Neotropical zooarchaeology and taphonomy

1. Introduction

This volume is intended as a collection of research papers that together survey some of the general trends in the interactions between humans and the Neotropical fauna throughout the late Quaternary as well as those in the taphonomic processes characterising the resulting archaeofaunal record, and their relation to the biogeographic features of the region. The general idea underlying the volume project is that understanding these relationships at such a broad scale may turn out to be a powerful tool for taphonomic and zooarchaeological research, and help account for some of this biogeographic region’s particularities with regard to others (see for example, Borrero, 2006; Muñoz and Mondini, accepted for publication). Hence, the volume is aimed at dealing with the specific aspects of zooarchaeology and taphonomy in the Neotropics and the problems shared by these investigations from the perspective of the general properties of the macroregion.

Past human–animal relationships can help account not only for human ecology and ways of life but also for the faunal communities generally in the region after humans became members in the late Pleistocene. Often the zooarchaeological record is the best-preserved record of these communities. On the other hand, understanding all other processes that structure this record has always been a key concern in zooarchaeology and taphonomy, focused both on negative (biases) and positive (palaeoecological) contributions, has reached a major development within this field. Multiple disciplines converge in this research area, as they do in this volume, to help investigate the general problems of concern.

The Neotropics—which encompass the region from southernmost North America all through to southernmost South America—is one of the most diverse biogeographic regions on Earth. This diversity as well as the biotic history of the region has many implications on faunal communities generally in the region after humans became members in the late Pleistocene. Often the zooarchaeological record is the best-preserved record of these communities. On the other hand, understanding all other processes that structure this record has always been a key concern in zooarchaeology and taphonomy, focused both on negative (biases) and positive (palaeoecological) contributions, has reached a major development within this field. Multiple disciplines converge in this research area, as they do in this volume, to help investigate the general problems of concern.

On the other hand, the internal variability in the Neotropics is huge, and contrasts between areas in the Guyano-Brazilian and the Andean-Patagonian subregions are significant (Rapoport, 1968). These variations are expressed in the faunal communities not only taxonomically but also in other properties such as population densities and body sizes. The Neotropics represent one of the most diverse regions on Earth (Cabrera and Willink, 1980; MacDonald, 2003). Among other ecosystems, the Neotropics includes more tropical rainforest than any other biogeographic region, and some of the driest deserts on Earth. This has many implications on faunal communities that impinge directly on human–animal interactions and the resulting fossil record.

Some of this variation is due to the particular history of the region. The Neotropical fauna was definitely modelled
after the Isthmus of Panama was formed in the Pliocene, when interchange with North America and a number of dispersals and extinctions took place (Patterson and Pascual, 1972; Webb, 1985; Lessa et al., 1997, among others). At present, endemism is very high in South America, the continent is characterised by its unsaturated fauna given the low numbers of large mammals, and many ecological niches are only partially occupied by mammals as compared to the Nearctic (Keast, 1972; Cabrera and Willink, 1980; Redford and Eisenberg, 1992, among others).

In sum, the Neotropical region can be considered to be distinctive in many respects, both regarding its spatial geography and its faunal history. Its human history is also a relevant fact. The region was peopled in the Pleistocene by human populations coming from the north, and it was the last large landmass to be peopled by hunter-gatherers. Later, different animals were locally domesticated, such as camelids and rodents. The introduction of other domestic animals took place along with the European occupation of the area since the sixteenth century.

3. Zooarchaeological and taphonomic research in the Neotropics

Zooarchaeological and taphonomic research in the Neotropics is a growing field of enquiry that at present displays a wide array of research lines (e.g., Emery, 2004; Mengoni Goñalons, 2004; Gutiérrez et al., 2007, just to cite some examples). It ranges from zooarchaeology in high-latitude oceanic contexts and high-altitude deserts to taphonomy in unsaturated faunal communities, including the consequences of regional biogeographic filters and barriers, the faunal communities present at the time of human dispersal in the region and their implications, the domestication of native Neotropical animals from a comparative perspective, among many other subjects.

