

ABSTRACTS OF PRESENTATIONS  
FROM ANDEAN CAT ALLIANCE MEMBERS AT  
THE 10<sup>TH</sup> INTERNATIONAL MAMMALOGICAL CONGRESS



ORAL PRESENTATIONS

**Phylogeography and Conservation of the Rarest Felid of the Americas:  
The Andean Cat (*Leopardus jacobita*)**

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**Abstract**

The Andean cat is considered to be one of the rarest felids of the world. In order to maintain the genetic integrity of the species, conservation units were identified from genetic variability, population structure and evolutionary history. Due to the extreme scarcity of this species, most of the DNA samples were obtained from faeces collected during habitat surveys. Results confirm that the Andean cat populations harbour extremely low mitochondrial and nuclear genetic diversity. A comparison with the pampas cat (*Leopardus colocolo*) suggests a historical bottleneck and a low effective population size as being responsible for the reduced diversity of the Andean cat. The geographic structure of the genetic diversity is very strong, but differs from that of other Andean species. These differences may be explained by populations isolated in “high-altitude islands”, as well as by the use of “high-altitude corridors” unattainable by other species. The unique population structure of this species enables the recognition of two evolutionarily significant units (ESUs), with a latitudinal separation between 26°S and 35°S. In addition, two genetically distinct groups within the northern ESU could be considered separate management units (MUs).

**Modeling the Ecological Niche of the Rare and Specialized Andean Cat:  
Implications for High Andes Conservation**

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**Abstract**

Aspects of the spatial ecology of specialized organisms can inform conservation actions when their elusive nature precludes deeper understanding of their behaviour and population biology. We applied ecological niche modeling to study the rare and endangered Andean cat (*Oreailurus jacobita*). Restricted largely to the High Andes, this is the more specialized of a guild of carnivores feeding on a narrow range of high-altitude prey species. Potential habitat for the cat and its main prey (the southern mountain vizcacha (*Lagidium viscacia*)) exists in protected areas that tessellate across international borders around the triple frontier between Argentina, Bolivia and Chile. From coordinated international research we explored ecological limitations to the species distribution from key environmental variables at local level (using presence/absence data on prey and carnivores and Resource Selection Functions) and landscape level (using presence-only data and Maximum Entropy Models -MAXENT). Our results contribute to generate ecological adaptation hypotheses and to identify key areas for the long-term protection of high Andean vertebrates across international borders.

## Ecology and Conservation of the Andean Cat (*Leopardus jacobita*) and Pampas Cat (*L. colocolo*) in Northern Chile

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### Abstract

The study was centered in the high Andes of the Tarapacá and Antofagasta regions in northern Chile above 3,000 meters. The purpose of this study is to use molecular genetics analyses combined with ecological and physiographic variables to describe how the Andean mountain cat and the Pampas cat (*L. colocolo*) coexist in the high Andean ecosystem. We extracted DNA samples from 489 carnivore scats and 2 skulls. We analyzed and identified undigested remains in feces. Small mammal availability was studied by capture-recapture methods using Sherman traps. Finally, we set 45 camera traps in 115 sites. To assess the spatial distribution of both species and their overlap, we characterized the location where scats and photos were collected by topography and distance to nearest vegetated area, water sources, roads and villages. 108 samples were identified as pampas cat, 34 as Andean cat, 59 as domestic dog (*Canis familiaris*), 19 as puma (*Puma concolor*), and 68 as culpeo fox (*Lycalopex culpaeus*). The main component of the diet of both pampas cat and Andean cat was rodents (71.0 and 82.0% respectively), followed by birds (27.5 and 18.0%). Food niche overlap between the two cats was extensive (0.82), indicative of low prey partitioning. These results show that both felids preyed on both diurnal/crepuscular species like the vizcacha, as well as more nocturnal prey such as the leaf-eared mice. The probability of finding pampas cat decreased with altitude, while the opposite trend was observed for the Andean mountain cat. Using the formula for estimating the carrying capacity of the altiplano habitat for Andean mountain cats (0.6 kg/km<sup>2</sup>) and a conservative body mass of 5 kg, 30 individuals could theoretically inhabit the core study area.

## Lowland and Upland Carnivores from the Southern Cone of South America

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### Abstract

Two contrasting hypotheses have been proposed about the competitive ability of widespread vs. geographically restricted species. One maintains that widespread species have become widespread because they are competitively dominant over related, geographically restricted species. The alternative hypothesis is that narrow-ranging species are ecological specialists that competitively dominate specific habitats/resources.

