



Jaguar Conservation Program

Jaguar abundance and habitat association in Queretaro, Mexico.

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Abstract:

The field portion of the study was carried out in northeastern Queretaro, Mexico. To date we have obtained two photographs of different jaguar individuals, with a density estimate of 1 individual/100 km². Additionally, we have recorded a total of 25 jaguar track sets in 11 of the 60 sampled cells, representing jaguar presence in 110 km² (18.3%) of the area. Jaguars are occurring at elevations of 300 to 600 meters, and 1200 to 1500 meters, shifting seasonally, and are associated with oak-woodlands and tropical evergreen rainforest.

We determined the distance of jaguars and pumas to four variables: waterholes, livestock, white-tailed deer (*Odocoileus virginianus*) and human settlements. Distance to waterholes and towns were not significantly different between the two species—waterhole distance was on average 450 meters or so. Average distance to nearby towns was 5km. Jaguar presence was centered in an area with no human presence. Jaguars appeared to be associated with livestock, jaguars were always found closer to cattle than pumas were. Inversely, pumas were found closer to white-tailed deer.

We also recorded the presence and relative abundance of 20 potential prey species. The most abundant species was the white-tailed deer, followed by great curassow (*Crax rubra*), and coatis (*Nasua* spp.). Deer abundance in the region was estimated through a pellet survey, yielding a density of 7.9 to 8.6 deer/km². Conservation efforts should concentrate on increasing deer density in the region, which may be depressed by historical hunting from before 1997 when the reserve was created. There are no collared peccary in the region, local people expressed that peccaries disappeared from the area about 10 yrs ago.

Livestock depredation by jaguars was assessed in the field and through questionnaires given to local producers. Results from the field surveys yielded no verifiable depredation events from January 2004 to June 2006. Nonetheless ranchers took us to the site of 31 depredation events. Most of these alleged events occurred during the month of September corresponding with a peak in precipitation. Most ranchers own less than 50 head of cattle in the region, with 5 to 10 calves born each year. Most of these calves are born during the dry season, and less than 30% are born throughout the year. The main causes of livestock mortality are diverse and only 25% are related to predation. From this figure, less than 10% can be attributed to jaguars, and predation is widely recognized as a problem with feral dogs. As a measure to reduce predation, most ranchers move their cattle out of the areas where a predation event had occurred. Regarding attitudes towards jaguars, about 50% of the locals see no benefit from jaguar presence, while 37% see jaguars as an ecotourism asset and as an alternative to ranching.

As part of the regional study we modeled jaguar suitable habitat through static and dynamic models for the States of San Luis Potosi (SLP), Queretaro and Hidalgo. One model assesses suitable habitat. The second model is a population viability analysis, which incorporates habitat features to assess the probability of extinction utilizing surrogate measures of survival and fecundity. Results from this analysis yielded the highest proportion of suitable habitat for eastern SLP, NE Queretaro (our field site) and N Hidalgo. Results using current conditions for the dynamic model are promising within the area identified by the static model as suitable. When using an increment in road density, the area presents very few areas acting as sources for breeding animals and most of them instead act as sinks. If this scenario were to occur, territories occupied by jaguars would disappear, resulting in population extinction in less than 50 yrs.

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