

UC Santa Barbara

Posters

Title

Diets of Burrowing Owls (*Athene cunicularia*) in a coastal southern California preserve

Permalink

<https://escholarship.org/uc/item/24v7h87r>

Authors

De Castro, Jessica Le

Chapman, Wayne

Evelyn, Christopher J.

et al.

Publication Date

2026-05-12

Diets of Burrowing Owls (*Athene cunicularia*) in a coastal southern California preserve

Jessica De Castro¹, Wayne Chapman², Christopher J. Evelyn², Jibrahn Gonzalez¹, Francis H. Joyce², Katja C. Seltsmann², & Lisa Stratton²

¹Evolution, Ecology, and Marine Biology Dept., University of California, Santa Barbara;

²Cheadle Center, University of California, Santa Barbara

Introduction

Burrowing Owls (*Athene cunicularia*) have severely declined in Coastal California, as they rely on disappearing grassland habitats with rodent-made burrows. Dangermond Preserve—a former ranch, now ecological preserve—in coastal southern California, is one of the last refuges for over-wintering owls.

What are these owls eating? How do their diets compare to that of a smaller, recently restored grassland in a more urban area (Ostwald et al. 2024)? Given Dangermond's conservation status and potentially higher abundance of vertebrate prey, we expected a lower proportion of invertebrates in pellets compared to the proportions found in those from North Campus Open Space (NCOS).

Methods

Pellet Sampling & Dissection

128 pellets were collected from Cojo Terrace at Dangermond in late 2024 to early 2025 and mapped on a 10-m grid. We randomly selected one pellet from each grid cell containing any intact pellets ($n = 25$) (Fig. 1). We dissected each pellet into vertebrate and invertebrate material.

Prey Taxa Identification

We identified vertebrates to the lowest possible taxonomic level using specimens, reference literature, and expert guidance. Katja Seltsmann identified exoskeletal invertebrate remains to the lowest possible taxonomic ranking. We calculated the minimum number of prey items in each pellet based on diagnostic anatomical elements.

Analysis

Compiled identification data and summarized frequency of occurrence for each taxon (Fig. 2), then calculated the invertebrate prey count by number to compare results to a previous study done using NCOS pellets (Ostwald et al. 2024) (Fig. 3).



Figures & Results



Fig 1. Where this study's pellets were collected. The small green circles represent the centers of quadrat grids where intact pellets were collected from the Cojo Terrace at Dangermond. Upper right: Location of the preserve relative to the rest of California.

