Point Blue Publication Brief

Modeling non-resident seabird distributions to inform ocean zoning in California

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Previous research identified Central California as a highly used foraging area for seabirds that breed primarily on Southeast Farallon Island, the largest seabird breeding colony in the contiguous 48 States.

In a study published in 2016, we focused on nonresident, non-locally breeding seabirds that visit central California during long foraging trips or after the breeding season.

We used data collected by the Applied California Current Ecosystem Studies (ACCESS) partnership to develop models to identify high-use foraging areas for each of six nonresident seabirds including black-footed albatross, sooty and pink-footed shearwaters, northern fulmar, red-necked and red phalaropes.

We found that distance to the shelf break and ocean climate as indicated by the state of the Pacific Decadal Oscillation were important environmental predictor variables to most seabirds, whereas primary productivity, distance to Cordell Bank, and depth were important to at least half of the birds. Other distance variables contributed little to the models.

We did not find significant differences between distributions of individual seabird species with similar feeding habits, with the exception of the sooty shearwater.

Model results of multi-use seabird foraging areas highlighted the importance of the continental shelf break, particularly the area near Cordell Bank, as the highest use foraging area. These results were confirmed by two different modeling approaches.

Our research methods can be implemented elsewhere to help identify critical habitat for conservation as human development pressures continue to expand to the ocean.

Main Points

- Distance to the shelf break and ocean climate were important predictor variables to most seabirds.
- Foraging seabird hotspots occurred along the continental shelf break, in the vicinity of Cordell Bank.
- Our research methods can be implemented elsewhere to help identify critical habitat critical wildlife habitats..

Studwell AJ, Hines E, Elliott ML, Howar J, Holzman B, Nur N, J. Jahncke (2017) Modeling Nonresident Seabird Foraging Distributions to Inform Ocean Zoning in Central California. PLoS ONE 12(1): e0169517. doi:10.1371/journal.pone.0169517