

Summer Flounder Stock Assessment Workgroup (SAW)
Model Comparison Workshop
January 30, 2018 – February 1, 2018
Summary of Next Steps

The summer flounder SAW met to examine multiple modeling approaches under consideration for use in the 2018 SAW/SARC stock assessment.

Participants in person and on webinar (summer flounder SAW and others): Chuck Adams, Russell Brown, Jeff Brust, Jessica Coakley, Kiley Dancy, Jeff Kipp, Chris Legault, John Maniscalco, Mark Maunder, Jason McNamee, Tim Miller, Charles Perretti, Gary Shepherd, Mike Simpkins, Katherine Sosebee, Pat Sullivan, Mark Terceiro, Tiffany Cunningham Vidal, Michael Wilberg, and Jim Weinberg

Overall the Workgroup:

- ❖ Agreed to schedule another model comparison workshop between the end of April and early June
- ❖ Developed strategies for both self-testing and cross-testing the assessment models
- ❖ Identified additional analyses to be completed prior to the next SAW meeting for all assessment models and the VAST model to address term of reference 4
- ❖ Agreed to conduct exploratory work to aggregate non-federal survey data
- ❖ Concluded that modeling should start simple, and that complexity (e.g. sex, time varying growth, etc.) should be built into the models given constraints of the data, estimation, and diagnostics results
- ❖ Determined that estimation problems, precision degradation, and diagnostic problems (e.g. residuals and profiles) should be used to guide those decisions
- ❖ Will examine modeling approaches to help understand changes in recruitment, distribution, and other regime shifts
- ❖ Determined that model averaging (model ensemble) methods needed further technical and practical consideration before they could be applied to a stock assessment in our region

All Assessment Models (ASAP, SAL, State-space; To be Revisited)

- ❖ Biological
 - Retain the Lux and Porter (1966) commercial fishery quarterly length-weight parameters (combined sexes)
 - Use the 2013 SAW 57 three-year moving window method for calculating maturities, updated with data through 2016
 - Retain the 2013 SAW 57 values assumed for natural mortality (M) in model development (i.e., M=0.2 males, M=0.3 for females (overall 0.25))

❖ Surveys

- Use NEFSC surveys only for across model comparison
- Model the NEFSC surveys separately: Albatross (ALB) and Bigelow (BIGSWAN; NEFSC surveys incorporating sweep survey results)
- Explore sensitivity to survey data weighting specifications
- Explore inclusion of other non-federal surveys where possible
 - Agreed to conduct exploratory work to aggregate non-federal survey data (e.g. GLM and/or other approaches will be considered)
 - Examine the effect of allowing q's for problematic surveys to vary (e.g. the "problematic" 4)
 - Examine the effects of the starting year of data - should the survey year be the first year in the model?

❖ Fleets

- Use the four-fleet configuration (i.e., commercial landings, commercial discards, recreational landings, recreational discards) in model development
- Selectivity:
 - Explore the fishery selectivity for all fleets including specifications that allow doming, force flat top, and use different not estimated ages
 - Explore the specification for the fishery selectivity blocks to identify breakpoints over the time series
 - Consider changes in size at age
 - Consider regulatory changes
 - Consider other informative empirical data
- Explore sensitivity to fleet data weighting specifications
- Examine the effects of the starting year – should the start of the fleet data be the first year in the model?
- Determine how to address the proportion of females at age in the fleets
 - Obtain data for specific years from Rutgers and NEAMAP
 - Examine tagging the data on the end or using approaches to hindcast
 - Compare the ratio of the sex at age from these studies with the survey sex at age

❖ Additional Exploratory Work

- Examine the autocorrelation in R
- Estimate M within the model, or profile over M
- R(0) profiling
- Examine production model diagnostics
- BRPs – not internally estimable at this time; will need to examine external/proxy approaches
- Residual analyses

Individual Modeling Work (In Addition to the Above)

❖ ASAP

- Combined sex modeling work (see completed working papers)
- Explore by sex models (see above)

❖ SAL

- Modeling growth (various approaches)
- Incorporate seasonal effects, if enough data to support
- Examine different time blocks for selectivity at length
- Explore how to better model the selectivity by sex
- Incorporate an aging error matrix if possible (not high priority for additional work)

❖ State-space

- Specify the selectivity by sex
- Estimate M within the model

❖ VAST

- Incorporate environmental variables into the model
- Incorporate non-federal survey data, for which spatial effects can be estimated
- Test if observed if changes in distribution seen are due to changes in the sampling locations, by assigning a catch of 1 to each observation and determining if the center of gravity changes
- Examine the differences in spatial effects by sex (for samples that have sex available)
- Compare the VAST output to a design-based estimate