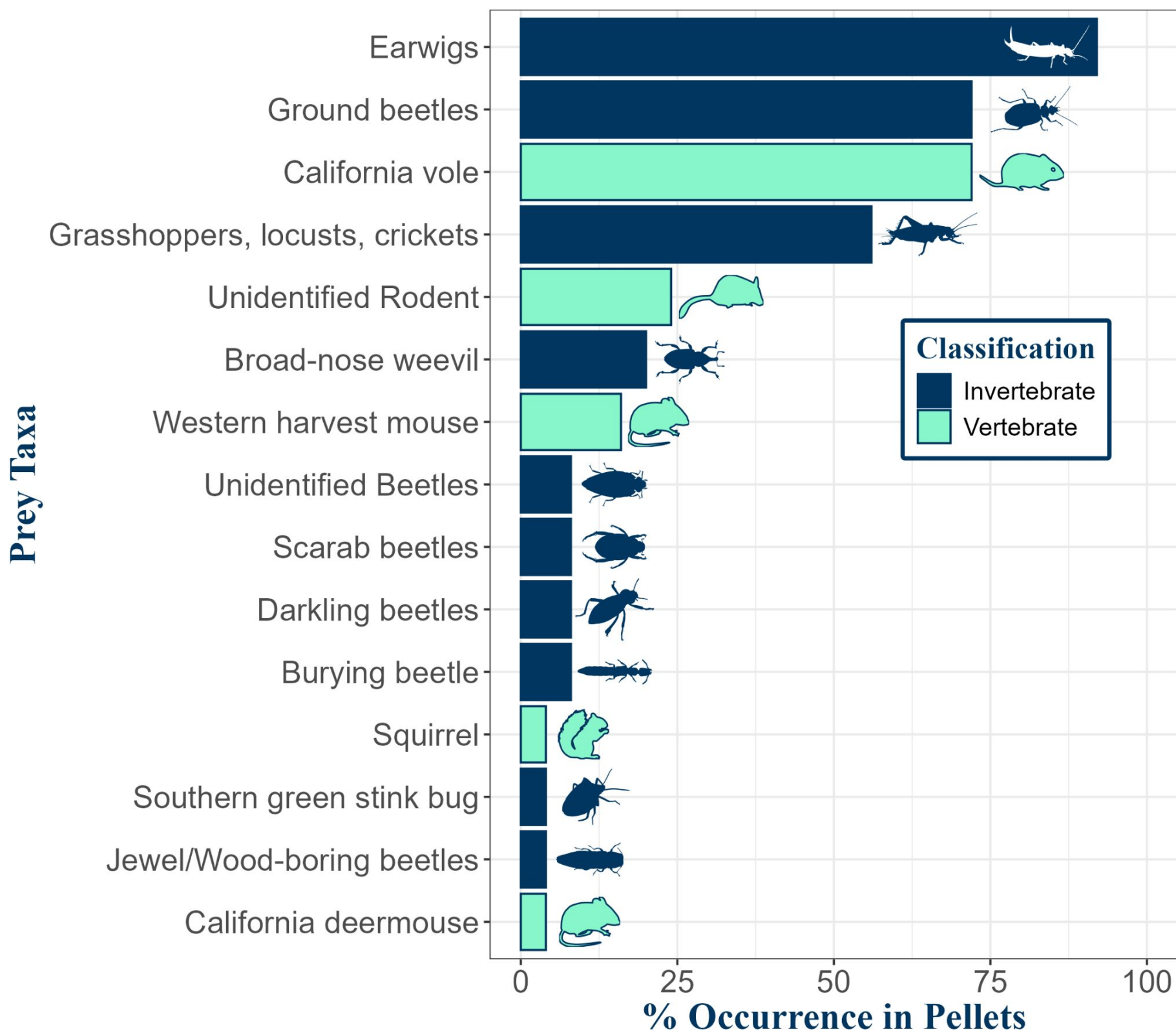


Fig 2. The in-pellet occurrence frequency of prey taxa—both vertebrate and invertebrate—as identified from the Dangermond specimens. **Taxa occurring in more than 50% of pellets dissected are grasshoppers, locusts, crickets (order Orthoptera); California voles (*Microtus californicus*); ground beetles (family Carabidae); and earwigs (order Dermaptera).**

