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Publication Brief

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Roadways Differentially Alter Movement Behavior of Small Wildlife Species

Roadway avoidance by wildlife species could decrease roadkill incidents, but could also increase chances of population fragmentation and genetic isolation. Since wildlife behavioral responses may differ with each road type and among species, there is a need for researchers and managers to understand these varied preferences.

A study in *Conservation Biology* examined how small mammal and lizard species in San Diego County coastal sage scrub habitat avoided or crossed three different type of roadways: unimproved dirt roads; a narrow, two-lane paved secondary road; and a two-lane rural paved highway. Study sites were located in San Diego National Wildlife Refuge and Rancho Jamul.

Animals were captured along roadways at study sites, dusted with fluorescent tracking powder, then released 5m from the road edge. Researchers tracked the paths of 17 species total, with the bulk of data collected for 5 species: cactus mouse (*Peromyscus eremicus*), San Diego pocket mouse (*Chaetodipus fallax*), western fence lizard (*Sceloporus occidentalis*), orange-throated whiptail (*Aspidoscelis hyperythra*) and Dulzura kangaroo rat (*Dipodomys simulans*).

All species crossed the dirt roads to habitat on the other side. The lizards also regularly ventured out onto a low-use paved secondary road of similar width, possibly using this road for both movement and thermoregulation. The mice, however, avoided moving onto this road, suggesting that they avoid paved road substrate. All lizard and mouse species avoided the paved highway.

Unlike the mice, the Dulzura kangaroo rats readily went out onto dirt and secondary roadways. While researchers did not find kangaroo rats in capture efforts at the paved highway site, it accounted for the majority of roadkill animals found directly on the highway, indicating that some animals attempted to cross the highway.

Management Implications

- Low-use dirt roads allow some permeability for small wildlife to move among scrubland habitats.
- Species that typically forage in and use open areas within their larger habitat were more likely to venture onto dirt roads and paved roads.
- Species that typically forage under the cover of shrubs were more likely to avoid dirt roads and paved roads.
- A relatively narrow, 2-lane rural highway with a constant stream of traffic was a sufficient barrier to deter small mammals and lizards from crossing the road to similar habitat on the other side.
- The findings reinforce past research demonstrating genetic isolation of small species with ranges divided by paved highways. They offer insights on predicting the relative risks of different roads to the isolation or road mortality of small animal species with different life history strategies.

THIS BRIEF REFERS TO:
Brehme, CS, JA Tracey, LR McClenaghan, RN Fisher. 2013. Permeability of roads to movement of scrubland lizards and small mammals. Conservation Biology. doi: 10.1111/cobi.12081

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A whiptail (*Aspidoscelis*) dusted with fluorescent tracking powder for the study.