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October 31, 2023

Jean Thurston-Keller
Bureau of Ocean Energy Management
Pacific Regional Office, Renewable Energy Section
760 Paseo Camarillo, Suite 102 (CM 102), CA 90101

Dear Jean Thurston-Keller,

The Pacific Seabird Group is a society of nearly 500 professional seabird researchers and managers dedicated to the study and conservation of seabirds and their environment. Our members possess expertise with seabirds throughout the Pacific, and many have direct experience in Oregon. We would like to comment on the spatial suitability analysis, as it pertains to seabirds, that was used to draft Oregon's Wind Energy Areas (WEAs). There are several items that should be considered prior to finalization of these WEAs and drafting of new WEAs at other locations in the region.

Of the 22 species of albatross recognized by the International Union for Conservation of Nature, 15 are threatened with extinction and eight species are endangered. Albatross have limited annual reproductive capacity and while conservation efforts for some species are seeing success, populations will need time to sufficiently recover. Albatross are expected to be vulnerable to displacement and collision from offshore wind installations[1]. In addition to potentially spending a small proportion of time gliding at the height of wind turbine rotors, albatrosses fly to higher heights in heavier winds and have less flight control during these conditions. Albatross also make repeated use of foraging areas which may further increase their vulnerability to displacement due to offshore wind energy infrastructure. In Oregon, albatross and other procellariiforms (e.g. sooty shearwaters) often move parallel to shore over the continental shelf following prey resources. Careful wind farm siting and tower placement is needed to prevent obstructing these movements. While most species of procellariiformes that occur in Oregon

[1] Kelsey EC, Felis JJ, Czapanskiy M, Pereksta DM, Adams J. 2018. "Collision and displacement vulnerability to offshore wind energy infrastructure among marine birds of the Pacific Outer Continental Shelf." *Journal of Environmental Management*. 227: 229-247.

waters are included in the current suitability analysis, the marine bird combined data layer excludes the endangered Short-tailed Albatross (*Phoebastria albatrus*). Although the Black-footed Albatross is broadly considered a reasonable proxy for the Short-tailed Albatross[2], this approach does not replace specific consideration of Short-tailed Albatross as they do currently occur in the WEA and there are some key differences between the two species. Short-tailed Albatross prefer shelf habitats across their range, incurring more overlap with coastal human activities than the other two albatross species found in the North Pacific.[3,4,5] Indeed, tracking information has revealed overlap with the draft Oregon WEAs and Short-tailed Albatross locations (Figure 1). The Short-tailed Albatross is a priority for further research as negative impacts to even small numbers of individuals could have consequences at the population level. Short-tailed Albatross breed in the western Pacific and the individuals that use Oregon waters are typically young of the year; thus, negative impacts to this portion of the population could reduce recruitment and hinder population recovery of a species that is still <1% of its historical population size. **PSG therefore recommends that existing tracking data and observations of Short-tailed Albatross be included in the analysis, and that additional tracking and/or modeling that combines at-sea observations and tracking data be conducted to more thoroughly identify species distribution in Oregon's offshore waters.**

[2] Guy, T. J., Jennings, S. L., Suryan, R. M., Melvin, E. F., Bellman, M. A., Ballance, L. T., Blackie, B. A., Croll, D. A., Deguchi, T., Geernaert, T. O., Henry, R. W., Hester, M., Hyrenbach, K. D., Jahncke, J., Kappes, M. A., Ozaki, K., Roletto, J., Sato, F., Sydeman, W. J., & Zamon, J. E. (2013). Overlap of North Pacific albatrosses with the U.S. west coast groundfish and shrimp fisheries. *Fisheries Research*, 147, 222–234. https://doi.org/10.1016/j.fishres.2013.06.009

[3] Orben, R. A., Adams, J., Hester, M. M., Shaffer, S. A., Suryan, R. M., Deguchi, T., Ozaki, K., Sato, F., Young, L., Conners, M. G., Kroodsma, D. A., & Torres, L. G. (2021). Across borders: External factors and prior behaviour influence North Pacific albatross associations with fishing vessels. *Journal of Applied Ecology*, 1–30. https://doi.org/10.1111/1365-2664.13849

