ogy, A.B. Rylands (ed.), pp. 263–271. Oxford University Press, Oxford.

Sick, H. 1997. Famílias e espécies: ordem Columbiformes. In: *Ornitologia Brasileira*, J. F. Pacheco (ed.), pp. 341–350. Nova Fronteira, Rio de Janeiro.

Stevenson, M. F. and Rylands, A.B. 1988. The marmosets, genus *Callithrix*. In: *Ecology and behavior of Neotropical primates*, Mittermeier, R.A., Rylands, A.B., Coimbra-Filho, A. and Fonseca, G.A.B. (eds.), pp.131–222. WWF, Washington.

Vilela, S. L. and Faria, D. S. 2004. Seasonality of the activity pattern of *Callithrix penicillata* (Primates, Callitrichidae) in the cerrado (scrub savanna vegetation). *Braz. J. Biol.* 64: 363–370.

Observation of Black-Capped Capuchins (*Cebus apella*) Feeding on an Owl Monkey (*Aotus brumbacki*) in the Colombian Llanos

Xyomara Carretero-Pinzón
Thomas R. Defler
Stephen F. Ferrari

Black-capped capuchins (*Cebus apella*) are known to feed on a wide variety of vertebrate prey, including lizards, frogs, birds, bats, marsupials, rodents, and squirrels (Izawa, 1978, 1990; Terborgh, 1983; Galetti, 1990; Rímoli, 2001; Resende *et al.*, 2003; Defler, 2004), although to date, there is only one report involving another primate, an infant titi, *Callicebus moloch* (Sampaio & Ferrari, 2005). Here we describe the behavior of a group of black-capped capuchins feeding on an adult female owl monkey (*Aotus brumbacki*) in a fragment of gallery forest in the Colombian Llanos. This appeared to be the scavenging of a carcass, rather than a predation event, but the observation nevertheless emphasizes the potential of the capuchins for the exploitation of prey this size.

The event was recorded during the long-term monitoring (September 2005 to January 2007) of a group of 43 squirrel monkeys, *Saimiri sciureus albigena* (Carretero-Pinzón, 2008) on the Arrayanes Farm (3°3'30"N, 73°35'40"W) near San Martín in the Colombian Llanos, department of Meta (Fig. 1). The group occupied a matrix of small fragments of gallery forest of up to 21 ha, including those on the neighboring Santa Rosa Farm, that are interconnected by fences. We collected quantitative behavioral data in scan samples (one minute scans at five minute intervals), and whenever an association was formed with the local group of *Cebus apella* [during 28.3% of monitoring time (1,113 hours of total observation time)]. We also collected data on the members of this group (1 adult male, 1 adult female, 2 juveniles, and 1 infant) using the same sampling schedule. During the event reported here we abandoned this schedule and the capuchins were monitored continuously for the first half hour and then at five-minute intervals, until the carcass was abandoned.

On the morning of January the 12th, 2006, when the squirrel monkeys and capuchins were foraging together in a mixed troop at approximately 08:35, the adult male *C. apella* apparently found a dead female owl monkey (*Aotus brumbacki*) in a tree hole. The assumption that the capuchin found the owl monkey rather than captured it alive is based on the lack of visible or audible evidence of hunting activity or prey capture. On finding the carcass, the adult male became visibly excited, and emitted feeding vocalizations, that were answered in kind by the four other group members, who then approached to a distance of 3-5 m from the tree-hole, from where they observed the male. The male pulled the owl monkey's legs out of the hole and began biting, tearing and eating the flesh of one of the legs. The male was the only individual to feed on the carcass during the first eight minutes, but then he moved to a neighboring tree to rest and looked on as the other group members moved in to feed. The adult female and the infant fed on the second leg; then one of the juveniles pulled the carcass out of the hole as far as its neck, bit off the right radius and hand, and ran to the neighboring tree to consume these parts. The four individuals each spent some 8-10 minutes feeding on different parts of the carcass. Tolerance and sharing appears to be typical of vertebrate predation in the capuchins (e.g. Perry and Rose, 1994; Resende *et al.*, 2003), at least where relatively large-bodied prey is concerned (Izawa, 1978). After approximately 20 minutes, the adult male returned to feed on the carcass in close proximity with the infant, while vocalizing aggressively towards the female, who responded submissively and moved to a neighboring tree. The infant eventually joined the female to be groomed, and one juvenile rested nearby while the other foraged for arthropods. All five group members ingested parts of the owl monkey's limbs, tail or dorsal musculature, but, while one of the juveniles probed the abdomen with its hand, none of the capuchins appeared to feed on the intestines or internal organs. Curiously, Resende *et al.* (2003) recorded the opposite pattern in the predation of a rat by *C. apella*, where the soft parts were consumed and the musculature ignored. In the pres-

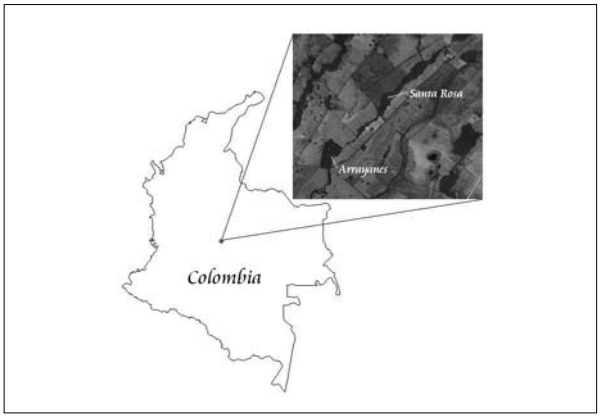

Figure 1. Location of the study area, showing the main fragments of gallery forest on the Arrayanes (16 ha) and Santa Rosa (21 ha) farms in the Colombian Llanos.

ent case, the freshness of the carcass was possibly a factor – the time of death was not known, but presumably preceded the scavenging by at least a few hours. After approximately one hour of intermittent feeding and resting, the capuchins abandoned the carcass as vultures began to arrive at the scene. The remains of the owl monkey's body – the skeleton and some fragments of skin – were found at the same location two days later. The capuchins moved through this area in the interim, but they did not approach the carcass.

