

Removing invasive mice will benefit storm-petrels through reduced owl predation

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We used Point Blue's long-term data to examine the complex relationship between house mice, burrowing owls, and ashy storm-petrels on the Farallon Islands National Wildlife Refuge and to provide a quantitative estimate of the anticipated benefit to ashy storm-petrels from a proposed house mouse eradication project.

Surveys by Point Blue biologists revealed a strongly seasonal pattern among the three species. Owls arrive at the refuge in the fall when mice are super-abundant as prey. But the mouse population crashes mid-winter each year due to seasonal rains and cold temperatures. This causes the owls to switch to preying upon storm-petrels which begin to return to the refuge at this time to breed. As a result, owl predation on storm-petrels is highest in late winter.

Analysis of storm-petrel capture/recapture data revealed a declining population trend in recent years and

showed that annual adult survival is inversely related to owl abundance, especially during winter.

We used a population-dynamic model to estimate the change in storm-petrel population trends resulting from reductions in owl predation. Under current conditions (i.e., owl predation the same as in recent years) the storm-petrel population is expected to decline by 63% over the next 20 years. However, a 50% reduction in burrowing owl abundance (and related predation) would reduce that decline to approximately 26%, whereas a reduction of 80% would result in a stable or increasing storm-petrel population.

Reducing burrowing owl abundance, through elimination of their house mouse prey, will have a substantial and significant effect in reducing overall storm-petrel mortality and will promote stable or

increasing future population trends.

Main Points

Migrating burrowing owls remain on the Farallones for several months due to high density of mice during the fall season

Owls switch from mice to storm-petrels as prey when mouse population crashes in winter

Owl abundance has a significant negative impact on storm-petrel survival and population trajectory.

Removing house mice is likely to reduce owl abundance and promote a stable or increasing storm-petrel population.

Nadav Nur, Russell W. Bradley, Leo Salas, Pete Warzybok, and Jaime Jahncke. 2019. [Evaluating population impacts of predation by owls on storm petrels in relation to proposed island mouse eradication](#). *Ecosphere* 10(10):e02878. 10.1002/ecs2.2878