

High altitude land use in the Huamachuco area

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Before the Spaniards entered this kingdom, there were in the lands of this province of Huamachuco many flocks of llamas, and in the highlands and unsettled regions a still greater number of wild flocks, called guanacos and vicunas, which resemble the domesticated llama (Cieza de Leon 1959:102).

This is a report of a survey carried out in the summer of 1982 under the direction of the Huamachuco Archaeological Project. The project is carrying out a long term investigation into the pre-history of the Condebamba basin in the north sierra of Peru.

Within the research area, little is known about high altitude land use and prehistoric site location in relation to ecological zone. Our objective was to gather information on prehistoric agricultural and pastoral adaptations in the area. Modern settlement and subsistence strategies were also investigated as an initial step in studying prehistoric patterns. The survey covered portions of upper quichua (3200-3500 m asl), lower jalca (3500-3700 m asl), and jalca fuerte (3700-4200 m asl). The particular areas were chosen as optimal for our research purposes within the limitations imposed by logistical and transportation factors.

Areas surveyed

A continuous transect was done from the upper quichua through the jalca fuerte in the Rio Shiracmaca, Rio Grande Huamachuco and Rio Yamobamba watersheds. Ground distance covered was approximately 21 km, and the transect in the higher areas followed for the most part a prehispanic road.

The upper quichua/lower jalca area surveyed was roughly 4 sq km in the western portion of the Shiracmaca valley, which lies

directly south of the modern town of Huamachuco (Figure 1, Area A). The valley is relatively wide, and ascending from the valley floor at 3200 m asl, the slope rises gently to the ridge base, which at 3500 m asl marks the upper limit of quichua land. Above, the ridge rises steeply, and both the ridge top and eastern slope comprise the portion of lower jalca land surveyed.

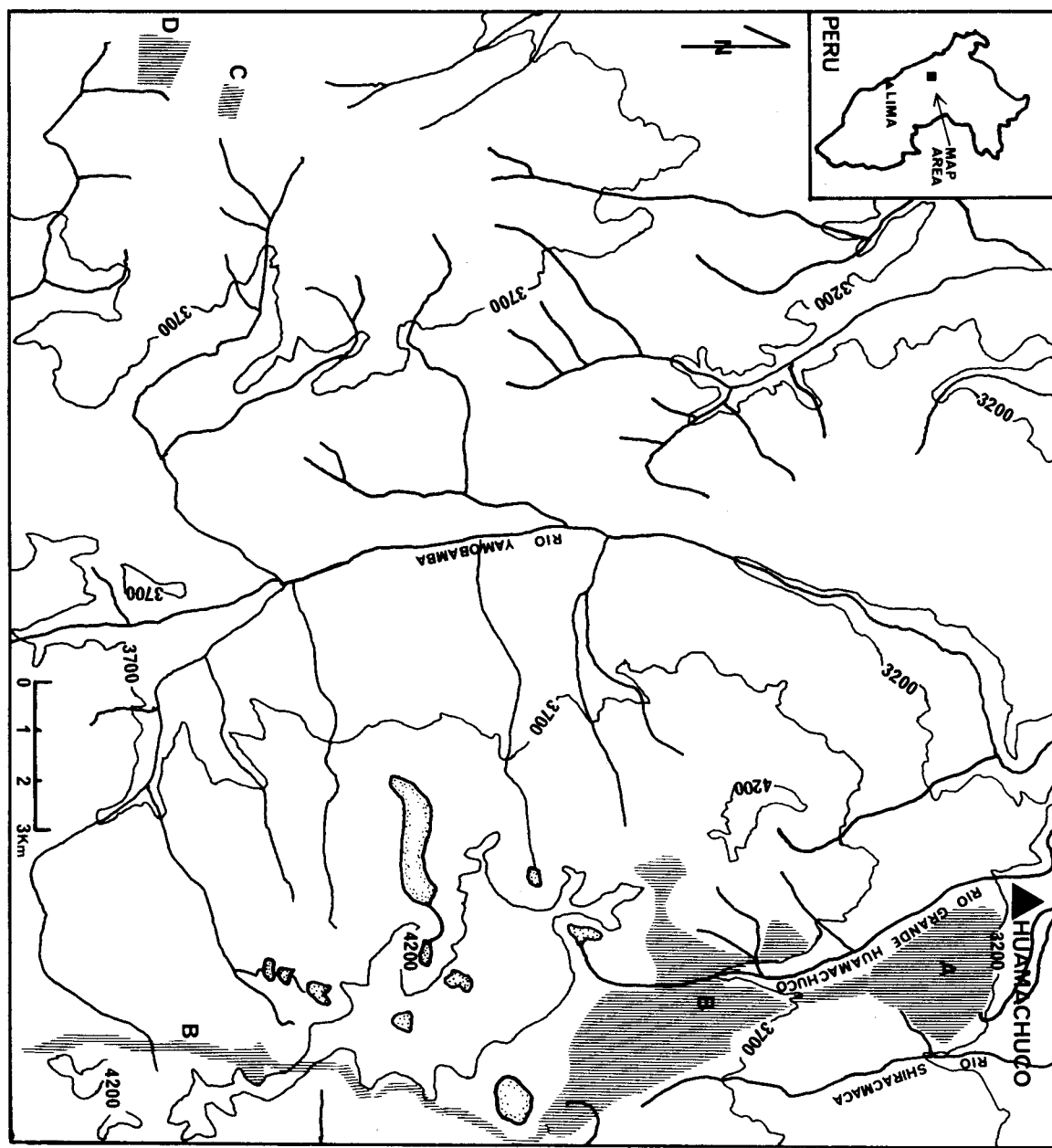
Several spring fed streams flow down the slope of the ridge and valley, and today canals are run off these streams to irrigate the fields. A modern canal fed from Lake Cushuru, a distance of 16 km south, traverses the slope of the ridge and is used to irrigate the upper portion of the valley. The valley slope is heavily farmed today with the exception of areas of introduced eucalyptus. The ridge top is not farmed and vegetation consists mostly of bunch grass, shrubs and herbaceous plants.

