

## Mountain-Specific Activities of the European Grassland Federation

In 1963, grassland scientists officially established the European Grassland Federation (EGF), which represents countries throughout Europe and covers all European mountainous regions. From the beginning, the EGF had the following objectives.

- To facilitate and maintain close contact among European grassland organizations.
- To promote the interchange of scientific and practical experience among grassland experts.
- To initiate symposia and other meetings among European grassland organizations.

Membership is open to national or representative grassland organizations in Europe. These may be national grassland societies or associations, national grassland institutes, or academies of agricultural science. Presently, there are 29 full country members and 7 so-called corresponding members in countries without a national or representative organization.

### Focus on mountain grasslands

As a general rule, conference themes are partly tailored to the type of grassland agriculture in the host country. Thus, aspects of moun-

tain grassland farming may be featured regularly in the general meetings or more specifically in symposia held in mountain countries.

The following meetings or symposia included specific aspects of mountain agriculture.

- Scotland, 1968—Hill Land Productivity.
- Yugoslavia, 1980—Forage Production Under Marginal Conditions.
- Norway, 1984—Impact of Climate on Grassland Production and Quality.
- Italy, 1996—Grassland and Land Use Systems.
- Germany, 2001—Organic Grassland Farming.
- France, 2002—Multifunction Grasslands: Quality Forages, Animal Products, and Landscapes.

With 2002 being the International Year of Mountains, it is fitting that Bulgaria (Pleven) was selected for the May 2003 symposium on “Optimal Forage Systems for Animal Production and the Environment.”

The next general meeting, on the theme “Land Use Systems in Grassland-Dominated Regions,” is scheduled to be held in Switzerland (Lucerne) in June 2004. At this congress, a wide range of aspects relating to grassland systems will be discussed,

with a focus on their implications under various environmental conditions and management intensities. Recent advances allowing increased efficiency and sustainability of grassland systems will be presented. Expectations about grassland systems and the achievements of these systems in terms of services to society and production of high-quality food will be discussed. Concepts of transdisciplinary research and system-oriented extension services will be introduced, pointing out how they can help meet future challenges of grassland-based agricultural systems. The GM will offer master classes and plenary sessions on themes such as “Balancing Ecology and Economics,” “Benefits and Risks to Society,” “Efficient Use of Natural Resources in Grassland Systems,” “From Forage to Food Quality and Safety,” and “Transdisciplinary Research and Exchange of Knowledge.”

Additional information on aspects and activities of the EGF, such as member countries, publications, and future conferences, is available on the EGF Web site [www.europeangrassland.org](http://www.europeangrassland.org).

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## Vicuna Use by Andean Communities: An Overview

Vicuna (*Vicugna vicugna*) are wild South American camelids that live in high-altitude steppes between Andean mountain ranges in the ecoregions of the Puna and

Altoandina. The species is prized for its fine fiber, which placed it at risk of extinction in the 1960s. Effective conservation measures during the past 30 years have

resulted in an increase in vicuna numbers, and now the world population is at approximately 200,000. Since the recovery of the species, Andean countries with viable vicu-

na populations (Peru, Bolivia, Chile, and Argentina) have begun developing management plans with the goal of promoting conservation while creating an alternative source of income for local people who live in a resource-poor area. The authors, both of whom are members of the World Conservation Union's Species Survival Commission, South American Camelid Specialist Group and reviewers of vicuna-related proposals for the Fish and Wildlife Service (FWS) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), describe ongoing management plans in these countries and explore their biological and socioeconomic impact. They suggest that wild management is a preferable alternative to captive management to promote sustainable use of the species and to improve the quality of life of the local people.

### Of vicuna and people

The altiplano of Argentina, Chile, Bolivia, and Peru, with an altitude of 3900–5000 m, is characterized by very harsh conditions such as low annual rainfall, a high daily temperature range, and low primary productivity (Figure 1). The area is inhabited by indigenous human communities with a rich cultural tradition of myths, legends, and rituals, and a particular cosmivision that mediates their interaction with the environment.

