

**ARCHAEOLOGICAL AND GEOGRAPHICAL EVIDENCE OF GUANACO HUNTING
(LAMA GUANICOE MÜLLER 1776) BY MARINE HUNTERS AND GATHERERS AT
THE FOG-OASIS OF ALTO PATACHE, SOUTH OF IQUIQUE**

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Abstract.

The paper studies the archaeological cultural remains found at a coastal settlement in Northern Chile from a geographic and cultural ecological approach. It focuses in understanding site occupation in intimate relationship with geographical habitat, its corresponding ecosystem, and biological components (flora & fauna). Among these, guanaco hunting is here particularly analysed through the traces left in coastal mountain landscape. Many archaeological items recovered inside the fog oasis prove the significance of hunting and butchering at place. Relationships are made between present flora, guanaco traces, ancient hunting activity and artifact deposition. Different eco-geographical sectors inside the fog oasis are distinguished according to artifact assemblage composition and site geomorphology. Hunting appears to be a very representative activity through millennia, judging from different typology of hunting gear.

Key words. Zooarchaeology, Ecoarchaeology, Fog oasis, American camelids, Coastal Hunter-gatherers, Atacama desert Coast, Ancient maritime economy, Indian hunting gear.

Preliminary remarks

1. Landscapes are not merely geographical sceneries for human activity, but permanent quarries of all kinds of life resources. Hence, climate and geofoms, local flora and fauna, are essential elements conditioning human habitability at certain spots. An eco-archaeological approach, consequently, pays special attention to geographical and biological systems interacting within a given territory, even before particular analysis through excavation is undertaken, like identification of tool assemblages or settlement typologies .

2. Excavation becomes a necessary knowledge tool only if geography and corresponding biology and ecology areas have been deeply understood in their intimate mutual relationships. Scenery is first; culture and human adaptation to it, come second, and in good part is explained

by the first. In the case of early Holocene sceneries, local geography and ecology may have looked different from present one. However, at the time this hyperarid portion of the Northern Chilean Coast was first populated, this apparently was not the case. Climate, geomorphology and ecology have changed little in the last five or six millennia, as we know from paleoecologists (Dollfus, 1967; Latorre, 2004), being therefore possible to make useful inferences from present or early historic conditions, to prevailing conditions having dominated in the area through the last few millennia.

3. Most archaeologists investigating at the Chilean arid Coast have interpreted *modus vivendi* of ancient inhabitants as depending almost entirely from marine resources, being terrestrial nutritional contribution rather eventual or of secondary importance. So, they were labelled fishers and marine collectors *per se*. Very few, like B.

Bittmann (1980;1982) and L. Núñez (1967/68, 1975; 1977) have glimpsed the great importance of coastal fog-oasis resources, including drinkable water, as vital for the sustainability through time of those settlements lying at the foot of fog-oasis. Chilean Northern coast is rich in such ecosystems (Dillon & Rundel, 1990; Cereceda, 2001, 2004; Larrain et al., 1998; Fig. 1).

4. Recent biological and geographical studies on such environments along the South Peruvian and North Chilean Coast (Dillon & Rundel, 1990; Muñoz-Schick, 2001; Cereceda, 2001, 2004; Larrain, 2001a, Pinto et al., 2000a, 2001b)¹, have much contributed to clarify certain questions, affording new insights into the way of living of coastal fishers and foragers. Among the resources obtained from fog-oasis by ancient inhabitants, we highlight here the importance of guanaco hunting, through the analysis of natural and cultural traces of its presence. This particular focus does not contradict the significance of other terrestrial resources also available at place, like water, plant or firewood collecting.

5. Fog studies conducted at the coast have convinced us that these coastal ecosystems, little known for archaeologists until 1996, were much richer than previously thought, and much more utilised by man than had previously been suspected.

Our working hypothesis²

Recent studies on Climate, Fog water collection, and Flora and Fauna diversity at the fog-oasis of Alto Patache (Cereceda et al, 2001;2004;2006; Larrain et al., 1998, 2001a, 2004a, 2004b; Muñoz-Schick, 2001; Pinto 2001a, 2001b),prove that these areas were perfectly able to sustain, in the past, small but permanent³ populations living at the coast, by means of a year round exploitation of nearby resources. This occupation has been traced back at least to 2,000 B.C.

according to Núñez (1978; see Sanhueza, 1985). Later studies date back to sixth millennium B.C. (Moragas, pers. comm.; see Muñoz, 1995). The main resources from fog-site biota were guanaco meat and hides, atmospheric water, firewood, bulbs, roots, leaves and fruits; rodents, terrestrial birds and snails (Lavallée et al., 1999). Total isolation, due to the absence of trails until 1996, has permitted the conservation *in situ*, of hundreds of cultural artifacts, many related with guanaco hunting. Guanacos, absent now since decades, have frequented the area until some 60-80 years ago, according to traces left behind. We can be reasonably sure that no human artifact collecting has been previously performed at place. The oasis, located in an almost inaccessible spot, maintained its cultural integrity until 1996, when first findings took place (Larrain, 1998; 2001b). Many of the traces left point out undoubtedly to guanaco chasing and butchering.

Punta Patache in Northern Chile.

