

# Archaeological Observations at a Coastal Fog-site in Alto Patache, South of Iquique, Northern Chile.

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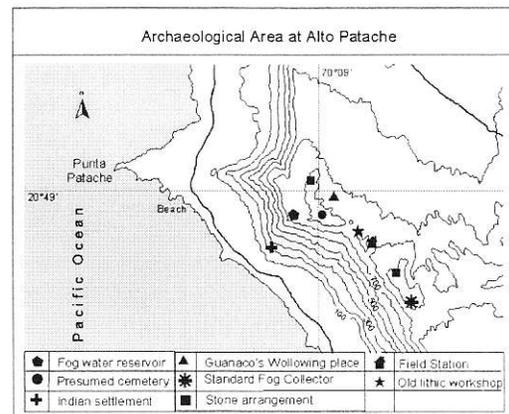
Abstract: A fog oasis located at Alto Patache (20°49' S; 70°09' W), at altitudes between 400-900 m, has been recently studied by us looking for evidences of past human presence and activity (Larrain et al., 1998). The geographical location, unknown before 1995 (Sielfeld et al., 1995), is a Fog oasis where flora and fauna showed a significant development after the ENSO events of 1992, 1984-85, 1987, 1992 and very specially, 1997. From 1996 until today, many traces of old prehistoric activity have been here discovered and analysed. The following are the most representative: a) a lithic workshop, b) an old water spring, literally filled with pottery fragments of kitchen bowls and jars, c) dozens of arrow points found along old guanaco trails, d) traces of old campfires, e) artificial stone arrangements serving as hiding places for hunting, f) areas freed from natural boulders and provided with typical stone arrangements, probably indicating tombs, g) old human trails going down through a steep ridge reaching the piedmont, and finally, h) an ancient preceramic campsite or settlement, around a rich **kjökkenmøding** or shellmound, almost untouched, with instruments still in situ, was found by us at the piedmont.

## 1. INTRODUCTION

Our first finding, in the middle of 1996, lies in a small sandy plain (pampa), slowly leaning down towards the North, at about 300 m from the edge of the coastal cliff. Scarce vegetation still concentrates there today. It extends at altitudes between 800 to 740 m. The central nucleus of this lithic workshop is now occupied by myriads of empty shells of terrestrial snails (**Bulimulus** like), who managed to cover the area, perhaps some 75-50 years ago, as a result of heavy rains and constant humid local conditions maintained through 3-4 years which greatly favoured their development. According to the records collected by Almeyda, near Iquique (1948), this wet period may well have been in operation between 1924 and 1945. After that time, a very long dry period begun, which continues up to our time. (Figure 1). Here we found, scattered in the field, many dozens of human instruments, made of black basalt, or different varieties of flint (silex). Among them, arrow stones, scrapers, harpoon points, knives, and stone hammers, most of them broken. There they lie, by the thousands, flint flakes, usually very small, proving a human very old industrial activity. Instruments, evidently, were worked in place. Rough material (like basalt, flint) was brought from elsewhere. 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 4,500-5,000 B.C. (Chinchorro culture) and extending until Colonial times. (Moraga, 1996). Game (specially

guanaco and zorro), was hunted and butchered in place. (See Larrain et al., 2001, in this Proceedings). As a proof, we found here hundreds of small pieces of broken mammals bones, with signs of severe erosion, products of old hunting habits. Pottery sherds are at this place, extremely scarce, proving the antiquity of the site. Old type instruments, like those made of basalt, similar to long spear points of old Periods of San Pedro de Atacama, were found in place, and have been recognized by Llagostera and Costa as certainly preceramic (pers.comm. 1999).

