

Paleoecology of the large carnivore guild from the late Pleistocene of Argentina

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The paleoecology of the South American fossil carnivores has not been as well studied as that of their northern relatives. One decade ago Fariña suggested that the fauna of Río Luján locality (Argentina, late Pleistocene-early Holocene) is not balanced because the metabolic requirements of the large carnivores are exceeded by the densities and biomass of the large herbivores. This conclusion is based on the calculation of densities using allometric functions between body mass and population abundance, and is a consequence of low carnivore richness versus high herbivore richness. In this paper we review the carnivore richness in the Lujanian of the Pampean Region, describe the paleoecology of these species including their probable prey choices, and review the available information on taphonomy, carnivore ecology, and macroecology to test the hypothesis of 'imbalance' of the Río Luján fauna. The carnivore richness of the Río Luján fauna comprises five species: *Smilodon populator*, *Panthera onca*, *Puma concolor*, *Arctotherium tarijense*, and *Dusicyon avus*. Two other species are added when the whole Lujanian of the Buenos Aires province is included: *Arctotherium bonariense* and *Canis nehringi*. With the exception of *D. avus* and *Arctotherium*, these are hypercarnivores that could prey on large mammals (100-500 kg) and juveniles of megamammals (>1000 kg). *S. populator* could also hunt larger prey with body mass between 1000 and 2000 kg. The review of the 'imbalance' hypothesis reveals contrary evidence and allows the proposal of alternative hypotheses. If high herbivore biomass occurred during the Lujanian, a higher density of carnivores could be supported than as inferred from the power function of body size and population density.

Key words: Carnivora, paleoecology, population densities, Pleistocene, South America.

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