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FOURTEEN NEW LOCALITIES FOR THE MURIQUI *BRACHYTELES ARACHNOIDES*

The woolly spider-monkey or murequi, *Brachyteles arachnoides*, is an endangered species endemic to the Atlantic forest of southeastern Brazil. Its biology and distribution have been reviewed by Strier (1992), Mittermeier *et al.* (1987), and Mendes and Chiarello (1993). According to Coimbra-Filho *et al.* (1993), fewer than 2,000 individuals are believed to exist, distributed among 15 widely scattered localities. However, in this paper we report the discovery of another 14 localities where murequis, locally known as "monocarvoeiro", are known to occur in the states of São Paulo, Paraná and Rio de Janeiro. This work is the result of several years of biological inventories, and part of a broader effort by the Instituto Florestal de São Paulo to gain a better knowledge of the native fauna and to elaborate sound strategies for its conservation.

São Paulo

The *Ilha do Cardoso State Park (PEIC)* is located on the southern coast (around 25° 03'S, 47° 53'W). This 14,000 ha park is covered by Atlantic forest from sea level to 950 m. In April 1989, four adult murequis were observed in tall (25-30 m) forest (altitude 180 m) near the Pico dos Três Irmãos. Later, in January 1991, two individuals were seen sunning themselves on a large emergent tree by the side of the Pico do Cardoso (altitude 600 m). This record represents the first population to be found on an island. The known population is four individuals in one group. A systematic study of the island's fauna was conducted over four years, starting in 1989, and this small troop was the only one known to exist. Since 1991 no further record or sign of these monkeys has been found, and it is known that at least two of them were killed by local inhabitants. This population is probably extinct.

The *Alto Ribeira State Park (PETAR)* of 35,000 ha is located in the karst region of the Serra de

Paranapiacaba massif (around 24° 25'S, 48° 35'W), and is mostly covered by middle (from 100 m altitude) to high (up to 1,000 m altitude) elevation Atlantic forest. In November 1989, two murequis, an adult female and a three-month old male, were captured by poachers at Bairro da Serra, municipality of Iporanga. The male was sent to the Rio de Janeiro Primate Center (CPRJ/FEEMA) (see Coimbra-Filho *et al.*, 1993). In April 1990, 12 murequis, including at least one infant and two juveniles, were observed at Caboclos valley, at an altitude of 400 m. The forest there is dominated by 20-30 m tall trees with few emergents, and a dense undergrowth with many lianas and epiphytes. Local people informed us of other groups, and it seems likely that there are at least three, or about 25 individuals, in the Park.

The *Serra do Mar State Park (Núcleo Mongaguá)* is located on the coast of São Paulo (around 23° 55'S, 4° 00'W). It has an area of 30,000 ha with altitudes ranging from 100 to 800 m. In May 1982, two adult monkeys were observed at 200 m at Morro do Chapéu. According to locals, three individuals were killed in 1980 at the same site. We also found a purse which had been made from the skin of a murequi. The minimum estimated population for this Park is one group, with two individuals.

The *Serra do Mar State Park (Núcleo Curucutu)* is located in the Serra do Mar massif (around 23° 47'S, 46° 25'W). This Park has an area of 23,697 ha, with altitudes ranging from 200 to 800 m above sea level. In 1991, two murequis were observed by C. Coelho Jr, a biologist carrying out a faunal inventory in the area. The animals were seen in a forest at 600 m altitude, near the source of the Rio Cubatão. The minimum estimated population is one group with two individuals.

The *Serra do Mar State Park (Núcleo Pedro de Toledo/Itariri)*, on the central coast of São Paulo (24° 10'S, 47° 07'W), has an area of 10,323 ha, with altitudes from 100 to 500 m above sea level. In July 1988, four *Brachyteles* were observed in dense Atlantic forest at an altitude of 400 m near Engenheiro Ferraz, a railway station between São Vicente and Pararlheiros. The Guarani Indians who live in the reserve are known to hunt monkeys in this locality as well as the nearby Indian settlement of Bananal. Minimum estimated population is one group with five individuals.

