

Zooarchaeological Evidence of Human Niche Construction at The Harris Site (LA1867)

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Overview

- The Harris Site (LA1867) is a large Mimbres Late Pithouse period (A.D. 550-1000) site. It was an agricultural village located along the Mimbres River in southwestern New Mexico. (See Figure 1)
- This period is characterized as a time of demographic and social change associated with climatic variability and change.
- This is when we see people in the Mimbres Valley commit to year-round occupation and make a real investment in agricultural subsistence.
- In what ways did the people living at the Harris Site pivot their niche constructing activities?

Methods

- The faunal assemblage was collected during excavations conducted by Dr. Barbra Roth with UNLV field schools from 2008-2012.
- 5,623 bone fragments were examined for identifying features and categorized by element and a taxonomic category of Family or below.
- 2,527 fragments met this condition and have been used to calculate several different kinds of secondary data.
- In addition to NISP, and MNI the Artiodactyl, Rodent, and Lagomorph Indices will also be calculated in order to better understand the lives of people living at the Harris Site.
- Applied animal indices can help us understand the relationships that people living at the Harris Site engaged in with other organisms and with the landscape that surrounds them.

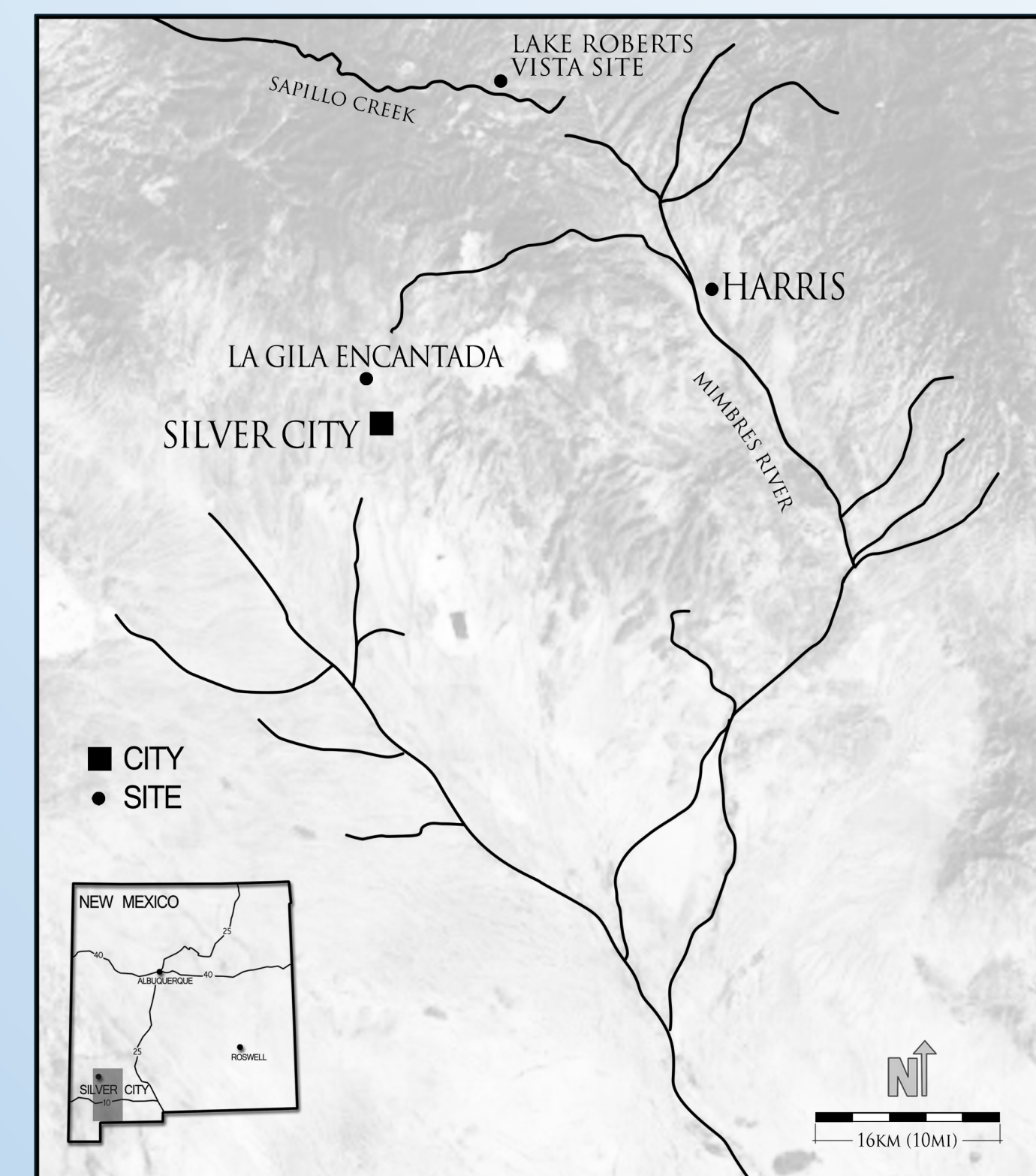


Figure 1: The Harris Site Location in Southwestern New Mexico

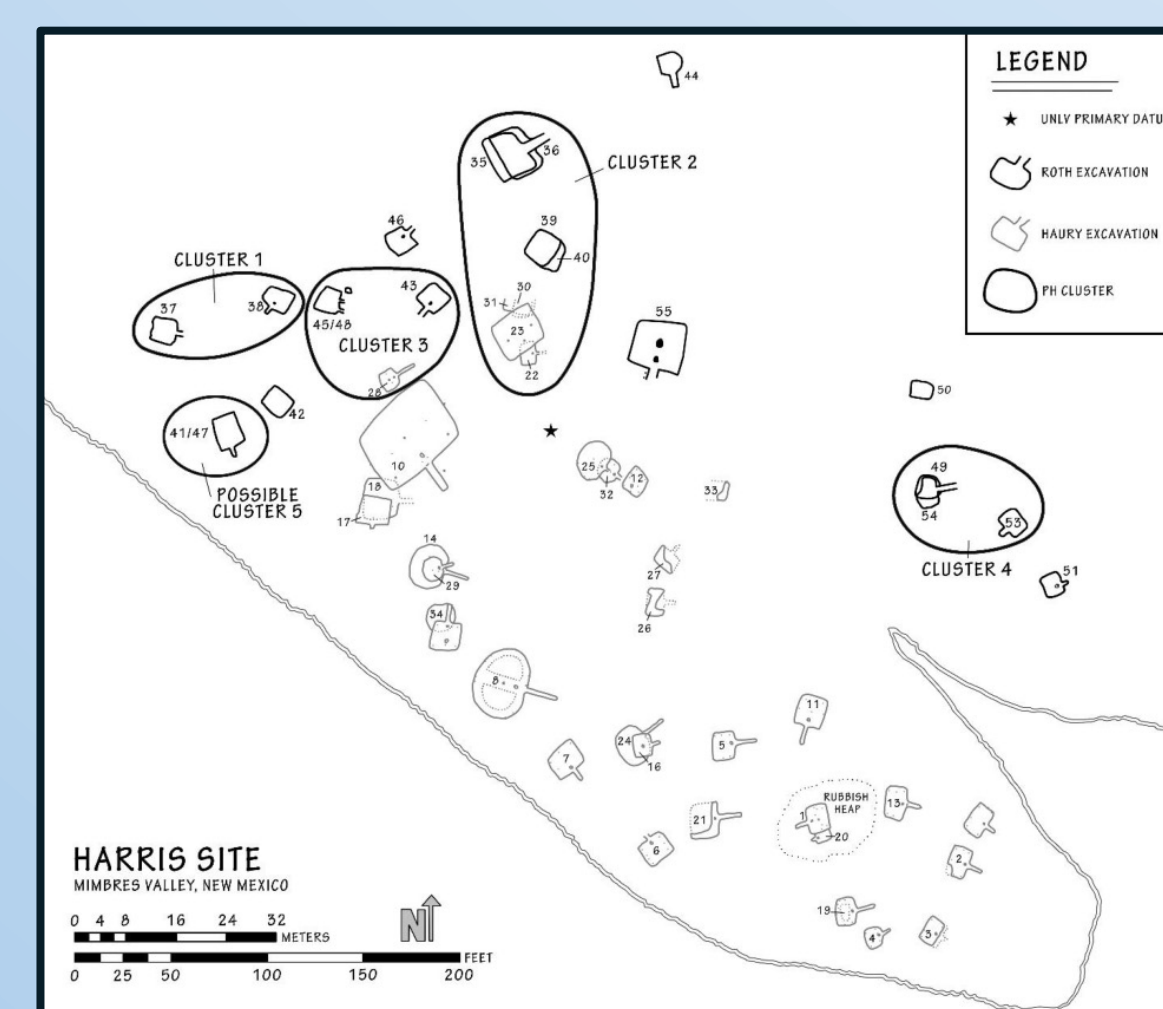


Figure 2: The Harris Site Village Map

Expectations

- We expect the Harris Site assemblage to tell us about both environmental and cultural changes during the Late Pithouse period. People who settled at the Harris Site brought with them knowledge of, and relationships with various species of plants and animals.
- A growing dependence on agriculture meant prioritizing the relationship they had with particular plants over others through dedicated fields or gardens. This altered the relationship between them and the surrounding landscape, as well as their relationships between animals and other plants and so should affect the archaeological record.
- Agricultural fields create a resource dense microenvironment distinct from the surrounding landscape. This concentration of resources leads to much higher populations of pest species and migrating birds.
- Animals that are more common in disturbed areas and those who are attracted to the concentrated resources found in the fields should dominate the assemblage. Generally, referred to as garden hunted animals, they usually fall into one of two categories:
 - Small animals that tend to live in underbrush or burrows.
 - Larger animals that are not too shy and live around the margins of disturbed areas.

