

DOCKETED

Docket Number:	19-ERDD-01
Project Title:	Research Idea Exchange
TN #:	225409
Document Title:	Presentation - Renewable Energy Research in Action - Supporting Science-Informed Decision-Making
Description:	By: Jeremy Potter of BOEM - Marine Environmental Research to Support the Transition to Renewable Energy
Filer:	Silvia Palma-Rojas
Organization:	BOEM
Submitter Role:	Public Agency
Submission Date:	10/30/2018 9:12:41 AM
Docketed Date:	10/30/2018



BOEM

Renewable Energy Research in Action

Supporting Science-Informed Decision-Making

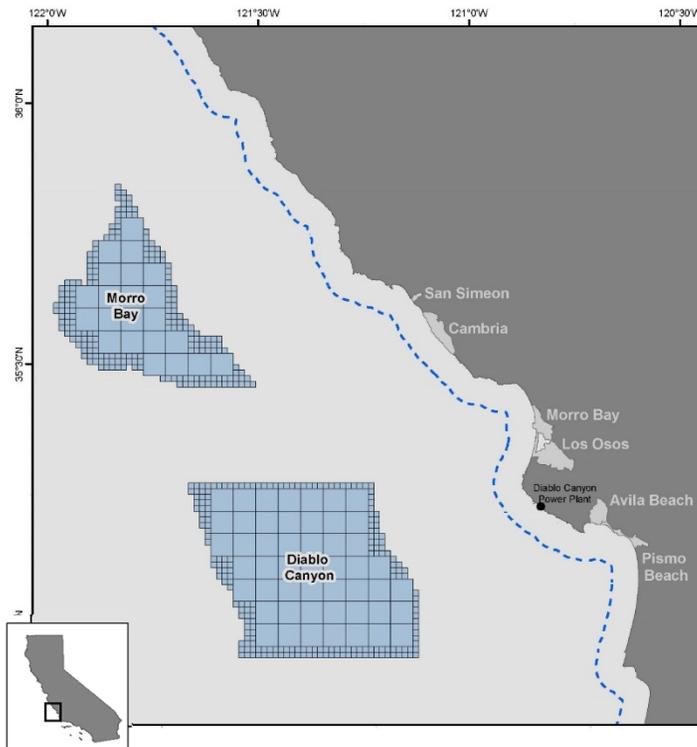
Jeremy Potter

Environmental Sciences Section Chief, Pacific OCS Region, Bureau of Ocean Energy Management (BOEM)

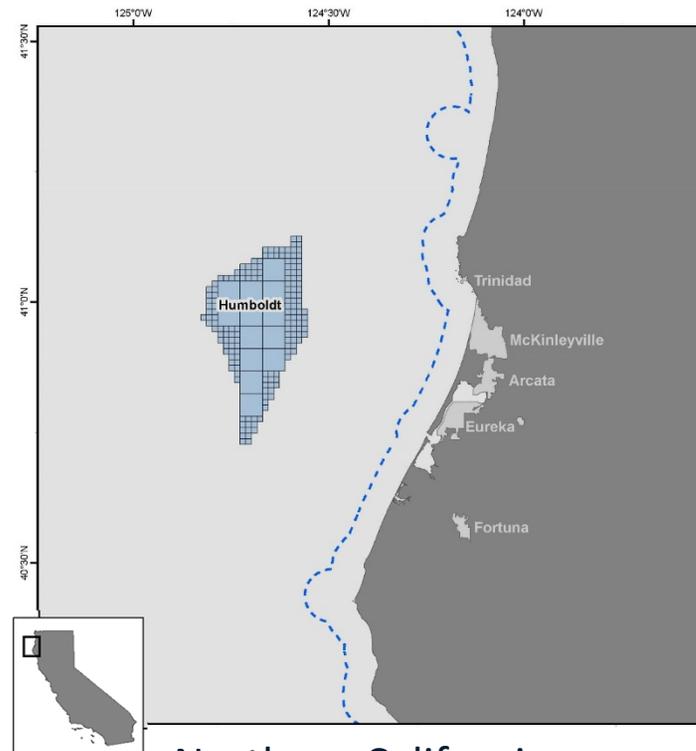
CEC Workshop: Next Generation Wind Energy Tech & their Environmental Implications

