Atlantic States Marine Fisheries Commission

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Ecological Reference Point Work Group December Check-In Summary
December 9, 2024 10:00 AM – 12:00 PM

Members in Attendance: M. Cieri, A. Sharov, J. Boucher, H. Townsend, D. Chagaris, A. Buchheister, M. Celestino, M. Dean, A. Schueller
Staff: K. Drew, J. Patel
Public: B. Wasserman, J. Higgins, S. Gehan, W. P., J. Kaelin, P. Himchak, J. Boyle

Species Data Updates
Menhaden, Atlantic Herring, Bluefish, Striped Bass, Spiny Dogfish
At the Methods Workshop in November, the SAS formed a work group to look more into the discrepancies between the Ault M and the Liljestrand M, and they have been exploring the differences between the Coston data set and the re-digitized data set. The re-digitized data set does have a higher recapture rate but this may be due to differences between whether a second magnet was included. The work group is checking data to ensure that the plant efficiency estimates used by each model are based on the appropriate magnets for both data sets.

The ERP WG reviewed the updated single-species reference points for the ERP species and the methods used to convert SSB reference points into total biomass reference points. The ERP WG also discussed the differences in definitions for targets and thresholds for federally managed species (Atlantic herring, bluefish, and spiny dogfish) and ASMFC managed species (striped bass, weakfish). For the federally managed species, the F threshold is the F_{MSY} proxy, and the SSB target is the long-term equilibrium SSB that will result if the population is fished at the F threshold; the SSB threshold is one half the SSB target value. For Commission managed species, fishing at the F target will result in the SSB target, and fishing at the F threshold will result in the SSB threshold in the long-term. Federally managed species do not have an F target; for the previous ERP assessment, the F target was defined as 90% of the F threshold, a value that had been calculated for the previous bluefish benchmark assessment, and which took into account the fact that in the federal system, the overfishing limit is calculated on the basis of the F threshold, but buffers are applied which results in a lower final quota. However, this causes inconsistencies in the results because fishing at this "F target" will result in an SSB higher than the SSB target in the long-term, and fishing at the threshold will result in an SSB higher than the SSB threshold for federally managed species.

The ERP WG recommended moving away from specific "target" and "threshold" language and focusing on the definitions of the reference points. The group recommended setting up a table for the F threshold, F target, SSB target, and SSB threshold to clarify definitions of targets and thresholds. The reference points are necessary for scenario testing in the EwE models. The F values are used to drive the populations for these projections in the scenario. The F sets up the scenario and then we can compare it against the biomass reference points.

For the Atlantic herring biomass reference points, the SSB target is the SSB that will result when the population is fished at the F_{MSY} proxy, $F_{40\%SPR}$. To get to the B target and threshold, SSB target and threshold were multiplied

by the mean ratio of age-1+ biomass to SSB over the assessment time series as was done in the previous ERP benchmark assessment. The group also recommended that the retrospective adjustment values for SSB and F be applied to the 2023 values when calculating age-1+ and F relative to the reference point in the terminal year, because number of juvenile herrings need to be considered and to be consistent with the management track assessment for herring. The group chose not to extend the correction to previous years, since the difference between the 2022 and 2024 update estimates of SSB and F were very similar except for the last few years of the 2022 update, and because the retrospective pattern has worsened since the 2022 update. Many of the difficulties with this assessment come from the ASAP model and most of these are resolved when using the WHAM model, which will not be ready for management use in time for this benchmark. Atlantic herring was the only species that required a retrospective adjustment.

For bluefish, the same process was followed for its respective F threshold and SSB targets. The terminal year of the bluefish assessment update was 2022. To produce estimates of age-1+ biomass and F in 2023, the options are (1) using projections from the Management Track report, (2) assuming that the F threshold is the same in 2023 and 2022 using a deterministic projection, or (3) calculating F 2023 based on preliminary removals. The projections from the management track assumed F in 2023 would be equal to the F_{MSY} proxy, but preliminary total removals in 2023 were estimated to be much lower than would be expected under that assumption and more in line with recent removals. Therefore, the group supported option 3. For the MICE species, we only have to make this decision for species, spiny dogfish and bluefish, but we will have to do this for multiple other species in the full model.

For striped bass, the SSB threshold is the SSB in 1995 and the target is 125% of that value; the age-1+ biomass in 1995 was used to calculate the equivalent total biomass reference points.

For spiny dogfish, the F_{MSY} proxy is $F_{60\%SPR}$ and the SSB reference points are based on the expected spawning output (numbers of pups) under that F level. The age-1+ biomass reference point calculations have 2 options: (1) using a ratio approach used by other species and then average total biomass/spawning output * SSB BRP for the SSB target/threshold or (2) use SS3 output for total biomass at SPR 60% for the SSB target/threshold. The group recommended option 2. The terminal year of the spiny dogfish assessment update was 2022, so the group considered the same set of options as for bluefish to calculate 2023 biomass and F. Total preliminary removals in 2023 for spiny dogfish were not available, as commercial discards are a more significant fraction of total removals than they are for bluefish, but commercial landings were lower than 2022 and total removals would likely be lower than the total removals under the F_{MSY} proxy assumed in the projections. The group recommended using option 3 again and extrapolating total 2023 removals from the preliminary commercial removals and the ratio of commercial removals to total removals in recent years.

Next steps: M. Cieri forward tagging data to D. Chagaris. K. Drew to use the above recommendations to proceed for herring, bluefish, and spiny dogfish.

Bluefin tuna
Diet data matrix is being formed for bluefin tuna. Prey items from each study are being assigned to categories that are used in the model.

Marine mammals, osprey

Osprey diet data was organized and cleaned with percentages that relied on biomass instead of number of fish were weighted more heavily.

Mammal diet data which was based on the Smith et al and Kenney et al papers originally had some groups that were aggregates of model groups the proportional biomass in the NWACS-full documentation from the previous assessment was used to split up aggregated groups.

Bay anchovy updates

M. Dean was able to do some preliminary runs of the spatial model with the bay anchovy survey data. There are some temporal gaps in the winter that RI or NJOTS may be able to fill. For the model, delta lognormal made the most sense because of high number of 0s. There is an interaction between distance from shore and season.

A question was asked if the data from the NEFSC surveys was calibrated between the Bigelow and the Albatross. The tow-by-tow survey data used in the spatial model was not, but it was unclear if the q from the total swept area biomass estimates was. The group recommended using the vessel effect instead of calibrating each individual tow for the spatial model.

Next steps: A. Buchheister to send over the prey mapping file to M. Dean. D. Chagaris to send month and year files to M. Dean. M. Dean and M. Celestino to follow up with A. Beet about q.

Zooplankton

Waiting on biovolumes for zooplankton. We talked about annual vs. seasonal estimates for zooplankton. There is a quirk in the seasonal layout of the data (Dec – Feb instead of Jan – March). Working to see if data can be realigned or clarified. A question for posed for whether to include pteropods but the group did not have a recommendation.

Next steps: M. Celestino to work with D. Chagaris and A. Buchheister to finalize formatting for zooplankton data.

<u>Model Updates</u>

NWACS-MICE

Diet data from 5-6 diet data sets were compiled into one database. Prey items were assigned to full and MICE model groupings.

Next steps: D. Chagaris to follow up with J. Patel to fix minor issues with categorizations and meet with J. Patel and A. Buchheister next week to finish up.

NWACS-Full

A. Buchheister followed up with J. Gartland with full model diet data. VIMS will bring on a contractor to

help with this request.