

NEW DATA AND A HISTORICAL SKETCH ON THE GEOGRAPHICAL DISTRIBUTION OF THE KA'APOR CAPUCHIN, *CEBUS KAAPORI* QUEIROZ, 1992

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According to Lopes (1993), Lopes and Ferrari (1993, 1996), Ferrari and Queiroz (1994) and Ferrari and Lopes (1996), the Ka'apor capuchin, *Cebus kaapori* Queiroz, 1992, should be considered as the rarest and most endangered primate from eastern Amazonia. Rylands *et al.* (1995) considered this taxon as "vulnerable", following the Mace-Lande system criteria for the determination of its conservation status. This is, however, one of the least known of the Neotropical primates.

The rarity of the taxon has contributed to an insufficient knowledge about its original and current geographical distribution, being based as it is on only a few confirmed localities (Figure 1). A review of the literature showed that, from a historical perspective, the presence of an "untufted" *Cebus* form in Maranhão and eastern Pará was not known to the old naturalists (Abbéville, 1876 [1614]; Evreux, 1929 [1615, 1874]; Lisboa, 1967 [1625-1631]; Prazeres, 1891, see also Frade, 1966; Ávila-Pires, 1989, 1992), nor to XXth century zoologists who studied the mammals of the region (Thomas, 1920; Sneath, 1926; Krumbiegel, 1940; Vieira, 1957; Ávila-Pires, 1958; Carvalho, 1960; Carvalho and Tocheton, 1969; Pine, 1973; Fernandes and Aguiar, 1993), nor to those who carried out collections for biomedical research (Deane and Martins, 1952; Travassos and Kloss, 1958; Deane and Damasceno, 1961; Ferreira *et al.*, 1970).

Goeldi and Hagmann (1906), however, drew attention to the existence of "*Cebus capucinus*" in the region of Rios Capim and Acará, in the State of Pará. This record remained forgotten, however, until Queiroz (1992) identified and described *Cebus kaapori*. Queiroz (1992) restricted the current geographical distribution of the new taxon to western Maranhão, in the region located between the Rios Gurupi (in the west) and Pindaré (in the east). The limits of its range would coincide, as such, with the borders between Amazonian forest and the "Zona dos Cocais" (dominated by *Orbignya* palm tree) in the north/north-east, and savannah (*cerrado*) environments to the south. Queiroz (1992) considered the possibility that the species might also occur in some localities immediately adjacent to these limits.

Subsequently, Lopes (1993), Lopes and Ferrari (1996) and Ferrari and Lopes (1996) enlarged the geographical range, extending it to the northwest, based on direct observations and secure information on the occurrence of *C. kaapori* in five further localities: four from eastern Pará and a fifth from the Gurupi Biological Reserve, west of the Rio Gurupi in the state of Maranhão. The western limit was fixed as the right bank of the lower Rio Tocantins.

The southern limit was established to the north of the 4°S, due to the absence of the species in the faunistic inventory of the area affected by the Tucuruí dam (Mascarenhas and Puerto, 1988). The northern limit, in that case, would coincide with the borders between the forest and the coastal formations in Pará and Maranhão (Ferrari and Lopes, 1996, Fig.2b, p.56). Ferrari and Souza Júnior (1994) also suggested the existence of an "untufted" *Cebus* form in the Tocantins-Xingu interfluvium. This would discard the hypothesis of allopatry between taxa of this species group in the eastern Amazon, although this possibility remains to be confirmed.

New data on the geographical distribution of *Cebus kaapori* were obtained by M. A. Lopes and O. de Carvalho Júnior (see Carvalho Júnior *et al.*, in prep., for a preliminary census) during observations in eastern Pará, and through a compilation of the faunistic inventory results that have been conducted in Maranhão since 1989. The data come from direct observations and also accounts by local inhabitants.

In Pará, the species has been observed in the Fazenda Amanda, near the village of Japiim, municipality of Vizeu, in a well preserved primary forest fragment (about 6,000 ha, including areas from nearby ranches; M. A. Lopes, pers. comm.), and in primary forest in the Fazenda Cauaxi, municipality of Paragominas (O. Carvalho Jr., pers. com.). *Cebus apella* was also recorded in both localities.

