



ACTIVITY PATTERNS AND HOME RANGE OF AN ANDEAN CAT AND PAMPAS CAT IN SOUTHERN BOLIVIA

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INTRODUCTION

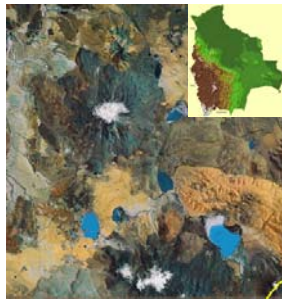
The Andean cat (*Leopardus jacobita*) is the most threatened felid of America and listed as Endangered by the IUCN (2008). Is also considered one of the least known felines in the world (Nowell & Jackson 1996). It inhabits rocky habitats of the High Andean region of Argentina, Bolivia, Chile and Peru, its main prey is the mountain vizcacha (*Lagidium viscacia*) and lives in caves, but little else is known about the behaviour of this elusive cat. The sympatric Pampas cat (*Leopardus colocolo*) is Near Threatened (IUCN, 2008) and has a wider distribution, but highland populations of this species are little studied. Radio telemetry studies provide invaluable information on habitat use, movements and activity patterns with implications for the conservation of wildlife populations (White & Garrot 1990), particularly of elusive species like the Andean cat. We present here the first data on home range and activity patterns of one Andean cat and one Pampas cat in the High Andean region of Bolivia.

STUDY AREA

Khastor and Khumo located 60 km south east of the village Quetena Chico (Province of Sud Lípez), in the north-eastern part of the influence area of the National Reserve of Andean Fauna Eduardo Avaroa (REA), average elevation 4400m. The sites are characterized by rocky formations, typical peatlands of high altitude called ‘bofedales’ and saline lagoons. The vegetation of the plains are open grasslands and herbaceous communities; shrub formations called ‘tholares’ are present mostly in the slopes and ‘queñoales’ grows sparsely in the upper rocky slopes. The climate is arid and cold, with high solar radiation and high daily thermal fluctuations.

METHODS

A female Andean cat and a female pampas cat were captured in April 2004 and May 2005, following a pre-trapping campaign between October 2003 and April 2004, and during March 2005 respectively.



Details of trapping, immobilization and radio-collaring are given in Delgado et al. (2004) and Beltran-Saavedra et al. (2009). Sombrita, the Andean cat, was captured in Khastor (22.27°S, 66.99°W, 4710m of elevation) and Estrellita the Pampas cat in Khumo (22.29°S, 67.07°W, 4722m of elevation). The two females were radio tracked using a hand-held antenna and receiver (RA-14K TR-4 Telonics), recording location and activity for a 7 hours-period at different times of the day and at least one period of 24 hours each month.

For triangulation we used Locate III for Windows PC (<http://www.locateiii.com>) and to estimate home range the program RANGES7 (Anatrack Ltd. <http://www.anatrack.com>).

RESULTS

Radio tracking provided 66 locations for Sombrita the Andean cat between April and December 2004, and 93 for Estrellita the Pampas cat between May 2005 and April 2006. The home range of Sombrita covered 65.52 Km² and that of Estrellita 55.3 Km² (95% Minimum Convex Polygons-MPC, Kernel Centre as peel centre, Table 1).

May and November (2004) were the months when Sombrita moved furthest distances, and July and November (2005) Estrellita (Figure 1). During this period both cats visited three rocky places along a rocky plateau dissected by valleys and the lower slopes of a volcano. Although tracked in different periods, both used similar areas (Figure 2), and Khumo was the place most visited; the overlapping area (MPC₁₀₀) was 23.9 Km². There were some places that were most visited by one of the species and less by the another or were not visited at all. For instance, Estrellita was frequently recorded at “Tujusales” where the “tujo” (*Ctenomys opimus*) a subterranean rodent can be found, while Sombrita was recorded in that place fewer times. On the other hand, Sombrita visited a place where the rocky walls are much higher and steep compared to other places and Estrellita was not recorded at that rocky place.

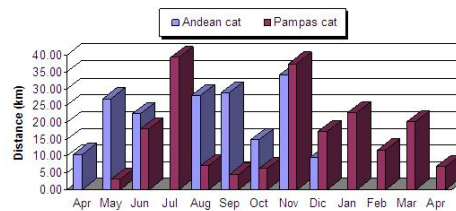


Figure 1. Monthly First to Last Distances. Andean cat 2004; Pampas cat 2005-2006

Activity

In general, both cat species were recorded active during all day. However the Andean cat showed mainly one activity peak between 18:00 and 22:30 hours and a much reduced activity between 10:00 and 14:00 hours. On the contrary, we did not find a clear pattern for the pampas cat, the female was active during all hours of the day, but highest values were between 22:00 and 1:00, as well as from 3:00 to 6:00 in the morning (figure 3).



Table 1. Estimated home range of both cat species by using 100%, 95% and 50%

Home range Estimator(Km ²)	MCP - Kernel Peel Centre	
	AC	PC
100% area	92.69	68.89
95% area	65.52	55.29
75 % area	56.69	26.11
50% area	15.71	5.79

Home range Estimator(Km ²)	MCP - Harmonic Mean Centre	
	AC	PC
100% area	92.69	68.89
95% area	82.05	53.79
75 % area	47.22	39.99
50% area	29.69	26.19

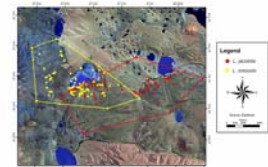


Figure 2. Total home ranges of Sombrita (2004) and Estrellita (2005-2006) at Khastor and Khumo rocky places

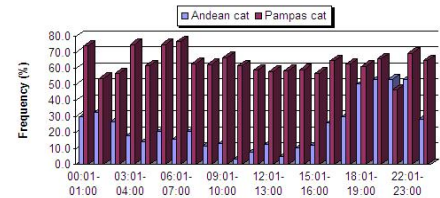


Figure 3. Activity Pattern. A cat 2004, P cat 2005

DISCUSSION

Although limited to one individual of each species, these data provides the first information available for further detailed studies in the high Andean zone. The estimated home range is among the largest among felids of similar size or weight (Silveira et al. 2005, Ross, 2006, Lucherini & Manfredi 2007, Pereira 2007). Habitat features which is naturally fragmented, such as rocky outcrops where the cats and their prey find refuge, could explain the large ranging area. Activity patterns differed between species, with the Andean cat being primarily crepuscular-nocturnal, and the Pampas cat active all day. Camera trap surveys in other High Andean regions (Lucherini et al. 2009) also detected differences in the activity patterns of the two species, but Andean cats were the most diurnal. Nocturnal activity of the Andean cat can be related with that of its main prey, the mountain vizcacha, while the food habits of Pampas cats are less specialized, consuming both nocturnal and diurnal prey (Napolitano et al. 2008). It is also possible that activity patterns vary with physiological condition, seasons, latitude and altitude. Estrellita the Pampas cat, was with a kitten, so this could explain in part the differences in the activity patterns.

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