Although the economy of the area thrived during preconquest times, at present it is one of the poorest regions in South America. Climatic and management factors such as altitude, harsh weather conditions, destructive frosts, soil erosion, pasture reduction caused by overgrazing, scarcity of water, and periodic droughts reduce the options for agriculture and limit economic activities. This is compounded by the lack of special techniques

adapted to production in desert environments, by the distance from markets, and by the low demand for regional products. The lack of opportunities leads to the out-migration of locals, who seek cash-generating opportunities in rural areas and cities at lower altitudes.

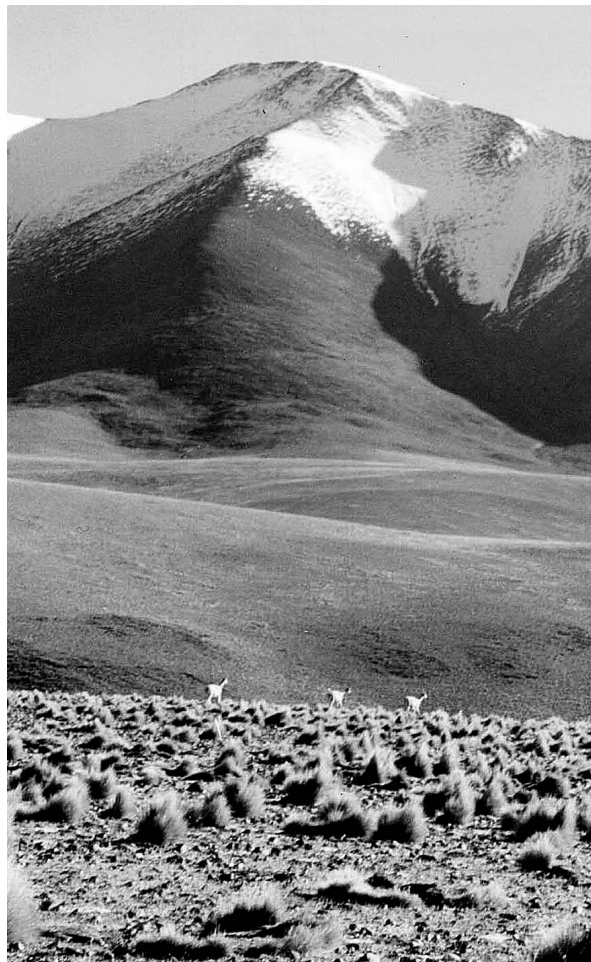
The South American camelids, both wild (ie, vicunas [*Vicugna vicugna*] and guanacos [*Lama guanicoe*]) and domestic (ie, alpacas [*Vicugna pacos*] and llamas [*Lama glama*]), have a long history of exploitation. Zooarcheological evidence suggest that vicunas and guanacos have been hunted since approximately 10,000 BP. Recent studies using molecular techniques support the hypothesis that alpacas are the result of the domestication of vicunas and that llamas are the product of the domestication of guanacos. In the mystical world of the local campesinos, vicunas and guanacos are *salqa* (they belong to the Mother Earth, *Pachamama*), and llamas and alpacas are *uywa* (they belong to the people). According to local traditions, economic success depends on the benevolence of *Pachamama*. This is obtained by rituals, offerings, and correct interaction with Nature.

### Priceless wool: boon and menace

Vicunas are members of the group of animals that produce fine fiber such as mohair and cashmere, angora, and shahtoosh (produced by goats, rabbits, and chiru, respectively). Vicuna scarves are famous for being warm yet so light that they can be pulled through a ring. The fact that each animal produces a small amount of fiber (on average 0.250 kg every 2 years), coupled with its quality and the relative scarcity of viable vicuna populations, makes vicuna fiber one of the most expensive and sought after in the world. Raw fiber was sold at US\$523/kg in Chile's first auction in March 2002. Vicuna scarves are sold at US\$1000

at Peru's international airport, and vicuna jackets can be bought starting at US\$5000 in the UK.

