GROUND ARTHROPOD COMMUNITY COMPOSITION IN A HETEROGENEOUS URBAN ENVIRONMENT.

Arizona State University.

RESEARCH OBJECTIVES
* describe composition and turnover of arthropod communities in 4 types of urban land use in the Phoenix, Arizona, metropolitan area
* determine which taxa are indicative of the area’s dominant forms of urban land use
* determine differences in diversity of arthropod communities between habitats

RESULTS: GRAPHS

YEAR 1
Richness & Density

YEAR 2
Richness & Density

METHODS: LONG-TERM ARTHROPOD MONITORING
* SITES:
  Year 1 (June 1998 - May 1999)
  4 residential (3 xeriscape, 1 mesoscape)
  4 desert (2 urban desert, 2 fringe desert)
  4 agricultural (3 alfalfa, 1 cotton)
  4 industrial

  Year 2 (June 1999 - May 2000)
  4 residential mesic
  4 residential xeric
  4 desert (2 urban desert, 2 fringe desert)
  4 agricultural (4 alfalfa)
  4 industrial xeriscape residential
  4 mesoscape residential
  4 industrial

* TRAPPING METHOD:
  10 pitfall traps per site

* TRAPPING DURATION:
  3 days per month

RESULTS
* overall 165 different taxa of ground arthropods were collected during the two year period.
* twice as many ground arthropods were collected during the second year than the first year.
* in both years the highest arthropod community richness was found in agricultural fields.
* rarefaction demonstrated that high richness in agricultural fields was an artifact of high arthropod densities, and in fact, desert and xeric yards have the most diverse arthropod communities.
* xeric yards are good mimics of the desert environment because they support similar arthropod communities.
* ground arthropod communities are consistently dominated by springtails (Collembola), ants (Formicidae), and mites (Acari), in the Phoenix metropolitan area.
* despite differences in the proportions of arthropods representing each taxa, ground arthropod community composition was similar between years.
* community composition varied with landuse.

IMPLICATIONS
* the presence of spatial heterogeneity within the Phoenix metropolitan area boosts the overall arthropod diversity of the region.
* home owners should be encouraged to create xeriscaped yards because they reasonably mimic desert habitats.
* there are ground arthropod communities that are characteristic of different forms of urban land use, which may be very useful in detecting latent effects of future urbanization.

ACKNOWLEDGEMENTS
The authors would like to thank Nancy McIntyre, Diane Hope, and all undergraduates, teacher interns, landowners and agencies, and CAP-LTER members who have made this project possible.