Through radio tracking, live and camera trapping we compared intraguild niche overlaps and population abundances of medium sized carnivores in three areas, one located in the High Andes deserts and composed by the culpeo fox (*Lycalopex culpaeus*), Andean cat (*Leopardus jacobita*) and Pampas cats (*L. colocolo*) and two in central Argentina, in the Pampas grassland and Monte ecoregion, and comprising the Pampas fox (*L. gymnocercus*), Geoffroy's cat (*L. geoffroyi*) and Pampas cat. In both guilds, the puma was the only large carnivore.

Several lines of evidence suggest that in the Pampas, guild composition was altered by human disturbance, which affected primarily the puma and, possibly, the felid/canid abundance ratio, favoring the more adaptable foxes. As expected, in both guilds niche overlap was the largest between the most similar species (i.e. small cats), but we found evidences of trophic, spatial and temporal segregations, which probably facilitate species coexistence. Although specialized, restricted species could be more efficient resource exploiters and still have smaller populations because they use rarer resources, the lower abundance of Andean cats, a trophic specialist, than the more widespread Pampas cats in areas where the main prey of Andean cats is abundant suggests that Pampas cats were competitively dominant. Interestingly, while the Pampas cat was the most abundant felid in the High Andes, it was less common than the Geoffroy's cat in the Pampas. While we cannot exclude that Geoffroy's cats are more efficient competitors, we suggest that species-specific habitat association may affect the competitive ability of carnivores.

### **First Density Estimates of Small Andean Felids: Which is Really the Rarest?**

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#### **Abstract**

The Andean cat (AC, *Leopardus jacobita*) is one of the least known and most endangered felids in the world. The Pampas cat (PC, *Leopardus colocolo*), another poorly known felid, shares its habitat with the AC in the Andes. The AC is considered to be less abundant than the PC; however, previous attempts to estimate abundance have not accounted for the probability of detection which can greatly bias such estimates. To improve estimates of density for these two species, we carried out a camera trapping survey in northwestern Argentina, at approximately 4000 m of elevation. Sampling was conducted during October-December 2006 and April-June 2007. In each year, we deployed 22 pairs of camera traps, which were strategically placed. For the PC, we photo-captured 7 individuals in 2006, 9 individuals in 2007, and 6 individuals in both years. For the AC, 2 individuals were photo-captured in 2006, 6 individuals only in 2007, and 1 in both years. We used a Bayesian spatial capture-recapture model to estimate the density of both species and activity centers of captured individuals. The estimated densities were 0.754 and 0.748 individuals/km<sup>2</sup> for PC and 0.070 and 0.130 individuals/km<sup>2</sup> for AC in 2006 and 2007, respectively. The baseline detection probabilities were low (0.018 and 0.069 for PC and AC, respectively). The estimated locations of the activity centers for both species do not appear randomly distributed across the study area. Results indicated that PC density estimates were consistent across both years whereas the AC results varied more between years. We suspect that while the AC occurs in low densities in this area, where prey appear to be abundant, its density may be even lower in other regions throughout its distribution. We note that detection probabilities are important in making reliable estimates of density, a key parameter in conservation and management decisions.

### **Distribution and Diet of Sympatric Cats *Leopardus jacobita* and *L. colocolo*, in the Bolivian Andes**

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#### **Abstract**

In Bolivia prior to year 2002, only 10 records were reported for the Andean cat (*Leopardus jacobita*) and 27 records for the pampas cat (*L. colocolo*). Between 2002 and 2008 the number of records increased to 54 for the Andean cat and to 77 for the pampas cat in the Andean ecosystem, based on: the remains of skins, photos, and faecal samples identified genetically. With the present information the Andean cat is distributed between 3850 and 5050 meters above sea level, in four of the six departments that have the high Andean ecosystem in Bolivia, while the pampas cat is distributed in five of the six departments considering the high Andean and Puna ecosystems in Bolivia, between 3300 and 5020 m.a.s.l., although for the latter species there are records for the eastern region of Bolivia and at a lower altitudes. For diet analysis a total of 165 faecal samples were analyzed, 40 correspond to Andean cat and 125 to pampas cat. This analysis was performed by identifying the mammalian food items based primarily on hair and dental remains. The percentage of occurrence of the items shows that the Andean cat eats predominantly *Lagidium viscacia* 85% to 48%, and *Auliscomys sublimis* 16% to 4%; vegetal material constituted 27% to 16%, and the remaining 19% to 32% divided in other 6 items. The pampas cat presented the following food items: *L. viscacia* 30% to 20%, *Phyllotis osilae* 30% to 4%, *Auliscomys sublimis*, birds and unidentified vegetal material 14% to 4%, the remaining 41% was distributed in others 16 items. This results shows that vizcachas (*L. viscacia*) were the most important food item consumed by both species, and the more important for the Andean cat.

