Avian Work Group Meeting #2
Friday, September 19; 9:00am – 10:30am

Participants

Work Group: Jeff Leirness (USFWS), David Bigger (BOEM), Daniel Martin (NOAA), Tom French (MA Division of Fisheries and Wildlife), Wing Goodale (BRI), Chris Elphick (UConn), Al Lombana (TNC), Holly Goyert (N.C. State), Todd Callaghan (MA CZM), Dick Veit (CUNY)

Marine Life Data & Analysis Team (MDAT): Pat Halpin (Duke), Jesse Cleary (Duke), Corrie Curtice (Duke), Earvin Balderama (Loyola), Brian Kinlan (NOAA), Arliss Winship (NOAA)

NROC: Nick Napoli, Emily Shumchenia

Welcome, introductions, etc.

After roll call, Emily described the process by which NROC and the MDAT team are following up with work group members who were unable to attend calls. As with the follow-ups from Call #1, members who are absent from future calls will be contacted by Emily or Corrie and given the opportunity to comment on what was discussed during the missed call(s). All comments are documented and shared internally with the MDAT team.

After Call #1, important follow-up discussions included the importance of developing maps for nearshore and coastal areas (0-3 km from shore) where most human-bird interactions are likely to occur; observations here are limited, and the planned NCCOS model predictions are often poor due to a lack of coverage of environmental covariates. We are also engaging experts on coastal migrants (e.g., passerines and shorebirds) that utilize offshore areas during specific times of year. These experts will help the team prioritize coastal migrant species for mapping.

Species prioritization/grouping options – see slides 4 – 12

Priority species are **(1)** "high" or "highest" priority in Bird Conservation Region 30 (New England/Mid-Atlantic coast); OR **(2)** listed as endangered by any New England state; OR **(3)** protected/recognized/previously mapped in any state ocean plan.

Species that can be modeled by MDAT contain > 100 observation records for the entire Atlantic coast for any season in the Compendium.

Priority species that CAN be modeled: See list on SLIDES 6-7. The work group will consider if models are desired for all of the species meeting these criteria. Possible exceptions include species mapped in the NY offshore study for which neither (1) or (2) above are applicable.

Priority species that CANNOT be modeled: See list on SLIDES 8-9. The work group discussed mapping options for these species. In some cases, as few as 50 observations could still be used to model distribution/abundance in the NCCOS modeling framework. The work group recommended lumping Arctic, Roseate and Common terns and perhaps "all unidentified terns" in the Compendium in order to increase the number of observations for a model. However, some terrestrial species (e.g., Golden-winged warbler) distribution and abundance would be misrepresented by aerial/ship surveys and should not be mapped or modeled using Compendium data – other terrestrial sources (e.g., radar, banding) would be more appropriate. The work group then offered several observations and comments on this species list: 1) There are FWS datasets and observations for several of these species that are not in the Compendium. 2) We have only noted the SHARP focal species on our spreadsheet and that they are

collecting data on several more species. 3) Species such as Bridled tern and Wilson's plover are at the edge of their range in the Northeast and do not need to be modeled/mapped here. 4) Black skimmer, black tern and Forster's tern are not in the MA SSU designation as noted in our spreadsheet.

- **Add numbers of observations from Compendium for Priority species that cannot be modeled to our spreadsheet**
- **Follow up with work group members to identify datasets and species/locations where USFWS might contribute to future analyses**
- **Work group members to highlight other SHARP (non-focal) species in our spreadsheet**
- **Work group members to highlight species for which Compendium data is unreliable for modeling**
- **Create an editable/shareable version of our spreadsheet to send to work group members so that they can check for classification accuracy, as well as make species prioritization, data source and mapping/presentation recommendations directly on the list**

Non-priority species that may be modeled: See lists on SLIDES 11-12. The work group examined this list for species that may be of interest for mapping/modeling. Phalaropes should be modeled – they are declining in the region and little is known about their distribution/abundance at sea. Royal terns should not be grouped with other terns; they are a more southern species that is expanding northward.

Non-priority species that will not be modeled or presented: See lists on SLIDES 11-12. The work group examined this list for species that could be important. Little gulls are pelagic and a substantial number of them winter offshore; therefore they may be of interest to model/map.