Punta Patache fog oasis⁴ lies at 20° 49' S and 70° 09' W, between 600 and 860 m.a.s.l, close to the top of a mega-cliff, in the vicinity of the sea (2-3 km); (Fig. 1). It occupies the highest section of the coastal Cordillera beginning South of Arica, and shows at place a topographic SSW general exposition. This factor, favors the penetration of the S and SW Westerlies coming from the ocean. Punta Patache is one of the eight fog-oasis (Fig. 1) lying between Arica (18° 27' S) and Loa river embouchure (21° 24' S). Convenient altitude, short distance to the seashore, slope exposition to S and SW, and rock granitic composition greatly facilitate the condensation of small droplets brought in by the oceanic winds constantly hitting the mountain chain at altitudes over 600m (Bowman, 1924, Fig. 19; Weischet, 1966). This phenomenon takes place only between

600m and 1,200m. high, causing the maintenance of vegetation (perennial and annual), which grasps to the rocky or sandy cliff. The phenomenon shows particular activity from June to mid December, a period characterized by strong water collection. (See Cereceda et al. 1999, 2001, 2004, 2006; Larrain, 1998, 2004b). Mean water collection rate here comes up to 7.5

L/m²/day.(Cereceda et al., 2001).The ENSO phenomenon, appearing along the Peruvian and Northern Chilean Coast every 5-7 years produces local rains and higher temperatures (Barber & Chávez, 1983; Rasmussen & Wallace, 1983), permitting the maintenance of this fragile ecosystem throughout time. Years 1982, 1987, 1992, 1997 and 2002 were the last registered “El Niño” events.

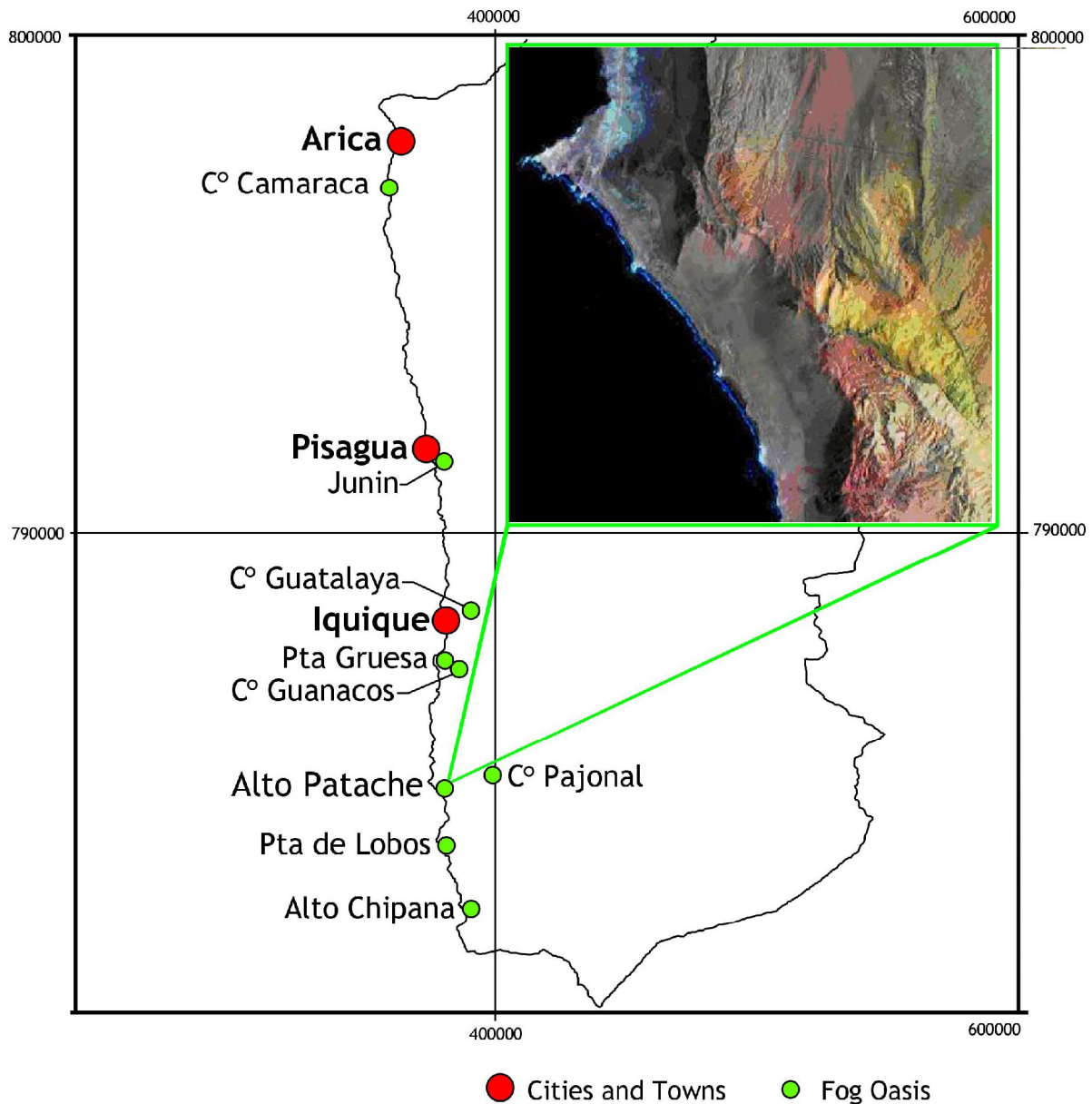


Fig. 1: Fog-oasis between Arica and river Loa embouchure; in zoom: geological map of Punta Patache. Note coast W-E inclination, deviating from normal N-S course.