The value of its fiber brought the vicuna to the verge of extinction. The Incas used vicuna sustainably by conducting roundups or *chakus* every 3–5 years, where some animals were shorn. After the Spanish conquest, vicunas were slaughtered in large numbers; along with competition from livestock, this almost caused the extinction of the species, reducing the world population to approximately 6000 individuals by 1965. This led to the listing of the species in Appendix I of CITES, and the creation of the Vicuna Convention with the aim of protecting the species and promoting sustainable use. International conservation efforts resulted in the recovery of some populations, and vicunas are now classified as LTRcd (lower risk–conservation dependent) in the 1996 Red List of threatened animals. The ban on trade of



**FIGURE 1** Andean landscape in Jujuy, Argentina. (Photo by Bibiana Vilá)

**FIGURE 2** Vicuna being shorn in Pampa Galeras, Peru. (Photo by Gabriela Lichtenstein)



vicuna fiber has been lifted from all vicuna populations in Peru and from certain populations in Argentina, Bolivia, and Chile.

In the areas where vicunas are still protected, local people complain about them because of perceived competition for food and water with domestic livestock, destruction of fences, and transmission of disease. When protection and incentives to protect vicunas are poor, people chase them with dogs and collaborate with poachers. Illegal hunting is still a major threat.

### The path to sustainability

The fact that vicuna fiber can be relatively easily obtained from live, shorn wild animals that have been temporarily caught makes this species ideal for sustainable use. Wild management draws on the *chakus* practiced by the Incas; vicuna are caught by surrounding them and driving them toward a funnel-shaped mesh enclosure. Once inside the enclosure, vicunas are taken one by one, shorn, and then released (Figure 2). Stress can be minimized by proper handling techniques. The alternative approach of captive management involves fencing a variable number of vicunas into a corral or larger enclosure and providing them veterinary care, water, food, and supplements. In smaller corrals, subordinate males are castrated to avoid fights and injuries.

Although the conservation and socioeconomic value of corrals has recently been questioned by international forums (eg, Traffic, FWS, CITES), ranches are becoming quite popular because they allow individual producers and not just whole communities to have a stake.

Data obtained from fieldwork in Ayacucho Region in Peru and from a study in Jujuy and Salta Provinces in Argentina are presented below to describe the biological

and socioeconomic impact of ongoing vicuna management plans. This is supplemented with public documents from all countries that have vicuna populations and with presentations made at the last 4 meetings of the Vicuna Convention.

### Different countries, different plans, one Vicuna Convention

Management plans in each country have been developed according to the country-specific social organizational systems, idiosyncracies, livelihoods, and national and local laws pertaining to resource and land tenure (Table 1). In the case of Peru and Bolivia, vicuna management plans were originally designed for whole communities to manage vicunas collectively in communal lands. In Argentina, where land is owned mainly by individual producers, a program for individual ranching was developed. Chile's management plans involve a mixture of community management of wild vicunas by Aymara communities and captive management by groups of Aymara families. Interestingly, in Argentina the main producers are not local farmers but a public organization: the National Institute of Agriculture and Cattle Technology (INTA). This organization not only provides technical assistance

**TABLE 1**

Country	Total number of vicunas	Type of management	Number of vicunas held in corrals	Price (US\$/kg)	Fiber exports (kg)
Argentina	35,000–45,000? (no census)	Captive	1500	250, rump; 70, belly and underpart	807.16 (1997–2001)
Bolivia	56,383 (2001)	Wild	NA	NA	NA
Chile	16,899 (2001)	Wild and captive	200	523, rump: 132, belly and underpart	99 (2002)
Peru	118,678 (2000)	Wild and captive	26,000	308	19,819, raw fiber; 15,607, processed fiber (1994–2001)



and vicunas to local producers but also organizes the fiber auctions.

