



Livestock depredation by puma (*Puma concolor*) in the Argentine Espinal, southern Buenos Aires Province



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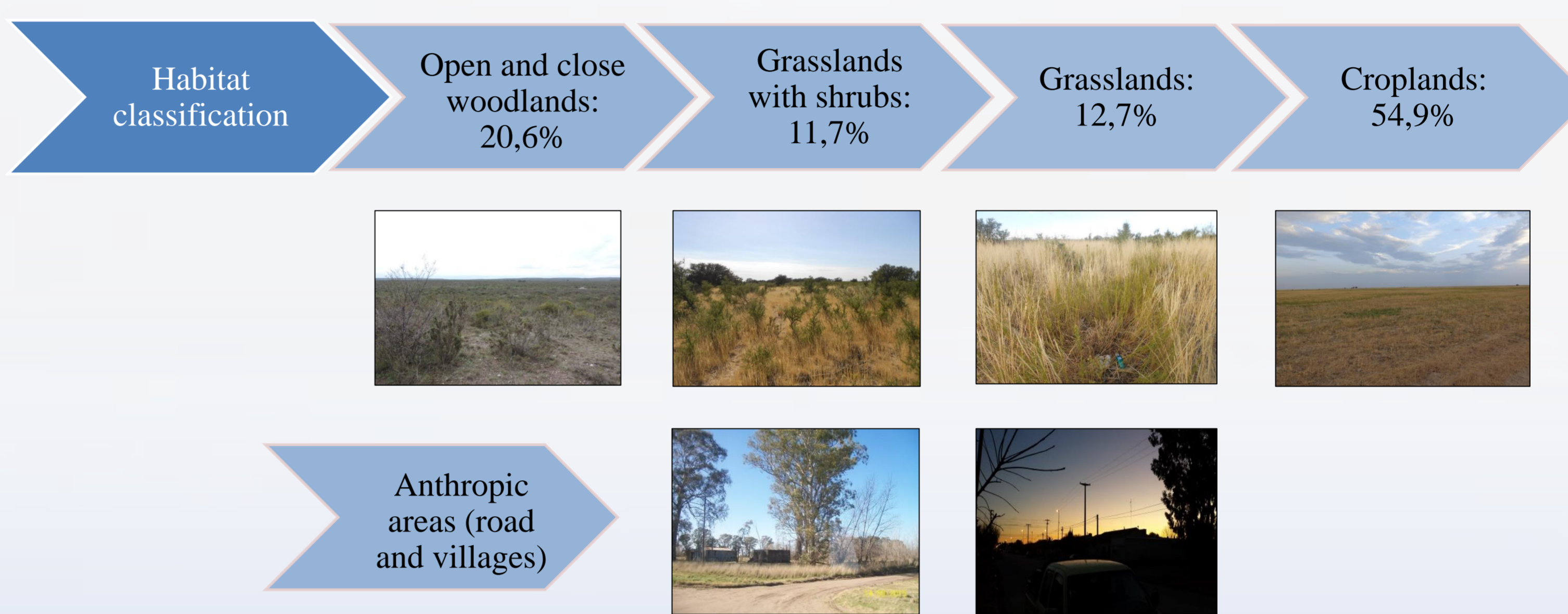
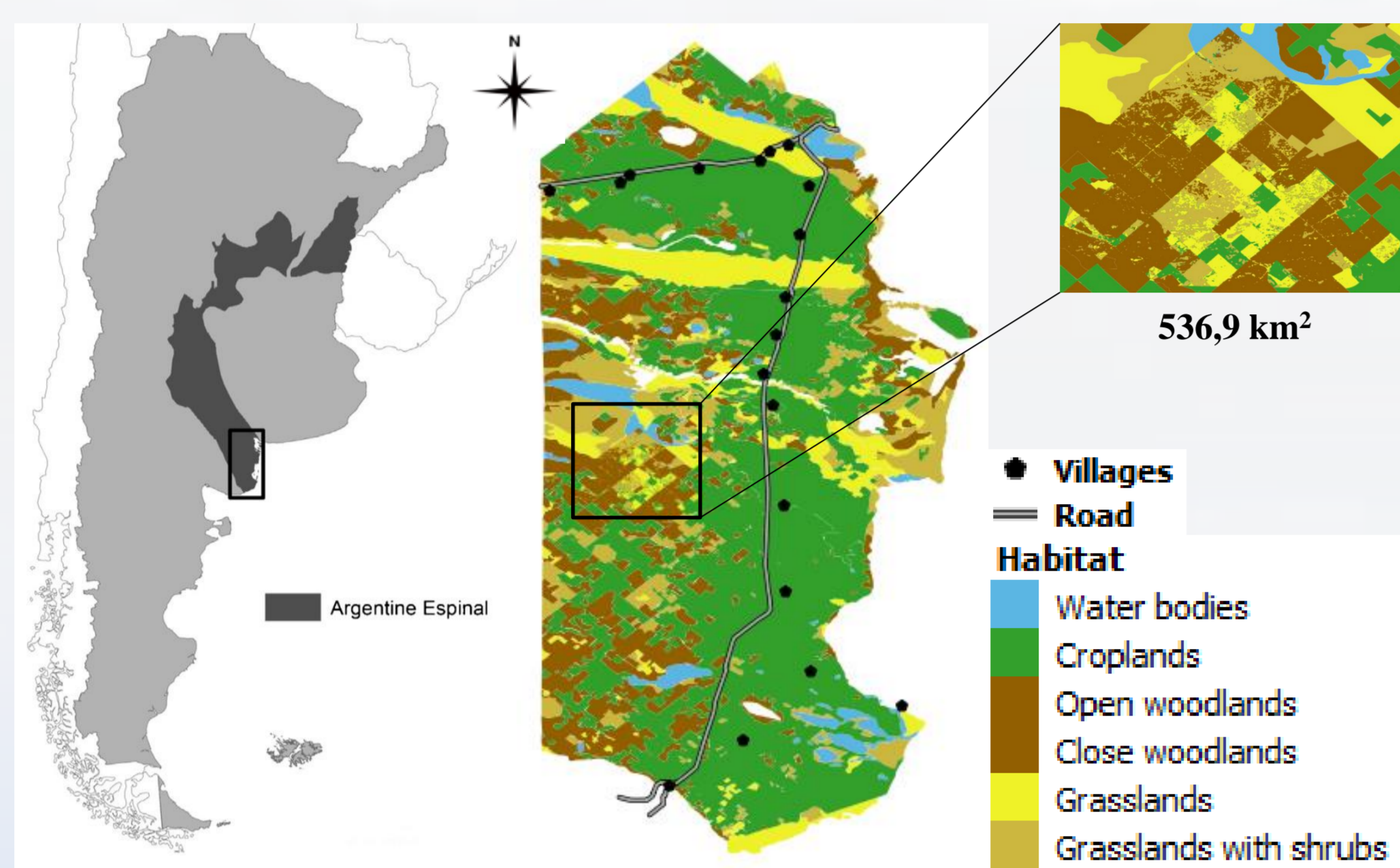
Introduction

