

# SOUTHBOUND

Late Pleistocene Peopling of Latin America

 **SPECIAL EDITION**  
Current Research in the Pleistocene

# **SOUTHBOUND**

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## **Late Pleistocene Peopling of Latin America**

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SOUTHBOUND: LATE PLEISTOCENE PEOPLING OF LATIN AMERICA

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**Part 2**  
**Archaeology of Early South Americans**

**PART**  
**2**

# New Data on Exploited Pleistocene Fauna at Piedra Museo (Central Plateau of Santa Cruz Province, Argentina)

Laura Marchionni<sup>1</sup> and Martín Vázquez<sup>2</sup>

► **Keywords:** Archaeozoology, Patagonia, Pleistocene/Holocene

This paper is an update on the archaeozoological studies of stratigraphic unit (SU) 6 at Piedra Museo; it includes analysis of the total assemblage from this unit and new evidence about exploited Pleistocene fauna. AEP-1 is a multi-component site under the rockshelter at Piedra Museo, located in the Central Plateau of Santa Cruz Province (47° 53' 42" S and 67° 52' 04" W). Previous papers summarized the analysis of lithic assemblages (Cattáneo 2002), archaeozoological and taphonomic data (Miotti and Salemmé 2005; Miotti et al. 1999), and geoarchaeological characteristics of the site (Miotti et al. 2003). Two archaeological components were initially defined: the upper component, dated toward the middle Holocene, and the lower component, dating to the Pleistocene-Holocene transition. Subsequently the latter was divided into two occupational phases, the older in SU6 dated to ca. 13,000–10,500 RCYBP, the younger in SU5 and SU4 dated to 10,400–9200 RCYBP (Miotti et al. 2003). SU6 registered the greatest taxonomic diversity in the sequence, comprising specimens of *Hippidion saldiasi*, *Lama gracilis*, *Lama guanicoe*, *Mylodon* sp., rheids, and medium-sized birds. Also recovered were 39 lithic artifacts, of which 36 are flakes and debris, and 3 are endscrapers (Cattáneo 2002; Miotti et al. 1999). These remains were interpreted as the result of activities related mainly to obtaining prey and its primary butchering; previously, cutmarks had been identified on specimens of *Hippidion saldiasi*, *Lama gracilis*, *Lama guanicoe*, and rheids (Miotti et al. 1995; Miotti and Salemmé 2005).

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This paper presents results from re-studying the faunal assemblage from SU6, with special emphasis on the evidence of the human use of extinct fauna. The goal is to integrate all the faunal evidence into one analysis, including specimens from excavation sectors which were not included in previous analyses.

## Results

The assemblage contains 219 specimens, of which 185 were assigned to taxonomic categories. The results, which confirm the findings in previous works, indicate that camelids, including *Lama guanicoe* and *Lama gracilis*, were recurrently exploited (Table 1). It is noteworthy that a high percentage of specimens are young or sub-adult animals or are fragments of diaphyses identified as *Lama* sp. The three categories belonging to camelids constitute 57% of the NISP of the assemblage. The Pleistocene taxa *H. Saldiasi*, *L. gracilis* and *Mylodon* sp. constitute 26% of the NISP (Table 1).

**Table 1.** Taxonomic composition of stratigraphic unit 6, Piedra Museo.

Taxa	NISP	% NISP	Taxa	NISP	% NISP
Birds	5	2.7	<i>Lama guanicoe</i>	12	6.49
Rheidae	4	2.16	<i>Lama</i> sp.	65	35.13
<i>Canis</i> sp.	6	3.24	Large mammals	44	23.78
Equidae	15	8.11	<i>Mylodon</i> sp.	6	3.24
<i>Lama gracilis</i>	28	15.13	<b>Total</b>	<b>185</b>	<b>99.98</b>

The frequencies of skeletal parts were estimated for all three categories of camelids (*L. guanicoe*, *L. gracilis* and *Lama* sp.). The calculated MNI is 3, and the estimates of percent survivorship and percent MAU (Lyman 1994) suggest a low representation of all skeletal parts. Attempts to correlate between these parameters and utility indexes (Borrero 1990; Lyman 1994) as well as bone mineral density (Elkin 1995) yield insignificant results. A completeness index of 0.70 (MNE/NISP) (Lyman 1994) indicates low fragmentation of the assemblage. The analysis of long bones finds that a significant number of fractures (44.89%) are of the helicoidal type.