In Maranhão, *C. kaapori* was observed twice (in 1994 and 1997) in the Fazenda MAPISA, about 60 km south-east from Buriticupu (minimum of one and three individuals together with a group of *Chiropotes satanas*, respectively). *C. kaapori* was also recognized as occurring locally by several informants in this and another two localities near to Santa Luzia. The informants commented spontaneously on its rarity. *C. apella*, on the other hand, was easily observed in all these localities. The observations of *C. kaapori* occurred in *terra firma* forest, with some history of logging and hunting pressure. A captive specimen was observed in Pio XII. The origin of the animal was attributed to the region of the lower Rio Grajaú, in the vicinity of the Lago Açu. Information from four people in Bacabal and Lago Verde also indicated the occurrence of *C. kaapori* in the region of the Rio Grajaú. This suggests that the geographical distribution of the taxon is wider than previously supposed. Queiroz (1992), Lopes (1993) and Lopes and Ferrari (1996) considered that the "Zona dos Cocais" could be a limiting factor, an ecological barrier to the species north and eastwards from the border established by Queiroz (1992). While this may be largely true, the evidence reported here suggests that its range may extend more to the north-east and south, along the patches of remnant forests of the Amazonian part of the "Zona dos Cocais" in the Pindaré-Grajaú interfluvium. The lower/middle Grajaú-Mearim and Mearim-Itapecuru interfluvia have been systematically inventoried. All other Amazonian primate forms that occur in Maranhão have distributions that reach as far as at

