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Ancient Hunting Strategies in Southern South America

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Ancient Hunting Strategies in Southern South America: An Introduction

Food obtaining strategies and tactics have always played a central role in archaeological investigations. Among them, knowledge about hunting and fishing activity has attracted particular interest. As Lee and Devore (1968) early pointed out, 90% of the time involved in human evolution was characterized as hunter-gatherer societies. This implies a vast number of human groups throughout time and space focused their economies on hunting and fishing practices along with food gathering. The socioeconomic hunting-fishing-gathering systems persist, and this has to do both with their higher benefits compared to other economic alternatives, and with the social cost of ceasing hunting (Kramer and Codding 2016). Beyond the historical depth and persistence of this way of acquiring resources, research interest was placed on understanding activities and social relations developed in hunting practice. Among them, one can find planning and knowledge on prey's behavior and environment particularities, socioeconomic motivations that involve food procurement, obtaining raw materials such as leather and bones and the search for prestige by hunters (Binford 1978–2012–, 1991; Borrero 2013; Churchill 1993; Foley 1983; Frison 2004; Laughlin 1968; Mithen 1990; Speth 2010). Besides, the particular roles of the people involved should be considered, whether as hunters/fishermen, beaters, carriers, and/or apprentices. Technology involved carrying out hunting, such as weapons systems, which may require components of different designs, raw materials, and geographical origin (Fenenga 1953; Ratto 1994, 2003; Shott 1997; Thomas 1978) and the construction of structures is also taken into account. Once the hunt has taken place, decisions about prey's butchering and transport are relevant. Combination of prey, landscapes and distances, number of hunters, tactics employed and technology available translates into hunting structures and the formation of different archaeological contexts, which are an excellent example of the spatial continuity of human behavior. Hunting/fishing activities influences and nourishes all the members and components of the social system, being crossed by multiple symbolic aspects like songs, rituals, dreams, that supplement and outline its realization. Last aspect of this practice and archaeological research, highlights the relevance of regional contexts. In this volume, we ask about the archaeological record of hunting, fishing, and gathering small animals in southern South America—taking into account the heterogeneity of this space—and on the strategies and tactics which were implemented by human populations.

A few years ago, we thought of convening a meeting to bring together the Argentinean research groups that were studying hunting/gathering/fishing practices combining multiple lines of evidence. Starting with conversations held in the framework of the IV Congress of Argentine Zooarchaeology at Ushuaia, Tierra del Fuego in 2016, the proposal was materialized in August 2018. The 1st Workshop "*Estrategias y tácticas de procuramiento de presas en el pasado: su discusión a partir de la integración de distintas líneas de evidencia*" (Strategies and tactics of prey procurement in the past: its discussion based on the integration of different lines of evidence) was held at Los Reyunos, Universidad Tecnológica Nacional (San Rafael, Mendoza, Argentina) and the meeting gathered 17 papers, which are the source of this book.

Workshop participants at Los Reyunos, San Rafael, Mendoza, August 2018

During Workshop, research carried out in very diverse sectors of the landscape of southern South America were presented, from the high deserts, such as the Puna to the steppes of northern Tierra del Fuego, and from Pampa plains to the central mountains and the forests of the Patagonian Andes. There were also multiple temporalities crossed, since the initial peopling of these landscapes to the current forms of hunting. Also, they integrate different archaeological lines of evidence from an interdisciplinary perspective. Ethnographic, anthropological, and historical data are pieced together with information brought by geneticists, biologists, zoologists, chemists and physicists, among others.

Volume Chapters

The first chapter (Chap. 1) focuses on the northwest of Argentina, and more precisely at Puna of Catamarca province. Enrique Moreno, Jorge Martínez, and Carlos Aschero propose a compendium of information on hunting strategies through the Holocene, center on data obtained from zooarchaeological sites, weapons systems and landscape characteristics and their transformations in two different regions of Antofagasta de la Sierra department. In this case, the main prey would have been the vicuña (*Vicugna vicugna*). The authors develop a theoretical and methodological proposal to study hunting strategies, focusing on the relevance of collective hunting and the construction of hunting blinds on a regional scale. Also, the information obtained of projectile points design allows them to discuss those models along the Holocene.

