over the course of his lifetime (Walters and Seyfarth, 1987), but in *C. apella* reports on dominance reversal events involving the alpha male, are rare.

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A Twin Birth in *Cebus xanthosternos* (Wied, 1820) (Cebidae, Primates)

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Cebus is a very wide ranging genus but the taxonomy of the four to five species recognized today is still poorly understood. The tufted brown capuchin, *C. apella*, especially has resisted a modern systematic evaluation mainly due to extreme individual variation (Hill 1960; Torres, 1988). For many years, the nominate subspecies has been ascribed to the entire Amazon, although at least four *C. apella* subspecies were recognized from the Atlantic forest, in Brazil, Paraguay and Argentina (*C. a. xanthosternos*, *C. a. robustus* and *C. a. nigritus*) and the central savanna (*cerrado*) of Brazil (*C. a. libidinosus*) (Mittermeier *et al.*, 1988, Rylands *et al.*, 1995). Of these, the form *xanthosternos* formerly occurred in a large area extending from the Rio Jequitinhonha in the south, and throughout the Atlantic forest of the state of Bahia, probably north and inland to the Rio São Francisco (Hill, 1960; Coimbra-Filho *et al.*, 1992a, 1992b). The karyotype of the form *xanthosternos* is well differentiated from other forms of tufted capuchin (Seuánez *et al.*, 1986; Matayoshi *et al.*, 1987) and Mittermeier *et al.* (1988) and Rylands *et al.* (1995) listed it as a full species. Today hunting and habitat loss have resulted in a severe decline in their populations and geographic range, and they are disappearing rapidly even in their last stronghold, the cocoa growing region of southern Bahia (Mittermeier *et al.*, 1982; Coimbra-Filho, 1990; Oliver and Santos, 1991; Coimbra-Filho *et al.*, 1992a, 1992b; Rylands *et al.*, 1993). Its status is recognized as "Critically endangered" by the World Conservation Union (IUCN) (IUCN, 1996).

A small colony of *C. xanthosternos* was begun at the Rio de Janeiro Primate Center (CPRJ-FEEMA) in 1984, in collaboration with the World Wildlife Fund -US (WWF-US) and Wildlife Preservation Trust International (WPTI), and Fauna and Flora International (FFI). Its critical status, and the large number found being maintained as pets in southern Bahia, however, argued for the expansion of this colony and the establishment of breeding colonies for its conservation *ex situ* elsewhere (Santos and Oliver, 1991; Oliver and Santos, 1991; Santos and Lernould, 1993a). The Brazilian Institute for the Environment (Ibama) established an International Recovery and Management Committee for the species in 1992 (Santos and Lernould, 1993a, 1993b).

The first specimens of *C. xanthosternos* arrived at CPRJ in 1980, and the first birth was registered in October 1984 (a female CPRJ 596). Two groups were then established and the beginning of the Center's colony as such. The founder population was comprised of six young and subadult individuals, and 24 births have been registered since then, from two males and ten females between 1984 and 1997. There was a problem with the first birth, to a primiparous female

Table 1. Development of the twin offspring of *Cebus xanthosternos* during the first 20 months.

	Father	Mother	Twins			
	474	1084	1739		1740	
Age	15 years	9 years	12 mo	20 mo	12 mo	20 mo
Weight (g)	3.900	3.000	1.600	1.750	1.500	1.850
Total body length (mm)	835	860	760	795	745	800
Tail length (mm)	460	500	440	450	440	460
Right foot (mm)	122	120	110	115	110	115
Ear (mm)	33 x 40	30 x 39	30 x 36	30 x 37	28 x 36	29 x 37
Upper canine	14	8 mm	7	6	6	4
Lower canine	11	8 mm	7	6	6	6
Distance upper canines	30.0	24 mm	17	25	23	26
Distance lower canines	23	18	21	21	17	21

Source: CPRJ/FEEMA animal register.

(CPRJ 324) which suffered a vaginal prolapse, and the newborn was found abandoned, still wrapped in the placental membranes and hand-reared (Pissinatti and Coimbra-Filho, 1991). From then on, however, all births were normal, and of single offspring, except for one twin birth reported here.