Livestock depredation is one of the most frequent sources of conflict between humans and carnivores throughout the world, representing a serious problem for carnivore conservation. We investigated the conflict between pumas and livestock ranchers in the southern Buenos Aires Province (Argentina). During the last decades, the natural habitats of this region have been dramatically modified due to the expansion of livestock farming and agriculture, which are the principal sources of income for local people. This study aims to characterize puma predation and describe its effects on the revenues of the ranchers living in this region.



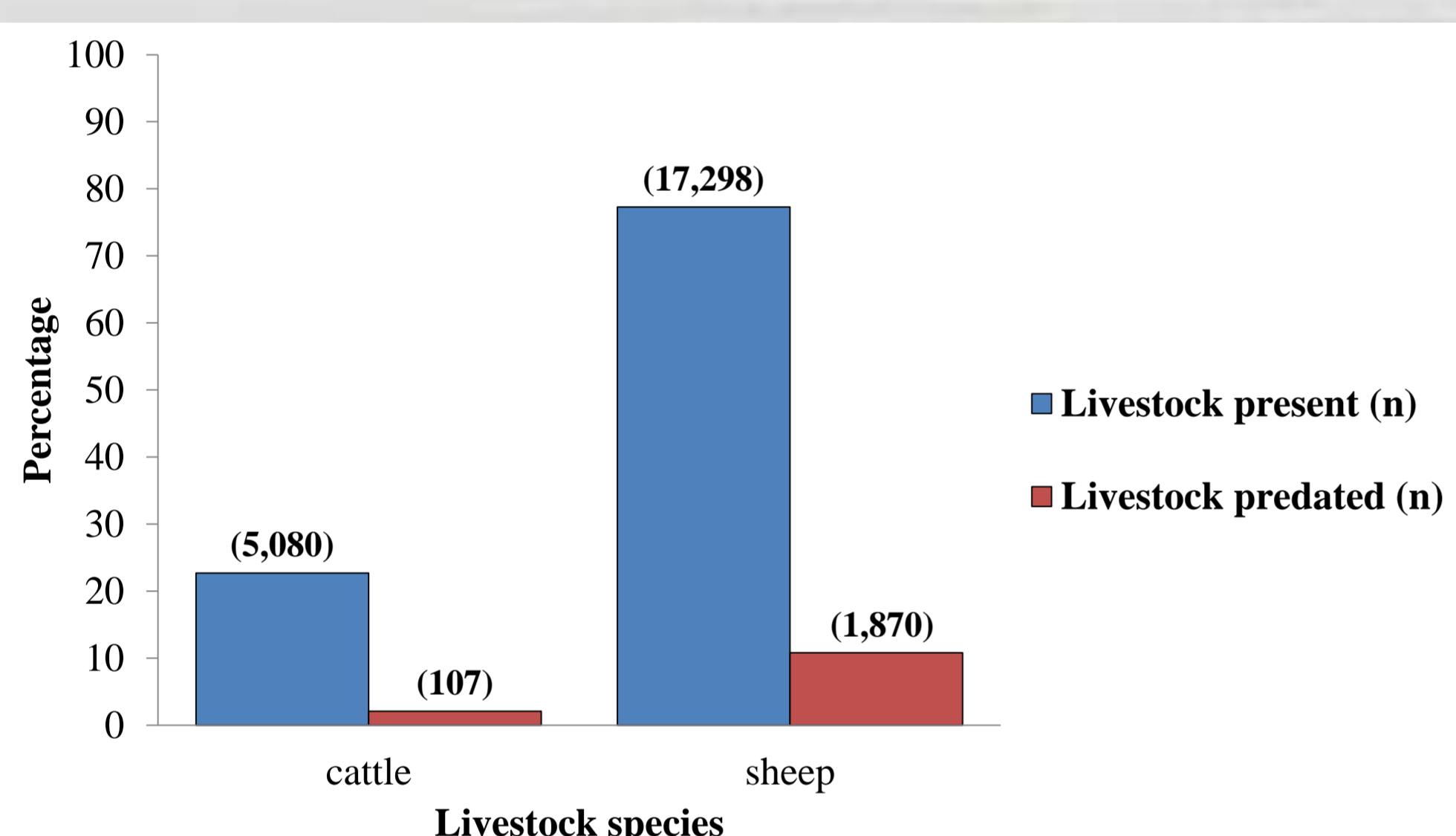
Study Area and Methods

Study area: Villarino and Patagones Counties (25.000 km²), ecoregion Espinal, Argentina.

