

## 2.16 THE PALEOINDIAN AND ARCHAIC OF CENTRAL AND SOUTH AMERICA



HUGO D. YACOBACCIO

The term “Paleoindian” refers to the short period of North American prehistory when people’s subsistence, at the end of the Pleistocene, was based on the hunting of megafauna like mammoths and mastodons. “Archaic” refers to generalised hunter-gatherers whose subsistence depended on modern fauna and a wide range of plants. This classification does not apply to Central and South American contexts. The full variability of Pleistocene and Holocene hunter-gatherer societies is not embraced by these concepts. It is better to refer to the process of population of Central and South America using the term “dispersal” in order to denote the spreading out of individuals or groups which filled up the available vacant habitat, and the term “colonisation” for the major extension of a population habitat or range that includes an established occupation of areas previously unoccupied or occupied.

There is no clear pattern for inferring a north-south route of dispersal and colonisation from Central America into South America. On the contrary, the first colonisers seem to have followed many routes, and for that reason the processes of dispersal and colonisation of the different regions were not necessarily connected. This can be seen in the uneven distribution of some characteristic markers of early human dispersal such as, for example, the distribution of Fish-tail projectile points throughout the continent. Although most of the dates are in the range of 12,000 to 9000 cal BCE a north-south cline is not observed. Moreover, the analysis of the few early human skeletal remains has shown two important issues: first, by 8000 cal BCE different regional populations already existed; and second, more than one stock migrated into the continent. This does not mean that the process of colonisation of every region was isolated, but the study of this process, on a continental scale, remains to be done.

### Central America and Northern South America

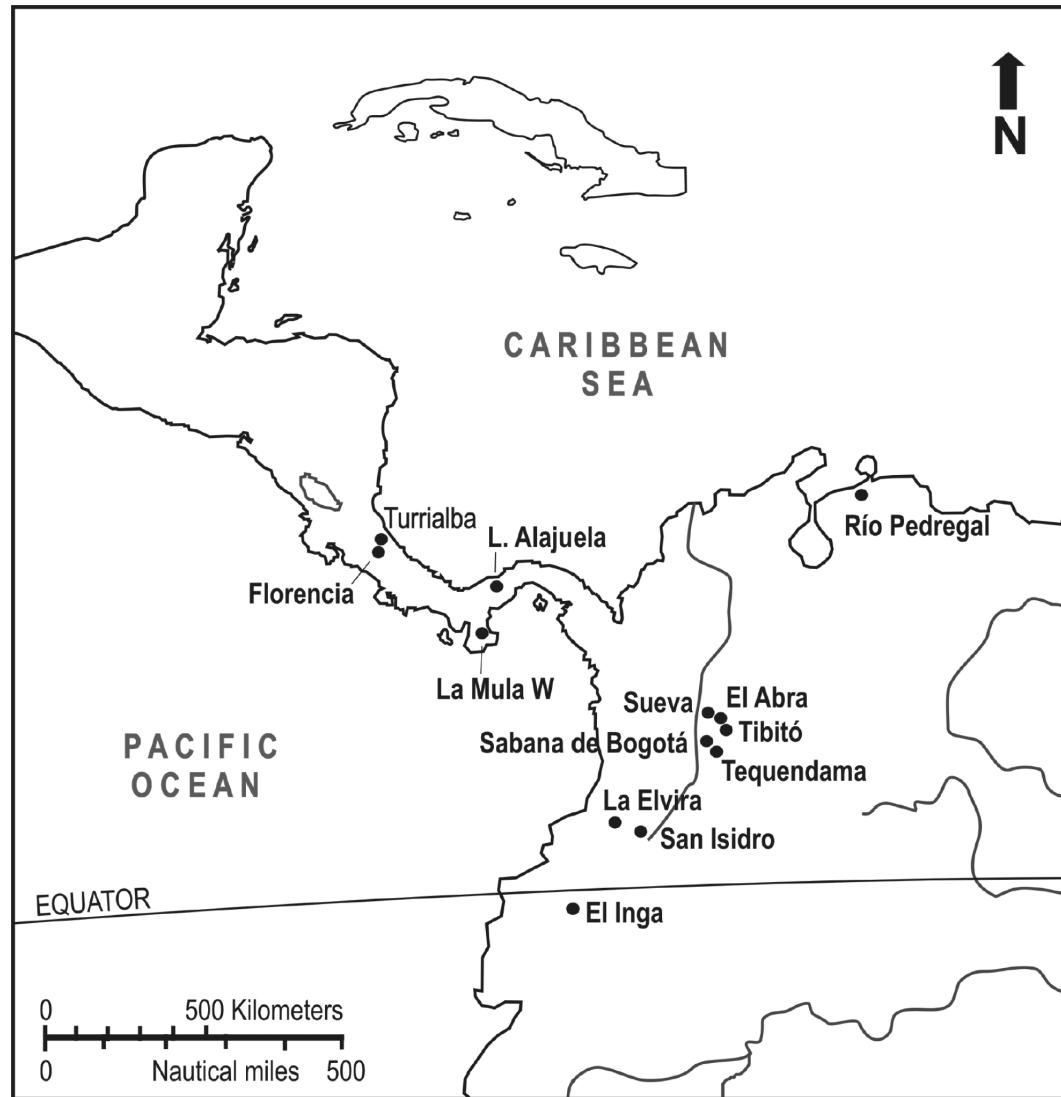
The first human dispersal in Central America has been detected in highland Guatemala, and dates back to 11,500

cal BCE. The early archaeological sites of Panama and Costa Rica were located in tropical forests, near open zones of xerophytic scrublands. Drier and cooler climates at the end of the Pleistocene in Central America resulted in a more open landscape than in Holocene conditions. Several types of projectile points have been described (Clovis-like, Fish-tail, unifacial stemmed and notched points) (Fig. 2.16.1), and so megafaunal hunting has been inferred, but there is no hard evidence to support this hypothesis. There is very scarce evidence of the subsistence base of these groups, and no data suggesting the utilisation of maritime resources.

