LINKING COMMUNITY AIMS WITH VICUNA CONSERVATION:

A BOLIVIAN CASE STUDY

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Abstract

Community-based wildlife management through sustainable use has been widely promoted in the past few decades as an appropriate strategy to link community aims with wildlife conservation. In the case of the vicuna, *Vicugna vicugna,* a wild camelid found in the high Andean region, conservation policies have shifted away from strict protection to allowing sustainable use by Andean communities. The general argument behind this move is that the generation and distribution of benefits derived from the commercial use of fibre at the community-level is likely to encourage local conservation of the vicuna. In Bolivia, the state grants custodianship and exclusive use rights to local communities. The unit of custodianship and use is the 'communal management area' that is within the control of one or more communities. This paper analyses the factors affecting community involvement during vicuna capture and shearing events, based on data collected in San Andres de Machaqa (Province of Ingavi, Department of La Paz). The analysis focused on the first period of implementation of the programme (1997-2002) in the absence of commercialisation of fibre. Findings show that community involvement depends on the combination of two groups of factors: those related to size and boundaries of communal management areas; and those related to the internal dynamics of local communities.

Resumen: El manejo comunitario de la vida silvestre a través del uso sustentable ha sido promovida, en las últimas décadas, como una estrategia apropiada para unir los intereses de las comunidades con la conservación de la vida silvestre. En el caso de la vicuña, *Vicugna vicuna*, un camélido silvestre en la región Andina, las políticas de conservación han pasado de la protección estricta al uso sustentable por comunidades andinas. El argumento general detrás de estos cambios es que la generación y distribución de beneficios a partir del uso comercial de la fibra a nivel comunal puede contribuir a la conservación local de la vicuña. En Bolivia, el Estado otorga custodia y derecho exclusivo de aprovechamiento de la vicuña a las comunidades que conviven con dicha especie. La unidad de custodia y aprovechamiento es el área de manejo comunal que puede estar integrada por una o más comunidades. Este trabajo analiza los factores que afectan la participación de las comunidades en los eventos de captura y esquila de la vicuña, basado en datos obtenidos en San Andrés de Machaca (Provincia Ingavi, Departamento de La Paz). El análisis se basa en el primer período de implementación del programa (1997-2002), sin comercialización de fibra. Se observa que la participación comunitaria depende de la combinación de dos grupos de factores: aquellos relacionados con el tamaño y límites de las áreas de manejo comunal; y aquellos vinculados con la dinámica interna de las comunidades.

Key words: vicuna, conservation, communities, collective action, Bolivia

Introduction

Wildlife conservation perspectives have shifted away from strict-protection to sustainable use, where benefits from wildlife utilisation are expected to provide incentives for community-based conservation (Adams & Hulme, 2001). The community-based strategy relies on a number of assumptions, one being that the target community is a willing participant in collective action (Hutton & Leader-Williams, 2003). Collective action refers to the joint collaboration or involvement of a group of people to achieve a common goal or interest. This paper re-examines this assumption by exploring the factors affecting community involvement in community-based management of vicuna *Vicugna vicugna*, a wild South American camelid which has a limit range in the high Andean region of five countries (Argentina, Bolivia, Chile, Peru, and Ecuador).

Due to the success of vicuna conservation and the high commercial value of its fibre, conservation policies have shifted away from strict protection to allowing sustainable use of the species. This is done under specific commitments signed at regional level (Vicuna Convention[1], 1979) and conditions established by the Convention for the International Trade in Endangered Species of Wild Fauna and Flora (CITES). Under this global policy framework, different exploitation systems have been developed to shear vicunas, with diverse shortcomings for both vicuna conservation and providing meaningful benefits to local people (Lichtenstein, 2004).

Vicuna management and property rights in Bolivia

In Bolivia, the actions of local communities has brought about the the success of vicuna conservation [2]. In 1997, three target populations of vicuña, located in Apolobamba, Mauri-Desaguadero, and Lipez-Chichas were passed by CITES from strict-protection (Appendix I) to allowing commercial use of fibre obtained from live shorn vicunas (Appendix II). From 1997-2002, technical, logistical and financial support[3] has been provided by the State through two government agencies: the General Biodiversity Bureau (DGB) in Mauri-Desaguadero and Lipez-Chichas, and the National Service of Protected Areas (SERNAP) in Apolobamba (DNCB, 1997).