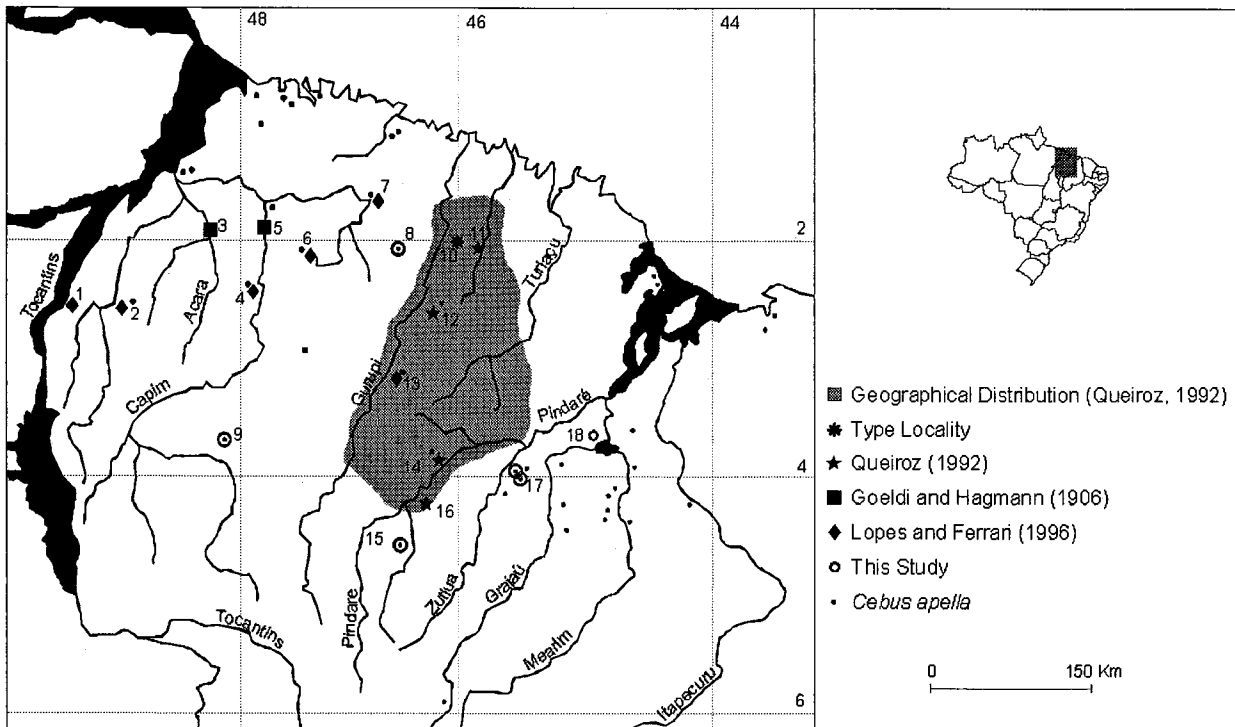


Figure 1. Localities for *Cebus kaapori* in eastern Pará and middle-western Maranhão. PARÁ: 1. Mocajuba, 02°35'S, 49°30'W; 2. CRAI Dendê, municipality of Tailândia, 02°30'S, 48°50'W; 3. Rio Acará (arbitrarily restricted to 01°54'S, 48°15'W); 4. Fazenda Badajós, municipality of São Domingos do Capim, 02°33'S, 47°47'W; 5. Rio Capim (arbitrarily restricted to 01°53'S, 47°45'W); 6. Fazenda São Marcos, municipality of Irituia, 02°13'S, 47°20'W; 7. Fazenda São Sebastião, municipality of Garrafão do Norte, 01°52'S, 47°00'W; 8. Fazenda Amanda, municipality of Vizeu, around of 02°05'S, 46°30'W; 9. Fazenda Cauaxi, municipality of Paragominas, 03°45'S, 48°10'W; MARANHÃO: 10. Garimpo Chega-Tudo, municipality of Carutapera, 02°30'S, 47°30'W (type locality); 11. Garimpo Limão, about 02°15'S, 46°41'W; 12. Aldeia Gurupiúna, Reserva Indígena Alto Turiaçu, 02°40'S, 46°20'W; 13. Reserva Biológica de Gurupi, 03°25'S, 46°45'W; 14. Posto Indígena Awá (paratype locality), Reserva Indígena Caru, about 03°54'S, 46°35'W (from Queiroz, 1992); 15. Fazenda MAPISA, municipality of Buriticupu, about 04°36'S, 46°30'W; 16. Fazenda Varig, about 47°03'S, 04°39'W (from Queiroz, 1992); 17. Santa Luzia, two localities around of 03°58'S, 45°31'W; 18. Lower Rio Grajaú, near to Lago Açú, about 03°43'S, 44°58'W.

least part of the Mearim-Itapecuru interfluvium. While *Cebus apella* was observed relatively easily in many localities (using a variety of habitats, including highly degraded areas), *C. kaapori* can be considered practically absent, from the right bank of the Rio Grajaú, eastwards. However, more surveys will be carried out in the southernmost parts in order to check this. The two *Cebus* species are sympatric in almost all of *C. kaapori* localities, although actual syntopy has not been verified.

The taxonomic status of *C. kaapori* has been questioned due to its close relationship with *C. olivaceus* populations from the north bank of the Rio Amazonas and the island of Caviana (Anon., 1993; Harada, 1994; Harada *et al.*, 1995; Masterson, 1996). This is an issue for further discussion (Silva Júnior and Cerqueira, in prep.). However, whether a species or subspecies, the Ka'apor capuchin continues as a valid taxon.

The enlargement of the range which was suggested by Queiroz (1992) and Ferrari and Lopes (1996) does not improve its conservation status as it involves highly degraded areas in both of the states. It is important that mammalogists with access to the region continue to accumulate data that will aid in the reconstruction of the original and current geographical distribution of this taxon in

order to contribute to the establishment of monitoring programs for the remnant populations.

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INTERGROUP INFANT TRANSFER AMONG RED HOWLERS, *ALOUATTA SENICULUS*, IN VENEZUELA: ADOPTION OR KIDNAPPING?

