

Wildlife or livestock? Divergent paths for the vicuña as priorities change in the pursuit of sustainable development

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English abstract

The unparalleled success of the international conservation effort of the last 30 years to recover populations of vicuña (*Vicugna vicugna*) from the brink of extinction has resulted in widespread ambitions to derive income from sales of its fibre. Vicuñas are locally abundant in their four main range countries, to the extent that competition with domestic livestock for grazing resources is an increasingly important issue for pastoral altiplano communities. A condition for the relaxation of international regulations on trade under CITES has been that fibre harvesting should be non-lethal, and this has led to the establishment of a number of different models for exploitation based around the live capture, shearing and release of vicuña. Proyecto MACS, a research initiative with support of the EU INCO programme has been investigating the ecological, economic and social implications of alternative management approaches. Liberalisation has resulted in different strategies emerging in different parts of the altiplano largely as a result of diverse policy priorities in the different countries. This paper reports results from Proyecto MACS to demonstrate some of the implications of these management strategies for the vicuña and its continued conservation.

Spanish abstract

Introduction

A coordinated international programme of controls on hunting and trade in the vicuña (*Vicugna vicugna*) during a period of some 30 years successfully averted the danger of extinction, and led to a resurgence in the population and expansion of range that still continues. The high value of the vicuña's fleece continues, however, to generate interest in its commercial exploitation, and a number of initiatives have been established to enable fibre harvesting, under license to the relevant CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) authorities. The revision of conservation policy has generally aimed to balance the interests of conservation against the pressing need for economic development. The widely accepted paradigm has been that:

"..the greater the equity and degree of participation in governance, the greater the likelihood of achieving [biodiversity conservation] for present and future generations"
(IUCN Sustainable Use Specialist Group, 2001).

The nature of the systems that have been established since the first relaxation of CITES controls in 1996 has been diverse, with different levels of management “intensity” reflecting different social-cultural realities on the ground. Vicuña have already become livestock in some areas, while they continue to be protected as wildlife in others. This paper explores the nature of this dichotomy, its origins and possible consequences.

Background

The vicuña is found at elevations in excess of 3700m in a range which extends from 9°30’S around Ancash in Perú to 29°30’ in the III region (Atacama) of Chile (Novoa & Wheeler 1984). The vicuña is classified as “lower risk: conservation dependent” in the 1996 Red List of Threatened Animals (IUCN 1996).

The vicuña has a long history of association with man. Early inhabitants of South America began the process of domestication some 6000 years BP in the Lake Titicaca basin of Perú and Bolivia (Novoa & Wheeler 1984). A millennium of selective breeding created the alpaca, an animal which, before the 15th century Spanish conquest was differentiated, as modern day sheep, into a large number of distinct and specialised breeds (Wheeler 1984; Kadwell *et al.* 2001), mostly used for their wool and for meat. By Incan times, management of the wild vicuña was ritualised and followed strict rules, which ensured not only that the fibre was available for the exclusive use of the Incan royal family, but also maintained a pattern of sustainable utilisation of the wildlife resource (Ochoa 1994a). Hunting of vicuña was prohibited. The harvesting of fibre was a communal activity in organised “chakus”, with each population being captured once in every three to four years. By modern standards, these chakus were immense affairs – early reports describe 20-30 thousand people taking part in each chaku, with a catch of 30-40 thousand head (Ochoa 1994b). All types of animals were shorn, and some of the males were killed for meat for the participants in the chaku. Cloth made from the fibre was highly prized. Garments are reported to have been worn once only by the emperor, thereafter being given away as favours and for burned offerings to the gods (Wheeler 1995).