Sacramento, CA | October 25, 2018

Wind Energy Call Areas – Central and Northern California



Central California



Northern California

BOEM Environmental Programs

Environmental Sciences

Provide information to predict, assess and manage effects from offshore energy and marine mineral exploration, development and production activities on human, marine and coastal environments



Environmental Analysis

Develop environmental documents under the National Environmental Policy Act (NEPA) to inform decisions on offshore energy exploration, development and production



Block Island. Image: Eric Thayer/Bloomberg

Ecological Information for Renewable Energy

- Seasonal distribution and abundance
- Seasonal density maps
- Migration routes and patterns
- Attraction and avoidance behavior
- Displacement effects
- Prey base changes
- Nocturnal activity and movement
- Effects of noise, vibration, lights and structures
- Collision risk



Difficult information to collect due to weather, remoteness, vessel availability, etc. 4 

Multi-tiered Approach and Goals

Broad-scale Assessments

- Facilitate planning at landscape level
- Government supported

Site-specific Assessments

- Project-level planning and assessment
- Project proponent supported
- BOEM guidelines based on statistical analysis

Goals

- Identify baseline conditions
- Detect changes associated with anthropogenic effects
- Evaluate the effects of past policies and management activities
- Design and implement projects that will minimize adverse effects to marine resources to the maximum extent practicable

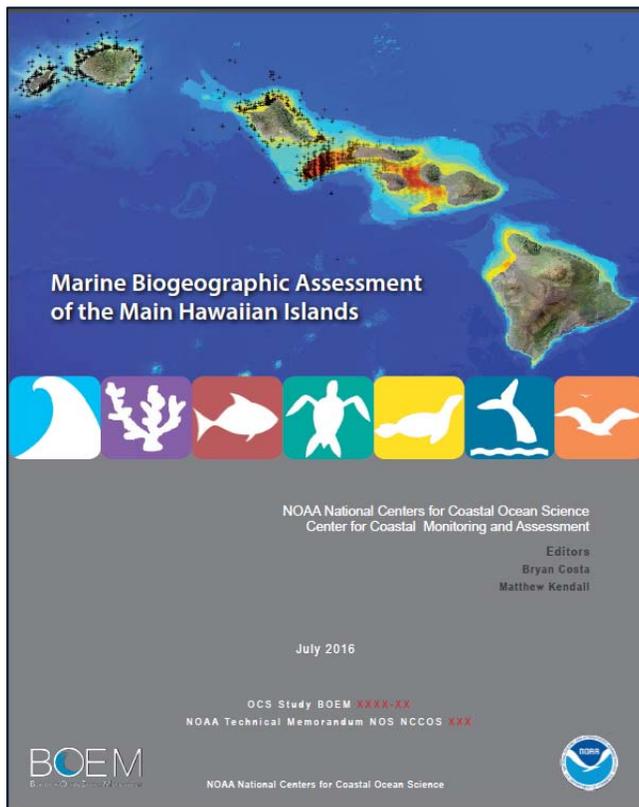


Strategic Approach to Renewable Energy Research



- Synthesize existing data
- Collect new data
 - Technology development
- Assess risk
- Monitor

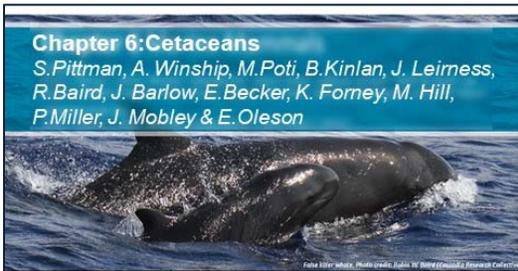
Marine Biogeographic Assessment – Main Hawaiian Islands



- How are select marine species or taxonomic groups distributed spatially and temporally around the MHI?
- What environmental conditions potentially influence these distributions?
- What significant gaps exist in knowledge about the marine biogeography of the MHI?