Under this new international policy framework, the government formulated the Vicuna National Regulation[4] supporting community-based management of vicuna in the wild. Vicuna is property of the state, but the government grants custodianship to local communities and exclusive use rights over those wild vicuna populations living in their communal lands. The unit of custodianship and shearing activities is the 'communal management areas' (CMA).

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[1] The Bolivian government is one of the first (together with Peru) to sign the Convention for the Conservation of Vicuna (Tratado de La Paz, 1969) and also to agree, ten years later, to the inclusion of the concept of 'sustainable use' in the new Convention for the Conservation and Management of Vicuna (1979).

[2] The term 'community' or 'ayllu' within the Andean context, refers to a group of families sharing control of a territory and is the social unit used by Quechua and Aymara speaking Andean people for the defence of their rights.

[3] The establishment of partnerships between government and international aid agencies (e.g. SERNAP-AECI in Apolobamba) or projects and programmes (e.g. DGB-Proquipo in Sud Lipez) have played a key role during this period, often attaching conditions to their funding.

[4] The Vicuna National Regulation is divided in VII Titles, XIV Chapters and 64 Articles; authorised by Supreme Decree in May 1997 (DS 24.529)

The general assumption is that CMAs designed by communities themselves, will fit their territorial and social organisation, and facilitate collective action in vicuna management. Bolivia provides a pertinent case to identify the factors affecting community involvement because, in spite of the lack of direct economic[5] benefits from shearing activities, the number of communal areas for vicuna management (CMA) has been increasing from 3 CMAs in 1998 to 32 CMAs in 2002 (DGB, 2003). In 2000, five Regional Associations for Vicuna Management (ARMV) were created to group together communal management areas for the future distribution of benefits from fibre commercialisation.

Study area and research methods

This paper uses primary and secondary data collected in the Regional Association[6] Machaqa. The area is situated at (approximately) 120Km South West from La Paz city, corresponding to the new Municipality of San Andres de Machaqa in the north part of the Mauri-Desaguadero pilot area for vicuna management. It covers around 150,000 hectares surrounded by the river Desaguadero in the North; the frontier with Peru in the west and the Province of Pacajes in the East and South as shown in Figure 1.

The area of Machaqa corresponds to the traditional Marka San Andres de Machaqa. The term Marka refers to the patrimony of minor units represented by kinship jurisdictions called Ayllus[2], surrounding an administrative or ceremonial center (Ticona Alejo & Albo Corrons, 1997). Figure 1 shows how the Marka San Andres de Machaqa is divided into six Ayllus: Collana, Levita, Choque, Alto Achacana, Bajo Achacana and Yaru. These converge in a town called San Andres de Machaqa, which is situated at their geographical centre. These Ayllus are divided into minor 'communities' that group between 30-60 families.