This apparently sustainable system of vicuña use broke down completely with the Spanish conquest. It has been estimated that the pre-Colombian vicuña population was in the region of 1.5-2 million head (Flores-Ochoa 1977). Though Incan belief systems persisted in communities of indigenous pastoralists, the introduced Spanish culture along with the firearms that they brought, recognised no cultural restrictions. With increasing pressure from hunting, numbers began to fall. Concern about overexploitation was recorded even in the 16th century by Spanish chronicler Pedro Cieza de León, who noted a dramatic decline in the populations of both vicuña and guanaco in Perú following colonisation in 1532 (Flores, 1994). The first conservation legislation was issued by decree in 1777 by the Imperial Court, when it was ruled that it was illegal to kill a vicuña and that it was necessary to have a suitable person, appointed by a magistrate present at captures. Later, at independence in 1825, Simon Bólvivar introduced further measures in Perú to prevent hunting of vicuña. Acting against this was the establishment of new

trading links, principally for alpaca fibres, to export markets by British-owned companies based in Arequipa (Orlove 1977).

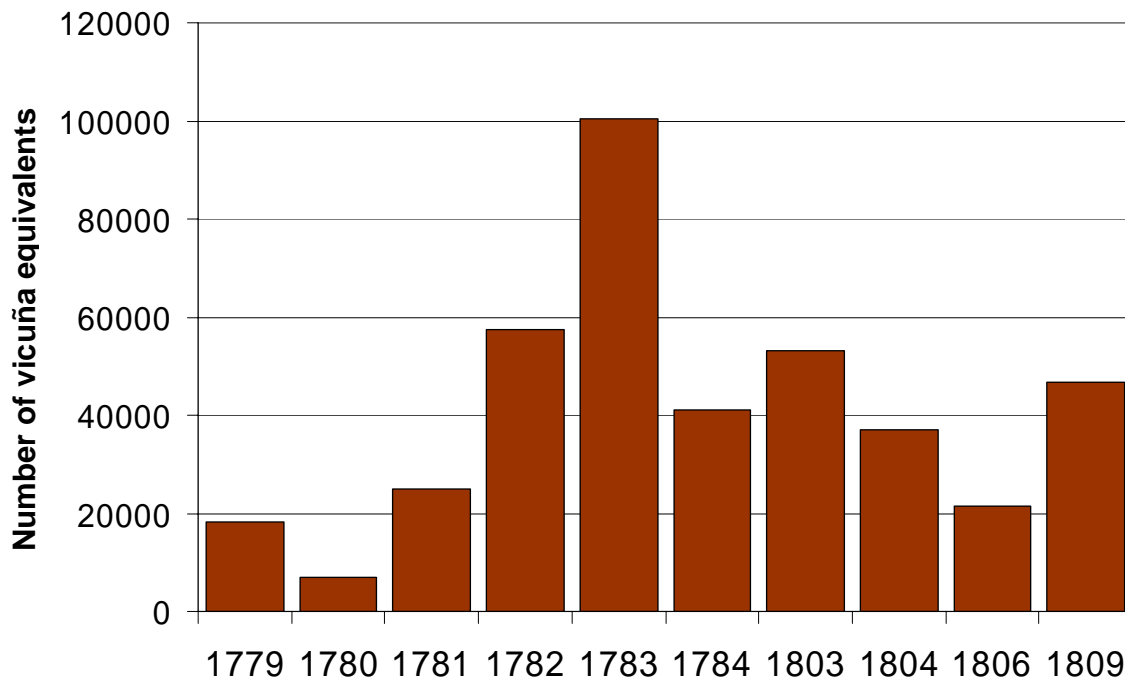


Figure 1. Exports of vicuña fibre from Argentina and Bolivia, 1779 – 1809, calculated assuming an average fleece weight of 250g. After Yacobaccio (2003).

Laws to protect the vicuña continued to be introduced. A Supreme Decree in 1920 prohibited trade in vicuña products, and another in 1926 forbade the export of vicuña fibre from Perú. These measures had a limited impact on hunting activities, but in 1933, controls were relaxed again to allow state involvement in licensed vicuña fibre exports. At this time, commercial demand and hence international trade in vicuña skins increased, such that as a result numbers began to crash dramatically. In the period 1937-1965, imports of vicuña fibre to the UK, the principal market, averaged 1270 kg per year, equivalent to the production from some 5500 – 6500 individuals (J.Sugden, pers. comm.). Over the same period, the vicuña population appears to have fallen from 400,000 in the 1950s to about 10,000 individuals in 1967 (Wheeler & Hoces 1997). The population estimates at this time are likely not to be particularly accurate, but it seems clear that the surge in pressure on vicuña stocks caused a rapid decline, and exposed the species to a very real risk of extinction. Fibre continued to be traded openly (approx. 350kg/yr) until 1970, when international restrictions on trade were enforced, and conservation measures were agreed multilaterally by the signatories of the first Vicuña Convention.

