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Archaeology, Faunal Analysis and Interpretation: Lessons from Maya Studies

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ABSTRACT: This article presents a non-zooarchaeological viewpoint, as a response to many of the themes presented in this special journal issue, and based on discussions that occurred during the 2003 Society for American Archaeology Forum, *Zooarchaeology in the Humid American Tropics: Making the Most of the Data*. Our experience in the Maya region shows many areas in which zooarchaeology can provide valuable contributions to better understanding the past. A fundamental need is better collaboration between field directors and faunal specialists. We highlight both the importance of expanding the contributions that faunal specialists make in understanding larger societal questions, and the need for more training in zooarchaeology as well as more in-country comparative collections and specialists. Finally, we emphasize the need for funding to support this research, including the post-field analysis.

KEYWORDS: ZOOARCHAEOLOGY, MAYA, METHODOLOGY, RECOVERY TECHNIQUES

RESUMEN: Como respuesta a muchas de las cuestiones presentadas en este volumen monográfico, basadas a su vez en discusiones que se produjeron en el foro de la Society for American Archaeology "*Zooarchaeology in the Humid American Tropics: Making the Most of the Data*" celebrado en el año 2003, este artículo presenta un punto de vista no zooarqueológico sobre las mismas. Nuestra experiencia en el área maya enfatiza las muchas áreas en donde la zooarqueología puede proporcionar valiosas ayudas en la mejor comprensión del pasado. Una necesidad fundamental es una mejor colaboración entre los directores de excavación y los analistas de fauna. Enfatizamos aquí tanto la importancia de diversificar las contribuciones que dichos analistas pueden llevar a cabo para comprender las cuestiones sociales de mayor importancia así como la necesidad para profundizar en el desarrollo de más especialistas y más colecciones de referencia entre países. Por último, enfatizamos la necesidad de la financiación como base de apoyo de toda esta investigación incluyendo los trabajos de laboratorio posteriores a la excavación.

PALABRAS CLAVE: ZOOARQUEOLOGÍA, MAYA, METODOLOGÍA, TÉCNICAS DE RECUPERACIÓN

INTRODUCTION

The 2003 Society for American Archaeology Forum, *Zooarchaeology in the Humid American Tropics: Making the Most of the Data* included discussions by both zooarchaeologists and non-zooarchaeologists. The special editors of this journal have asked us to write an article from a non-zooarchaeological perspective commenting on these discussions. As archaeologists who have worked in Mesoamerica for many years, we were asked to synthesize and elaborate on some of the points that audience members contributed about the central themes presented – screen size, variable preservation, comparative collections, the use of ethnography, regional comparability, increased collaboration between archaeologists and zooarchaeologists, and the robustness of the faunal data.

We highlight in this article the evolution we have seen in the Maya area, and how zooarchaeology can provide invaluable assistance to understanding the past.

The practice of archaeology has changed substantially over time. There have been changes in the practitioners, in the manner in which archaeology is funded, and in the focus and goals of the archaeological work itself. Originally an avocation, archaeology was often funded and practiced by individual antiquarians without any established written or unwritten professional guidelines. As archaeology became an accepted vocational practice, teams of archaeologists were funded collectively by museums and other institutions to pursue detailed descriptive work in an attempt to chronicle the past in broad brush-strokes. Today, archaeology has become more scientific and academic. Individuals or teams of individuals work together to find funds to undertake research based on specific questions that often seek to look not only at patterns, but also at variability within the ancient past.

Not surprisingly the role of faunal analysis has also changed dramatically. Early studies focused on classifying living and ancient animals as a means of determining diet and habitat. Present-day researchers now explore far more varied topics, such as status differentiation and political economics. Faunal remains and their analysis have great value in archaeology. Nevertheless, particularly in the tropics, faunal analysis still is not utilized to its full potential. There needs to be a new paradigm shift – one moved forward by the kinds of analyses now possible, with new research tools and techniques as well as with substantial communication and feedback among faunal analysts and field researchers. Such collaborative problem solving also requires much time to be devoted to post-field analysis and write-up.

