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Capuchin Monkeys in The Caatinga: Tool Use and Food Habits During Drought

In the interior of the state of Paraíba, about 300 km eastwards from João Pessoa and about 10 km north of the small town of Desterro de Malta, there is a small mountain range inhabited by a few groups of *Cebus apella*. The region is part of the Caatinga biome. We visited this place in November 1983, in the advanced dry season. That year was particularly dry. We had been formerly invited by the Brazilian Forestry Development Institute (IBDF), to check reports that capuchin monkeys were starving because of the strong drought depriving them of their food resources. We learnt later that only one old animal, with heavily-worn teeth, had been found dead, and that people of the vicinity were feeding the animals with boiled or dry corn and bananas. After a reconnaissance of the area, we concluded that the animals were solving the problem of drought in several ways and that the inhabitants of the neighborhood were probably projecting their own necessities and hard life on the wild monkeys.

Local people reported that lactating infants had been seen three months earlier, and that although they were very shy they had entered one of the isolated houses in their range on which occasion an infant had been captured. They were reported to feed on very common lizards, on the seeds of maniçoba (*Manihot* sp.), to suck the juice of crushed coconuts of the catolé palm (*Syagrus oleracea*), and also to chew the juicy macambiras (*Encholirium spectabilis*).

We walked up the mountain range to the area were the capuchins lived. The vegetation was leafless with a general gray appearance. From time to time, green trees drew our attention (pau-pedra, pitombeira = *Tallisia* sp., oiticica = *Licania rigida*, feijão bravo = *Capparis* sp. and espinheiro = *Acacia* sp.). After a while we discovered several thickets of macambira where the plants had been

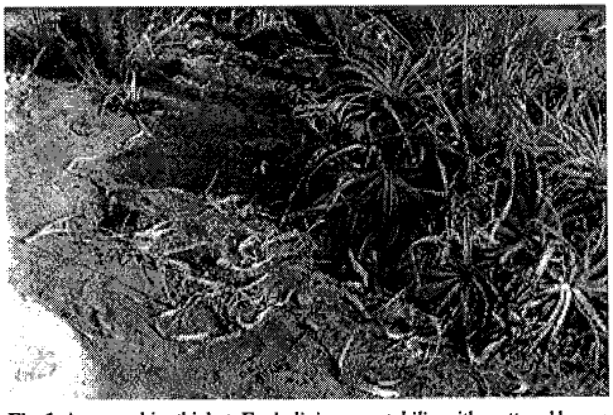

Fig. 1. A macambira thicket, *Encholinium spectabilis*, with scattered leaves chewed by *Cebus apella*.

Fig. 2. The rock used as a mortar, with *Syagrus* nuts beside it.

pulled out of the ground and the leaves chewed at their white bases, where they are more tender and juicy. This had been done in a disorderly fashion, as would be expected of a capuchin (see Fig. 1).

A little further on we stopped at a large flat, bare rock ("lagedo") where several crushed catolé coconuts were spread around on the ground. Close to them there was a round, about one kg, heavy pebble that on closer examination showed an area were the surface was rough as if it had been recently stricken against a rock. At 10:00 am. we heard stones falling four times, and on several occasions the noise of stones knocking. A short time later we found a group of monkeys that received us by shaking branches. The group was formed of an adult of light pelage, two adults of dark pelage, two young and an adult female with an infant on her back. We have no doubt that the capuchins were using a rock as a mortar, and a stone (pestle) to hit the palm nuts placed on it (see Fig. 2).

