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Opportunistic use of tortoises (*Chelonoidis chilensis*) in a site of the Chaco-Santiagueña region (Province of Santiago del Estero, Argentina)

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ABSTRACT

Zooarchaeological analysis of the role of turtles as a resource for ancient inhabitants has been approached in different regions of the world, within the Broad-Spectrum Revolution and paleodemography frameworks and covering extensive periods of time. In the present work, the role of tortoises (*Chelonoidis chilensis*) is discussed for the Beltrán Onofre Banegas-Lami Hernández site from Chaco-Santiagueña archaeological region (Santiago del Estero Province, Argentina). This site corresponds to the late agro-pottery stage. The proportion of used resources at the site was estimated and the ethnographic work of the study region and surrounding areas were analyzed to discuss the importance of turtles in the diet of ancient inhabitants. In accord with the results, *C. chilensis* was used opportunistically or circumstantially, and could be more relevant during summer as an additional resource to lizards, *Tupinambis* sp.

1. Introduction

In recent years, zooarchaeological work in Argentina has seen further development of minor fauna analysis (e.g. Bond et al., 1981; Albino, 2001; Quintana et al., 2002; Acosta and Pafundi, 2005; del Papa et al., 2010; Quintana and Mazzanti, 2010; Albino and Franco, 2011; Fernández et al., 2011; Frontini and Escosteguy, 2011; Medina et al., 2011; Pardiñas et al., 2011; Escosteguy et al., 2012; Fernández, 2012; Salemme et al., 2012 among others). However, only data on consumption of tortoises for the Chaco-Santiagueña region (del Papa and De Santis, 2015) were recorded. In other regions, there are some indications of their remains' presence in archaeological sites with indirect evidence (e.g. Lagiglia, 1974; Albino and Albino, 2004; Gil, 2005; Prates, 2008). Lagiglia (1974) notes the presence of tortoises' remains in southern Mendoza sites of cultural context Atuel II (260 BC). They might correspond to plates (both bony and cornea portion) of *Chelonoidis donosobarrosi* "partially burned" (Richard, 1999), although there is no mention of the amount. For southern Mendoza, Gil (2005) mentions the presence of remains assigned to Testudinidae in low proportion for late Holocene sites. For the middle and lower valley of the Rio Negro river tortoises' bony plates have been recovered (*Chelonoidis* sp.) with evidence of combustion in Negro Muerto and Angostura 1 sites from Late Holocene (*ca.* 500 and 950 BP, respectively) (Prates, 2008). Finally, in the Pampas region turtles' remains of *Hydromedusa* have been recovered (cf. *Hydromedusa* sp., Salemme et al., 1985; *Hydromedusa tectifera*, Salemme, 1990).

For the agro-pottery period of the Chaco-Santiagueña archaeological region (Santiago del Estero Province), with a timeline that begins in 350 AD until the Spanish conquest, various authors note the presence of tortoises' remains but without mentioning whether they had evidence of anthropic consumption (Kraglievich and Rusconi, 1931; Rusconi, 1934; Lorandi and Lovera, 1972; Cione et al., 1979). Most of the sites analyzed by these authors are located in the vicinity of the Salado River. Rusconi (1934) assigned plastron plate remains of *Testudo tabulata* (a synonym of *Chelonoidis denticulata*, a species that does not inhabit the study area at present) in Llajta Mauca site. Zetti and Tonni recorded remains of Pleurodira (river turtle) on the site Quimili Paso (Lorandi and Lovera, 1972), and Cione et al. (1979) assigned remains to *Chelonia* indet in El Veinte site.

Research conducted in recent years in the region (Togo, 2004; del Papa, 2012) shows that a few specimens of *Chelonoidis chilensis* have been recovered in the Villa la Punta site with MNE = 1, Maquijata site with MNE = 10 (both located in proximity to the mountains of Guasayán) and Media Flor site with an MNE = 2

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(located in the basin of the Dulce river) (del Papa, 2012). Carapace plates are predominant in these sites, and only in the Maquijata site are endoskeleton elements (three vertebrae) represented; however, they do not show evidence of human activity (del Papa, 2012). Moreover, for the Beltrán Onofre Banegas-Lami Hernández site, analysis of tortoises' remains was presented, showing anthropic consumption (del Papa and De Santis, 2015).

Moreover, most zooarchaeological work on tortoises conducted in different regions of the world (mainly from Spain, Italy, South Africa, Israel, Colombia, Caribbean islands, North America, etc.) are part of studies on diet amplitude, paleodemography, taphonomy, environmental changes, taxonomy and other non-food uses (e.g. Sampson, 1998, 2000; Klein and Cruz Uribe, 2000; Stiner et al., 2000; Speth and Tchernov, 2002; Frazier, 2005; Stahl and Oyuela-Caycedo, 2007; Blasco, 2008; Morales Pérez and Sanchis Serra, 2009; Blasco et al., 2011; Brown, 2011; Salazar Garcia et al., 2013; Thompson and Henshilwood, 2014, among others). The researches analyzed not only different regions, but also various cultural contexts and timelines (from the Early Pleistocene to historical moments and ethnographic studies).