<https://www.boem.gov/ESPIS/5/5555.pdf>

Marine Biogeographic Assessment – Main Hawaiian Islands



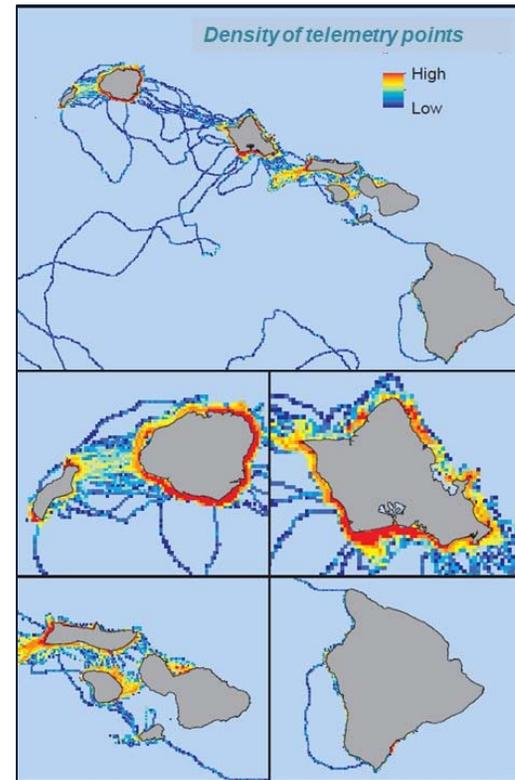
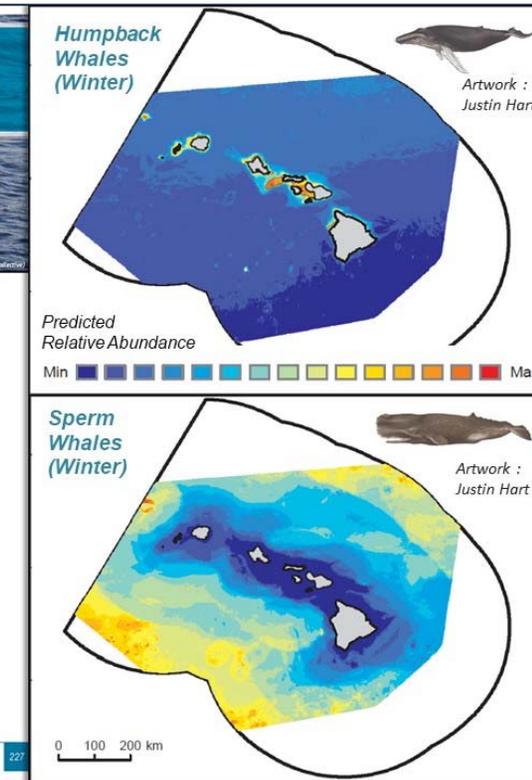
Chapter 6: Cetaceans

S. Pittman, A. Winship, M. Poti, B. Kinlan, J. Leirness, R. Baird, J. Barlow, E. Becker, K. Forney, M. Hill, P. Miller, J. Mobley & E. Oleson

GIS Data: (66 Spatial Layers)

