

- Martins, W. P. and Strier, K. B. Submitted. Age at first reproduction in philopatric female mureiquis (*Brachyteles arachnoides hypoxanthus*).
- Printes, R. C. and Strier, K. B. 1999. Behavioral correlates of dispersal in female mureiquis (*Brachyteles arachnoides*). *Int. J. Primatol.* 20: 941-960.
- Printes, R. C., Costa, C. G. and Strier, K. B. 1996. Possible predation on two infant mureiquis, *Brachyteles arachnoides*, at the Estação Biológica de Caratinga, Minas Gerais, Brasil. *Neotrop. Primates* 4: 85-86.
- Rylands, A. B., Strier, K. B., Mittermeier, R. A., Borovansky J. and Seal, U. S. (eds.). 1998. *Population and Habitat Viability Assessment for the Mureiqui* (*Brachyteles arachnoides*). IUCN/SSC Conservation Breeding Specialist Group (CBSG), Apple Valley, MN.
- Strier, K. B. 1993/1994. Viability analyses of an isolated population of mureiqui monkeys (*Brachyteles arachnoides*): Implications for primate conservation and demography. *Primate Conserv.* (14-15): 43-52.
- Strier, K. B. 1997. Mate preferences in wild mureiqui monkeys (*Brachyteles arachnoides*): Reproductive and social correlates. *Folia Primatol.* 68: 120-133.
- Strier, K. B. 1999a. *Faces in the Forest: The Endangered Mureiqui Monkey of Brazil*. Harvard University Press, Cambridge.
- Strier, K. B. 1999b. Predicting primate responses to "stochastic" demographic events. *Primates* 40: 131-142.
- Strier, K. B. 2000. Population viability and regional conservation priorities for mureiquis (*Brachyteles arachnoides*) in Brazil's Atlantic forest. *Biotropica* 32(4b): 903-913.
- Strier, K. B. and Ziegler, T. E. 2000. Lack of pubertal influences on female dispersal in mureiqui monkeys (*Brachyteles arachnoides*). *Anim. Behav.* 59: 849-860.
- Strier, K. B., Mendes, F. D. C., Rímoli, J. and Rímoli, A. O. 1993. Demography and social structure in one group of mureiquis (*Brachyteles arachnoides*). *Int. J. Primatol.* 14: 513-526.
- Strier, K. B., Mendes, S. L., Bragança, A. M., Coelho, C. C., Costa, C. G., Diaz, L. G., Dib, L. T., Gomes, J., Hirsch, A., Lynch, J. W., Nogueira, C. P., Odália Rímoli, A., Oliva, A. S., Printes, R. C., Rímoli, J. and Santos, R. R. 1999. Census of the primate community at the Estação Biológica de Caratinga, Minas Gerais, Brazil. *Neotrop. Primates* 7: 134-135.
- ing primate populations and habitat fragmentation patterns over the entire Rio Doce basin in Minas Gerais (Hirsch, in prep.). The farm is in the Rio Suaçuí Grande valley, 26 km from the town of Peçanha. The first author, accompanied by personnel of the Minas Gerais State Forestry Institute (IEF/MG), flew over the area in a helicopter the previous day to estimate the extent of deforestation in this and a number of protected areas in the region. During the overflight we were able to identify an area of relatively well-preserved forest occupying one of the hilltops on the farm.
- Using information obtained from local inhabitants, Aguirre (1971) concluded that *B. a. hypoxanthus* had been extinct in the region of the headwaters of the Rio Suaçuí Pequeno since 1945/47. Kinzey (1982), following Aguirre (1971), stated that *B. a. hypoxanthus* was formerly present in the region of Peçanha. However, in July 1981, 40 years on, Russell A. Mittermeier, Andrew Young and Carlos Alberto Machado Pinto found a population of eight individuals at the Fazenda Córrego de Areia (Mittermeier *et al.*, 1987). Rosa Lemos de Sá (pers. comm. in Strier, 1992) attempted to locate this group again in 1990, but without success.
- In our two-days of fieldwork in 2001, we performed five playback points (playing recordings of mureiqui vocalizations, spending 10 minutes at each: 5 minutes playing the tape recording with a 5-minute pause). We also made a detailed assessment of habitat structure at six further points. However, due to technical problems, we were unable carry out a full primate census of the Fazenda, and this is planned for our next field trip.
- We obtained a positive response of mureiqui calls on the third playback point. At this time, we were in a deep and humid mountain gorge surrounded by some trees estimated as being 30 m in height. The group we located was composed of four adult males, one sub-adult male, one juvenile male, two adult females each with a juvenile, one adult female with an infant, and one juvenile female. We stayed with the group for about 30 minutes till they moved away. During this period, some of the individuals vocalized frequently, several evidencing a certain degree of stress, probably related to our presence, possibly exacerbated by hunting pressure in the area. In the same gorge during the fifth playback session, we also detected a group of *Cebus robustus* of at least four individuals.