In the second chapter (Chap. 2), Matías Medina and Imanol Balena advance on a technological and functional study of projectile points recovered from different sites in the Córdoba province corresponding to the late pre-Hispanic period (1500–360 years BP). The authors evaluate the importance of hunting in contexts where agriculture introduction would have diminished the importance of this activity. This implies populations with flexible economies throughout the annual circle, prioritizing in some moments cultivation and others hunting and gathering activities. Economic intensification would have been accompanied by multiple sociocultural changes, including the adoption of bow and arrow as a weapon for camelid hunting and the performing of individual hunts, as a clear reference to the emergence of centrality on family groups.

Chapter 3 takes place at Pampa area, more precisely, in zones related to the Samborombón and Salado rivers, María Isabel González, Paula D. Escosteguy, Mónica C. Salemme, Magdalena Frère, Celeste Weitzel and Rodrigo Vecchi focus on the study of coypu obtaining (*Myocastor coypus*), a large rodent that has been repeatedly used by human populations for at least the last 2500 years. Currently, it is required mainly for its skin, but also for its caloric contribution. The authors, based on experimental and ethnoarchaeological studies, focus on the stages of obtaining, consuming, and discarding these animals today. These data are compared with archaeological evidence, especially with lithic technology and zooarchaeological assemblages. It is argued that, while it is still possible to hunt coypu with a stick, in the past "*bolas*" and other weapons like projectile points were frequently used. All this suggests the incidence of changes in the different strategies for obtaining this resource over time.

In Chap. 4, Cristian Kaufmann, María Clara Álvarez, Pablo Messineo, María Barros, Mariano Bonomo and Guillermo Heider, study hunting strategies for obtaining guanacos (*Lama guanicoe*) during the late Holocene in the south-east pampas. They compare data from two periods, the early stages of Late Holocene (3400–1700 years BP) and it's the final stage (1300–800 years BP). They established the great importance of guanaco for the populations that lived there, and the changes in the technology of obtaining them. Thus, while in the earliest archaeological sites, weapons would have been "*bolas*" and atlatl darts, for the final period

bows and arrows would have been used, evidenced by the presence of small triangular projectile points. Despite the technological change, continuity of the spaces used to hunt, such as river junctions and dunes as hunting traps, is observed.

Regarding other activities and prey, in Chap. 5 Romina Frontini, Cristina Bayón, and Rodrigo Vecchi ask about strategies to catch marine fish during the Middle Holocene in the area of Monte Hermoso, Buenos Aires province, corresponding to the Pampa area. Through the study of archaeofaunal fish remains, lithic technology, paleoenvironmental reconstructions and ethological characteristics of fish, the authors propose that weights for nets and lines were used in the sites. Fishing worked as alternative to obtain marine resources, at a time when environmental conditions were favorable to this.

Chapter 6, by Silvina Castro, Lucía Yebra, Valeria Cortegoso, Erik Marsh, Agustín Castillo, Agustina Rughini, María Victoria Fernández, and Raven Garvey, proposes an analysis located at central west Andes of Argentina, but which has a potential discussion on a wider scale, such as the adoption of bow and arrow and the replacement of weapons system previously used. Despite focusing on projectile points, the authors also use environmental, chronological, and paleoenvironmental data to frame the discussion. Through projectile point analysis from six archaeological sites, they pose the presence of bow and arrow from 3080 years BP in the sites located North of the study area, while just about 1000 years BP makes its appearance at sites located to the South. This technological change would respond to population growth, reduced mobility, low-scale food production, and the implementation of pastoral economies.

Miguel Giardina, Clara Otaola, and Fernando Franchetti develop in Chap. 7 their study about hunting, processing, and consumption of Rheidae. This proposal is based on ethnographic and ethnohistorical data that allow them to know the traditional strategies of obtaining this bird and its implications for archaeological investigations. From interviews with local people "*puesteros*" and the participation in a traditional hunting event, the authors emphasize the economic importance of this bird for the *puestero* populations, especially the fat, but feathers, skin, and bones too. This chapter shows the importance of the use of boleadoras together with horses and dogs for hunting execution. That is why they pose the possibility that this practice is relevant for the local economy after the Spanish conquest, while for the pre-Hispanic period it would have focused on eggs obtaining.