Beyond the ridge, between 3700-4000 m asl in the jalca fuerte, the transect area traverses a rolling plateau bounded to the east and west by river valleys (Figure 1, Area B). Water is common on the valley slopes and floors but not on the plateau itself. Vegetation is mostly grass, and both long bunch grass and a short mat grass are present in this area. The bunch grass is generally found in wetter regions often associated with mosses. Trees grow only in the most sheltered places.

Above 4000 m asl the transect passes through an area of mountain slope terrain with glacial features (moraines, erratics, and kettle lakes). Water is also common in this area, and both types of grasses are present. In the jalca fuerte a total of 9.4 sq km in area were surveyed, and all but 2.5 sq km were intensively covered.

In addition to the transect survey, two small areas of jalca fuerte totalling 1.4 sq km were examined in the Rio Yamobamba drainage (Figure 1, Areas C and D). Here, relief is high plateau cut by ravines and steep ridges. Vegetation is grassland and water is common in the lower areas.

FIGURE 1 SURVEYED AREAS



KEY

- ▲ MODERN TOWN
- ▨ SURVEYED AREAS

Modern land use

In the upper quichua/lower jalca the modern agricultural regime was studied for information on factors which condition land use in the present, and in the jalca fuerte information was sought on pastoral land use and herding practices. Modern land use data was gathered from interviews with farmers and herders, teniente gobernadores, Ministry of Agriculture officials, workers from Organismo para el Desarrollo de La Libertad (ORDLIB), and from published ORDLIB reports and finally personal observations. In both agricultural and pastoral areas today, all land is privately owned. The practice of communal land tenure is not known in this region.

In the Shiracmaca valley area, there is some farming on the steep ridge slope, mostly potatoes and barley, but the major agricultural activity takes place in the quichua, i.e. from the ridge base to the valley bottom. Here, every piece of available land is farmed. The farmers recognize two types of soil; tierra negra, an organically rich soil which occurs over 3400 m asl, and tierra pardas, a poorer quality clayey soil, much overused, which occurs below 3400 m asl.

