78 YEARS OF GROUND-ARTHROPOD SAMPLING IN THE GREATER PHOENIX AREA: RESULTS FROM THE FIRST THREE YEARS

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RESEARCH OBJECTIVES

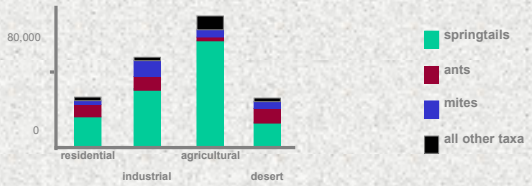
- Determine how differences in land use types may affect the taxonomic diversity of ground arthropod communities in metropolitan Phoenix, Arizona.
- Compare ground arthropod composition and abundances among different types of urban and desert habitat and among different years.
- Identify potential indicator taxa for dominant types of land use.

FIELD METHODS

- From June 1998- May 1999, ground arthropods were sampled in 4 sites in each of 4 major habitats: residential yards, Sonoran desert, agricultural fields, and industrial xeriscapes.
- From June 1999- May 2000, xeric and mesic residential yards were differentiated, as were urban desert remnants and urban/desert interface, resulting in 4 sites in each of 2 additional forms of land use.
- Ten pitfall traps were set at each site for three consecutive days. Arthropods were collected each month, and were identified to family in the lab.

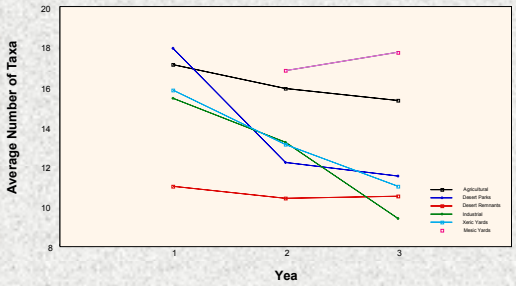
COMPOSITION

Results from the 1st year
(Similar results from the 2nd and 3rd years)



TAXA RICHNESS

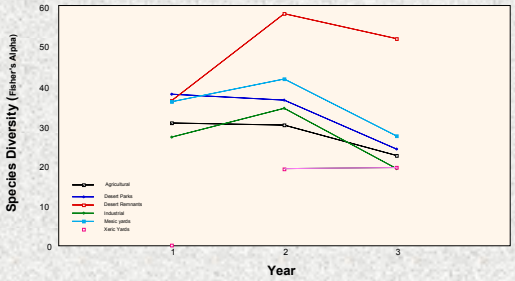
We found significant differences in total taxa Richness between years, with the highest richness in the first year, and the lowest in the third year



Repeated Measures ANOVA					
Source	SS	DF	MS	F	P
Year	38.96	2	19.48	8.87	0.009
Error	17.58	8	2.20		

TAXA DIVERSITY

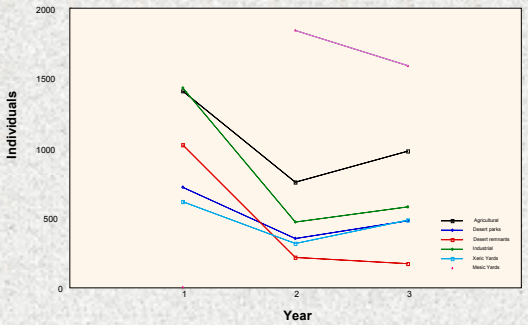
Though taxa diversity was lower in the third year, the differences in diversity between years were not significant.



Repeated Measures ANOVA					
Source	SS	DF	MS	F	P
Year	311.8	2	155.9	3.98	0.063
Error	313.1	8	39.1		

ABUNDANCE

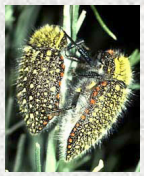
We found significant differences in total arthropod abundance between years, with the highest density in the first year, and no obvious differences between the second and the third year.



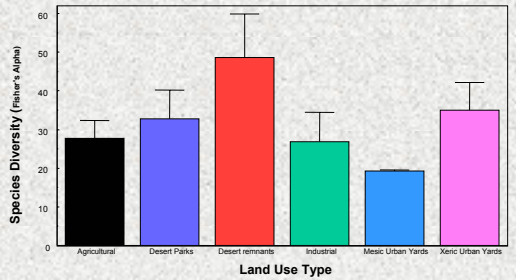
Repeated Measures ANOVA					
Source	SS	DF	MS	F	P
Year	1081637	2	540818	15.9	0.002
Error	271322	8	33915		

CONCLUSIONS

- In the Greater Phoenix area Arthropod community dynamics changes in time and space.
- Since species diversity did not change in time, the higher taxa richness in the first year may be explained by 'sampling effect' (more individuals sampled in the first year).
- The differences in species diversity in space indicate the importance of native plants for sustaining high species diversity.
- The differences in arthropod species diversity in time and space emphasize the importance of a long term monitoring program of biological populations for future management and conservation strategies in the greater Phoenix area.



We found Significant differences in Arthropod diversity between land use types. Diversity was the highest in urban desert remnants, and was also very high in Xeric urban yards. Mesic urban yards had the lowest diversity. All three habitats with Sonoran desert vegetation (desert park, desert remnants and xeric yards) had the highest diversity.



One Way ANOVA					
Source	SS	DF	MS	F	P
Land use	1312	5	262.4	4.62	0.016
Error	625	11	56.8		