In Chap. 8, Diego Rindel, Florencia Gordón, Bruno Moscardi, and Iván Pérez deal with on the importance of small prey (armadillos, fish, mollusks, birds, small carnivores, and rodents) for human population diets at northwestern Patagonia. The authors seek to understand and evaluate the role of these animals in the food choices of these populations. They used stable isotope values and zooarchaeological data, which are discussed with ethnohistorical evidence on the nutritional supply of these animals. The results suggest that the importance of small prey in human population diets during the Holocene had been much greater than originally thought. In this way, it is proposed that hunters would have supplemented guanaco with small prey, according to availability and nutritional benefits of these small animals, and despite its processing and capture costs.

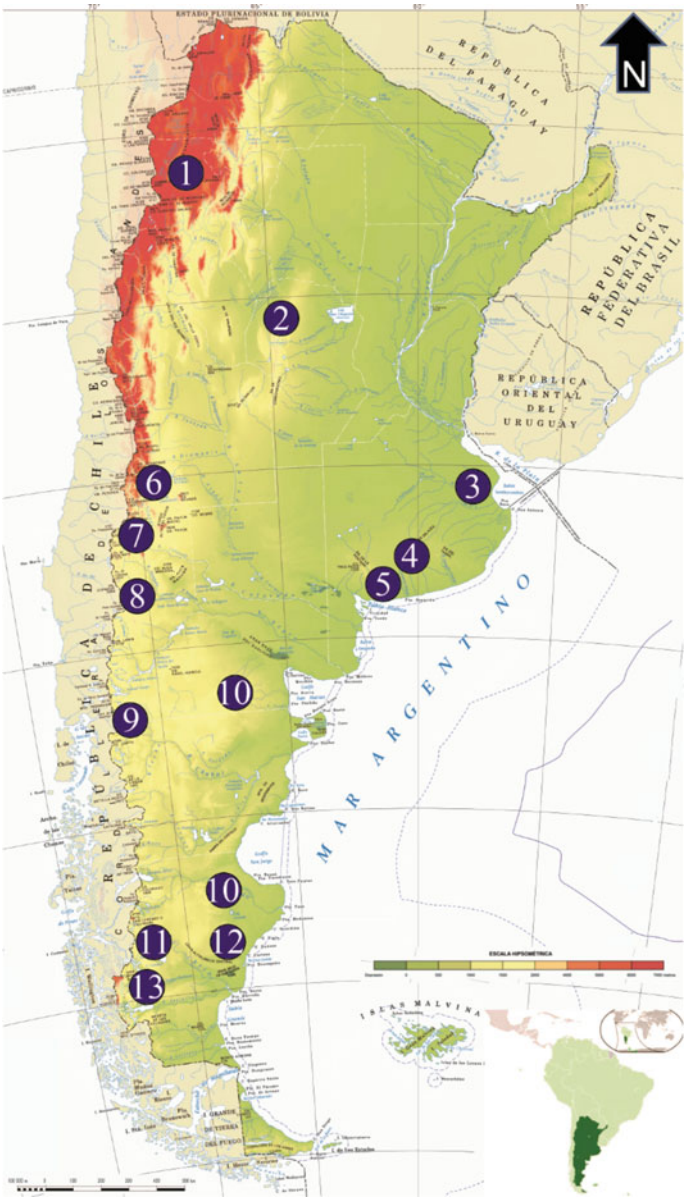
Mariana Carballido Calatayud and Pablo M. Fernández established, in Chap. 9, the differences in hunting strategies developed in the forest and the steppe of North-Central Patagonian for the last 3500 years. Based on environmental, ethological, ethnographic, and historical information, they propose three models of hunting strategies, one linked to the forest, another to the steppe, and a transitional one. The models contemplate the hunting of guanaco, huemul (*Hippocamelus bisulcus*), and lesser rhea (*Rhea pennata*), and are tested by the analysis of lithic materials and faunal remains from archaeological sites located along the rain shadow gradient of Patagonia. The authors propose some differences in the strategies employed, as the prevalence of huemul hunting in the forest, while the guanaco would have been the main prey in the steppe. Also, they state the use of bow and arrow as a useful weapon to gain an advantage in the forest, but not in the steppe.