The *Jurupará State Park* is located in the Serra de Paranapiacaba massif. This 26,300 ha reserve is covered by middle to high elevation Atlantic forest.

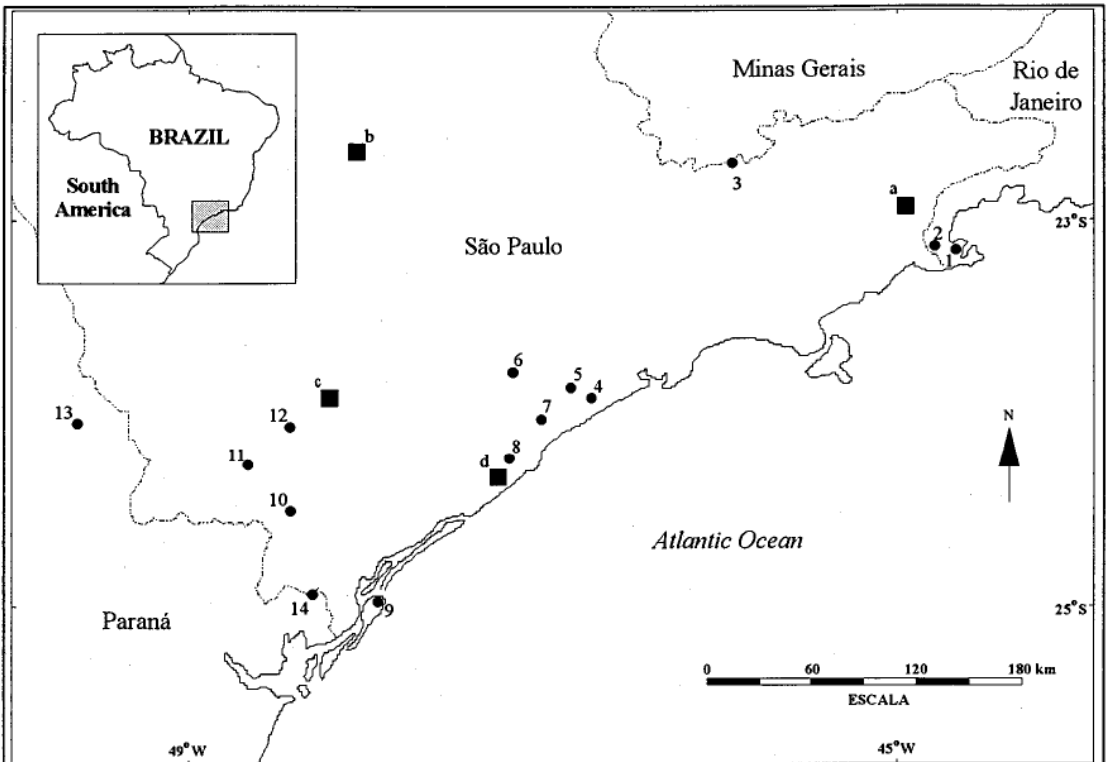


Figure 1. Map showing known (squares) and new (circles) localities for the murrelet between Rio de Janeiro and Paraná. 1=APA Cairuçu, 2=Bocaina, 3=São Francisco Xavier, 4=Mongaguá, 5=Curucutu, 6=Jurupará, 7=Pedro de Toledo/Itariri, 8=Itatins, 9=Ilha do Cardoso, 10=Jacupiranga, 11=Alto Ribeira, 12=Fazenda Intervals, 13=Jaguariaiva, 14=Guaraqueçaba, a=Cunha, b=Barreiro Rico, c=Carlos Botelho, d=Juréia.

In July 1990, five adult monkeys were observed at an altitude of 400 m at Morro dos Souzas. Minimum estimated population is one group with five individuals.