The amount and extent of public financing and technical assistance provided by countries for vicuna management vary. In Argentina the government does not provide financing to producers, who instead must rely on a private company to finance their corrals and shearing equipment, whereas in Chile the state provides all of the infrastructure and technical assistance. The number and power of the actors involved also vary greatly; Peru has the most powerful producer organization, the National Vicuna Society, in charge of collecting and selling the fiber from 250 communities from all over the country.

In every country technical assistance is provided by public organizations dependent either on the Ministry of Agriculture or the Ministry of Sustainable Development. The Vicuna Convention provides general guidelines for the development of vicuna management plans and the protection of the species by advocating at the international level and by supporting or failing to support proposals developed by its member countries.

### **Vicuna management in Peru and Argentina**

Since 1992, communities in Peru have had stewardship and property rights over vicunas under national law. Until 1995, vicunas were managed in the wild and were captured only to be shorn, and then released. Since 1996, the National Council for South American Camelids began developing a program that consists of installing 1000-hectare corrals (with a 12-km perimeter) on communal land from which domestic livestock is withdrawn. Corrals generally enclose between 250 and 1000 vicunas. Communities pay US\$22,000 for the corrals and provide free labor and land. The fiber produced by all communities is stocked and sold by the National

Vicuna Society to an international consortium. Corrals can be paid for in cash (through a loan from the government) or in vicunas (valued at US\$1000 each). Vicunas given as payment for the loan are in turn used in a repopulation program that sells them to communities that want to install a corral. By the end of 1998, 250 communities had joined the captive management program, 415 vicunas had been transferred to communities that wished to stock vicuna, and 2400 vicunas came from communities that used vicunas to pay for their corrals.

Vicuna captive management plans in Argentina are led by INTA's Abrapampa Station. This station donates 12–36 vicunas from its own captive herd to individual producers. A greater number of young vicuna, produced under captive conditions, have to be returned to the INTA station by each producer as compensation for the initial vicuna donation. Fencing material for the installation of 10-hectare corrals is financed by the principal local buyer of vicuna fiber (Pelama Chubut SA). Once vicunas are shorn, producers sell the fiber obtained to Pelama Chubut SA to pay for the fences and obtain some cash. It takes 4–10 years for producers to pay back the loan depending on the percentage of production they allocate for this purpose.

### **Biological impact**

Vicuna captive management plans either in small corrals or in large enclosures have similar consequences for the enclosed population. The social organization of vicuna is based on stable family groups and bachelor groups. Males regulate the size of their group and access to females by aggressive displays or fights. Bachelor groups play a key role in reproduction. The genetic importance of the bachelor groups is related to the fact that they can move freely between populations, “moving genes” over

extended areas. In captivity, bachelor groups can neither run away from the aggressive territorial males nor migrate. Captive management practices in Argentina include the castration of bachelor males, which disrupts the natural social organization of vicunas and inhibits the genetic flow between populations. Other genetic consequences include inbreeding, genetic drift, and artificial selection.

Producers often force captive vicunas to live at levels of population density higher than they would tolerate in the wild, because larger animal populations mean greater returns. As space becomes limited, competition can become severe, and antagonistic interaction rates may increase. Because subordinate individuals are often unable to avoid or escape from aggressive or dominant conspecifics, they may experience injury and physiological stress. Stress causes a dramatic decline in the vicuna birth rate in the small enclosures of Argentina. This is particularly problematic because producers must return young vicunas to INTA in exchange for the ones that were originally donated.

### **Socioeconomic impact**

A socioeconomic study of the management plan in Peru revealed that captive management implies a high-risk investment with low expected returns. Local people have to work for free in vicuna capture and installation of corrals, paying an opportunity cost for not doing other jobs and for removing their livestock from the best lands. The program appears to have had little direct financial impact so far on most community members. Corrals generate a conflict between environmental and economic interests: given the low carrying capacity of the Peruvian Puna (0.3 vicunas/hectare), placing more than 300 vicunas in a 1000-hectare corral has a negative impact on the environment and on vicuna population

growth. But from an economic perspective, more vicunas per corral produces greater short-term profit.

