BOEMRE ENVIRONMENTAL STUDIES PROGRAM PROFILE

Region: Headquarters

Planning Area(s): All Atlantic

Title: Compendium of Avian Information and Comprehensive GIS Geodatabase (NT-08-03)

Cost: $200,000 ($100,000 BOEMRE/$100,000 USGS)

Period of Performance: FY 2011-2012

Conducting Organization: U. S. Geological Survey

BOEMRE Contact: Dr. Sally Valdes

Description:

Background: With the passage of the Energy Policy Act of 2005, the BOEM was delegated responsibilities for alternative energy activities on the Outer Continental Shelf. This new responsibility includes offshore wind energy projects. Experience from onshore wind development suggests that the siting of facilities is critical to minimize impacts to bird species, particularly migratory birds. While the BOEM and other Federal and State Agencies and others collect and/or compile data on many coastal and marine birds, this data is widely dispersed and of varying quality. Since 2008 USGS and BOEM have had an interagency agreement to compile, synthesize and incorporate into a comprehensive GIS Geodatabase seabird and shorebird data along the Atlantic coast to assist BOEM scientists and decision-makers regarding potential impacts from wind energy development on the OCS. The need for this information was identified during the BOEM Alternative Energy workshop and in the Worldwide Synthesis and Analysis of the Existing Information Regarding Environmental Affects of Alternative Energy Uses on the OCS.

To support modeling efforts of seabirds in the western Atlantic, USGS has assembled >250,000 seabird occurrence records that include scientific surveys as well as general observations from 1906 to the present. However, models are only as good as the data that goes into them and much of the data currently in the Seabird database is more than 20 years old, making it increasingly difficult to use for predictive modeling due to the limited occurrence data for many species, ad hoc sampling approach used on many historical surveys, and the paucity of environmental data available to use as model variables. Modeling is a data-intensive process and the more data available, the better the predictions and inferences that can be made. Recently, major strides have been made towards collecting new seabird survey data in the form of improved survey design (e.g., US Fish and Wildlife Service Atlantic Seaduck Survey). As a result, our collection of recent knowledge about seabirds is growing steadily. In addition, several states (RI, DE,

NJ) have been sponsoring seabird surveys offshore of their respective states while the federal funded work continues on NOAA ships-of-opportunity. Some projects have just completed or are near completion. As new information becomes available, the data can be folded into the existing database once work is completed. New data will be very important for improving the accuracy of model output and improve our ability to understand distributions under different environmental and anthropogenic forces. Especially important may be models that predict future seabird distributions under various climate change scenarios.

Finally, by compiling a comprehensive collection of existing data sets it will be possible to identify geographic, temporal and species data gaps to help identify future research needs.

Objectives: The objectives of the study are to: augment the comprehensive Geodatabase populated with data on seabird and shorebird species that are potentially at risk from offshore wind facility development with data from major new survey efforts; to model seabird occurrence relative to physical, chemical and biological factors; and to provide maps that illustrate the modeling results in a way that is understandable to decision-makers and the public.

Methods: The data search and synthesis will focus on new major data sources for birds in the Atlantic offshore environment that are now, or will soon, become available. The information will be integrated, when appropriate, into the GIS Geodatabase. The augmented data base will be used to model issues of importance to decision-making concerning future wind facilities, for example, how habitat affects distribution, whether distributions have changed over time (effect of climate change or other factors), and how distance from shore might affect distributions of different species of concern.

Importance to BOEM**:** Development of offshore alternative energy facilities, particularly wind turbines, have the potential to impact bird species. Knowledge about the numbers and distribution of bird species that are at risk would greatly assist the BOEM in identifying locations that are preferred for wind energy development and those that should be avoided.

Current Status: Ongoing interagency agreement with U.S. Geological Survey.

Final Report Due: Various reports. Interagency agreement ends January 2011. Have requested no-cost extension until April 2011. New final report would be due April 2013.

Publications from current project:

Zipkin, E. F., B. Gardener, A. T. Gilbert, A. F. O'Connell, Jr., J. A. Royle, and E.D. Silverman. 2010. Distribution patterns of wintering sea ducks in relation to the North Atlantic Oscillation and other local environmental characteristics. Oecologia 163:893-902.

Presentations scheduled for World Seabird Conference, September 7-11, 2010:

Garner, Beth. 2010. Estimating occupancy and detection of multiple species from repeated aerial count data.

Gilbert, Andrew. 2010. Increasing our knowledge of seabird distributions in the U.S. Atlantic: Development of a relational seabird occurrence and survey effort.

O'Connell, Allan. 2010. Hierarchical models for estimating seabird distribution in the Northwest Atlantic.

Revised Date: November 12, 2010