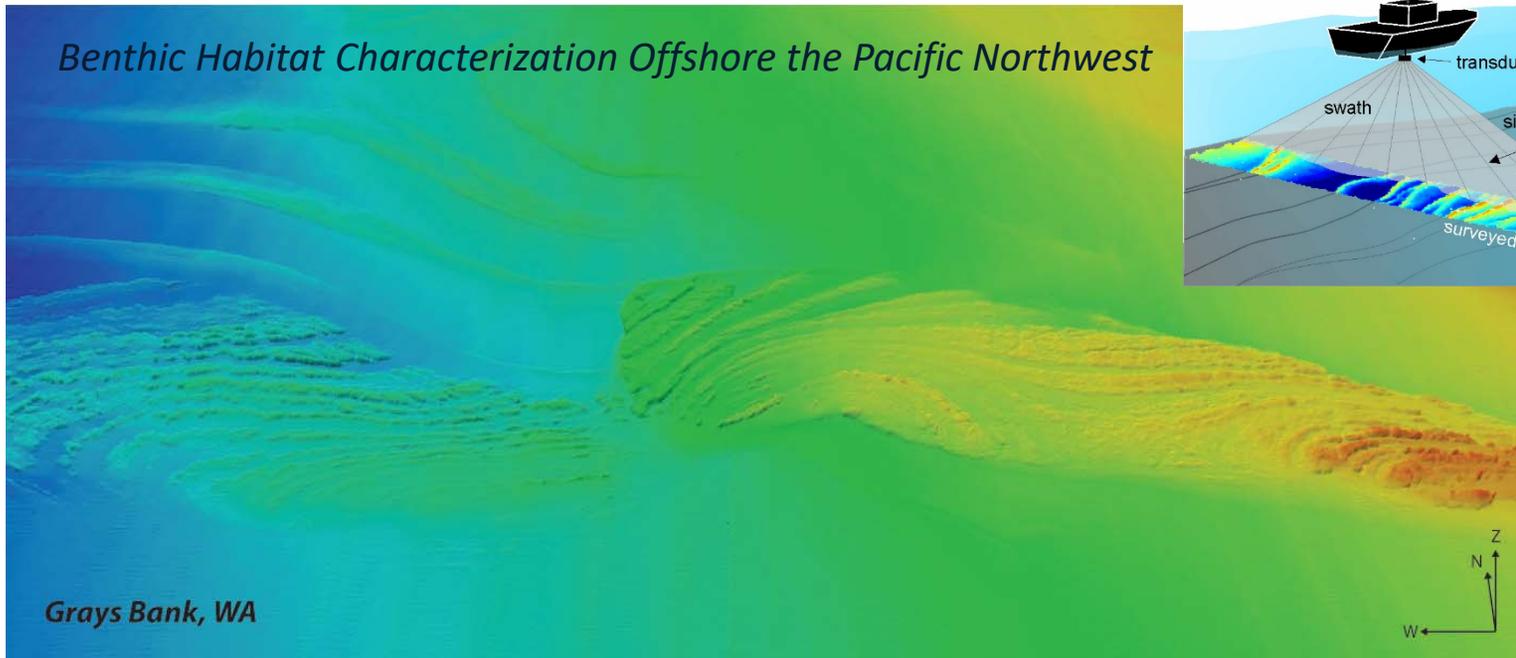
- Summer/winter presences for 22 species (42)
- Summer/winter spatial predictions & uncertainty for 7 species (24)
- Model inputs (listed in Chapter 2)

Data Sources: NOAA SWFSC MMTD, NOAA PIFSC PSD, Cascadia Research, UH



Fishes and Essential Fish Habitat

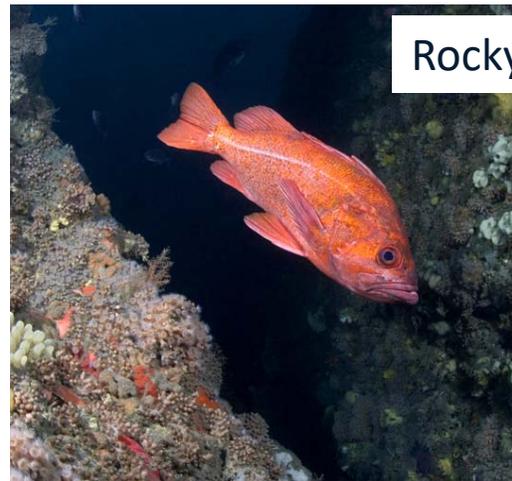
Seafloor mapping is used to predict the distribution of fish and sensitive habitats



Fishes and Essential Fish Habitat



Rocky Relief Classes		Sediment Type	
 mid relief	 depression	 gravel mix	 coarse sand
 crest		 medium sand	 fine sand
		 muddy sand	