South of Punta Patache, a marked deviation of the littoral line from a predominant N-S to NW-SE is clearly seen (Fig. 1). This topographic change of direction, plus the presence of altitudes over 600 m at the top of the cliff, greatly favors the formation of fog-oasis and their peculiar ecosystem. Here, the NW-SE coastal chain direction faces straight the prevailing Westerlies, charged with

oceanic humidity. Similar situation is observed in a few other northern fog oasis, specially in Alto Junín, Punta Gruesa, Punta de Lobos and Punta Chipana (Fig.1). Apparently, the stronger the NW-SE inclination of the coast, the greater the surface and strenght of resulting fog-oasis, given the other necessary geographic parameters.

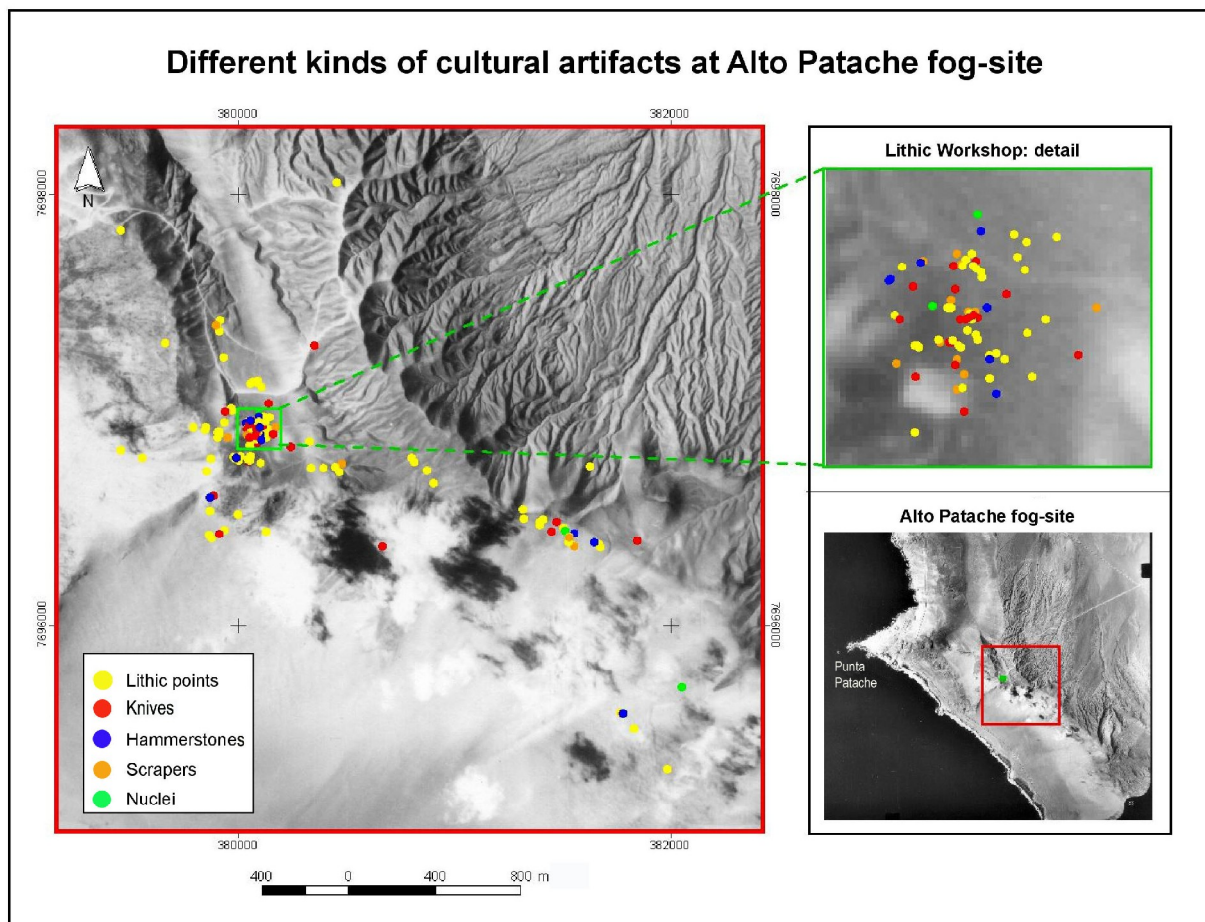


Fig. 2. Concentration of cultural artifacts (red square) corresponding exactly to areas where guanaco was hunted and butchered.

The green square isolated at right, shows the heavy artifact concentration at the lithic workshop, by far the place with the greatest abundance of cultural items within a small surface (Cárdenas, 2000). Not only instruments (finished or broken) but also

pottery fragments, mollusk shells and guanaco bone fragments lay scattered around. The majority of such artifacts correspond to different point types, used for marine or terrestrial hunting purposes (Fig. 4a).

