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The Impacts of Agriculture on Small Mammals in Prehistoric Southern Arizona
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Introduction

Background:
- Agriculture was introduced to the Tucson Basin during the Formative period nearly 2000 years ago
- In A.D. 750-950 (the Classic Period) the later Hohokam people developed large-scale riverine irrigation systems, intensifying agriculture
- Anthropogenic environmental changes can establish new ecological niches for populations of small mammals such as those from the genus Lepus (the jackrabbit)

A comparison of Lepus remains from the Formative and Classic periods could answer the following questions:

When did the Hohokam develop a sedentary lifestyle and to what degree did they impact the surrounding environment?

Methods

- Measured remains of the genus Lepus from the Marana Mound site, a Classic period Hohokam site
- Compared these measurements to a data set collected from Las Capas, a Formative period site also located in the Tucson Basin
- Data was analyzed with a Mann-Whitney U test for size similarity and Siegel Turkey test for variability

Las Capas 2000 B.C.
This early agriculturist site is located downstream of two major tributaries of the Santa Cruz River, which was the water source for a system of canals for irrigation (Mabry, 2008)
Conception of Las Capas by Michael Hampshire.

Marana A.D. 750-950
Excavations of this site suggest that there was a greater dependence on maize, along with increased use of irrigation. More efficient stone tools, pottery, and storage rooms have also been found (Whittlesey and Ciolek-Torrello, 1996)

Results

Mann-Whitney U = 959, p = .00219;
Las Capas larger
Siegel-Turkey U = 1069.6, p = .00848;
Marana more variable
Marana 1) n = 55; Las Capas 2) n = 53

Mann-Whitney U = 207, p = .2127;
size similar
Siegel-Turkey U = 167, p = .0161;
Marana more variable
Marana 1) n = 23; Las Capas 2) n = 24

Mann-Whitney U = 347.5, p = .5103;
size similar
Siegel-Turkey U = 257.5, p = .0174;
Marana more variable
Marana 1) n = 37; Las Capas 2) n = 21

Mann-Whitney U = 57, p = .3123;
size similar
Siegel-Turkey U = 31, p = .00656;
Marana more variable
Marana 1) n = 17; Las Capas 2) n = 9

Conclusions

- In general, remains from the later Marana site tended to be similar in size to those from Las Capas, but with greater variability
- Greater variability in size suggests that the human impact on the local environment affected selective pressures on the jackrabbits
- The change in selective pressure could be due to newly established ecological niches or overhunting: both evidence of sedentary life

References

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