With the exception of callitrichines, twin births are rare among cebids, although they have been reported in wild populations of *Aotus vociferans* (*v.* Aquino *et al.*, 1990), *Callicebus cupreus cupreus* (*v.* Knogge and Heymann, 1995), *Alouatta palliata* (*v.* Chapman and Chapman, 1986), *Alouatta seniculus* (*v.* Crockett and Rudran, 1987), *Alouatta caraya* (*v.* Bicca-Marques and Calegaro-Marques, 1994), and *Brachyteles arachnoides* (*v.* Strier, 1991). Twin births have also been reported in captive populations of *Saimiri boliviensis* (*v.* Anonymous, 1993; Biben, 1993), *Aotus nancymaae* (*v.* Gozalo and Montoya, 1990; Màlaga *et al.*, 1991), *Pithecia pithecia* (*v.* Savage *et al.*, 1995), *Cebus apella* (*v.* Eisenstein and D'Amato, 1972; Stott, 1953), *Ateles fusciceps* (J. Vermeer, pers. comm.), and Bushmitz Moshe (pers. comm.) recorded three cases for *Cebus apella* in the Israel Monkey Park. A twin birth has also been reported for *Callimico goeldii*, which normally produces single offspring (Altmann *et al.*, 1988).

The birth of twins in *Cebus xanthosternos* at CPRJ-FEEMA was significant in that both survived well. In two of the three twin births reported by Bushmitz Moshe (pers. comm.) only one of the twins survived. Likewise one of the twin *C. apella* reported by Eisentein and D'Amato (1972) was born dead. Only one of the twin *Callicebus c. cupreus* reported by Knogge and Heymann (1995) and of *Brachyteles* reported by Strier (1991) survived. The twin *C. xanthosternos* (CPRJ 1739 and CPRJ 1740) were born on 25th February 1997. They were both male. Eisenstein and D'Amato (1972) recorded the birth of two females, with separate placentas, but we were unable to ascertain if the *C. xanthosternos* twins had separate placentas or not. Some biometric parameters are shown in Table 1.

The mother of the twins (CPRJ 1084) was primiparous, although she had had plenty of time to observe births of other females in her group. She was an extremely careful mother. During the first month, the offspring were carried ventrally, only rarely and briefly venturing to the mother's dorsum. Most of the time, and when not suckling, they were oriented similarly, with their heads on the same side of the mother. This is in contrast to marmoset twins, in which each generally places itself with its head on different sides of the mother, and are only rarely aligned with their heads on the same side. Only around the fifth month did the offspring begin minor escapades away from the mother, with some rare and brief occasions when they were carried by other group members. This only became more frequent when the young were one year old and already being weaned. At 20 months old, they still rode on the mother's back or occasionally grabbed hold of another group member when they felt threatened. The father (CPRJ 474) was never observed to participate in the carrying or socialization of the young, a feature observed in all the *Cebus* births recorded at the Center.

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News

Estación Biológica Caparú - Colombian Amazon

In 1984, after many years of planning, I established the nucleus of a research station in the Colombian Amazon on the lower Río Apaporis, not far from the Brazilian border. The idea was to pursue long-term studies of primates and other endangered animals, clarifying some of the interactions that these animals have with their plant communities, and training young Colombians in field techniques. The primate community at Caparú is made up of eight species: *Aotus* sp., *Callicebus torquatus, Saimiri sciureus, Cebus apella, Cebus albifrons, Cacajao melanocephalus, Alouatta seniculus,* and *Lagothrix lagothricha.* My first priority was to begin a study of *Lagothrix lagothricha,* which was common and easy to find in this region, a fact I had first established during a preliminary visit in 1980 (Fig. 1).

The site of the Estación Biológica Caparú (1°05.55´S, 69°30.8´W) is in lowland (200 m) forest in a transition zone between the ancient rocks and soils of the Guyana Biogeographical Province and the Amazonian Biogeographical Province (*sensu* Hernández-Camacho *et al.*, 1991) in a black-water drainage, thus a site of comparatively low soil fertility. The station itself sits on an ancient Pleistocene river terrace, which has its own particular plant community of lower diversity when compared with the more inland Plio-Pleistocene soils of the typical rolling red clay hills which support the highest diversity of plants in the area (Ibarra *et al.*, 1977; Defler and Defler, 1996). The buildings are 900 m north of Colombia´s largest freshwater Amazonian lake, the 24-km Lago de Taraira, which protects a rich community of endangered species such as the Amazonian manatee (*Trichechus inunguis*), the giant river otter (*Pteronura brasiliensis*), the black cayman (*Melanosuchus niger*), and the piraracu (*Arapaima gigas*). The greatest source of human disturbance had been hunting and fishing by neighboring Brazilians, which mostly ceased when we began our activities there. This was essentially a forgotten corner of Colombia with little colonization and only occasional hunting and fishing by indigenous people.