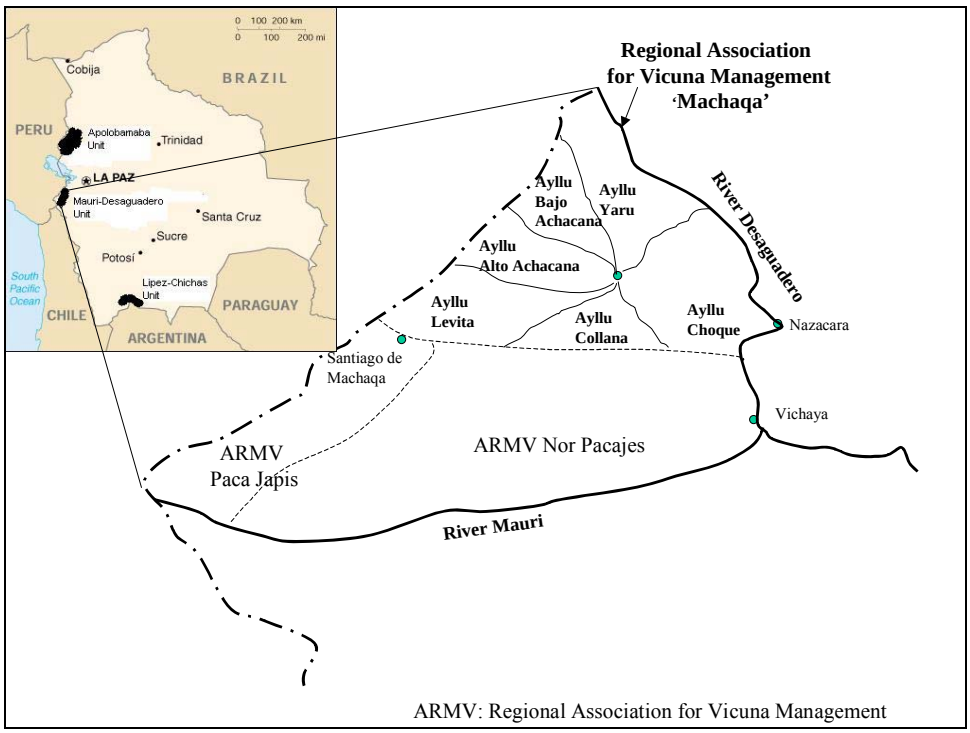
Vicuna capture and shearing events started in the year 2000, with technical, financial and logistical support from by the DGB. The main role of DGB (as the CITES authority in Bolivia) is to control and certify that fibre has been obtained from live sheared animals. But, during the first three years of implementation (2000-2002), DGB also provided broad support for the communities.

Research methods combined participative observation with other research techniques such as semi-structured interviews and group discussions before and during vicuna capture and shearing events. Information was triangulated with secondary data obtained from review of documents and official records.

[5] The fibre sheared from 1998-2002 is stocked by government for future commercialisation.

[6] In 2000, five Regional Associations for Vicuna Management (ARMV) were created to group communal management areas for the future distribution of benefits from fibre commercialisation.. These are distributed in Potosi department (Sud Lipez) and La Paz department (Apolobamba; Machaqa; Paca Japis; and Nor Pacajes)

Figure 1. Mauri-Desaguadero area for vicuna management



Results and discussion

Vicuna capture and shearing events take place in each of the communal management areas that are willing to participate in the activities, in joint collaboration with two DGB technicians and 16 wildlife wardens[7] from the Mauri-Desaguadero area. The two-day events are divided in a number of stages and organisational processes as seen in Table 1.

Table 1. Organisational processes during vicuna capture and shearing events

Stages	**Organisational processes**		
	Coordination and planning	**Decision-making arrangements**	**Collective action arrangements**
Construction of capture enclosure	Date of the event Site of the event Transport of posts	Criteria for selection of capture site and design of enclosure	Human labour
Round-up and capture of vicuna	Coordination of people Social contract (Ayni)	Round-up strategy	Human labour
Shearing and certification	Coordination and division of labour	Shearing technique	Skills and capabilities

[7] Wildlife wardens are community members employed by DGB agency to monitor and control vicuna all year round as well as produce a monthly census report informing on the status of vicuna populations.

The first day of the event consists of the construction of enclosure, while the second day consists of the round-up, capture, and shearing. These different stages and the organisational processes involved are described below.

Construction of the capture enclosure

The capture enclosure (*manga de captura*) is a structure installed forming a V-shaped design to permit the round-up of vicunas to a corral at its end. The structure is constructed with posts 3 m long and 10cm in diameter that are joined by fish netting (type "Raschell") 200 m in length and 2 m wide. Netting and posts are shared between communities. The DGB supports the transport of nets, but relies on the pre-planning and coordination of communities for the transport of posts to the capture site.

Round-up and capture of vicuña

People are first grouped in different points far away from the corral (depending on the design of the capture enclosure) in order not to be seen by vicunas that are grazing inside the V shaped enclosure. With the use of walkie-talkies the different groups are coordinated to gradually walk towards the corral, slowly reducing the distance from each other until they are joined in the same line until the vicunas are enclosed in the corral. Once inside, the vicuna's legs are tied up (following the same traditional method as domestic animals) and laid down on the floor.