Results

- The results of the analysis of 2,527 bones identified to the taxonomic category of Order or below are summarized in the pie chart below.
- These specimens represent approximately 168 (MNI) animals, representing 51 taxonomic categories. Many species were only represented by 1 or 2 bones, and so were grouped under more general taxonomic categories.
- Leporids and Rodents were by far the most common in the assemblage making up 80% of the total. The next closest is Artiodactyl with roughly 10%, but its important to note that most of the material identified only as large mammal are probably artiodactyl as well.
- The Harris Site has fauna remains consistent with an agricultural village living in a dry temperate forest river valley.

Lagomorph Index

- A measure of the frequency of rabbits versus hares in an assemblage.
- Lagomorph Index:

$$(LI) = \frac{\sum(\text{cottontails})}{\sum(\text{cottontails} + \text{jackrabbits})} = \frac{393}{393 + 259} = .6$$

- The Lagomorph Index has been used as a proxy measure for a variety of things including local vegetation, presence of agricultural fields, elevation, and hunting techniques.
- Rabbits are associated with more dense cover, and hares (Jackrabbits) are associated with less cover more open areas.
- Rabbits are generally viewed as a solitary hunting activity since they live in denser brush and they tend to hide, while hares are more often found on open plains and are best hunted in a group with a net.

Rodent Index

- A measure of the frequency of rodents in an assemblage.
- Rodent Index:

$$(RI) = \frac{\sum(\text{Rodents})}{\sum(\text{Lagomorphs} + \text{Rodents})} = \frac{603}{603 + 1223} = .33$$

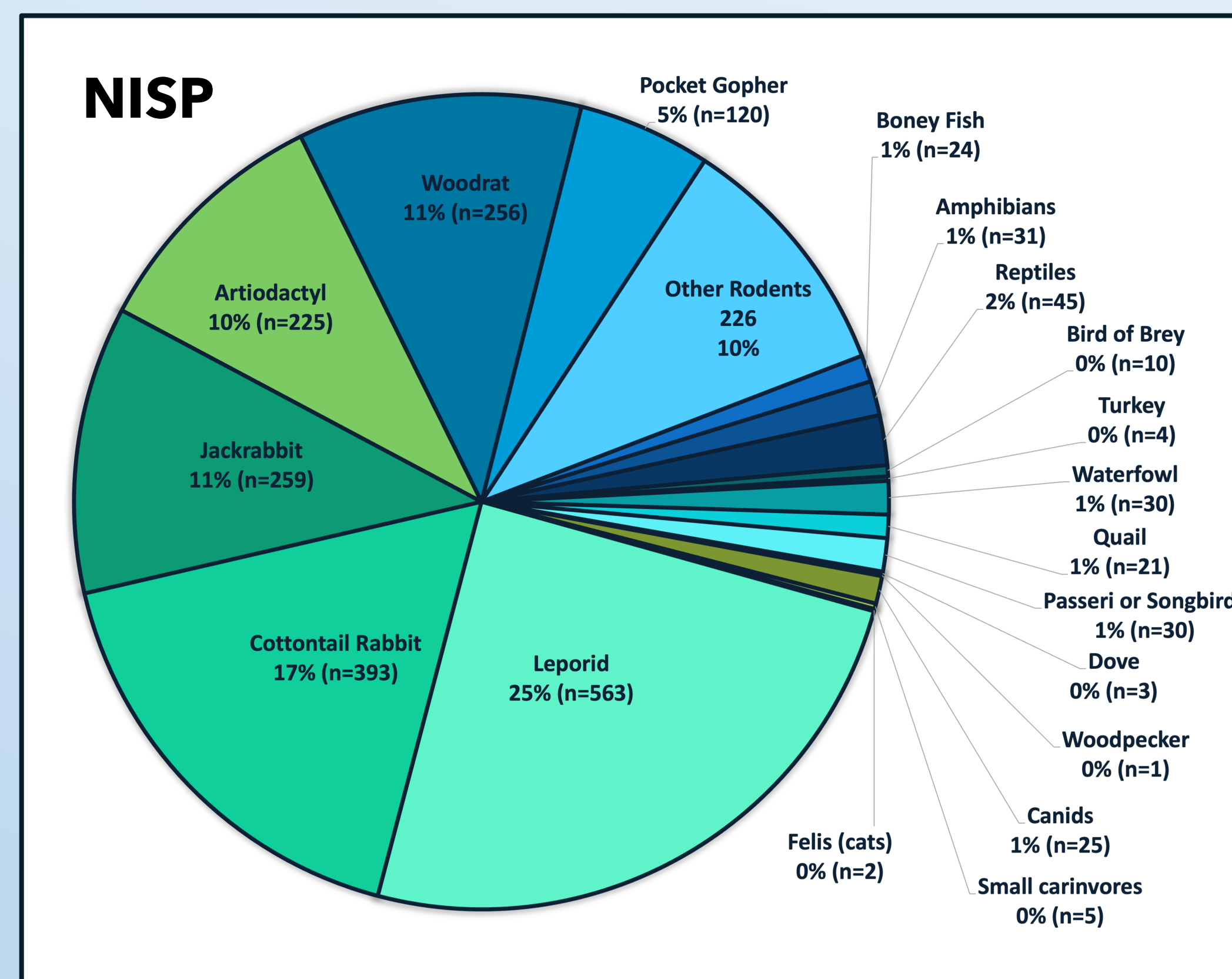
- High numbers of rodents has been linked to intensely modified and managed microenvironments like farm fields and settlements. The presence of a heavily modified environment is linked to efforts to increase the carrying capacity of the environment.
- Rodents would have been plentiful in disturbed areas and easy to catch during routine tending of the gardens and surrounding managed microenvironments.
- While rodents in this type of assemblage are often considered intrusive, it is clear people were consuming them as well.

