

2° Rufford Small Grants Foundation

Final Report

Project: Ecology and Conservation of the Jaguar (*Panthera onca*) and the Puma (*Puma concolor*) in the Argentine semi-arid Chaco: comparing two areas with different levels and types of human interference.

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RSG reference	20.03.09
Reporting period	July, 2009 to September, 2010
Amount of grant	£5996
Date of this report	February, 2011

Summary:

Research on jaguars in the Argentine Chaco is extremely limited, and the information vacuum is an important obstacle to conservation efforts. The puma is apparently more adaptable to human presence, but research is lacking on its ecology in this region too. The general objective of this project is to study the ecology of the jaguar and the puma in the Argentine Chaco, including distribution, density, prey availability and sympatric relations between the two species. We will compare three sites in the semi-arid Chaco of Argentina with different levels and types of human interference, determining the principal conservation problems facing these species in the region. For project's period 2009, we worked in the second site, it is located in Copo National Park. Copo is the only national park within the Semi-arid Chaco region, constitute the best-protected portion of the Argentine Chaco and one of the most promising sites in terms of the survival of the jaguar and puma in the region. With the information obtained in Copo and in the other two site we will generate the first guidelines for a jaguar and puma management plan in the Argentine semiarid Chaco.

Introduction:

In Argentina the jaguar (*Panthera onca*) is classified as endangered and its populations have diminished by 85%. Currently it only occurs in three isolated regions of the country and research on jaguar ecology and conservation has concentrated only in two of them, the Yungas and 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 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 Wildlife Conservation Society (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 and puma are threatened by these activities, but the principal conservation problems for the species in the region are unknown (Fig. 2). Additional research is also required to determine whether their co-existence is influenced or not by human activities.

The semi-arid Chaco region currently includes more than seven protected areas, but each one is too small on its own to protect a viable and secure population of Jaguars. This string of protected areas in the region has been identified by Argentine conservation and natural resource management organizations as the basis for a future Chaco Green Corridor. This corridor is currently being designed and implemented, and could possibly harbor an ecologically viable population of jaguars. 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.

To date the only conservation actions undertaken in the region are limited to brief studies that have not been continued. Two workshops in 2006 and one in 2008 were held to develop the Jaguar Management Plan by the Chaco region. We was invited to the three workshops, and participated as one of the few researchers working with cats in the Argentine Chaco. Representatives of government and non-governmental organizations responsible for jaguar conservation in the country also participated and one of the priority recommendations was to promote further research on jaguars in the semi-arid Chaco.

The **General Goal** of our 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 (> 0.8 kg body weight) across the three sites with different levels and types of human interference, 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.
4. To obtain current data on the distribution of the jaguar in the Argentine semi-arid Chaco region.
5. Determine which are the principal conservation problems that are suffering these species in the Chaco region.

Methods:

a) To obtain data on the presence and density of jaguar and puma: I used the systematic camera-trap methodology with a minimum of 24 and a maximum of 36 camera-trap stations at each site, each station with two camera-traps across from each other. The stations will be

separated from each other between 2400 and 3600 m and will function continuously for 60 days per year. In the case of animals with spot patterns, such as the jaguar, individuals can be identified by their unique spot patterns. In the case of pumas, despite the challenge with animals lacking spot patterns, individual identification may also be possible following certain methodological precautions. Another methodology that I applied to obtain data on presence and relative abundance of both cats, and to complement camera-trap data, was the line transect surveys conducted daily for approximately 75 days, on foot, to record direct observations and signs, including scats, bones, scrapes on trees, tracks, etc.

b) To obtain data on relative abundance of potential prey species: I used the same camera-trap stations as for jaguar and puma density. I will calculate the probability of patch-occupancy of prey species (program PRESENCE) and also I will calculate the relative abundance of them as the number of captures/100 trap-nights. I used the same line transect surveys described above to recorded direct observations and sign of prey species, generating information on presence and relative abundance of these species for each site, calculated as the number of observations or signs per km surveyed.

c) To obtain data on habitat use and spatial and temporal activity patterns for jaguar, puma and their prey: The camera traps recorded the time and date of each animal photographed, from which temporal activity patterns can be described. In addition, by covering the greatest habitat range and area possible with camera traps, I will be able to describe spatial activity patterns and habitat use. Direct observations and signs recorded during transect surveys also contributed to describing use of space and habitat.

d) To obtain data on different levels of human interference at each site: I will conduct semi-structured interviews across the three study areas. I will interview local inhabitants, local and urban hunters, park guards, etc, focusing on direct observations of the two species, conflicts with cats, reports of their presence, livestock predated by cats, location of jaguar or puma skins, etc.. I will also inquire about potential prey species and about types of livestock present, land use patterns at each ranch, and other aspects of productive activities in the area. For this component of the project, we will take advantage of our considerable previous knowledge of the zone, of the families that inhabit there and of the productive activities that each settler realizes.

e) To obtain data on the distribution and the principal conservation problems of both cats in the region: I will use the datas of camera trap records, line transect survey observations (direct and indirect), as well as interviews.