[4] Suryan, R. M., Dietrich, K. S., Melvin, E. F., Balogh, G. R., Sato, F., & Ozaki, K. (2007). Migratory routes of short-tailed albatrosses: Use of exclusive economic zones of North Pacific Rim countries and spatial overlap with commercial fisheries in Alaska. *Biological Conservation*, 137(3), 450–460. https://doi.org/10.1016/j.biocon.2007.03.015

[5] Orben, R., O'Connor, A., Suryan, R., Ozaki, K., Sato, F., & Deguchi, T. (2018). Ontogenetic changes in at-sea distributions of immature short-tailed albatrosses Phoebastria albatrus. *Endangered Species Research*, 35, 23–37. https://doi.org/10.3354/esr00864

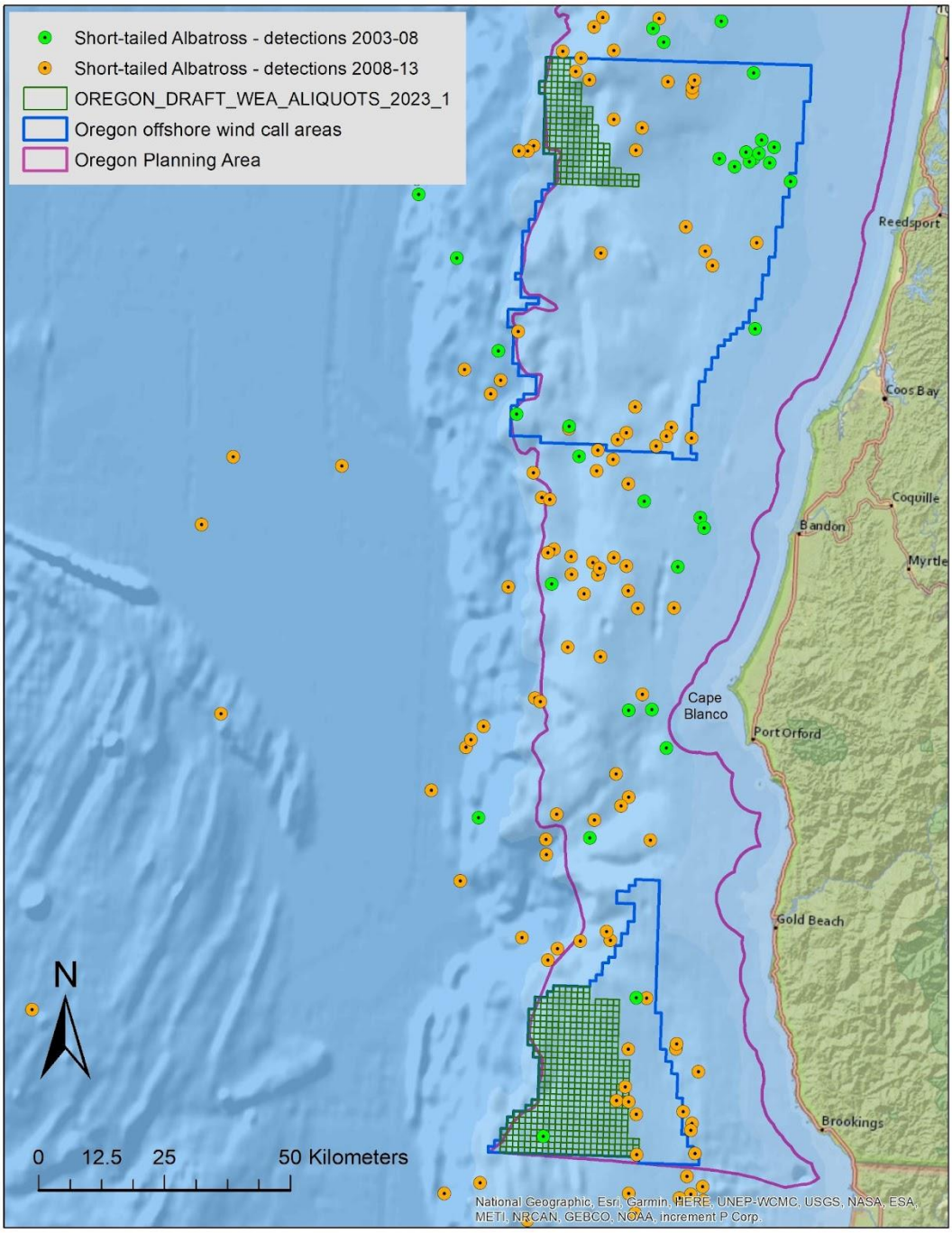

Figure 1. Locations of Short-tailed Albatross tracked with GPS transmitters.[4]

More than half of all petrel species are threatened with extinction. The Leach's Storm-Petrel (*Hydrobates leucorhous*) has experienced a 30% population decline globally over the past 50 years.[6] Oregon hosts the largest breeding concentration of this species in the eastern Pacific with 95% of breeding birds found on islands south of Cape Blanco.[7] The species is state listed as sensitive and population trends need to be investigated and published. Predicted densities of Leach's Storm-Petrels off the Oregon Coast indicate spring and summer densities are highest to the west of the draft Brookings WEA where they are known to forage.[8] Individual tracking conducted in 2023 identified east-west commuting routes of Leach's Storm-Petrels from one of southern Oregon's breeding colonies, Goat Rocks (Figure 2). Leach's Storm-Petrels from this colony cross the proposed Brookings WEA to reach offshore foraging