

GEOGRAPHICAL AND ARCHAEOLOGICAL INTERPRETATION OF CULTURAL ARTIFACTS FOUND WITHIN THE LIMITS OF A FOG-SITE AT ALTO PATACHE, SOUTH OF IQUIQUE, (CHILE).

¹H. Larrain, ²M. Aguilar, ³P. Cereceda, ³P. Osses, ³M. Farías, ⁴L. Pérez.

¹Universidad Bolivariana, Iquique, horaciolarrain@vtr.net, ²Universidad Arturo Prat, Iquique, maguilar@unap.cl, ³dcereced@puc.cl; ³posses@puc.cl. Instituto de Geografía, P. Universidad Católica de Chile, Santiago, ³mfarias@puc.cl, ⁴luispreyes@hotmail.com;

Abstract: A fog oasis at Alto Patache (20°49' S; 70°09' W), located at altitudes between 760 and 860 m, has been studied by us since 1997 trying to interpret the evidences of past human presence and activity (Larrain et al., 1998, 2002, 2004). The oasis presents, along the heights of the coastal cliff different geographical landscapes where multiple human occupation forms have been detected. The following paragraphs show the geologic origin, and the typology of archeological artifacts, mostly lithic, found scattered at the surface of the oasis which are representative of different activities. An important lithic workshop occupies the plain lying at 775-785 m height, whereas disperse small Indian campsites and several old guanaco trails are still to be seen at place. The total isolation of the site, only opened to visitors early 1996, offered different geomorphological features, some of them greatly favoring the ancient occupational pattern. The different percentage observed in the lithic instruments recovered at different sectors of the archeological site, as shown by us, clearly manifest the practice of different economic and cultural activities developed by the population of hunting-gathering and fishermen residing in campsites closer to the sea, but having very frequent access to the fog site lying atop of the coastal cliff. Coastal fishing people climbed the steep slopes looking for vegetal and faunistic resources found at place, due to the presence of the almost permanent fog. The archeological evidence analyzed so far, reveals a very intensive use of the fog-site in subsistence activities like vegetal collecting (seeds, roots, tubers), guanaco and fox hunting, artifact making *in situ* and fog water collecting. These economic terrestrial activities in the upper section of the cliff, were perfectly combined with marine subsistence based on sea weeds, mollusks, fish and sea animals (specially sea lions) which could be trapped or hunted along the nearby beaches and reefs.

1. INTRODUCTION

Our first casual archeological findings at place were done March 1997 when our geographical research on fog and fog collection begun. We could verify very soon that there were many evidences of early occupation and activity, left at place, mostly related to hunting and collecting activities in the past. At the beginning, the strong relationships between fog presence and human activities, were not clear.

End 1998, at 110m over sea level the main residential campsite of the early inhabitants was discovered, lying close to the coast. Obvious paths, still visible, connected the archeological site with the fog site lying atop. In the hilly area, crossing the gentle slopes of higher elevations, many hundreds of guanaco trails were carved, remaining visible until today. No guanacos (**Lama guanicoe**) visit nowadays the area, nor have been seen there in several decades. This evidence certainly tell us that their frequent presence, according to the signs detected (see Map), belongs to earlier and wetter periods. But exactly when?. According to the records collected by Almeyda, near Iquique (1948), this wet period may well have been present between 1924 and 1945. After that time, very long dry periods begun, which continue up to our time.

