Abstract

Fleming, D., M. Gibbs, and B. Ball. Urbanization and habitat context shape long-term ground-dwelling arthropod communities in metropolitan Phoenix

Insects and other ground-dwelling arthropods play essential roles in desert and urban ecosystems by supporting pollination, decomposition, and food webs. In the rapidly urbanizing Phoenix metropolitan area, landscape transformation, vegetation management, and climate stressors are expected to affect arthropod communities, yet long-term assessments across habitat types remain limited.

For more than two decades, the Central Arizona–Phoenix Long-Term Ecological Research (CAP LTER) entomology lab has monitored ground-dwelling arthropods using standardized pitfall traps. This dataset includes arthropod data from 57 sites spanning urban and non-urban environments. This study focuses on data from twelve sites with continuous sampling between 2005 and 2025 to examine arthropod abundance and community composition. These sites span desert, desert remnant, xeric, and mesic habitats and include locations that have experienced substantial urban encroachment over time. Using quarterly sampling, we explore patterns in arthropod abundance across habitat types and through time.

Results from this analysis offer a region-wide view of how landscape context is associated with differences in ground-dwelling arthropod communities. Patterns vary across habitat types, with some landscapes showing stronger shifts through time than others. Together, these results help place long-term arthropod dynamics within the context of urban ecosystem structure in arid cities and provide a starting point for future work linking arthropods with vegetation and land management.

Lead presenter: Graduate student.

Citation

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Interdisciplinary Research Team

Ecosystem Structure and Functioning