areas, which means that surveys focusing only on use of habitats within the WEA might underestimate the importance of this area to the species if they do not effectively capture ephemeral commuting flights. Petrels nesting at nearby colonies are likely to show similar patterns and may also encounter the Brookings WEA. This species may be vulnerable to collision and displacement due to its nocturnal habits and known attraction to artificial lighting. Kelsey et al. (2018)[1], found a high level of uncertainty for the collision and displacement vulnerabilities of Leach's Storm-Petrel, indicating that this species is high priority for additional research on the potential impacts from offshore wind installations. **PSG therefore recommends that BOEM conduct additional at-sea observations and individual tracking to help avoid, minimize, and mitigate potential impacts to this species, particularly during the breeding season.**

[6] http://datazone.birdlife.org/species/factsheet/leachs-storm-petrel-hydrobates-leucorhous/text

[7] Naughton M, Pitkin D, Lowe R, So, K. 2007. "Catalog of Oregon Seabird Colonies," Biological Technical Publication (Report No. BTP-R1009-2007). Report by US Fish and Wildlife Service (USFWS).

[8] Leirness, J., Adams, J., Ballance, L.T., Coyne, M., Felis, J.J., Joyce, T., Pereksta, D.M., Winship, A.J., Jeffery, C., Ainley, D.G. and Croll, D., 2021. Modeling At-Sea Density of Marine Birds to Support Renewable Energy Planning on the Pacific Outer Continental Shelf of the Contiguous United States (No. OCS Study BOEM 2021-014). US Department of the Interior, Bureau of Ocean Energy Management, Camarillo, CA.

