



Atlantic States Marine Fisheries Commission

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Ecological Reference Point Winter Check-In

February 7, 2024 1:00 PM – 4:00 PM

Meeting Summary

Committee Members in Attendance: *M. Cieri, S. Madsen, G. Nesslage, M. Dean, M. Celestino, A. Schueller, J. Boucher, A. Sharov, A. Buchheister, D. Chagaris, J. McNamee, H. Townsend*

ASMFC Staff: *K. Anstead, K. Drew, J. Patel*

Public: *P. Himchak, A. Binstock, J. Higgins, B. Chiles*

Candidate Species Decisions

Smooth dogfish (M. Cieri)

M. Cieri summarized the available data. It was noted that data are fairly sparse for this species and that it mostly decapods and crustaceans. This may be a result of niche partitioning with spiny dogfish and the biomass of smooth dogfish is much lower than spiny dogfish. While there is an age-structured model for smooth dogfish (Stock Synthesis), it has not been updated since 2015 (terminal year 2012) and therefore does not have data for many of the ERP assessment years. Additionally, there wasn't much support to believe that smooth dogfish is an important predator on menhaden.

There was a question of why this species was included as a candidate. In the past, it was considered an important predator because smooth dogfish had almost as much menhaden removal as weakfish. However, the rankings that were originally considered for menhaden removal were based on NEFSC food data based on stomach composition, which may not have the fullest picture of diet data. With the way that the consumers are ranked, there is a steep drop-off of amount removed by other consumers after top predators (striped bass, spiny dogfish, bluefish, weakfish). Weakfish and smooth dogfish often alternated positions on these rankings. The reason weakfish was included was because it's a data-rich species and there is a hypothesis that the drop in population for this species has not recovered due to potential food conflict with striped bass. This species may not be an important consumer of menhaden, but may have other relationships to menhaden.

The ERP workgroup (WG) agreed that smooth dogfish did not warrant inclusion in the NWACS -MICE or VADER model. As it stands, for the NWACS full model, smooth dogfish is included in the "other demersal benthivore" group. It was agreed that the species can be included in the report by writing up a short paragraph that summarizes investigation efforts.

Bluefin tuna (M. Dean)

M. Dean reviewed highly migratory species (HMS) predator diet literature and diet databases to see which species the ERP WG would want to include in the model. Most HMS had a relatively low presence of menhaden in their diets, except for bluefin tuna with a range of 0-97% of their diet being comprised of menhaden and an average of 27%. Based on where and when diet data was collected, this may be a significant predator. There are biomass time series available from stock assessments with projections that go out to 2024. Spatial distribution is an important to consider with bluefin tuna to determine overlap with menhaden. Two groups have pop-up satellite tagging data that may help determine seasonal spatial distribution of bluefin tuna. B. Galuardi and M. Block, leads on one of the groups with this tag information, have agreed to support the ERP WG's efforts by creating a map of probability for where and when tuna can be found that the group can overlap in the NWACS-MICE model's domain. M. Dean provided an older MSVPA shape file (created by L. Garrison) that covered about 20 nautical miles of buffer up the coast, which B. Galuardi and M. Block can use to help provide the needed data. The tagging group said that they estimate that they can come up with a table by season and region for the fraction of the bluefin population. As of now, it is assumed that bluefin may not be as important a predator as striped bass but maybe more important than weakfish.

In discussions, it was brought up that bluefin tuna is a predator of growing importance within the Gulf of Maine and their consumption rates in that area are seem to be growing more prevalent during longer stretches of the year. There was a question of the ephemeral nature of including an HMS in the model and the challenges of modeling HMS that regularly move outside the model domain. With migration, there is a concern that any trends that arise within this population caused by factors outside the model domain. The modelers asked that the tagging group provide data on how much of the population and biomass will be along the Atlantic coast during most of the year. M. Dean said that based on his communication with the group, that some fish may fall along the eastern-western boundary for tuna, but the tagging group can calculate the portion of the population on the Atlantic coast and provide data for just that group. There was also a recommendation to add another region to the model to account for what lays outside the model area. This would help pro-rate what the tuna are eating outside the model. The same may be able to be accomplished for mortality based on landings by fleet and permitting. The modelers expressed a greater comfort with including bluefin tuna if the group can comfortably get pro-rated biomass and mortality rates. There was one more discussion point about how much of this stock overlaps with the spatial domain of the NWACS-MICE model; if it's just 10-15% then too much of the population dynamics is outside of the model's range to be considered, but it may be worth considering if greater. The NWACS full model has a category for HMS and VADER may be able to incorporate it as well with some thought. The verdict was to keep this species in the MICE model temporarily.

Next steps: provide B. Galuardi and M. Block with updated shape files or a raster grid so that they can provide more data.

Nearshore piscivorous birds (A. Sharov, J. Patel)

J. Patel and A. Sharov found little to no updated data or reports for absolute abundance for nearshore piscivorous birds. Species considered included osprey, eagles, loons, cormorants, herons, and egrets. Current

data mostly is based on observer counts along specific paths and has no way to account for seasonality. They consulted with B. Watts (Center for Conservation Biology at William & Mary) who has comprehensive counts for osprey in the North Carolina/Chesapeake Bay region. That same lab recently put out a paper that estimated menhaden consumption rates based on bird diets that were assumed to rely 100% on menhaden (maximum possible consumption) by converting needed energy to tones of menhaden. Although that is one possible methodology to explore, the ERP WG would still need to have estimates of absolute abundance.