Of the total cultivated land in the survey area, 69.5% is devoted to potatoes, 10% to wheat, 7% to barley, and 6.5% to maize. The remaining 7% is planted with lupin, oca, olluco, linseed, onions, culantro (green parsley), oats, rye grass and quinoa. In the higher portion of the valley slope which is serviced by the Cushuru canal, two potato crops a year are grown. Papa riego, or potato crop grown with irrigation, is planted in May and June and harvested in November and December. Papa seco, or potato crop grown without irrigation, is planted in September and October when the rains come, and harvested in February, March and April. In the lower valley slope area, where the waters from the canal do not reach and irrigation is not possible, this is the only potato crop grown.

Wheat is generally planted in the same fields as, and following, a potato crop from November to January and harvested in July, August, and September. Maize is grown only in the lower area, below 3400 m asl, and is also often planted following a potato crop. Planting takes place from September to November and the crop is harvested in April

and May. Finally, barley is planted in December, January and February and harvested in June, July and August. The crop cycle for the most part is two years of potato, one year of wheat or maize where possible, and four years fallow. Fertilizer is used only on potato and maize.

Pastoralism is practiced throughout the valley and ridge area, and is an important component of the local system. Fields in fallow are used for pasture. In some small areas oats are cultivated; the grain is used for fodder and the stubble for the pasturing of sheep and goats. Pigs, chickens and guinea pigs are raised for food, and cattle are valued as plough animals.

The majority of agricultural products are consumed by the producers, however where there is a surplus, it is sold in the market in order to buy fertilizer. Within the valley there is an exchange of products; people higher up will exchange their potatoes for maize grown only in the lower area. Systems of labour exchange exist; some men, usually those with little land, will exchange seed and labour for a share of the harvest, and minkas, or collective work parties are common at planting and harvesting time.

The area is more populated in the lower valley slope and houses are located primarily along the modern roads leading to and from Huamachuco. There are no houses on the ridge top and the few at the ridge base are located approximately .25 km apart. The houses are not associated with any one type of feature and when not located along roads they are situated in prime agricultural land. The total number of houses in the survey area is approximately 238 and the population estimated to be 1055. Differentiating by ecological zone, the population density in the lower jalca is 1 person per 2.8 ha, and in the upper quichua is 1 person per 0.3 ha.

Very few families have land in both higher and lower areas and most farm lands adjacent to their houses. The average landholding is .5 - 1 ha. While in lower areas most families both farm and herd sheep and goats, higher up around the ridge where the jalca lands begin, the greater quantity of pasture land is used by those who just herd.

This pattern continues in the jalca fuerte where the pre-dominant subsistence activity is herding in all the areas surveyed. The most important species present is sheep, followed by pigs and cattle. Permanent corrals are found mostly associated with herders' permanent residences. These corrals are generally built of piled fieldstones, but occasionally are of adobe on a fieldstone base. In one instance, a portable corral of branches was observed in a potato field in the lower area of the jalca fuerte, but this type is not common in the area. It should be noted that a few permanent corrals are located in areas away from any herder's habitation.

Herders from each area of the survey were interviewed to determine the kind and number of animals they owned; how much land they owned; where they grazed their animals; and how far they would move their animals in one day. Most herders owned between 60-120 sheep, approximately 12 pigs, and approximately 5 cows. One family also owned 70 goats. Property sizes varied between 7-300 ha, with most ranging between 30-80 ha. The population density is low with 5 families of 27 people inhabiting an area of 563 ha yielding a density of approximately 1 person for every 21 ha. Herds are only grazed on the owner's private property. The normal herding pattern is to bring herds out from a corral near the herder's residence in the morning and move them to a desired area of natural pasture for the day, after which they would be returned to the main corral for the night. Free ranging of herds over communal land is not a pattern that occurs in this area. Overnight camping with animals in pasture areas also does not seem common, although some isolated thatch shelters were noted in high pasture areas unassociated with corrals. This daily herding pattern was reported to be the traditional pattern by the persons interviewed. Before the agrarian reform haciendas owned much of the jalca fuerte. Some of the large fieldstone corrals not associated with habitation sites may have been built for their use although the main pastoral adaptation in the memories of the people of these areas was the same as today.