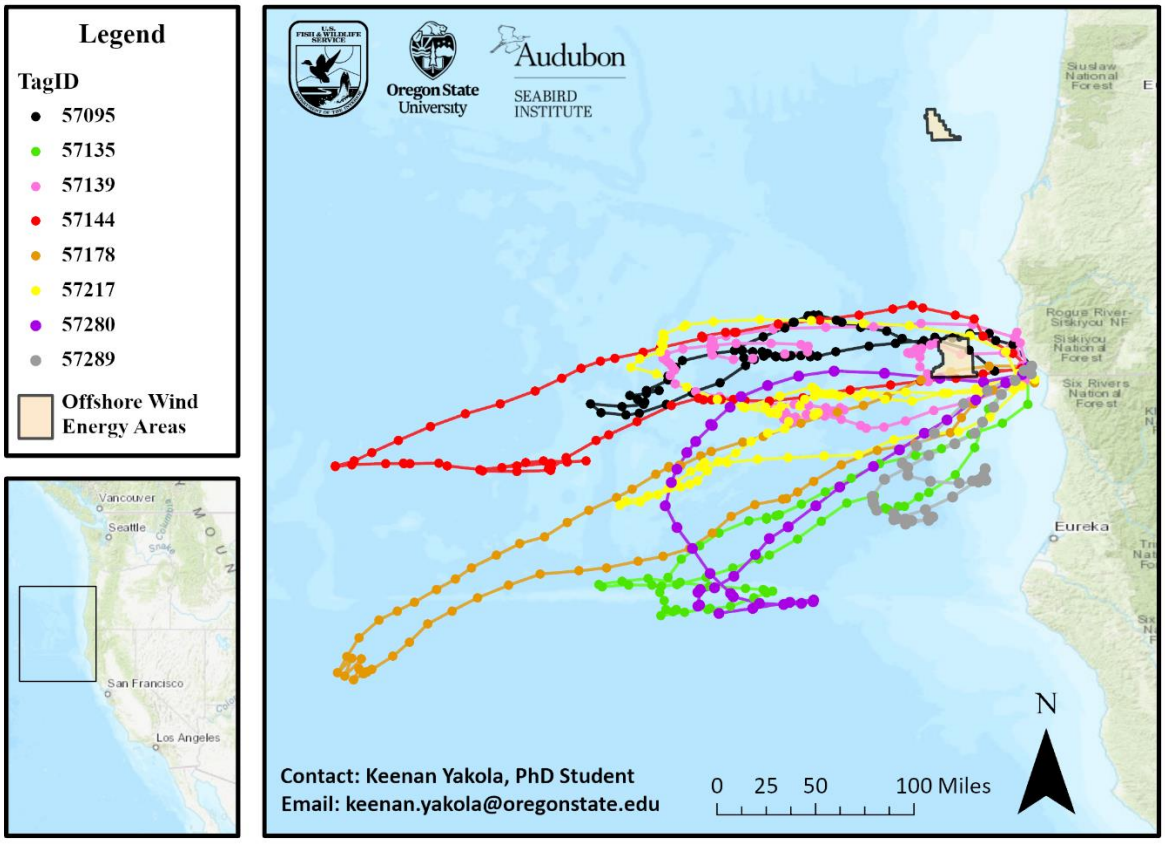

Figure 2. Flight tracks of Leach's Storm-petrels captured at the Goat Island breeding colony.

Members of the Alcidae family are highly vulnerable to displacement from offshore wind turbines (Kelsey et al.) and displacement of many members of this family has been well documented at North Sea wind farms.[9,10] Displacement can cause direct loss of access to foraging grounds or increase commute times, both of which may increase energetic demands, reduce the amount of time adults spend guarding chicks during the nesting season, and decrease individual and population fitness over time. In Oregon, the Tufted Puffin and the Marbled Murrelet are two alcids of particular concern. The Tufted Puffin is a state listed sensitive species and the largest colony in the state has declined by 95%.[11] Commuting routes and foraging hot spots during the breeding season need to be identified for the Tufted Puffin, which breeds on

[9] Vanermen, N., Onkelinx, T., Courtens, W., Van De Walle, M., Verstraete, H., & Stienen, E. W. M. (2015). Seabird avoidance and attraction at an offshore wind farm in the Belgian part of the North Sea. *Hydrobiologia*, *756*(1), 51–61. https://doi.org/10.1007/s10750-014-2088-x

[10] Peschko, V., Mercker, M., & Garthe, S. (2020). Telemetry reveals strong effects of offshore wind farms on behaviour and habitat use of common guillemots (Uria aalge) during the breeding season. *Marine Biology*, *167*(8), 118. https://doi.org/10.1007/s00227-020-03735-5