Geomorphological and cultural traits at Alto Patache

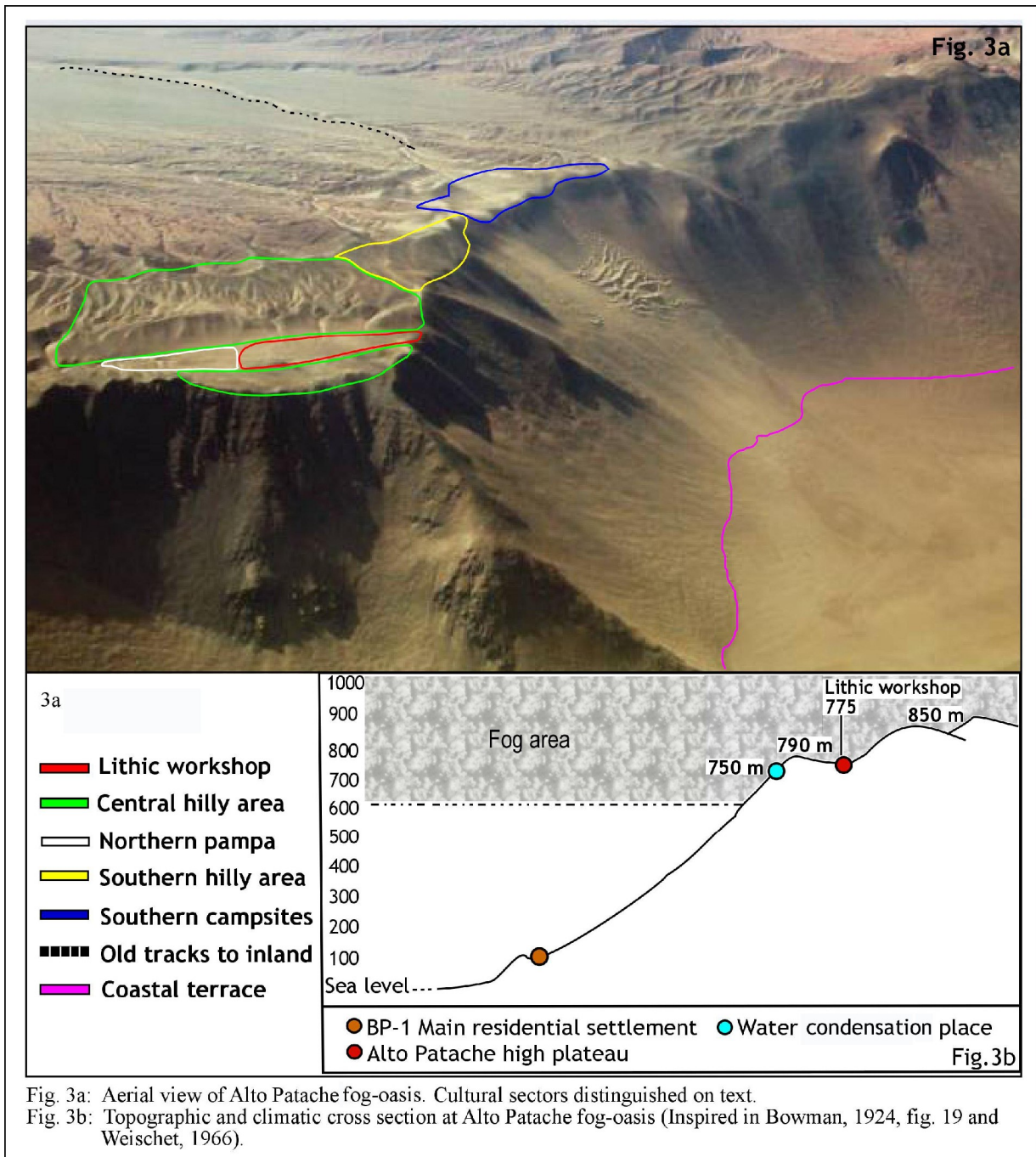


Fig. 3a: Aerial view of Alto Patache fog-oasis. Cultural sectors distinguished on text.

Fig. 3b: Topographic and climatic cross section at Alto Patache fog-oasis (Inspired in Bowman, 1924, fig. 19 and Weischet, 1966).

Fig 3a shows the sectors located close to the cliff border, following a rather wavy N-S direction. These areas, different each other from a locational and cultural point of view are, at the same time, significant resource areas, from where coastal inhabitants could

and did get several necessary commodities for their mixed (maritime and terrestrial) way of living.

To the East extends a huge plain, cut by innumerable ravines dissecting an old geological plateau, carved by many

crevasses and paleo-streams (Fig. 3). Biological life is here impossible, away from moistening influence of coastal fog. Old tracks, however, led to inland communities lying along the gorges flowing to Pampa del Tamarugal, which can still be followed today⁵. E-W cross section (Fig. 3b) makes evident relief features and altitudes as influenced by fog. (Bowman, 1924, Fig. 19; see also Weischet, 1966). The agricultural villages, lying at the eastern border of the Pampa, over 1200 m.a.s.l., offered to the coastal bands several resources: wood, textiles, cords, and wool; maize, chili pepper, potatoes, calabashes; reeds, carob pods, chañar fruits, *inter alia*, for exchange for marine productions. Such traffic, active since very early was carried on through Colonial and early Republican times, following the same tracks. times (See Núñez & Varela, 1967/68; Núñez, 1975; Núñez et al., 1975; Núñez & Moragas, 1983). No such traffic exists today, having ceased some 30-40 years ago.

Materials and methods

1. Taking profit of weekly climatic measurements trips, a surface survey has been done, exploring most of the fog-site area, covering some 1.000 ha. As a result, more than 400 artifacts (mostly lithic) have been collected. No digging has been practiced yet.
2. Relationships to guanaco traces left *in situ* have been always determined, if existing.
3. All found objects have been registered using a GPS. Coordinates have been incorporated to maps using Arcview system (GIS), showing different cultural pictures of the area (Fig. 2 & 3b).
4. Artifact complexes have been assembled into eco-cultural units using as parameters

cultural context, and geomorphological traits.

