Supporting Hawaiian Renewable Energy - 2013

Discipline	Title	Rank
HE/MM	Habitat Affinities and At-Sea Ranging Behaviors among Main Hawaiian Island Seabirds	6
Needed now for assessment and environmental review of offshore energy projects off the Main Hawaiian Islands (MHI).		

BOEM Information Need:

BOEM needs quantitative information that links distribution, movements and behaviors among seabirds with physical habitats in waters surrounding the MHI to evaluate potential effects to seabirds and their oceanic habitats caused by installation of new renewable energy infrastructure within OCS waters off Hawaii.

© David Pereksta

Relationship to Previous BOEM-Supported Research:

This study will collect detailed information linking Hawaiian breeding seabirds with coastal and offshore habitat utilization surrounding the MHI and help link surface wind and wave direction data with proposed *in situ* seabird telemetry data. This will allow BOEM to expand it's previously funded "Seabird Vulnerability Index" for the Pacific OCS to the waters surrounding the MHI.

OBJECTIVES

Increase BOEM's understanding of at-sea habitat utilization and ranging behaviors for seabirds breeding within the MHI by:

1) Conducting multi-species and multi-scale quantifications of at-sea habitat utilization and ranging behaviors for seabirds breeding within the MHI; and

2) Compiling and providing an analysis of remotely-sensed and model-derived habitat data (e.g., chlorophyll concentrations, sea surface temperature, sea surface height, sea level pressure and wind speed/direction) to examine habitat relationships that can be used to predict species' distributions and improve spatial vulnerability maps.

METHODS

© David Pereksta

1) Combine existing recent telemetry-based information on at-sea utilization and behavior with new measurements of at-sea habitat utilization (GPS, Ultra High frequency and Global Location Service-based telemetry and archival sensors) among the most abundant, near-island foraging species. For species that frequently visit MHI waters, tracking deployments will be targeted at significant roosting areas;

2) Use spatially-explicit habitat modeling to combine seabird utilization with oceanographic habitat to generate mapped species probability distributions and multi-species data that will be combined to delineate community-level hotspot areas; and

3) Generate numerical models that relate flight behavior with fine-scale (2-6 km) winds and waves to evaluate 3-dimentional risk.