



Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Ten years of actualistic taphonomic research in the Pampas region of Argentina: Contributions to regional archaeology

María A. Gutiérrez*, Daniel J. Rafuse, María C. Álvarez, Agustina Massigoge, Mariela E. González, Nahuel A. Scheifler, Cristian A. Kaufmann

Instituto de Investigaciones Arqueológicas y Paleontológicas del Cuaternario Pampeano (INCUAPA-CONICET), Facultad de Ciencias Sociales, Universidad Nacional del Centro de la Provincia de Buenos Aires, Olavarría, Buenos Aires, Argentina

ARTICLE INFO

Article history:

Received 1 May 2017
Received in revised form
14 September 2017
Accepted 22 September 2017
Available online xxx

Keywords:

Actualistic taphonomy
Naturalistic studies
Experimental studies
Pampas region
Regional archaeology

ABSTRACT

Over the last decade, we have conducted an actualistic taphonomic research program in the Humid Pampas of Argentina, in order to build a corpus of information about the taphonomic agents and processes characterizing this sub-region. In this paper, we present a summary of our results after ten years of actualistic taphonomic studies in the Pampas. Our program includes both naturalistic and experimental research. Some of the controlled experiments consist of studies with different-aged guanaco bones, including sub-aerial weathering in a controlled environment, and water transport with disarticulated bones. Other studies were conducted at a local zoo, where we offered different types of prey to native small-sized carnivores (canids, felids, mustelids, and mephitids). Our naturalistic observations include the development of taphonomic transects in different environments. Through this method, we were able to study different topics among which some of the more significant are the movement of bones by small-sized carnivores and the distribution of beached Magellanic penguin specimens along the coast. Particular studies included the analyses of the content of dens occupied by small carnivores, the effects of a grassland fire in a vertebrate assemblage, the modifications produced by a local rodent -vizcachá- in the landscape, and the damage generated by pumas in guanaco carcasses. After ten years of systematic research we contributed to identify the potential mixture between modern bones and the archaeological record in relation to the environment; to determine bone preservation biases according to the properties of the record; to recognize agents responsible of bone accumulation and alteration; and to establish diagnostic criteria in order to differentiate cultural from natural patterns.

© 2017 Elsevier Ltd and INQUA. All rights reserved.

1. Introduction

Our main archaeological research is a long-term study with the aim of evaluating the evolution, population dynamics, and historical trajectory of the hunter-gatherer societies that occupied the Pampas grasslands of Argentina during the Late Pleistocene and Holocene. During this long time span, several changes occurred in the technology, subsistence, mobility, demography, and social organization of human groups. We adopt two research perspectives in order to conduct our investigations: regional archaeology and actualistic taphonomy. In terms of regional archaeology, we study chronology, subsistence, mobility, lithic and ceramic technologies,

settlement patterns, and the mortuary practices of hunter gatherers (Massigoge, 2007; González, 2010; Gutiérrez et al., 2011; Álvarez et al., 2013; Kaufmann and González, 2013; Gutiérrez and Johnson, 2014; Politis et al., 2016; Rafuse, 2017). In parallel, we carry out actualistic taphonomic studies (naturalistic and experimental *sensu* Marean, 1995) in order to generate frames of reference to understand patterns of accumulation, preservation, modification, and destruction of bone assemblages. This knowledge is critical when interpreting human subsistence practices and paleoenvironment properties from archaeofaunal assemblages. In this paper, we present the main results of the different lines of research that make up this long-term taphonomic program. Some of these lines are finished, while others are currently under development; consequently, the scope of the results differs among them.

The advance of taphonomy in Argentina began in the second

* Corresponding author. Avda. del Valle 5737, B7400JWI, Olavarría, Buenos Aires, Argentina.

E-mail address: mgutierr@soc.unicen.edu.ar (M.A. Gutiérrez).

half of the 1980s. In Pampean archaeology, this field became important during the end of this decade, particularly when faunal studies were incorporated within an interdisciplinary framework. During these early years, the collaborative work between Pampean archaeologists (including the first author of this paper) and Dr. Eileen Johnson promoted the incorporation of a taphonomic perspective in the archaeological research (Johnson et al., 1998), and was the starting point for the development of an integral taphonomy program which continues today. At first, we focused on the analysis of bone modifications in zooarchaeological assemblages for building taphonomic histories of archaeological sites (Gutiérrez, 2009). Beginning in the early 2000s, we performed isolated experiments to test hypotheses emerging from our studies of archaeological sites. These experiments, which can be viewed as the beginning of the actualistic stage of our research, lead us to change our interpretation of the sites. As a consequence, faunal assemblages once considered anthropic in nature were the result of natural formation processes (Gutiérrez and Kaufmann, 2007; Kaufmann and Gutiérrez, 2004). Since 2006, actualistic taphonomy has been systematically engaged in our archaeological research, and new topics were incorporated. In this paper, we present a summary of our results after ten years of actualistic studies in the Pampas.

2. Study area

Our actualistic studies are carried out in the plains and coastal areas of inter-sierra grasslands and the Tandilia hills of the Pampas region of Argentina (Fig. 1). The interior plains are characterized by eolian and floodplain deposits. The eolian deposits are comprised of sandy loess, very fine sand sheets, and dune fields (Zárate and Blasi, 1993). The coast environments include extensive beaches with large dunes, rocky cliffs, and shallow freshwater lakes which house a variety of birds and mammals (Marcomini and López, 2013). The foothills of the mountain ranges lie on a Precambrian base with

shallow dry soils and steep terrain which prevents the deposit of loess (Zárate and Folguera, 2009). The regional landscape is greatly affected by farming and urbanization. The climate is temperate and humid, with an average rainfall of 900 mm (Stutz et al., 2010). The area is characterized by low archaeological visibility and a near absence of native ungulates (i.e., *Lama guanicoe*) that once constituted the main prey of prehispanic hunter-gatherers (Martínez and Gutiérrez, 2004).

