



Aerial Survey Maps of Seabird Densities, Cetacean and Pinniped Occurrence Available for CA-OR-WA

To inform their marine resource planning along the Pacific Northwest coast, the Bureau of Ocean Energy Management (BOEM) needs data on the distribution and densities of marine birds and mammals that utilize continental shelf-slope habitats. Such information will help identify regional species hotspots.

To obtain these data, USGS conducted aerial at-sea surveys for seabirds and marine mammals as part of the Pacific Continental Shelf Environmental Assessment (PaCSEA). Josh Adams and colleagues completed the first comprehensive, large-scale, multi-seasonal aerial survey data set for the northern California Current System (NCCS) since the 1980's/1990's. Preliminary results are published as OCS Study BOEM 2014-003.

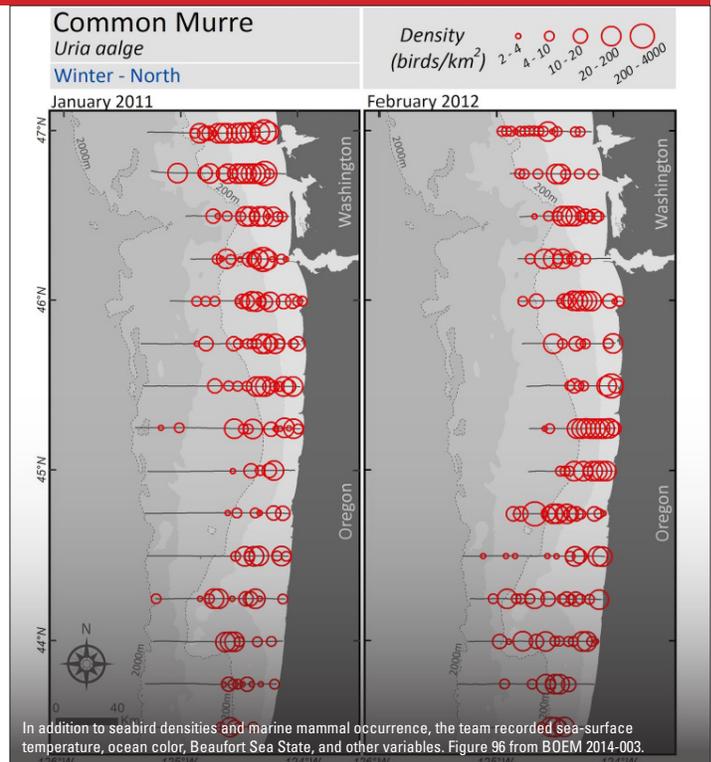
Airplane-based visual surveys were conducted during winter, summer, and fall of 2011 and 2012, from the shoreline to the 2,000 meter isobaths along 32 transects spanning Fort Bragg, CA, through Grays Harbor, WA. Finer-scale aerial surveys were conducted over the continental shelf at six focal areas of interest to BOEM: Fort Bragg; Eureka, CA; Siltcoos Bank, OR; Newport, OR; Nehalem Bank, OR; and Grays Harbor.

The survey recorded 59,466 individual seabirds (54 species) and 5,939 individual cetaceans and pinnipeds (21 species), represented as densities (individuals per km²) and reported by season and depth stratum, for the most frequently observed seabird species (e.g. Sooty Shearwater, Common Murre, Northern Fulmar, Western Gull) and for all marine mammal sightings (e.g. blue whale, harbor porpoise, northern elephant seal).

This Brief Refers To:

Adams, J, J Felis, JW Mason, JY Takekawa. 2014. **Pacific Continental Shelf Environmental Assessment (PaCSEA): aerial seabird and marine mammal surveys off northern California, Oregon, and Washington, 2011-2012.** U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Pacific OCS Region, Camarillo, CA. OCS Study BOEM 2014-003. 266 pages. <http://www.werc.usgs.gov/ProductDetails.aspx?ID=5024>

Adams, J, J Felis, JW Mason, JY Takekawa. 2015. **Pacific Continental Shelf Environmental Assessment (PaCSEA): aerial seabird and marine mammal surveys off northern California, Oregon, and Washington, 2011-2012. GIS Resource Database.** U.S. Geological Survey ScienceBase. Data files and documentation. doi:10.5066/F7668B7V <http://dx.doi.org/10.5066/F7668B7V>



MANAGEMENT IMPLICATIONS

- This survey effort completes the first stage of the PaCSEA project. USGS will now compare these results with past surveys in the region, and integrate aerial survey data with satellite telemetry data for numerically abundant indicator species and seabird species of focus.
- Survey data of seabird densities, and of cetacean and pinniped occurrences, will contribute to quantification of marine life hotspots within the northern California Current System, help build predictive models for species distributions, and inform environmental reviews of proposed offshore, renewable energy projects.
- PaCSEA data is accessible and viewable online via the USGS ScienceBase website.

RESEARCH CONTACT

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