In Chap. 10, the archaeological landscape of the Patagonian plateaus of Santa Cruz and Río Negro provinces are the focus of the study. Laura Miotti, Laura Marchionni, Darío Hermo, Enrique Terranova, Lucía Magnin, Virginia Lynch, Bruno Mosquera, Jorgelina Vargas Gariglio and Natalia Carden propose to study on changes in hunting strategies through time and space. They focus on information on lithic technology, archaeofaunal remains, rock art, and hunting structures (hunting blinds). Once again, the main prey would have been guanacos and propose the articulation of four factors to be taken into account for the interpretation of hunt: the participation of hunting groups, the ethological characteristics of prey, the diversity of weapons employed, and topography, a category that includes landforms, objects, and beings. Based on this proposal, they observe changes in hunting strategies through the Holocene, as well as in the different plateaus on which the research focuses. The authors' highlights the importance that hunting blinds would have had over time as hunting-related constructions, while the main difference would have been in the use of different weapons systems, with the appearance of "*bolas*" during the middle Holocene and the bow and arrow during the late Holocene.

In Chap. 11, Josefina Flores Coni, Juan Dellepiane, Gisela Cassiodoro, Rafael Goñi, and Agustín Agnolin centralize their study on guanacos hunting strategies in the Patagonian plateaus of Santa Cruz and give account on the changes these strategies experienced along the last 2500 years. Changes are related to demographic growth, the use of more effective technologies, and changes in the mobility patterns of hunters. The differences were mainly materialized in the construction of hunting blinds on these plateaus configuring inherited archaeological landscapes. Hunting grounds are established in open and closed areas, but spaces for social interaction between hunter populations are also configured. Thus, by opposing paleoenvironmental, spatial, lithic technology, and archaeofaunal information, it is proposed that these plateaus were spaces used by guanacos in times of greater aridity and that hunters modified their hunting strategies and technologies by delineating hunting grounds through the construction of blinds.

Also, with an important focus on the articulation of hunting strategies with hunting blind construction, Nora Franco, Lucas Vetrisano, Brenda L. Gilio, Natalia A. Cirigliano, and Pablo Bianchi, in Chap. 12 discusses the characteristics of human occupation of the southern end of Deseado Massif, located in the center of Santa Cruz province, and the realization of communal guanaco hunting. Intensive surveys show the presence of hunting blinds in a limited sector of the landscape, while they would be absent in the rest of the study area; they are registered more than 100 km away. This information, added to the data obtained from lithic technology analysis, leads the authors to propose that these places would have been used during the late Holocene mainly as hunting grounds.

Finally, in Chap. 13, Juan Bautista Belardi, Flavia Carballo Marina, and Gustavo Barrientos describe and discuss the hunting strategies and tactics implemented during the late Holocene to obtain guanaco and Rheidae as a complementary prey. To achieve this goal, the authors use archaeological evidence at different altitudinal levels on the northern margin of Lake Viedma basin, Santa Cruz province. These altitudinal and environmental variations—ranging from the shore of the lake to the basaltic plateau—seem to have generated different hunting strategies. The distribution, density, and variability of artefacts related to hunting—projectile points and "*bolas*"—the differential presence of hunting blinds and the environmental characteristics of different altitudinal levels allows the authors to propose a seasonal and complementary model of landscape use, which allowed the occupation of the basin throughout the year.



General reference map with the location of research areas reflected in each chapter (Map modified from Instituto Geográfico Nacional Argentino)

Cross-Interests and Study Trends

First of all, we would like to highlight the geographic variability covered by the different chapters and the way multiple lines of evidence have been articulated to try to understand the strategies for obtaining resources and the contribution that this configures to understand the human societies. We would like to highlight some other aspects in which the different chapters intersect and we believe that they summarize the interests in the study of the acquisition of resources through hunting, fishing, and gathering of small animals in Argentina. The first of these is the importance of camelids—guanacos and/or vicuñas—as the main prey in most of the landscapes investigated. This highlights the outstanding role played by these animals throughout history for the human populations at different latitudes of South America. Nevertheless, strategies for the production and processing, consumption, and disposal of huemul, rheids and smaller species such as fish, rodents, small birds, and carnivores have also been discussed. The great diversity of prey on which the chapters concentrate shows the importance of the obtaining of different species for both diet and the establishment of strategies for obtaining them.

The treatment of changes and continuities in hunting strategies through time and space is another aspect treated along the volume, either covering the entire Holocene or on shorter time scales. Different strategies, changes in weapon system or in social organization, and even the impact of the Spanish conquest are some of the themes that intersect the chapters. Also, geography and landscapes play a preponderant role in several chapters, analyzing how hunting strategies impact environmental diversity within study regions. This shows the importance of assessing local contexts and their relevance to regional archaeological interpretations.

