OCEAN PLANNING IN THE NORTHEAST

Fish Work Group Meeting #1
Tuesday, August 12; 10:00am – 11:30am

Participants

Work Group: Giancarlo Cicchetti (EPA), Michelle Bachman (NEFMC), Chris Bonzek (VIMS), Jeremy King (MA DMF), Prassede Vella (MA CZM), Sally Sherman (ME DMR), Les Kaufman (Boston University), Malin Pinksky (Rutgers), Sharri Venno (Houlton Band of Maliseet Indians), Jonathan Grabowski (Northeastern University), Peter Auster (UConn)

Marine Life Data & Analysis Team (MDAT): Pat Halpin (Duke), Mike Fogarty (NEFSC) and Corrie Curtice (Duke)

NROC: Nick Napoli, Emily Shumchenia, John Weber

Introductions, regional ocean planning background, the role of this work group

Nick began the meeting by providing the ocean planning background and context. The June 25th Natural Resource Workshop was an opportunity to discuss the cross-cutting issues related to creating new marine life spatial data products with a broad audience (see table distributed with meeting materials). The goal of this expert work group is to inform MDAT's development of these new distribution and abundance products over the next year and to help identify longer-term priorities for marine life spatial data products. The intent is to have this group meeting every 4-6 weeks through the end of the year, with an eye towards preparing for public meetings in October and the November RPB meeting.

The work group discussed the over-arching goals of this marine life spatial mapping effort and the intended uses of the new spatial data products for ocean planning. Nick described NROC's concurrent efforts to coordinate with existing regulatory authorities on spatial data that are currently required for consultations related to the Endangered Species Act, Essential Fish Habitat and other considerations for other species groups. By using the new spatial data products to support these existing statutes, decision-making processes and coordination among agencies would be greatly improved. Nick also briefly described options for future data products derived by overlaying several of the new distribution/abundance maps for species covered by existing statutes in order to delineate areas of ecological importance, for example.

Fish species and datasets – Mike Fogarty (NOAA)

Mike described the suite of principal survey datasets currently in-hand that will be prioritized for this effort. These datasets include the NEFSC bottom trawl survey, the Northeast Assessment (NEAMAP) bottom trawl surveys, and the Massachusetts Division of Marine Fisheries (MA DMF) bottom trawl survey. The advantages of relying principally on these surveys are their wide geographic coverage (Northeast region and more), wide temporal coverage (from mid-1970s to present), and standardized collection methodology.

Additional data

Additional datasets that could be incorporated into MDAT products include bottom trawl surveys in Long Island Sound and Narragansett Bay, for example. These datasets would offer the option for higher spatial resolution data products in some geographic areas, but would require additional work to assemble and analyze. Many states in the region have explored mapping or modeling of local datasets like these for state ocean planning efforts.

The work group also discussed additional datasets specific to individual species. These datasets are typically surveys that are targeted to a species or species group.

- **Work group members are encouraged to review the MDAT data sources and send any additional data sources or any other comments about data sources to MDAT: northeast_marinelife_data@duke.edu**

Species

The work group discussed the species list provided by MDAT derived from datasets in-hand (see table distributed with meeting materials), as well as the NROC species list assembled by considering existing regulatory authorities and other factors (also distributed with meeting materials). There are species in common between these lists as well as species on the MDAT list (that are found in the principal trawl data) that are not on the NROC list, and vice versa. For example, the MDAT list currently contains subtropical species that may expand their range into the Northeast region due to climate change. The NROC list includes several large apex predator species that may be of conservation concern, but are not captured in the principal bottom trawl surveys utilized by MDAT.

The work group highlighted several species as important to include in analyses but that are not well-represented in the principal bottom trawl surveys. These species include American lobster, American eel, Atlantic sea scallop and river herring. The work group offered suggestions for additional data sources on these species and discussed options for creating spatial data products for these species.

The work group also discussed the potential importance as prey of several fish species to marine mammals and birds. The work group agreed that MDAT should coordinate among subgroups to ensure that species lists contain prey species or other co-varying species if possible.

Finally, the work group discussed particular species that are important to Tribes, such as anadromous fish. The principal bottom trawl surveys may not be the best source of data for these species. Tribal representatives described the importance of these species for their stakeholders and for ocean planning.

- **MDAT will assemble a list of potential additional data sources for river herring, American eel, American lobster, and Atlantic sea scallop**
- **MDAT to coordinate species lists among marine life components**
- **Work group members are encouraged to review the MDAT species list and send any additional species and potential data sources for those species or any other comments about species to MDAT: northeast_marinelife_data@duke.edu**

Product options

Mike Fogarty's Ecosystem Assessment Program group has developed a number of spatial data products using existing NOAA NEFSC bottom trawl survey data – examples of maps and animations can be found on their website. The goals of the MDAT project are to 1) update these products with additional datasets (i.e., NEAMAP, MA DMF) 2) add the most-recently collected data for each of these surveys, 3) improve the resolution of the models by exploring alternative geostatistical/interpolation methods, and 4) derive new, more ecologically-integrative products such as maps of trophic groups, total fish biomass and total fish biodiversity.

The current approach uses simple interpolations to get a broad view of fish distribution and abundance in addition to more complex modeling with environmental covariates (such as temperature and depth). Environmental covariates include those collected during the bottom trawl surveys themselves (e.g.,

depth, bottom temperature) and remotely sensed data (e.g., sea surface temperature). The work group discussed options for grouping species by functional or trophic groups as well as binning years in order to increase the number of observations for modeling. The work group also discussed the potential for the whole MDAT team to utilize the same environmental covariates across marine life components for distribution/abundance modeling.

- **MDAT will explore options for incorporating additional environmental covariates such as side scan sonar data and sediment data**
- **MDAT will also consider potential species groupings**

Analysis of trends and accounting for climate change

The current NOAA models include animations that help to visualize changes in fish distribution and abundance through time. The work group discussed options for creating new spatial data products that project future fish distribution and abundance based on changing environmental conditions. The MDAT fish subgroup is aware of an ongoing project at the Gulf of Maine Research Institute to better understand this issue. The NEFSC is also involved in a project with The Nature Conservancy to understand potential species shifts due to climate change. The results of this project may inform MDAT spatial products. Lastly, the MDAT fish species list includes a number of subtropical species that can be mapped in order to better understand what species may expand their distribution and/or increase in abundance as a result of climate change.

Next steps

MDAT and NROC will reach out to work group members who were not on the call to determine if there are additional species important for this work and to identify additional data holdings. Scheduling for the next call in mid-September will go out shortly.