There are a number of reasons why the potential of faunal analysis has not been fully utilized, and many were discussed during the 2003 SAA Forum. These reasons go beyond issues designated as continuing sources of concern to faunal analysts, such as the need for comparative collections and the problems of sampling (see Wake, this volume; Quitmyer, this volume). Most important is the increasing need for communication and collaboration between archaeologists and environmental specialists such as zooarchaeologists. With collaboration comes the potential to maximize the value of data in times when funding and excavation permits are more difficult to attain. Collaboration ultimately increases the breath of knowledge about the data, providing more grounded results, with multiple lines of evidence that will be of interest to many peer-reviewed journals, rather than being available only in non-published final reports.

The promise and the changing role of faunal analysis are nowhere more apparent than in the field of Maya Studies (e.g., Teeter, 2001; Emery, 2003; 2004a). Faunal analysis was not a central element of initial work in the Maya area. Yet, the early 20th century Carnegie Institution of Washington investigations in the Maya world brought a number of biologists to Mexico and Guatemala to study modern animals (Willey & Sabloff, 1993). Because these individuals were present in the field, even at remote sites like Uaxactun, Guatemala, in the 1920s and 1930s, faunal material from selected excavations – such as caches and burials – could be readily identified. And more important, the value of faunal identification to Maya Studies was recognized.

Other than from a historical standpoint, the largess and benefits of the Carnegie Institution of Washington in terms of Maya archaeology is a topic that sees infrequent discussion in the archaeological literature (Willey & Sabloff, 1993). While most researchers agree that the Carnegie Institution of Washington kick-started Maya archaeology, carrying out a series of long-term investigations at many of the sites that now form the mainstay sequences for the field (Willey & Sabloff, 1993), its work is not often praised for being innovative. Instead, the Carnegie Institution has been attacked for carrying out only descriptive archaeology, or culture history, which did little to advance the field of archaeological understanding and theory in the Maya area (Kluckhohn, 1940; Taylor, 1948). To a large extent, this negative view of the Carnegie Institution still prevails. Yet, the Carnegie Institution was innovative in that it consciously spurred interdisciplinary work (e.g., Pohl, 1985) that should be the envy of modern researchers. In the interest of a broadly defined "Maya Studies," biologists were sent out by the Carnegie Institution to make collections of mammals, birds, and fish that would be of use not only to biologists but also for ancient and modern comparisons to data gained from archaeology and contemporary social sciences (Willey & Sabloff, 1993).

However, the Carnegie Institution of Washington work in the Maya area did not focus on col-

laborative problem solving. Collaborative problem solving can broaden the field of inquiry for faunal analysis. Faunal remains can be and have been used to answer many key questions. They can be used to consider societal and economic changes, such as ethnicity, production and trade activities, and status differentiation.

ARCHAEOLOGICAL PROBLEMS FACING MODERN FAUNAL ANALYSIS

The 2003 SAA Forum tried to identify the problems and propose solutions for tropical faunal analysis. Each of these topics has not only a zooarchaeological opinion, but also a general archaeological viewpoint that should be included. Some of these examples are listed here and discussed further below. Emery (this volume) finds that far too few people are trained to undertake faunal analysis in the Maya area. Wake (this volume) and Quitmyer (this volume) find a lack of appropriate comparative collections and sampling strategies being used in the tropics. Cooke (this volume) discusses fish taxonomies and the difficulties of teasing out habitats from geomorphologically highly unstable environments. McKillop *et al.* (2003) demonstrates a clear problem arising as faunal materials are differentially preserved and recovered from within the archaeological record. Papers by Teeter & Chase (this volume), Brown (2003), and Maxwell (2003) show, perhaps most significantly, that invaluable faunal data are not well integrated into larger archaeological analyses and interpretations.

To undertake faunal analysis, one needs extensive anatomical training in comparative skeletal biology or zoology – training focused on species level identifications with incomplete specimens. Faunal analysts may share interests and abilities with evolutionary biologists, zoologists, and paleontologists. It is also important to know about ecosystem and evolutionary biology, taxonomy, and biogeography, as well as all the anthropological subfields. In most anthropology programs, this kind of training is not available, and it is not easily found in other disciplines (Emery, 2004b). Just as would-be faunal analysts find it difficult to acquire the necessary specialized training, at the same time non-faunal researchers fail to recognize the benefits that faunal analysis can provide for collaborative problem solving. The study of faunal materials is not a standard offering for general graduate archaeology education in the same way that certain other analyses, such as ceramics or human osteology, have become.

