

RUFFORD SMALL GRANT
(FOR NATURE CONSERVATION)

FINAL REPORT

**SHEARING OF WILD GUANACOS IN PATAGONIA:
A NEW THREAT FOR THEIR ALREADY DEPRESSED POPULATIONS?**



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January 2008

OVERVIEW OF THE PROPOSED PROJECT

The Patagonian steppe of Argentina is a vast and sparsely populated area where populations of native wildlife have been undermined by human activities. Guanaco (*Lama guanicoe*) is one of the two species of wild South American camelids and one of the few large, native herbivores of the region. Over the last century, guanacos have experienced a dramatic decline in abundance and range distribution, mainly due to illegal hunting and livestock raising through competition for food and habitat modification. At present, only about 500000 guanacos are left and most of them inhabit Argentinean Patagonia. However, most lands are ruled by sheep farmers that have a negative opinion towards guanacos because they diminish sheep food resources. Consequently, guanacos are killed or chased out of these large ranches to enhance field productivity. In the last few years, shearing of guanacos has arisen as a complementary activity for sheep farmers; furthermore, nowadays most wildlife agencies of the Patagonian provinces are promoting this activity. Shearing of wild guanacos is a clear example of how a negative opinion towards a native species can be turned into a positive, even protective attitude. Local inhabitants previously engaged in poaching now benefit from successful shearing events of relatively large populations. However, shearing would only favour conservation of guanacos if it does not negatively affect their survival and reproduction. The effects of shearing on the behaviour and population dynamics of guanacos have not been adequately evaluated yet. Hence, we aim to evaluate the consequences of capturing-shearing wild guanacos on their social structure, survival, and reproduction. New guidelines for welfare practices will also be an output of this project when further data are collected.

STUDY AREA, MANAGEMENT EVENTS AND DATA COLLECTION

Our study area is located in a 40000 ha sheep-ranch in the central portion of the province of Río Negro, Argentinean Patagonia. This ranch has been shearing free-ranging guanacos since 2003 and already has 1500 guanacos individually tagged. We have initiated studying the effect of shearing wild guanacos in this ranch in October 2005, and we radio-collared 10 male guanacos in February 2006. In this report we only show preliminary results obtained in the last year (i.e. November 2006 – November 2007), which was the period funded by this RSG. During this period, we conducted fieldwork in December 2006 and February, March, May, June and October 2007.

Since 2003, this ranch organises shearing events twice a year, before and after the guanaco's breeding period, usually in October and February respectively. The concretion of these shearing events strictly depends on the ranch owner decisions and the formal approval by the province Wildlife Agency. The management events conducted during the last year, i.e. in March and October 2007, were not aimed to shear guanacos but to capture guanacos that would be translocated to a National Park in Córdoba province, central Argentina. A re-introduction programme has been launched in 2007, aiming to re-establish a wild population of guanacos in central Argentina, where they have gone extinct. This reintroduction programme involves the translocation of guanacos captured in Patagonia into a National Park located in central Argentina. The entities in charge of this reintroduction programme include the National Park Administration, and the National and Provincial Wildlife Agencies. In

agreement with the owner of the sheep ranch where we initiated our studies in 2005, they have decided that this ranch was the appropriate field to capture guanacos to be released in the National Park in central Argentina. Therefore, the guanaco population in this ranch was selected as the source population for the reintroduction programme. Consequently, in 2007 instead of capturing guanacos with the purpose of shearing them, the two management events were aimed to capture guanacos in order to be translocated.

