

Early Human Occupation in the Southern Part of the Deseado Massif (Patagonia, Argentina)

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Human occupation sites dating to the Pleistocene-Holocene transition have been identified in the Deseado Massif, Patagonia (e.g., Cardich et al. 1973; Miotti et al. 1999; Miotti and Salemme 2003, 2004; Paunero 2000a, 2000b, 2009; Paunero et al. 2007). However, south of the Massif, the earliest evidence of human occupation dates to the early Holocene, ca. 8900 RCYBP at El Verano (Durán et al. 2003) and ca. 8050 RCYBP at La Martita Cave 4 (Aguerre 2003).

There has been no previous systematic archaeological research in the Deseado Massif south of El Verano and La Martita Cave 4 sites. However, this area is crucial to our understanding of the initial peopling of southern Patagonia because, although the Massif contains numerous caves as well as excellent rocks for flintknapping (*sensu* Aragón and Franco 1997; Callahan 1979), similar resources are scarce to the south (e.g., Echeveste 2005; Franco and Cirigliano 2009; Franco et al. 2009; Panza and Franchi 2002; Panza and Haller 2002; Panza and Marin 1998; Russo and Flores 1972; Russo et al. 1980). Research in nearby areas indicates that variations in these resources from one area to another, as well as differences in the availability of water, had a significant impact on early human populations (e.g., Borrero and Franco 2000; Goñi et al. 2000–2002; Franco et al. 2007).

The area of La Gruta is in the southern part of the Deseado Massif just north of the Chico River, which flows from northwest to southeast. Borrero (1989–90, 1994–95) has suggested that rivers may have been important routes during the peopling of Patagonia, and it is thus very possible that early hunter-gatherers may have followed the Chico River. Today the area is dominated by closed depressions in volcanic rocks that may contain seasonal lagoons and occasional permanent bodies of water. Studies are currently underway in the

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south of the Massif to determine how water levels in the lagoons varied during the late Pleistocene and Holocene to assess the possible importance of the lagoons in the initial occupation of the area. Primary and secondary sources of lithic raw material were identified in the southern part of the Deseado Massif and in spaces located south of it by conducting systematic surveys. Although the findings are exploratory, the comparison with results obtained by other researchers suggests a greater availability of high-quality raw materials north of the La Gruta area (Franco et al. 2009).

A small cave (La Gruta, lagoon 2, cave 1) was discovered in the cliff wall of one closed depression that contains a seasonal lagoon. A small test pit in the floor of the shelter did not reach bedrock but exposed deposits dating back to $10,656 \pm 54$ RCYBP (AA-76792, Franco and Cattaneo 2009). Later, a 1-by-1-m test pit excavated to bedrock exposed a series of small hearths in the oldest deposits of brownish red sandy silt (Franco et al. 2010). Additional dates of $10,840 \pm 62$ (AA-84223), $10,845 \pm 61$ (AA-84224) and $10,477 \pm 56$ RCYBP (AA-84225) indicate early human utilization of the area. Artifacts associated with the hearths are small flakes (89% are < 20 mm long) mostly of chalcedony and siliceous rocks. Some of the chalcedony may have been imported, since it was not identified in the immediate vicinity (*sensu* Meltzer 1989). Black and gray obsidians were also recovered; based on geochemical data they probably came from 158 km to the north in the Pampa del Asador (Stern 1999, 2000). The presence of obsidian in deposits dating to the Pleistocene-Holocene transition supports the suggestion of Civalero and Franco (2003) and Franco (2002, 2004) that early human populations knew of the sources and included obsidian in their toolkits.

These preliminary findings indicate that the southern part of the Deseado Massif was being utilized by human populations at least by $10,845 \pm 61$ RCYBP or 12,890–12,600 CALYBP, calibrated using CALIB 6.0 (Stuiver and Reimer 1993) and INTCAL09 (Reimer et al. 2009)). La Gruta rockshelter would have provided protection from the wind and given an excellent view of the nearby area. The size of the site and hearths, as well as artifact characteristics, suggest that during the Pleistocene-Holocene transition the cave was used repeatedly for short periods of time by a few to several people. These people probably used the cave for shelter during hunting trips and to sight prey. Pollen analysis of cave sediments indicates that when the shelter was used the vegetation was grass steppe, suggesting semiarid conditions.

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