

FACTORS AFFECTING SMALL CAT ABUNDANCE IN THE HIGH ANDES OF ARGENTINA

Lucherini Mauro, Luengos Vidal E. and Reppucci J.

GECCM, Cát. Fisiología Animal, Depto. BByF, UNS - CONICET, Argentina. E-mail: lucherinima@yahoo.com

OBJECTIVE

Two little-known species of small cats occur in the High Andes of Argentina, Bolivia, Chile and Peru:

Andean cat *Leopardus jacobita*



Pampas cat *Leopardus colocolo*



We examined the patterns of relative abundance of these cats as a function of topography, prey availability and other habitat characteristics.

STUDY AREA



Elevation: 3000-5000m a.s.l.

METHODS

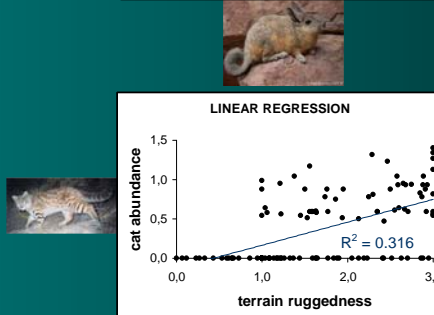
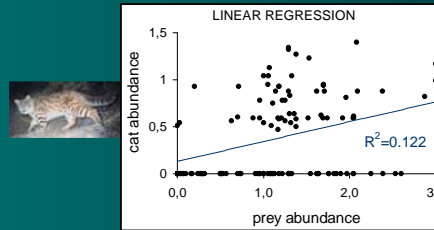
- ✓ Cat signs of presence were counted while walking 212, 400 m-long line-transects in 10 areas, where we also recorded:
 - ✓ abundance of Mountain vizcachas *Lagidium viscacia* (small cats' main prey), estimated through 4 categories of visually-estimated fecal pellet abundance
 - ✓ presence of other carnivores
 - ✓ altitude
 - ✓ slope
 - ✓ terrain ruggedness (4 categories)
 - ✓ habitat composition
 - ✓ human activity at 2721 sampling points along transects.
- ✓ Cat relative abundance was estimated as the number of cat sites/km.



Mountain vizcacha

RESULTS

The average (\pm SD) number of cat sites/km was 3.02 ± 4.71 . Almost all signs were feces.



As expected, cat abundance (log-transformed N. of cat sites/km) increased with that of their prey (mountain vizcacha abundance; linear regression: $F=16.6$, $d.f.=120$, $p=0.0001$).

The regression with prey abundance had a lower predictive value than that with terrain ruggedness as independent variable ($F=55$, $d.f.=120$, $p=0.0001$).

Values of the Akaike selection criterion (AICc) and difference (Δ) for alternative linear models explaining cat abundance variations.

| Independent variable | K | AICc | Δ |
|-----------------------------|---|--------|----------|
| Terrain ruggedness | 1 | -245.3 | 0 |
| Mean slope steepness | 1 | -222.8 | 22.6 |
| Mountain vizcacha abundance | 1 | -215.4 | 29.9 |
| all 3 independent variables | 3 | 338 | 538.3 |

Using all variables in a stepwise procedure, only ruggedness, prey abundance and mean slope had significant ($p < 0.1$) contributions, and the resulting model explained only a slightly larger proportion of data variability ($R^2=0.369$, $p=0.0001$). Nevertheless the Akaike selection criterion (AIC) indicated that the most likely model includes only terrain ruggedness as predictive variable, while the alternative models with prey abundance and steepness have little support.

Similar results were obtained adopting logistic regression models with presence/absence of cat signs as dependent variable.

The values of indices for terrain ruggedness and abundance of Mountain vizcachas were 1.7 and 1.6 times greater in the transects located in areas of cat high density (defined as those with > 4 cat sites/km) than in low abundance areas (no cat sign recorded).

Variations in prey abundance, elevation, and terrain ruggedness between areas with high and low abundance of cats.

| Transect type | # Trans. | Total length | Small cat abundance | Mountain vizcacha abundance | Mean elevation | Ruggedness index |
|---------------|----------|--------------|---------------------|-----------------------------|----------------|------------------|
| HIGH DENSITY | 23 | 7385m | 9.06 | 1.62 | 4119m | 2.22 |
| LOW DENSITY | 47 | 15945m | 0 | 0.99 | 4210m | 1.33 |

CONCLUSION

Because the great majority of the cat signs we recorded were feces, we cannot exclude that ruggedness is indicative of patches preferred by cats as defecation sites. Nevertheless, we suggest that this parameter is related to the rocky areas with steep slopes that are vizcachas' preferred habitats and thus that prey abundance and availability would be the key environmental variables affecting cat abundance in the High Andes.

ACKNOWLEDGMENTS



CITA/CITE:

Lucherini, M., Luengos Vidal, E. & J. Reppucci. 2009. Factors affecting small cat abundance in the high Andes of Argentina. Poster Session, 10th International Mammalogical Congress. Mendoza, Argentina 9-14, August 2009.