5. Some units show high artifact concentration in small surfaces, demonstrating a longterm cultural activity. Other units, much broader, show traces of human wandering and chasing activity. Here, arrow points have been found, in evident connection with guanaco paths.

6. Only man made artifacts or diagnostic pottery shards have been picked up for study. Flakes, as several other ecofacts found at place, were left untouched. (“Formatted artifact collection”).

7. Animal bone samples were collected for identification. Thus, we know that practically all bones found correspond to guanaco (*Lama guanicoe* Müller, 1774). Bones and plants were identified by specialists.

8. Two Data Base have been compiled: one showing the eco-cultural elements related to hunting activity, and another, analysing all artifacts found.

9. A Field Diary conducted by the main author retains the details of every journey. (H. Larrain Field Diary, vols. 73 to 77).

10. Digital photographs have been taken to illustrate the findings.

11. In the first two years of field work (1997-1998), lacking a GPS, location of pieces has been approximated by means of a detailed description. Later, using a GPS, it was possible to retroactively determine precise position of all cultural items.

Next we are presenting the evidence, archaeological and geographical so far collected mainly related to guanaco hunting and butchering at place. (Fig. 2; Figs. 4a &

4b). Ethnohistorical evidence, important as it is, has been left out here for later analysis. The significance of water catching, through condensation of fog water at the spot located 750 m. a.s.l., has been already studied elsewhere (Larrain et al., 2004).

Archaeological evidence.

The archaeological artifacts, mostly lithic⁶, recovered between 1997 and 2006, and their position in space, has been registered in Fig.2

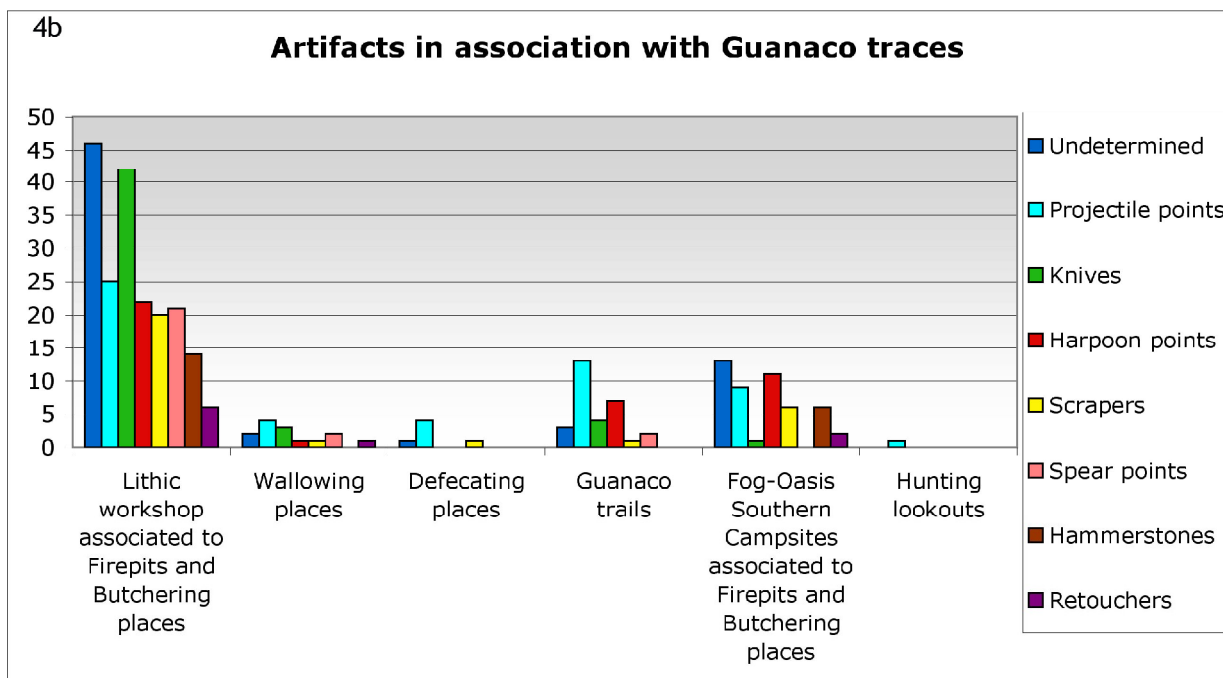
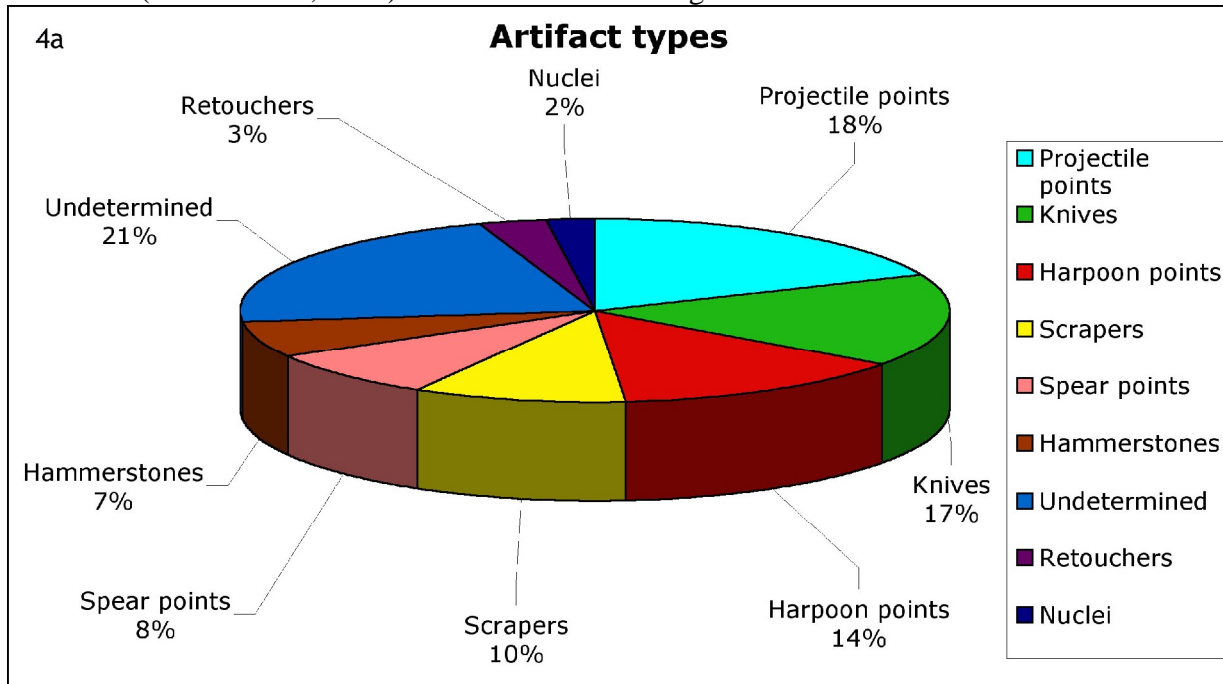


