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# Human Processing of Rodents in Patagonia: The Relevance of Historical and Ethnographical Data for Archaeological Interpretations

Analia Andrade\*

Instituto Patagónico de Ciencias Sociales y Humanas, Argentina

\*Corresponding author: Analia Andrade, Instituto Patagónico de Ciencias Sociales y Humanas, Argentina.

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## Abstract

The consumption of small mammals was a widespread practice between indigenous societies worldwide. Modern taphonomic studies carried out upon bone assemblages from archaeological sites in northern Patagonia (Argentina) demonstrate that Caviomorph rodents were also included in the diet of Patagonian populations, both from the steppe and the forests, at least since the Late Holocene. The revision of historical and ethnographical documents written by priests, naturalists and ethnographers during c. XVI-XX allow to corroborate that rodents were intensively exploited in Patagonia, continental and insular. Bones, meat and skin of the animals were employed for diverse purposes, and the gathering activity was guided by women and children.

**Keywords:** Human rodent consumption; Intensive exploitation; Small mammals; Patagonia; Ethnography; Zooarchaeology; Culture and ideology.

## Introduction

The consumption and utilization of rodent species by indigenous societies was documented worldwide through diverse cultural practices, both religious and economic [1-6]. The Olduvai Gorge (1.76 Ma, Tanzania) is the earliest archaeological documentation of hominids micromammals consumption [7]. In the Central Andes, the caviidae *Cavia porcellus* was domesticated since pre-Columbian times [8,9], and it is included in ritual ceremonies [10,11]. Aymara and Quechua populations from the Puna of Argentina, Bolivia and Chile uses the skins of the *Abrocoma* species, and specimens of *Galea musteloides* with cranial deformations have been found in tombs suggesting micromammals captivity [12].

While in Patagonia (southern part of South America) the proportions of rodent remains in zooarchaeological contexts are, in many cases, higher than those of other taxa, the role of small mammals in human subsistence was underestimated. The reasons for this underestimation were the preponderance attributed for large and medium sized mammals in human diets, the consideration of rodents as intrusive (and bioturbation agents) into the archaeological sequences and the absence of clear evidences (like cut marks) that could allow to associate them with defined cultural practices. This review discusses the intensity in the

exploitation of certain species of rodents in Patagonia. It is argued – based on archaeological, historical and ethnographical evidences – that indigenous societies used this resource integrally since at least the Late Holocene.

## Discussion

Modern taphonomic studies carried out upon small mammals' assemblages from archaeological sites in northern Patagonia allowed to demonstrate the rodent consumption between Patagonian people. For northwestern arid Patagonia, the *Caviomorpha* species *Ctenomys* sp., *Microcavia australis* and possibly also *Galea leucoblephara* were exploited by hunter-gatherers since at least 2000 years BP (13, Loncomán Cave CLO, Rio Negro province). The overrepresentation of skull bones and distal elements of the limbs, the high degree of fragmentation in the bone sample, and the defined pattern of thermal alteration, mostly affecting distal segments of tibias, incisors, premaxillae and mandibles of *Caviomorpha* species, allowed to include them into the list of species exploited by hunter-gatherers from the northern Patagonian steppes. For northeastern arid Patagonia, the consumption of the cricetid rodent *Holochilus brasiliensis* and Caviidae species was proposed based upon the presence of cut



marks, tools manufactured on rodent bones and thermal alteration [14]. Specific cut marks related with a careful skinning was observed for the caviidae species *Cavia aperea* and *Galea tixiensis* from the Argentinean Pampas [15] suggesting the use of the skin. A pattern similar to the observed for the Loncoman Cave small mammal sequence was obtained for some archaeological sites located in the north-Patagonian Andean forest demonstrating that the rodent consumption was not an exclusive practice of the hunter-gatherer populations from the steppe [16]. Moreover, the consumed species –*G. eublepharid*, *M. australis*, *Ctenomys haigi*, and possibly also *C. sociabilis*– are not typical components of the forest's fauna, but from un-forested and xeric environments in the near steppe. The presence of those species in the archaeological context raises new hypotheses that are being tested (Andrade, unpublished data) regarding possible changes into the landscape by natural and/or anthropogenic causes, since transport of rodents from the steppe or forest-steppe ecotone is improbable given their small size and the distances involved (20-40km currently, see discussion in 16).

The combination of the taphonomy evidence with historical and ethnographical data allowed to demonstrate that the way in which rodent bones are presented in the archaeological record is closely related with the technique employed to prepare the animals to be consumed. Moreover, rodents were intensively exploited in Patagonia –both for the continental people *günuna küne* and *aonik'enk* and for the insular *selk'nam*- and this practice continued until the last century. Their predilection for rodents was recorded since the first contact episode back to 1520. For the *selk'nam* people from northern Tierra del Fuego it became even one of the main food items and considered a delicacy [17]. The historical and ethnographical information comes from documents from c. XVI-XX written by priests, naturalists and ethnographers, who made the first contacts with the Patagonian indigenous societies. Chronicles relate that animals were eviscerated and cooked directly on coals, and in many cases, they left the skin and only the biggest bones were discarded. The combustion traces observed in the extreme of incisors, premaxillae's, mandibles and tibias in the archaeological record agree with this way of cooking. The remaining bones, smaller and weakened by cooking, would be consumed together with the meat and therefore, their representativeness would decrease in the record. An experimental cooking study showed that thermo-alteration is restricted to the distal portions due to the retraction of muscles during roasting [18]. For the Atacama Desert (northern Chile), ethnographic and archaeological evidence showed that animals were beheaded before cooking, causing the overrepresentation of heads in the record [19]. An overrepresentation of mandibles, maxillae and isolated molars in some archaeological sites (Central Chile, 20; New Mexico, 21 and South Africa, 2 amongst others) was interpreted as evidence of human discarded activities related with subsistence. This was also regularly observed in some Patagonian archaeological sites (see discussion on 16, 17 and the reference cited therein).

Animals consumed are large, diurnal and fossorial-colonial species because they are conspicuous and predictable in space [20]. Taking advantage of these ecological habits, animals were directly stalked at the entrance of their caves, using a pointed stick

for their capture. In addition, this gathering activity was guided by sex and age, and linked with the biological and social reproduction [17]. This task oversaw women and children. In addition to be a food resource, the *Ctenomys* animals provided raw materials to make manufactures. The skin was used as a cephalic girdle to adjust the neonates (during a lunar cycle), to make clothing (also a female task) and as stored bags to transport colour substances. For the *selk'nam* people, the mother, after the birth, only can eat *Ctenomys* skin, bird fat, seafood and vegetables, a period in which meat was prohibited, but not the food product of her own gathering activity. For the Mapuche people -also known as Arucanos- who live in south-central Chile, rodents from the families, Chinchillidae and Octodontidae also constituted an important and common food item -and also for the Spanish conquerors during scarcity times (12)- showing that inclusion of rodents in prehistoric diets would be a regional pattern.

## Conclusion

The consumption of rodents in Patagonia was a topic of debate between researchers, and previous analyses did not advance to distinguish between cultural and natural depositional agents for the small mammals in the archaeological contexts. The inclusion of taphonomic, historical and ethnographical evidences in the analysis allowed to understand that rodents were an important item in the diet of Patagonian indigenous societies –from the actual territories of Chile and Argentina- and constituted a regular resource for local populations. Not only was the meat employed, but also the skin and bones. The high abundance reported in the chronicles would favor their consumption, but they were chosen for the taste, considered even a delicacy.

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## Conflict of Interest

No conflict of interest.

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