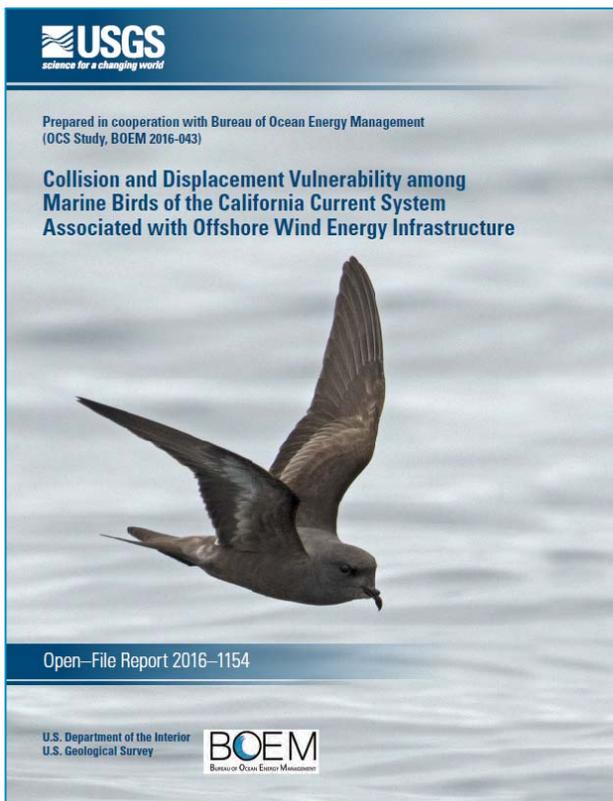
Rocky Habitat



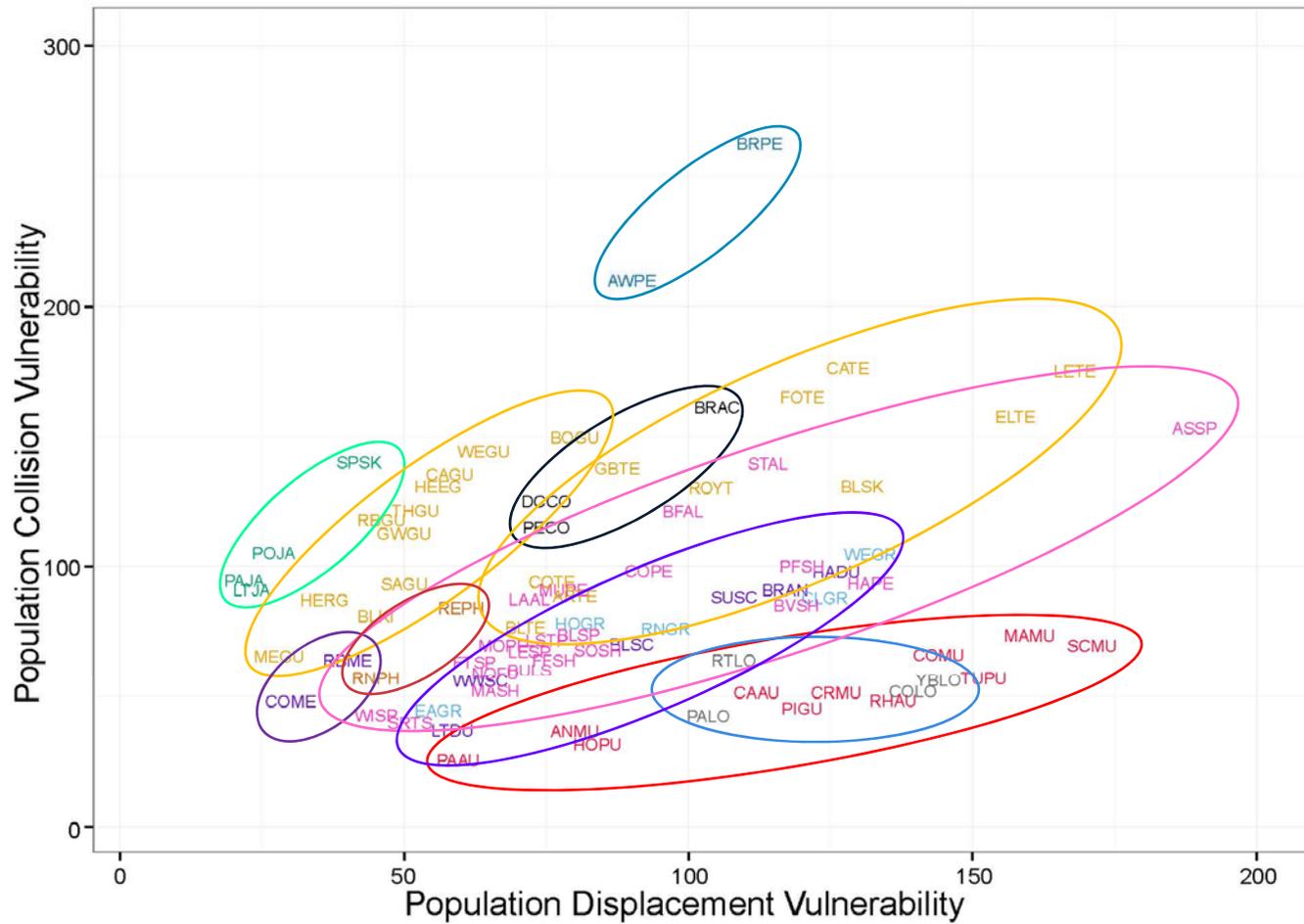
Muddy Habitat



Marine Bird Vulnerability to Offshore Wind Energy

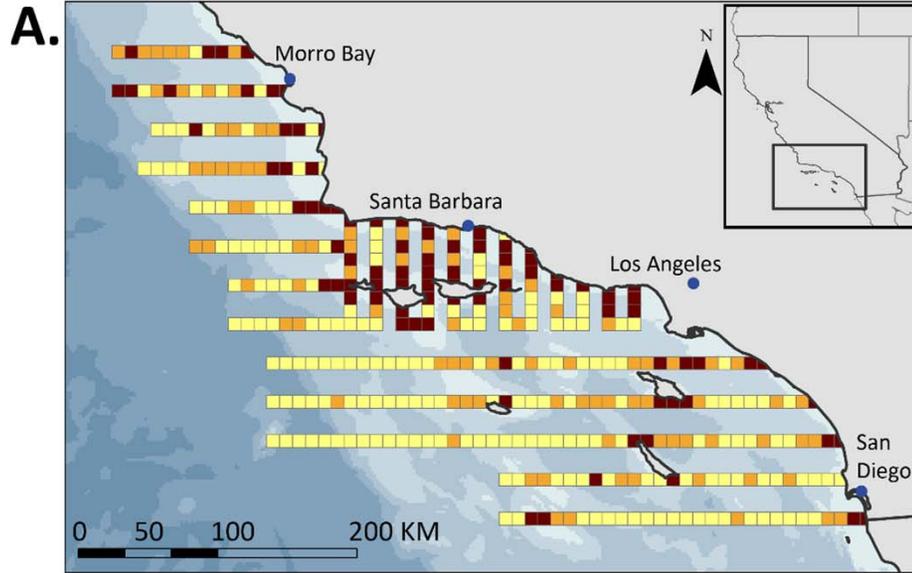


- First comprehensive evaluation of marine bird vulnerability in Pacific
- Vulnerability driven by species-specific parameters
- Uncertainty quantification
 - Opportunities to increase understanding
 - Database can be updated
- Useful tool for management decisions
- Vulnerability scores can be mapped using bird distributions to inform spatial planning