Fig. 4a: Types of cultural artifacts found at Alto Patache fog-oasis. Fig. 4b: Artifact types related to different areas showing guanaco hunting activity.

Artifact percentage. Explanation of findings (Fig. 4a).

1. Percentages of all lithic instruments appear in Fig 4a. Artifact categories once analysed, except for undetermined items, according to their frequency at the fog oasis, include: a) Arrow points; b) Knives; c) Harpoon points; d) Scrapers; e) Spear points; f) Hammerstones; g) Retouchers; h) Nuclei. Some point types belong to very old cultural periods, according to Núñez (1975; 1977) and Muñoz et al., (1995).

2. All the artifacts, either for terrestrial or marine use, were worked here, in the heights. The main residential camp, located at the 110 m.a.s.l., at the marine terrace, shows extremely scarce evidence of working activity at place. The contrary has been observed at the lithic workshop where the flakes count up to the thousands.

3. Next in numbers come projectile points (18 %). They were used along with the bow, and being the foxes naturally solitary, and birds too small, we assume that they were mainly used in guanaco hunting. This assumption is reinforced by the fact that they were always found at, or close to still visible guanaco trails (Fig. 4b).

4. Then come the “knives” (17 %). They are strongly connected with butchering activity, specially at the lithic workshop. They coexist with hundreds of small bone fragments, all of them belonging to guanaco.

5. Harpoon points were important (14 %). They were used at the sea, in fishing or sea lion hunting near the coast. Its number in our cultural inventory is significant. Worked at place, once broken during elaboration process, were discarded. However, the very few found intact, were to be found not at the main “lithic workshop”, but around the small

Southern campsites, leading to the marine terrace below. (See note 6).

6. Spear points, all made on basalt (8 %), were also used in guanaco pursuit and hunting. Judging by their typology, they were used in arcaic times, before the introduction of the bow in the area. They are from 5 to 8 cm long, and show the same morphology found in the highlands at these old periods (Llagostera, pers. comm.). They were certainly worked at place, judging by the hundreds of basalt flakes of different sizes found.

7. Scrapers are the required tools for meat tearing up and cutting. In our inventory they constitute a 10 %. They were found at the lithic workshop among minute rests of broken guanaco bones.

8. Hammerstones are extremely scarce (7 %). In contrast, they are found by the dozens at the main residential settlement, located below. They were used for meal preparation, close to the dwellings, and rarely found where the prey was hunted. Cooking took place specially at the main settlement.

9. “Retouchers” appear to be somewhat enigmatic (2 %). The pieces so far collected do not show much use in their extremes, as they usually do.

10. In our Graph the label “undetermined”, comprises many broken pieces (21 %), whose function is not clear. Some may be unfinished tools; some others, broken instruments.

11. Finally, burins or drills, have not been found at place. Perhaps, we have simply overlooked them, when collecting.

Eco-Cultural Comments.

We are particularly focused here in guanaco hunting. According to traces left and their normal habits, guanacos commonly browse around in small herds, formed by several individuals. Rodents (*Phyllotis sp.*), Reptiles (*Phrynosaura sp.*, *Homonota sp.*, *Microlophus sp.*), and Birds like *Sicalis sp.* or *Muscisaxicola sp.*, offering a short biomass, were of little use for eating purposes. (Larrain, 2001a). Small arrow points, however, may well have been used for chasing them, too.

Summing up all artifacts used in strict connection with guanaco hunting (like points, scrapers and knives), we come up to 52 % of all lithic items recovered, that is, the great majority of artifacts. The first two, for chasing game; the others, for butchering and meat scratching or cutting.