São Francisco Xavier, in the Serra da Mantiqueira massif (around $22^{\circ} 57'S$, $45^{\circ} 30'W$), on the border with the state of Minas Gerais, is a privately-owned forest of about 5,500 ha, with altitudes ranging from 800 to 2,000 m. A group of 12 murrelets, including two infants, was photographed by Luiz Alberto Antonietto in April 1991. Later, on May 28 1994, one adult female and a subadult were seen feeding on *Inga* fruits (altitude 1,100 m). The minimum population is 12 individuals.

The *Juréia-Itatins Ecological Station (Juréia massif)*. This area, with mountain ranges reaching altitudes of 800 m, is located on the southern coast of São Paulo ($24^{\circ} 30'S$, $47^{\circ} 15'W$). The first records of murrelets from the massif were made by Carlos Eduardo Dias Camargo in 1982, and Cecília Torres de Assumpção in 1985. In January 1986, eight individuals were observed in the Rio Verde valley at an altitude of 100 m. After 1989, several further sightings were made by the

Reserve's staff, and the numbers seen varied from four to eight (Fausto Pires de Campos, pers. comm.). The estimated population is one group with eight individuals.

Juréia-Itatins Ecological Station (Itatins massif). This mountain range is isolated both from the Serra do Mar and the Juréia ranges by about 40 km of lowland, swampy forest. Its highest peak reaches 1,350 m. In September 1990 two infant murrelets were captured by poachers in the area, and were subsequently sent to São Paulo Zoo. During a survey in this area in December 1993, we saw signs indicating the presence of murrelets, such as ripped-off palm leaves.

Fazenda Intervals. This well-known reserve in a ranch in the Serra de Paranapiacaba massif ($24^{\circ} 11'S$, $48^{\circ} 23'W$), has an area of 38,000 ha comprised principally of low (60 m altitude) to high (1,100 m) elevation Atlantic forest. A systematic study of the ecology and behavior of a group of 24 murrelets in the Carmo valley (altitude 600m) has been underway since July 1989 (Petroni, 1993). The forest is dominated by 20-25 m tall trees with few emergents and a dense undergrowth of giant bamboo and lianas. Surveys conducted

throughout the reserve have indicated a minimum of ten groups, with a total of 240 individuals.

Jacupiranga State Park. This large 150,000 ha reserve is located in southern São Paulo (25° 00'S, 48° 20'W). Altitudes range from sea level to 1,250 m. In March 1992, three adult muriquis were observed in tall (20 m) forest at 250 m altitude near Caverna do Diabo. At Barra do Turvo, near the Paraná border, muriquis are systematically killed by local inhabitants. In February 1994, a young female was captured by poachers and was being held as a pet near Caverna do Diabo. A minimum of three groups are known to occur in the Park.

Rio de Janeiro

The *Bocaina National Park (PNB)* is located on the southern coast of Rio de Janeiro (22° 50'S, 44° 15'W). It has an area 120,000 ha, with altitudes ranging from sea level to 2,132 m. The forested region is mainly along the coast. In July 1991 we found some bones and one skull of *Brachyteles* in the home of a poacher in the village of Patrimônio, around 400 m above sea level. According to locals, two muriquis were killed in the forest near Ponta da Trindade. These two localities are close to the southern border of the Park, at the limits between Rio de Janeiro and São Paulo.

The *Cairuçu Environmental Protection Area (APA Cairuçu)* is close to the border between Rio de Janeiro and São Paulo, and only 30 km from the Serra da Bocaina. It includes a 10,000 ha forest reserve ranging from sea level to an altitude of 600 m. Local inhabitants claim that the area holds a sizeable population of muriquis. Five monkeys were killed by local people in October 1990 near the Cairuçu peak. In Indian language "cairuçu" means "large monkey".

Paraná

Jaguariaiva. This locality is on private land, on the northern coast of Paraná (near 24° 15'S, 49° 30'W). A partial skeleton and a broken skull were found in a poacher's home in September 1993. According to local people, two young muriquis were sold to animal traffickers in January 1993. Monkeys are systematically hunted for food in this area.