Even teaching faunal analysis in a university setting proves difficult because of the lack of comparative collections. Few extensive comparative collections of biological specimens exist outside of major natural history museums. Even where they do exist, such collections do not travel, meaning that scholars must go to them. And the materials that are necessary to undertake comparative analysis cannot be found for purchase from major educational or scientific supply companies. This is not conducive to a classroom setting and makes research difficult.

Building new faunal collections is difficult, especially if the species being studied come from other parts of the world. Government regulations often prohibit both the collecting and the exporting of modern faunal materials. For instance, in Belize, the killing of an ocellated turkey (a creature important for the ancient Maya as food and ritual symbol) is prohibited; neither may one export the bones without permits from two different government agencies. Many foreign countries have no major collections of their own flora and fauna, and most in the Maya world have no in-country experts in zooarchaeology. Thus it is hard to find comparative specimens, let alone collections or local analysts. Skeletal developmental sequences, in terms of aging and sexing identifications, are likely to be further underrepresented and even more difficult to accomplish.

Most faunal analysts do not excavate their own specimens. Thus, there is some data loss before specimens ever get to analysts (even if the analyst is present at the site) because of the fragile nature of the specimens and because of diverse collection techniques in the field. Archaeological bones are fragile; simply transporting them – however carefully – in harsh field conditions can lead to their further deterioration before they even reach an experienced researcher for identification. It becomes important for zooarchaeologists to work with field directors when they are developing project goals and sampling strategies. Zooarchaeologists must articulate why 1/8-inch or 1/16-inch screens may be important for data recovery (Quitmyer, this volume), given the greater length of time such screening would require.

An even more crucial concern, however, is the context of the faunal specimens. Many archaeo-

logical settings are not conducive to the preservation of faunal remains, and many past and present social practices dictate that some faunal remains will either not enter or not be preserved in the archaeological record. It is often unknown whether preservation issues are due to human agency or to factors of nature. If faunal analysts are not in the field when specimens are excavated, the detailed context of remains may not be evident. While some contexts, such as in caches and burials, may already be identified, analysts may be given other materials to analyze with no indication of whether the remains came from surface finds, were included in mixed construction fill, or had rested *in situ* on a floor. Only with the collaborative process can contextual details be understood. Teeter spent many hours consulting with Chase and Chase on what an excavated unit or even a special feature really meant and what possible dates might be associated, even though she was on site for many of those excavations. It can take years for field directors to understand what has been excavated, and interpretations do change.

Even when actual archaeological faunal specimens are not recovered, interpretations related to fauna have been undertaken by examining ancient iconography, particularly in the form of animals painted on ceramic vessels. These data have been used to see animals as food, as ritual components, and as clan symbols (e.g., Helms, 1979, for Panama). Yet only rarely have iconographic portrayals and relevant archaeological faunal collections been compared and contrasted. Considerations of iconography, archaeological context, and simple preservation can, however, lead to an extremely skewed picture of the ancient past. Iconography will emphasize only certain animals, perhaps in disproportion to their actual use in terms of exploitation and consumption (Cooke, 1992).

FAUNAL ANALYSIS IN THE TROPICAL MAYA LOWLANDS

The identification of distinct archaeological contexts often depends on excavation technique and the experience of the researcher. When fully explored and defined, archaeological contexts prove to be extremely variable in terms of both content and preservation. In the Maya area ceremonial contexts, like burials and caches, are often easily identifiable because they are usually encased in architecture and sealed below floors. Other contexts, such as *in situ* household floor debris, may be more difficult to encounter because of poorer preservation. Thus sampling, context, and preservation may result in the overemphasis of certain unusual species. Realizing this can lead to interesting conclusions within the realm of ancient cosmology (Maxwell, 2000).