The lithic workshop (Figs. 2 & 3a) offered for camping and hunting purposes an ideal location, from a botanical (presence of shrubs and bushes), zoological (presence of guanaco), and geographical point of view (level area protected from winds). Consequently, the great majority of artifacts have been found there.

The very high percentage of harpoon points (broken pieces) proves that the spot was the preferred one for lithic workmanship. Was protection against enemies or just energy saving the reason?. Perhaps, both.

Spear points were only found at campsites or at the lithic workshop. They are clearly associated to hunting and butchering activity.

Very few items have been found close to lookout spots. These were places to spy the game, not working places. Instead, at or close to guanaco trails, a good part of small arrow points were found intact, or slightly broken.

Scrapers were only found in two kinds of places: the lithic workshop and the Southern campsites (See Figs. 3a & 4b).

Scratching and meat cutting were done only in the campsites; rarely elsewhere. Scrapers and knives, altogether, constitute a 27% of all lithic items found. What emphasizes the importance of butchering *in situ*.

Total number of undeterminate tools is high (21%). Broken artifacts, however, should be found in a lithic workshop rather than elsewhere. Its number, therefore, seems normal.

The number of cultural items found in strict relationship to guanaco trails, away from campsites, is surprising. Not only points (arrow and spear points), clearly suggesting chase, but also scrapers were found. What may probably indicate that during their wanderings following wounded game along its trails, they continued making their most necessary artifacts.

Finally, “undeterminate“ or broken tools were not found except in campsites, what once again suggests intense workmanship activity at the camping site.

Botanical evidence.

Guanaco presence can only be ecologically explained by the existence of extensions of palatable plants *in situ*. Today, except during eventual ENSO events bringing local rains and dense fog, annual vegetation is scarce. Pinto et al. have documented the existence *in situ* of 45 plant species, including three cacti. Practically all, specially Gramineae, Liliaceae and Nolanaceae, are edible by animals. (Pinto, Larrain et al., 1999). During heavy ENSO years, local vegetation descends until the 200 m. line, their dry stems remaining there for decades. No surprise, then, that some authors in previous centuries have testified their utilisation for feeding pack beasts, at specific places. (O'Connor, for Cobija [1826] 1928).

In Alto Patache there are sectors (Fig. 3), where hundreds of dry stems of shrubs like *Ephedra*, *Stipa* and *Lycium*, are still

visible. Some come up to 3-4 inches in diameter. Their presence area coincides well with the area of denser occupation by early inhabitants. This strongly points to the existence, in the past, of wider surfaces covered by shrubs and bushes. In fact, hundreds of *Stipa* and *Ephedra* stems, scatter today around the area, almost all dead. Particularly those growing a little further inland. This once richer vegetation cover explains well the selection of the site by herbivores and ancient foragers and hunters, looking for meat and vegetal food. Same situation has been documented in Alto Chipana by Egaña, 2002, and García, 2002, for the cliff section descending towards the marine terrace. We have detected a similar situation with *Eulychnia* cactus at Cobija (22° 33' S) when climbing the hills up to the 1000 m.a.s.l. According to climatic evidence, the XIXth Century has been considered humid, in flagrant contrast with present XXth and XXIst Centuries. As a proof, Pinto documents recent death or strong reduction of *Tillandsia* stocks near and South of Arica (2004; 2005).

In our area, most of the dry *Ephedra* stems concentrate, precisely, in and around the area of the main lithic workshop, thus clearly suggesting the presence of a dense bush cover in the past. This evidence constitutes another proof of an ongoing desiccation process having suffered a severe intensification in the last 50-60 years.

Plant conservation state.

Most of the annual plants surviving now at the oasis (*Frankenia*, *Cristaria*, *Nolana* spp., *Tetragonia*, *Quinchamalium*, etc.) have been sighted vigorously growing during “El Niño” years, as happened recently in 1982, 1992, 1997 and 2002. During “La Niña” years, instead, that is, between two ENSO events, these plants are practically

absent. Perennial plants, like *Eulychnia*, *Opuntia*, *Stipa*, *Atriplex*, *Lycium*, *Poliachyrus*, *Suaeda*, *Ophryosporus*, or certain *Nolana* spp. manage to survive from one humid period to the next, sprouting very little foliage, and barely flowering during dry years. Bulb or rhizome plants, like *Oxalis* sp., *Alstroemeria* sp., *Leucocoryne* sp., *Zephira* or *Fortunatia* sp., show small and shortliving leaves, and decay after a few weeks, being unable to flower during the dry years. (See Pinto et al, 2001 for a complete plant list). Plants like *Stipa* (*Gramineae*) or *Ephedra* (*Ephedraceae*) have drastically reduced their ancient habitat sheltering and clustering at the cliff border, where fog moisture is denser. Guanaco trails abundance, however, can only be explained by a much more developed vegetation cover, possibly constituted by the same species still persisting today. Guanacos could not survive today in this area, except during the few months fed by ENSO eventual local rains. A proof pit recently dug by us at the spot proved the presence of many Liliaceae bulbs, all dead, going down to 20 cm deep. Living bulbs are found, instead, in depths going from 10 to 20 cm., much closer to the cliff border.

Cultural-geographical evidence.