There is some agriculture in the jalca fuerte as well. Potatoes

are grown in sheltered areas of river valleys below 3950 m asl. The owners of the farms kept some herd animals, but fewer than those of the pastoralists and on smaller properties.

The modern settlement pattern in the quichua and jalca areas has several implications. The main variable determining settlement location in all areas studied appears to be access to transportation routes to and from the major center, Huamachuco. In the Shiracmaca valley, this means most houses are located along roads in the lower valley area. In spite of the fact that at higher elevations within the valley the soil has not been overused, access to irrigation water is better, and two potato crops are possible each year, the population in that area is sparse. Recently, there has been some recolonization of the upper areas, probably due to land pressures lower down. In the jalca fuerte, while access to modern roads is the most important variable determining the location of pastoral sites, proximity to water and minimization of altitude were also chosen for. Farm sites were located where shelter was available, while water and transportation access were also important.

Agricultural and pastoral adaptations today differ with regard to population density. Herding sites are small with few buildings and people. Agricultural areas in general have greater populations, numbers of sites, and greater site densities than the exclusively pastoral areas.

Archaeological results

The prehistoric survey was conducted as follows in Area A. The area was stratified into two sub areas: the ridge area which at 3500-3650 m asl is located in the lower jalca; and the valley slope spanning 3200-3500 m asl located in the upper quichua. An intensive survey was carried out on the ridge, where 9 sites were located, and the valley slope was surveyed using a 10% random sample which located 6 sites (Figure 2). Of the total, all of the ridge sites and two of the valley slope sites had architecture. The remaining 4 sites were sherd scatters. Surface collections of ceramics and