### 1.1 Map of the area



## 1.2 The ancient water “spring”

The presence of old water springs, along the coastal cliff south of Iquique, has been discussed by Núñez y Varela (1965). They mention the existence of a source of water lying high, at the rocky promontory of Punta Gruesa. They suspected that something similar may have been present at the area of Patache, at whose feet, many old Indian camping sites and tombs were discovered. But they never visited the place. Bodini et al., (1978) discuss also the presence of springs along the North Chilean Coast and their chemical characteristics (very saline: more than 1500 p.p.m.). Lying at approximately 750 m, at the feet of huge almost vertical enormous rocks, facing the S and SW, we found evident signs of human water collecting activity. The huge broken blocks are part of a descending rocky granite like formation, which form a kind of hard spine, going down until 110 m high. (Osses, 1998). At this height is exactly located the old Indian settlement to which we will come back soon. At the western face of the vertical wall of a huge granite block, we detected a small cavity where evidently water was purposely retained in a kind of reservoir, made of stones lined up and walled to avoid flowing away. There is still mud visible on its bottom. Where did this water come from? Hydrologists visiting the area (Neil Ingraham, pers. comm.) came to the conclusion that the only explanation is through continuous fog deposition in the vertical surfaces of the rocky blocks, flowing down in hyperhumid days or periods, and finally retained in a kind of well. No other geological explanation seems possible according to geology. That means that fog droplets, filtering down along the faces of the exposed rock, could be first retained and then delivered by living lichens, thoroughly covering its surface. Lichens seem to be acting there as excellent catching devices for fresh water. The presence of hundreds of pottery sherds, nearby, and only in a small surface around this area, could be explained through the Indian custom of filling there, at the spot, their jars with pure water, and transporting it to their dwelling sites located below. Guanaco or sea lion hides are provided with thin and long hairs which are good catchers and retainers of fog droplets, easily permitting its accumulation and storage if big vessels are at hand. Let us imagine, then, sets of such animal hides extended along the vertical rocky walls facing the South, been used here as artificial devices (like our modern fog collectors or “atrapanieblas”), able to concentrate and increase water availability at the place. This hypothesis seems to us to be the only possible explanation for the presence of a huge “cemetery” of broken vessels and water jars at this altitude (750 m.). In a word, there was no such “water spring” at the place, but there was enough water to have been accumulated. Ancient people used natural phenomena like fog “to milk” the clouds, obtaining small amounts of drinkable water.

Moreover, the places of concentration of clay vessel debris perfectly coincide with the altitudes given for the best fog concentration and collection.

## 1.3 Human Instruments for hunting purposes and Guanaco Trails

Disseminated near the workshop and sometimes following strictly old guanaco trails still visible across the hill slopes, we found dozens of complete arrow points, small, with peduncle, showing fast always a distinctive and almost identical pattern. We believe they were used for guanaco and fox hunting, since these animals used to go always along the same routes, and even to defecate in the same places. Close to such defecation places, fine instruments were also found. The area shows many thousands of such ancient trails, still sculptured in the sloping hills. At the lithic workshop, together with remains of broken bones, where animals like guanaco were supposedly slaughtered, there appeared dozens of instruments fragmented, or complete, used in animal slaughtering and butchering.

## 1.4 Stone artificial arrangements

We have so far found **two types** of clearly artificial **stone arrangements**: a) piling of middle size stones, at the top of hill tops, from where guanaco wanderings could be easily detected and observed. Its purpose seems simple: observation posts for animals crossing by. The stones were brought from elsewhere and piled up here. Maybe, small refuges were also built up, covered perhaps with animal skins, from where they could easily shoot their arrows. In fact, near such arrangements, there are still guanaco trails visible. The spots may have served only for one or two hunters, well hidden under animal skins.

## 1.5 The settlement

The areas described so far, lying between 750 and 860 m were used as resource acquisition spots. Animal meat, tooth, skins, bones, tendons, vegetal material like bulbs, plant aerial parts, leaves, roots, bushes for firing purposes, and even thick pieces of wood (from arbusts like *Ephedra breana* or cactus like *Eulychnia iquiquensis*) could be obtained in place. Being full time specialists at the sea, fishermen were also able to get here, in the clouded area of the Western Cordillera, finding unexpected means for surviving, evolving to hunters and even collectors. Importantly fresh water was here available most part of the year. Their economy, should be, therefore, considered as mixed. They were fishermen, hunters and terrestrial collectors at the same time. And, in fact, among the organic

remains recovered from their camping sites, close to the coast (shellmounds), we discovered in our excavations, many signs of their typical fog menu, including guanaco and remains of plant food.

Their ancient settlement, lies below, exactly under the fog line, at 110 m high, at the end section of the rocky chain or spine, coming down from the fog area. (Osses, 1998). The black rocks form big promontories; among them, and almost hidden, a small level space is visible, crowded with cultural and natural *débris*, having been discarded by humans. Some stones are artificially arranged in circles, constituting the basements of old dwellings. Discarded instruments on andesite, arrow points, big hammers, scrapers and the like cover the site, which appears to be very well protected from the outside. Watchmen could observe, from its top, all possible menaces coming from the world outside. An excellent location to live, far enough from the sea (about a kilometer) and a few hundred meters from the top of the cliff (provided with animal and vegetal resources), and even less from the water source. No archaeological digging has been made so far. By eye inspection, however, the shellmound is from the early preceramic, and most probably, of the same age as the most ancient lithic instruments found in the workshop place, at 800 m.