Following are the physical features left in the landscape by the presence of guanaco herds:

a) Grids of guanaco trails, carved in and along the coastal slopes, can be observed specially at the leeward side. There are thousands of them, crossing the slopes in all directions. Some penetrate deeply inland;

some others go down the cliff until the 200 m line, where they disappear covered by sand. They use to be around 25 cm. wide, and climb or descend the slopes at very gentle angles. Surprisingly, they have survived until today, almost undamaged. Along these trails or closeby, many small arrow points have been found.

b) Eight wallowing spots have been so far recognised in the area, connected with guanaco trails. As already known, American camelids (wild or domestic) use to wallow in sandy places, to get rid of parasites and relax. The spots are typically round or oval in form, with depths varying from 25 to 40 cm. Soft and loose soils are selected.

c) Twenty guanaco defecating places have been detected also. Consistently they concentrate near or very close to the main lithic workshop itself. Level areas were preferred. The reason seems clear: at the spot plants were once much more abundant. So, in or around the Alto Patache high plateau workshop concentrates 50 % of all defecating places detected. An evident spatial connection between the selected place for wallowing and defecating, and the hunting spot used by old hunters to spy them is shown at place.

d) Hunting lookouts or parapets located at crossroads of guanaco trails, in higher elevations with excellent visibility are another important feature. They were usually built by transporting from elsewhere and piling up local crude stones. Four such lookouts spots have been found. The stones may have acted as bases for fixing animal hides, from where hunters could spy and shoot their victims.

e) Even without digging, small firepits with evidence of charcoal, ashes and burned animal bones are still visible; crude stones suffice for retaining fire within its limits.

Conclusions

1. Guanaco was widely hunted, slaughtered and very possibly, eaten at place⁷. Apparently, hunting was present during the long cultural development of coastal hunting-gathering societies, as shown by different typology of hunting gear.

2. Its manifold presence is proved throughout the different landscape features present. (Larrain, et al, 1998, 2001; Olmos, 1985).

3. Guanaco has not been sighted recently at place. Faeces found in their defecating places prove a very long absence, probably going back at least to 50-60 years ago.

4. All kinds of lithic tools for hunting activity, have been made and left at place. Many marine hunting weapons were also made here. The practice of a mixed economy, marine and terrestrial, is here clearly demonstrated.

5. Alto Patache fog oasis presented, in a near past, and still more in remote times, a much denser vegetal cover than today. Dry plant stems are the proof thereof. We are witnesses today of a strong ongoing and increasing desiccation process with several plant species rapidly decaying in numbers, or dying *in situ*.

6. All the evidence accumulated so far fairly convince us that Alto Patache fog oasis, in ancient times, was able to sustain human sedentary life for very small bands of coastal hunter-gatherers. Many life commodities, including potable water, were obtained at place.

7. Fog-oasis life products, essential for their diet, specially game and plants, were

certainly much more important than previously affirmed.

8. Future research related to ancient coastal inhabitant's economy should include a thorough analysis of relationships of coastal settlements and closest fog ecosystems, as the perfect complementary areas to known marine ecosystem.

9. Alto Patache fog oasis presents all the necessary climatic and botanical conditions for sustaining human life, during long time periods.

10. Guanaco hunting has been practiced *in situ* since very early times, judging by the kinds of hunting gear found.

11. Present Fauna and Flora depauperation at Alto Patache constitutes a clear proof of ongoing climatic dissection process in the area.

Acknowledgments

We would like to express our gratitude to F. Velásquez for her technical assistance; to the students of the Universidad Católica (Santiago) and Universidad Bolivariana (Iquique), who helped us in collecting information in the field, and finally to Carolina Larrain, for her revision of our English manuscript.

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Notes

¹ Botanists have usually distinguished two types of fog-oasis: a) **multispecific**, characterized by the presence of many plant species; and b) **monospecific**, constituted by only one plant species, the rootless *Tillandsia* sp. (Bromeliaceae). Our fog-oasis at Alto Patache belongs to the first type. There are several *Tillandsia* fog-oasis located in the area between Arica and Loa River, covering hundreds of square kilometers. (Pinto, et al, 2005). Mono-specific from a botanical point of view, they are rich in fauna, particularly Reptiles, Insects and Arachnoidae.

² Danish archaeologist Bente Bittmann was the archaeologist who best demonstrated the significance of using ethnohistorical sources for understanding coastal ancient cultures. Her "Cobija Project" was the foremost archaeological interdisciplinary endeavour applied to studying a Chilean coastal area

³ Present hypothesis is only valid for those few coastal spots, where special geographic conditions favor the condensation of fog near the top of the mega-cliff. Alto Patache is one of the seven fog-oases at the coastal fringe between Arica and Loa River embouchure (Sielfeld et al. 1995; Pinto et al., 2001b. (See Fig. 1). At the coast of Antofagasta several other fog oases there exist, particularly Mamilla, Cobija and Cerro Moreno.

⁴ We consider "permanent" those populations living at the foot of this active fog oasis, even if their individuals used to make longterm temporal expeditions into the heartland or into the sea, in search of the necessary life commodities. During these temporal migrations they used to erect humble cottages almost everywhere, in their visits for hunting, fishing, or collecting purposes. (Larrain, 1978/79).

⁵ Figure 3 shows an old track leading to the East along ancient paleo-streams.

⁶ The typology here proposed has a provisional character. Harpoon points, may well have been utilised for other kind of chasing, not only marine.

⁷ The American deer, *Odocoileus virginianus*, Zimmermann, present in South Peruvian Coastal archaeological sites (Lavallée, 1999), probably has also been present at place in remote times. Only so we could understand Mellet's reference concerning a deer's chasing by Indians at the Coastal heights of Paposó by 1820. (Mellet, 1942).

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