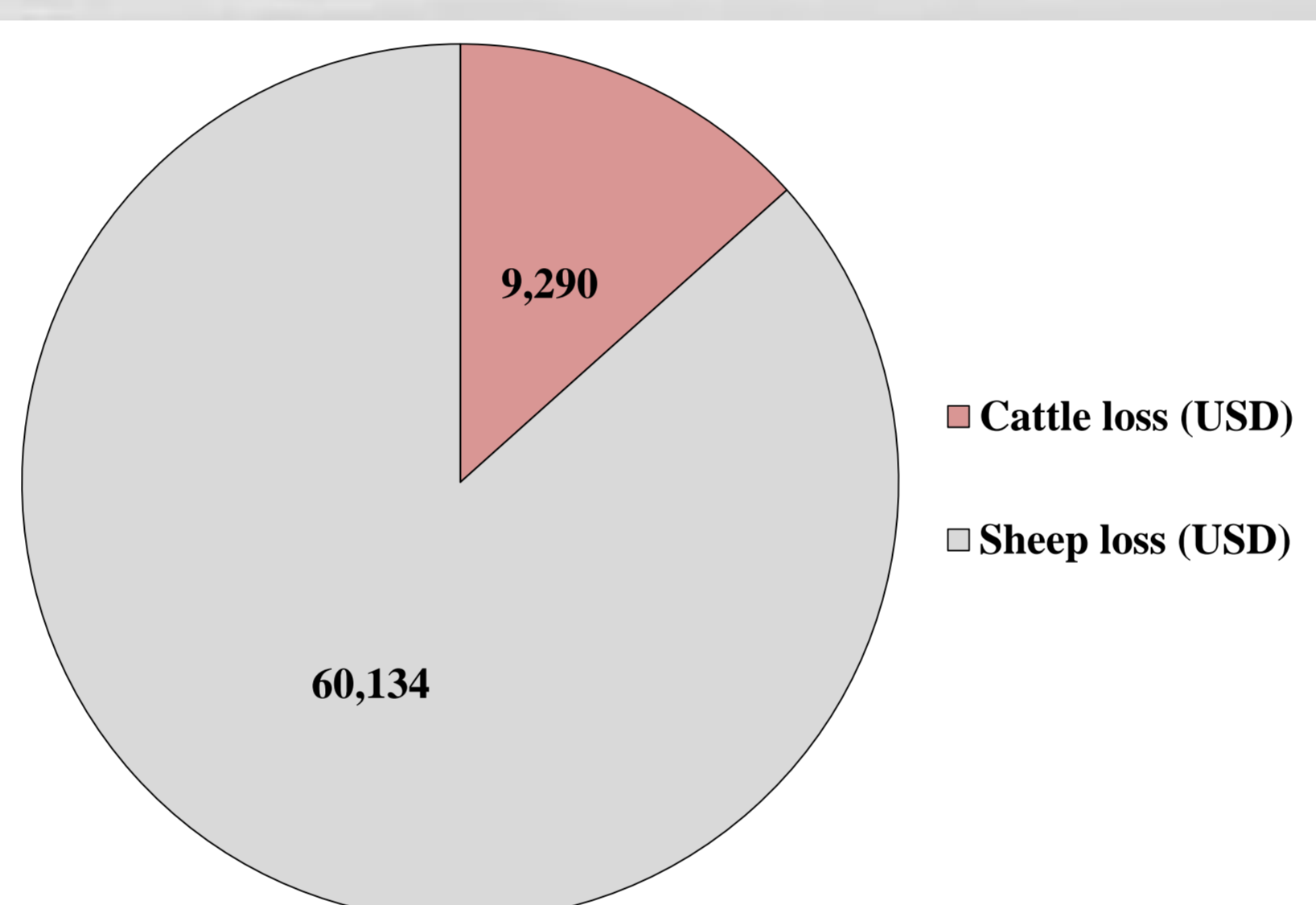


Methods: Semi-structured interviews with local ranchers, kill site inspections. Six years of data collection (2007-2015).