Shearing and certification of vicuña

Animals are divided by sex, offspring younger than two years old are not sheared and are kept to one side; females are first sheared and then released together with their offspring. Once all vicunas have been released into the wild, the fibre sheared from each animal is put into a plastic bag and the weight recorded using an electronic balance provided by DGB technician. This number is registered in the Community Minutes[8] and the DGB agency files. The fibre collected is then stored in DGB central offices in La Paz with the name of the communal management area awaiting future commercialisation.

[8] The Community Minutes (Actas de la Comunidad) also records the names of the participants and their community of origin.

Table 2 shows that community involvement has not been continuous and while new communities get involved (e.g Huallaquiri), others decide not to get involved (e.g. Pachamaya).

Table 2. Characteristics of the 12 communal management areas in Machaqa area

Ayllu	Area (Ha)	Number Vicunas	Wildlife wardens	CMA	No of communities involved	Community involvement in vicuna capture and shearing events		
						2000	2001	2002
Choque	20,112	1,672	3	San Antonio	1		-	√
				Kanapata	1	-	√	√
				Nazacara	1	√	√	√
				J.deManquiri	1	√	√	√
				Huallaquiri	1	-	-	√
				Pachamaya	1	-	√	-
Yaru	13,104	500	1	Conchacollo	3	-	√	√
Collana	21,141	955	1	Collana	6	-	-	√
Levita	41,186	1,996	2	Laquinamaya	8	-	√	√
Bajo Achacana	23,163	1,050	0	Chijipucara	1	-	-	√
				Chuncarcota	1	√	√	-
Alto Achacana	30,200	1,314	2	Antaquirani	1	-	-	√

Sources: Integration of primary (Field work) and secondary sources (DGB, 2003; Prefectura La Paz, 2002)

The analysis of the different cases presented in Table 2 reveals that the different patterns of community involvement observed depend on a compromise between size and boundaries of communal management areas, and the internal dynamics of communities as discussed below.

Each Ayllu within Machaqa coincides with the Vicuna Protected Area established by government for monitoring and control of vicuna populations (DNCB, 1996). Within each Ayllu the distribution of vicuna is not homogeneous, depending on the dynamics of vicuna populations and the habitat availability that can also vary from one season to the next (Renaudeau d'Arc et al., 2000). Table 2 shows two different sizes of communal management areas. Those formed by one community (e.g. cases in Ayllu Choque) and those formed by a group of communities (e.g. cases in Yaru, Levita and Collana).

Ayllu Choque has (approximately) 1,672 vicunas distributed in 20,112 hectares patrolled and monitored through periodic census by three wildlife wardens[9]. Each of the six communities in Choque decided to manage vicuna at the community level without grouping their territories. In reporting communities decisions to get involved or not in vicuna capture and shearing events, views are strongly shaped by past experiences.

[9] Wildlife wardens are both community members and DGB employees. The three wildlife wardens in Ayllu Choque, for example, are community members from Nazacara, Huallaquiri and Pachamaya.

For instance, in the case of CMA Huallaquiri, the community authority first expressed her reserves towards participating in the shearing event that year (2002) arguing that it was not good for the capture because it was on a slope, there was low density of vicuna and there were too few people. Her argument was based on the perception that her community did not fulfill the three criteria for the selection of a capture site (high density of vicunas, water availability and accessibility to the area). This perception was influenced by observations during vicuna capture and shearing events in CMA Nazacara, a communal management area with a high density of vicunas (probably related to the good local habitat conditions) as well as good topography for the placement of enclosure. Communal management areas integrated by one community only can provide 1 to 3 (in the best of cases) appropriate sites where to capture vicuna. Where the density of vicuna is low, varying spatially and over time (probably related to the poor habitat quality), the availability of vicuna at time of need (day of capture) is unpredictable.

While the unpredictable availability of vicuna at time of need is a common problem observed in the literature of common pool resources (Ostrom, 1990), the analysis suggests that communal management areas integrated by more than one community can better address this problem than those areas integrated by only one community by increasing the number of appropriate sites to capture vicuna. For example, in 2002, the shared territories of the eight communities in CMA Laquinamaya provided two appropriate sites to capture and shear vicuna.

