

THE JAGUARUNDI (*Puma yagouaroundi*) IN THE KAA-IYA DEL GRAN CHACO NATIONAL PARK, SANTA CRUZ, BOLIVIA

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ABSTRACT: Jaguarundis are felids that inhabit almost all habitat types below 2200 m, but basic aspects of their biology and behaviour are still unknown. This study was carried out using camera traps to register the species' activity pattern in dry Chaco habitats. Jaguarundis were exclusively diurnal with a decline in activity during the warmer hours. Also, photographs showed a coat color ratio of two grey individuals for one orange.

RESUMEN: El gato gris (*Puma yagouaroundi*) en el Parque Nacional Kaa-Iya del Gran Chaco, Santa Cruz, Bolivia. El gato gris es un felino que habita casi todo los tipos de bosque por debajo de los 2200 msnm, sin embargo aspectos de su biología y comportamiento permanecen desconocidos. Este estudio se realizó utilizando trampas cámaras para registrar el patrón de actividad de esta especie. Se encontró que el gato gris es exclusivamente diurno con un receso de actividad en las horas mas calurosas del día. Además se encontró que el color del pelaje sigue un patrón de dos individuos grises por uno anaranjado.

Key words. Activity. Camera trap. Gran Chaco. Jaguarundi.

Palabras clave. Actividad. Gato gris. Gran Chaco. Trampas cámara.

The jaguarundi (*Puma yagouaroundi*) is a small cat (2 to 4 kg) ranging from Texas, United States, to central Argentina. Although it is widely distributed in almost all vegetation types up to 2200 m, it is considered a rare species across its range (Emmons and Feer, 1997; Parera, 2002; Cuéllar and Noss, 2003).

The Kaa-Iya del Gran Chaco National Park (34 000 km²) was created to protect the diverse and unusual wildlife of the dry Chaco and since 1997 several studies have been carried out on the park's wildlife and its importance for the local indigenous communities around the park (Taber, 1997; Cuéllar et al., 1998). One of these studies is the monitoring of large- and

medium-sized mammals with camera traps (Maffei et al., 2002). This paper summarizes the results for jaguarundi during four years of camera trapping.

Most of the data come from two study camps: 1) Tucavaca Camp (18° 30.97' S, 60° 48.62' W) is located in transitional Chiquitano to Chaco dry forest. The average temperature is 26°C and the annual precipitation is around 800 mm. The forest has a relatively even canopy of 8 to 12 m (Navarro and Fuentes, 1999). 2) Cerro Cortado Camp (19°31'36" S, 62°18'34"W) is located in the Isono area. The vegetation is Chaco dry forest with a canopy of 4 to 6 m, an annual mean temperature of

26°C, and annual precipitation of 550 mm (Montes de Oca, 1997).

Between 24 and 32 pairs of camera traps were set in each of the two research camps, with distances between 1 and 2 km among camera pairs. The survey areas covered between 49 and 58 km². The camera traps were set 30-40 cm above the ground and at one meter more or less from the trail or road. The cameras worked 24/7 and the date and hour is printed in every photograph taken.

Every camera trap census, between 2002 and 2004, lasted for sixty days: a pilot study and three censuses were carried out at Tucavaca (with a total of 7560 trap-nights) and two censuses at Cerro Cortado (5200 trap-nights). We obtained a total of 41 photographs of jaguarundis: 12 from Cerro Cortado (CC), 26 from Tucavaca (Tuc), and three elsewhere in the Kaa-Iya National Park. Of the latter two were from Ravelo camp (Chiquitano forest, from two surveys of 4728 trap-nights between 2001 and 2003) and one record from Guanacos Camp (Chaco grasslands, two surveys of 3960 trap-nights between 2003 and 2005).

Jaguarundis are distributed all across the Kaa Iya National Park, but are more abundant in

the Chaco plains forest (CC) and Chiquitano transitional forest (Tuc) than in Chaco grasslands. All photographs were taken during daylight, between 5:00 and 18:00, with an activity peak between 7:00 and 11:00 hours and 14:00 and 18:00 hours (**Fig. 1**), indicating an exclusively diurnal activity pattern.

