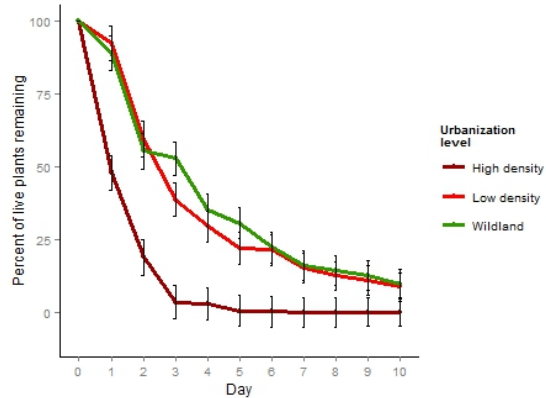


The effects of urbanization on trophic interactions in a desert landscape

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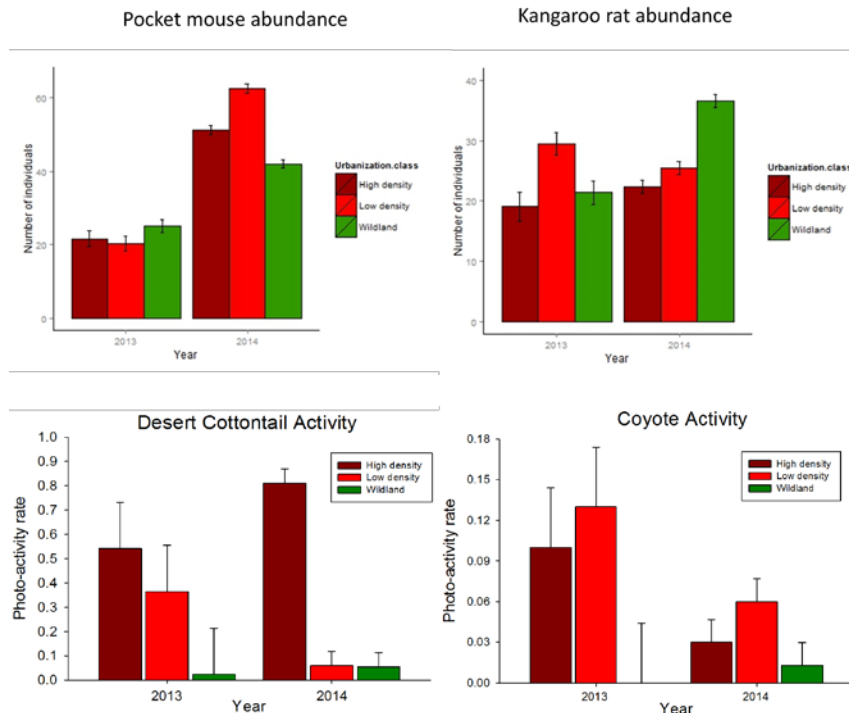
Abstract: Urban growth and its impacts on ecosystems are accelerating globally, yet little is known about the patterns and mechanisms of ecosystem change, especially within exurban landscapes. Anthropogenic modification of trophic interactions, mediated by resource availability and behavioral responses of predators and prey, can have important indirect effects on the characteristics of urbanizing ecosystems.

We examined the effect of varying degrees of exurban development within Las Cruces, New Mexico, USA on a trophic system that included mammalian predators (coyotes, *Canis latrans*), mammalian herbivores (lagomorphs and rodents), and herbaceous plants. We tested the hypothesis that the degree of urbanization would affect herbaceous plant recruitment, and expected that plant recruitment would be negatively affected by exurban development. Such an effect could result either from increases in herbivores associated with increased resource availability from irrigation and ornamental plants (a bottom-up effect), or from an increase in herbivores due to a reduction in predators that avoid humans (a top-down effect).



As expected, we found increased rates of herbivory on seedlings and decreased herbaceous plant recruitment in dense exurban areas. However, overall rodent abundance, seed consumption rates, and activity of black-tailed jackrabbits (*Lepus californicus*) did not vary with urbanization. We did find increased activity by both desert cottontails (*Sylvilagus audubonii*) and coyotes in dense exurban areas, consistent with a bottom-up effect.

Our results indicate that exurban development can have important indirect effects on the structure of adjacent, untransformed ecosystems.



Relationship with the LTER VI proposal: This poster contributes to Obj. 5 (c).