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Ecosystem Data Review Brief for the Humboldt Wind Energy Area

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About this Brief

This brief summarizes the findings of a longer report,
**“Environmental Data Catalog for
the Humboldt Wind Energy Area”**

The report was completed in January 2022 by Julie Howar,
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To read the full report, please visit:
www.pointblue.org/humboldt-wind

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Photo captions/credits

Front cover: Humpback whale and Western Gulls near Southeast Farallon Island/
Mike Johns, Point Blue Conservation Science. Inside: Agate Beach, Patrick’s Point
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Point Blue Conservation Science – Point Blue’s 160 scientists work
to reduce the impacts of climate change, habitat loss, and other
environmental threats while developing nature-based solutions to benefit
both wildlife and people.

Visit Point Blue on the web at www.pointblue.org.



Introduction

Clean energy that works with nature, such as wind and solar, is key to creating a healthy future. But there must be thoughtful, science-driven planning in order to implement this approach to energy production.

To help in the review and assessment of a proposed wind energy area 21 miles off the coast of Eureka, California, Point Blue Conservation Science (Point Blue) developed a data catalogue that synthesizes the most relevant environmental known datasets within the vicinity, including the nearshore coastal areas of Humboldt County.

In this report brief, we detail existing knowledge, critical data gaps, and recommendations for addressing those missing pieces in order to assess impacts to marine ecosystems from the potential future installation of turbines in the Humboldt Wind Energy Area (HWEA).

Our assessment is part of a multi-step process to make a decision on whether or not to lease the area in question. If leases are awarded, then the interested company has up to five years to gather the necessary data. The Bureau of Ocean Energy Management would then write an Environmental Impact Statement which generally takes another two years and additional data.

Please find our full report at: www.pointblue.org/humboldt-wind

Key Research Gaps & Recommendations

Challenge

Future Change

Determining whether population shifts in marine species might be due to oceanic and climatic conditions or anthropogenic influences is an overarching challenge.

Changes in climate and the increasing frequency of marine heat waves will cause changes in distribution and migratory patterns of species, potentially deviating from model predictions that are widely used to assess distribution and abundance. Abrupt shifts in oceanic conditions can cause a cascade of changes in distribution and migratory patterns for different species, many of which are described in our full report.

Recommendation

To mitigate this challenge, we recommend improving information on likely future scenarios to obtain a more effective and durable assessment of offshore wind development impacts. We also encourage the collection of baseline data. Additionally, planning and budgeting for long-term monitoring that includes a flexible, adaptive approach to implementation based on ecosystem variation and potential impacts would help.



Challenge

Offshore Wind Impacts

There are some data for seabirds and whales, but sensitivities to impacts such as collision and noise are not well known for most of the species at risk, especially to floating turbine development which is relatively new and unstudied.

Recommendation

Develop and budget for long-term monitoring and plan for a flexible approach to adjust for ocean and species change to address this challenge.



Challenge

Centralized Data Repository

Barriers to data access and quality include lack of public access, lengthy special request requirements, an overwhelming number of gateways and repositories, lack of maintenance and updates and link to peer review, and incompatible formats for analysis.

Recommendation

To address this challenge, we suggest investing in more up-to-date management of centralized data repositories for marine ecosystem components that could be affected by offshore wind development.



Habitat and Species-Specific Gaps & Recommendations

Benthic Environment

The benthic environment (on/near the ocean floor) is inherently difficult to study, and our understanding of this environment is lacking. Based on this review, it does not appear that site-specific oceanographic or hydrographic data is being collected for temperature, salinity, oxygen, phosphate, and nutrients in or near the HWEA.

Focused, regular, fine-scale data collection in the project area will improve the understanding of the importance of these features and their biological associations.

Marine Invertebrates

Monitoring changes in invertebrate communities requires collecting multiple samples at several locations across seasons. It also entails post-cruise laboratory work to identify and quantify the species caught which can be time-consuming and costly.

Site-specific sampling is necessary to understand invertebrate communities that inhabit the HWEA site. Those identified could be linked to the benthic data and features, and this would be helpful in modeling approaches for this and future potential offshore wind sites. Budgeting for this work is recommended.

Fish and Fisheries

Studies that collect data on fish are often species-, life-stage-, or group-specific, tend to focus on species that have an economic value, and are highly localized. The highly mobile and wide-ranging nature of some fish species increases the challenge of collecting population and distribution data. There can also be legal barriers to obtaining fishery data.

Outreach and collaboration with fishing communities is needed to ensure accurate representation of the data and equitable offshore wind decisions. For non-commercial species, enhanced sampling and research in the HWEA is important to establish baselines of abundance and distribution.

Marine Mammals

Variability in distribution, as well as the fact that marine mammals spend most of their time at sea underwater and out of view are challenges. The large area coverage of most models may reduce their specificity and applicability in smaller, more specific areas. Data outside of summer and fall are limited.

Using distribution models of pinnipeds with good tracking data would add to available data. Recent advances in acoustic monitoring are likely to improve data on beaked and sperm whales, and other vocal species. Increasing the availability of year-round data would improve analyses.

Sea Turtles

Most available data come from limited reporting of fisheries bycatch, incidental sightings, and highly focused telemetry surveys. Because data are limited, the creation of density and distribution models is challenging.

NOAA and partners are currently working to revise and expand existing predictive models for leatherback sea turtles using updated and more widely deployed tag data. These models will provide additional representation of the expected distribution of this species in the California Current System.

Seabirds

Although offshore seabird data is some of the best and most thorough data out there, the coarse spatial scale of the data make predictive analysis on a local level like the HWEA challenging.

For the purposes of wind energy development, it would be beneficial to have more information on species interactions with offshore wind infrastructure, especially for rare, threatened, endemic, and locally breeding species. Studies that provide fine spatial and temporal scale data on seabird movement patterns and habitat utilization in and around the HWEA itself are important for understanding the potential impacts as well.

“Sustainable development - development that does not destroy or undermine the ecological, economic, or social basis on which continued development depends - is the only viable pathway to a more secure and hopeful future for rich and poor alike.”

—Maurice Strong (1925-2015), Opening Statement to the Rio Summit, 1992

On the Right Track

To responsibly develop offshore wind, we need a clear baseline that includes distribution and vulnerability information for the species, habitats, and human uses most likely to be impacted. That information can then inform what additional research and data are critical at a site-specific level. Even with comprehensive data available, the decision to move forward can be complicated, and the input of multiple stakeholders is needed.

Point Blue’s role in this endeavor is to provide thorough review of the known and unknown scientifically-gathered ecosystem and environment data in the offshore area. This supports the multi-step effort to make a decision pertaining to the placement, extent, and potential environmental impacts of the Humboldt Wind Energy Area.

It is possible, even likely, that the knowledge needed exists, but limited availability and accessibility has made it difficult to find and apply it to this and other projects. We identified knowledge and gaps here. While the gaps are substantial, there is ample information out there! The challenge is compiling it all.

Improved site-specific knowledge of the ecosystem in the HWEA will help mitigate potential impacts of offshore wind development and can positively influence projects in other locations.

With emerging technologies, informed coordination, and proper funding, we believe efforts to create clean energy that result in more net benefit than harm are absolutely possible. We hope that our contribution to this partnership will help actualize a better future for all to that end.

Visit www.pointblue.org/humboldt-wind for contact information and access to our full assessment.



This project was made possible by funding from
the California Ocean Protection Council.



The OPC is committed to basing its decisions and actions on the best available science, and to promoting the use of science among all entities involved in the management of ocean resources.



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