Reducing burrowing owl predation to benefit Farallon ashy storm-petrels

Russ Bradley
rbradley@pointblue.org

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

Owls arrive at the refuge in the fall when mice are 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 return to the refuge at this time. As a result, owl predation on storm-petrels is highest in late winter.

Removing house mice as a food source is expected to result in fewer owls overwintering on the island, and thereby reduce predation on storm-petrels.

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 decrease by 7.2% per year. However, a 50% reduction in burrowing owl abundance (and related predation) would result in a near stable to increasing population, whereas a reduction greater than 70% would produce even more positive results for the storm-petrels.

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. (See figure page 2)

Main Points

- Owls switch from mice to storm-petrels as prey during winter.
- Predation on storm-petrels is positively related to owl abundance and negatively related to mice abundance.
- Owl abundance has a significant effect on storm-petrel survival.
- Removing house mice is likely to reduce wintering owl abundance and promote a stable or increasing storm-petrel population.

Nur, N., R. Bradley, L. Salas, and J. Jahncke. 2012. Modeling the Impacts of House Mouse Eradication on Southeast Farallon Island. Unpublished report to USFWS.

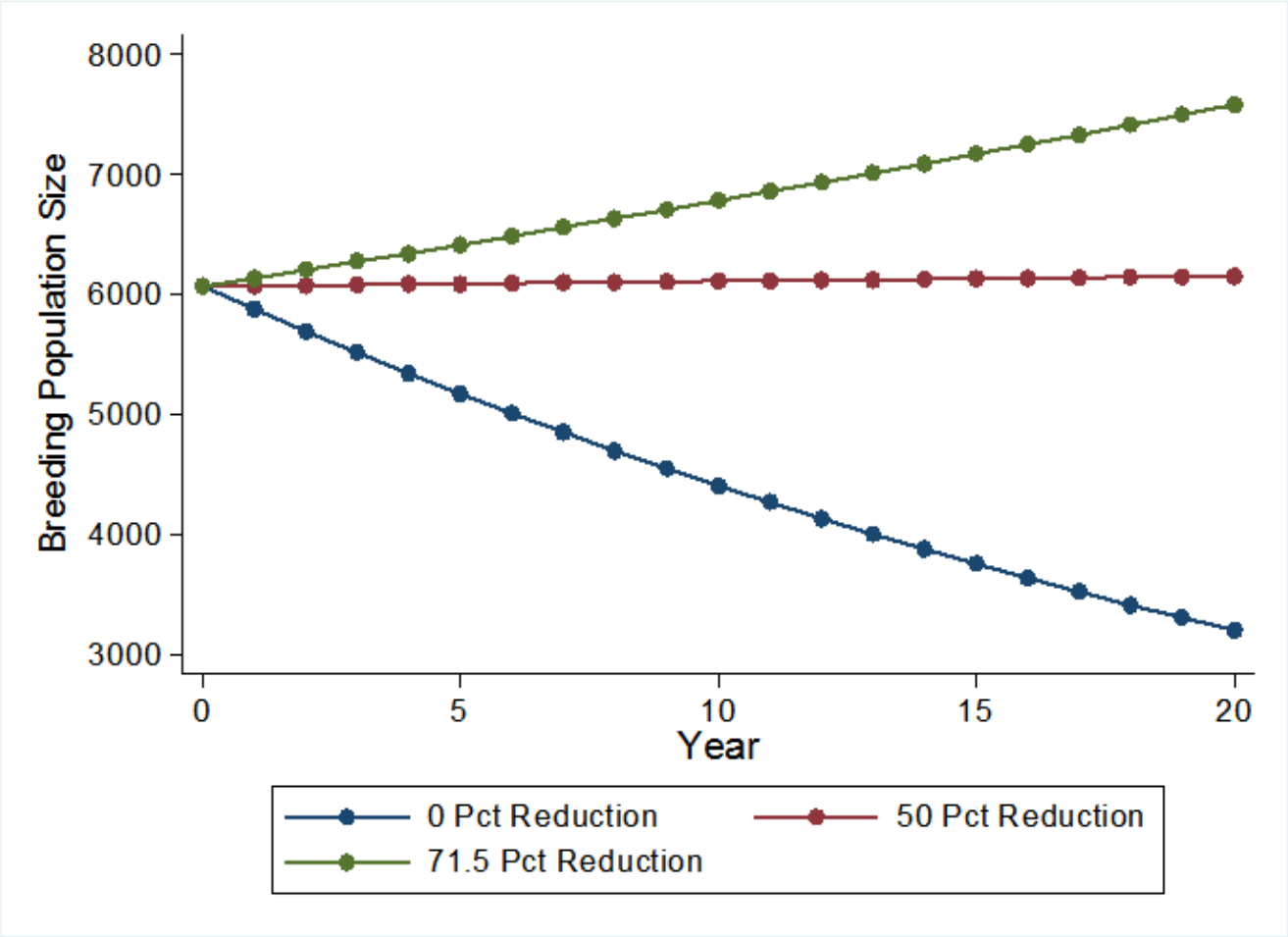

Figure 1. Farallon ashy storm-petrel population projections under the three scenarios of reduction in burrowing owl abundance: 0% reduction, 50% reduction, and 71.5% reduction. Depicted are estimated breeding population sizes for a 20-year period. Year 0 corresponds to most recent conditions and is the year that burrowing owl reduction occurs.