Govindasamy Agoramoorthy

Episodes of infant adoptions have been reported in several species of primates (Thierry and Anderson, 1986). Infant kidnapping has also been reported for a number of free-ranging Old World primate species including *Papio anubis* (v. Ownes, 1975), *Presbytis entellus* (v. Sugiyama, 1965, 1966; Hrdy, 1978; Mohnot, 1980), *Macaca fuscata* (v. Itani, 1959), *Macaca radiata* (v. Rahamann and Parthasarathy, 1962), *Cercopithecus aethiops* (v. Lancaster, 1971), *Pan troglodytes* (v. Goodall, 1968), and *Gorilla gorilla* (v. Fossey, 1976). Although infant adoptions have been previously reported among howlers (Agoramoorthy and Rudran, 1992), no information is available on the behavior of infant kidnapping and its consequences among group living New World cebids in the wild. A field study on red howler (*Alouatta seniculus*) social behavior was carried out by the author during 1989-94 at Hato Masaguaral, Venezuela (Agoramoorthy, 1994, 1995, 1997) and several cases of male invasions followed by infanticide were observed (Agoramoorthy and Rudran, 1995), as well as three cases of infant adoptions (Agoramoorthy and Rudran, 1992). This paper describes an unusual case of intergroup infant transfer among red howlers.

Two red howler social groups numbered '6' and '7' were neighbors, and their home ranges overlapped. During the first week of April 1994, group 7 was comprised of 11 individuals, with two adult males, three adult females, one subadult female, two large juvenile males, one medium-sized juvenile male, one small juvenile male and one male infant (approximately 3 months old). On 10 April 1994, female #3 of group 7 was captured with her infant (#3.5) using chemical immobilization methods described previously by Agoramoorthy and Rudran (1994). Both mother and infant were marked with color-coded tags on both ears for visual identification. The female was an old adult, aged approximately 11 years. During early April 1994, group 6 was comprised of 12 individuals, with one adult male, four adult females, one large juvenile male, one large juvenile female, two small juvenile males, one small juvenile female, and a pair of approximately four month-old male infant twins. An adult female #4, approximately four years old was observed with these new born twins on 10 December 1993. According to the life history data, the female #3 of group 7 and female #4 of group 6 were not related.

On the morning of 20 April 1994 at 0830, groups 6 and 7 were seen in nearby trees within 20 meters of each other, and howled at each other for 25 minutes. Subsequently individuals of group 6, including female #4 with her infant twins, chased group 7. As a result, group 7 individuals were forced to move away from the area, and group 6 stayed and fed in the tree. The observation ended at mid-day. On the next morning when group 7 was contacted again, the infant #3.5 of female #3 was missing. After two hours of searching, the infant was found in the neighboring group 6 with female #4. How and why the infant was adopted or kidnapped by female #4 of group 6 was not known. Infant #3.5 was carried dorsally by female #4 of group 6, while her infant twins were carried ventrally. A large juvenile female was also observed to carry the adopted/kidnapped infant on a few occasions. No other individuals of group 6 participated in transporting or handling the infant. Although female #4 allowed the new infant to stay in body contact with her, it was not observed suckling.

From the morning of 21 April, the mother of infant #3.5 was seen wandering alone on the periphery of her group's range but moving towards the direction of group 6. She was not involved in the social activities in her group. On the next day, in the evening, she twice attempted to approach female #4, but she was chased away by the females. On both occasions, female #3 was alone and her group was not in the vicinity. At dusk, group 7 individuals were seen near group 6 and they later settled down to sleep with no apparent aggressive encounters. On the morning of 23 April at 0725, groups 6 and 7 were observed 15 meters apart and howling at each other. Ten minutes later, adult males and females of group 7, led by female #3, approached group 6 individuals and chased them away. A moment later, infant #3.5 was seen unattended by members of group 6 and it was vocalizing mildly. The mother approached the infant, and sniffed its head, body and genitals, and the infant immediately clung to the belly of its mother. It appeared to be weak and had probably been starved for the last two days.

Although it has been suggested that lactating young adult females with infants are most likely to adopt or kidnap infants than females without infants (Silk, 1980), the involvement of a mother of twin infants in adopting or kidnapping has never been reported previously for any non-human primate. Several hypotheses have been proposed regarding the causes and function of infant kidnapping, but the costs and benefits of such behavior are almost impossible to measure quantitatively (Hrdy, 1976). A number of benefits, including improved foraging for the mother after losing the infant to the kidnapper were suggested by Hrdy (1976). The female in this study, however, did not evidently gain any extra time for feeding or grooming. In fact, she isolated herself and did not participate in any social activities. This may have been due to psychological trauma and stress after losing her infant. A female long-tailed macaque was also reported to have shown high stress