3. Bone intrinsic properties: mineral density analysis

Since previous research has shown that bone mineral density (BMD) is an important variable influencing the bones response to many taphonomic processes (Brain, 1981; Lam et al., 2003; Lam and Pearson, 2005; Lyman, 1984), the focus of our research program was to study changes in this intrinsic property in relation to age. Density analysis was conducted on metacarpals ($n = 46$) and femora ($n = 45$) of modern guanacos (*Lama guanicoe*) of different age classes (unborn, newborn, juvenile, subadult, adult, senile). One of the most relevant aspects of our research was the large mineral density variability detected in the analyzed skeletal parts. While an increase in density values in relation to age was observed for the metacarpal, this trend was not registered in the case of the femur (Gutiérrez et al., 2010). Contrary to our expectation, this variability would not be primarily related to the ontogenetic development of the species; as possible other biological variables could have affected bone mineral density in some degree.

Our study from a large sample of these two skeletal elements showed that bone density is highly variable for each element, mainly for the younger individuals. Taking into consideration the observed variability, part of which could be a response to ontogenetic development, we had proposed in previous articles (Gutiérrez et al., 2010; González et al., 2012) that the bone density indices currently used in zooarchaeology underestimate the variability in BMD values for each skeletal element or portion. Most of these

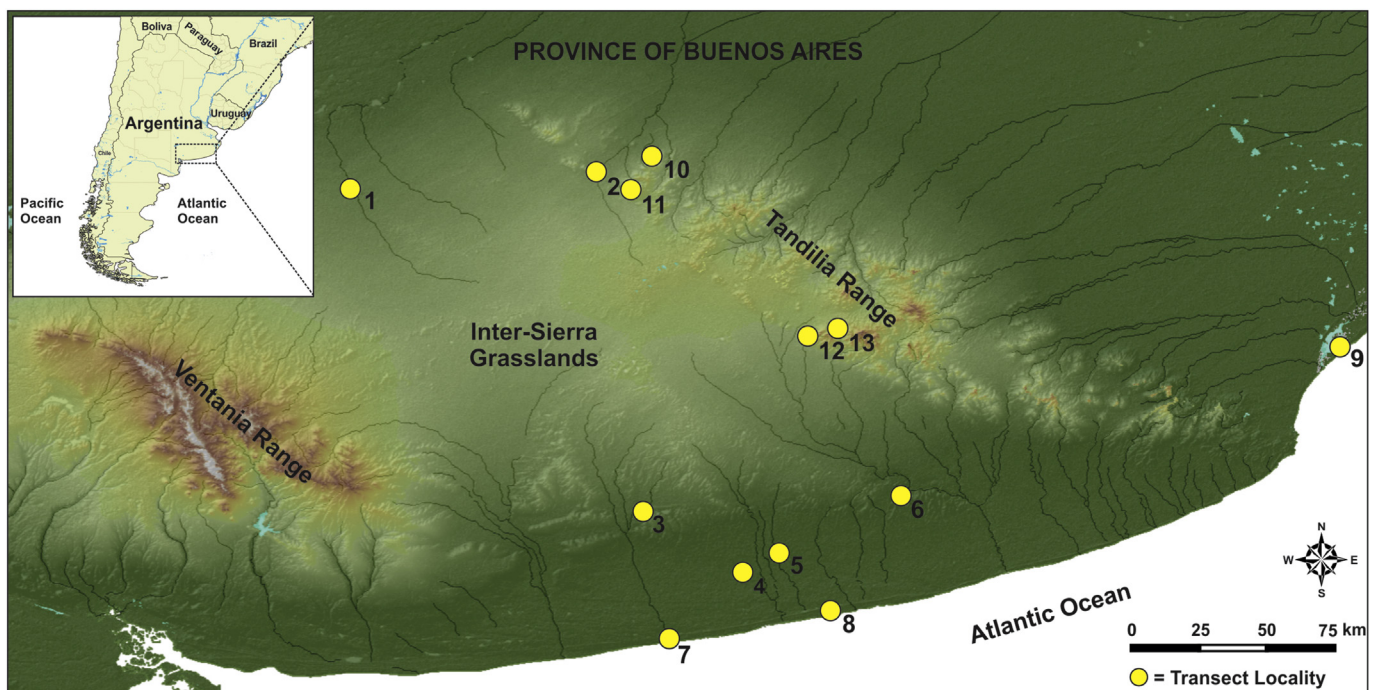


Fig. 1. Map of the study area with the location of the actualistic studies. Plains, river valleys, and lakes: (1) General La Madrid, (2) Olavarría, (3) Arroyo Seco, (4) Orense, (5) San Cayetano, and (6) La Dulce. Coast and lagoons: (7) Claromecó, (8) Balneario San Cayetano, and (9) Mar Chiquita. Hills: (10) Cerro Largo, (11) La Vertiente, (12) Cerro La Tinta, and (13) Siempre Verde.

Download English Version:

<https://daneshyari.com/en/article/10500917>

Download Persian Version:

<https://daneshyari.com/article/10500917>

[Daneshyari.com](https://daneshyari.com)