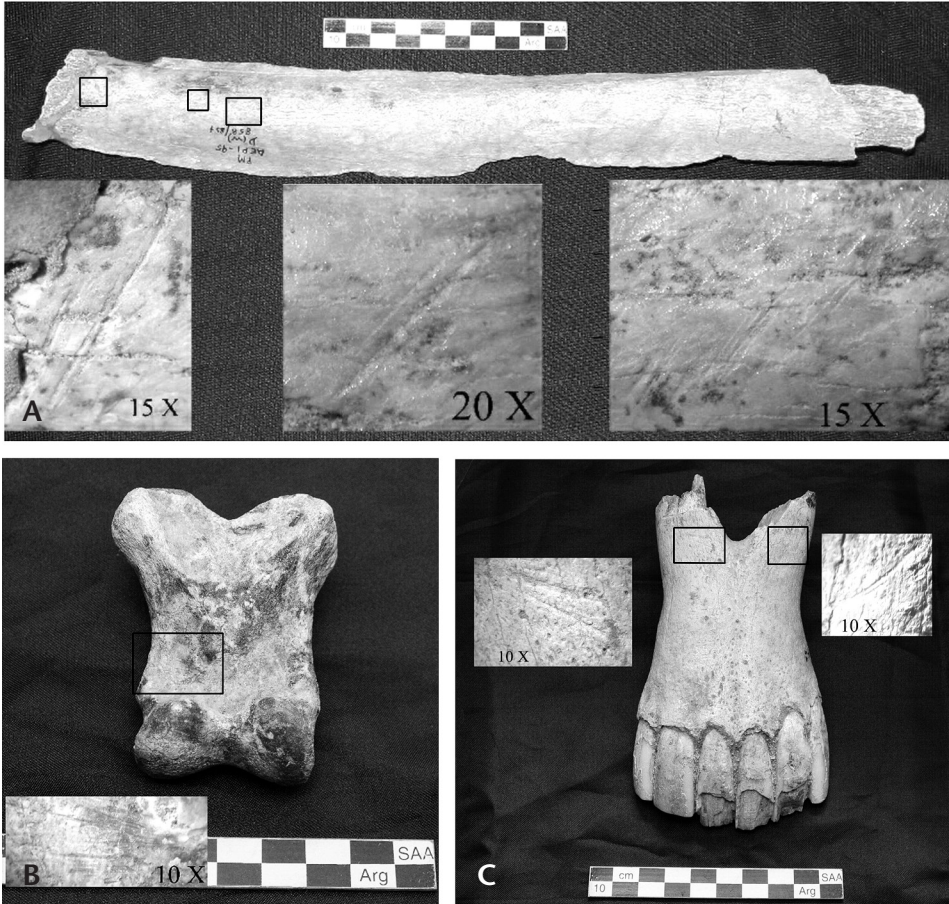
In analyzing specimens of extinct taxa, we emphasized identifying modifications of anthropic origin to assess the degree to which humans were responsible for creating the assemblage and thereby evaluate interaction between humans and megafauna. The bone surfaces were analyzed with the naked eye and a binocular magnifier (up to 60X). Perceived patterns show that both natural and cultural agents participated in creating the set.

Among modifications identified as resulting from human processing (Figure 1) were cutmarks detected on a high percentage of specimens (24.4%). Cutmarks were observed on specimens of extinct taxa already published and in *Mylodon* sp. (16.6%), *Hippidion saldiasi* (33.3%), *Lama gracilis* (21.4%) (Figure 1), *Lama guanicoe* (14.2%), and rheids (25%).

Although modifications made by carnivores are not clearly identified and are therefore recorded less frequently, we observed possible evidence of carnivore gnawing on some specimens. Other perceived modifications were produced by thermal alterations, roots, and manganese staining.

## Conclusions

Our analysis of the faunal assemblage from Piedra Museo confirms many of the tendencies and



**Figure 1.** Faunal bones from stratigraphic unit 6, Piedra Museo, featuring cutmarks identified in this study. **A**, rib of *Mylodon* sp.; **B**, phalanx of *Hippidion saldiasi*; **C**, mandible of *H. saldiasi*.

patterns in exploiting fauna observed in previous analyses of significantly fewer samples. We conclude that the fauna exploited in the first occupations at Piedra Museo, mostly camelids and opportunistically hunted Pleistocene mammals, coincide with a generalized pattern (Borrero 2009; Borrero and Franco 1997; Miotti and Salemme 1999). The values of taxonomic diversity calculated for SU6 indicate that camelids were the principal prey exploited. Taxa hunted to a lesser extent were native horses, rheids, and maybe occasionally mylodons. All represented taxa, both extinct and extant, show evidence of human processing, though in varying frequencies.

The taphonomic studies carried out previously recorded the presence of cutmarks on horse and *Lama gracilis* specimens, but not on the remains of *Mylodon*. This taxon is present in many locations in Patagonia; in most cases, however, the unclear nature of a human association or the absence of anthropic traces has hindered assigning it to the status of an exploited species (Borrero 2005, 2009). The presence of unambiguous cutmarks in a rib sample of *Mylodon* from SU6 (Figure 1), even though all evidence belongs to a single specimen, supports the

hypothesis of human butchering of this taxon. Overall, the incidence of verified cutmarks suggests that camelids and horses were the most intensively exploited specimens; in the case of camelids, their extensive exploitation by humans is confirmed by the high incidence of helicoidal fractures of long bones. The evidence of mylodon butchering is quite sparse, which suggests they were only occasionally exploited by humans, either by hunting or scavenging.

In summary, we conclude that humans were the principal agent responsible for accumulating faunal remains in the SU6 deposit at Piedra Museo. Evidence of carnivore damage is found only infrequently in certain isolated skeletal units; therefore, the role of carnivores as an accumulating agent is minor.

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