The Aguadulce Rock Shelter has the longest sequence of the region. The first human occupations are dated between 10,500 and 7500 cal BCE; the lithic technology is characterised by bifacial reduction techniques. In the next occupational phase, dating from 5150 to 3800 cal BCE, bifacial thinning techniques disappeared and were replaced by an expedient lithic technology and bipolar reduction. Milling stones used to process roots and tubers also emerge in this period. Phytolith analysis on ground cobbles and milling stones showed evidence of manioc starch grains (*Manioc* sp), yam starch grains (*Dioscorea* spp) and arrowroot (*Maranta arundinacea*). The processing of maize (*Zea mays*) was recorded as well. These data indicate that in this region late preceramic economies were mainly based on root- and seed-crop cultivation.

Moreover, data from lake sediments show that slash-and-burn cultivation was initiated on the Pacific Coastal Plain of central Panama and nearby areas around 5800 cal CE. Monagrillo pottery, introduced from northern South America, is recorded in 2920 cal BCE in the Aguadulce Rock Shelter, and also in coastal shell middens. Palaeo-ecological evidence from central Panama shows that forest clearance through slash-and-burn agriculture had intensified by this time, which means an increased reliance on seed-cropping (e.g., maize) instead of root-crop farming.

In northern South America, there is some evidence of the coexistence of human groups and Pleistocene megafauna, particularly in the savannah of Bogotá. In Tibitó (11,780 cal BCE), mastodon (*Cuvieronius*) and American horse (*Hippidion*) were found associated with unifacial tools like scrapers, flakes and possible perforators, but no projectile points. In Taima-Taima and El Vano, an inference of the association of megafauna and



MAP 2.16.1. Sites of Central America and northern South America. (Drawing by Patricia Solá.)

stone tools has been made, but taphonomic problems pose serious difficulties for this assertion; the same can be said of the site of Tequendama, where the middle section of an El Jobo projectile point was lying inside the pelvic cavity of a mastodon. In the best cases, the coexistence of hunter-gatherer groups and Pleistocene fauna can be supported, but there is not a strong and effective interaction. In many other sites of the region (Sueva, Chobschi, Cubilán, El Abra), only modern fauna has been found. A generalised subsistence base (plants, small mammals, riverine fauna, deer) makes more sense in explaining the current data from the savannah of Bogotá, the Magdalena River Valley and the highlands of northern Ecuador.

In addition, there is evidence of the early management of plants, including the cultivation of squash (*Cucurbita* sp), arrowroot (*Maranta arundinacea*), leren (*Calathea alluvia*) and bottle gourd (*Lagenaria siceraria*), early in the 9th millennium BCE. It has been proposed that hunter-gatherers from San Isidro

had sophisticated forest resource-management practices such as clearance and selective planting. In this site, phytoliths of *Marantaceae* were found on edge-ground cobbles, together with charred seeds of *Persea americana* larger than the average wild species, and *Erythrina* cf. *edulis*, a cultivar that originated in the mountain forest.

Intensification of plant utilisation is recorded by 5850 cal BCE with the introduction of maize (*Zea mays*) and the domestication of manioc (*Manihoc esculenta*) and several other plants. Domestic plants were adopted in the lowland deciduous forests before the appearance of villages and a more sedentary way of life. By 5000 cal BCE pottery appears in northern Colombia (San Jacinto I) within the context of an economy based on the exploitation of wild plants; moreover, shell middens on the Colombian coast have fibre-tempered ceramics (Puerto Hormiga). Tropical agriculture began as a complement of hunting and gathering, perhaps based on house gardening and shifting agriculture.