Results and Discussion



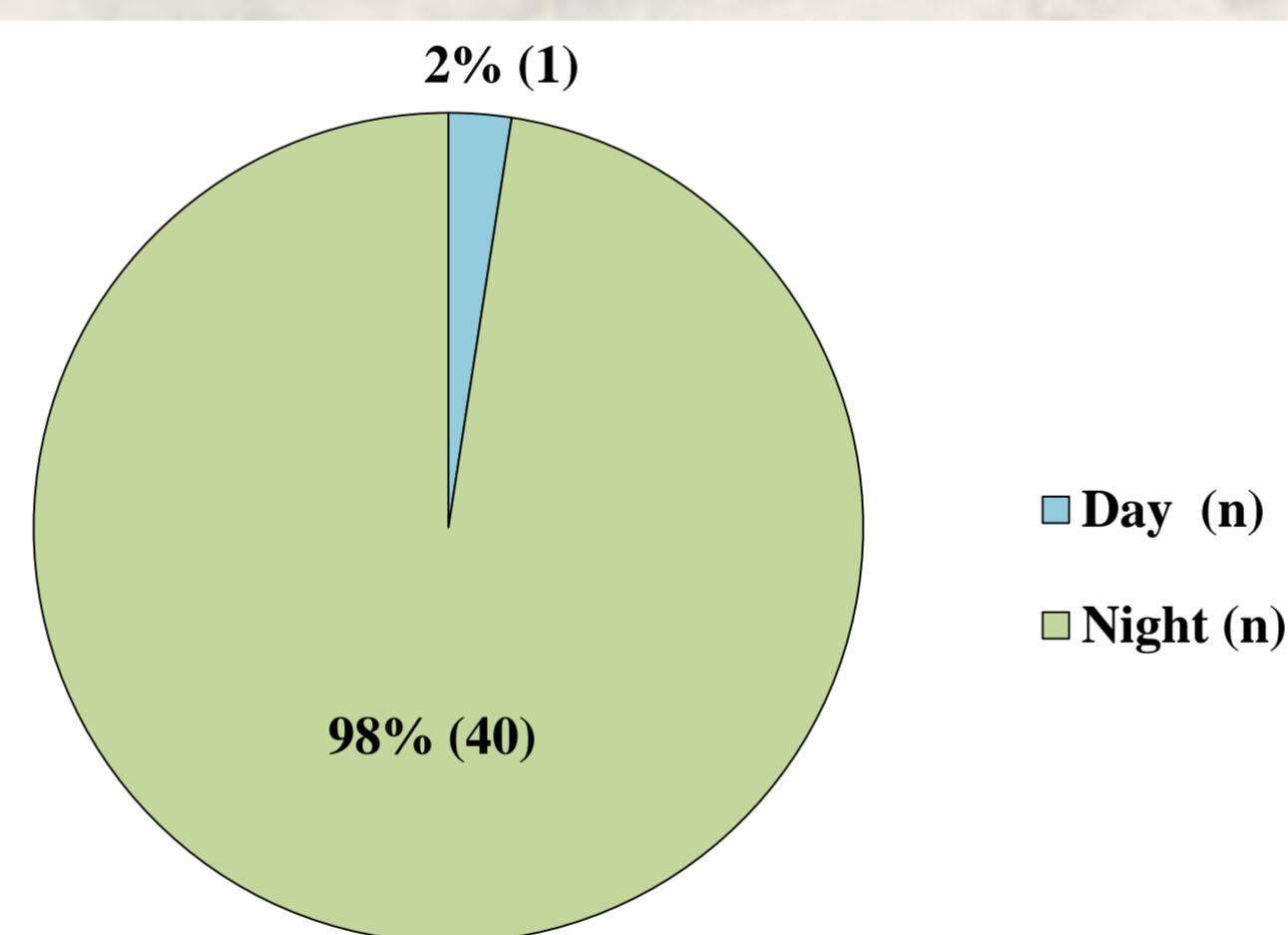
Percentage of livestock present and predated by puma (2007-2015).