Also, it is noteworthy the integration of ethnographic, ethnohistorical, and experimental data. The articulation of these sources allows the building of frames of reference to discuss the archaeological information and also to expand the chronological and interpretative backgrounds. Finally, we would like to stress the role played by the construction of hunting blinds and its imprint on the landscape, and the reason for weapon systems change, specifically the adoption of bow and arrow.

This volume provides a broad compilation of articles that brings together the effort of many years of fieldwork and laboratory analyses done by different research groups; thinking, discussing, and generating multiple lines of evidence to interpret how hunting and fishing strategies were organized and developed by human populations in southern South America. In this way, this volume can be grouped with other compilations dealing with hunting strategies at a global level (Bar-Oz and Nadel 2013) and at a regional scale (Martínez and Bozzuto 2011; Martínez and Rivero 2013).

Finally, we would like to thank the many actors who were of central importance, both in the realization of the workshop and in the development of this volume. In the first place, to all the research groups that accepted the proposal and the challenge of bringing together different lines of evidence to deal with a special topic such as hunting, fishing, and collecting different faunal resources. To the reviewers, for their readings and suggestions that have enriched chapters, helping with their knowledge and playing an important role in this book. To Springer/Nature editors, for allowing us to publish the volume, and particularly to Jorge Rabassa, editor of the Latin American Studies series of Springer/Nature. To the Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICET), Universidad de Buenos Aires, Universidad Nacional de Catamarca and Universidad Nacional de la Patagonia Austral, for all the support offered for the organization of the workshop and the edition of the abstract's volume. To the Dirección de Turismo of the Municipalidad of San Rafael and to the team of the Executive Unit IDEVEA that offered itself totally to the organization of the event. In particular, we would like to thank the Universidad Tecnológica Nacional of San Rafael for providing its facilities to carry out the workshop where we were able to develop such enriching discussion moments around animal hunting and fishing strategies in the past.

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Chapter 1
Ancient Hunting Strategies of Wild Camelids Through the Study of Multiple Lines of Archaeological Evidences at Southern Argentine Puna

Enrique Moreno, Jorge G. Martínez, and Carlos A. Aschero

Abstract In recent decades, wild camelids hunting strategies have been a topic of interest for several research groups in Argentina's southern Puna in Northwestern Argentina. In this chapter, we present a synthesis of hunting strategies models that would have been implemented at Antofagasta de la Sierra (Catamarca, Argentina) in a long-lasting account that covers the entire Holocene. The models we will treat were defined for two discrete areas within this Puna environment: Quebrada Seca and the Antofalla ravine. For both areas, different hunting models were postulated based on the combination of a series of variables such as landscape features and weapon systems. They varied in time and space for both areas, although vicuñas were a common factor as hunting prey. Our interest here lies, then, in reflexively evaluating these models in order to form a theoretical, methodological, and technical basis for the study of pre-Hispanic hunting practices in the higher Andes environment.

Keywords Hunting practices · Weapons · Landscape · Antofagasta de la Sierra · Holocene · Northwestern Argentina

1.1 Introduction: About Hunting as a Practice

Before beginning our proposal on hunting strategies in the Puna of Catamarca Province, Argentina implemented through the Holocene, we believe it is necessary to think on what we understand by hunting and what these practices imply for the human populations that developed them. In this sense, it is reductionist to think that hunting involves only the killing of one or more animals by one or more people in order to obtain primary and secondary resources. It is clear that the significance of

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this practice far exceeds this only dietary objective. Many authors have asked for the importance of hunting in different spheres of the social reproduction of human populations (Laughlin 1968; Binford 1988; Churchill 1993; Aschero and Martínez 2001; among others). Going further from the food supply, one of the main aspects surrounding hunting practices would be linked to the symbolic role generated by the action of killing wild animals, to the social hierarchy reached by the one who could obtain the prey and to the social implications that the collective hunting might have had. In the particular case of Southern Argentine Puna, the main prey would have been the vicuña (*Vicugna vicugna*), a wild animal that has a great capacity to identify and escape from potential predators in an environment high above sea level, where the hunters had simple weapons and some difficulties to obtain hiding places, given the absence of high vegetation capable of providing hideout and wide visibility. However, as we will see, these characteristics would not be so homogeneous and would also affect the actions of prey as well.