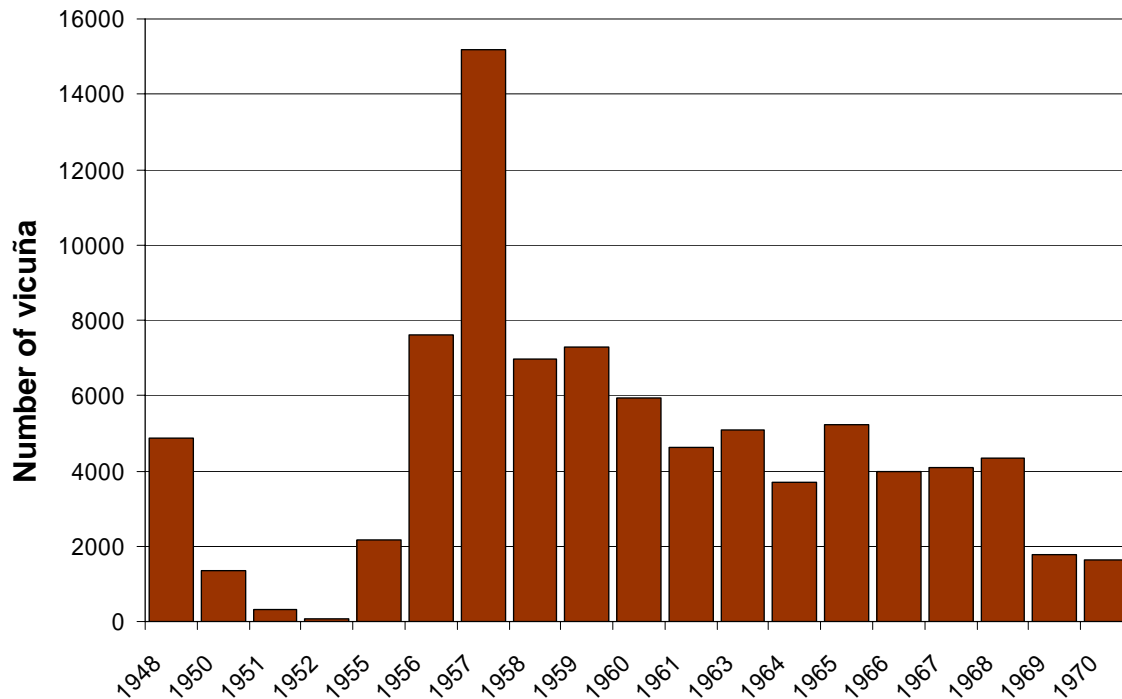


Figure 2. Imports of vicuña fibre by one British company, 1948-1970.

The vicuña as agent of sustainable development

There is widespread belief that sustainable use of vicuña for its fleece through appropriate management has great potential to contribute both to the long-term conservation of the species and to the economic development of Andean communities sharing the same land (Sumar 1988; Torres 1992; IUCN 1996). This principle is formalised in the 1978 Vicuña Convention, though it was not until 1996 that capture and shearing on a legal commercial basis began. Exploitation of the vicuña is now practised to a greater or lesser extent in all four altiplano countries, though the results in terms of development have been mixed (Lichtenstein *et al.* 2002). Management practices vary between (and within) the countries, apparently as a result of cultural, political and land tenure differences (Galaz 1998; Lichtenstein *et al.* 2002).

As many of the indigenous communities involved give religious and cultural importance to the vicuña, there is an extra sociological dimension to the dynamics of vicuña ecology (Bernhardson 1986). The future of vicuña conservation is inextricably linked to future economic and social change in the altiplano. Vicuña may increase in numbers and colonise new areas only if left to do so by local communities. Tolerance, or the lack of it - the trade-off between culturally reinforced positive attitudes towards vicuña and practical concern for their direct impact on forage availability for livestock - may be a highly significant factor influencing vicuña distribution (Cueto *et al.* 1985).