In our weekly visits, we found, scattered in many hectares, hundreds of human instruments, mainly made of black basalt, different varieties of flint (silex) and andesite. Among them, arrow stones, scrapers, harpoon points, knives, and hammerstones, most of them broken. There they were, by the thousands, flint flakes, usually very small, proving a human very old industrial activity (lithic workshop). Instruments, evidently, were worked at place. Rough material (like basalt, flint or riolite) was brought from elsewhere. Archeologists have been working in the area, stating very old Indian presence (Bittmann, 1986; Núñez, 1965; Núñez et al., 1975; 1977/78; 1983). Small Indian cemeteries found by archaeologist Cora Moragas nearby, at the rocky point of Patache close to the sea line, prove a very long occupation of the site, beginning, perhaps, by 6.500- 5.000 B.C. (Chinchorro culture) and protracting until Colonial times. (Moraga, 1996). Other archeologists, like Olmos y Sanhueza (1984; 1986) have studied nearby coastal sites, affording interesting observations on settlement patterns. Game (specially guanaco and zorro), was hunted and butchered in place. (See Cereceda et al., 1999; Larrain et al, 2001, 2004). As a solid proof, we found here hundreds of small pieces of broken mammals bones, product of chase. Pottery sherds are

rather rare at this place, proving the antiquity of the site. Old type instruments, like fragments of spear points made on basalt, similar to long spear points of older periods of the Puna cultures, were found at place mixed with more recent materials belonging to the last centuries before the Spanish conquest. The influence of Arica agricultural cultures (Pocoma, Gentilar) is also visible through decorated pottery types found at place. The main goal of this paper consists in proving: a) the great importance of geomorphological features in the selection of Indian settlements; b) the concentration of Indian remains exactly close to habitat of the natural resources (flora and fauna); c) the huge importance of hunting at place, through the findings of numerous arrow points specially adapted to guanaco hunting, close to the guanaco trails or wollowing spots.

2. Map of the area

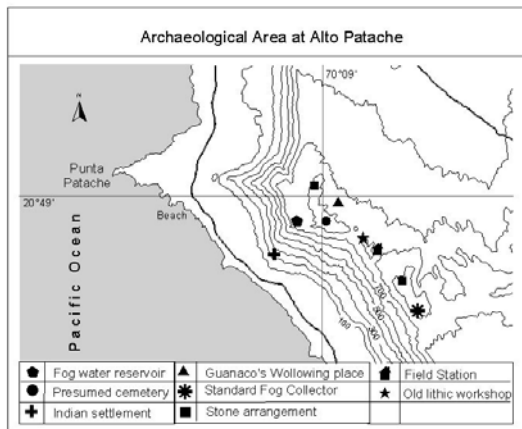


Fig. 1.

3. Alto Patache archeological sites.

Next Figure (Fig. 2) shows the different types of archeological sites so far studied in the heights of fog oasis at Alto Patache. Some are very extense, some other, small. The main sand plain (“Lithic workshop”) at 775 m. high, covers around two square hectares, slowly descending towards the N; it is occupied by a workshop where the great majority of the artifacts have been found. Flakes are everywhere present. This site has given us the 52% of all artifacts found. Next in importance, comes the area called by us “South Pampa Campsites”, where six small camps have been detected. Each of them is only a few square meters wide, composed mainly by mollusk shells, flint flakes and sometimes, pottery fragments. Whereas the main settlement was widely occupied with butchering and collecting activities, the small campsites reflect short and eventual occupation before descending to the marine terrace 600 m. below.

These small campsites lie close to the cliff where some perennial plants survive (like *Ephedra sp.*), a

useful material for cooking purposes. In fact, small firepits have been also found at place. The smallest sites correspond to possible cemeteries (7%) or simple corridors, where guanaco and fox used to wander around.