Thus, it is necessary to think of hunting in terms of these social implications as a relevant practice on the social and inter-group scale for strengthening relationship nets. Since to achieve success, every hunt needs to articulate several factors. These refer to (a) hunters knowledge about the behavior of potential prey, (b) tactical resources that offer the local environment characteristics, which include not only the relief and vegetation, but the action of winds, location relative to the position of the sun, among others; (c) operational or control relations between hunters and (d) the possibilities provided by the implementation of multiple technical devices, such as weapons or structures. These, including many other issues, such as premonitory dreams, an adequate calendar for hunting, social events involved before and/or after hunting, such as rites of passage, propitiatory rites for the success of hunting, requests for the successful reproduction of the prey, prior to the time of the female's calving, are relevant aspects for hunting practices.

For this work, in which we will focus on archaeological evidence, some of these aspects will not be specifically addressed but will be taken into account for the interpretations that may be reached. Some years ago, two of the authors raised the need to articulate multiple lines of archaeological evidence to study hunting strategies: the weapons systems, the particularities of the relief and climate, the ethology of prey and the social relations between hunters (Aschero and Martínez 2001).

Pointing out the importance of hunting as a social practice in the reproduction of human groups over time and the need for a comprehensive approach to understand hunting in archaeological research, in this chapter our main aim is to develop a theoretical-methodological contribution based on the case studied and articulating these different lines of evidence, to help to understand the importance and particularities of hunting strategies for pre-Hispanic populations through the Holocene in Argentine Puna.

1.2 Hunting Strategies and Its Relevance in Argentine Puna

Through the history of human occupation in the South-central Andes, the interaction between camelids and human populations was central in the social reproduction, in relation with the obtaining of a series of resources such as meat, leather, bone, tendons, wool, transport, etc. Among the strategies practiced by human populations in order to appropriate these animals (sensu Ingold 1987), hunting results the most important because of its realization in the long term of human occupation of the area, and also because of its relevance in different social, economic, political, and historical contexts. A multiplicity of investigations has provided information about these populations and the relevance of hunting in this long historical process which covers approximately the last 10,000 years. In this sense, these investigations have proposed that during the early and middle Holocene, human populations were characterized by an economy based in camelids and rodents hunting and in the exchange of vegetable resources from lower areas, principally the mesothermal valleys (Aschero 2000; Elkin 1996; Martínez 2003; Yacobaccio et al. 1997–1998). The archaeological investigations were able to advance in the characterization of hunting strategies, as well as on the settlement and mobility patterns of these groups. Among these studies it is the one carried on by Aschero and Martínez (2001) who assure that "the hunting of camelids was the principal subsistence activity, including during late moments under the full establishment of agricultural practice (although) hunting and gathering dominated the strategies of subsistence of most of the history of men in the Puna desert, until herdering and agriculture, as productive ways of subsistence, started to become preponderant in these economies" (Aschero and Martínez 2001: 216, author's translation. Also see Martínez 2003).

In the same way, Elkin (1996), analyzing the archaeofaunal remains of Quebrada Seca 3 (Antofagasta de la Sierra, Catamarca) shows that camelids were the principal resource of this zone in the Puna of Catamarca. This author proposes the relevance of hunting camelids without selecting ages nor sex of prey. An important conclusion she arrives at is that "the camelids populations of the Antofagasta de la Sierra basin seems to have supported hunting pressure through several millennia without the need of protecting the animal's reproduction rate, systematically preying over family groups, the most vulnerable part of the population" (Elkin 1996: 134–135, author's translation).

These authors, together with other investigations in the South-central Andes, have proposed the realization of camelids hunting, being a very important resource due to its caloric input as well as the use of secondary products. In this way the mobility of human populations would also have been related with the mobility strategies of troops of camelids in moments of climate changes, occupying lower or higher ecological levels (Fernández Distel 1974; Gambier 1981; Núñez 1983; Yacobaccio 1991; Yacobaccio et al. 1997–1998).