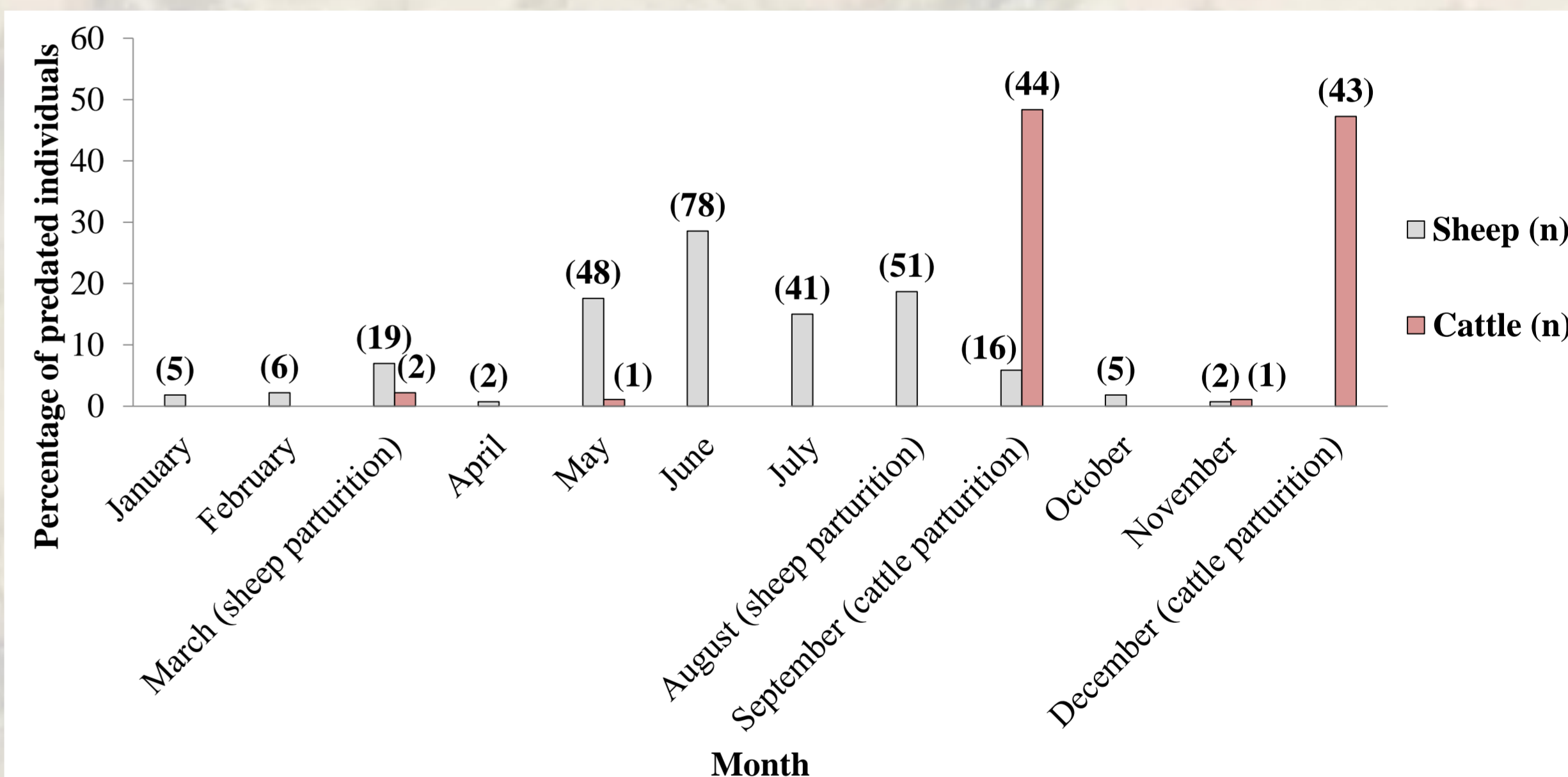
Economic loss suffered by ranchers due to puma depredation (2007-2015).

In both counties, sheep were the most predated livestock gender (10.8%), while depredation on cattle was less frequent (2.1%). Consequently, the economic loss produced by puma predation on sheep was greater than for cattle and equalled to 13.4% of the overall economic damage. Moreover, if we consider only those ranches (n=83) where we know the exact numbers of individuals present and predated, the total number of livestock heads (both cattle and sheep) killed by pumas (n=1,977), represented the 8.83% of the total stock (n=22,378).