Fieldwork was conducted every two months by 2-4 persons since December 2006, except for the winter period where climate conditions impeded fieldwork. The Biologist Andrés Rey organised and participated in all campaigns, accompanied by other members of our group and field assistants. Each campaign consisted of 7-20 days of fieldwork at two sites within the sheep ranch: “managed site” versus “control site”, covering 5000 ha each. In each campaign we conducted the following activities: (1) recorded the structure and location of social groups, (2) estimated density and juvenile/adult proportion, (3) looked for carcasses and assessed cause of death, and (4) located and observed radio-collared guanacos. To obtain all these data, the two sites were walked following pre-defined transects (i.e. line transect sampling) where we recorded the location, identification (age and sex class, tags), group composition, and general condition of all observed guanacos using binoculars and a telescope. Data on dead animals found along transects was also recorded. Additionally, to observe radio-collared guanacos we followed them using the receiver and antenna until visual contact was achieved, when we recorded its location, group composition, and general condition of the animals. During the first campaigns we followed 10 guanacos that were radio-collared in February 2006 and then we duplicated this number with the new 10 radio-collars bought by the RSG.

During each management event, we were present when guanacos were captured and handled before being either release within the same field or taken to the National Park in central Argentina. Guanacos were driven into a funnel-shaped corridor by *ca.* 30 horse-riders. We recorded data on all captured guanacos (sex, age, body condition, reproductive status), and people related to the reintroduction programme tagged the guanacos to be translocated while we only tagged those guanacos that were to remain within the ranch. Tags consisted in numbered and coloured collars, and the 10 radio-collars bought by the RSG. Few guanacos were sheared in these management events (see Results and Discussion).

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Picture 1: Biologist Andrés Rey radio-tracking guanacos (photo by ML Guichón); 2: captured guanacos before shearing (photo by ML Guichón); 3: people hired by the ranch owner for handling and shearing guanacos (photo by ML Guichón); 4: sheared guanacos waiting to be released within the ranch (photo by ML Guichón); 5: guanacos in the control site (photo by ML Guichón); 6: dry stream used as road due to unusual drought in 2007 (photo by A Rey).

RESULTS AND DISCUSSION

Management events

In March 2007, 93 guanacos were captured and those individuals in better condition were selected for translocation to the National Park. A total of 78 guanacos (62 adults and 16 juveniles, we call juveniles to all guanacos <1 year old) were translocated to central Argentina. We tagged 6 adult guanacos that were released at the same site of capture, five of which were radio-collared (all adult females).

In October 2007, 207 guanacos were captured. Given that weather conditions throughout 2007 have been extremely dry and cold, the general condition of most guanacos was rather deficient. A total of 85 adult guanacos were driven into the trucks to be taken to the National Park though 18 individuals were finally released within the ranch because overcrowding conditions would not guarantee safe arrive to destination. We tagged 118 guanacos that were released at the same site of capture. From these, we selected 14 adult females that were radio-collared before release, half of which have been sheared before tagging.

Density and mortality

Numbers of guanacos ranged between 8-34 guanacos/km², showing an overall declining trend particularly in the managed site (Figure 1). This site under management has shown during the previous year relatively high densities of guanacos (>20 individuals/km²) compared to the control site within the same ranch but also compared to other ranches in Patagonia. Low densities found in the managed and control sites in October 2007 were probably a result of adverse weather conditions, which affected availability and quality of resources, throughout the year. The five adult females that have been radio-collared in March 2007 were found dead before the management event in October 2007. Carcasses of dead guanacos was larger in October 2007 (n = 55) than in previous campaigns (December 2006: n = 8; February-March 2007: n = 12; June 2007: n = 10). No juveniles were captured in October 2007 and only a few were observed during transect sampling.

