

**REPORTS FOR IDEA WILD**

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**ECOLOGY AND CONSERVATION OF THE JAGUAR (*Panthera onca*) AND  
THE PUMA (*Puma concolor*) IN THE ARGENTINE SEMI-ARID CHACO:  
INFLUENCE OF PREY AVAILABILITY AND HUMAN PRESENCE IN THE  
REGION.**

**REPORT SUMMARY**

In Argentina the jaguar or yaguareté is classified as endangered and its populations have diminished by 85%; currently it only occurs in three isolated regions of the country. Research on jaguar ecology and conservation in the country has concentrated on the Yungas or the Atlantic Rainforest, with very little research on the species in the Chaco region. The information vacuum is a major obstacle to planning regional conservation strategies. In addition, the other big cat of the region, the puma (*Puma concolor*), has also been studied in other regions of the country, but no studies on its ecology in the semiarid Chaco region exist, and its response to human pressure and environmental changes here is unknown. Due to its potential competitive effect, understanding the population status of this other species of great cat in the region can help us better understand some aspects of the ecology and conservation of the jaguar.

The American Gran Chaco is considered unique for its environmental and cultural characteristics, and the Argentine semi-arid Chaco was identified by WCS as one of the new highest priority Jaguar Conservation Units. Unfortunately the region has suffered for decades now a severe environmental deterioration because of the advancing agricultural frontier, uncontrolled fire, indiscriminate hunting, and intensive forest exploitation. The Chaco populations of jaguar are threatened by these activities, but the principal conservation problems for the species in the region are unknown. These human activities usually alter ungulate population dynamics and structure as well, which could negatively affect populations of large cats that depend on ungulates as a prey base. Therefore the need is urgent for current and precise information on the distribution of jaguars and pumas in the region, in order to determine priority conservation areas, and to strengthen existing proposals for biological corridors to connect the protected areas, as well as environmental education and extension programs for corridor and protected area conservation.

The principal goal of this project is to study the ecology of the jaguar and the puma in the Argentine semi-arid Chaco, relative to different levels and types of human interference, and to determine the principal conservation problems facing these species in the region. The specific aims are: 1) to determine variations in the presence and density of jaguars and pumas across three sites in the Argentine semi-arid Chaco, relative to different levels and types of human interference; 2) to determine variations in availability of potential prey species for jaguar and

puma across the three sites and relative to the presence and abundance of both big cats; 3) to determine whether differences exist between jaguar and puma with respect to habitat use and spatial or temporal activity patterns, relative to the availability of prey and to the different levels and types of human interference at each site; and 4) finally, to obtain current data on the distribution of the jaguar in the Argentine semi-arid Chaco region.

I have completed the first systematic camera-trap survey in the area, within the Chaco Province Aboriginal Reserve, lasting nearly three months based at a field camp. I set up 30 camera trap stations, each with two camera traps, and operated them for 60 continuous days. In this period we have obtained 200 rolls of film in which we registered photos of 16 species of medium and large mammals, including *Puma concolor*, *Leopardus pardalis*, *Catagonus wagneri*, *Tayassu pecari* and *Myrmecophaga tridactyla*. Although we can not estimate the density of jaguars at this site because we had no pictures of this species in the cameras traps, we did obtain data from indirect observations of jaguars (tracks) in the trails, so we can confirm the presence of the species at this site. We obtained 46 photos of pumas including a female and two cubs and now we are working to confirm the number of individuals in the photos in order to estimate population density. During a period of 75 days, my team and I covered over 3000 km of trails and roads, on foot and by vehicle, to record tracks, signs, and observations of jaguars, pumas and prey species. We conducted semi-structured interviews at 10 local settlements and 3 schools, focused on species' presence, jaguar-human conflicts, hunting data on cats and their prey, among other subjects. We also conducted informal interviews with park guards from two Provincial Reserves and one National Park in the region. Finally, we distributed educational materials to five rural schools in the area and to the park guard of one of the Provincial Natural Parks.

#### **PROJECT DURATION:**

The project began in mid-April, 2008 and the first field campaign finished in September 2008. In December 2008 we organized together with the National Park Administration Northeastern Delegation, a meeting to disseminate information on the project and to adopt management measures for the Chaco jaguars in 2009, with representatives of government and NGOs in the city of Resistencia, Chaco Province. With this meeting we finished the activities for the first year of work (2008). We are currently compiling and analyzing the field data and the photographs and we are planning the next field campaign for 2009.

#### **SOME PRELIMINARY RESULTS:**

Some of the preliminary results are that the minimum convex polygon area covered by the 30 stations camera traps (each with two camera traps operating for 60 continuous days) was 44,903 ha. This represents one of the largest areas covered by a single systematic camera trap survey for jaguars. In this period we obtained 200 rolls of film in which we registered photos of 16 species of medium and large mammals. We did not photograph jaguars in this period, but instead *Puma concolor*, and the other medium and small carnivores, like *Leopardus pardalis*, *Leopardus geoffroyi*, *Cerdocyon thous* and *Pseudalopex gymnocercus*. In the case of *L. pardalis* and *C. thous*, both species were cited but not confirmed for this site. Although we can not estimate the density of jaguars in this site because we had no pictures of this species in the cameras traps, we did obtain data from indirect observations of jaguars (tracks) in the trails, so we can confirm the presence of the species at this site. On the other hand, there were records of several direct sightings of jaguars from rural people, one of them during the field survey period (possibly a juvenile or female). We obtained 46 photos of pumas including a female and two cubs and now we are working to confirm the number of individuals in the photos in order to estimate population density. The periods of greatest activity of pumas during the months of the study coincided with the afternoon and night. There were records of numerous species of potential prey, both for jaguar and puma, such as *Catagonus wagneri*, *Tayassu pecari*, *Myrmecophaga tridactyla*,

*Pediolagus salinicola*, *Tolypeutes matacus*, *Sylvilagus brasiliensis*, *Procyon cancrivorus*, *Dasyus novemcinctus* and *Euphractus sexcinctus*.