Regarding the role of tortoises in the ancient inhabitants' diet, most studies are based on a combination of the Diet Amplitude model or Broad Spectrum Revolution with paleo-demographic inferences. In this sense, the authors attempt to explain the changes between the Middle Paleolithic and Upper Paleolithic in the Old World and posit that from the end of the Middle Paleolithic the Broad Spectrum Revolution spread (incorporation of low energy return resources such as tortoises, among others) due to an increase in both human population and hunting pressure level on resources, so the size of tortoise individuals consumed decreases over time (e.g. Klein and Cruz Uribe, 2000; Stiner et al., 2000; Stiner, 2001; Speth and Chernov, 2002). As a result of the research goal, most of the work done on Diet Amplitude models considers the role of tortoises in relation to changes over time (they mainly take into account broad time frames). Some sites from the early Pleistocene of Africa and Spain suggest occasional tortoise consumption (Braun et al., 2010; Blasco et al., 2011). In a previous paper (del Papa and De Santis, 2015) through taphonomic analysis, anthropic consumption of tortoises was inferred in the Beltran Onofre Banegas-Lami Hernandez (BOL) site. However, their role in the sites ancient inhabitants' diet was not thoroughly discussed. The aim of this work is to investigate the role of tortoises (*Chelonoidis chilensis*) in the diet of the ancient inhabitants of the BOL archaeological site from Chaco-Santiagueña archaeological region, with a limited time occupancy.

1.1. Study area, characterization of Beltrán Onofre Banegas-Lami Hernandez site

The Chaco-santiagueña archaeological region (Fig. 1) corresponds to the present Province of Santiago del Estero (Argentina), which is characterized by a loessial and salty sedimentary plain that is interrupted in its southern, west and northwest edges by the mountains of Sumampa-Ambargasta, Guasayán and Cerro del Remate respectively (Basualdo et al., 1985). This region is part of the semi-arid and continental subtropical part of the country, with average temperatures for the study area of 20 °C, annual rainfall (concentrated in the summer period) which ranges from 500 to 600 mm, and a greater potential evapotranspiration capacity which determines a water deficiency (Ledesma, 1979). Among the features of the region is the lack of permanent water sources, which are concentrated in the two main rivers, the Dulce and Salado, and springs and wells near the mountains.

The Province of Santiago del Estero is located in the ecoregion of Chaco Seco (Burkart et al., 1999), characterized by the presence of a xeric semideciduous forest. Before the intervention of humans through deforestation, it had a higher stratum dominated by red quebracho (*Schinopsis quebracho-colorado*) and white quebracho (*Aspidosperma quebracho-blanco*). Lower trees such as mistol (*Ziziphus mistol*), a great variety of trees and shrubs, and a significant presence of algarrobos (*Prosopis* sp.) can also be seen here (Torrella and Adámoli, 2006). Faunal distribution is framed in the Guayano-Brazileña subregion, Subtropical Estate, Chaqueño District (Ringuelet, 1961).

Culturally, this region has been integrated into Argentina northwest together with regions or sub-areas of Puna, Selvas Occidentales, and Valliserrana (González, 1979). However, the Chaco-santiagueña region was less relevant to the archaeological investigations than the Valliserrana, mainly due to the absence of monuments or stone constructions, and the relatively "less developed" pottery style of the first, traits that were extensively studied in the second region. In this sense, the Chaco-Santiagueña region has been traditionally regarded as marginal, as far as cultural development is concerned. There is a succession of waves of influence or convergence from the surrounding regions which configured a particular cultural context in this territory (e.g. Hauesnchild, 1943; Bleiler, 1948; Gramajo de Martinez Moreno, 1978).

The Beltrán Onofre Banegas-Lami Hernández archaeological site (Robles Department, Santiago del Estero) is located at 27° 49′ 08″ S, 64° 02′ 43″ W (Fig. 1). It is possible that this site corresponds to the one denominated by Hauenschild (1943) as Merced de Tacana, excavated in the early twentieth century and which work helped shape museum collections, mainly ceramic material (Museo de Antropología de Córdoba; Lindskoug, 2008). The area occupied by the old settlers is distinguished by the presence of mounds that disrupt the landscape in the vicinity of the Dulce River paleo-riverbed. The remains analyzed in this paper come from a 28.75 m^2 area, organized in grids by successive campaigns from 2008 to 2009 (del Papa and De Santis, 2015). Most grids show the largest concentration of archaeological materials between 10 and 50 cm. From that depth on, materials decrease drastically. During the field work, ceramic material was recovered. Preliminary, they are assigned to the late agro pottery context, with the presence of mainly Sunchitúyoj fragments and scarce Averías remains (ceramic remains are still under study). Lithic and human bone remains (skull fragments in a single grid) were also recovered. On this site, a radiocarbon date has been obtained from samples of charcoal, 420 ± 60 BP (LP-2054) (del Papa and De Santis, 2015).

1.2. Cultural context of the site

The agro-pottery stage in the region is characterized by the development of sedentary groups with Las Mercedes, Sunchitúyoj and Averías pottery, and timeline that begins in 350 AD until the Spanish conquest in the sixteenth century. Given the context of the study site (mainly involving Sunchitúyoj materials and few Averías remains), the focus is on the late stage.

The Late Period in the Chaco-Santiagueña region is characterized by the presence of groups of Sunchitúyoj and Averías pottery bearers (Togo, 2004). In many places, these styles are associated, while in some others they are separated (Reichlen, 1940; Gramajo de Martinez Moreno, 1978; Togo, 2004). Grouping Sunchitúyoj and Averías in the Chaco-Santiagueña Cultural Tradition (Lorandi, 1978) is based on the fact that both present a settlement pattern and an economic system with similar characteristics, although there is a difference in intensity (e.g. greater emphasis on textile practices and a population increase in Averías). Their fundamental differences are focused on the decorative and stylistic type of pottery. Sunchitúyoj involves bicolor ceramic, soft colors and the central iconography of an "Owl" while Averías shows polychrome