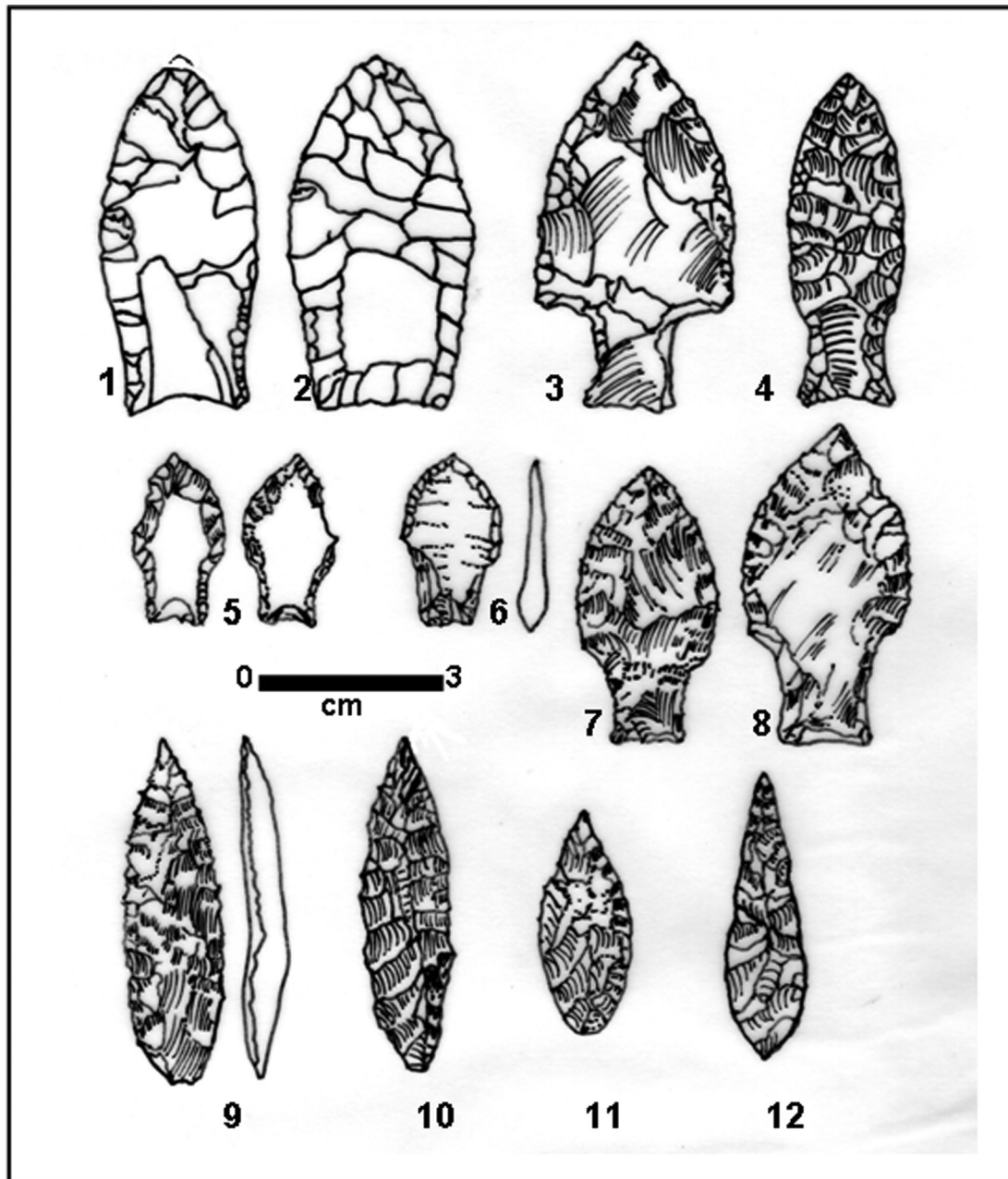


FIGURE 2.16.1. Early projectile points from Central and South America: 1. Guatemala, Clovis-like point, surface; 2. Costa Rica, Clovis-like point, surface; 3. Piura, Peru, Fish-tail point; 4. eastern Uruguay, Fish-tail point; 5. Pampas, southeastern Provincia de Buenos Aires, Fish-tail point; 6. Pampas, Cerro El Sombrero, Provincia de Buenos Aires, Fish-tail point; 7. Period I, Fell's Cave, Fish-tail point; 8. Period I, Fell's Cave, Fish-tail point; 9. Telarmachay, Puna de Junin, Peru, Lanceolate point; 10. Pachamachay, Puna de Junin, Peru, Lanceolate point; 11. Guitarrero Cave, Peru, Lanceolate point; 12. Guitarrero Cave, Peru, Lanceolate point. (Drawing by Hugo Jacobaccio.)

## The Central Andean Chain

The population of the highlands has been thought of as a "puna only" phenomenon. Hunter-gatherer bands going south through the Andean chain have constituted the most popular hypothesis. However, this can no longer be sustained, and

the most probable proposition today is a late colonisation of the highlands above 4000 m. The Late Pleistocene climate was cold and wet; between 12,000 and 11,000 cal BCE two main glacial advances can be discerned in the Junín Plain. A glacial climate prevailed in the vicinity of the archaeological locations, and most of the mountains at 4200 m altitude were covered with ice. No reliable exploitation of Pleistocene fauna is recorded; in the sites in which their presence has been documented (Lauricocha,



MAP 2.16.2. Sites of South America. (Drawing by Patricia Solá.)

Uchkumachay and Tres Ventanas), their remains are below the first human occupation. The earliest occupations of the Puna of Junín are dated to 9300 cal BCE, when dry and cold conditions predominated, according to isotopic values of carbonates from

lake sediments. These conditions gradually changed towards near modern values at about 1300 cal BCE.

A diversity of projectile points, mainly lanceolate forms (Fig. 2.16.1), characterises the tool assemblage of the region,



which shows great homogeneity suggesting a close cultural relationship. These early occupations have a balanced proportion of cervids and camelids in the faunal assemblages, although with a predominance of camelids whose remains increase through time. A specialised economy based on the hunting of camelids was expanded, and it is evident in the majority of the sites after 5600 cal BCE or even earlier in Pachamachay and Panaulauca. As a consequence of this specialisation, arguments have been proposed about a development of a domestication process of the vicuña (*Vicugna vicugna*), as early as 4400 cal BCE at the site of Telarmachay. The evidence that makes this hypothesis possible is the high proportion of newborns and alpaca-type incisors, which has not been replicated in the region's other sites. Otherwise, evidence of change in the size of camelids, which has been interpreted as the result of a domestication process at Pachamachay and Panaulauca, has been dated to 2900 cal BCE, in agreement with the regional information we have about this event. The regional settlement pattern of base and temporary camps, was unaltered until the arrival of ceramics (Chavín style). It is striking that there is a virtual absence of shell-goods from the coast, and that obsidian was only moved over short distances, which indicates restricted exchange networks.

At lower altitudes, in the valleys of the Callejón de Huaylas, Guitarrero Cave was occupied from 10,100 cal BCE. Lanceolate projectile points are the most common in the early levels (Fig. 2.16.1); triangular and stemmed points are present to a lesser extent in later occupational layers. Cervids and small mammals were the main prey animals through the whole sequence, and several plant remains were also recovered. The Ayacucho Valley sequence, especially at Pikimachay Cave, is problematic; we have to discard the "Pacaicasa" (23,400–14,600 BCE) and "Ayacucho" (13,000–11,000 BCE) phases because the most reasonable explanation for the presence of megafauna is ground sloth denning, with abundant remains of *Megatherium* dung. Moreover, what were previously thought to be stone artifacts made of tuff from the roof of the cave have no real traces of human workmanship. The cut marks present on the bones of the extinct fauna have also been questioned. Holocene human occupation of the valley and adjacent lands had hunting and gathering as its subsistence base, although small mammals (e.g., *Cavia*) outnumbered cervids and camelids, which had a low frequency. Lanceolate projectile points predominate, with some stemmed and ovoid types. Claims about plant domestication (quinoa, squash and gourd) since 6400 cal BCE have been made, but not confirmed. The increasing numbers of guinea pig (*Cavia* sp) bones in the Puente phase (around 3400–2900 cal BCE) have been interpreted as penning of tamed animals, but the high number of bones is the only evidence behind this explanation.