Conservation activities for vicuña were first developed in Pampa Galeras in Perú. In 1972, the reserve received support from the German Federal Government to conduct

research, build infrastructure and establish a security system through armed guards patrolling the 6,500 hectare core management zone. The programme proved highly successful. Removal of hunting pressure resulted in initial recruitment rates of 21% per year (Eltringham & Jordan 1981). However, by the mid 1970's a negative population growth of 11.3% was detected, possibly caused by prolonged droughts and overgrazing (Brack 1980). In response, a cull was carried out in 1977 (120 head) and 1978 (400 head). This decision involved not only the Peruvian authorities, but also international conservation agencies – IUCN and the World Wildlife Fund – and caused huge controversy at the time (Otte & Hoffmann 1981). The issue brought into stark focus the differences between conservationists on the one hand and wildlife managers on the other.

In 1980, the National Plan for the Rational Utilization of the Vicuña was introduced in response to the culling controversy. It was recognised that local communities should see some return for their investment in wildlife protection (Brack *et al.* 1981), and that their involvement in conservation would help to reduce the level of poaching.

The project established a new set of principles for future management of the species by:

- Local community participation
- Technology transfer to the Andean campesino for effective management of the vicuña
- Generation and organisation of legal markets for vicuña wool (based on live shearing of vicuña)
- Implementation of housing, health and education programs in the campesino communities involved in the project.

Revenue generated by the legal commercialisation of the vicuña wool would, it was hoped, generate additional productive activities for the well-being of the population.

Divergent development paths for vicuña management

The principles established in Peru have underpinned subsequent policy development for vicuña sustainable use throughout the altiplano. In 1991, the law was changed to shift the emphasis of vicuña management from protection to sustainable use (*Ley de promoción de las inversiones en el sector agrario, Decreto Legislativo No. 653*), by transferring the custody of the vicuña to local communities as well as transferring technology and methods for the rational use of vicuña wool as a means of local socio-economic development. At this time, international trade was still heavily restricted under CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna). The trade ban for cloth made from Peruvian fibre was lifted in 1995.

In the same year, the government of Perú approved a law granting communities the right to manage the land used by the vicuña, and penalizing illegal game practices (Cueto *et al.* 1985). Local communities began by exporting 2,000 kg of vicuña fibre (produced between 1987 and 1993). The following year, 3,000 kg (produced from 1994 to 1995) were exported. In 1998 the total export was 2,500 kg.

The commercial harvest of vicuña was pushed harder in Perú than in the other three countries because of strong political pressure from local communities to be allowed access to a potentially valuable resource.

Table 1.

Change in the estimated vicuña populations in the 5 signatory countries to the Vicuña Convention since protection measures were introduced.

	1969	1981	1997	2001
Peru	10,000	61,900	102,800	118,700
Bolivia	3,000	4,500	33,800	56,400
Argentina	1,000	8,200	22,100	33,500
Chile	500	8,000	19,800	16,900
Ecuador	0	0	1,600	2,000
Total	14,500	82,600	180,100	227,500

* (Torres 1992), ** Censo de la vicuña 1996, CONACS (1997) (vicuñas)

In Bolivia, which has the second highest population of vicuña, the approach has been more cautious. There has been a strong emphasis on conservation since the establishment of national parks in 1969. Unlike in Perú, however, a legislative framework for vicuña sustainable use was not introduced until 1997 (*Reglamento para la Conservación y Manejo de la Vicuña* - D.S. 24.529). Vicuña retain their national heritage status – they belong to the state - and as such may not be kept in enclosures. Rights of use are, however, passed to local altiplano communities who have official approval to undertake vicuña management (Rendon-Burgos 2000). Three pilot centres were established: Ulla Ulla, Mauri Desaguadero and Sud Lipez, and a programme of capacitation was initiated by the Ministry of Biodiversity and Sustainable Development (DGB) to establish a system of wild capture for the benefit of indigenous communities. The objective of the Bolivian project was clearly stated to involve these communities in decision-making, though unlike in Perú, the government has sought to maintain the conservation of the vicuña as the ultimate objective of management.