It is well understood in Maya archaeology that faunal remains are more likely to be preserved if they are found associated with permanent stone buildings (e.g., Moholy-Nagy, 2003: 58), perhaps because lime from the readily leached plaster that once covered these buildings helps in the initial preservation of faunal remains until the collapsing building covers the bone, thereby lengthening the deterioration time. In outlying Maya residential groups, by contrast, with their more impermanent constructions, faunal remains are not commonly encountered, both because they are close to the surface and because of tropical temperatures and water fluctuations, unless they are secondarily included in construction fill (e.g., Teeter, 2001, 2004). Thus, the recovery of faunal remains in the Maya area (and, indeed, elsewhere) is skewed by differential preservation, by chosen excavation focus, and by archaeological recovery techniques.

It is difficult to gain an understanding of exactly what was consumed in an ancient Maya household. Faunal remains in association with the latest occupation of most residential groups are usually almost non-existent, and when they are present, they represent such chance differential preservation as to be non-representative of the totality of what was once there. Even where there is good preservation of the garbage containing faunal materials, such as in elite Maya palaces and their stone buildings (Chase & Chase, 2001a), one must question the direct association between such garbage and the original occupants of the buildings.

The Maya were very fussy about their garbage. Living as they did in a tropical environment, they needed to be concerned about refuse, especially in a densely packed urban setting. Garbage decomposed quickly in the tropical environment, attracting other animal and insect pests that could be detrimental to human health. Disease attributable to pests associated with festering garbage was potentially transmittable to a broad spectrum of the ancient community. Not surprisingly, then, it appears that the Classic era Maya employed extremely sophisticated systems of garbage collec-

tion and removal. Garbage was quickly gathered up and transported out of buildings and plazas either to be used as field fertilizer or fill (Chase & Chase, 1998) or to be incorporated into other construction projects (Moholy-Nagy, 1997). For these reasons, when *de facto* garbage is found in association with a building, it needs to be carefully analyzed because it provides a rare opportunity to review garbage and possibly its breakdown in a carefully regulated system. At some sites, such as Tikal, Guatemala (Harrison, 1999), given the amount of garbage that piled up in some rooms, it would appear that the garbage collection system had failed completely and that individuals were literally living on top of their trash. At other sites, such as Altun Ha, Belize (Pendergast, 1979), it seems that some building rooms were purposefully filled in with garbage, perhaps preparatory to future construction efforts that never materialized. And at still other sites, such as Caracol, Belize (Chase & Chase, 2000), thin sheet-like layers of trash and faunal remains occur outside of stone buildings, often concentrated in corners, perhaps indicating a short-term holding area for trash that was never collected.

Thus, how trash and its associated faunal material occurs in relation to buildings has implications for whether the accumulated trash is part of a still-functioning system, whether the trash is representative of the activities of the inhabitants of a given building, and whether the trash may or may not have been curated. Once these factors have been considered, then the contents of the refuse may reveal other behavioral clues. Is there evidence of cooking and food preparation in the form of ash and hearths, ceramic braziers, cooking or storage vessels, and manos and metates? Are serving vessels present that could have been used for food? Are ritual ceramics present? Is there evidence for craft production? Is the trash consistent with a single activity or with multiple activities? Such questions are rarely answered within the framework of standard archaeological artifact analysis.

In a modern Maya archaeological setting, a given excavation may be undertaken during which all artifactual material may be carefully gathered through fine-mesh screening and even floatation. The area may be meticulously planned, and there may be specific locational information for artifactual remains. Such careful methods may not, however, always be practical or possible. Even with them, what happens next in the laboratory can disrupt the interpretation of the material beyond the level of lists and very simple identifications. Although all the artifacts and ecofacts may be processed and even catalogued, they then go off to separate individuals who undertake separate detailed analyses – for no one archaeologist is a master of all trades. The ceramics go to a ceramicist, who may type and count the collected material. Only rarely, however, is a concerted effort made to look at forms and whole vessels associated with specific floors and deposits (e.g., Chase & Chase, 2004a). The lithics go to a lithic specialist, who may eventually undertake microware analysis to look for function. Like other artifact classes, ground stone and special finds go to their respective analysts. Similarly, the faunal material is also carefully bagged, usually for future identification and analysis. Only infrequently are all these artifact classes reintegrated, meaning that the overall contextual interpretation suffers. Even if they are eventually reintegrated, the slow pace of archaeological processing means that such reintegration usually happens only after the passage of considerable time. Yet, it is precisely at this level of integration that interpretive breakthroughs happen in archaeology. While lists of faunal materials at a given site are instructive as to past animal exploitation and use, such lists cannot substitute for the truly collaborative efforts of diverse researchers, who examine and analyze their data classes and then recombine these data sets contextually.

