RUTGERS

PROTECTION OF CRITICAL BEACH-NESTING BIRD HABITATS IN THE WAKE OF SEVER COASTAL STORMS
Interim Progress Report – F14AC01023
June 30, 2016

Tasks Completed This Period

Task 1: Development of Best Management Practices for Preservation of Beach-Nesting Bird Habitat

We have conducted a thorough literature search of habitat selection and habitat quality for the four target species. We are in the process of extracting from the literature relevant information, and we are working to synthesize this information into a format that can be interpreted and used by land managers. We are also including quantitative information developed from our models. We anticipate providing a draft report by September 30, 2016.

Task 2: Delivery of Regional Stakeholder Workshops

Based upon the results of our work over the past two years, as well as discussions with USFWS, land use agencies, and municipalities, we have reworked our strategy for disseminating the management implications of our research. We will hold two stakeholder meetings, one of which will include state, federal, and regional regulators and agency personnel whose tasks or activities interface with beach nesting bird management and conservation. This group will include, but not be limited to, U.S. Fish and Wildlife Service, New Jersey Division of Fish and Wildlife, New Jersey Division of Land Use Regulation, U.S. Army Corps of Engineers (NY and Philadelphia Districts), New Jersey Department of Environmental Protection - Bureau of Coastal Engineering. The second meeting will focus on coastal communities and land owners that host beach nesting birds and whose activities (i.e. beach maintenance practices, public use policies) impact nesting birds and their habitat. Both meetings will include segments summarizing the results of this project, including best management practices and other recommendations. It is anticipated the meeting with the regulatory/wildlife agencies will also include a directed discussion about the implementation of the findings and relevance to their respective missions. The community meeting will be more information in focus, although feedback on potential conflicting issues on their sites will be solicited.

New Applications of Work:

1. *Evaluation of Beach-nesting Birds as Umbrella Species* – As discussed in our last report, we evaluated the utility of each of our target species as a conservation umbrella for beach-nesting birds. Our manuscript, based upon the worked funded by this project, has been accepted with minor revisions to *Biological Conservation*. The abstract is below:

Selecting umbrella species for conservation: A test of habitat models and niche overlap for beach-nesting birds

Umbrella species are rarely selected systematically from a range of candidate species. On sandy beaches, birds that nest on the upper beach or in dunes are threatened globally and hence are prime candidates for conservation interventions and putative umbrella species status. Here we use a maximum-likelihood, multi-species distribution modeling approach to select an appropriate conservation umbrella from a group of candidate species occupying similar habitats. We identify overlap in spatial extent and niche characteristics among four beach-nesting bird species of conservation concern, American oystercatchers (*Haematopus palliatus*), black skimmers (*Rynchops niger*), least terns (*Sterna antillarum*) and piping plovers (*Charadrius melodus*) and across their entire breeding range in New Jersey, USA. We quantify the benefit and efficiency of using each species as a candidate umbrella species on the remaining group. Piping plover habitat encompassed 86% of the least tern habitat but only 14.6% and 13.2% of the black skimmer and American oystercatcher habitat, respectively. However, plovers co-occur with all three species across 66% of their total habitat extent (~649 ha), suggesting their value as an umbrella at the local scale. American oystercatcher habitat covers 100%, 99% and 47% of piping plover, least tern and black skimmer habitat, making these species more appropriate conservation umbrellas at a regional scale. Our results demonstrate that the choice of umbrella species requires explicit consideration of spatial scale and an understanding of the habitat attributes that an umbrella species represents and to which extent it encompasses other species of conservation interest. Notwithstanding the attractiveness of the umbrella species concept, it unlikely replaces local conservation interventions especially for breeding individuals in small populations.

2. We have been provided with an additional $10,000 to expand our piping plover model to the south shore of Long Island. To date, we have produced a land use layer of the expanded study area that is compatible with our New Jersey data. We have received information on piping plover nesting locations, as well as general areas of public lands. We are now working on converting these data into useful model inputs. We hope to run our new model within the next two weeks.

Youth and Veteran Involvement

We are continuing to employ part-time a female, minority youth, who is assisting PI-Maslo in the generation of models and maps.