As regards the state of the art in Neotropical taphonomic research, important advances have been achieved in the last couple of decades. After an initial stage when isolated or exploratory taphonomic observations were made, several regional taphonomic studies were done, although more long term research is still needed, as is a more thorough and relevant integration into general archaeological research projects (Borrero, 1988, 2007; Mondini and Muñoz, 1996). Also, more research is necessary on the variability of specific agents and processes and the contexts in which it is produced. In spite of these shortcomings, the region has produced some of the finest taphonomic research, with exhaustive studies and original models. Some examples can be seen in this volume.

Neotropical zooarchaeology has been growing since the 1970s, and it can now be considered a fully mature field of research in different places of the region, as was shown by Mengoni Goñalons (2006) (also see Stahl, 1996; Nogueira de Queiroz, 1999; Mengoni Goñalons, 2004, among others). From the early beginnings, it has been concerned not just with the particular cases under study, focused namely on subsistence issues, but also with methodological aspects of the discipline, although more research is needed in political, social and symbolic issues and, methodologically, more experimental work and integration of taphonomic research would be welcome (Mengoni Goñalons, 2006).

Given the variability of faunal communities in the Neotropics, as well as the rich human history here, ranging from some of the earliest known hunter-gatherers in the New World to states and empires, zooarchaeological and taphonomic research have contributed not only novel results but also original approaches. However, compared to other biogeographic regions such as the Ethiopian and even the Nearctic ones, where zooarchaeological and taphonomic studies have been abundant, information here has traditionally been more uneven. Only recently has more consistency developed, with particularly intensive research in areas such as Mesoamerica, the Central Andes and the Southern Cone. In addition, most work has been published in local venues and only recently have syntheses become more regular (e.g., Mengoni Goñalons, 2004; Gutiérrez et al., 2007, as well as the 10th ICAZ Plenary Session organised by Mengoni Goñalons et al.), which speaks of the improving health and prospects of the disciplines in the region.

Although not intended as a synthesis strictu sensu, this volume aims at contributing another perspective to general research approaches. The Neotropical biogeographic region basically coincides with Latin America, a geographical-political unit with a particular history and academic background, which has strongly impinged upon research in the area and contributed to its peculiar character. Although this is certainly taken into account, this volume is organised around a biogeographic criterion related to the human-biotic interactions we study, rather than the state of the art of research in national or some other units related to research history. From this viewpoint, also, taphonomy and zooarchaeology are integrated into one another throughout the volume.

The need to understand the variability related to the ecological contexts where taphonomic and zooarchaeological information is generated has long been acknowledged in the literature (e.g., Gifford-Gonzalez, 1991; Hudson, 1993). One of the problems we face in addressing these questions is that variability has hardly begun to be understood in regard to many lines of evidence. Methodologically, this implies that while the immediate conditions producing some traces can be easily inferred, understanding the circumstances under which different factors interact remains more ambiguous, as the assemblages we study can be produced by different agents in different contexts (Gifford-Gonzalez, 1991). Hence, wondering about zooarchaeology and taphonomy at a Neotropical scale represents an opportunity to advance our knowledge of the conditions under which past human populations interacted with prey and predators and how the record of
these and other faunal interactions was formed. We believe that some ecological relationships among species can only be perceived at broad scales of comparison, since we are dealing with the rates at which tactics, actions and decisions are repeated (Stiner, 1993), and thus such a scale of analysis can provide new, relevant information.

In this context, future efforts would probably benefit from a mix research strategy, aimed at recognising agent/process variability, and thus reducing ambiguity in the faunal record, while simultaneously exploring—from the very beginning of the research process—the conditions under which such variability is generated and thereby its meaning in terms of past human behaviour and its context. In other words, a productive strategy would be to address both stages in Gifford-Gonzalez’s (1991) seminal paper together. This volume in fact shows this is beginning to be the case in the Neotropics.