The case of the Desterro de Malta capuchins shows that the species is able to survive even under very hard conditions, due to the plasticity of their diet and their rich behavioral repertoire. Nut-cracking behavior by pounding has been observed in captivity several times, but very rarely in the wild. Izawa and Mizuno (1977) described *Astrocaryum* palm nut-cracking behavior by capuchin monkeys in Colombia, but in this case by striking the fruit against a bamboo stalk. *Cebus albifrons* and *C. olivaceus* likewise pound hard fruits such as brazilnut pyxidia (*Bertholetia excelsa*, Lecythidaceae), *Phenakospermum* sp. (Musaceae), and *Duroia aquatica* (Rubiaceae), and smash palm nuts against branches, although not as efficiently as *C. apella* (M. G. M. van Roosmalen, in Rylands, 1987). None of these cases involved, however, the manipulation of a tool as such, although Struhsaker and Leland (1977) observed a tufted capuchin bashing a palm nut held in its hand with another, rather than on a branch or bamboo stalk. Visalberghi (1990) provides an important review of tool use in this genus. Visalberghi (1987) and Anderson (1990) described experiments in captivity where *Cebus apella* used stones as tools for nut-cracking. As pointed out by the first author, the chances for arboreal monkeys of manipulating stones and finding horizontal surfaces on which to pound them are scarce. Desterro de Malta, however, offered the appropriate scenario, and the predic-

tion of Visalberghi (1987) that field observations of capuchin monkeys in the adequate environment will show tool-use for nut-cracking has here been confirmed for the first time.

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Common Woolly Monkeys (*Lagothrix lagotricha*) Feeding on *Chrysophyllum colombianum* (Sapotaceae) in Southern Ecuador

On the 5th December 1990, whilst at the end of a pre-cut trail running through the upper-tropical forest (elevation: 1100 m) approximately 3 km south of the Bombuscara Visitor Centre, Podocarpus National Park (04° 08'S 78° 58' W), Colin Taylor and I encountered a troop of six woolly monkeys. The monkeys were foraging in the canopy (25-30m tall). The group separated, but three individuals, including one juvenile remained in the tall tree that they were eating from. They were screaming and clearly disturbed by our presence and the adults threw fruit they were eating at us. The monkeys had accurate and strong throws, forcing us to dodge the flying fruit. We observed them through binoculars, at a distance of 40 m for five minutes before they moved off. The fruit, about the size of a small peach, and leaves from the tree were collected. Professor Terry Pennington of the Royal Botanic Gardens, Kew, UK, kindly identified species as *Chrysophyllum colombianum* (Aubreville), a Sapotaceae (*v.* Gentry 1993). Fruits from the family Sapotaceae are common monkey foods (Pennington, in litt. 1991) and there are 43 species in the genus *Chrysophyllum* (*v.* Gentry 1993). *Chrysophyllum colombianum* was previously known to occur from Costa Rica to Colombia, so with the help of the woolly monkeys we have extended its range by approximately 1500 km (Pennington, in litt. 1991). The true status of the woolly monkey, known locally as Chrongo, in Podocarpus National Park is unknown due to a lack of surveys, but they are considered rare as the park is in the foothills of the Andes, the extreme western edge of their range. However, they were not present further east in the Rio Nangaritza valley, Cordillera del Condor (04° 20'S, 78° 40'W), which is adjacent to the park, during a brief survey in 1994 (Balchin and Toyne, in press). Indeed, no primates were encountered, presumably due to pressures from hunting by the local Shuar Indians. Elsewhere in the Cordillera del Condor they have been encountered further north at Comainas (*c.* 1700 m) in Peru (Emmons and Pacheco, 1996).

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A New Locality For *Brachyteles Arachnoides* And The Urgency Of Finding New Directions For Muriqui Conservation

The muriqui, *Brachyteles arachnoides*, is an endangered Brazilian Atlantic forest endemic (Strier, 1992a, 1992b), surviving in highly fragmented forests, mostly in the states of São Paulo and Minas Gerais. A number of new localities have been reported in the last two years (Antonietto *et al.*, 1994; Martuscelli *et al.*, 1994; Oliveira, *et al*, 1996; Fontes *et al*, 1996), but for the majority the groups comprise only a few individuals, and some of them are thought to be already extinct (Martuscelli *et al.*, 1994).

On January 20, 1996, during our first survey of the Fazenda