Artiodactyl Index

- A measure of the frequency of Deer in an assemblage relative to small mammals.
- Artiodactyl Index:

$$(AI) = \frac{\sum(\text{Artiodactyls})}{\sum(\text{Artiodactyls} + \text{Lagomorphs})} = \frac{225}{225 + 1223} = .14$$

- Frequency of deer in an assemblage has been linked to changing climate, long-term shifts in subsistence strategy, and a depressed or over-hunted population of prey.



Discussion

- Faunal remains give us clues to the kinds of niche constructing activities that impacted their environment and the ways the plant and animal communities were managed.
- Harris Pithouse village was a reaction to people's decision to invest more time and energy in their relationship with particular plants - this meant moving settlements to the first terrace above the river and maintaining a year-round presence.
- This change in behavior had cascading effects on the surrounding landscape, the plant and animal communities, the people who occupied this site, and the relationships each shared with the others.
- Faunal evidence supports this understanding in that commensal species who do well in disturbed environments and human settlements make up a large majority of animals represented in the site assemblage.
- Over 80% of the assemblage is made up of small mammals that would have been considered pests. These animals would have been able to maintain large healthy populations in close proximity to the site because of the resource rich modified fields, middens and food storage.

Conclusion

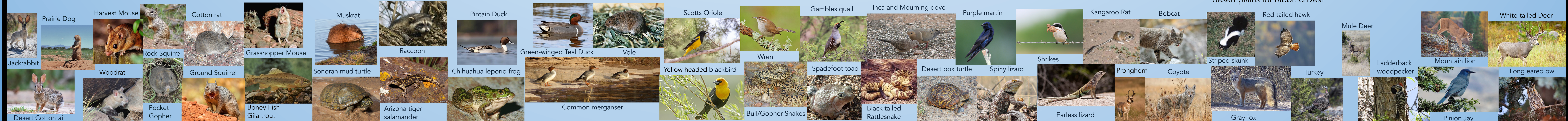
- People at the Harris Site would have had to work to control threats to their gardens and agricultural fields generating a large number of small mammals available for consumption. Deer are also known to be a threat to the managed fields and gardens inhabiting the surrounding edge zones and are expected to be present in garden hunting assemblages.
- Garden hunting practices would have reduced the need to hunt large game, and the need for trips that were hunting specific. The faunal indices support this in that although artiodactyl remained an important resource, procurement overwhelmingly focused on small mammals.
- This faunal analysis supports the hypothesis that people at the Harris Site were committed to maintaining and managing a year-round agricultural settlement. The cost of maintaining these managed fields and food forests/gardens paid off in a number of interconnected ways.
- By cultivating a variety of plant resources in adjacent agricultural fields and gardens people were able to increase the efficiency of the relationship they cultivated with plants. These resource rich patches would then draw in animal resources too.

Future Research

- Birds make up an interesting aspect of this assemblage and by getting more accurate species identifications I hope to paint a more complete picture of the kinds of birds they targeted and why.
- Stable carbon isotopes on both leporid bones and artiodactyl may help to parse out some of the differences in habitat. Are jackrabbits and cottontails hunted in different environments? Are jackrabbits able to be sourced locally or do they have to go down to the desert plains for rabbit drives?



Managed garden and fields



Overlooking the Harris Site on the First River Terrace

Mimbres River Environment

Gila River Wetland Environment

Pinion Shrubland Low Mountains

Desert Grassland

Mountain Grassland and Ridgetops

High Mountain Forest