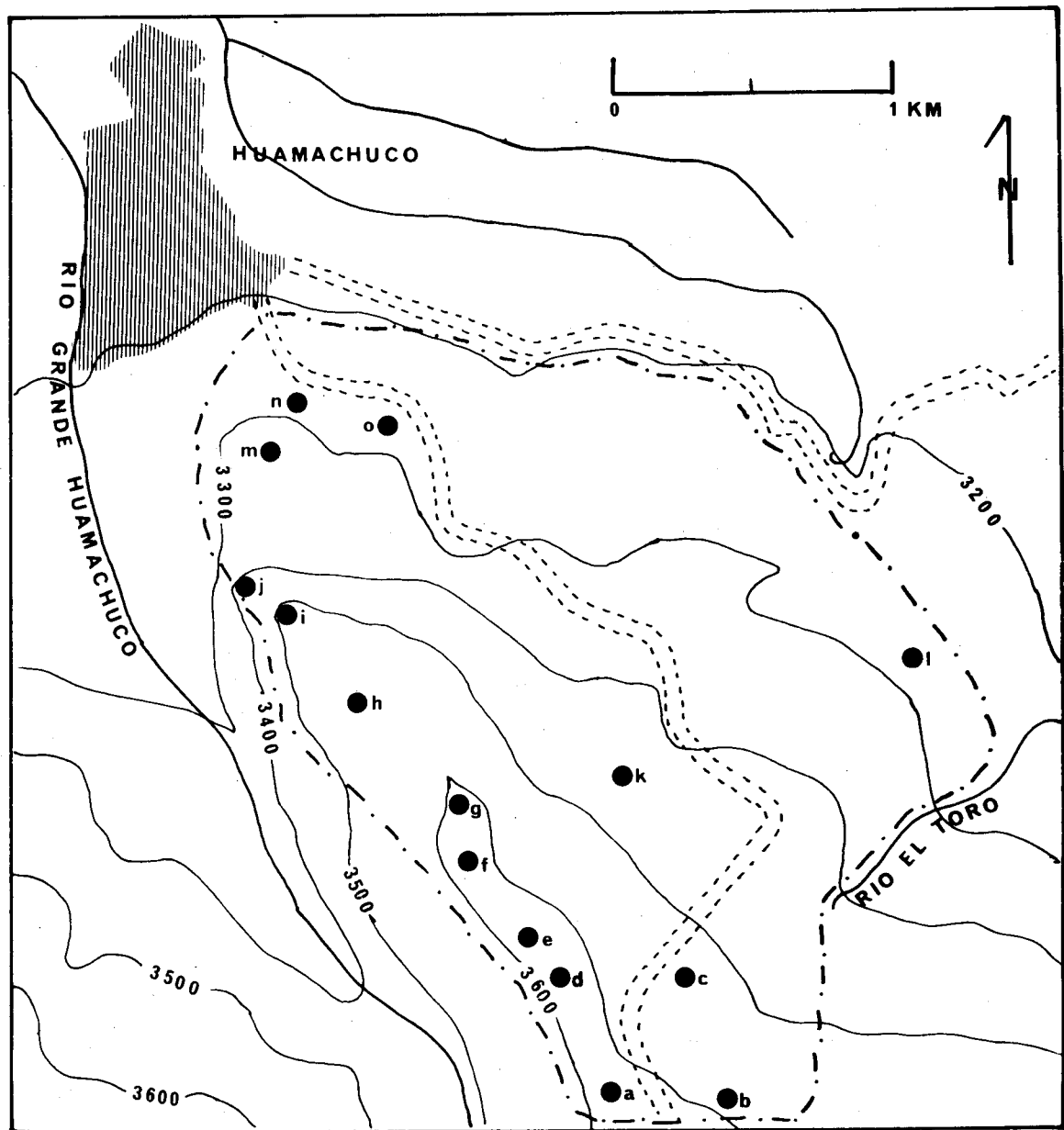






FIGURE 2 AREA A

KEY

-  MODERN TOWN
-  ARCHAEOLOGICAL SITE
-  MODERN ROAD
-  SURVEY BOUNDARY

lithics were gathered and one ridge site was test pitted and radio carbon and soil samples were collected.

The sites with architectural remains were of varying complexity. All of the ridge sites featured circular stone walled plazas, some artificially elevated. Of these, two types were in evidence: plazas enclosed with single circular stone walls, some with a room attached, and somewhat larger sites featuring plazas surrounded with double circular walls enclosing several rooms. Of the latter group, one site, A-h, had two adjacent rectangular plazas bordered by small square rooms; this is the largest site on the ridge. The other double walled circular plaza, site A-g, was situated on a knoll at the highest point on the ridge. At the knoll base stood a 3 to 4 m high and 3 m wide defensive wall bordering a ditch which extended approximately 25 m. These two sites also had stone walled terraces ringing their slopes, and possible ramps leading up to the plaza areas. The construction at both groups of sites had in common double-faced fieldstone wall foundations which stood for the most part 40 cm high with mud mortar. Where standing walls were in evidence, they were approximately 1.5 m high of uncoursed stone, with larger and smaller rocks fitted together in a mud mortar.

The remaining two sites with preserved architecture were located on the valley slope. Site A-o consisted of several groups of badly destroyed wall remains that appeared circular and could be the remains of small houses. The other site, A-c, was a large rectangular stone walled enclosure, possibly a corral, with adjacent badly destroyed wall remains whose configuration could not be determined.

Collections were mostly ceramics, which were almost entirely utilitarian and uniform within sites. Chungos were observed at site A-h, and small pieces of slate of undetermined source were evident all along the ridge. Lithics were found within sites on the valley slope and in one test excavation on the ridge. They were crude, with some chert flakes, but the majority were probably basalt. Of interest were several choppers and reused batons of this material whose function is undetermined but could possibly have been used for

shaping stone. One broken doughnut shaped stone of trachite that could be a digging stick weight was found in a field sherd scatter.

Analysis of the ceramics from surface collections and the architectural data show the ridge and valley slope were occupied by the Early Horizon but the majority of sites date to the Early Intermediate Period. The two large ridge sites with double circular walled plazas show two occupations; A-g has Early Intermediate Period and Late Intermediate Period, and A-h has Early Horizon and Late Intermediate Period represented. No Middle Horizon occupation of the ridge has yet been identified.

