

Proposed Archaeological Investigations of the Quebrada Manga, Peru
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Recent interdisciplinary research in southern Peru is providing an increasingly clear picture of the way Paleoindian foragers entered South America and adapted to dramatically changing conditions at the end of the last ice age. This was an exceptionally dynamic time characterized by major environmental transformations: climatic patterns were shifting, glaciers were in retreat, and the distribution of plant and animal communities was changing rapidly. How did these early settlers successfully adapt to such changes and rapidly colonize a continent of productive coasts, the rugged Andes Mountains, and the vast Amazon?

Sites such as Quebrada Tacahuay (Keefer *et al.* 1998) and Quebrada Jaguay (Sandweiss *et al.* 1998), as well as the Ring Site (Sandweiss *et al.* 1989), suggest that Paleoindians were settling the coast very early, taking advantage of rich Pacific fisheries and littoral zones. In the 1990s a University of Maine team of archaeologists working at the coastal site Quebrada Jaguay found that the site's inhabitants were sophisticated fishermen who targeted particular species of fish and shellfish from as early as about 13,000 years ago until about 8,000 years ago. From the start, these people built houses (among the earliest known in the New World) and carried out domestic activities. These findings suggest that at least some of South America's earliest settlers were a maritime-focused people, already adapted to living on the coast (Sandweiss *et al.* 1998).

Yet, during the Terminal Pleistocene (13,000-11,400 years ago), the initial occupants of Quebrada Jaguay used obsidian from the highland Alca source some 155 km distant, indicating contact with the high mountainous interior. Very likely these people moved seasonally between the coast and the Andes, although it is also possible that there was a separate early highland population, and the two groups were trading. Later in the Early Holocene there was almost no obsidian at Quebrada Jaguay, suggesting diminished contact with higher zones - a profound change in the settlement system or social relations.

The connection between Quebrada Jaguay and the Alca obsidian source is remarkable in that it is the only positively demonstrated material link between analogous coastal and highland locales in all of South America. We have spent several field seasons trying to better understand this link by searching for sites contemporary with Quebrada Jaguay in the highlands near the Alca obsidian source - first at the source itself (2004), and subsequently near the Firura and Coropuna ice caps (2005-2006), which lie along a GIS-modeled least-cost path connecting Quebrada Jaguay and the Alca source. Our exploration of this area has located dozens of potentially early sites, and we anticipate future excavations there.

Data from our 2005 and 2006 high elevation field work supplements settlement data Sandweiss (1999) obtained in his earlier survey of the coast and low hills around Quebrada Jaguay up to 200 m elevation. In order to understand how early foragers used the various ecozones between the coast and the high Andes, the next step is to survey the totally unknown area between the two previously studied termini. The intervening area corresponds to the Quebrada Manga canyon, which flows from the *puna* plateau rim directly south to the Quebrada Jaguay site and the Pacific coast.

Archaeological study of this virtually unexplored canyon will begin at the coast near the town of Camana and progress through various ecozones, including the hyper-arid coastal desert, fog-dependent *lomas* vegetation, absolute desert, and intermontane valleys, ending at the highland village of Chuquibamba. The route will gain 4,300 m elevation over approximately 90 km (55 miles). Because only one small modern settlement occupies the Quebrada Manga and virtually no roads or footpaths access the canyon, the survey will be conducted as a three to four week backpacking expedition. Due to the hyper-aridity of the coastal segment of this route, the work will be done in January and early February, the height of the wet austral summer, when there is the potential for some fresh water flow in the quebrada bed.

As a backup, water, food and fuel will be cached at regular intervals along the route one week before the survey begins. Using a 4x4, we will attempt to access the canyon rim to form the caches. We will then begin at the coast and survey about 30 km of the canyon per week for three weeks, focusing our efforts on river terraces, canyon rims, and rock shelter and cave sites where canyon walls expose bedrock. The entire project will take four to five weeks.

References

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Figure 1. LANDSAT 2001 image showing locations of Quebrada Jaguay archaeological site, Alca obsidian source, Andean ice caps, modern towns of Camaná and Chuquibamba, and proposed Quebrada Manga project area, southern Peru.