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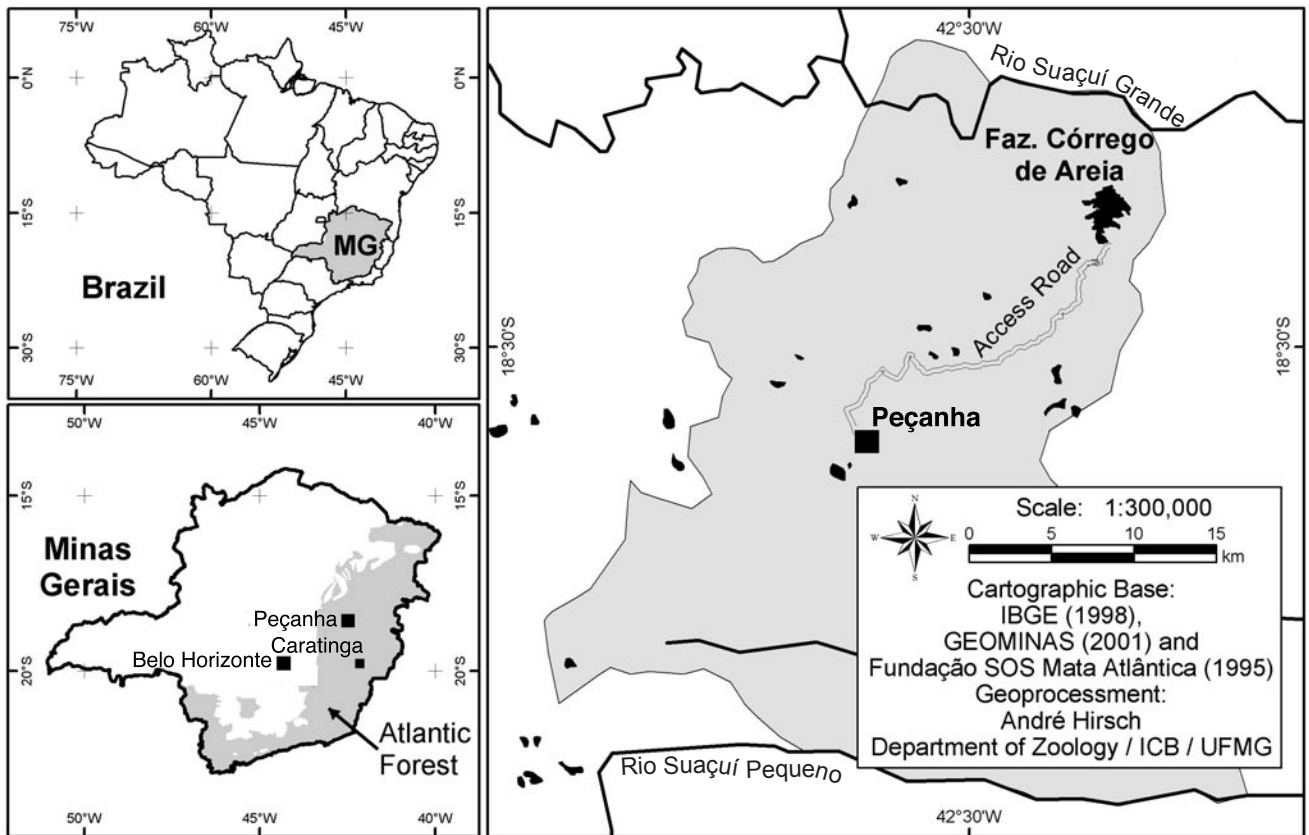
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## REDISCOVERY OF *BRACHYTELES ARACHNOIDES HYPOXANTHUS* AT THE FAZENDA CÓRREGO DE AREIA, MINAS GERAIS, BRAZIL