Various species of plants, including cultivars, were also recovered from some of these highland sites. In Guitarrero Cave, lima beans (*Phaseolus lunatus*) were retrieved and initially dated around 6600 cal BCE, a date coming from Complex IIe, but the AMS dating of one bean seed selected from this context yielded a date between 600 and 400 cal BCE. This discrepancy calls into question the supposed early dates for other cultivars

like maize, squash, gourds and lúcuma. The same can be said for early plant remains from the Ayacucho area, such as cotton, maize and bean from the Chihua phase (4300 to 2800 BCE). Quinoa (*Chenopodium*) remains from Panaulauca, thought to be of a domesticated variety (thin-coated seeds), were recorded from levels dated to 3000 cal BCE. Again, other remains of thin-testa seed from the southern Peruvian site of Quelcatani Cave yielded an AMS radiocarbon date of c. 500 cal BCE. The earliest dates for *Chenopodium* (probably *C. quinoa*) from the Lake Titicaca Basin are from the Chiripa Site in levels dated to 1500 cal BCE. Direct AMS dating of cultivar remains needs to be done before any claim about an early process of domestication can be sustained.

## The Southern Andes

The highlands of the southern Andes are a high elevation semidesert extending from southern Peru to northwestern Argentina and northern Chile, passing through the Bolivian altiplano. Two ecological zones may be defined: the Dry Puna and the Salt Puna. The Dry Puna is in the north and west of the region. South of 20° latitude is the driest Salt Puna, with salt lakes that dominate the geography and cover portions of northeastern Chile and northwestern Argentina. Both the Dry and Salt Puna are occupied by plant communities defined by altitude, varying from scrubland to grasslands in the higher elevations above 4200/4300 m. Wetlands, which attract both animal and human populations, are located in the headwaters of gorges and ravines, and they are highly variable in size.

The dispersal of human population into the region took place at the boundary of the Pleistocene and Holocene. There is no confirmed interaction between early hunter-gatherers and extinct mammals. *Hippidion* sp, *Megatheriinae* and ground sloth dung have been found at Peña de las Trampas (southern portion of the Argentine Puna) and dated to around 13,167 cal BCE. A vertebra of a possible extinct *Equus* has been found in the site of Tuina 5 in northern Chile in a stratum with lithic artifacts, but their taxonomic status is uncertain because modern horse cannot be ruled out.

The early dispersal of hunter-gatherers has been detected in sites below 4000 m, in both Chile and Argentina, and dated to between 10,450 and 10,240 cal BCE. These are small occupations in caves and rock shelters which have evidence of the manufacturing of lithic artifacts and consumption of modern fauna such as rodents (*Lagidium* sp) and wild camelids (*Lama guanicoe* and *Vicugna vicugna*).

When the moister conditions of the Early Holocene prevailed, with widespread productive areas distributed along the different altitudinal ranges, hunter-gatherers spread into the different habitats of the region. By 8900 cal BCE all altitudinal ranges seem to be occupied. The evidence is no longer available only from caves or rock shelters, but also from open-air sites.

One of these, Asana, is located in the Osmore Basin of southern Peru. The settlement was established on the margins of the Asana River on a low terrace. The earliest occupations

have been defined as a logistical camp in which two hearths were associated with some lithic tools and meagre faunal remains. The next occupations show significant changes in site structure, and the densities of artifacts and faunal remains

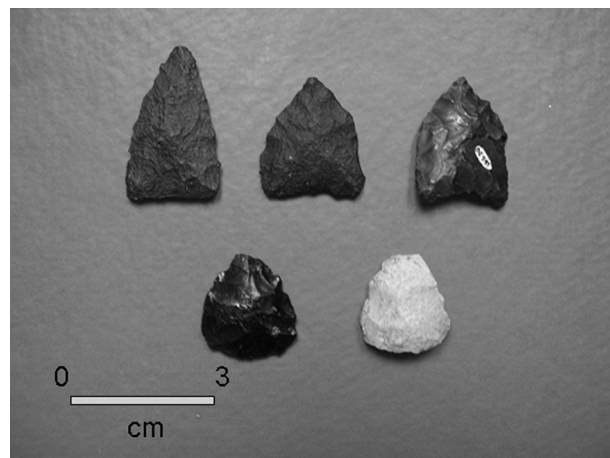


FIGURE 2.16.2. Early triangular projectile points of the southern Puna. (Photo by Hugo Jacobaccio.)

increase substantially. After 7800 cal BCE hunters of taruca deer (*Hippocamelus antisensis*) and of wild camelids repeatedly occupied the site. Their projectile points are mainly lanceolate, with a few stemmed; they are similar to those of the Arica highlands (Las Cuevas, Patapatane, Hakenasa). This spot seems to have been quite stable through the Holocene, because the site had sporadic occupations during the Mid- and Late Holocene.

Other sites from the Early Holocene show close cultural relationships, as seen in the shared features in several aspects of their material culture. The projectile points are invariably triangular (Fig. 2.16.2), and the other lithic tools are unifacial and marginally retouched. Only in the southern part of the Salt Puna (Quebrada Seca 3) have some broad stemmed projectile points been recorded. The sites have small occupational surfaces ranging between 20 and 37 m<sup>2</sup>, and in two sites (Inca Cueva 4 and Tuina 1) circular dug-out places were prepared for habitation. Various proportions of *Lagidium* and camelids, with some taruca deer bones, are the main species present in these contexts. In addition several wild plants were employed for technical purposes or as food, including tubers (*Hypsocharis* sp), cacti (*Opuntia* sp; *Tephrocactus* sp), wild peppers (*Capsicum* sp), wild beans (*Phaseolus* sp) and seeds (*Lupinus* sp). Claims for the presence of early maize have been made on the basis of the evidence from the site of Huachichocana III, but a direct AMS