While the size of communal management areas may be affecting the probability of vicuna capture, the difficulty of common property regimes as a tenure strategy (Giordano, 2003) may also be influencing local people's perceptions towards vicuna management. This is illustrated by looking at the factors affecting the involvement of Pachamaya in vicuna capture and shearing events in 2002.

During a group discussion amongst wildlife wardens (one belonging to the Pachamaya community) they revealed that Pachamaya did not want to participate because half of them were in discord between being involved or not. The underlying reason for this disagreement was related to past experiences that members from Pachamaya community had faced during their participation in the shearing event in 2001 (the previous year). In this regard, the wildlife warden from Pachamaya community remarked that the previous year, when they captured vicunas, people started to yell that they were vicunas from CMA Jesus de Manquiri, and asked for them to be released again. In the case of communal management areas in Machaqa, the demarcation of boundaries is based on social norms (informal laws) frequently unknown except to community members (Astvaldsson, 1997; Plata Quispe et al., 2002; Ticona Alejo & Albo Corrons, 1997). In the case of CMA Laquinamaya, the eight communities decisions to manage vicuna in joint collaboration may be based on their past successful experience in managing water resources[10]. But, three communities from the Ayllu Levita are not included in this joint collaboration. One reason of this is because these three communities want to divide their boundaries from the rest of the Ayllu and create their own canton. This process of division of communities through land titling (Land Reform INRA 1996) has also been observed in other parts of Machaqa area such as the case of Chuncarcota in Ayllu Bajo Achacana (Plata Quispe et al. 2002).

[10] This development intervention has been supported by the Misión Alianza Noruega and is still functioning.

In fact, this difficulty of defining boundaries of communal management areas is related to open debates about how boundaries and borders should be conceptualised in common property regimes (Geisler et al., 1997; Sturgeon, 2004) but also on socio-political context in which processes of divisions and fusions are taking place (Albó 2003).

Vicuna capture and shearing events relies heavily on collective action institutions already in place in the Andean communites, that also reduces other costs associated with the two-day events, such as the access to tools, infrastructure or transport of posts (for example, posts are shared by each of the three Ayllus in Machaqa). In fact, this type of institutions for mutual aid, reciprocity and collective work (such as Ayni), as well as the community land not being divided by fences and the relative poverty of the Bolivian Altiplano are the three main reasons supporting community-based management in the wild.

For example, in the case of CMA Huallaquiri, the community authority's willingness to participate in the event (supported by community members) was strong enough and the problem of lack of human labour was resolved through the establishment of a social contract or mutual reciprocity agreement with Jesus de Manquiri and Nazacara called Ayni.

In spite of low expectations (such as the school teacher from Jesus de Manquiri who told me he really doubted Jesus de Manquiri would give much support), on the day of the event there were approximately 23 community members amongst which approximately 10 came from Jesus de Manquiri and 5 from Nazacara. The community involvement in these cases was related to the legitimacy to the social contract made between communities (Ayni). This social contract is a key element in the organisational process during the round-up and capture of vicuna for those CMA integrated by one community only. In those CMAs where social contracts have not been established (e.g. CMA Chijipucara) the lack of labour affected the vicuna capture event, which resulted in a small number of vicuna being captured.

The number of people available during the capture is a key factor affecting vicuna events. The size of communal management areas plays a key role since they represent a strategy to compensate the effects of out-migration on the human labour available. The social bond to collaborate in vicuna activities is already established in those communal management areas formed by more than one community. However, those communal management areas formed by one community only depend on the establishment of these social contracts to compensate the lack of human labour. This strategy depends heavily on the characteristics of community members, and, in the future, it is difficult to predict whether the internal dynamics of communities is changing towards reinforcing or on the contrary, weakening these links.

Conclusions

While the immediate decisions to join the programme may be influenced by past experiences from the programme, this paper highlighted that issues within communities is a complex affair that must be considered when exploring institutions of management. These are the size and boundaries of communal management areas, and the collective action arrangements during vicuna capture and shearing events, both happening within a changing socio-political context in which communities exist today.

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