For communities with 400 vicunas, corrals are a high-risk investment with low expected returns. For communities with less than 250 vicunas, corrals are not profitable. This contrasts with revenues from the management of free vicunas, which is a moderately risky venture with a good chance of profitability. Because wild management entails paying wages to local people, it helps the local economy and provides a direct benefit to workers. Because they do not have to remove domestic livestock from the area of the corral, community members pay no opportunity cost for wild management.

Workshops with communities in Peru revealed that having to remove domestic livestock from the corral area acts as a disincentive to establishing captive vicuna populations. Moreover, neighboring communities are fighting over where to install the corrals. Even though communal work is part of the local tradition, interest in participating in vicuna

captures is decreasing because people realize that they do not receive benefits. This is also causing an increase in poaching activities.

An economic study in Argentina revealed that it is unlikely that an investment in a 10-hectare corral for 12–36 vicunas, which produce at the most 7.2 kg of fiber every 2 years, can be profitable, especially because producers have to return the original number of vicuna to INTA and pay for the loan for the corral. Producers believe that they need at least 120 vicunas to make the enterprise profitable and 10–12 years before they realize economic returns under present conditions. The lack of economic returns limits producers' investment in the care and management of vicunas. Thirty-seven percent of the corrals have already returned their vicunas to INTA or were closed down because animals were not provided adequate care.

### Concluding remarks

All available evidence leads us to conclude that management of free-ranging vicunas is a preferable

alternative to management of captive vicunas, from both a biological and a socioeconomic perspective. Furthermore, in captive management programs indigenous knowledge is generally ignored and replaced by systems of exploitation alien to local people. We fear that the lack of benefits to local people might threaten the long-term viability of many vicuna populations because poaching could increase.

### ACKNOWLEDGMENT

This work was undertaken as part of Proyecto MACS for the European Union INCO-DEV program (ICA4-2000-10229)

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## 75 Years of the Himalayan Club and *Himalayan Journal*

Founded by a group of British officers, mountaineers, and naturalists in 1928, the Himalayan Club was a noted institution in British India that has lasted to this day. In 1927, Sir Geoffrey Corbett, a member of the Indian Civil Service, wrote a letter to 3 British officials with an interest in the Himalaya: Major Kenneth Mason of the Survey of India, Major General Walter Kirke (then acting as Chief of the General Staff), and Brigadier E. A. Tandy, Surveyor General of India. Corbett suggested founding a Himalayan Club, and the others supported the idea. Corbett then went ahead and contacted other leading officials,

including the Viceroy, the Commander-in-Chief in India, and the Governor of the Punjab. Meanwhile, Mason contacted Major E. O. Wheeler of the Survey of India and Captain J. G. Bruce of the Gurkhas. These men were the founding members of the Himalayan Club, as Corbett himself narrated the story (*Himalayan Journal* [HJ], Vol 1, 1929).

The Himalayan Club was based on the model of the Alpine Club (founded in 1857 in London). Its purpose was "To encourage and assist Himalayan travel and exploration, and to extend knowledge of the Himalaya and adjoining moun-

tain ranges through science, art, literature and sport."

The Club was officially inaugurated at a meeting at Army headquarters in Delhi on 17 February 1928. A year later, the Himalayan Club incorporated the Mountain Club of India, which had been formed in Calcutta in 1927—the year Corbett was preparing to found the Himalayan Club without knowing about the Calcutta venture.

One of the main activities of the Himalayan Club has been the annual publication of the *HJ* since 1929. Kenneth Mason was its founding editor, serving from 1928 to 1940 (Vols 1–12). Mason was not