certain characteristics of the Arataú forest may be more beneficial specifically to *C. s. utahicki* (and perhaps also to other taxa). Thus, while the Caxiuanã National Forest may be the most important protected area in the region, effective conservation of *C. s. utahicki* - and possibly other fauna - may depend on the establishment of further reserves, and the development of effective alternative measures in other areas of the Xingu-Tocantins interfluvium.

Acknowledgments: This study was supported by the Goeldi Museum/ECFPn and the Grupo Queiroz Galvão, and by grants from WWF-US and the Brazilian Higher Education Authority - CAPES. We would also like to thank Olavo Galvão, Luciano Tavares and Andréa Nunes.

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Primates of the Serra do Brigadeiro State Park, Minas Gerais, Brazil

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Aguirre (1971) pointed to the Serra do Brigadeiro, in the south-east of the state of Minas Gerais, as one of the few localities where the muriqui, *Brachyteles arachnoides*, still survives. Aguirre (1971) had suggested the existence of 50-60 individuals of *B. arachnoides* in a 2,400 ha forest at Araponga. The exact localities proved impossible to identify, and it was only in the last decade, that its continued occurrence in the region was confirmed, when a female juvenile was captured during surveys by the Centro de Estudos Ecológicos e Educação Ambiental (CECO), based at Carangola, Minas Gerais.

The Serra do Brigadeiro State Park (PESB), 13,210 ha, was created by the State Government of Minas Gerais, through the State Forestry Institute (IEF) on 27 September, 1996 (Fig. 1). The park covers part of the municipalities of Ervália, Fervedouro, Sericita, Araponga, Miradouro,

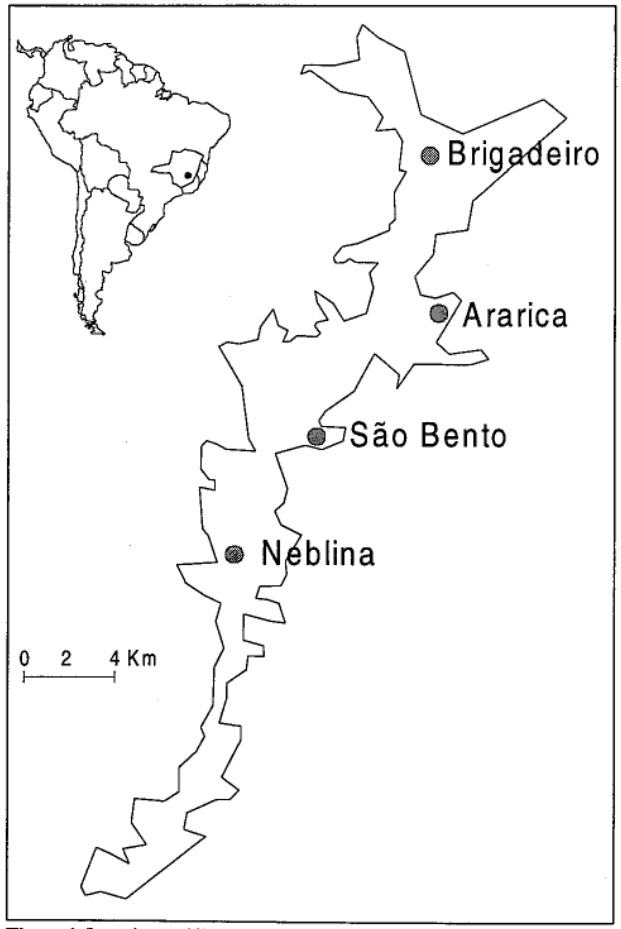

Figure 1: Location and limits (approximately between 42°22'S and 42°32'S, and between 20°34'W and 20°53'W) of the Serra do Brigadeiro State Park, Zona da Mata, Minas Gerais, southeast Brazil. Note the four sampling areas.

Pedra Bonita, Muriaé and Divino. The predominant vegetation in the past was tropical forest, part of the Atlantic forest of Brazil. Today only fragments remain. In the 1960s, the Belgo-Mineira mining company cut the majority of the forests of the region to produce charcoal, and today only 10% of the primary forests remain, the majority of which is composed of secondary vegetation.

Faunal surveys were carried out in 1996/1997, involving six expeditions and 25 days in the field. Censuses were carried out along specific trails in four sampling areas (Table 1). For three species, playback was used in order to increase the chance of locating the groups. Tape recordings of the vocalizations of *Callithrix geoffroyi, Callicebus personatus* and *Brachyteles arachnoides* were used at regular intervals (Sony Walkman and audio amplifiers).

Four primate species were observed which had already been recorded for the area (*Callicebus personatus, Cebus apella nigritus, Alouatta fusca,* and *Brachyteles arachnoides*), along with the first sightings of *Callithrix aurita*. *C. aurita* had already been recorded in the vicinity of the park in the municipality of Araponga (Cosenza, 1994; Fonseca *et al.*, 1994). Two small groups (5 and 4 individuals, respectively) were seen in primary and secondary forest within the Fazenda Neblina. Both observations were made using playback, with the groups approaching the observer, allowing accurate identification and group counts. Population densities of the primates were estimated from a single census in the Fazenda Neblina (Table 2).

C. aurita was found to be rare, as was *B. arachnoides* the most vulnerable species in the park. The low densities of muriquis are undoubtedly associated with the widespread deforestation and hunting pressure during the 1960s and 1970s. Annual visits to the Park since 1987 have allowed us to identify two separate groups of muriquis, one with 27 individuals (no infants seen) in the Fazenda Brigadeiro (Andrade, pers. comm.) and another with 15 individuals in the Fazenda Neblina (Cosenza, 1993).