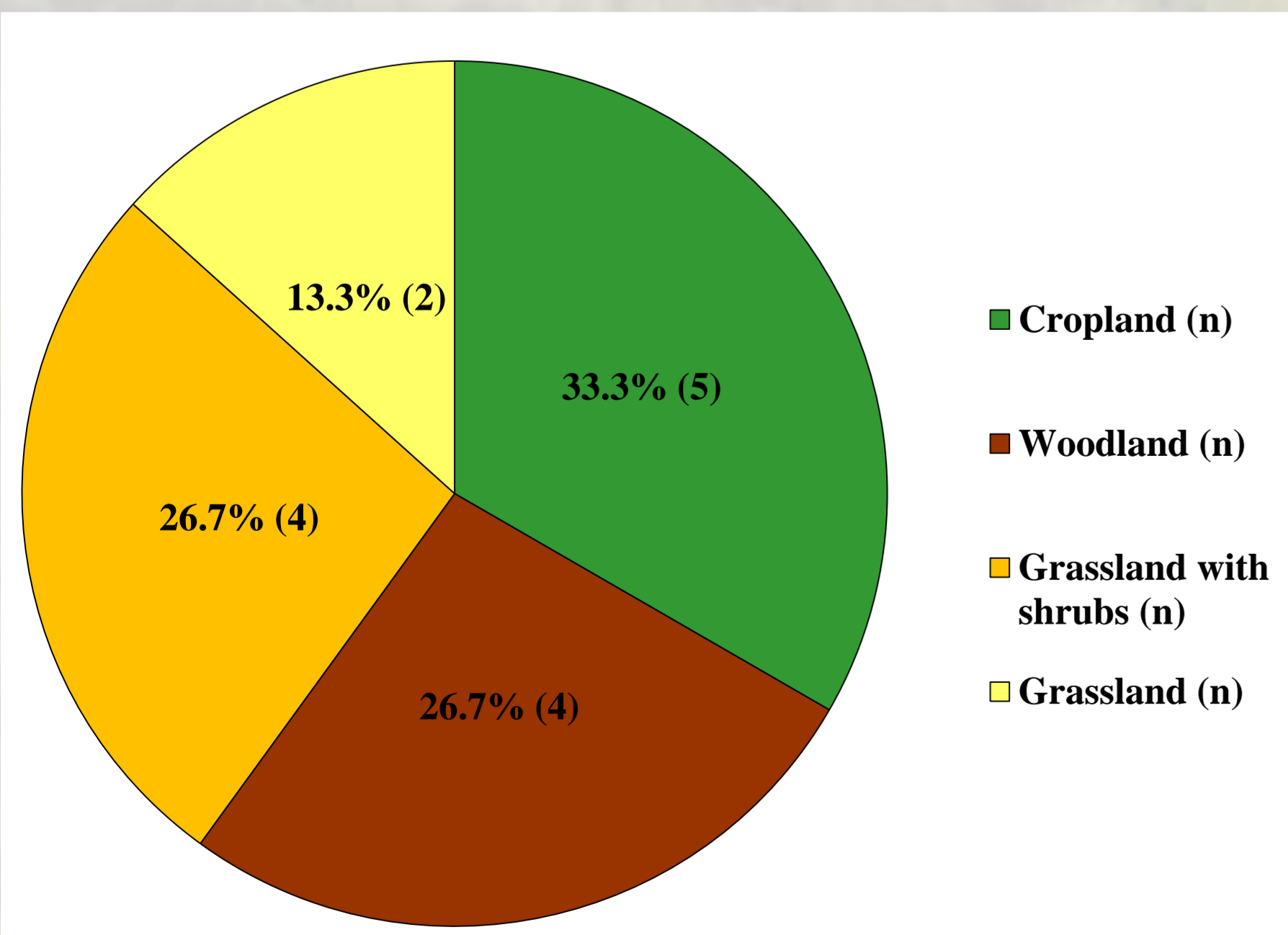
Most predation events occurred during night time and far from anthropic areas (roads and villages; mean distance \pm SD: 32.01 \pm 16.7 km). No temporal predation pattern was observed on domestic sheep, whereas predation on cattle was concentrated during the calving period (from September to December).



