Reconstructing ancient Maya animal use through zooarchaeology

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Introduction

The ancient Maya inhabited an ecologically diverse area stretching from southeastern Mexico to central Honduras **(Fig. 1)**. Within this context, an area of particular interest is the range of variation in ancient Maya animal use and exploitation. Reconstructing patterns of Maya diet and animal use is significant to understanding how the Maya were able to feed their growing populations, what habitats they exploited most heavily, and whether or not their subsistence practices led to ecological degradation. Maya animal use is also of interest due to the importance of animals and animal products in Maya ritual, trade, and tribute. Patterns of ancient animal use may be explored through the interdisciplinary field of zooarchaeology, or the identification and analysis of archaeological bone, tooth and shell remains.

Fig. 1: Map of the Maya cultural area showing major archaeological sites. The yellow stars indicate the main sites included in my doctoral research.

Cultural Period	Chronology
Late Postclassic	A.D. 1200 - 1530
Early Postclassic	A.D. 950 – 1200
Late/Terminal Classic	A.D. 600 – 950
Early Classic	A.D. 250 - 600
Late Preclassic	400 B.C.– A.D. 250
Middle Preclassic	1000 - 400 B.C
Early Preclassic	2000 –1000 B.C.

Fig. 2: Cultural chronology for the central and southern Maya lowlands (modified from Coe (1999))

Materials and Methods

I conducted preliminary recovery method tests at the site of Trinidad to assess how archaeological excavation procedures influence the composition of the faunal assemblage. Although fine-screen (<1/4" mesh) sieving is generally accepted as the most effective means of recovering small animal remains (e.g. fish vertebrae) (James 1997; Shaffer 1992) these recovery methods are not consistently employed at Maya archaeological sites. Soil samples (5-10 liters) were therefore sieved through a series of nested screens containing 1/4, 1/8 and 1/16-inch mesh **(Figs. 3-4)**.

Fig. 3: My assistant Carlos Alonzo water-screening soil samples through stacked 1/4", 1/8" and 1/16" screens to recover small faunal remains.

Fig. 4: Close-up of soil being processed through the screens with light water pressure

The weight, number, state of preservation and taxonomic diversity of the faunal remains recovered from each screen size was recorded. All faunal materials recovered from Trinidad are currently being identified using modern comparative specimens housed at the Florida Museum of Natural History, Gainesville.

Results and Interpretation

Recovery Method Tests:

Only a small portion of the nested screen test material from Trinidad has been analyzed, but a sub-sample of 15 proveniences indicates that fine screening (1/8" and 1/16" mesh) yields greater numbers of bone fragments from taxa such as fish, snakes and small mammals **(Figs. 5-6)**.

In addition to increasing the number of identifiable fragments recovered, fine screening also increased the overall taxonomic diversity of the assemblage. Fish remains were completely absent from the ¼" fraction. The dietary contribution of fish at this lacustrine site would therefore be significantly underestimated without the fine screen sample. This illustrates how the composition of archaeological faunal assemblages can be greatly influenced by the recovery methods employed during excavation.

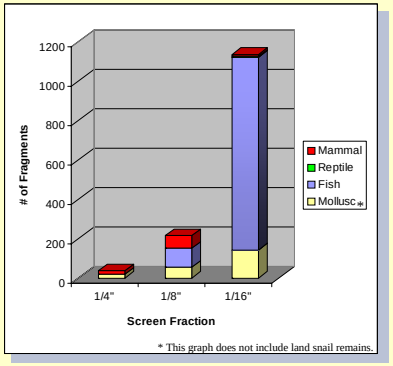

Fig. 5: The number of bone and shell fragments (identifiable at least to taxonomic class) recovered from Trinidad bulk soil samples increases with decreasing screen size. The presence of small fish remains in the 1/8" and 1/16" fractions was the greatest difference in faunal recovery observed between the samples.

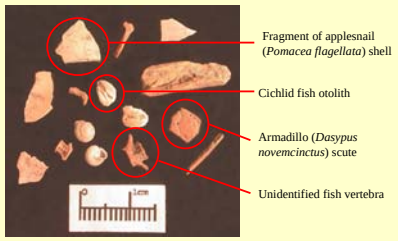

Fig. 6: Example of well-preserved faunal remains recovered from a 1/8" screened soil sample from Trinidad. Such small remains are easily missed during excavation.

However, small, well-preserved faunal remains were not recovered from every provenience and it may be too time-consuming to employ fine screen recovery techniques across an entire site. As analysis continues, I will therefore focus on identifying the types of depositional contexts (e.g. burials, middens, floor surfaces, fill deposits) that should be prioritized for fine-screen sampling. This information may be compared to similar recovery tests being done at other Maya sites to better understand how environmental and cultural contexts influence the differential preservation and recovery of zooarchaeological remains.

Preliminary Faunal Analysis:

Fig. 7: Examples of archaeological bone fragments recovered during general excavation at Trinidad. A) *Orthogeomys hispidus* (mandible), B) *Canis familiaris* (molar), C) *Mazama* sp. (proximal phalange).

Identification and analysis of the complete faunal assemblages from Trinidad, Cancuen and Marco Gonzalez is scheduled for the upcoming year. At this stage it is therefore impossible to provide detailed information regarding ancient Maya animal use at these sites. However, some faunal identification has been completed for the site of Trinidad **(Fig. 7, Table 1)**. These identifications are tentative and should not be viewed as an accurate representation of the entire Trinidad zooarchaeological assemblage.

Scientific Name	Common Name
Odocoileus virginianus	White-tailed deer
Mazama spp.	Brocket deer
Canis familiaris	Domestic dog
Orthogeomys hispidus	Pocket gopher
Dasypus novemcinctus	Nine-banded armadillo
Sciuridae	Squirrel
Trachemy scripta	Slider turtle
Serpentes	Snake (unidentified)
Rajiformes	Ray
Cichlidae (2 + species)	Cichlid fish
Ariidae/Heptapteridae	Catfish
Pachychilus sp.	Jute
Pomacea flagellata	Applesnail
Unionidae	River clam
Strombus sp.	Conch

Table 1: Preliminary list of the taxa present in the Trinidad zooarchaeological assemblage according to scientific and common name

Future Research

My dissertation research will build upon the screening tests and preliminary faunal identifications completed during the summer of 2004. I will analyze the zooarchaeological remains from three Late Classic to Postclassic period (ca. A.D. 600-1300) sites from different ecological zones within the Maya lowlands of Belize and Guatemala (the coastal site of Marco Gonzalez, the inland lacustrine site of Trinidad, and the riverine site of Cancuen which rests at the lowland/highland interface). All of these sites have been interpreted as prehistoric trading centers due their strategic geographic locations between resource zones and along known trading routes.

Research Questions:

- ❑ Do elite and non-elite animal use patterns reflect more local or extended economies? How does this compare to other sites not interpreted as trading centers?
- ❑ Is there evidence for "pan-Mayan" animal use patterns across the diverse ecological zones?
- ❑ What is the potential for using chemical and isotopic signatures to reconstruct ancient trade routes and identify non-local resources?

Fig. 8: A fish carved in stone from the site of Copan, Honduras. Marine resources such as fish and shellfish played an important role in Maya iconography, cosmology and trade. (photo by Dr. Kitty Emery)

New Methods for Tracking Trade Networks:

The nature and function of extended trade networks will be examined through the classification of procurement zones for local, non-local, and exotic fauna and through chemical sourcing (trace element and stable isotope analysis) of animal bone and shell. This analysis will be performed on remains from my three study sites, as well as samples from other contemporary Mesoamerican sites such as Copan.

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