Work at Caracol, Belize, has been ongoing now for over 20 years (Chase & Chase, 1987, 2004b; Chase & Chase, 1994). Since the inception of the project, we have made a concerted effort to collect faunal material and to have it analyzed (Morton, 1987; Teeter, 2001) and placed within its ecological context (Miller & Miller, 1994). Only now are the long-term benefits of this collective work beginning to bear fruit. Rather than simply noting that marine fish were present at the site, we are now able to establish that such materials were available to a broad spectrum of Caracol's ancient community, presumably being distributed at markets (Chase & Chase, 2001b). The presence of certain avian species can be directly correlated with high status and can be used as a guide for anomalous contexts (Teeter, 2001). Craft specialization using faunal remains can also be established for both stone palaces and smaller residential groups (Teeter, 2004). Other patterns in differential diet (Chase *et al*., 2001; Chase *et al*., 1998) and in artifact and faunal correlations (Chase *et al*., in press) are also being established.

In spite of the slow progress being made, however, an imbalance has occurred in archaeology relative to its practitioners and the expectations that derive from their work. There is a tug-of-war between idealism and reality. Archaeology, as practiced in the Maya area, is a long-term exercise. Digging and recording are the simple parts of the task. The full analysis of the recovered materials is much harder. As well, funding for extended periods of analysis is usually unavailable. Most archaeologists are employed in academia and have teaching and other obligations in addition to their research. They also must process materials that have been excavated, even those outside their areas of expertise. But reporting is done on a yearly basis, both in academia (in terms of annual evaluations) and in archaeology (in terms of field season reports due to government agencies) – a timeframe that is usually too short for effective analysis to be undertaken. Thus, while counts and lists may be made and sections and plans inked, contextual integration and synthesis are usually not possible within such a contracted timeframe. There are also modern-day difficulties in getting samples to analysts for processing, not to mention getting onto the calendar of a given analyst. Foreign governments have tightened their export requirements. Sometimes foreign countries will refuse to give permissions for collections to be shipped, even though these countries do not themselves have the comparative collections necessary for species identification. All of this means that final analysis and interpretation are destined to take many years. While it would be nice to have a cadre of Maya archaeologists and analysts, all endowed with long-term full funding through agencies like the McArthur Foundation, in order to carry out the collaborative enterprise necessary for the full analytical interpretation of collected archaeological remains, this is unlikely to happen any time soon.

CONCLUSIONS

Although the Carnegie Institution of Washington has been disparaged as being atheoretical and concerned only with descriptive culture history, it at least got its basic descriptive publications out in a relatively timely fashion and attempted to engage in true interdisciplinary research. What the Carnegie Institution accomplished 50 years ago has become difficult for many researchers to replicate today. Not only is the publication of basic descriptive data hard to accomplish in the world of modern publishing, but also the full publication of analytical data, covering all ceramic, artifact, and faunal material, is rare, given the time constraints of modern academia. Yet, archaeologically, we have far better and more varied techniques, both in the field and in the laboratory, than those that existed over 50 years ago, techniques that are conducive to much higher levels of interpretation than were possible in the past.

These deficiencies could be corrected if a new version of the Carnegie Institution were created or, at least they could be alleviated if we could find mechanisms to free and fund researchers so that they could undertake collaborative efforts for extended and lengthy periods of time. What is needed to move tropical faunal analysis forward is a focus on communication and collaborative problem-solving, the post-field analytic time to pursue these efforts, and the funds and support to give us this time.

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