In Chile, a conservation programme was initiated in 1970, at which time the national population was estimated at 500 individuals (Cattan & Glade 1989). Protected areas were established in Region I (Lauca, Tarapaca). The main priority was to stop poaching and illegal traffic of fibre and to apply the recently agreed Vicuña Convention (Miller 1980; Torres 1992). With the installation of park guards, annual census counts began to rise as the population recovered with the easing of hunting pressure (Rodriguez & Nunez 1987). By the 1980s, the pressure was beginning to build for sustainable use to be authorised. Several studies were carried out to evaluate fibre quality and ways to distribute benefits

of fibre sales (Fernandez & Luxmoore 1995) and a strategy for the sustainable use of the vicuña was developed (CONAF 1991). It was expected that in the early 1990s, the vicuña should be in use by local communities (Torres 1992). However, the sustainable use by indigenous communities has to date never been realised principally because of problems with agreeing a framework for distribution of benefits.

With the successful population recovery in Chile, the reality on the ground is that conservation has to move forward into a sustainable use phase (Bonacic *et al.* 2002). However, the debate as to the form which such sustainable use should take is becoming increasingly polarised. A pilot programme for breeding vicuña in enclosures was established at Ancara, near the Peruvian border, in 1999, and, following relaxation of the CITES regulations in 2002, it is expected that this model will be expanded to other areas of the I Region of Chile (Refs).

Argentina has a population of around 23,000 vicunas (Torres 1992). The pattern of land use and ownership in the Argentine altiplano is quite distinct from the situation in neighbouring Bolivia. The area is extensively settled by owner-occupier ranchers, with herds of sheep and llamas.

Vicuña distribution in Argentina includes portions of the north-western provinces of Jujuy, the main focus, with vicuña present in Salta, Catamarca, La Rioja and San Juan. The lack of a national census and the scarcity of surveys make it impossible to have reliable data on total vicuna numbers. However most of the researchers in the country agree that some populations have increased their numbers in the last years while others maintained their size (SSN 2002). Populations from areas that suffered local extinction in the past are slowly repopulating. The distribution of the species is patchy. The attitudes of the local population and the frequency of patrols by wildlife guards appear to be important influences on this, with local abundance of vicuña being associated with communities which have a positive attitude to their presence (Vila, 2002, pers. comm.)

Commercial management of wild vicunas is currently permitted by CITES in Jujuy, however, to date there are no records of this having taken place. Vicuña utilisation in Argentina takes place on farms. The system is promoted by the agricultural extension organisation, the National Institute of Agriculture and Cattle Technology (INTA) Abrapampa, Jujuy. This station “donates” groups of 12, 24 or 36 vicuñas from their captive herd to individual producers. Young vicuñas plus 10% of their offspring produced under captive conditions have to be returned to INTA station as a compensation for the initial vicuña “donation”.

Argentine vicuña production created some controversy at the 2002 COP-12 CITES meeting in Chile. The US Fish and Wildlife Service had proposed not to allow Argentine fibre to be imported to the US. Their objection was based in their concerns about the relation between the enclosures and the conservation of the wild populations and the genetic fitness associated with the small of animals in the enclosures. Trade from all producer countries was in the end authorised, on the basis that it would be practically impossible to differentiate traded fibre from different provenance. However, the issue underlines the

sensitivity of a major market for the fibre to ethical questions related to animal welfare and conservation.

The international conservation efforts brought back the species from the brink of extinction. As a consequence of its success, the vicuña conservation programme became one of the most symbolic projects in Latin America. The vicuña programme demonstrated that Governments, International Agencies and local communities could work together to stop species population decline.