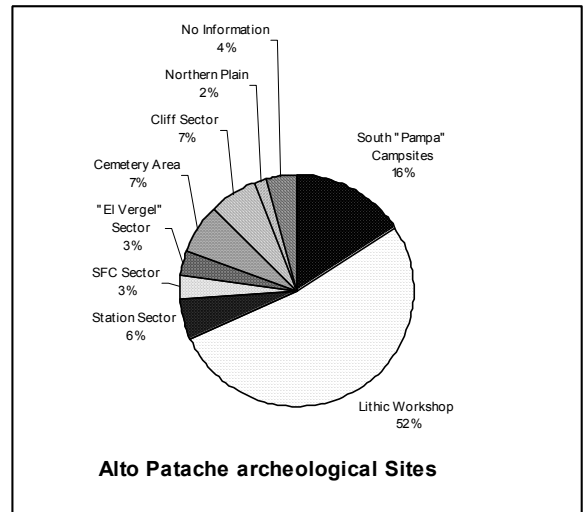


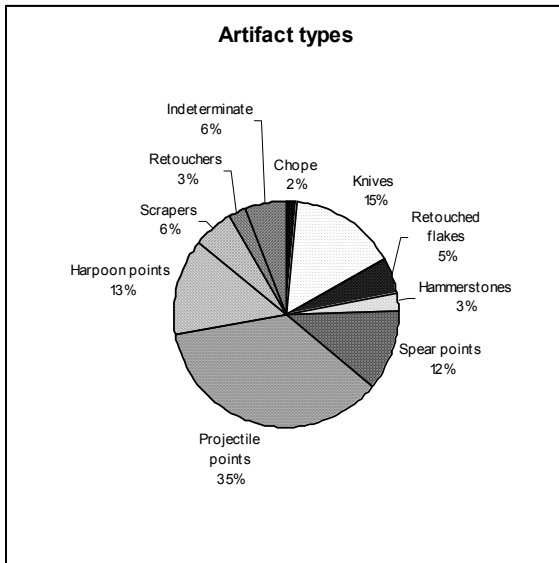
Fig. 2

4. Number and Location of Artifacts recovered.

The following Table shows the sectors within the oasis where archeological artifacts were found.

Sector	Artifact	Description	Open
Lithic workshop	52%	Wide sand plain, opening and descending to the NE. Most sand and scattered small size rock frgments. Open to the W and NE (780 m- 760 m)	W SW
South "Pampa" Campsites	16%	Narrow plain opening to the E. Communicates by deep gorges to the interior pampa. Only sand. (810-830 m)	W
Northern plain	2%	Stretching plain going down N to coastal terrace through deep gorges. Well protected from (750-700 m). Covered by sand.	NW
Cliff sector	7%	NE-SW direction, close to the cliff border. Narrow fringe, mostly crossed by guanaco trails	W
Cemetery area	7%	Gentle slopes going down to the E. Area densely covered with small volcanic rock fragments. Subsoil chalky	ENE
El "Vergel" Sector	3%	Short plain surrounded by gentle hilly landscape. Abundance of lichens	E
SFC Sector	3%	Hilly section of the cliff top going N-S direction. No perennial plants present.	W
Field Station Sector	6%	Very irregular landscape, with chain hills and gorges. Somewhat apart from the cliff.	W and E

Fig. 3



5. Typology of artifacts present.

It is interesting to analyze the types of artifacts found within the oasis. The highest percentage (35%) corresponds to arrows or projectile points. That is, to items used directly in animal hunting. Few and very small birds are present, at times, in the oasis (*Sicalis sp. Muscisaxicola sp., Thinocorus sp.*). Therefore, we can presume that the arrows were only used in hunting game. The arrows found, in general, are broken, which means that were either broken during the elaboration process, or, perhaps, broken through the impact on prey. Moreover, the great majority of the arrows were found very close or inside the guanaco trails, or close to their wallowing places, a clear sign that they were used with this clear purpose. A second aspect which attracts our attention is the fact that there exist in this area extremely few hammerstones (only 3% of the total), an artifact which is mainly used in the preparation of food (grinding and milling), and is, therefore, very common in permanent or semi-permanent Indian settlements. Instead, scrapers are more abundant (6%), which are normally usually used in obtaining meat (from butchering). Very high, also, is the percentage of harpoon points, used in marine fishing. That means that this isolated place, far from disturbances, was used as the perfect "factory" to prepare both items: arrow heads for the game, and harpoon points for the fish and marine animals. That they were involved in marine activities, is clearly proven through the presence of "chopes de mariscar", instruments made of sea lion bones, used in shellfish fishing, common in archeological sites located in the marine terrace, directly below our fog oasis (2%), only a few minutes walking distance.

