

Ground Sloth Predation in the Northern Semi-arid Region of Chile

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Mylodon sp. records in Chile have been well documented in several sites of southern Patagonia and Tierra del Fuego (Borrero 1997, 2001, 2003; Borrero et al. 1988, 1991, 1997; Massone 1987, 1996; Nami 1987; Prieto 1991, San Román et al. 2000). Anthropological and taphonomic factors have been suggested to account for the presence of this large Pleistocene herbivore in archaeological contexts (Borrero 2001). Although at first Borrero (1986) stated the possibility that humans had preyed upon *Mylodon* sp., he later postulated a more plausible scenario of human scavenging (Borrero et al. 1988). This argument is partially based on hypothesized competition between human groups and large carnivores who coexisted in the same habitat 10,000 RCYBP. It has been proposed (Borrero 2001) that the natural death of this sloth must have provided abundant meat for carnivores and scavengers, and even leftovers for humans.

Recent research at the semi-arid coastal locality of Los Vilos (Choapa Province, 31°S, FONDECYT project 1030585) has allowed us to record several sites yielding extinct mammals, including *Mylodon* sp., in some cases with cultural associations (Núñez et al. 1994; Jackson 2002). While evidence of hunting is still ambiguous, indicators of animal predation and scavenging have been clearly noticed. Observed evidences are dermal bones with gastric acid corrosion, their discrete accumulation (< 80 in 1 m²) suggesting desegregated feces, the absence of other skeletal parts, punctures in cervical vertebrae, carnivore-type fractures, and significant bone dispersal. Locally, *Palaeolama* sp. and *Equus (Amerhippus)* sp. exhibit similar patterns.

The carnivore paleontological record in the area is scarce, consisting of a phalanx identified as cf. *Felis concolor* at the Quereo site (Núñez et al. 1994). Nevertheless it remains unclear whether this felid could have caused the predation and concentration of all the remains of extinct fauna in the area. In the area, carnivore marks are registered on adult animals exceeding 500 kg (*Equus [A.]* sp. and *Palaeolama* sp.). A phalanx with digestive acid traces and punctures on a cervical vertebra were observed among the *Palaeolama* remains at the El Membrillo site. In the case of *Mylodon* sp., evidence of predation was recorded in juvenile animals, although age distinctions are difficult to establish based exclusively on dermal bones. In relation to other possible carnivores, the canid record (*Dusicyon* sp.) in the lowest level of Quereo (Núñez et al. 1994), given its small size, does not appear related to taphonomic evidences on *Mylodon*, even though it could account for bone dispersal, as has been actually observed (Jackson and Jackson 1999).

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Assuming contemporaneity of at least some of the sites yielding *Mylodon*, and given their significant proximity (< 3 km from Quereo site to the El Membrillo site), we can suggest a distributional pattern similar to the action radius of a carnivore. This pattern could be related to fresh water availability along ravines and edges of ancient lacustrine basins. The absence of a more diagnostic paleontological record limits a clearer scenario. Future research should assess the possibility of more than one type of predator during late-Pleistocene times, just as in southern Patagonia with the case of *Panthera onca mesembrina*, *Smilodon*, *Arctodus*, and large canids like *Ducisyon avus*.

These new findings allow us to reevaluate the use of space and its resources by the first human groups who inhabited the semiarid region during the late Pleistocene. Until now, gathered evidence has not fully accounted for the hunting of megaherbivores. At the El Membrillo surface site (dated to $13,500 \pm 65$ RCYBP [NSRL-11081], Jackson 2002) two *Mylodon* sp. bone loci were observed. Cut marks, fractures on fresh bones, and associated lithic artifacts suggest human activity (Jackson 2002). This assemblage proposes issues similar to those stated by Borrero (2001) for the debate about Patagonian hunting versus scavenging. We think this problem admits new research lines, particularly related to the possible dispute between extinct carnivores and the first hunter-gatherers in the region. As open-air sites, they also compare to assemblages from Patagonia and Tierra del Fuego that are exclusively recorded at caves and rockshelters.

Current knowledge regarding *Mylodon* sp. along the semiarid coast of Chile cannot be solely explained by exclusive models, namely Paleoindian hunting or carnivore predation. Present evidence suggests a more complex Pleistocene scenario possibly integrating both arguments.

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