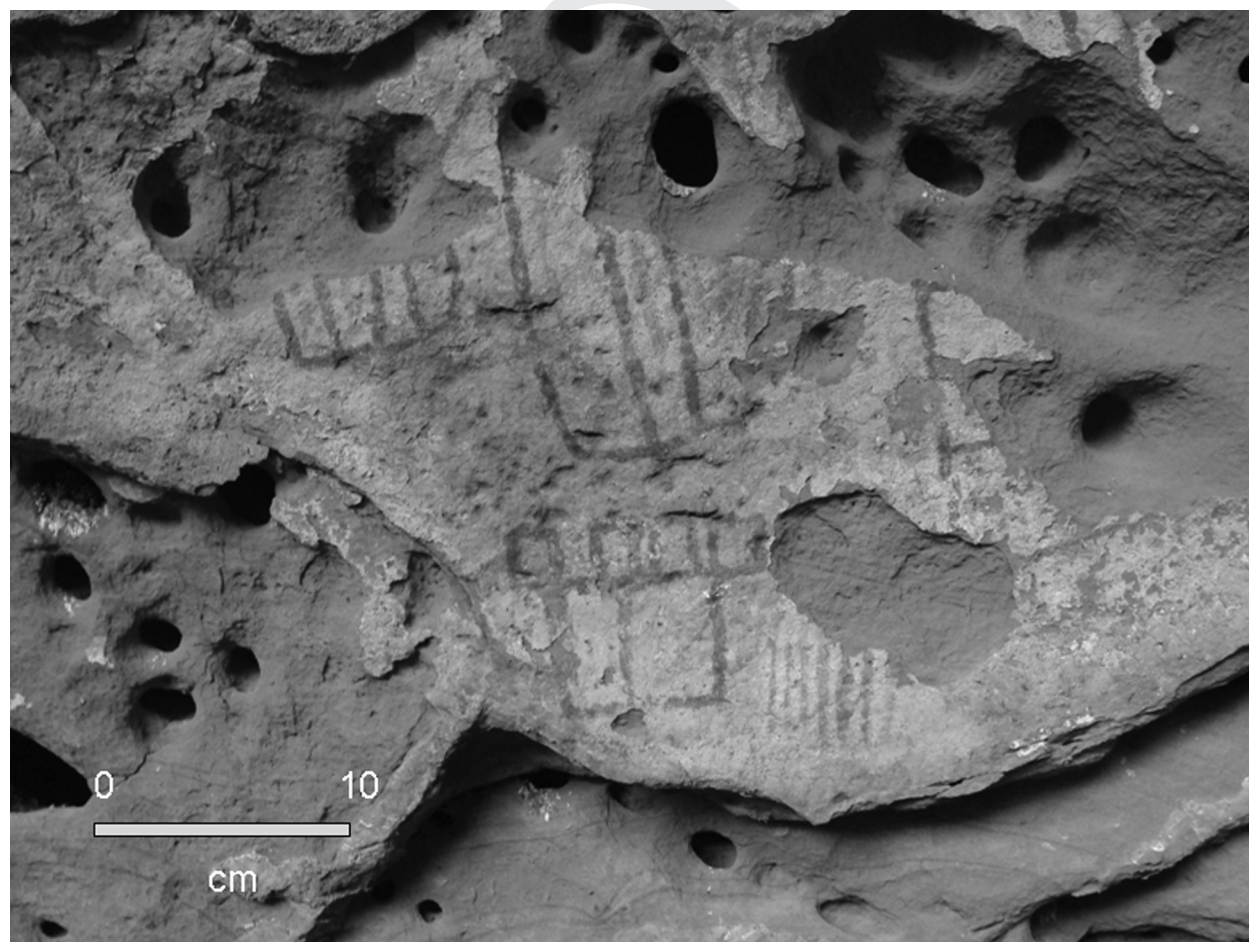


FIGURE 2.16.3. Geometric designs of rock art from Inca Cueva 4. (Photo by Hugo Jacobaccio.)

