shaped selectivity run]*
 - Behzad – why such a big divergence from base run in 1980s? (for “down-weight age comp” run)
 - Erik – maybe with less age-comp weight, the model is fitting the PRFC better?
- *[Amy shows JAI fit plot for sensitivity runs v base run ...overall pretty similar]*
- *[Amy shows PRFC fit plot for sensitivity runs v base run ... “down-weight age comp” run causes the largest change]*
 - Behzad – doesn’t look like any of the sensitivity runs caused the PRFC to fit better in recent years
 - Matt – something else must be causing the pattern we see from the update
 - Amy – must be more than one piece of information is causing the under-fitting of the PRFC in recent years...just omitting one index or the other doesn’t cause a better fit.
 - Behzad/Matt – appears that regardless of the sensitivity run, the status in terminal year(s) would not change...overfished/overfishing
 - Matt – what about landings...any major trends?
 - Amy – reduction has been pretty flat...bait is increasing
- Erik – we need to consider that each sensitivity run we describe should have a reason for it...we’re trying to evaluate something with it. The only one that seems questionable is the dome-shaped selectivity run. Not sure if this run is getting at what we’re really concerned about...although understand that it was a board directive. We should revisit how we got to the selectivity patterns we’re currently using.
- Alexei – believes the question is really with the area in which the fishery operates...more flat-topped to the north, and potentially more dome shaped to the south.

- Erik – you’re right, but the reason we didn’t explore the spatial component here is because that would require complete re-vamping of model, which isn’t appropriate in an update
- Erik – also, thought that there was a question about the bait not targeting the largest individuals
- Matt – doesn’t believe this is occurring...dome shaped selectivity seems plausible in reduction fishery, but not in the bait fishery.
- Erik – data suggests that either they’re both domed or neither are domed. The slope of the age structure for both fisheries are similar... they seem to be catching similar age structures...which is why I don’t believe this sensitivity run is what was intended. Perhaps this is an issue that needs to be more fully explored in the next benchmark.
- Erik – we should keep in mind that these sensitivity runs are not equally plausible scenarios...just explorations of the sensitivity of the model to specific assumptions.
- Behzad – we need to come up with a consensus on what to do about adding a sensitivity run with both reduction and bait dome shaped?
- Rob – purpose of selectivity runs is to challenge assumptions...so why not add this run, since choice of selectivity pattern for both fisheries are assumptions, not empirically derived
- Erik – [to Amy] how much work is it to add another sensitivity run?
- Amy – can probably have ready for next Thursday.
- Erik – committee agrees to add sensitivity run with dome-shape selectivity for both fisheries

Retrospective

- *[Amy shows retrospective plot for Full F – over shooting in recent 5 yrs, undershooting in 2000-2005]*
 - Matt – looks like there is a pretty big difference in all years
 - Joe – we lost a reduction company in 2005
 - Matt – it might be helpful to do plots in a relative % change for future presentations
- *[Amy shows retrospective plot for Recruitment – undershooting in recent 5 yr, overshooting in 2000-2005]*
- *[Amy shows retrospective plot for Biomass – same pattern as recruitment]*
- *[Amy shows retrospective plot for Fecundity – same pattern as recruitment]*
- *[Amy shows retrospective plot for JAI fit – underfitting in recent 5 yrs, overfitting 2000-2005]*
- *[Amy shows retrospective plot for PRFC fit – underfitting in recent 5 yrs]*
 - Matt – interesting there is still an effect as far as back as 1980s
 - Alexei - what is causing this, mathematically?

- Erik – believes this caused by changes in q
- Matt – so is there something that we've changed/added that has caused this retrospective pattern...added data, or changed an assumption?
- Alexei – or was there a change in the fishery?
- Alexei – speculate that this could be caused by spatial shifts in either the fishery, or the stock, or in the portion of the age comp that the fishery harvests
- Matt – or could be caused by a change in M
- Behzad - well, it appears something happened in 2005
- Joe – One of the reduction companies (Wheatly?) closed in 2005, and he used to catch significantly more peanuts...combined with an increase in fishing off NJ, which includes more older fish...this could cause a shift in the fishery age comps.
- Matt – looks like there is a 200% retrospective pattern in F in the terminal year
- Alexei – but even if you did proportional correction, we would likely still be overfishing
- Matt – normally in favor of a correction, but with such a recent pattern switch (2005), this seems inappropriate
- Erik – keep in mind there is not time to correct the base run, we can only explore the model's performance at this point
- Alexei – if the base run indicates that F is 2-3 times F_{target} , but the model is also overshooting F by 200% in terminal year, what message does this send to management?
- Erik – without actually making the correction, all we can do is state the evidence...perhaps the managers will push for an expedited benchmark
- Matt – we're basically telling the managers we don't know if we're overfishing or not
- Erik – or you could say that the base run indicates we are overfishing, but the sensitivity run indicates that the model tends to have a bias towards an overfishing status
- Matt – we might want to come to a consensus on whether we want a benchmark sooner rather than later
- Genny – without better data, it is unlikely that a new benchmark will drastically improve performance
- Matt – but getting the model in front of a review panel can force the decision as to whether this model is appropriate to use, given the bias/uncertainty
- Alexei – not sure this is really a solution...we're basically just passing the decision on to a group of 3 semi-random individuals
- Matt – disagree, believes there needs to be a peer review to make this call
- Behzad – can we explore this retrospective issue ourselves?
- Matt – not for this update, and realistically we won't do it until there is a peer-review on the horizon. After we play/tweak with the model to explore these issues, the model will likely be so changed that it would require a peer-review anyway.