4. The volume

As previously mentioned, zooarchaeological and taphonomic knowledge on the Neotropical region as a whole needs to be deepened, as the analysis of its particular conditions may elicit more relevant models that differ from those more commonly found in literature. Although we must admit that it is difficult to produce results at such a macro scale, we believe that contributions in this direction such as the assemblage of research papers in this volume are a fundamental advance and a more complete picture of Neotropical zooarchaeology and taphonomy is emerging. Interdisciplinary studies are also a fundamental approach for such goals, as can be appreciated throughout this volume.

The volume is the result of a number of presentations at the Neotropical Zooarchaeology and Taphonomy Symposium we organised at the 10th Conference of the International Council for Archaeozoology (ICAZ), held in México, D.F., in August 2006. Most of the papers presented here were submitted to the symposium, although some of the participants could not attend the meeting.

A variety of research problems are addressed in the volume that deal with the Neotropical zooarchaeological and taphonomic records from different perspectives, and focus on different regions, from the transition with the Neartic to the southern limits of the Neotropical region itself, and various time frames, since the peopling of the Americas to state societies, including actualistic research.

Peter Stahl and Luis Borrero, whose research and stimulating ideas on South American zooarchaeology and taphonomy have been so inspirational to the kind of goals we are addressing in this volume, were the keynote speaker and discussant, respectively, at the symposium. Stahl’s opening paper on zooarchaeology’s contribution to historical ecology in the Neotropics discusses the specifics and implications of this important role of the discipline in the region. Other papers address human interactions with faunas as varied as parasites (Araujo et al.) and Pleistocene herbivores (Garcia et al.), with palaeoecological implications for the peopling of the Americas, the extinction of Pleistocene faunas and beyond. Taphonomic contributions include a regional model of vertebrate deposition, which compares bone accumulations in Patagonian and African environments (Cruz): one on herbivore mass deaths and their archaeological implications, also in the southern Neotropics (Belardi and Rindel), and one on the characterisation of a large felid’s action throughout the Neotropics (Mondini and Munoz). Some contributions have explicitly integrated taphonomic and zooarchaeological approaches, such as that by Fernandez on vertebrate deposition at archaeological sites in northern Patagonia, which considers both natural actors and human processing for specific nutrients, and that by Nogueira de Queiroz on the problems and prospects of Brazilian zooarchaeology and the relevance of taphonomy to it. Other contributions focus on the importance of certain resources and the ways to obtain and process them in a variety of contexts, as in the case of fish in coastal central America, where it seems to have been cured (Carvajal-Contreras et al.); cetaceans in the Atlantic coast of Brazil, where they contributed to a varied diet (Volkhmer de Castilho); fish in the Andean Lake Titicaca, where environmental and social factors would have impinged on the decline of the resource in the Late Formative (Capriles et al.); and guinea pigs, whose fat contribution to the diet may have been a factor for its domestication in the Andes (Rosenfeld). Finally, some papers deal with faunal utilisation in complex societies, as is the case with Izeta’s paper on camelid utilisation in different altitudinal Andean zones and Corona’s paper on the differential use of Neotropical and Neartic animals in a deeply hierarchical Mesoamerican society. The final discussion by Borrero closes the volume with his sharp perspective and original ideas on these papers and on the research in the region.

We hope readers from the Neotropics and beyond enjoy with these exciting pieces of research.

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1Other papers that were contributed to the session but are not included in this volume include Paleobiogeography and paleoclimate of the Atacama desert over the last 50,000 years as inferred from rodent middens, by Claudio Latorre, Julio L. Betancourt and Antonio Maldonado; Chorology of Patagonian microfauna: its meaning on the taphonomy and paleoenvironmental reconstruction of archaeological sites, by Monica Salemme, Laura Miotti and German Moreira; and The marginality issue revisited: Tasmania and Tierra del Fuego zooarchaeological records compared, by Richard Cosgrove, Sebastian Muñoz and Anne Pike-Tay.
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Mariana Mondini

Laboratorio de Zooarqueología y Tafonomía de Zonas Áridas, CONICET—Museo de Antropología, FFyL, Universidad Nacional de Córdoba, Av. H. Irigoyen 174, 5000 Córdoba, Argentina

E-mail address: mmonmun@mail.retina.ar

(A. Sebastián Muñoz)