

Effects of Predation Risk on Space Use by Small Mammals: A Field Experiment with a Neotropical Rodent

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Abstract

Predation is often implicated as the most important factor determining differential microhabitat use by small mammals, particularly in desert ecosystems. This generalization, however, is based primarily on observational and correlational approaches and only a few field experimental studies. In a large scale, long-term experimental manipulation of predators in semiarid north-central Chile, we studied the effects of excluding vertebrate predators on the space use of a small mammal species. We used three different techniques to determine space use under and away from shrubs by the diurnal, herbivorous rodent *Octodon degus*. These included smoked tiles, fluorescent pigment tracking, and tabulation of numbers of runways among shrubs. Results show that *O. degus* used spaces away from shrubs more often, made more (and less straight) runways between shrubs and had smaller daily home ranges in grids where predators were excluded. Thus, besides the well known predator effects of density depression and survival reduction of their prey, our study demonstrates experimentally that prey respond behaviorally to perceived predation risks.