Callicebus personatus groups occur throughout the remaining forest patches, both primary and secondary, in the Park. Group size varied from 2 to 5 and the titis are evidently the species least affected by forest fragmentation and degradation. They are occasionally captured for pets by local people. Two females have been sent to the Rio de Janeiro Primate Center (CPRJ/FEEMA). The brown howling monkey, *Alouatta fusca*, was also observed with some frequency, even though, after *B. arachnoides*, it is the species suffering the highest hunting pressure. Although *Cebus apella nigritus* was rarely seen during the censuses, capuchin monkeys were the species most often mentioned in interviews with local people.

Table 1: Species of primates, their occurrence at the different survey areas and in different vegetation types in the Serra do Brigadeiro State Park, Minas Gerais.

Species	Census Areas[1]	Vegetation Types[2]
Callithrix aurita	1	SF-PF
Callicebus personatus	1-2-3-4	S-SF-PF
Cebus apella nigritus	1-2-4	SF-PF
Alouatta fusca	1-2-3-4	SF-PF
Brachyteles arachnoides	1-2	SF-PF

[1] Census areas: (1) Fazenda Neblina, (2) Fazenda Brigadeiro, (3) Ararica, (4) São Bento.

[2] Vegetation types: (S) Scrub, (PF) Primary forest, (SF) Secondary forest.

Table 2 - Estimated densities of primates in the Fazenda Neblina forest of 320 ha, Serra do Brigadeiro State Park, Minas Gerais.

Species	Density (ind./ha)
Callithrix aurita	0.028
Callicebus personatus	0.103
Cebus apella nigritus	0.009
Alouatta fusca	0.075
Brachyteles arachnoides	0.018

The number of primate species in the Serra do Brigadeiro State Park is very high when compared to other protected areas in the Atlantic forest of Minas Gerais. Including, as it does, four species (*C. aurita, C. personatus, A. fusca* and *B. arachnoides*) listed as threatened in the *IUCN Red List of Threatened Animals* (IUCN, 1996), as well as the threatened species lists of Brazil (Fonseca *et al.*, 1994) and of the state of Minas Gerais (Lins *et al.*, 1997), the importance of the Serra do Brigadeiro State Park is unquestionable.

Acknowledgments: We thank Sérgio L. Mendes and Anthony B. Rylands for commenting on an earlier text. Our thanks also for support from FAPEMIG (*Fundo de Amparo à Pesquisa do Estado de Minas Gerais*), and numerous people who directly or indirectly helped us in field, most especially Renato Neves Feio, Ronaldo Pereira and Lúcio S. Leoni.

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Reaction of Wild Emperor Tamarins to the Presence of a Snake

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Predation on callitrichines is rarely observed in the wild. Reports of predation by snakes include, for example, those by Heymann (1987) and Correa and Coutinho (1997). Other predators include raptors, tayras, and ocelots (see Caine, 1993; Ferrari and Lopes Ferrari, 1990). Since predation on these primates is not commonly witnessed by researchers in the wild, anecdotal accounts may be useful to evaluate its role in callitrichine social evolution (see Caine, 1993) as well as its impact on population density. In this paper we report on the reaction of a black-chinned emperor tamarin (*Saguinus imperator imperator*) group on the proximity of a snake.

The incident (observed by the first author, C.A.N.) occurred on 24 September, 1997, during a study on the cognitive aspects of foraging decisions in *S. i. imperator*, *S. fuscicollis weddelli*, and *Callicebus cupreus cupreus* at the Zoobotanical Park of the Federal University of Acre (UFAC), Brazil (9°56'30"-9°57'19"S, 67°52'08"-67°53'00"; 100 ha), Rio Branco, state of Acre, Brazil. At 1209 h, an emperor tamarin group composed of four individuals (one adult male - AMA, one adult female - PNK, and two immature males – BRA and LAR) arrived at feeding station A. Each feeding station (totalling four) was composed of eight visually identical feeding platforms (FP) distributed in a circular arrangement. At 1214 h, following BRA and PNK, respectively, AMA and LAR were feeding on bananas at FP1 and FP7 when a snake (probably a *Bothrops* sp. measuring approximately 1.2 m) climbed up FP2 and remained curled on the top. FP2 was approximately 4.6 m distant from FP1, and 10.7 m distant from FP7 (Fig. 1). At 1216 h, AMA saw the snake from FP1 and left the platform, emitted an alarm call from an adjoining tree, and abandoned the feeding station, followed by all other group members. LAR could not see the snake from FP7 because there were two trees between it and FP 2 (Fig. 1). About one minute after the tamarins had left the feeding station, the snake went to the ground and disappeared into the vegetation.

This single observation of an interaction between a potential predator and the tamarins was made during approximately 4,000 hours of daily monitoring of the feeding stations from September 1997 through January 1998.

Figure 1. Partial view of the feeding station showing the first author close to the platform 1 (A). Feeding platforms 2 (B) and 7 (C) are also shown.

During this time two stable social groups and several solitary emperor tamarins visited the feeding stations 986 times, involving more than 145 hours of observations. Whether this case represents a predation attempt or not, is impossible to affirm. However, the reaction of the tamarins would indicate it was.

Acknowledgments: The study is supported by the Fundação O Boticário de Proteção à Natureza, The John D. and Catherine T. MacArthur Foundation, the Fundo Mundial para a Natureza-WWF, Brasil, the American Society of Primatologists, the Center for Latin American and Caribbean Studies/University of Illinois at Urbana-Champaign, S.O.S. Amazônia, the Brazilian Higher Education Authority (CAPES), and the Parque Zoobotânico/UFAC.

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