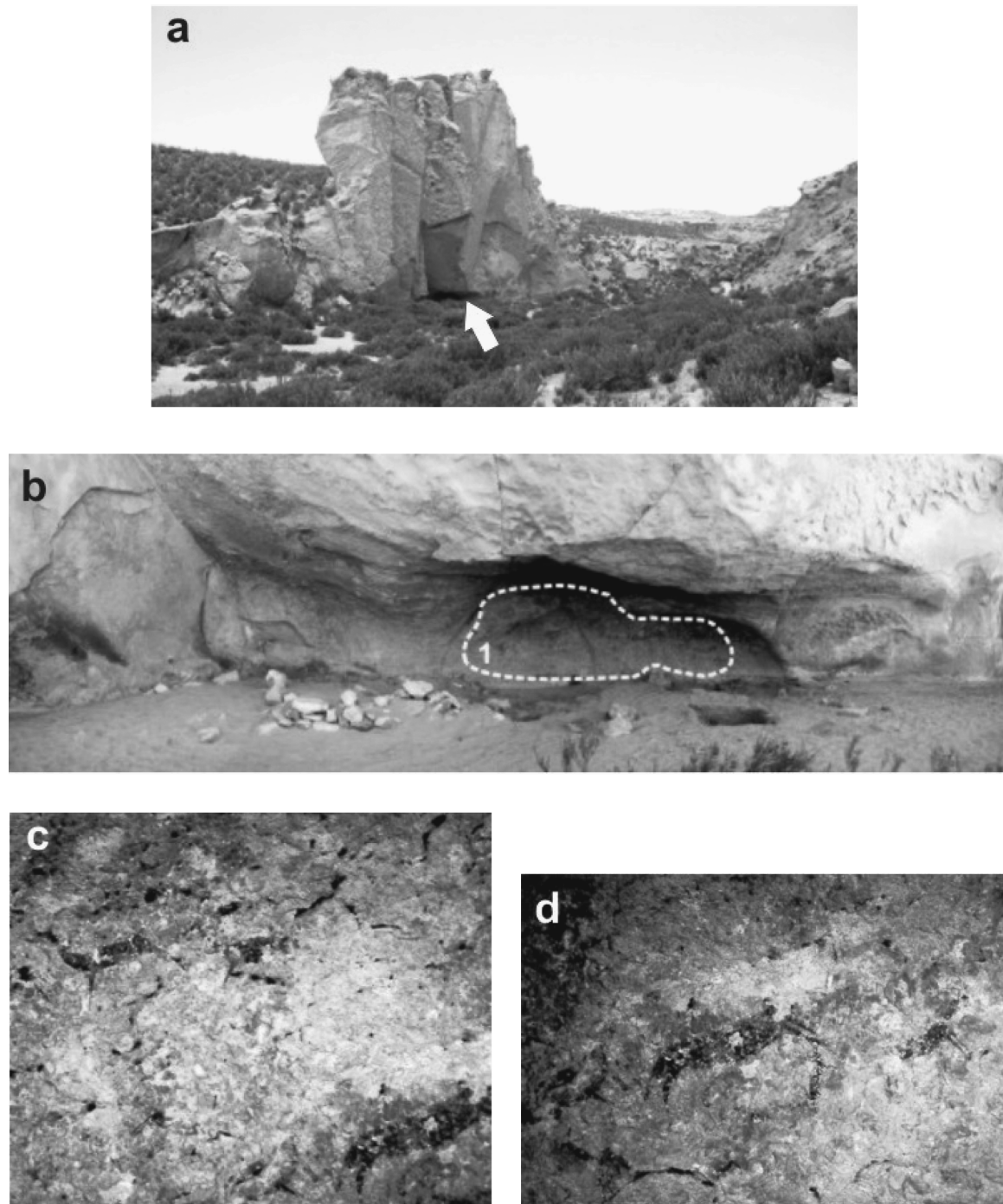


FIGURE 2.16.4. Southern Puna Early Holocene site and rock art: (a) Hornillos 2 rock shelter location at 4020 m; (b) Area with rock paintings; (c) naturalistic camelids with two legs; (d) naturalistic camelids with four legs. (Photos by Hugo Jacobaccio.)

date on the corn yielded a result of about 500 CE. Two sites have rock art that has been indirectly dated to the Early Holocene: Inca Cueva 4 has geometric designs painted in red and black (Fig. 2.16.3), while Hornillos 2, located in the western part of the Argentine Dry Puna, displays wild camelids, humans and birds painted in red and black (Fig. 2.16.4).

A new arrangement in the pattern of occupation by hunter-gatherers becomes evident with the onset of Mid-Holocene hyper-arid conditions in 7300 cal BCE through the whole region.

These conditions were more intense and homogeneous in the Salar de Atacama Desert, constraining stable human occupations in that area that was abandoned until 4800 cal BCE. In the Dry Puna of Argentina, there is evidence of the existence of more stable and productive habitats above 4000 m, as well as in some wetlands with broad catchment areas below this altitude, allowing more continuous human occupation of the eastern slope of the Andes. The same conditions seem to have prevailed in the headwaters of the Loa River in Chile, in the



highlands of Arica and in the Antofagasta de la Sierra Basin in the Salt Puna of Argentina.

The site of Hornillos 2 has intense occupations at this time, suggesting long-term stays (Fig. 2.16.4). The variety of projectile points increased in this period, including lanceolate (long and short), pentagonal stemmed ("San Martín") points and triangular types that have different technological attributes from those of the earlier periods. Camelid remains increase in importance, and a reduction of other animal resources has been noted. Different hunting strategies were employed, including collective hunting techniques, as seen in the stone structures specially constructed for this purpose.

Regionally speaking, during the Mid-Holocene, the archaeological record shows a general logistical settlement pattern, which implies a reduction in residential mobility and an increase in the relative occupation of reduced areas. This process was accompanied by an intensification process of camelid utilisation that could have influenced the first steps towards their domestication.

After 4200 cal BCE, with the climatic amelioration of the Late Holocene, substantial sites with stone-made habitation structures appear in the region, and have been interpreted as evidence of reduced residential mobility or even sedentism. Some of them, like Tulán 52 and Puripica 1, have between twenty and forty circular structures interspersed with courtyards, and cover a surface area of about 400 to 540 m<sup>2</sup>. The habitations gave evidence of domestic activities and storage pits. Outside the dwellings mortars and pestles were found in large quantities. At Puripica 1, inside one habitation structure a piece of sandstone with depictions of domestic camelids was found.

All the sites of the region show an intensive use of camelids, but this rise in intensity was dependent not only on increasing pressures by hunters. Several kinds of evidence showed that a new relationship between people and camelids was developing by 3350 cal BCE. These include an increase in animal size, as seen in osteometric and allometric analyses and bone pathologies. Later, evidence for the captivity of animals (Asana, Inca Cueva 7, several sites in Tulán Gorge) is recorded after 2590 cal BCE. A relationship of protection could have been developed, in which local groups of hunter-gatherers with reduced residential mobility managed segments of the camelid population, affording them protection from natural predators and access to forage and water. To sum up, the archaeological record between 4200 and 1720 cal BCE shows several sizes in camelid populations: one large, with great size variation (the protected one, most probably large guanacos that were the ancestors of the llamas – *Lama glama*), one small (vicuñas that were heavily hunted during this period) and finally one that matches the size of modern domestic llamas.

In addition, the use of cultivars has been recorded from several sites: bottle gourds from Inca Cueva 7 and Cueva Salamanca (2600 and 5200 cal BCE respectively). Phytoliths of quinoa (*Chenopodium quinoa*), maize (*Zea mays*) and starch from tubers (*Oxalis tuberosa*, *Solanum tuberosum*, *Canna edulis*) were obtained from milling stones pertaining to the context of the southern Puna and dated to between 3500 and 1650 cal BCE.

The management of cultivars and domestic camelids involved a growing process of social complexity that is also seen in the development of new burial practices, the expansion of exchange networks, the appearance of prestige technologies and the manifestation of new styles of rock art in which the depiction of domestic camelids is outstanding.

## The Pampas

The Pampas are an extensive plain between the Atlantic Ocean in the east and the piedmont of the Andean Chain in the west. This plain comprises an herbaceous steppe with some forest canopy on the margins of the big rivers that flow into the Río de la Plata. The Ventania and Tandilia Ranges in the southwest part of the region are the only noteworthy interruptions to this plain.

An early dispersal of hunter-gatherer populations has been detected in several sites in the Late Pleistocene and Early Holocene when the climate was cool and dry. In Cerro La China there were bifacial artifacts, Fish-tail projectile points (Fig. 2.16.1) and small hearths that yielded several dates with a pooled mean of 10,700 cal BCE. In a nearby rock shelter, together with lithic artifacts, bones of guanaco, pampas deer (*Ozotoceros bezoarticus*), rodents and a *Eutatus* scute were found. A postdepositional cause for the association between lithics and extinct fauna cannot be ruled out.