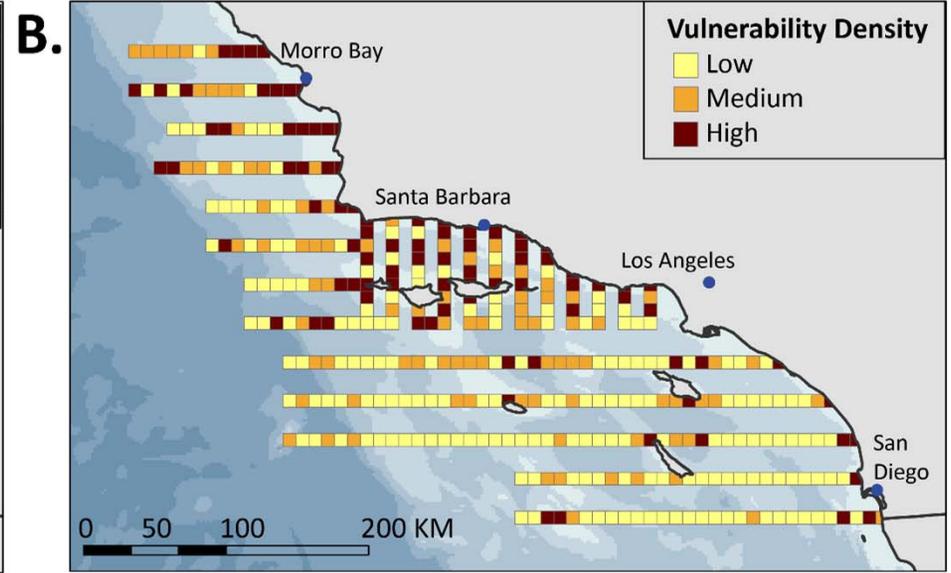


- | | | | | |
|-------------------------------------|--|--|-------------------------------------|--|
| <input type="checkbox"/> Alcids | <input type="checkbox"/> Grebes | <input type="checkbox"/> Jaegers & Skuas | <input type="checkbox"/> Pelicans | <input type="checkbox"/> Procellariids |
| <input type="checkbox"/> Cormorants | <input type="checkbox"/> Gulls & Terns | <input type="checkbox"/> Loons | <input type="checkbox"/> Phalaropes | <input type="checkbox"/> Sea Ducks & Geese |

Marine Bird Vulnerability to Offshore Wind Energy



Collision Vulnerability



Displacement Vulnerability

Monitoring – MARINE

Multi-Agency Rocky Intertidal Network



MARINE is a consortium of government agencies, universities, tribes, and private groups that collect long-term monitoring data for rocky intertidal species at 169 sites along the west coast of North America since 1992

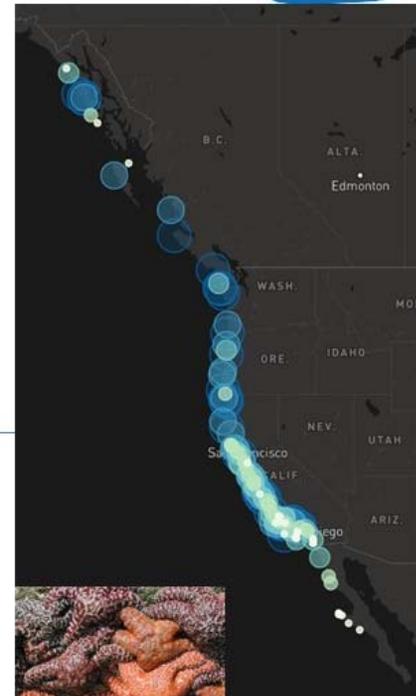


Monitoring – MARINE

Multi-Agency Rocky Intertidal Network



MARINE is a consortium of government agencies, universities, tribes, and private groups that collect long-term monitoring data for rocky intertidal species at 169 sites along the west coast of North America since 1992



Proposed Pacific Seabird Monitoring Network

Specific Research Questions

- Using the Vulnerability Index and other sources, can a suite of indicator species suitable for monitoring the potential effects of offshore energy activities in the Pacific be identified?
- Building upon information gathered in data synthesis efforts, can we coordinate and supplement ongoing research to meet our objectives?
- Which monitoring design is the most efficient to distinguish regional population trend modifications resulting from offshore energy projects compared to other factors affecting seabirds?
- What lessons can be derived from a 3-year pilot monitoring effort to refine baseline information that can be applied to a long-term monitoring program designed to inform offshore energy?

Ideas for further discussion...

- A few example research areas for CEC consideration:
 - Near-shore/onshore issues (e.g., ports/harbors, cabling)
 - Marine mammal entanglement risk assessment
 - Remote monitoring technology (e.g., bird-strike)
- Ensuring complementarity of CEC and BOEM efforts:
 - Sharing additional information on past/ongoing environmental studies
 - Further discussions about remaining gaps and research needs
 - Leveraging respective funding opportunities



<https://www.boem.gov/Pacific-Studies/>
<https://www.boem.gov/Pacific-Region-Renewable-Energy/>

Jeremy Potter

Environmental Sciences Section Chief, Pacific OCS Region

jeremy.potter@boem.gov