

## **Office of Renewable Energy Programs: Ongoing Studies**

**Study Area(s):** Atlantic

**Administered By:** Office of Renewable Energy Programs

**Title:** Statistical Guidelines for Marine Avian Studies

**BOEM Information Need(s) to be Addressed:** BOEM developed [guidelines](#) for avian surveys on the Outer Continental Shelf (OCS) that provide guidance to potential applicants, states, and federal agencies on conducting avian surveys. These guidelines include explicit recommendations on the number of surveys needed to detect aggregations of birds in OCS lease blocks. These guidelines are updated as new information becomes available. Satisfying this immediate BOEM need will support the interpretation of existing avian survey data for NEPA, the design of future monitoring efforts, and the assessment of impacts due to other activities on the OCS.

**Total Cost:** \$247,000

**Period of Performance:** FY 2012-2017

**Conducting Organization(s):** National Oceanic Atmospheric Administration  
National Ocean Service National Centers for Coastal Ocean Science

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### **Description:**

**Background:** The launching of the Secretary's "Smart from the Start" wind energy initiative for the Atlantic OCS is aimed at facilitating the prioritization, rapid siting and leasing of new projects. Experience from onshore wind development in the US and offshore development in Europe indicate that siting of facilities is an important approach in minimizing impacts to seabird bird populations. Discussions during the US Fish and Wildlife Service Marine Bird Science and Offshore Wind Workshop and the BOEM [Atlantic Wind Energy Workshop in 2011](#) emphasized the importance of identifying areas of persistent aggregations of birds (a.k.a. "hot spots") which may conflict with offshore wind energy development. Conversely, the identification of "cold spots" or areas where birds do not aggregate and thus may not conflict with wind energy development is equally important. Yet, seabirds are highly mobile organisms, and detecting "hot spots" and "cold spots" of seabird aggregation in the marine environment poses a statistical challenge. This research will develop a general framework for determining the number, frequency, and temporal distribution of survey effort needed to adequately characterize the occurrence and abundance of seabird species on the Atlantic OCS.

**Objectives:** The objective of this study is to develop guidelines for statistically robust sampling of seabird abundance to support environmentally responsible marine renewable energy siting.

**Methods:** A statistical power analysis will be used to estimate the number of surveys needed to determine the likelihood of a site being a seabird “hotspot” or “coldspot”. The analysis will rely on existing seabird data from the “[Compendium of Avian Occurrence Information for the Continental Shelf waters along the Atlantic Coast of the U.S.](#)”

**Current Status:** Additional analyses are being conducted to develop species-specific survey recommendations. Preliminary results of Phase II were received in November 2016 and January and February 2017.

**Final Report Due:** March 31, 2018

**Publications Completed:**

Zipkin, E.F., J.B. Leirness, B.P. Kinlan, A.F. O'Connell, and E.D. Silverman. 2012. Fitting statistical distributions to sea duck count data: implications for survey design and abundance estimation. *Statistical Methodology*. doi:10.1016/j.stamet.2012.10.002

Kinlan, B.P., E.F. Zipkin, A.F. O'Connell, and C. Caldow. 2012. Statistical analyses to support guidelines for marine avian sampling: final report. U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs, Herndon, VA. OCS Study BOEM 2012-101. NOAA Technical Memorandum NOS NCCOS 158. xiv+77 pp. <http://www.boem.gov/OCS-Study-BOEM-2012-101/>

Kinlan, B.P., E.F. Zipkin, A.F. O'Connell, A. Sussman, M. Wimer, and C. Caldow. 2013. Statistical analyses to support guidelines for marine avian sampling. Oral presentation. Atlantic Marine Bird Conservation Cooperative Workshop, Charleston, SC, March 2013. ([PDF](#))

Zipkin E.F., Kinlan B.P., Sussman A., Rypkema D., Wimer M., and O'Connell A.F. 2015. [Statistical guidelines for assessing marine avian hotspots and coldspots: a case study on wind energy development in the U.S. Atlantic Ocean](#). *Biological Conservation*. 191: 216-223.

**Affiliated WWW Sites:** <https://coastalscience.noaa.gov/projects/detail?key=189>

**Revised Date:** June 30, 2017