Large base camps also exist, such as Arroyo Seco 2; it is located on a low ridge between a creek and a lagoon, and had several occupations over a long time period. The early occupational levels include a lithic industry mostly composed of unifacial, marginally retouched quartzite artifacts associated with bone remains of modern (*Lama guanicoe*, *Ozotoceros bezoarticus*, *Rhea americana*) and extinct megamammals (*Megatherium americanum*, *Equus neogeus*, *Hippidion* sp., *Toxodon platensis*, *Glossotherium robustus*, and *Paleolama wedelli*). Researchers at the site consider that the *Megatherium*, *Hippidion* and *Equus* remains provide evidence for human activity, such as consumption and marrow processing. The presence of the other taxa is not yet well understood. A pooled mean date from these levels gives a chronology of 12,053 cal BCE, which is one of the earliest pieces of evidence for human settlement in the "Southern Cone" (i.e., Paraguay, Uruguay, Argentina and Chile). The utilisation of different resources shows that the hunter-gatherers who lived at the site exploited a wide variety of ecological zones, such as the plain steppe, the Atlantic coast, and the mountain ranges of Tandilia and Ventania. The similarities in the settlement pattern, artifact types (especially Fish-tail projectile points) and the use of lithic raw materials, suggest a close cultural relationship between the people of the southeastern pampas – for example, those living in the steppe (Arroyo Seco 2) – and those living in southeastern Tandilia (Cueva Tixi).

About 5000 cal BCE warmer and humid conditions were established, the wettest in the eastern part of the Pampas, but with a dry interval between 4400 and 1300 cal BCE. This date saw the onset of modern conditions, which have lower temperatures and are more arid than the preceding period. During



the Mid-Holocene human inhumations appear for the first time in the region, revealing complex mortuary practices and long-term utilisation of the same location for the disposal of human bodies. The Atlantic coast and the arid western pampa were colonised at this time. About 5000 cal BCE the consumption of sea lions (*Arctocephalus* and *Otaria*) was first recorded, although the coastal environment was not permanently occupied or intensively exploited. The coast was utilised by inland people as part of their mobility ranges.

Between 5500 and 1300 cal BCE there was an expansion of the hunting and gathering way of life. The guanaco, pampas deer and American ostrich were the main resources used. Collective hunting techniques appeared for the first time (Paso Otero 1 and 3), as a consequence perhaps of changes in the demographic patterns of hunter-gatherer groups. Residential camps were invariably located on lagoon and river margins, and lithic technology is highly homogeneous throughout the area.

During the Late Holocene, from 1300 cal BCE onwards, all the different environments of the region were colonised, including river margins where fishing and small mammals were the primary resources. Mobility ranges were greatly expanded, and interaction networks increased in complexity. The introduction of ceramics and the bow and arrow were important technological changes. The circulation of decorated pottery (mostly with geometric incised motifs) in the northeastern part of the region, from the Delta of the Río de la Plata to the Río Salado Basin, was part of the exchange system involving several local populations. Evidence of objects originating in other regions, such as copper, semiprecious stones, obsidian and Chilean ceramics, has been found. Ceramics from the Vergel-Valdivia complex are also present in western dry pampas contexts, at the site of Tapera Moreira dated to between 1250 and 1395 CE. A few centuries before European colonisation (16th century) Amazonian groups arrived in the Río de la Plata Delta, introducing horticulture and new ceramic types. Moreover, people originating in northern Patagonia occupied the southeast pampas, causing a replacement of population as noted in human skeletal remains.

The Uruguay plains have many biogeographical similarities to the pampas. Several Fish-tail projectile points have been found on surface sites (Fig. 2.16.1), but remains of bifacial stemmed projectile points, blade tools and end- and side-scrapers were dated to 8300 cal BCE at Pay Paso 1. The context includes several bones, including one *Glyptodon* scute, although the consumption of megafauna has not been confirmed. The change to the warm and humid conditions of the Mid-Holocene caused a concentrated resource distribution around wetlands located in floodplains and river margins. The human response to these environmental conditions was an increased sedentism. As of 2800 cal BCE dome-shaped residential mounds appear in eastern Uruguay. At Los Ajos, a circular village was functionally divided into domestic and public areas. In addition people began to practice a mixed economy of hunting and horticulture, by incorporating maize and squash (*Cucurbita* spp). By 750 cal BCE ceramics of the Vieira Tradition, originating in the littoral of southern Brazil, had been introduced.

## Patagonia

Most of Patagonia consists of a continuous semi-arid steppe dissected by a few rivers flowing to the Atlantic Ocean. The steppe is heterogeneous, with mixed proportions of shrubs and grasses. Along the Andean ridge there are belts of forest dominated by *Araucaria araucana* in the north and *Nothofagus* spp in the southern part of the region. South of 46° latitude there are masses of continental ice. Tierra del Fuego has similar biogeographical characteristics.

Since the investigations by J. Bird between 1938 and 1943 in southern Patagonia, the idea of an early peopling of the region has been widely supported. The “First Period”, described after the excavation of Fell’s Cave, included the now famous Fish-tail projectile points (Fig. 2.16.1), discoidal stones and bone tools associated with extinct horse. Years later Bird was able to radiocarbon date these occupational levels to between 11,300 and 9300 cal BCE. Since then the quest for the early peopling of Patagonia has been, and still is, the main agenda of archaeological research.

The history of the peopling of Patagonia is very complex, because of the critical role played by climatic change at the end of the Pleistocene, and the changing availability of places due to fluctuating climatic conditions which influenced the accessibility of suitable areas for human habitation. For this reason the territory was unevenly and slowly colonised by hunter-gatherers between 11,300 and 9200 cal BCE. At this time, deglaciation was complete but the early human dispersal coincided with a cold reversal event which explains why only few habitats were available for human occupation. These habitats were Ultima Esperanza in the southern portion of the continent, the north of Tierra del Fuego before the opening of the Magellan Strait and the Central Plateau of southern Patagonia. It should be borne in mind that the Pleistocene coast is today submerged after the sea level rise in the Early Holocene.