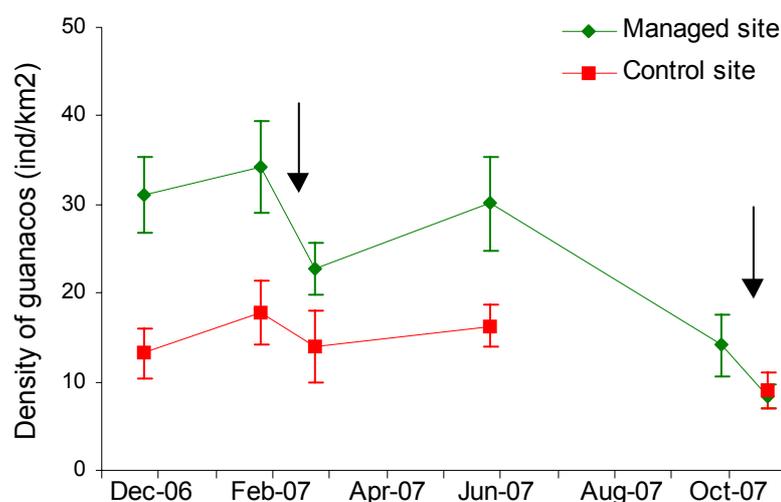


Figure 1. Density of guanacos (\pm SE) in the managed and control sites. Black arrows indicate management events in March and October 2007.

The decrease in guanaco numbers right after a shearing event is usually reverted within a month and is probably related to the effect of herding and the time needed to establish new groups and/or territories or recover the ones held before the herding (work in progress). In 2007 the management practice decided by the owner of the ranch and the local authorities imposed a novel effect on the population by extracting a total of 145 guanacos for translocation. If we consider a rough mean of 23 guanacos/km² in the 5000 ha of the managed site, we can estimate a total of *ca.* 1200 individuals in this site so that the extraction of guanacos in 2007 would represent *ca.* 12% of the population. Recent data collected from radio-collared guanacos indicate that movements of these animals are quite restricted in this area and that they remain most part of the year within the managed site and occasionally they are found in neighbouring sites but always within the same ranch. Breeding season (i.e. most births and copulations) mainly occurs in December-January in this ranch. We are gathering and analysing data on reproduction success of this population to evaluate the effect of extracting this number of animals; however, adverse conditions in 2007 seemed to have caused extremely low recruitment.

Group size

Guanacos can be found in family groups, as solitary individuals or forming large groups of both males and females (mixed groups). Family groups and solitary individuals were found in the control site though mixed groups were only seen in the managed site. Mean size of family groups was slightly larger in the control site (control site: 6.6 ± 0.3 individuals; managed site: 5.6 ± 0.3 individuals). Mean size of mixed groups varied greatly per season (4-39 individuals).

Individual movement and group formation

Radio-tracking data suggest that movement pattern may vary according to sex and season. While most individuals were located within the same area in the managed site, suggesting relatively stable territories or home ranges, some adult males moved further. Anyway, the largest distances between radio-locations in consecutive campaigns never exceeded 20 km. Only one adult male was found outside the managed site but always in adjacent areas within the ranch.

Radio-collared males were observed as members of all types of social groups (family groups, large groups of males and females, and as solitary individuals) and the same individuals were observed in different types of groups in consecutive campaigns. Radio-collared females were never observed alone and were usually part of either family groups or large mixed groups.

OUTPUTS AND FURTHER STUDIES

We will present the results obtained with this RSG in the next Meeting of the Ecological Society of Argentina (August 2008) and the Annual Meeting of the Mammal Society of Argentina (November 2008). We will also submit the following manuscripts to scientific journals (Journal of Wildlife Management, Biological Conservation, Journal of Mammalogy, Journal of Arid Environments):

- Abundance, social structure and recruitment of guanacos: effects of live-shearing wild populations in central Patagonia. Rey A, L Martinek, M Sahores, A Novaro & ML Guichón.
- Mortality of guanacos due to wire fencing in sheep ranches in Patagonia. Rey A, A Novaro & ML Guichón.
- Mobility and group formation in a wild population of guanacos. Rey A, L Martinek, A Novaro & ML Guichón.

Funding by RSG will be acknowledged in each presentation.

This report only contains preliminary results of the data collected in the period November 2006-November 2007. We plan to continue our studies on the effect of management of wild guanacos in this ranch, particularly we aim to collect more data about survival, movement, group formation and breeding success of radio-collared guanacos. Analysis of the potential effects of capture-handling and shearing or extracting individuals has usually been conducted over a short time frame. Our study intends to evaluate mid- and long-term effects of management mainly through the continuation of the fieldwork already under course. We will be able to present a more complete set of analysis and more robust results in 2009.