In total there were 22 cameras placed on roads, and 40 cameras on trails; jaguarundis were mainly photographed on roads (30 observations on roads, compared to 10 on trails; $\chi^2=15.2$; $gI=1$; $P<0.01$), considering that at Tuc the relationship between cameras in the roads and trails was 1:3 and in CC was 1:1.5.

The coat color pattern was identified in 40 photographs, varying from dark gray to orange. The gray pattern was more common than the orange pattern by a ratio of 2:1 (27 cases versus 13), supporting Eizirik et al. (2003) that also state that the reddish color has lower population incidence. Because the color pattern is uniform and these cats do not have spots or distinctive markings, we could not identify individuals.

Almost all the felid species photographed were identified to the individual level, including pumas (*Puma concolor*), and their

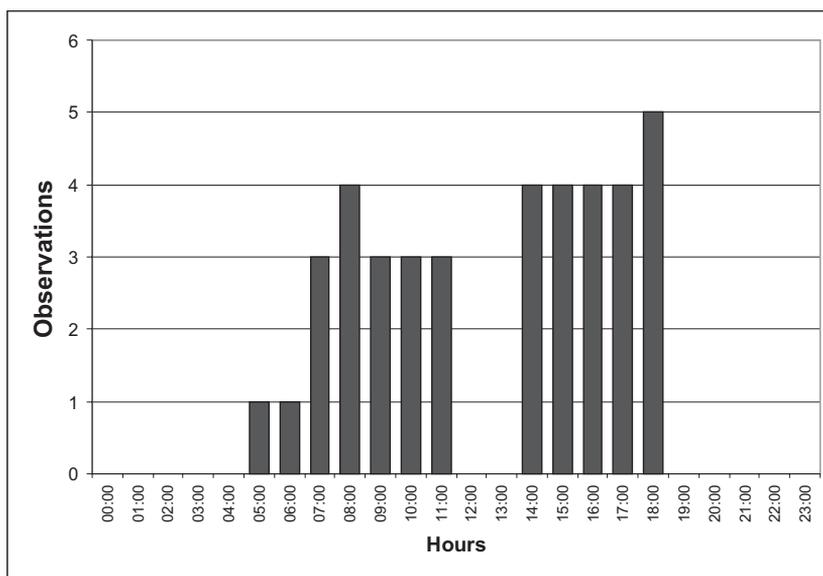


Fig. 1. Activity pattern of Jaguarundis at Kaa-Iya National Park.

Table 1

Cat species captured with camera traps at Tucavaca Camp (2001-2004) and Cerro Cortado Camp (2002-2004).

Species	Photographs		Density (ind/100km ²)	
	Tucavaca	Cerro Cortado	Tucavaca	Cerro Cortado
<i>Leopardus pardalis</i>	297	149	29.0	31.0
<i>Puma concolor</i>	51	165	2.9	6.2
<i>Panthera onca</i>	50	84	2.8	5.2
<i>Leopardus geoffroyi</i>	15	25	-	15.2
<i>Puma yaguaroundi</i>	14	12	-	-

density was calculated (data are resumed in Cuéllar et al., 2006). At the Tuc camp the jaguarundi ranks fifth among five cat species, in terms of number of photographs, over three systematic censuses. At CC camp, the jaguarundi also ranked fifth out of five cat species registered over two camera-trap surveys (**Table 1**).

From this it would appear that jaguarundis are apparently rare in both survey areas, and in the Kaa-Iya National Park in general, but Emmons (pers. comm.) suggested that jaguarundi behavior differs significantly from that of other cats, in that they do not preferentially use roads or trails. If this was the case, then the number of photographs in our camera-trap surveys would not reflect relative abundance, and jaguarundis might be more abundant than they appear to be. Tello (1986) reported for Bolivia that although jaguarundis are common, they are difficult to capture and study and are rarely seen. This is supported by our own capture efforts with cage traps at the Kaa-Iya National Park (1391 trap nights at Tucavaca and 915 trap nights at Cerro Cortado), where we captured only one jaguarundi, compared to 10 crab eating foxes (*Cerdocyon thous*) and 12 ocelots (*Leopardus pardalis*). In Mexico, jaguarundis seem to be adaptable and resistant to fragmentation and habitat destruction (Aranda, 1991); the same situation is reported in Venezuela (Bisbal, 1991). Additional research would be necessary to confirm the ecology and populational status

of jaguarundis in the habitat types prevailing in the Kaa-Iya National Park.

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