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Some Observations on the Predation of Small Mammals by Tufted Capuchin Monkeys (*Cebus apella*)

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Capuchin monkeys are the most omnivorous of the New World primates and are predators of small vertebrates (Terborgh, 1983). *Cebus capucinus* has been observed hunting coatis (*Nasua narica*) and squirrels (*Sciurus variegatoides*) in Costa Rica (Newcomer and De Farcy, 1985; Rose, 1997). Brown capuchin monkeys (*Cebus apella*) capture and eat lizards, squirrels, frogs and birds (Izawa, 1978; Terborgh, 1983; Galetti, 1990). Ferreira *et al.* (2002) described predation on birds by a group of tufted capuchins at the Tietê Ecological Park, São Paulo. Here we report on our observations of this same, semi-free-ranging group eating small mammals. The group lives in an 18 ha reforested area in the Tietê Ecological Park, São Paulo, Brazil. A detailed description of the area and the group is given by Ottoni and Mannu (2000).

On 6 June, 2001, at around 0930, one of us (BDR) was following the capuchin group and saw the juvenile male Frank eating birdseed near the juvenile male Lobato and juvenile female Vavá. Suddenly he descended to the ground, grabbed a mouse hidden in the bushes and took it to a tree. The mouse was not seen moving prior to capture, so we cannot be sure if he had killed it or if it was already dead. Frank examined its belly and ripped the skin between the hind limbs, but soon abandoned the prey. Lobato approached, took the mouse and, after a brief examination, also abandoned it.

On 15 March, 2003, at around 1050 in the morning, BDR and VG observed the dominant male Bisqüi on a branch, 10 m above the ground, eating the head and intestines of an adult male rat (*Rattus rattus*). The adult female Cisca, carrying her 5-month-old infant, and the adult male Medeiros were watching Bisqüi from very close by. An unidentified immature was also nearby, and watching keenly. Bisqüi showed great tolerance, never threatening or attacking those who were watching. The unidentified immature was able to eat a piece of the viscera. After about three minutes, Bisqüi abandoned the rat, which fell on the ground. Female juvenile Ada went down and took the carcass. We observed her from a close distance (around 4 m). She ate parts of the digestive tract, liver and pancreas, and after about four minutes, also abandoned the carcass. The juvenile male Químico then approached and examined it, but soon went away, following the group and leaving the rat on the ground.

On examination, most of the muscle tissue of the carcass was intact, except for the abdominal layers and the face muscles. The rat's belly was ripped open, and its liver, pancreas, stomach, heart, the entire digestive tract, and the brain were completely eaten. Consumption of the head and brains of small vertebrate prey has also been registered by Heymann *et al.* (2000) in their study of *Saguinus mystax* and *Saguinus fuscicollis*. Biting the head of lizards, frogs and bird nestlings was seen as a killing strategy with a rich energy source, the brain, as a reward. Izawa (1978) described *Cebus apella* in Colombia which killed frogs by squeezing the prey's neck or biting them, and then consuming the thighs, the tips of the hands and feet, and the viscera. We were unable to see the way the prey was killed, but the monkeys certainly showed a preference for eating the intestines and brain. Later that morning, at 1135, VG observed an adult male eating a small young, pink mammal around 5 cm in length. Another adult male had also been observed eating two young mammals similar to this one in July 2002.

On 27 May, 2003, at 0945, VG observed an adult female carrying the carcass of an opossum infant (*Didelphis* sp). The dominant male, Bisqüi, and another adult female were nearby. Almost the entire carcass was consumed; only the head, skin and bones and a small part of the intestines remained. Unlike the rat carcass, in this case the muscle tissue was broadly consumed and the brain was intact.

Although the capuchin monkeys are provisioned daily, they forage continuously, eating fruits, leaves, birds and invertebrates such as spiders and worms (Ferreira *et al.*, 2002). As opportunists, they probably capture vertebrate prey whenever possible, even though food scarcity is not a problem for this group; varied protein sources are always welcome, and hunting behaviors may be rewarding *per se*. In contrast to what was observed with Izawa's group in

Figure 1. Adult female (Cisca) observes dominant male (Bisqüi) eating a rat.

Colombia, in all predation events described here the possessor tolerated the proximity of conspecifics; this created opportunities for food transfer, either direct and tolerated or, more often, through scrounging. Food transfer in this group was also registered in bird predation events, and scrounging was also the most common type of transfer (Ferreira *et al.*, 2002).

In a review of the genus by Freese and Oppenheimer (1981), vertebrate prey listed included only lizards, birds and rodents in the diet of *C. capucinus*, and frogs in the diet of *C. apella*. While John Oppenheimer was the pioneer in studies of this genus in the wild (*C. capucinus* in particular), this diet list reflected the paucity of information available at the time. As new field studies are conducted, our understanding of the diversity of prey taken by tufted capuchins, and the dynamics of food transfer among them, will continue to improve.

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Insect-eating by Spider Monkeys

Andres Link

Introduction

Studies on the diet and feeding behavior of spider monkeys (*Ateles* spp.) have revealed they are primarily frugivorous, with fruits representing between 72% and 90% of their diet (Carpenter, 1935; Hladik and Hladik, 1969; Klein and Klein, 1977; Van Roosmalen, 1985; Chapman, 1987; Symington, 1988; Dew, 2001). Flowers and young leaves are also eaten frequently, especially when fruit is scarce (Van Roosmalen and Klein, 1988; Castellanos, 1995; Nunes, 1998; Stevenson *et al.*, 2000). Bark, decaying wood, fungus, seeds, soil from salt-licks and termite nests, insects and other items are seldom consumed and represent only a small part of their diet (see Van Roosmalen and Klein, 1988).

Insect-eating in spider monkeys has been reported in several studies and, except for passive consumption (for example, fig wasps in fig fruits), it represents a minor part of their feeding activities. Wagner (1956) reported that spider monkeys eat insects and insect larvae. Termites are eaten selectively (Klein and Klein, 1977; Van Roosmalen, 1985), but this behavior has been difficult to separate from decaying wood or termite-nest eating (Castellanos, 1995) and has not been observed in several studies (Dew, 2001; Link, pers. obs.). They have been incidentally observed eating meliponid bees in Costa Rica (C. A. Chapman, pers. comm.) and Colombia (P. Stevenson, pers. comm.), and caterpillars are eaten intensively by spider monkeys during short periods of the year in a number of different sites (Van Roosmalen, 1985; Chapman, 1987; Symington, 1988; Cant, 1990).

White-bellied spider monkeys (*Ateles belzebuth*) have been studied in the Tinigua National Natural Park in Colombia for several years and, until this study, no insect-eating behavior had been observed except by Pablo Stevenson (pers. comm.), who reported it as a minor part of the diet of one of his study groups (MB-1); no individuals in his other groups had ever been seen actively consuming insects. During the study reported here, I observed white-bellied spider monkeys eating insects on a number of occasions and, although it represents a small part of their total diet in the study year, it was an important food item at certain times.

Study Site

This research was carried out at the Centro de Investigaciones Ecológicas de La Macarena (CIEM), part of Tinigua National Natural Park in the northwestern Amazon, located