These results show a strong Early Intermediate Period presence in the valley developing out of the Early Horizon with a concentration of sites on the ridge top at the interface of jalca and quichua zones. These sites are very likely habitation sites. The presence of rooms, domestic pottery, grinding stones, and the lack of public buildings are consistent with this interpretation. The first phase of occupation at the major regional site in the area, Marcahuamachuco, has been radio carbon dated to the Early Intermediate Period. As the location of these sites is in the immediate sustaining area of Marcahuamachuco, they are probably contemporary rural settlements engaged in a farming/herding subsistence.

The prehistoric settlement pattern is very different from the modern one. While transportation access today is the major variable determining settlement location, in the past it is likely a number of variables were operant. While transportation cannot be ruled out, to date there is no evidence of a major route in the immediate ridge area. The location of the ridge sites is optimal for visibility and/or defensive purposes. More likely the location was chosen to reserve the best agricultural land below for subsistence purposes, and to ensure equal access to the resources of both jalca and quichua zones.

The archaeological survey of the jalca fuerte discovered 29 sites (Figure 3). Twenty of these were in the present day non-agricultural area (see Table 1). Of these sites B-1, B-o, B-s, B-n and D-a are all

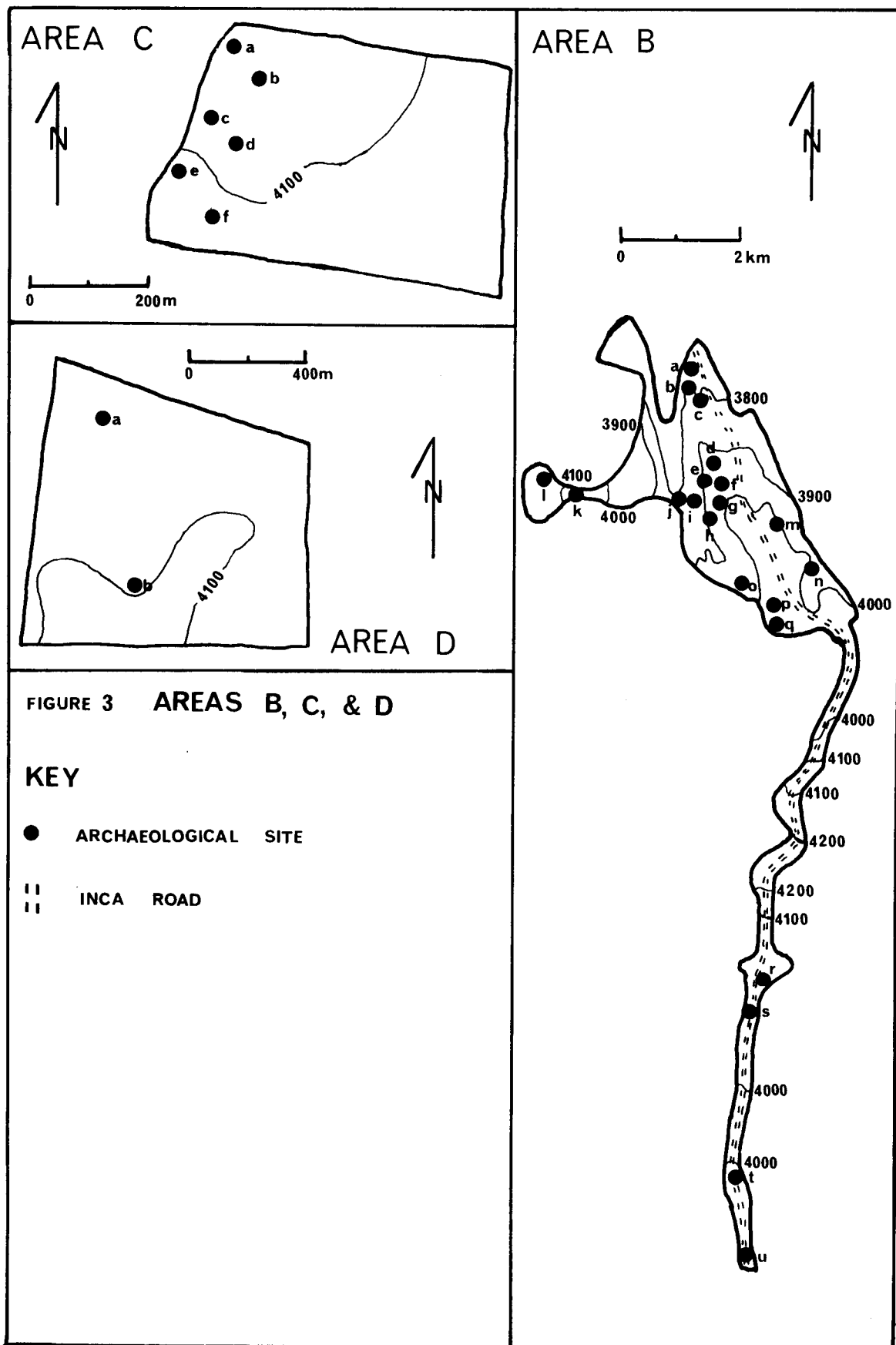


Table 1. Archaeological Sites in the Non-agricultural jalca fuerte.

Site Area and No.	Ceramics Present	Ceramic Date	Architecture Present and Type
B-f	No	Undated	Square room with alcove
B-k	Yes	Modern	Five structures of uncertain form
B-l	No	Undated	Small rectangular windbreak
B-m	No	Undated	Mound with 7 internal pits
B-n	Yes	Modern	One house wall
B-o	Yes	Modern	One circular windbreak, and 1 rectangular windbreak
B-p	Yes	Modern	Two circular windbreaks
B-q	Yes	Uncertain	Mound with rectangular room
B-r	No	Undated	Square room with alcove
B-s	No	Undated	Five small circular windbreaks
B-t	Yes	LIP & Modern	None
B-u	Yes	Modern	Corral, 2 small circular wind- breaks, & 2 small rectangular windbreaks
C-a	Yes	Modern	None
C-b	Yes	EH to Modern	None (rockshelter)
C-c	Yes	Uncertain	None
C-d	Yes	Modern	One rectangular room
C-e	Yes	Modern	Small circular windbreak
