



Research Recommendations

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August 14, 2025

Progress on 2020 Recommendations

- Expand collection of diet and condition data along the Atlantic coast to provide seasonally and regionally stratified annual, year-round monitoring of key predator diets to provide information on prey abundance and predator consumption.
 - Additional diet data incorporated current assessment from new Rhode Island and New Jersey monitoring programs, as well as snapshot studies from e.g., Maine

Progress on 2020 Recommendations

- Improve monitoring of population trends and diet data in non-fish predators (e.g., birds, marine mammals) and data-poor prey species (e.g., bay anchovies, sand eels, benthic invertebrates, zooplankton, and phytoplankton) to better characterize the importance of Atlantic menhaden and other forage species to the ecosystem dynamics.
- Improved data for osprey, marine mammals, anchovies, zooplankton, but no new monitoring programs

Progress on 2020 Recommendations

- Conduct a management-strategy evaluation (MSE) to identify harvest strategies that will maximize the likelihood of achieving the identified ecosystem management objectives.

→ No progress

Progress on 2020 Recommendations

- Further development of NWACS-MICE, NWACS-FULL, and VADER

→ This benchmark

Progress on 2020 Recommendations

- Develop a coordinated timeline of assessments and assessment updates for Commission-managed species to provide the most up-to-date multispecies inputs for the NWACS-MICE model during ERP assessment updates.
- Limited progress: aligned ASMFC species assessments, NEFSC assessments worked out this time

Progress on 2020 Recommendations

- Develop a plan to coordinate management of Atlantic menhaden and their predator species across management Boards.
- Issue presented to the Commission, but no real progress

Progress on 2020 Recommendations

- Some progress made, but the ERP WG continues to recommend those items as crucial for continued improvements in the ERP assessment.

- ERP WG endorses all the recommendations from the single-species benchmark, including:
 - Develop and implement a menhaden-specific, multi-year coastwide fishery-independent index of adult abundance-at-age
 - Improve bait fishery data
 - Standardize ageing across Beaufort and the states
 - Investigate processes related to recruitment and spatial dynamics

- Short-Term Data Collection/Research
 - More data on prey size (or age) are needed to more accurately apportion diet across age stanzas of prey
 - More work is needed to understand how to appropriately integrate the results of genetic diet composition studies with traditional studies to make the best use of both types of datasets
 - Develop monthly catch and fishing mortality time series and monthly or seasonal indices for fully seasonal model
 - Revisit the assumption that all of the spiny dogfish biomass estimated from the stock assessment are within the model domain

- Long-Term Data Collection/Research
 - Improve data inputs for the three bird groups
 - More comprehensive seasonal and spatial sampling of spiny dogfish diets
 - Improve diet data for menhaden to determine contributions by phytoplankton groups, zooplankton, and detritus
 - Research on ecological mechanisms to incorporate more quantitative or explicit drivers of recruitment, productivity, mortality, etc.

- Short-Term Modelling

- Better quantification and depiction of uncertainties associated with the various data inputs, estimated parameters (e.g., vulnerabilities and switching power parameters), and model predictions
- Further development of Ecostate and/or the EwE software for more robust estimation of model parameters and quantification of uncertainty
- Exploring adding recruitment forcing functions for other ERP species in the NWACS-MICE model

- Long-Term Modelling
 - Develop spatially explicit ERPs, e.g., through EcoSpace
 - Depending on management objectives for spatial ERPs, spatially explicit assessment models for Atlantic menhaden and/or other ERP species may need to be developed

- Short-Term Management Process
 - Convene a spatial Ecosystem Management Objectives workshop to identify goals and objectives that spatial ERPs should address, so the ERP WG and Menhaden TC can establish a timeline for data collection and model development



Timing of Next Assessments

- 2026: MRIP re-calibrated time-series of recreational catch released
 - Scale of change unclear, but may have some impacts on striped bass, bluefish, and weakfish
 - 2027: Striped bass benchmark completed
 - Potential changes to scale of population or definition of reference points
- Update ERPs if changes to striped bass can be incorporated into the tradeoff-analysis, otherwise wait until benchmark

- Spatial ERPs are a high priority for the Board, but no clear objectives/goals
 - Inform the Bay cap?
 - ERPs for different regions to establish regional status or regional TACs?
 - Something else?
- Timeline for next benchmark will depend on management objectives

- De-couple Atlantic Menhaden and ERP benchmarks: complete single-species benchmark first to feed into the ERP benchmark
- Timing of next single-species benchmark will depend on spatial ERP objectives and capacity of SEFSC to develop spatially-explicit BAM
- Continue work on ERP models outside the benchmark framework



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Questions