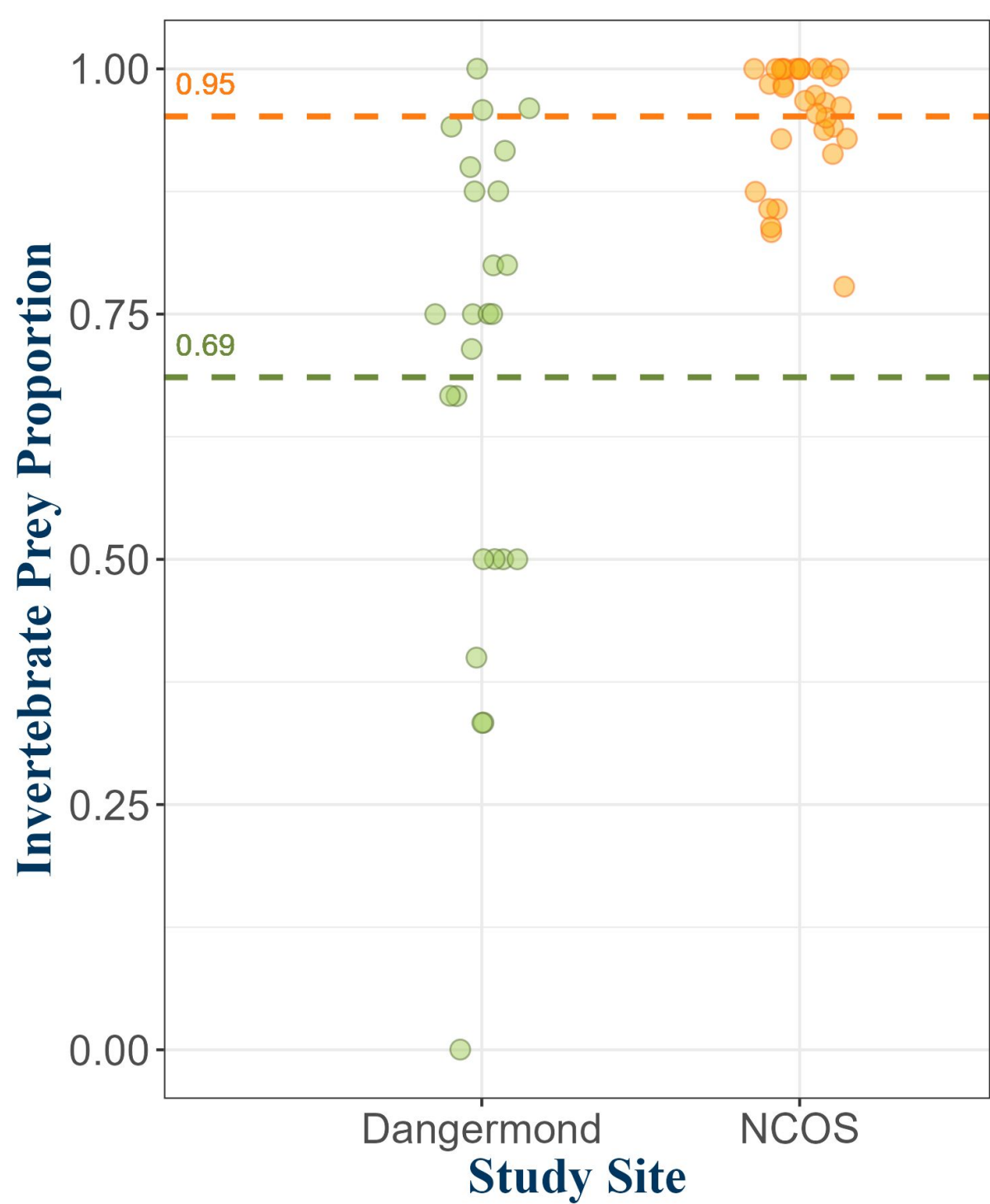


Fig 3. There is a greater insect prey presence in pellets from NCOS than Dangermond. Dashed lines denote the mean of pellets' proportions for each site. Each point represents the prey proportion of a single pellet based on count number.

Discussion

As expected, the proportion of insect prey in Dangermond Burrowing Owl pellets is lower than that of NCOS. Earwigs were the most frequently found prey item, but the unexpectedly high prevalence of California voles highlights a notable difference with the NCOS results, as that species was not recorded in the locality.

The invertebrate proportions may be skewed, representing lower-bound estimates, as we chose intact pellets that kept their shape—something that insect-heavy pellets often are not able to do. In future studies, we'd encourage exploration of how habitat characteristics may impact the birds' diets, as well as seasonality in prey availability.

A higher availability of small rodents may facilitate Burrowing Owls' greater dietary reliance on those taxa in Dangermond Preserve, underscoring the importance of preserving its grassland environment to support the owl's declining populations.

References

- Chapman, W., & Stratton, L. (2025). *Burrowing Owl Report: Burrow Usage, Habitat Survey, and Recommendations for the Dangermond Preserve, Cojo Terrace*. <https://escholarship.org/uc/item/51x6k7p6>
- Ostwald, M. M., Sullivan, K., Stratton, L., Rickard, A., & Seltsmann, K. C. (2024). Invertebrate-biased diet of burrowing owls in a newly-restored coastal grassland. *Nature Conservation*, 56, 151–159. <https://doi.org/10.3897/natureconservation.56.127231>

Acknowledgements

We acknowledge the Jack and Laura Dangermond Preserve, the Point Conception Institute, and the Nature Conservancy for their support of the research that supplied these owl pellets, and we thank Paul Collins and the Santa Barbara Museum of Natural History for aiding in our small vertebrate identifications and allowing us to use their collections and facilities.

Image credits: Integration and Application Network and Phylopic.



UC SANTA BARBARA
Cheadle Center for Biodiversity
& Ecological Restoration

UCSB EEMB URCA Spring 2026