André Hirsch, Luiz Gustavo Dias  
Waldney Pereira Martins, Simone Porfírio

On 1 December, 2001, we encountered a group of 13 *Brachyteles arachnoides hypoxanthus* in a forest in the Fazenda Córrego de Areia (18°26'S, 42°25'W, altitude 388-805 m, 60 ha), municipality of Peçanha, in the state of Minas Gerais (Fig. 1). The forest was surveyed as part of a project examin-

The forest in the Fazenda Córrego de Areia covers only 60 ha, but during the helicopter overflight we were able to obtain coordinates using a Garmin GPS III Plus, and with a Landsat 5 TM satellite image and an Arc View GIS 8.1 geographic information system (ESRI, 2001), we were able to estimate that it extends over 449 ha surrounding the hilltop. For the habitat structure assessment, we used the technique of Sample Points along a Transect. A circle of 6 m in radius (113.2 m<sup>2</sup>) was demarcated at each of six points at 300 m intervals along the transect (see Hirsch *et al.*, 1994; Hirsch, 1995, in prep.), the first placed 200 m inside the forest to avoid "edge effects". In general terms, the forest of Fazenda Córrego de Areia can be considered



**Figure 1.** Location of the Fazenda Córrego de Areia and other forest fragments, municipality of Peçanha, Minas Gerais, Brazil.

**Table 1.** Habitat variable score of six points evaluated at Fazenda Córrego de Areia and other selected areas from Minas Gerais State that harbor *Brachyteles arachnoides hypoxanthus* populations.

Variables	Fazenda Córrego de Areia Peçanha	RPPN Feliciano Miguel Abdala Caratinga	Rio Doce State Park (Campolina) Marliéria	Fazenda Esmeralda Rio Casca
Area (ha)	449	957	35.976	56
Perimeter (km)	15.85	92.10	120.30	3.00
Ideal perimeter as a circle (km)	7.51	10.97	67.18	2.65
Deviation from ideal perimeter (%)	111.01	739.84	79.07	13.09
Average altitude (m)	597	550	310	348
Density of trees (trees/ha)	471.56	397.88	368.41	530.50
Tree DBH - average (cm)	27.35	19.20	23.21	18.77
Nº of trees with DBH >10 cm	32	27	25	36
Nº of trees with DBH >75 cm	1	2	2	0
Tree height average (m)	14.17	14.65	12.74	11.91
Nº of trees with H >20 m	4	4	3	4
Nº of dead trees and branches	24	11	12	16
Nº of emergent trees	4	5	5	4
Canopy connectivity (0 to 3)	2	3	3	1
Presence of <i>Euterpe edulis</i> (yes/no)	Yes	Yes	Yes	No
Density of lianas (0 to 3)	1	1	2	3
Occurrence of gaps (Yes/No)	Yes	No	No	Yes
Occurrence of logging (Yes/No)	Yes	No	No	Yes
Occurrence of fire (Yes/No)	Yes	No	No	Yes

Source: Hirsch (*in prep.*).

**Table 2.** Demographic variable scores of *Brachyteles arachnoides hypoxanthus* from Fazenda Córrego de Areia and other selected areas from Minas Gerais State that harbor miquiqui populations.

Variables	Fazenda Córrego de Areia Peçanha	RPPN Feliciano Miguel Abdala Caratinga <sup>a,c</sup>	Rio Doce State Park Marliéria	Fazenda Esmeralda Rio Casca
Area (ha)	449	957	35,976	56
Ecological density (ind./ha)	0.029	0.123	0.007	0.214
Total individuals	13	63	250 <sup>b</sup>	12 <sup>b</sup>
Adult males	4	14	na	na
Adult females	3	19	na	na
Juveniles	5	18	na	na
Infants	1	12	na	na
Sex ratio	1.33	0.74	na	na
Reproductive rate (infants/females)	0.33	0.63	na	na
Proportion young/adults	0.86	0.91	na	na

Source: a – Dias and Strier (in press); b – Rylands *et al.* (1998); c – only from Matão Group; na – not available.

as seasonal semideciduous forest following the classifications of Brazil, IBGE (1993), located near to the contact zone of the Atlantic Forest and Cerrado (bush savanna of Central Brazil). It is the most northwesterly location for the occurrence of *B. hypoxanthus*, 160 km from the Feliciano Miguel Abdala Private Reserve (Caratinga Biological Station), 153 km from the Rio Doce State Park, and 230 km from Belo Horizonte, the capital city of the state of Minas Gerais.