Capuchins are highly resourceful and opportunistic primates, able to exploit a wide variety of foods, so in this sense, the events observed here were well within the behavioral potential of the species. As it appears that the body of the owl monkey was scavenged, rather than captured alive, it still remains unclear whether capuchins would normally, if ever, prey on adult primates the size of *Aotus*, which have a body weight of approximately 1 kg. The only record of a capuchin predation of another primate involved an infant titi (Sampaio and Ferrari, 2005), and predation of terrestrial mammals by capuchins has involved either small-bodied rodents or the infants of larger-bodied species, such as coatis and opossums (Newcomer and De Farcy, 1985; Rose and Perry, 1994; Resende *et al.*, 2003; Fragaszy *et al.*, 2004). In this context, it is interesting to note that *Saimiri*, which associates systematically with *Cebus* during foraging at many sites – including the present one – is actually slightly smaller than both *Aotus* and *Callicebus*. Even so, there appear to be no reports of capuchins actively pursuing or preying on squirrel monkeys, even juveniles. In addition to other factors, in the specific case of *Saimiri*, the potential benefits of predation may be more than outweighed by those of the foraging association (Terborgh, 1983; Boinski, 1996).

Acknowledgments

We are grateful to the Sanchez-Rey and Novoa families, owners of the Santa Rosa and Arrayanes farms, for their hospitality and logistic support. We also thank Germán Espinosa and Yolima González for their support in the field, and Dr Akisato Nishimura, professors Martha Bueno and Carolina Gómez for their contributions, Liz Tyson for her review of the text and an anonymous reviewer for their comments.

Xyomara Carretero-Pinzón, Maestría en Ciencias Biológicas, Pontificia Universidad Javeriana, Bogotá, Colombia, e-mail: <xyocarretero@yahoo.es>, xcarretero@gmail.com, **Thomas R. Defler**, Departamento de Biología, Universidad Nacional de Colombia, Bogotá, Colombia, e -mail: <thomasdefler@gmail.com>, thomasdefler@hotmail.com, and **Stephen F. Ferrari**, Departamento de Biologia, Universidade Federal de Sergipe, São Cristóvão, Brazil, e-mail: <ferrari@pq.cnpq.br>

References

Boinski, S. 1996. Vocal coordination of troop movement in squirrel monkeys (*Saimiri oerstedii* and *S. sciureus*) and white-faced capuchins (*Cebus capucinus*). In: *Adaptive Radiations of Neotropical Primates*, M. A. Norconk, A. L. Rosenberger and P. A. Garber (eds.), pp. 251–269. Plenum Press, New York.

Defler, T. R. 2004. *Primates of Colombia*. Conservación Internacional, Bogotá.

Fragszy, D. M., Visalberghi, E. and Fedigan, L. M. 2004. *The Complete Capuchin: the Biology of Genus Cebus.* Cambridge University Press. Cambridge.

Galetti, M. 1990. Predation on the squirrel, *Sciurus aestuans*, by capuchin monkeys, *Cebus apella*. *Mammalia* 54: 152–154.

Izawa, K. 1978. Frog-eating behavior of wild black-capped capuchin (*Cebus apella*). *Primates* 19: 633–642.

Izawa, K. 1990. Rat predation by wild capuchins (*Cebus apella*). *Field Stud. New World Monkeys, La Macarena, Colombia* 3: 19–24.

Newcomer, M. W. and De Farcy, D. 1985. White-faced capuchin (*Cebus capucinus*) predation on a nestling coati (*Nasua narica*). *J. Mammal.* 66: 185– 186.

Perry, S. and Rose, L. 1994. Begging and transfer of coati meat by white-faced capuchin monkeys, *Cebus capucinus*. *Primates* 35: 409– 415.

Resende, B. D.; Greco, V. L. G.; Ottoni, E. B. & P. Izar. 2003. Some observations on the predation of small mammals by tufted capuchin monkeys (*Cebus apella*). *Neotrop. Primates* 11(2): 103– 104.

Rímoli, J. 2001. Ecologia de um Grupo de Macacos-prego (Cebus apella nigritus, Goldfuss, 1809; Primates, Cebidae) na Estação Biológica de Caratinga (MG): Implicações para a Conservação de Fragmentos de Floresta Atlântica. Ph.D thesis, Universidade Federal do Pará.

Sampaio, D. T. and Ferrari, S. F. 2005. Predation of an infant titi monkey *(Callicebus moloch*) by tufted capuchins (*Cebus apella*). *Folia Primatol.* 76:113– 115.

Terborgh, J. 1983. *Five New World Primates.* Princeton University Press, Princeton.

Densidad Poblacional y Tamaño de Grupo de *Saguinus leucopus* en Parches de Bosque en el Departamento de Caldas, Colombia

Néstor Roncancio Duque
William Rojas Vinasco
Jaime Vicente Estévez Varón

Introducción

Por motivos históricos, geográficos y ecológicos, la mayoría de la población humana en Colombia está concentrada en la región Andina y en la planicie Caribe. En consecuencia, estas regiones son las más afectadas por la transformación