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Cover Photo: First photographic evidence of a Pallas's cat in Bhutan. The animal was captured in Jigme Dorji National Park on 17.11.2012
Photo: Jigme Dorji National Park

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Cats captured in the High Andes close a door to potential monitoring programs

Because of their similarities, pampas cats *Oncifelis colocolo* and Andean cats *Oreailurus jacobita* are usually studied simultaneously in areas where they overlap, but these similarities have been often an obstacle for researchers. The foot morphology was reported as useful to differentiate these species and potentially develop monitoring programs based on footprints. With the objective to attach radio-collars, two Pampas cats and one Andean cat were captured in the Argentinean High Andes. This enabled us to observe a high variability in the Pampas cat foot and conclude that a monitoring program based on footprints would be unreliable at least until a more detailed study on foot morphology is carried out.

Pampas cats and Andean cats share mostly the same threats, at least where their distribution ranges overlap, which is the complete Andean cat distribution (AGA 2011) that covers the high Andes from central Peru to central Argentina plus a portion of the Argentinean Patagonian Steppe (Villalba et al. 2004, Cossíos et al. 2007a, Novaro et al. 2010). Because of their similar sizes and morphological characteristics, these felids are frequently confused across their ranges, and local people use a single name for both species in most places (García-Perea & Hamilton 2002). Although the Andean cat has a more delicate conservation status (Endangered according to IUCN whereas the Pampas cat is listed as Near Threatened), both species are poorly known to science (Pereira et al. 2008, Acosta et al. 2009). Thus, because of the wide geographical overlap and the similarities in their ecological characteristics (Walker et al. 2007, Lucherini et al. 2009), most conservation and research projects work on both species simultaneously.

The above-mentioned morphological similarities have been often an obstacle for the study of these species. A difference in the shape of their feet was identified by Yammil Ramirez, published in a handbook of surveying techniques for high Andean carnivores (Cossíos et al. 2007b) and recently reported by Iriarte & Jaksic (2012). According to these authors, the leading edge of the heel pad has two lobes in the Andean cat and only one in the Pampas cat (Fig. 1) and the hind edge of the heel pad has three well marked lobes in the Andean cat that are less discernable in the Pampas cat (Fig. 1).

In their handbook, Cossíos et al. (2007b) suggested that the difference would be useful to design a monitoring program based on their footprints, especially using track stations given the characteristics of the soil of the areas where these cats occur. This is a simple and inexpensive technique that could be easily replicated in multiple locations and is suita-

Fig. 1. Diagram of foot morphologies of pampas cat (left) and Andean cat (right), modified from Cossíos et al. (2007b) and Iriarte & Jaksic (2012).

Fig. 2. Foot of both pampas cat captured. Two lobes in the front edge and three lobes in the hind edge of the heel pad are clearly visible. (Photo: left, J. Reppucci; right, E. Galetto).

ble to be used as a sampling method in an occupancy analysis framework (MacKenzie et al. 2006). Additionally, the differences in foot shapes could potentially be used to confirm Andean cat presence in areas where they have not been detected; thus improving our still imprecise knowledge of their distribution range.

With the aim of attaching GPS radiocollars to study the space and habitat use by both species, three cats (a female and a male Pampas cat, and a male Andean cat, all adults) were captured in NW Argentina. Both specimens of Pampas cat showed a foot morphology (Fig. 2) that resembled more closely the structure previously described as typical for the Andean cat (Cossíos et al. 2007b, Iriarte & Jaksic 2012), with two clearly visible lobes in the leading edge of the heel pad and three well defined lobes in the hind edge of the heel pad. The Andean cat foot structure was similar to that previously described (Cossíos et al. 2007b, Iriarte & Jaksic 2012).

The morphology of Pampas cat feet that we observed in our study area makes the use of footprints to differentiate this species from the Andean cat unreliable. We conclude that in order to produce a reliable description of Pampas cat feet, a quantitative study should be made based not only on museum skins but also on live animals covering a larger portion of this felid's known distribution.

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