6. Materials used in cultural artifacts. (see Fig. 4)

Concerning the basic material employed in the preparation of artifacts (Fig.4), we can assess following presumptions: a) flint ("sílex" in Spanish) is never present in place and had to be brought from elsewhere. Where from?. Like basalt, both are of volcanic origin, very common in the highlands or in higher altitudes. Close to the town of Pica, there exist huge basaltic rocks thrown by old eruptions. We have also seen blocks of flint stones (measuring 1.2 m. long and 50-60 cm wide) left in the interior desert, a few kilometers from the coast; b) old inhabitants, therefore, had to travel to the coast carrying broken sections of the rock, weighting probably no more than 15-20 kg. We have found some of these flint blocks used as nuclei, and left forgotten in old settlements in the marine terrace (50 m. to 90 m. high), exactly at the foot of our fog oasis. These rock materials are not to be found at the beach, since beach stones are normally of granitic or granodioritic type, according to coastal geologic formations. Granite or granodiorite are not good materials for artifact construction. They break easily and moreover, are not sufficiently hard. Andesites and riolites, on the contrary, can be found amidst granite rocks at the beaches as a proof of the Coastal Cordillera's geological origins; c) Granite, consequently, will be rarely used as instrument in Indian settlements, and practically does not appear in our registers; d) As seen in Fig. 4, flint is by far the most used material in harpoon, arrow points and scrapers manufacturing. As basalt, flint is a very hard rock and permits its working by pressure and percussion.

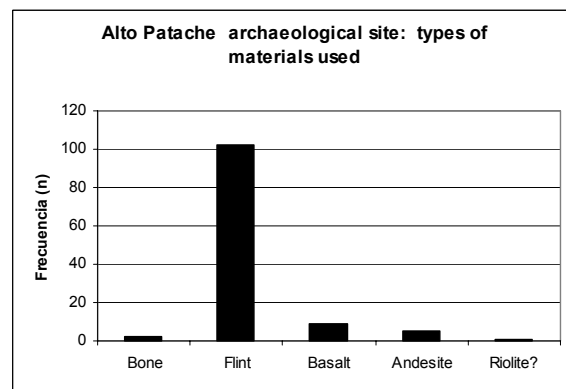


Fig. 4. Types of material used in cultural artifacts

7. Results and conclusions

In view of the very exhaustive artifact collection done by us at the fog oasis from 1997 to 2004, following conclusions elapse: a) people living and working within the limits of the fog oasis (in its different mini ecosystems) were exactly the same people who had their residence and campsites below, at the foot of the cliff, that is, some 600 m lower, occupying the marine terrace as permanent residence; b) The types of

materials used riolite (namely basalts and flint), with the sole exception of andesite or riolite had to be brought from long distances, c) the typology of cultural artifacts detected in our surface collections clearly reveal strong hunting habits, at sea (harpoon points), and inland at the fog site (arrow points), d) The reason lies the existence of a rich ecological biosystem within the borders of this fog site; e) The already known coastal “fishermen”, consequently, were at the same time plant collectors, hunters and fishers, not only fishers; f) Therefore, in the vicinity of a rich fog oasis it is difficult to assess which activity and in what times was definitory for an economic adscription of the group; g) The facts here brought to light clearly demonstrate that future studies of archeological groups living at the coast, should always contemplate fine analysis of fog oasis potential for sustaining human life. Geographical landscapes cannot be dissected as we usually do (coastal terrace, steep cliff, cordillera or pampa), since human beings looked for their subsistence wherever they could find access to life resources of any kind. And, very differently from us, ancient people were use to move along huge distances to provide for their most urgent necessities. They had, consequently, a very different space perception. And this space perception, influences strongly on our focus of analysis.