During a period of 75 days, my team and I covered over 3000 km of trails and roads, on foot and by vehicle, to record tracks, signs, and observations of jaguars, pumas and prey species. This survey complements the sampling with camera-traps and will allow us to compare the results of the methodologies among sites. Some of the most important data recorded with the transect surveys include tracks of jaguar, tracks and direct observations of puma, tracks and direct observations of *M. tridactyla*, tracks and caves of *Priodontes maximus*, skeletal remains and tracks of *Tamandúa tetradactyla*, direct observations of *Puma yaguarundi*, tracks and signs of *Tayassu pecari* and *Tayassu tajacu* herds (the latter species, as was the case for *P. maximus*, *P. yaguarundi* and *T. tetradactyla*, was not recorded in the camera traps). With regard to the preliminary results of the interviews, we were able to detect that there is a conflict with goat predation by the puma, but not so with the jaguar, of which there are no records of predation on livestock for many years. While people consider that very few jaguars remain in the area and because of that, they no longer represent a danger to livestock, they still consider jaguars to be a potential danger, both for cows and for the people themselves. The general feeling towards the jaguar is fear, and although people know that hunting is illegal, most of them go out to hunt a jaguar if they see or find a track.

Unlike previous years, in 2008, the majority of interviewees had recent news of jaguars, either by other people's direct observation or to have heard roaring at night. During 2008 there were approximately 10 cases of records of the species by the inhabitants of the Reserve and surrounding areas, of which 5 were direct observations on roads and 5 were tracks or roars (two of these records were near Copo National Park and Loro Hablador Park, south of the Aborigin Reserve, one direct observation was of a female with a cub (Chaco Wildlife Service *com. pers.*) and the other record were tracks (Perez, *com. pers.*)).

In addition to the analysis of data, during the last months of 2008 we continued efforts to disseminate the project among the agencies and institutions related to the conservation and management of the species in the Chaco. In December we organized, together with the National Park Administration Northeastern Delegation, a meeting in Resistencia city, in which we discussed the current status of the species, the results of this preliminary sampling, and proposed some priority activities to undertake in 2009. Some of the proposals were the design of educational posters and informational booklets to distribute across the range of the species, among residents and rural schools and the surrounding villages. Another proposal was to work on the possibility of creating new protected areas in the Chaco Green Corridor area to link the already existing areas. Finally we discussed the legal aspects that protect the species and the lack of implementation of these measures, based on recent reports of animals hunted.

Finally, we are currently completing the analysis of data and beginning to planning the second year of work in northern Copo National Park

I think one important outcome was the absence of jaguar photographs in the camera traps. This is indicating that the density of the species at this site is very low, because the sampling effort was so large. This highlights the urgent need to take action in managing the species in the region much earlier than we expected. On the other hand, the fact that we obtained data on the species, from sightings by the local people as well as tracks that we recorded ourselves, is also an important result because it confirms that the species is still in the region despite the low density. The results about the density of pumas and their conflicts with settlers also gives us important information, since very little was known of the status of this cat's populations in the Semiarid Chaco, nor about its problematic relation with local people. Apparently the density of pumas is quite high despite the serious problems caused by livestock predation, which is why it is persecuted by the locals. Clearly the puma's survival strategy is more effective than the jaguar's, as in other regions of their distribution, while the former also may be pursued less than the jaguar.

The results about the diversity of prey species of both cats confirmed the presence of species of high conservation value in the area, highlighting especially *Catagonus wagneri*, *Tayassu pecari*, *Priodontes maximus* and *Myrmecophaga tridactyla*. However, the low density of some of these species, in particular all three peccary species, could be one of the explanations for the low density of jaguars, in addition to hunting.

I think that the fact of being present in the area for 3 whole months conversing with people, teachers and park guards was an important contribution to jaguar conservation in the area, at least in a preliminary fashion. Slowly we are creating awareness that this is a protected species, that people from outside are interested in protecting and studying it, and these changing attitudes help reduce the conflicts people have with the species. In the same way, we believe that the distribution of educational materials also contributed significantly to this goal.

In terms of institutions responsible for decision-making, we believe that our having initiated field surveys and disseminating the first informal technical reports, as well as conducting the workshop to address the topic with governmental and non-governmental institutions, has generated an important reactivation of interest in working to manage and protect this species. This also possibly contributed to the proposals for the creation of new protected areas.

#### **ACTIVITIES FOR THE NEXT YEAR:**

This work is part of my doctoral research project for the National University of Córdoba, Argentina, where I have a scholarship until April 2011, with the possibility of renewal for two years more. So I have planned at least two years more of sampling in two more sites of the Chaco region, with varying degrees and types of human interference and protection.

For 2009 I expect to continue this research in the northern area of Copo National Park, Santiago del Estero Province, which is the only national park within the Semi-arid Chaco region of Argentina.



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