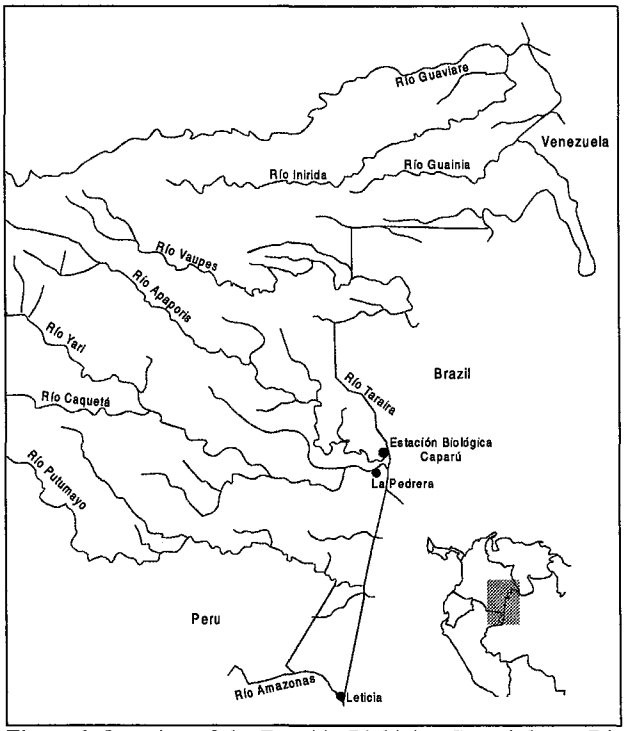

Figure 1. Location of the Estación Biológica Caparú, lower Río Apaporis, Colombia.

Our first Colombian student began her bachelor's thesis work in 1984, and she has been succeeded by about 10 other thesis students, while we have taught two field courses with the participation of other Colombian biologists (Forero, 1986; Muñoz, 1991; Ardila and Flórez, 1994; Palacios and Rodríguez, 1995; Palacios, 1997; Rodríguez, 1997; Barrios and Mantilla, 1998; Patiño, in progress; Gómez, in progress; Stephen, in progress). Most of the thesis work has been with primates, although there has been work with fishes (Corea, in progress) and giant otter (Botello, in prep.) as well. An independent project of an assistant resulted in a valuable collection of butterflies (Lora, 1991), while an on-going doctoral project from a student from the University of London has made an extremely valuable collection of frogs, lizards and snakes (with 1 or 2 new herp species to be described) (Stephen, in prep.).

Sara Bennett-Defler has worked with the avifauna (Bennett-Defler, 1994; Bennett-Defler and Defler, 1997) as well as completing a four and one-half year phenological study of the major plant communities (Bennett-Defler, in progress). I have concentrated on woolly monkeys (*Lagothrix lagothricha*) and black-headed uacari (*Cacajao melanocephalus*), as well as primate conservation, for the past few years (Defler, 1989a, 1989b, 1989c, 1990, 1991, 1994a, 1994b, 1995a, 1995b, 1996a, 1996b, 1996c, in press; Hernández-Camacho and Defler, 1989; Palacios *et al.*, 1997), and had recently begun studying *Saguinus inustus*, although problems on the lower Apaporis have made the resolution of some of the research a rather difficult problem.

For several years we worked with the Colombian National Parks for the declaration of the entire region of the lower Apaporis river as a National Park (Defler *et al.*, 1991), until the project was opposed by the Indian community upriver, which wanted to annex the land into their own Indian Reserve. In June 1998 all of the land of the lower Apaporis, including the Estación Biológica Caparú was declared part of the more than 1,000,000 ha Yaigojé-Apaporis Indian Reserve. In a meeting with the Association of Captains of Yaigojé-Apaporis (ACIYA) in May, several NGOs and government conservation organizations signed an agreement with ACIYA to develop environmental zoning for the lower