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Spatial Distribution of Nearshore Foraging Seabirds in Relation to a Coastal Marine Reserve

While Marine Reserves are often designated primarily to protect and enhance fish populations, they are generally thought to be beneficial for a wide range of species. In a paper published in the journal *Marine Ornithology*, PRBO authors Dan Robinette, Nadav Nur, Adam Brown, and Julie Howar investigated whether the Vandenberg State Marine Reserve provides benefits to seabirds. The study used six years of data to compare the number of seabirds feeding inside and outside of a coastal marine reserve in central California.

The study found that seabirds foraged mostly outside the reserve and the areas they used were consistent over the six years. This shows that it is possible to identify places that are important to feeding seabirds and that marine reserves could be modified to overlap with these important feeding areas.

The coastal reserve investigated is at the tip of a large coastal headland and does not protect much of the area on either the windward or leeward sides of the headland. Past studies have shown differences in the types of marine organisms found in windward and leeward habitats. Windward areas tend to host large numbers of suspension feeding invertebrates like mussels while leeward areas provide refuge for newly hatched fish.

In central California, there are several seabird species that feed close to shore, hunting many of the fish and invertebrates targeted for protection by coastal marine reserves. This study focused on two breeding seabirds (Brandt's and Pelagic Cormorants) and two spring migrants (Pacific Loons and Surf Scoters). The three fish-eating species (the 2 cormorants and the loon) foraged mostly in leeward waters while the invertebrate-eating scoters foraged mostly in windward waters. Protection of important foraging

Main Points

- Seabirds foraged mostly outside of the MPA, and foraging patterns were consistent over six years.
- Fish-eating seabirds foraged mostly in the lee of a coastal headland where fish were predicted to be most abundant.
- Potential beneficial effects of reserves can be overshadowed by geographic and oceanographic factors influencing prey distribution.
- MPAs can protect important seabird foraging habitat if appropriately placed.

habitat for either or both groups could be accomplished by extending the reserve boundaries in the windward and/or leeward directions.

The paper can be viewed in its entirety on the Marine Ornithology website:

<http://www.marineornithology.org/>

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