As an example of live harvesting of wildlife products, the vicuña is probably unique. As an example of the farming of wildlife for the harvesting of commercially valuable products, the vicuña joins a number of other notable examples worldwide. Farm systems have been established within the last century for the production of other wildlife products, such as bear bile and musk. These predominantly Chinese farms have attracted international criticism on animal welfare grounds. The combination of luxury products with animal abuse is not only ethically inexcusable, but also disastrous for product image. Both the bear and the deer farms have been the subject of hard-hitting animal rights campaigns (Shrestha 1998; Homes 1999). Sustainable use of wildlife is likewise under the spotlight of international concern for both animal welfare and environmental impact (Roe *et al.* 2002).

So it is that the vicuña producers need to be careful not to establish the type of production that could one day attract such criticism from the animal welfare lobby. The nature of fibre as a product, ensures that its provenance is far more obvious to buyers than for example bile or musk. Consumers are already sensitised to environmental concerns about quality textiles following extensive publicity about shahtoosh fibre, the fine undercoat of the Tibetan antelope or *chiru* (Traffic 1999). The campaign to increase public awareness of the plight of the *chiru* has had a significant impact on demand from the US, and should alert vicuña producers to the need to produce fibre within internationally recognised standards of “sustainability”.

On the other hand, it is also obvious that harvesting systems must be at the same time profitable and practical. With problems being encountered with achieving expected levels of wealth creation, the initial aims of sustainable use defined during the seventies are now being reconsidered. There is still no consensus whether the vicuña should be managed communally as a wild animal or be privatised to be farmed by local communities, or indeed other farmers outwith the altiplano. This issue is currently hotly debated in Chile (Galaz 1998). A series of wild capture-release trials were conducted during the last ten years. In 2000, this gave way to trials on breeding in enclosures. In Perú, which embarked on an ambitious programme of enclosure building in the late 90s, opinion amongst the campesinos appears to be swinging away from fencing towards wild management, as cases of psoroptic mange begin to increase in frequency (J. Wheeler, 2002, pers. comm.). Clearly there is a case for improving international collaboration in systems development.

The sustainable harvest of high quality fibre following live capture and release of a wild mammal is perhaps a unique case in wildlife management (Wheeler & Hoces 1997). Non-lethal harvesting obviously has many potential advantages over hunting for skins from the point of view of vicuña conservation. The impacts however of capture, shearing and release are not well known, especially over the longer term (Bonacic *et al.* 2002). The rigorous and unforgiving climate, for example, of the altiplano may cause significant cold stress to animals devoid of the protection of an insulating fleece (Eltringham & Jordan 1981).

Work within the MACS project (Lichtenstein & d'Arc, 2003) suggests that in Argentina and Bolivia, neither the intensive or extensive management options are achieving conservation or local development goals. Management in captivity in Argentina does not provide an incentive towards conservation of vicuñas outside corrals, and the economic benefits, if any, are negligible. The lack of progress in commercialising vicuña fibre in Bolivia has prevented *campesinos* from realizing economic benefits, and incentives for conservation of vicuñas by local communities remain elusive. However, it does seem clear that though the wild management model does have the potential to bring development benefits, the farm model does not seem to have the capacity or scope to either conserve wild vicuña populations outside corrals, or to enhance local livelihoods. However, past experiences from community management of vicuña in Peru suggest that the distribution of benefits among the communities will be a key factor in determining the success of the Bolivian experience.

Conclusions

The management of wild vicuñas has genuine potential to augment rural incomes in the Andes, and this potential is being realised in a number of locations where wild vicuña abundance is high, and effective property rights agreements have been reached. Community involvement will probably ensure protection of wild vicuña numbers, at least where such exploitation is seen to bring real economic or community benefits.

However, conservation is more than maintaining populations. The concept includes protection of landscape, animal welfare, genetic diversity, and indeed “wildness”. It is important that these secondary benefits of wildlife conservation remain an integral part of the development of commercial exploitation. The extraction of valuable fleece is part of an integrated management system for these wild places, enhancing people’s lives by sustaining the protection of wild landscapes and traditional culture.

Farming of vicuñas is not sustainable use. Now that wild vicunas are out of immediate threat of extinction, the breeding of vicunas in captivity makes no positive contribution to the conservation of vicunas in the wild. Indeed, restriction of free movement of vicuñas over extended periods reduces conservation value and implies duty of care for animal health and nutrition.

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