In discussion, it was noted that this group was already included in the NWACS full model. There was also a question of how to gauge dependence of shorebirds on menhaden. There is a possibility of treating this group similar to striped bass since their sensitivity may be comparable. However, including this group in the MICE model when there isn't any data will increase uncertainty and assumptions. If the group had data in specific areas, the ERP WG may be able to include it and explore it better. Modelers could evaluate sensitivity of birds to menhaden if it was of interest, but they aren't in the running to be promoted to the MICE model due to lack of high-quality data. The group discussed if birds should be removed entirely since data is not robust. However, the ERP WG agreed to leave them in NWACS full model since it is already in there and is one of the more sensitive group in that model. It is important to understand that sensitivity to see where the group needs more information for nearshore birds. Additionally, the group talked about the possibility of revisiting old data for the full model and possibly breaking down this larger category of "birds" into individual species based on data availability. The modelers agreed that if there is other data, even if it's older, it may be worth folding into the full model.

Next steps: J. Patel and A. Sharov will contact A. Buchheister to see if older data should be revisited and if it's possible to include just the data-rich species.

Marine mammals (J. Patel, H. Townsend)

Similar to birds, J. Patel and H. Townsend were not able to find consistent and reliable abundance data for the marine mammals group. J. Patel read through stock assessments from NOAA going back to 1996 to track abundance and mortality for whales, porpoises, and pinnipeds, but found a lack of consistency in methodology and frequency that would make any time series inaccurate.

In discussion, it was noted that the humpback whale stock assessments are fairly consistent and accurate. It may be worthwhile to treat this group similar to the birds and focus on sensitivity in place of adding new data. There was also a point of discussion that including high-interest species like humpbacks may draw interest to this ecosystem-based approach for management, but ultimately, there may just not be enough diet data out there for species that have good abundance estimates. It will increase the noisiness of the model. There was talk of figuring out rough humpback predation on menhaden numbers since the abundance counts are done well, but then it comes down to dependency on menhaden vs. other species. If the rough numbers show that whales are very dependent on menhaden, this could be misinterpreted. There was talk of including dolphins instead of whales since there is some diet data available. This may be included in the full model, but not the MICE model. The modelers said that, similar to the birds, if updated data is available for the full model, it can be folded in. Currently, the full model has 3 groups (pinnipeds, baleen whales, and toothed whales). If the ERP WG is able to find accurate biomass or diet data, it may be beneficial

to pull out specific subgroups or use that data-rich group as a proxy for the whole group. The 2017 technical report for the full model has more information on how the full model is grouped.

Next steps: J. Patel and H. Townsend will contact A. Buchheister to see if, similar to birds, older data should be revisited and if it's possible to pull out some specific species for the 3 larger groups.

ERP Species Updates

There is now a single index for zooplankton for the MICE model. For Atlantic herring, they are transitioning from a state-space model to the WHAM model and are on the management track. The group should have updated Atlantic herring numbers by June.

Model Development Updates

D. Chagaris provided updates on the NWACS-MICE model. There are no changes to Ecopath yet. Diet data are still being requested and biomass and landings inputs for ERP species will be made current with stock assessment files. The Ecopath input parameters will be updated once species/ages are finalized. For Ecosim, a primary production timeseries is being created from the GLORYS ocean and monthly vulnerability forcing functions are adapted from the MSVPA seasonal overlap model to incorporate seasonality. Once the group has egg production data, it will be used to create egg production forcing functions. For Ecospace, the base maps and summary regions have been created with spatial temporal data input created from GLORYS ocean model and habitat preferences obtained from Aquamaps (placeholders). Preference functions will be developed from survey data along with dispersal rates, migration patterns, and port locations. Model calibration will begin on August 24th after coastwide and regional indices of abundance and landings, species distribution maps, and fishing effort maps are acquired. For forcing on predator-prey vulnerabilities, seasonal predator-prey overlap was estimated during the 2014 MSVPA update. Seasonal vector was converted to monthly using a time series spline smoother and scaled to mean of 1. It was proposed to apply these forcing functions to limited number of pred-prey interactions. These include 5 predators (striped bass ages 2-6+, bluefish, weakfish, and spiny dogfish) and 2 prey (menhaden and herring—adult stanzas only). For the NWACS Ecospace region, regions are only defined for purpose of summarizing output and comparing with observed data. They should be accommodating to regional datasets. Five areas and 2 depth strata (at 30 m) based on the NEFSC stat zones, the MSVPS regions, and NEAMAP depth survey were proposed. Ecospace preference functions can be obtained online from Aquamaps database and do not have age structure. They are only trapezoidal functions with full preference across broad range of values. Alternatively, these functions can be developed empirically using survey data and binominal GAMs, but this requires presence/absence data and environmental variables at each sample and there may be a need to combine data from multiple surveys. The functions are mostly written and now just require data wrangling. For model calibration there is a new paper out detailing Ecosim model calibration options and impact on model derived advice and D. Chagaris is on track to begin model calibrations this year.

There was question about the binning of adult stanzas for the 2 prey species included in the model and the possibility of expanding age representation since currently menhaden only has 2 groups—young of the year and 1+. The NWACS full model has these binned as “small,” “medium,” and “large” for menhaden. For the MICE model, it may be worth collapsing diet data into 2 groups and consider

expanding age structure. Most of the MICE model uses NEFSC data, but grid cells in the model only have 1 region so accounts for overlap with shifting or expanding regions. There was also a comment about overlap with Canadian waters and how that can be resolved by setting the statistical areas to those that start with "5" since "4"s are Canadian.

D. Chagaris also mentioned a stakeholder survey to be deployed to stakeholders, industry reps, and public citizens that attend ERP WG meetings. Results will be used to improve communication and identify where outreach and education is needed. It will be a quick survey that can be sent to guests on previous calls as well. This will give the ERP WG time to provide comment and improve communication.

For the VADER model, there were no updates outside of a meeting set up for the VADER WG on the 19th and that J. Patel will be assisting J. McNamee with updating the data files.