- **Prioritize phalaropes and little gull**
- **Work group members to make comments and prioritization recommendations for these subsections of the spreadsheet**

Methods overview – see slides 13 – 32
Brian and Earvin each briefly described the frameworks and methods for their respective modeling approaches. As a result, the work group began a discussion about the ecological meaning of model outputs. This conversation logically flowed into the next discussion topic about potential outputs and products.

Proposed products overview – see slides 33+
The work group discussion about proposed products could be broadly categorized by 1) distribution and abundance products; and 2) post-processed interpretive products. For the first category, MDAT will develop maps of predicted abundance and predicted probability of occurrence. These products will be relevant to a wide range of ocean planning and resource management needs. The second category of products is derived from the first category, and requires various degrees of interpretation and/or expert judgment. These types of products include metrics of persistence and thresholds of abundance, occurrence and persistence for individual species. These products could be customized to relay ecologically- or biologically- important information to ocean planning and management activities at the regional scale or for a particular purpose. For example, at the regional scale, thresholds of avian persistence could be defined to identify important areas for birds (e.g., places that birds return to year after year). The way(s) in which this work group contributes to the definition of thresholds will also help inform the RPB's consideration of other ecological analyses and identifying ecologically important areas in the region. This topic will be a focus of a subsequent work group call.

Brian clarified that the NCCOS abundance outputs are not predictions of precise/actual abundances. The work group confirmed that this was also their understanding and agreed that the NCCOS outputs are sufficient for effective decision making.

Of the NCCOS models, the work group discussed whether high abundance or high occurrence was a more appropriate indicator for decision making. What happens when each of these layers gives an opposite output (e.g., high abundance but low occurrence)? Members suggested that an index of persistence might be useful to address these questions. Brian suggested that Earvin's models may help answer that question by mapping the probability that a chosen number of birds would occur in a given space over the course of a year.

Another work group member suggested that the metric we really care about is abundance, not occurrence, but that we would have to adjust or correct for the influence of a single large aggregation occurring briefly. They recommended calculating a metric of cumulative abundance over the year. Again, Brian suggested that the maps showing probability of exceeding a threshold abundance would work well for representing this idea (Earvin's models).

The group then discussed how these thresholds could be defined. It was decided that the threshold outputs that Earvin's models generate automatically would likely be insufficient for many species (SLIDES 31 & 32). The work group then discussed the process of defining these thresholds for each species individually based on some percentage of the total population, using "ballpark estimates" of total population. They agreed that this approach would work well because it would allow us to accurately compare probability maps for species with similar threshold abundances but whose populations exist either entirely within our region or mostly outside our region. This approach would lead to more effective decision making.

In order to further address questions and concerns about the differences between abundance and occurrence maps (SLIDE 24), Brian suggested that Earvin's model outputs (SLIDES 31 & 32) be used to calculate a persistence measure for each species. The state of Massachusetts has looked at persistence in two ways – persistence over the course of a year and persistence over the course of our total record of observations. Annual persistence is useful for planning the timing of construction activities (or any other short-term disturbance) whereas cumulative persistence is critical to overall siting decisions – e.g., defining the areas that birds return to year after year. Massachusetts has found that mapping the 10th and 90th percentiles of the probability of occurrence has been useful (rather than the average). Work group members recommended considering use of the top quantile of probability of occurrence based on % of population size to define important areas for each species.

The group again stressed the need for unique thresholds for each species. For example, a map that shows 100% probability of 1 individual occurring anywhere in the study area over the course of the year is not useful to managers. However, a threshold of 1 individual may be appropriate for an endangered species like Roseate terns. In future work, those maps could be overlaid with more information about risk to specific activities and could perhaps be useful in site-specific analyses.

- **MDAT will work with work group members to develop options for a persistence metric derived from model outputs**

Next work group call

Feedback on species prioritization will be sought out and incorporated prior to the next call. The work group may also further consider the issue of thresholds on the next call; this topic will be informative to the RPB's decision related to defining ecologically important areas. We will address questions such as: How can we effectively and efficiently define thresholds for all modeled species? Can we do this given the timeframe for this work?