C-f	Yes	Modern	Corral, 5 enclosures, & 1 room
D-a	Yes	LIP & Modern	Four windbreak clusters, & 1 cluster of rectangular rooms
D-b	Yes	Late Pre- hispanic & modern	Seven corrals, and one circular windbreak

windbreaks which probably functioned either as traveller restcamps due to their proximity to footpaths, or as herder camps. In this context they are similar to those windbreaks present at the corral site B-u. Site B-r, although undated, appears to be modern as it is associated with a machine cut ditch. Site B-m is located just east of the prehispanic road at the point where the first view appears of Marcahuamachuco from the south and may date to the Early Intermediate Period. Sites C-d, C-e, and C-f all appear to be part of one herding station as C-f is a corral and C-d and C-e are habitations associated with it. Site C-b is a rockshelter with three main shelters present. Lithics were common at this site with probably 12 different sources of raw material present of at least four types: obsidian, chert, chalcedony, and quartzite. In general, lithics were rare over most of the surveyed area. The quantity of lithics at C-b then suggests a preceramic date. The rockshelter is used presently as both a sheep-shelter and a campsite. In the past uses were probably analogous. Site D-b is a corral site, and the one most certain to be prehispanic of those located in the survey areas. Another site D-a situated close by has windbreaks that seem to be contemporaneous with the corrals at D-b. For this reason D-b and D-a are interpreted as prehispanic herding camps.

Nine sites were found in the agricultural area of the jalca fuerte (see Table 2). Batans and chungos are entirely absent from these sites. However sites B-a, B-b and B-g appear to be agricultural sites. This interpretation is based on their dissimilarity to the pastoral sites of the area, in particular their larger size and lack of corrals.

The final prehispanic feature to be addressed is the road, Inca in local lore, which was surveyed in Area B (Figure 3). Only one small structure was found in direct association with the road and it was undated. The road is preserved primarily in the non-agricultural jalca fuerte.

Prehispanic use of the jalca fuerte in this area has left few traces especially in comparison to the lower jalca and upper quichua.

Table 2. Archaeological Sites in the Agricultural jalca fuerte.