Comparing the forest and the miquiqui population at the Fazenda Córrego de Areia with three other miquiqui sites - two protected and one unprotected - we can conclude that it is of intermediate size, is far from ideal in its perimeter and, thus, suffers a strong edge effect, has steep terrain, a high density of large trees with many dead trees and branches, a canopy with intermediate connectivity, and suffers from logging and fires. The population density of the miquiquis is relatively low and, compared to the RPPN Feliciano Miguel Abdala, the sex ratio is biased towards males, and the reproductive rate is low (a low young/adult ratio) (Tables 1 and 2).

The northern miquiqui, *Brachyteles hypoxanthus*, is Critically Endangered (Hilton-Taylor, 2002). The finding of this population at the Fazenda Córrego de Areia exemplifies the widespread loss of its habitat through agricultural encroachment and forest fragmentation, and also a serious cause of threat to this species - hunting. Protection of the remaining small, privately-owned forests in the state of Minas Gerais, such as those in the vicinity of Peçanha, is now an essential strategy for the conservation of the northern populations of miquiqui (Strier and Fonseca, 1996/1997; Rylands *et al.*, 1998). We were unable to ascertain if this was the only group living in this forest, but there are certainly no other forests that connect with it, and only a few other areas in the headwaters of Suaçuí Valley with sufficient area and habitat requirements. Miquiqui populations such as this one will suffer increasing genetic homozygosity, and their future is dim (Strier, 2000).

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**André Hirsch, Luiz Gustavo Dias**, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, 31270-901, Belo Horizonte, Minas Gerais, Brazil, e-mail: <hirsch@mono.icb.ufmg.br>, **Waldney Pereira Martins**, Núcleo de Biodiversidade, Instituto de Estudos Sócio-Ambientais do Sul da Bahia (IESB), Rua Major Homem Del Rey 147, Cidade Nova, 45652-180 Ilhéus, Bahia, Brazil, and **Simone Porfírio**, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, 31270-901 Belo Horizonte, Minas Gerais, Brazil.

## References

- Aguirre, A. C. 1971. *O Mono Brachyteles arachnoides (É. Geoffroy)*. Academia Brasileira de Ciências, Rio de Janeiro. 53pp.
- Brazil, IBGE. 1993. *Mapa de Vegetação do Brasil*. Escala 1:5.000.000, Projeção Policônica. Fundação Instituto Brasileiro de Geografia e Estatística (IBGE), Rio de Janeiro.
- Dias, L. G. and Strier, K. B. In press. Effects of group size on ranging patterns in *Brachyteles arachnoides hypoxanthus*. *Int. J. Primatol.* 24(2).

- ESRI. 2001. ArcView GIS v. 8.1. Environmental Systems Research Institute (ESRI), Redlands, CA.
- Hirsch, A. In preparation. Fragmentação do habitat e estratégias de conservação de primatas na bacia do Rio Doce, Minas Gerais, utilizando um Sistema de Informação Geográfica. Doctoral thesis, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte.
- Hirsch, A. 1995. Censo de *Alouatta fusca* Geoffroy, 1812 (Platyrrhini, Atelidae) e Qualidade do Habitat em Duas Áreas com Remanescentes de Mata Atlântica em Minas Gerais. Master's thesis, Universidade Federal de Minas Gerais, Belo Horizonte.
- Hirsch, A., Subirá, R. J. and Landau, E. C. 1994. Levantamento de primatas e zoneamento das matas da região do Parque Estadual do Ibitipoca, Minas Gerais, Brasil. *Neotrop. Primates* 2(3): 4-6.
- Hilton-Taylor, C. 2002. 2002 IUCN Red List of Threatened Species. Website: <<http://www.redlist.org/>>.
- Kinzey, W. G. 1982. Distribution of some Neotropical primates and the model of Pleistocene forest refugia. In: *Biological Diversification in the Tropics*, G. T. Prance (ed.), pp.455-482. Columbia University Press, New York. Gazetteer. 53pp.
- Mittermeier, R. A., Valle, C. M. C., Alves, M. C., Santos, I. B., Pinto, C. A. M., Strier, K. B., Young, A. L., Veado, E. M., Constable, I. D., Paccagnella, S. G. and Lemos de Sá, R. M. 1987. Current distribution of the muriqui in the Atlantic forest region of Eastern Brazil. *Primate Conserv.* (8): 143-149.
- Rylands, A. B., Strier, K. B., Mittermeier, R. A., Borovansky, J. and Seal, U. S. (eds.). 1998. *Conserving Brazil's Muriqui: Population and Habitat Viability Assessment Workshop for the Muriqui* (Brachyteles arachnoides). IUCN/SSC Conservation Breeding Specialist Group (CBSG), Apple Valley, MN.
- Strier, K. B. 1992. *Faces in the Forest: The Endangered Muriqui Monkeys of Brazil*. Oxford University Press, Oxford.
- Strier, K. B. 2000. Population viabilities and conservation implications for muriquis (*Brachyteles arachnoides*) in Brazil's Atlantic forest. *Biotropica* 32(4b): 903-913.
- Strier, K. B. and Fonseca, G. A. B. da. 1996/1997. The endangered muriquis in Brazil's Atlantic forest. *Primate Conserv.* (17): 131-137.

