

## Narrowing the Spatial Range of Megafaunal Distributions on the Semiarid Coast of Chile

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Archaeological studies over the last 13 years reveal a significant concentration of megafaunal remains in a restricted area of the semiarid coast of Chile (31° 50' S), south of the Los Vilos locality (Jackson et al. 2003). Three prior research projects (FONDECYT 91-0026, 1950372, and 1990699) underscored the importance of these findings and led to further systematic investigation of this issue (FONDECYT 1030585). In 2003, surface surveys were conducted to establish where and under which conditions these particular bone assemblages appeared. The ultimate goal of this project is to assess eventual association with late-Pleistocene humans.

Given that the general area had been intensely explored before (six systematic surveys), the methodological strategy was structured with geomorphological and paleogeographic directives that promised the greatest potential for yielding Pleistocene records (Prieto and Jackson 1997; Varela 1981). Thus the search focused on drainages, their mouths, dune fields, recently eroded gorges on paleodunes, and small lacustrine basins. Surveys covered a total area of 101 km<sup>2</sup>, along 25 small east-west drainages (with Pacific outlets), distributed along a coastal margin ca. 24 km long. Results were particularly clear. They confirmed the spatial concentration previously noted, a total of 22 sites yielding bones of extinct megafauna within 29 km<sup>2</sup>. The research team found just two isolated sites outside this area; bone distribution defined the limits north-south and east-west. This area encloses a paleolacustrine basin originally defined (J. Varela 1981; Núñez et al. 1994) as the "Graben Central," a depressed tectonic basin filled with late-Pleistocene deposits. Field observations noted the existence of small restricted microbasins within this zone. We suggest that the relative altitude (m a.s.l.) of the bone deposits may be the result of varying contractions of these small lagoons due to increasing aridity towards the end of the Pleistocene.

Surveys showed 8 stratigraphic and 16 surface sites. The latter are a common feature given strong coastal eolian deflation caused by southwest winds. Some of the surface bone scatters are spatially associated with cultural remains, including lithic artifacts and ephemeral sea mollusk concentrations, as previously noted in the study area (Jackson 2002). Most commonly observed taxa were *Palaeolama* sp., *Mylodon* sp., and native horse, and in few occasions proboscideans. Anthropogenic marks on bones were registered in minimum quantity, in the form of systematic edge flaking and fresh fractures. To date, within the limits of this area, the only thoroughly investigated sites yielding

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extinct fauna are Quereo (Núñez et al. 1994) and El Membrillo (Jackson 2002), but only the former exhibits unambiguous cultural associations (Dillehay 2000).

Our conclusions about spatial tendencies are supported by these factors:

1. Since the system of lacustrine basins constitutes a propitious habitat for megaherbivores, the area and bone distributions are indicative of the Pleistocene environment.
2. Regional geomorphologic agents have exposed the remains of extinct fauna, which suggest the probable existence of deeply buried remains in other areas. Strong wind deflation over dune fields around the "Graben" has been especially instrumental in revealing faunal remains. Specific details about reported spatial concentrations are unlikely the result of observer bias, since the region is uniformly visible over its entire extent.
3. Differential preservation across the region probably helps to account for the presence or absence of findings in this area.

In summary, local paleogeographic factors led to the existence of small lagoons and an ecological refuge (Núñez et al. 1994) where herbivores, responding to environmental changes, congregated. Consequently, if human agency could be confirmed for at least some of the observed assemblages, that would imply a nucleated settlement pattern, strongly bonded to the presence of megafauna, towards the end of the Pleistocene. Future field campaigns will evaluate the issues and the hypothesis raised by means of systematic subsurface surveys in areas with the potential for Pleistocene records and by digging some of the sites herein presented.

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