Site Area and No.	Ceramics Present	Ceramic Date	Architecture Present and Type
B-a	No	Undated	Seven semi-platformed rectangular rooms
B-b	No	Undated	Two large D shaped rooms
B-c	No	Undated	One rectangular room, & one small rectangular windbreak
B-d	Yes	LIP	Internally divided square building with 4 external large pits
B-e	Yes	Modern	Corral, & 3 small rectangular windbreaks
B-g	Yes	Modern	Corral (?), & 4 rectangular rooms
B-h	No	Undated	One small circular windbreak. & one small rectangular windbreak
B-i	Yes	Modern	Corral, & 2 rectangular rooms
B-j	No	Undated	One small rectangular room

Most of the dated sites in the jalca fuerte are late (Late Intermediate Period and later). If it is assumed that the jalca fuerte is the preferred setting for camelid herding, the lack of jalca fuerte sites is surprising. Either there were very few domesticated camelids until late in time, or the prehistoric herding regime was different from that documented further south in the Central Andes, where remains of permanent settlements of full-time herders are common in the jalca fuerte. Faunal evidence from Huacaloma, Cajamarca, located north of Huamachuco in the Condebamba Basin, shows domesticated camelids were present and predominant at this site by 200 BC (Shimada 1982:311, 325-6). There is no obvious reason why camelids would not be present in Huamachuco by this date as well. A different herding regime is suggested then in which settlements are located in the upper quichua or lower jalca and the jalca fuerte is used for herding on a daily basis on communally held land. Under such a regime, the only herding-related structures that would be expected in the grazing area would be windbreaks for the shelter of herders. Intensive animal care (eg. culling, breeding, tending etc.) would be carried out at lower altitudes in the permanent settlements.

Conclusions

From the results of the surveys and modern land use studies, several conclusions can be drawn about high altitude land use in the Huamachuco area.

In the periods prior to the Late Intermediate Period the pattern seems to be as follows. There is little evident use of the jalca fuerte. The exception is the rockshelter site (C-b) which is an obvious campsite and whose location allows an overview of a very wide area. In the lower jalca/upper quichua area, early sites dating to the Early Horizon and Early Intermediate Period are found on the ridge top and slope. While it cannot be said that the sole determinant of settlement location is juxtaposition to both agricultural and herding zones, certainly the location allows this. No large corrals are in evidence, but faunal remains from other Huamachuco area sites (Cerro Sazon, Marcahuamachuco) indicate that

camelids were in this area from at least the Early Intermediate Period on. The relatively low frequencies of camelid bones suggests that the animals were not kept or managed in large enough numbers to require large corrals; instead, animals may have been kept in household compounds. Modern evidence shows that people both farm and herd in this lower area at short distances from their habitations without the use of large corrals. Also, it should be noted the choice of the ridge top could be tied in with the fact these sites are linked temporally to Marcahuamachuco and this position allows for visibility with the larger site.

In regard to later periods, as reported by Cieza de Leon, camelids were present in the area in large numbers. There are two late prehispanic corrals, one in the jalca fuerte and one in the upper quichua/lower jalca which give evidence of some larger scale herding. However the evidence still indicates the jalca fuerte is not a major habitation location for pastoralists. Instead, an extensive regime is suggested. This again would predict habitations lower, at the interface of quichua/jalca zones. As the survey results have shown, the two larger sites on the ridge, A-g and A-h, have Late Intermediate Period occupations. One corral on the valley slope, site A-c, and one site with house remains, site A-o, also date to this period.

Tentatively it would appear preferred location for all periods for which we have evidence was at the interface of quichua and jalca zones in order to optimize access to the resources of both zones.¹

Footnotes

1. We wish to acknowledge the Social Sciences and Humanities Research Council of Canada for funding the project and the Instituto Nacional de Cultura de Peru for permission to work in this area. We would like to thank Dr. John Topic and Dr. Theresa Lange Topic for giving us the opportunity to work on the project and for help in the writing of this paper. We owe thanks also to our field assistants Alina Portella Vejarano and Lucio Tito Franco for their valuable help and companionship in the field, and to the people of the district of Huamachuco for their hospitality and cooperation.

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