### 1.6 Results and conclusions

1. Our research in place, even without digging, has demonstrated the constant use of a fog oasis by human ancestors living near the sea and also from the sea. The complete ecosystem (marine, coastal, cliff areas covered by fog and interior level pampas), was perfectly known by them, constantly having recourse to one or another geographical system, according to their needs or facilities. We are just beginning to understand, in some aspects, why they were able not only to subsist in desert conditions, but even to increase in numbers and populate ample sectors of our arid Coast.

2. The almost continuous presence of water, collected along the rocks, from heavy fog events daily, assured the old fishing population of their fresh water supply. They didn't need to rely only on the saline coastal "aguadas".

3. Many elements of their menu could be obtained at the fog-site: meat, bone marrow, Plant leaves and fruits (*Ephedra*), snails and lizards, Plant bulbs (always accesible through digging).

4. The isolation of the site, free from strange visitors, favoured the elaboration of lithic instruments in place (arrow points, hammers, scrapers etc.) where they could be used in mammal hunting and butchering nearby. The access to the **hinterland**, from where flint and basalt had to be brought, was assured from the place.

5. When studying the Flora and Fauna still growing at Alto Patache Fog-Oasis, (Larrain et al., 2001) we were surprised with the unsuspected possibilities for life offered here. Archaeologists always knew about the complementary role of these resources for their diet. But now, under the light of fog influence in the spot, in terms of life growth and development, we can explain much better and with better arguments, the permanence and persistence of their settlements lying at the coast. Their main problem: drinkable water obtention and storage, seems now to be solved.

6. Archaeologists having worked at the littoral and excavated coastal shellmounds and cemeteries, rarely give special attention to cultural and ecological possibilities offered by the coastal chain, especially at higher altitudes, between 700-1000 m, in terms of Indian activity and resource's quarry. Bittmann, 1986 seems to be an exception, in her studies at the coast of Antofagasta. Engel studied Peruvian Lomas under this light (1989-1990). Chilean researchers, like Sanhueza, 1986; Olmos y Sanhueza, 1984, and Moragas 1996, have recently studied Indian cemeteries and shellmounds lying close to the sea shore, but they never looked at the hilly cliff, almost perpetually dwelled by fog. Perhaps the only one who best glimpsed the importance of places affected by fog were Nuñez y Varela, 1965, who undertook the task of re-discovering Indian springs near the coast. Fresh water sources were for them certainly the most important settling problem to be solved before all others.

### 1.7 Comments

A natural question emerges: why did old foragers and coastal fishermen establish their lithic workshops on the top of the coastal cliff, exactly where the fog frequency has its maximum? We think we are able now, after three years of detailed observations, to satisfactorily answer this question. Alto Patache was a typical preceramic industrial site (where all kind of implements were fabricated) and, at the same time, a source of food resources and water, as we have hinted at, in 1998 (Larrain et al., 1998).

The following elements have been studied in direct connection with local resources: a) A lithic workshop lying at the bottom of a small basin in a level plain where thousands of flint and basalt stone flakes, witnessed Indian industrial activity and proved the existence of an ancient traffic route from inland. b) Along hill slopes facing the sea, and going down to 300-400 m, many thousands of guanaco trails are still to be seen. In their vicinity, several flint stone arrows were found, certainly used for guanaco hunting. c) Artificial stone arrangements, at certain crossing points of guanaco trails, offered the hunters hiding places to wait for and kill the passing game. d) At the foot of huge standing stone blocks, the remains of an old

water spring was detected, around which hundreds of pottery vessel shards were spread; e) Human trails go down to the main settlement, located at 110 m altitude. f) The undisturbed settlement shows circular house basements, kitchen mounds of marine shells, pottery shards and broken instruments, made of beach boulders or flint. g) Presumed fishermen tomb groups, marked by typical small stone arrangements. h) Fragments of broken mammal bones around the lithic workshop. All this evidence, collected over three years of site observation, point to the frequent utilisation of this fog-site, through several millennia, by coastal fishermen as a nearby plant and animal resource place for a supplementary diet rich in protein and carbohydrates, due to the constant presence of fog-vegetation. Maps, photographs and designs show the importance of the site for human coastal prehistoric life.

### Acknowledgments

We express our special gratitude to the Cia. Minera Punta de Lobos, for their support in the field. Also to Dr. Neil Ingraham (California) and Dr. Ute Schuster (London) for their suggestions and comments, especially on the existence of a source of water in the area. To archaeology student Ximena Valenzuela, who provided us bibliographical references on the area. To Marta Peña and my students of the Universidad Arturo Prat (Iquique), for their enthusiastic support in our frequent visits to the place. Finally to the I.E.C.T.A., secretary Mrs. Silvia Alquinta who dedicated much time in assembling our materials.

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