In Ultima Esperanza, at Cueva del Medio, butchered bones of horse, ground sloth (*Mylodon*), *Lama* cf. *owenii* and guanaco – which is the most abundant vertebrate at the site – are associated with hearths and abundant lithics. Fish-tail projectile points are included. These occupations have a mean pooled date of 10,070 cal BCE. A few kilometres away similar contexts were found at Cueva del Lago Sofia 1 (11,280 cal BCE). The previously mentioned excavations in Fell’s Cave demonstrated the existence of an association between megamammals (particularly horse and ground sloth) and humans, but recent reanalysis of the megamammal bones gave evidence of other contributing agents in the formation of the bone assemblage, since several horse bones display carnivore punctures.

The Tres Arroyos Rock Shelter in the inland of Tierra del Fuego showed a clear association among hearths, fragments of projectile points perhaps of a Fish-tail type and butchered remains of both Pleistocene and modern mammals. Several radiocarbon dates indicate an average pooled age of 10,633 cal BCE for the earliest occupations. Human subsistence was focused on terrestrial resources in northern Tierra del Fuego before the formation of the Magellan Strait, which opened around 7500 cal BCE.

Piedra Museo, in the Central Plateau, has several occupations between 11,000 and 10,300 cal BCE. During these occupations the locality was used for specific activities related to hunting, slaughtering and primary processing of prey. Butchered remains of extinct horse, *Lama gracilis* (an extinct camelid), ostrich (*Rhea Americana*) and guanaco – which are the most abundant – were found. The tool assemblage comprises lithic artifacts such as side- and end-scrapers, marginal retouched flakes and a fragment of a Fish-tail projectile point. Other nearby sites with similar chronology and cultural context are Cueva Casa del Minero (La María Locality) – which also has remains of an extinct camelid (*Hemiauchenia paradoxa*) – Los Toldos and Cerro Tres Tetras.

In the Early Holocene many more Patagonian habitats were colonised, like the Andean basins of Chile and Argentina, and northern Patagonia. In addition, the Central Plateau and Ultima Esperanza continued to be occupied, but with certain temporal discontinuities. At the same time some localities started to be used repeatedly. Long-term sequences are characteristic of caves, such as the best known Cueva de las Manos, which features impressive rock art (Fig. 2.16.5), and several sites from the Andean lakes, like Cerro Casa de Piedra. This site has occupations that seem to be the first dispersal into the forest from the east. Guanaco is the dominant animal resource and huemul deer (*Hippocamelus bisulcus*) is relatively abundant in the earliest levels. Projectile points are unstemmed and triangular, characteristic of the so-called Toldense Industry, which is also present at Cueva de las Manos, and in sites of the Central Plateau. In Mid-Holocene times further diversity is noted in the lithic assemblages, as more blades and laminar tools were incorporated. These tools characterise the period between 6400 and 5500 cal BCE, and have been explained as a change in technological strategies due to the diminution of mobility ranges that reduced the possibility for accessing the available areas of good lithic raw material.

Ultimately, during the Late Holocene, the variety and size of sites are remarkable, from very large sites with intensive and extensive occupations to open-air camps or accumulations that may have resulted from the repetitive use of caves



FIGURE 2.16.5. Early Holocene naturalistic guanacos from Cueva de las Manos. (Photo by Hugo Jacobaccio.)

and rock shelters. In terms of human colonisation most of the Patagonian ecosystems were actively incorporated at this time.

The rock shelters and caves were important places for persisting occupation, as shown by the rock art, both paintings and engravings. There are 489 recorded sites with rock art in the whole of Patagonia, except for Tierra del Fuego. The earliest evidence of rock art is from the Early Holocene between 10,000 and 7700 cal BCE, both in northern (Cueva Epullán Grande) and southern Patagonia (Cueva de las Manos [Fig. 2.16.5], Cueva Fell and Los Toldos 3). This art seems to represent the existence of different visual messages locally developed by means of distinct designs – geometric, scenes, hand stencils – but perhaps with a common ancestor if we take into account the generally accepted mechanism of hunter-gatherer group's dispersing through fission. The production of rock art continued during the Holocene and seems to show an increase in the past 3000 years.

There are also indications of the utilisation of the Atlantic coast, starting between 4500 and 4200 cal BCE; the exploitation of molluscs, fish, crustaceans and other resources has been attested. However, the intensity of occupation is highly variable along the coast, and apparently depended not only on the availability of marine resources, but also on the productivity of the adjacent inlands, and the suitability of the routes towards the coastal zone. The coast of northern Patagonia has major densities of occupation, although the human consumption of marine foods is extremely variable between zones. Stable isotopic evidence from human bones shows only a limited consumption of pinnipeds in Península Valdés and Monte León; in other places a terrestrial diet was dominant. Furthermore, there was not a specialized technology for obtaining pinnipeds or other marine resources. Moreover, there are no differences in the patterns of human inhumation between the coast and the adjacent hinterland. In the Late Holocene a great interaction is acknowledged; the presence of obsidian, semiprecious stones and textiles on the coast and of marine cobbles and bivalves in the interior shows the existence of interaction networks. Besides, in historical times the consumption of protein from land mammals is noteworthy.

There was a generalised use of the coast in northern Tierra del Fuego. Isotopic analyses performed on human skeletal remains are not conclusive, because some individuals reveal a terrestrial diet, while others show some consumption of marine resources, perhaps pinnipeds. The dispersal of hunter-gatherers to the Beagle Channel occurred late in the Mid-Holocene, around 5800 cal BCE. Around 5400 to 3500 cal BCE the hunting of sea mammals became dominant, and claims for a long-term adaptation to the maritime littoral have been made. The diversity of bone harpoons found in many shell middens is evidence of a certain specialisation on pinniped hunting. However, as of 3600 cal BCE evidence of a broader use of resources is found, for example in the increase of stone projectile points of lanceolate morphology. An increase in the utilisation of mainland resources is also evident: there are more remains of guanacos and birds. In the past thousand years intensification in the use of fish,

including pelagic species, is observed. The material culture also changed: bone harpoons were simpler, and the projectile points were smaller and stemmed, with long shoulders. In this sense, the historical Yamana used six ecological zones of the Beagle Channel and inland Tierra del Fuego: beaches, the intertidal zone, the zone between the low tide and a depth of 5 m, the channels, the islands and the inland zones near the beaches, where they moved around mainly by canoes.

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