

INTERACTIONS BETWEEN AN APEX PREDATOR AND MESOPREDATORS ACROSS A LANDSCAPE WITH HUMAN INTERFERENCE

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Study Description

Human activities have populated the planet with domestic animals like livestock while also eliminating wild species that could conflict with them. We investigated factors affecting predator occurrence in semiarid landscapes of central Argentina and tested for evidence of mesopredator release at large scales. Our study region has a few, small protected areas interspersed within a mosaic of livestock ranches and game hunting grounds. We hypothesized that mesopredators would avoid spatial and temporal overlap with the apex predator, the puma, but that human activities (i.e., cattle raising and trophy hunting) would dampen top-down effects and mediate habitat use of smaller carnivores.

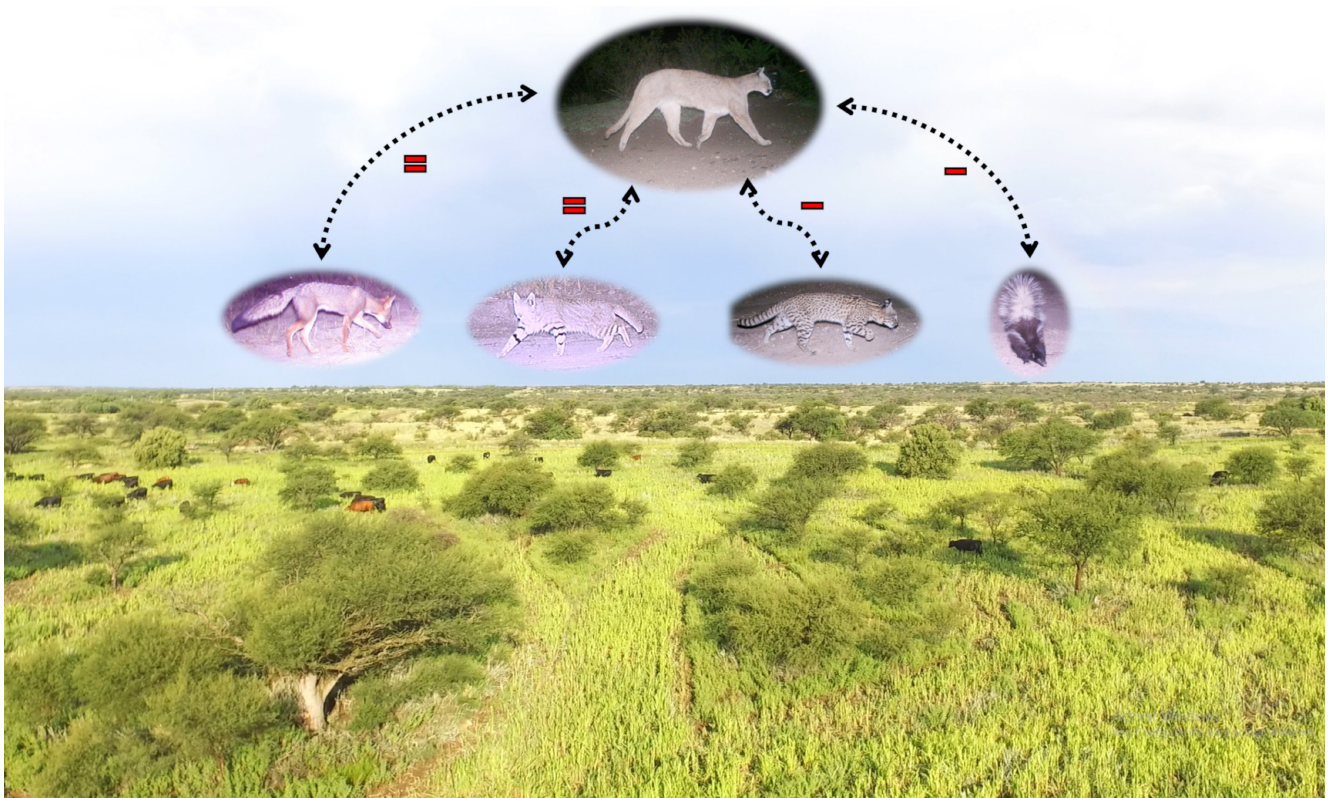


Photo 1. In the Caldén forest region of central Argentina, we installed 16 camera traps in each of 45 10×10 -km grid cells, covering 61,611 km², to determine interactions between carnivores and explore contributions of habitat, biotic, and anthropic factors on co-occurrence. The carnivore guild was constituted of the puma, *Puma concolor* (top predator; upper center of photograph), and subordinate predators (under puma, from left to right: pampas fox, *Pseudalopex gymnocercus*; pampas cat, *Leopardus colocolo*; Geoffroy's cat, *Leopardus geoffroyi*; and Molina's hog-nosed skunk, *Conepatus chinga*). Geoffroy's cats and skunks spatially avoided pumas (negative sign), but pumas did not influence pampas fox or pampas cat space use (equal sign). Photograph credits: José H. Sarasola and Juan I. Zanón Martínez.



Photo 2. The study area corresponds to the Espinal phytogeographic province, mainly occupied by the Caldén forest (left), but includes interspersed sand grasslands and salt deposits (right). This forest is a xerophilic forest ecosystem dominated by Caldén trees (*Prosopis caldenia*), covering from 30% to 50%, and grasslands predominating over bushes. The topography is characterized by plateaus, valleys, hills, and low-altitude plains (<200 m). Photograph credit: José H. Sarasola.

These photographs illustrate the article “Assessing carnivore spatial co-occurrence and temporal overlap in the face of human interference in a semiarid forest” by Juan I. Zanón Martínez, Javier Seoane, Marcella J. Kelly, José Hernán Sarasola, and Alejandro Travaini published in *Ecological Applications*. <https://doi.org/10.1002/eap.2482>.