8. Comments.

Our archeological activity during these seven years at Alto Patache fog oasis, as a complementary part of our geographical research on fog, has demonstrated the necessity of combining archeology with geography, and other earth sciences, specially biogeography and geomorphology. Old settlement patterns cannot be fully understood without a knowledge on Geography and Ecology. Otherwise, our final conclusions will be necessarily biased. As a final comment, therefore, studies of the sort should be undertaken with a solid support by earth scientists.

Acknowledgments

Special thanks are due to the students of archeology, Luis Pérez, Cristian Riffo, Mauricio Navarro and Daniel Moscoso, of Iquique, for their help in collecting information in the field. To Marta Peña for her support and patience during our frequent field visits. To Pedro Lázaro, for his invaluable disposition to afford his photographs for publication. To Celedonio Marón, librarian, for his collaboration.

2. REFERENCES

Almeyda Arroyo, E., 1948: Pluviometría de las zonas del Desierto y de las Estepas cálidas de Chile, Editorial Universitaria, Santiago, 162 pp.

- Bittmann, B. 1986: “Los pescadores, cazadores y recolectores de la Costa Arida chilena: un modelo arqueológico”. *Revista Chungará* N°16-17:59-65 Universidad de Tarapacá, Arica, Chile.
- Cereceda P., H. Larrain, et al., 1999. Informe Arqueológico del año 1998, (Proyecto Fondecyt N° 1971248).
- Larrain, H. et al., 1998: “Human Occupation and Resources in a Fog-covered Site in Alto Patache (South of Iquique, Northern Chile)”. *First Conference on Fog and Fog Collection*, Vancouver, Canada, July 1998.
- Larrain, H. et al., 2001: “Three Years of Zoological Records at a Fog-site of Alto Patache, South of Iquique (Chile), during “El Niño” and “La Niña” (1997-2001)”. Paper Presented to the *II Conference on Fog and Fog Collection*, Saint John, New Foundland, Canada, July 2001.
- Larrain, H., 2002. Informe de investigaciones arqueológicas en el sitio Alto Patache, año 2002. (Proyecto Fondecyt N° 1010801).
- Larrain H. et al., 2004): “Interpretación geográfica y arqueológica de los artefactos culturales hallados en el yacimiento de Bajo Patache-2. (BP-2), Sur de Iquique”, *Revista POLIS*, Universidad Bolivariana, Santiago, N° 7.
- Larrain, H. et al., 2004. Informe de investigaciones arqueológicas realizadas en el oasis de niebla de Alto Patache y áreas colindantes, correspondiente al año 2003. (Fondecyt N° 1010801).
- Núñez, L. y Varela J., 1965: “Sobre los recursos de agua y el poblamiento prehispánico de la Costa del Norte Grande de Chile”, *Estudios Arqueológicos*, Departamento de Arqueología y Museos, Universidad de Chile, Antofagasta, N 3-4, 1-4.
- Núñez, L., 1975. “Dinámica de Grupos Precerámicos en el perfil costa-altiplano, Norte de Chile”, *Estudios Atacameños*, N° 3, 59-74.
- Núñez, L. y Cora Moragas, 1977/78. “Una ocupación con cerámica temprana en la secuencia del distrito de Cañaño (costa desértica del Norte de Chile), *Estudios Atacameños*, N° 5, 21-49, Universidad del Norte, Museo Arqueológico de San Pedro de Atacama.
- Núñez, L., y Cora Moragas 1983, “Cerámica temprana en Cañaño, costa desértica del Norte de Chile), Análisis y evaluación regional”, *Revista Chungará*, N° 11, 31-61, Universidad de Tarapacá, Arica,
- Olmos, O. y Sanhueza, J., 1984: “El precerámico en la costa Sur de Iquique” *Revista Chungará* N° 13:143-154 Universidad de Tarapacá, Arica, Chile.
- Sanhueza, J., 1986: “Antecedentes para el estudio de un sitio con posible data arcaica en la costa Sur de Iquique: Chucumata-1 (I Región, Chile). *Revista Chungará* N° 16-17: 49-58 Universidad de Tarapacá Arica, Chile

