

Factors affecting the presence of pumas in a highly conflictive area of Central Argentina

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Although *Puma concolor* is a widespread wild felid, little is known about its South American distribution and ecology, especially in areas with intense human activity. The puma was historically present throughout Argentina. In the second half of the last century, pumas were extirpated from most of Patagonia and have returned only in recent decades (Novaro and Walker 2005). In northeastern Argentina, high levels of habitat fragmentation caused a decline in puma populations (De Angelo et al. 2011). In the Buenos Aires province, with the advance of the agricultural and livestock frontiers, the range of the species has suffered a marked reduction (De Lucca 2010; Caruso et al. 2011). Illegal hunting is widespread.

In 2013, we started a project which aims to identify the effects on puma ecology of intensive agricultural and livestock activity in the Argentine Espinal ecoregion of central Argentina. It is characterized by a temperate and semi-arid climate and lies between the Pampas grasslands and the Monte dry woodlands. The Argentine Espinal has been heavily modified by human activities and has been identified as a habitat fragmentation hotspot (Crooks et al. 2011).

Camera traps recorded a total of 63 puma photographs (Fig. 2) at 22 of the 28 sites. The variables that best explained puma presence were proportion of cropland, distance to grassland with bushes, and distance to road. The frequency of puma signs increased when the proportion of cropland in the area and the distances from grassland with bushes decreased. Surprisingly, puma presence was also negatively correlated with distance to secondary roads, perhaps because tracks are more readily detected along dirt roads.

To model habitat suitability (figure 2) we used 81 presence records. The variables considered for the construction of the map were distances to cropland, bushland, grassland, grassland with bushes, and roads. The most suitable areas for pumas overlapped typically with patches of bushlands, grasslands and grasslands with bushes, whereas the least suitable areas were related to croplands. Although habitat fragmentation may also affect suitability, this factor has not been analyzed yet in the study area.

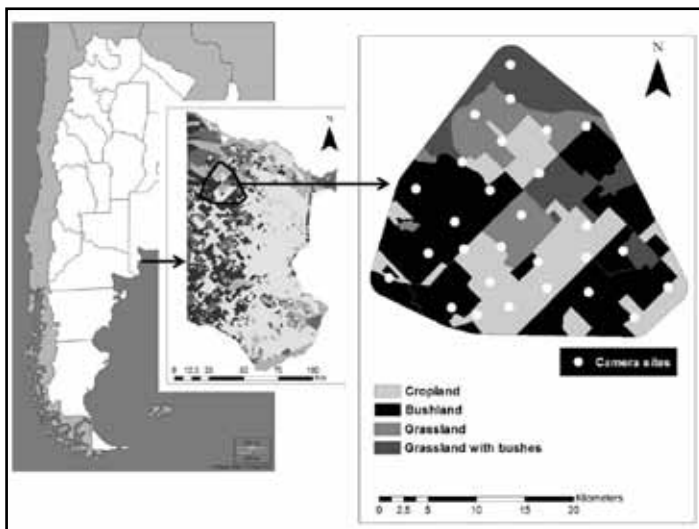


Figure 1. Study area location and vegetation map

We report here our preliminary results regarding the factors affecting puma in an area (644 km²) of intense conflicts with livestock in the southernmost part of Buenos Aires province (Fig. 1) and on our efforts to create a habitat suitability map. Field surveys are ongoing, and the data presented in this note were collected from January to September, 2014. In addition to recording any puma sign (tracks, scats, direct observations), we deployed remote camera traps at 28 sites, located to maximized the probability of photographing pumas (at water sources, trails). Camera sites were stratified by habitat. Camera capture effort totaled 4138 trap-days. We applied GLM analysis to detect the variables that explain the habitat use of pumas and then used MaxEnt to create a habitat suitability map.

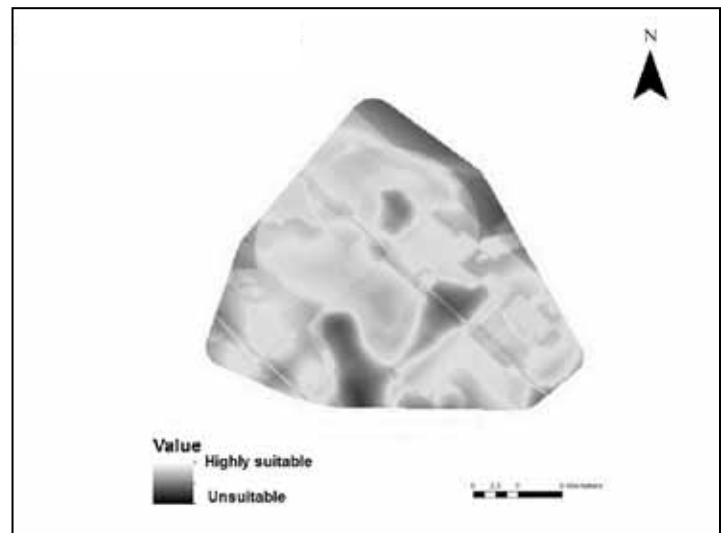


Figure 2. Puma habitat suitability map for study area

This is the first study in Argentina showing that pumas in areas of strong anthropogenic pressure are avoiding highly modified areas where vegetation cover is poor. This could be related to their need for shelters from humans but also to their predation strategy (stalking). The latter hypothesis is supported by the greater availability of wild prey species in semi-open and closed habitats, such as grassland and bushland, than in open habitats, such as cropland.

This year we hope to begin monitoring collared puma movements and predation events on livestock. We will also organize workshops with ranchers and identify conflicts with carnivores and possible mitigation measures to preserve puma populations in this area of importance for livestock production in Argentina.