[11] Pearson, S. F., Keren, I., Hodum, P. J., Drummond, B. A., Hipfner, J. M., Rojek, N. A., Renner, H. M., & Thomas, S. M. (2023). Range-wide changes in the North American Tufted Puffin Fratercula cirrhata breeding population over 115 years. *Bird Conservation International*, *33*, e24. https://doi.org/10.1017/S0959270922000193

nearshore rocks and islands but forages in shelf waters farther offshore. The small remnant population of Tufted Puffins nesting on Goat Island is particularly vulnerable to both displacement from foraging grounds and collision risk given the proximity of the colony to the Brooking WEA and would be a valuable focal population for individual tracking. The Marbled Murrelet is state listed as endangered and federally threatened. While the Marbled Murrelet spends most of its time <5 km from shore and outside of the proposed WEAs during the spring and summer breeding season, it is known to be sensitive to ship disturbance and may be affected by increased ship traffic[12] transiting to WEAs. The Marbled Murrelet also experiences a prebasic molt during the fall when they are rendered flightless for up to eight weeks. Disturbance may cause particularly severe effects during this time. Localized tracking studies are needed to assess murrelet dependency on areas where ship traffic would be projected to increase and to identify distribution during the timing of the molt. Additionally, little information exists on the winter distribution of either of these species, and should be investigated prior to construction of offshore wind installations. **PSG therefore recommends that BOEM conduct additional breeding-season and annual-cycle tracking studies of both Tufted Puffins and Marbled Murrelets to provide baseline data on activity patterns in and around lease areas, evaluate use of proposed WEAs for commuting between breeding and foraging areas, and fill information gaps on habitat requirements and risk exposure during sensitive periods of the annual cycle.**

More broadly, the limitations of the analysis presented by Leirness et al. (2021)[4], which was used as the basis for the spatial suitability analysis, must be addressed. The authors acknowledge that survey effort was uneven geographically and temporally, which affected the uncertainty of the modeling. Additional, dedicated year-round at-sea surveys of the lease areas following standardized survey protocols would fill information gaps about marine bird species of concern, as well as providing baseline data for the region and improving model predictions. Similarly, better information is needed for species in the Northern California Current with relatively high collision and displacement vulnerability rankings that also display high levels of uncertainty related to those rankings.[13] This includes migratory species (e.g. ducks, geese, shorebirds) that might be flying at higher altitudes adding to their collision risk. **PSG recommends that the data gaps causing high levels of uncertainty in the suitability analysis be filled using a combination of direct visual observations, radar studies focused on migratory movements, and individual tracking data in order to more accurately predict the impacts of offshore wind energy projects and develop methods for mitigation.**

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[12] Marcella, T. K., Gende, S. M., Roby, D. D., & Allignol, A. (2017). Disturbance of a rare seabird by ship-based tourism in a marine protected area. *PLOS ONE*, *12*(5), e0176176. https://doi.org/10.1371/journal.pone.0176176

[13] Kelsey, E. C., Felis, J. J., Czapanskiy, M., Pereksta, D. M., & Adams, J. (2018). Collision and displacement vulnerability to offshore wind energy infrastructure among marine birds of the Pacific Outer Continental Shelf. *Journal of Environmental Management*, *227*, 229–247. https://doi.org/10.1016/j.jenvman.2018.08.051

Finally, **we strongly recommend that BOEM plan for standardized before-after control impact or before-after gradient studies to detect changes in seabird distribution and abundance at the WEAs or eventual lease sites.** Such studies are more likely to be effective at detecting change if conducted at regional scales rather than at the scale of individual wind energy installations[14], and multiple wind energy installations could have cumulative impacts that exceed the expected effects of any single installation. BOEM should therefore ensure robust monitoring at the ecosystem scale by conducting region-wide surveys before, during and after construction; ensuring that any project-scale monitoring by developers follows standard protocols; and requiring that data be shared among projects. This will be of utmost importance to ensure that impacts to seabirds are identified in a timely fashion and can be addressed through mitigation and adaptive management.

Sincerely,

Lindsay Adrean
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Date: 2023.10.31 14:36:22 -07'00'

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[14] Lamb J.S., Gulka, J., Adams, E. Cook, A. and Williams, K. In press. A synthetic analysis of post-construction displacement and attraction of marine birds at offshore wind energy installations. *Environmental Impact Assessment Reviews*.