Around 5500 years BP, the process of domestication of plants and animals should have begun, which implies an important modification in economic, social, political, and religious contexts in the local populations. This period shows a progressive

decrease in the importance of hunting camelids which Yacobaccio et al. (1997–1998) proposed as a process beginning with a hunting-gathering economy, passing through hunting-domesticating, hunting-herding until reaching a time of herding-hunting. This modification would be given in the predominant strategy that is defined as the one that determines the organizational structure over which different economic activities are planned and realized. This process implies a complexity of the hunting-gathering societies, characterized by aspects such as the reduced residence mobility, territorial behavior, high population density and presence of bigger groups of residents, intra-group inequalities, development of ritual practices as a form of social cohesion (Hocsman 2006; Yacobaccio 2001).

Around the start of the First millennium BC the agricultural-herding societies are definitively established, which conform the "Formative period" inside the chronology established by the regional archaeology (Olivera 2001). These societies, in Puna case, have been characterized as small populations dedicated to herding, with a differential importance of agriculture development and with the input of wild camelid hunting (*Vicugna vicugna* and *Lama guanicoe*). In this way the economic organization and therefore the reproduction strategies of human groups were based around the control of the herds, subjecting the other practices to the development of these activities (Yacobaccio 2001).

However, information obtained by archaeological investigations, show that this situation was more flexible, where there can be noted a diverse economical organization, where different economic strategies had a relevant importance on everyday life reproduction. Regarding agriculture, Quesada (2001, 2007) has developed an investigation in the Antofalla area, where he shows the agricultural development and the social scale of work associated with these practices, remarking the importance of this activity. On the other hand, investigations centered in the archaeofaunal remains have shown a relative preponderance of the exploitation of wild camelids, specifically vicuñas, compare to the already domesticated llamas (*Lama glama*). These are the cases, among others, of Tebenquiche Chico 1 (Haber 2006; Revuelta 2005), Quebrada Seca 3 (Elkin 1996) and Real Grande 1 (Olivera 1997), in the southern Puna (Catamarca) and Huachichocana III (Yacobaccio and Madero 1992) in the northern Puna (Jujuy). This allows us to reflect about the role of hunting of wild camelids in the agricultural-herding period, being an economy based on diversified economic strategies. In this historical context, the relevance of wild camelids, particularly vicuñas, started to modify, particularly because of the quality of its wool and its role in the regional articulation and the reproduction of social hierarchies.

Following this imaginary timeline, in the Inka period and according to what the historical chronicles show, the vicuñas would have recovered an important "economical-ritual" role by taking part of *chaku* celebrations in honor of the Inka (Puló 1998, 2000; Ratto 2003). This ritual consisted of the preparation of a great circle, in which a troop of vicuñas was entered and then they were hunted and the flesh and wool were given to the Inka. It seems that this practice had a strong control by the Inka state as it is shown in several chronicles and ethno-historical investigations (Cieza de León [1553] 1984; Murra 1978; Polo de Ondegardo [1571] 1990; Yacobaccio 2009). Later on, during the colonial period (XVI and XVII centuries),

the vicuña would have turned in one of the principal resources to accomplish tribute payment by local populations due to its characteristics (possible to be changed for metals, raw material to be transformed into manufactures which could be placed in the market or object which would be accepted as "money of the earth") (Lema 2004; Yacobaccio et al. 2007). However, this is referred in the narrative construction of travellers of the zone from a deterministic view, where the unique economic option for local populations was the subsistence through the vicuña and it was not thought as a mechanism of articulation of the local societies with the emerging colonial markets (Haber and Lema 2006; Lema 2004; Moreno and Revuelta 2010).

Already in the Republican period (nineteenth century), the vicuña's hunting relevance would continue being central for the local populations, providing a resource which was possible to be exchanged for goods from other regions. Thus, the vicuña hunting of other species, would provide a surplus of resources even more important than agriculture. This activity supplied resources such as meat, wool and leather. However, the principal resource would have been the weave of the vicuña which would allow the exchange for other goods in places such as Cachi (Salta) or San Pedro de Atacama and Toconao (Chile) (Benedetti 2005). "*The commercial exchange consists in selling the leathers and wool of the vicuña, llama, sheep and goat leather, and there can be added the animal skins obtained from hunting… Other products which they exchanged for corn or flour are the woollens which they spin and knit by primitive methods and which are very appreciated by experts*" (Catalano 1930 in Benedetti 2005: 400, author's translation).