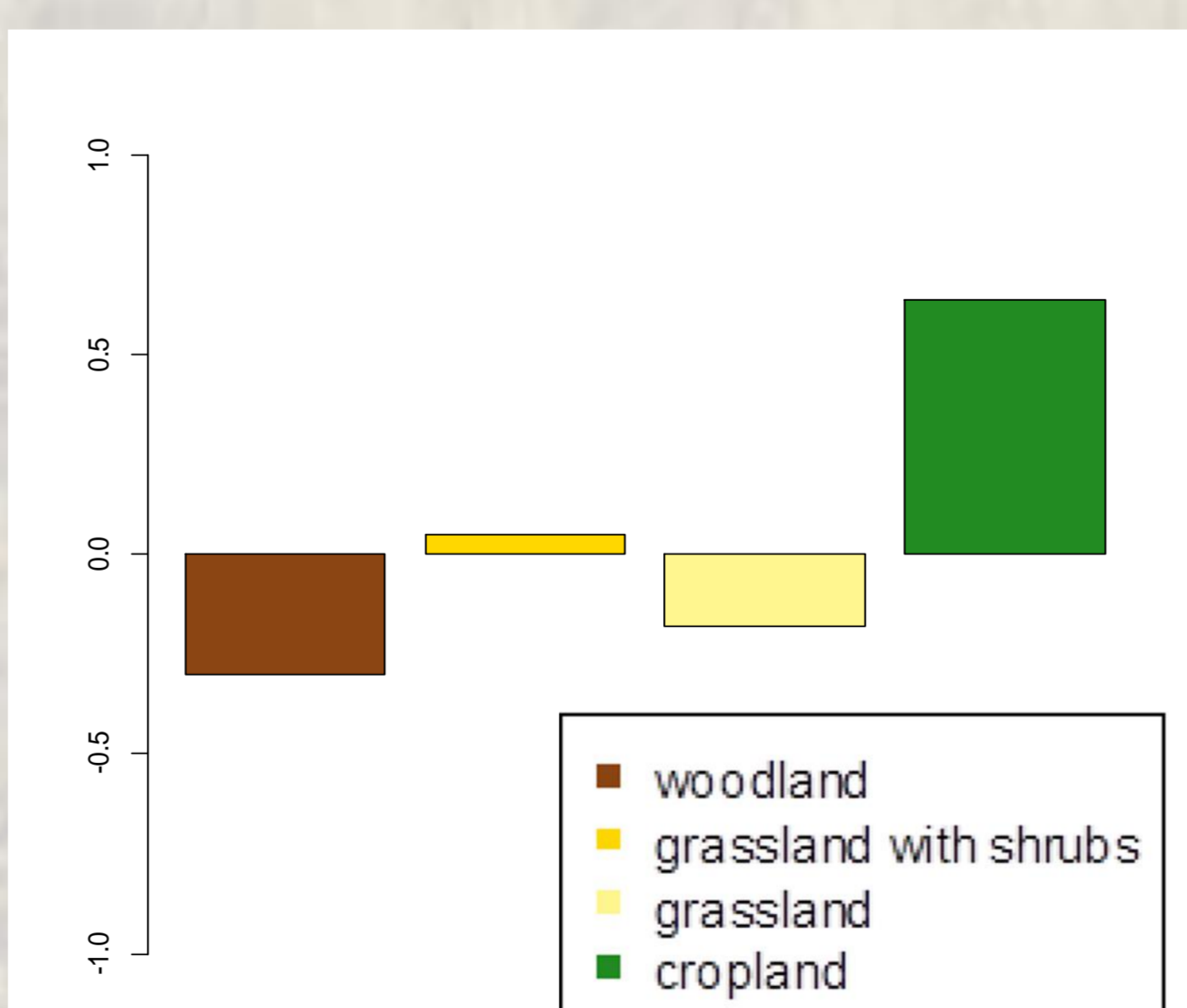
Daily puma depredation pattern (2013-2015).



Monthly puma depredation pattern (2013-2015).



Habitat of puma kill sites (2013-2015).



Habitat selection by puma using the Jacobs Preference Index (2013-2015).

An intensive field survey realized in a small area of Patagones county (536,9 km²) during 24 months, showed that predation events (n=15) occurred most in cropland, followed by woodland and grassland with shrubs. Grassland was the least represented habitat in predation sites. The proportion of predation events in cropland was greater than the availability of this habitat in the area, probably due to a greater presence of sheep in cropland areas. The mean number of livestock killed for each predation event differed according to the method we used to collect the data. For example, in Patagones (the only county for which we have enough field data) this number was 26.3 individuals for the data from interviews and 4.6 when we used only data collected directly by field operators through kill sites inspections. In this sense, interviews to ranchers may result in an overestimation of their livestock losses due to puma attacks.

Conclusions

Our results showed that local ranchers and pumas have a coexistence conflict in the study area, due to puma attacks on livestock. In particular, the information we collected through semi-structured interviews realized with livestock ranchers in conjunction with those ones which we collected during kill site inspections, produced valuable data to understand carnivore-livestock conflicts and, therefore contribute to design management measures to decrease it.

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