

Species Richness of Ground Arthropods found at the Sonoran Desert Center and a Xeric urban yard

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Data

Research Question

How does the diversity of arthropods in an urban backyard differ from the Sonoran Desert Center? The center abuts next to a development of about 200 houses making it a desert remnant. The author posits that there will be a difference because of the greater diversity of native flora in the Sonoran Desert Center opposed to the urban yard.

Abstract

Is there a difference in number and species richness in arthropods found in an urban xeric yard and a desert remnant? The author posits if pit fall traps are used to capture arthropods from a suburban backyard and the Sonoran Desert Center, then there will be a difference in the diversity of ground arthropods, because non-native plants are used in landscaping suburban yards. Arthropod orders of each line were identified. A slight difference was in species richness was found between the arthropods of the desert remnant and the urban yard.

Hypothesis

Non-native plants used in landscaping of suburban yards will affect species diversity when compared to remnant deserts.

Procedure

The procedure followed the Ecology Explorers Arthropod protocol. Ten pitfall traps were dug at three locations, two at the Sonoran Desert Center and one in a xeric yard in Peoria, Arizona. The traps consisted of ten holes dug five meters apart. They consisted of holes deep enough to fit a 16 oz plastic solo cup. Site identifications were conducted for each site. Every 2.5 meters along the line the land cover was identified for each site. One of the SDC traps ran west to east for 25 meters and south to north for another 25 meters. The other trap line at the SDC ran along a wash from west to east. The holes in the xeric yard ran west to east with for 30 meters and south to north for ten meters and again east to west for 10 meters. The traps were left open for 72 hours and frozen for thirteen hours. The organisms were identified to the order level.

Conclusion

The hypothesis was species richness of arthropods would be higher in a remnant desert than an urban yard because an urban yard uses non-native plants; this was not supported by the data. For this particular set of data the species richness between the three locations was not different, but it is not known if it is significant. Looking at the species richness data chart and graphs show that the xeric yard and the SDC terraced wash had a richness of 10 and 13 respectively. The numbers for the two sites are similar. The number for the wash was 8 which was lower than the two (relatively the same). This study does not show much difference in the number of species found between the three sites. The Shannon and Simpson analysis numbers were similar for the three sites also. However, when looking at the abundance of the arthropods in each location the xeric yard had almost twice as many with 106 than did the terraced wash with 66 and the wash with 50. It is recommended that this study be repeated multiple times to see if the numbers are consistent or if the above study was an anomaly. Another study that could be done is to investigate if there is a significant difference in the types of species between the two locations.

Species of ground arthropod	SDC terraced wash	SDC wash	Urban Xeric Yard
Carabidae	1	3	0
Tenebrionidae	5	9	12
Coleoptera	2	1	0
Bethylidae	1	0	0
Formicidae	39	29	42
Mutillidae	5	0	2
Clubionidae	1	0	0
Araneida	3	0	6
Lepismatidae	1	1	0
Thysanura	1	0	0
Scorpiones	1	5	0
Isopoda	2	1	0
Labiidae	0	0	2
Blattidae	0	0	3
Unknown	0	0	1
Polyphagidae	0	0	2
Dermaptera	0	0	1
Acari	4	1	41
Total abundance	66	50	106

	SDC terraced wash	SDC wash	Urban xeric yard
SDC terraced wash	0		
SDC wash	0.31	0	
Urban xeric yard	0.404	0.519	0

	Richness	Shannon	Simpson
SDC terraced wash	13	1.6	0.63
SDC wash	8	1.3	0.62
Urban Xeric Yard	10	1.5	0.71

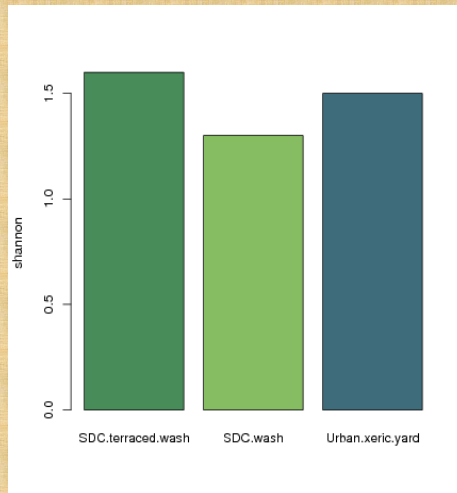
Urban backyard



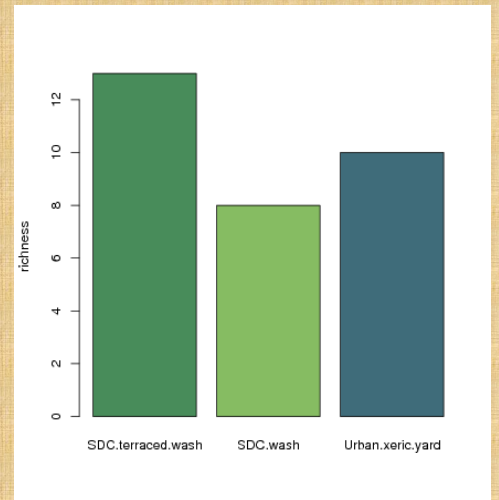
Urban front yard



Shannon Number and Evenness of Ground Arthropod Orders Graph



Ground Arthropod Species Richness Graph



SDC Terraced wash



SDC wash