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## UM CASO DE RAPTO OU TRANSFERÊNCIA ACIDENTAL DE UM INFANTE ENTRE BANDOS VIZINHOS DE *ALOUATTA GUARIBA CLAMITANS*

Vanessa Barbisan Fortes

### Introdução

Uma ampla variedade de categorias de interação adulto-infante tem sido descrita na literatura primatológica, desde o cuidado parental e aloparental até situações extremas de agressão, como por exemplo o infanticídio. Nicolson (1987) classificou as interações fêmea-infante em duas principais

categorias: afiliativo (cuidado maternal e alomaternal) e agressivo (abuso), destacando que a distinção entre elas nem sempre é clara. De acordo com Clarke (1990), o rapto ocorre quando o infante é forçadamente separado de sua mãe, sob protesto de ambos. Outros dois modos pelos quais infantes deixam ou são removidos de suas mães são: tomada, quando o infante é removido sem protesto, e transferência, quando o infante voluntariamente agarra-se a outro animal. Relações adulto-infante e cuidado parental em *Alouatta* são bem documentados na literatura (Altmann, 1959; Baldwin and Baldwin, 1973; Bolin, 1981; Sekulic, 1983; Neville *et al.*, 1988), assim como relatos de adoção (Izawa, 1989; Clarke and Glander, 1981; Agoramoorthy and Rudran, 1992). Já os relatos de rapto são menos freqüentes, havendo registros para *A. palliata* (Clarke, 1990) e *A. caraya* (Calegario-Marques and Bicca-Marques, 1993). Raptos de infantes por indivíduos do mesmo grupo parecem ser mais freqüentes, havendo apenas um relato de rapto inter-grupo (Glander, 1974). Um possível caso de rapto inter-grupo em *Alouatta guariba clamitans* é apresentado por Marques and Ades (2000) para um infante de cerca de dois meses de idade, em que o macho envolveu-se no cuidado aloparental. Na maioria dos casos, o contexto em que a troca de infante ocorreu não foi observado, havendo apenas observações posteriores em que o infante encontrava-se com indivíduos de outro grupo. A seguir será descrito um caso de possível tentativa de rapto de um infante de *A. g. clamitans* por um bando vizinho, habitante de um fragmento de Floresta Estacional Decidual no município de Santa Maria, Rio Grande do Sul, Brasil.

### Métodos

O registro comportamental aqui apresentado foi obtido durante um estudo da dieta e padrão de atividades de *Alouatta guariba clamitans* (bugio-ruivo) no município de Santa Maria (29°43'-29°44'S, 53°42'-53°44'W), Rio Grande do Sul, Brasil (Fortes, 1999). A área de estudo, pertencente ao Ministério do Exército, é denominada Campo de Instrução de Santa Maria (CISM). O CISM possui uma área total de 5,876 ha, com cerca de 20% de florestas nativas (Floresta Estacional Decidual), distribuídas em fragmentos de diferentes tamanhos entremeados por vegetação campestre. O grupo de bugios-ruivos estudado habitava um trecho do maior fragmento florestal existente na área, com cerca de 200 ha, no qual vários grupos foram visualizados.

Acompanhou-se um grupo de bugios-ruivos composto por dois machos adultos, um macho subadulto, três fêmeas adultas e uma fêmea juvenil no período de janeiro a dezembro de 1996. Uma das fêmeas deu à luz em janeiro, mas o infante desapareceu antes do primeiro mês de vida. As outras duas fêmeas deram à luz no mês de abril (infantes observados pela primeira vez em 24 de abril de 1996), sendo que os infantes sobreviveram até o final do período de estudos.

O relato a seguir decorre de observações feitas durante um encontro entre dois grupos vizinhos, o qual resultou