- Erik – We also need to decide whether this is useful for management right now...unfortunately we don't have the time to fully understand what is going on, but we can convey the troubling diagnostics we're looking at
- Genny/Erik – bottom line, we don't have the time to tinker with the model, but we need to convey the amount of uncertainty that exists
- Behzad – believes this is a pretty unique situation...the fact that retro pattern switched
- Matt – agreed

PROJECTIONS

- Amy – what do we want to do for 2012 landings for reduction/bait fisheries?...mean of 2009-2011 landings?
- Alexei – what's happening after 2012 in the projections?
- Amy – well whatever management action gets decided...constant landings approach? Assumes the board will have other requests to evaluate as well.
- Matt – given the retro pattern, are you going to just start with the terminal year?
- Matt – would go with the base run/terminal year starting point...just need to communicate that there appears to be a retro bias. Perhaps could do a correction for terminal year bias, and show how this affects the projections.
- Amy – going to go with a 3-yr avg (2009-2011) to estimate 2012 landings
- Jeff - do we foresee the bait fishery landings to continue to increase?
- Joe – Jeff Kaelin did not think this was the case
- Matt – would agree with this
- Alexei – but we don't have reason to expect it to be less than previous year either
- Amy – how do we want variability specified?...landings are considered hard numbers in the projections...basically assumes “perfect” management
- Matt – given the other sources of variability, landings variability will likely be minor
- Amy – agreed
- Alexei – could just go with 2011 landings, since there appears to be an increasing trend
- Matt – better to go with 3 yrs, given variability of conditions
- Erik – concurs with Matt
- *[SAS agrees to go with 3 yr avg 2009-2011 to represent 2012 landings in projections]*
- Mike – Amy, will we expect to see a similar table as was produced for PID, only out to 10 yrs?
- Amy – correct

FUTURE CONFERENCE CALLS

- Erik – appears a June 7 call is necessary...9AM-Noon, but hopefully shorter than that

REVIEW TIMELINE OF WRITE UP

- Mike – deadline is 6/19, but TC meeting is 6/25
- Erik – is it expected that the full report will be distributed to the TC before the 6/25 meeting?
- Mike – yes, would be good to give them a week...shoot for 6/18 to be complete
- Erik – would be good to have a draft out by 6/11, so that the SAS can review and provide comments
- Genny – this seems like an impossible schedule to pull off...maybe we shoot for a draft version out to the TC by 6/18.
- Genny – looking at the benchmark document, there are lots of things that we don't need to update/comment on. Have made an attempt to whittle the update document down to only the necessary sections
- *[Genny reviews the outline & section assignments – see her document for who's doing what]*
- Genny – shoot for getting report sections in by 6/13, so that a draft can be assembled & distributed to TC by 6/18

OTHER BUSINESS

- Alexei – need a little help from Erik/Amy to get the base model to run in ADMB
- Erik – what is the times for meeting on June 25th?
- Mike W - 9:30AM – 5PM

PUBLIC COMMENTS

- Judd Crawford –a lot of work was put into the sensitivities, retrospectives, etc for this update...seems like more work than is typical for an update. Don't want all these initiatives to de-rail the progress that is being made. Thinks the group is doing a good job.
- Joe Grist – good job so far. Wants to obtain access to presentations shown today
 - Genny – we can't share results of assessment until it is final
- Jeff Kaelin – what is the date for next meeting, June 15th or June 25th?
 - Mike W– June 25th
- Jeff Kaelin– very disappointed in the recent article [*sorry, didn't hear which group he was referring to*] about the last meeting, did not feel the process was compromised.
- Mike Prager – there seems to be doubt/modesty on part of SAS about the utility of the model for management, given the preliminary update results. Would urge the group to not hesitate in providing their own evaluation of the usefulness of the model.
- Mike Prager – regarding projections...understand it is common to initialize projections from the terminal year of the assessment model. However, given the ugly retrospective

patter, should consider initializing the projections a couple of years before terminal year, to minimize the effect of the retrospective pattern.

- Doug Butterworth – asks to see the retrospective pattern again (full F)
- *[Amy show retrospective plot for Full F]*
- Doug Butterworth – if you look at the retro patterns, it appears the last 2 years of any retro run are no good, but before that it appears to settle down. Mike Prager’s suggestion is then a good one, start projections from 2 yrs prior.
 - Erik – unfortunately, at this point, we don’t have time to re-program the projection code...it already is set at terminal yr
- Doug Butterworth – likelihood components table...is this negative log-likelihood (NLL) or likelihood?
- Amy – NLL
- *[Amy shows likelihood components table for the sensitivity runs]*
- Doug Butterworth – the base run and the dome-shaped selectivity run share the same input data...other sensitivity runs use different data, so fits are not comparable by likelihoods. If you look at the total NLL, it appears the dome-shaped run fits far better (base = 2457; dome = 2397). The caveat is that the age comps *are* overweighted, which influences the importance of the selectivity pattern.
- Doug Butterworth – regarding the comments that both fisheries share the same shaped selectivity pattern...this NLL table indicates that there is a difference in the selectivity patterns between the fisheries.
- Erik – Meeting Adjourned