## POSTER PRESENTATIONS

### Factors Affecting Small Cat Abundance in the High Andes of Argentina

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#### Abstract

The ecological factors affecting the distribution and abundance of both species of small cats occurring in the High Andes, the Andean cat *Leopardus jacobita* and the Pampas cat *L. colocolo*, have not been explored. We examine here the patterns of relative abundance of these cats in Argentina as a function of topography, prey availability and other habitat characteristics. Cat signs of presence were counted while walking 400 m-long line transects and their relative abundance was estimated as the number of cat sites/km. For each transect (n=121, in 10 areas) we also recorded the presence of Mountain vizcachas *Lagidium viscacia*, small cats' main prey, and of other carnivores, as well as altitude, slope, terrain ruggedness, habitat composition, human activity at 2721 sampling points along transects. The average ( $\pm$ SD) number of cat sites/km was  $3.02 \pm 4.71$ .

As expected, cat site abundance increased with that of their prey ( $R^2=.122$ ,  $p=.0001$ ), estimated through 4 categories of visually-estimated fecal pellet abundance. Nevertheless, this regression had a lower predictive value than that with terrain ruggedness as independent variable ( $R^2=.316$ ,  $p=.0001$ ). Using all variables in a stepwise procedure, only ruggedness, prey abundance and mean slope had significant ( $p<.1$ ) contributions, and the resulting model explained only a slightly larger proportion of data variability ( $R^2=.369$ ,  $p=.0001$ ). The values of indices for terrain ruggedness and abundance of mountain vizcachas were 1.7 and 1.6 times greater in the areas of cat high density (defined as those with  $> 4$  cat sites/km,  $n=23$  transects) than in low abundance areas (no cat sign recorded,  $n=47$ ). Although it cannot be excluded that ruggedness is indicative of patches preferred by cats as defecation sites, we suggest that this parameter is related to vizcacha preferred habitats and thus that prey abundance and availability would be the key environmental variables affecting cat abundance in the High Andes.

### New records of the endangered Andean cat *Leopardus jacobita*.

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#### Abstract

Until recently the endangered Andean cat was considered an endemic of the High Andean and Puna biogeographic provinces at altitudes above 3000 m.a.s.l. Combining genetic identification of skins and scats, morphometric analysis of skulls, and one sighting, we report here eight new confirmed records of this species at elevations as low as 650 m.a.s.l. Using field interviews we also present 17 unconfirmed reports of the presence of this specie. These records show that the Andean cat distribution in this area is not marginal and, besides the main Andes mountains range, it extends into two new biogeographic provinces: the Patagonia and Monte regions of northern Patagonia. Our findings demonstrate that the Andean cat is not an endemic of the high Andes, and that the species' habitat plasticity is greater than previously known. In the northern portions of the Andean cat's distribution the main threats to the species were identified as habitat loss followed by hunting for religious purposes. In this newly discovered habitat the main threats apparently are killing for predation on goats, oil activity that open roads to poachers, and climate change that can affect Andean cat's main prey populations distribution. There are several protected areas in the region and generally local people avoid hunting this specie except with particular individuals, therefore it is a potential site for long term conservation.

**Activity Patterns and Home Range of an Andean Cat  
and Pampas Cat in Southern Bolivia**

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**Abstract**

We report the tracking results of the first radio-collared Andean cat and of a pampas cat in the south western high Andes of Bolivia and that of their activity patterns. Both female cats were tracked in subsequent years during 8 (2004) and 10 (2005) months respectively. The home range estimated with Minimum Convex Polygon was of 66.5 Km<sup>2</sup> for the Andean cat and 55.3 Km<sup>2</sup> for the pampas cat. Both cats used three main rocky sites and remained particularly in one of them, where the pampas cat was captured. The three rocky places surround or are near to lagoons and bofedales. Main activity for the Andean cat was recorded at dusk or at night (between 18:00 and 23:00 hours) and the pampas cat showed regular activity during all day, but the most intensive was between 22:00 and 8:00 hours.