

Supporting Pacific Coast Renewable Energy - 2013

Discipline	Title	Rank
HE/MM	<u>Data Synthesis and High-Resolution Predictive Modeling of Marine Bird Spatial Distributions on the Pacific OCS</u>	3
Needed now to fully understand distribution and abundance of avian species off the Pacific coast prior to renewable energy installation.		



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BOEM Information Need:

Improved species-specific distributions and density estimates of seabirds that can be extended to non-surveyed areas.

Relationship to Previous BOEM-Supported Research:

- This study builds on avian studies funded through the Pacific OCS Region that were done to determine existing baselines of species.
- This study will provide detailed information linking varying environmental and oceanographic conditions to seabirds within the Pacific OCS and will help define habitat characteristics and identify mechanisms that aggregate seabirds.



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OBJECTIVES

Increase BOEM's understanding of marine bird distribution on the Pacific OCS by:

- 1) Collating existing data from surveys conducted over the last 50 years;
- 2) Predictively modeling marine bird distribution on the Pacific OCS, taking into account all available data and relationships with environmental variables; and
- 3) Mapping the predictive distribution of marine birds to identify areas of persistent aggregation and persistent avoidance ("hotspots" and "coldspots").



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METHODS

- 1) Identify and acquire datasets and extract sightings to identify species and groups of interest, combine species into functional groups where necessary, develop standardized effort metrics and relative indices of occurrence and abundance, and develop dataset and taxa-specific uncertainty estimates/weights;
- 2) Identify, collect, format and process environmental and oceanographic predictors for the Pacific OCS;
- 3) Choose modeling methods that account for multiple datasets with different levels of confidence and measurement error; account for different spatial and temporal support; and adapt existing methods that have been successfully applied in other regions;
- 4) Produce continuous, high resolution predictive maps of presence probability and sightings per unit effort (SPUE) for bird species and groups of interest, including maps of annual climatologies and uncertainty;

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- 5) Provide model predictions for presence probability and SPUE within BOEM lease blocks or similar sets of polygonal planning areas by performing spatial simulation and calculating ensemble statistics for each lease block; and
- 6) Combine predictive maps across species and groups to identify “hotspots” and “coldspots” of abundance and diversity and/or occurrence of multi-species assemblages of interest with a limited, targeted effort based on guidance from BOEM, USFWS, USGS and other interested parties.



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