The materialization of vicuña hunting and its introduction into the European markets due to the fine quality of its wool, promoted the realization of an excessive hunt of these animals, causing the ban of hunting and marketing of vicuñas wool since approximately 60 years in the territory of the Province of Catamarca, Argentina, as well as in all the areas which own vicuñas in other countries of South America. These laws were established because of the claim of different areas because of the killing of vicuñas due to the high prices of the wool and the total lack of control of this practice (Moreno 2012; Puló 1998, 2000; Vilá 2006).

1.3 Antofagasta de la Sierra: Environmental Characteristics

The department of Antofagasta de la Sierra (Catamarca, Argentina) is located in the Southern Puna of Argentina above 3000 m a.s.l., and it is characterized by extreme aridity, large daily thermal amplitude, scarce watersheds and very low rainfall, so it is defined as a high altitude desert. This vision of the Puna environment assumed a scarce human population or conditions that implied difficulties for the development of life. However, we believe that the main problem of this vision is based on negating the variability of spaces with differential water availability, as oasis, from which desert spaces were managed as pathways of circulation and exploitation of mineral

resources and where the temporal depth and growing social complexity has been a major axis in the reproduction of human populations along time.

This chapter will focus on two research areas of Antofagasta de la Sierra Department, whose data outline the basic nucleus of it. On one hand we have information from Quebrada Seca, in the micro-region of Antofagasta de la Sierra and on the other hand, from the Antofalla ravine, on the periphery of the homonymous "Salar" (i.e., a large salt lake) (Fig. 1.1).

Quebrada Seca is located 15 km east of Antofagasta de la Sierra village at ca. 4100 m a.s.l. and it is where the stratified archaeological site Quebrada Seca 3 (QS3) is located. It is a rocky eave that was interpreted as the central point of a settlement location, established by a limited space with a radius of 2.5 km in which different micro-environments are articulated: high altitude marshes, gullies with ignimbrite outcrops—with sporadic drains and shrubby vegetation typical of the rocky outcrops—that connect marshes with high plains in the relief of the glacis, with a steppe east-west slope and "pajonal" type vegetation. In this place (according to Ingold 2000) there are a set of interrelated sites inhabited at different times along

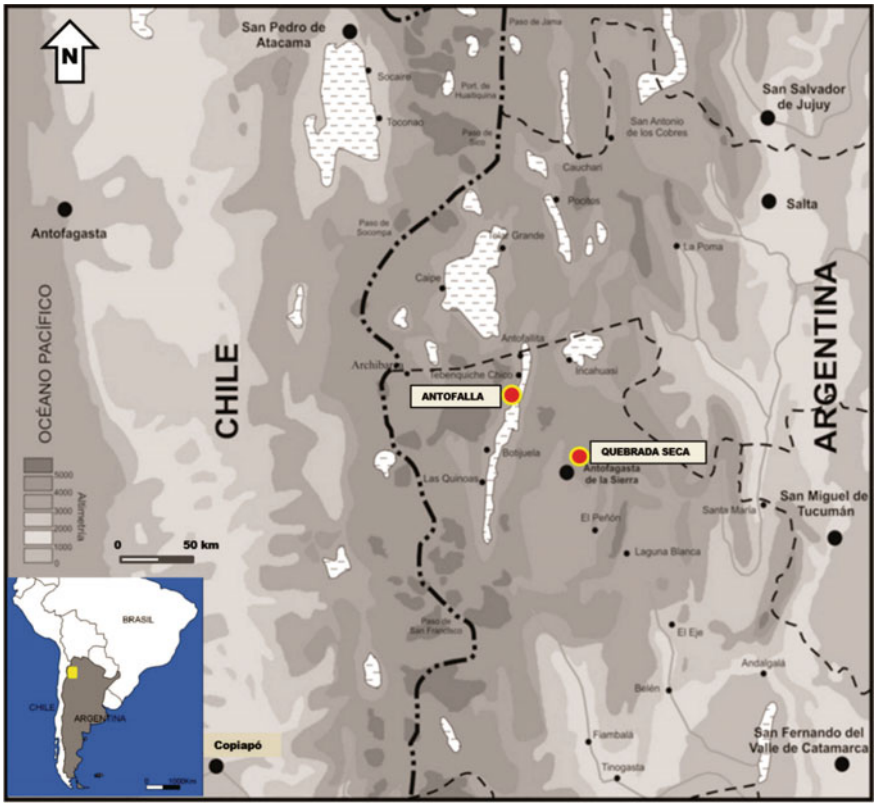

Fig. 1.1 Location map of the two research areas