The *Guaraqueçaba Environmental Protection Area (APA Guaraqueçaba)*. On the Serra do Mar massif of Paraná (25° 05'S, 48° 10'W) near the border with São Paulo, this 80,000 ha reserve ranges from sea-level to 1,100 m. In August 1992,

15 km from the Jacupiranga State Park, we observed two muriquis at an altitude of 800 m, close to the Morro Três Pontões, in the Serra da Virgem Maria. Minimum estimated population is one group with two individuals.

All the muriquis reported here were black-faced, belonging to the subspecies *B.a.arachnoides* (see Coimbra-Filho *et al.*, 1993). The records from Paraná represent the first for the state and extend the species' known distribution to the south. The Rio de Janeiro records are important in that they represent the only confirmed existing populations for the state. However, interviews with locals in the areas of Mambucaba and Paratí, near Angra dos Reis, also indicate that the species is well-known, and further research is required. An individual in the colony of the Rio de Janeiro Primate Center (CPRJ/FEEMA) may have come from Paratí (Coimbra-Filho *et al.*, 1993). Records from São Paulo are interesting for a number of reasons. Most come from areas which are already protected by law (although this has meant little for some of them). Some of the areas are very close to each other and may hold continuous populations. The large forest tract represented by the Alto Ribeira Park, Fazenda Intervales, and the Carlos Botelho State Park (see Mittermeier *et al.*, 1987) probably hold the largest extant population of the species, and is the most promising area for its long-term survival. There is the possibility of enlarging this already large protected area through the addition of privately-owned areas: the Aliperti Ranch, with 35,000 ha of mostly low to medium altitude primary forest adjacent to the southern border of Intervales, and a pool of eight ranches in the municipalities of Pilar do Sul and São Miguel Arcanjo, close to Carlos Botelho, and totalling 20,000 ha. This could result in a continuous reserved area of 180,000 ha.

The São Francisco Xavier population deserves further study being the only one known from the southern Serra da Mantiqueira, an area of different climate and vegetation, including as it does *Araucaria* forest, to the coastal massifs. The muriquis observed at this locality evidently belong to the nominal subspecies (black-faced), as is so for others collected along the Serra da Mantiqueira north to the Serra dos Órgãos (Rio de Janeiro) (Coimbra-Filho *et al.*, 1993; Lemos de Sá *et al.*, 1993). If the Serra da Mantiqueira is a barrier between the southern (nominal) and northern (*B.a.hypoxanthus*) subspecies, it is probably due to vegetational changes at higher elevations and on the western side of the mountains. Muriquis are well-known at São Francisco Xavier on the eastern

side, but reportedly absent on the western side where *Araucaria* and *Podocarpus* forest occur.

The state of São Paulo holds the largest remaining area of Atlantic forest, and by far the largest population of muriquis, with 60% of the known localities. Most existing reserves are larger than 15,000-20,000 ha, and theoretically large enough to hold viable populations of the species. Nevertheless, habitat fragmentation is leading to the isolation of these populations, due to the building of roads crossing the reserves, large areas degraded by human activities, and natural barriers. Today, there are few reserves with continuous forest larger than 10,000 ha. With the protection of biodiversity as a priority, the Instituto Florestal de São Paulo (IF) has begun efforts to protect their long-neglected reserves, and to create new ones in areas with significant species diversity.

The fourteen localities almost double the number of area where *Brachyteles* is known to survive. A minimum of 23 groups and 303 individuals must be added to the estimate of Mittermeier *et al.* (1987). Although we have more than doubled the known population, the situation has proved to be alarming. Most parks have serious problems with poachers and squatters. For example, Jacupiranga has had its forest area largely destroyed, with less than 30,000 ha remaining of its original 150,000 ha, with an estimated 5,000 families living inside the Park, even in close to proximity to the headquarters. In the short-term, poaching is the single most important factor contributing to the species' decline, as can be seen in the accounts of the localities reported here. *Brachyteles* is a "k-strategist", a slow-growing and slow-maturing species (Milton, 1986; Petroni, 1993), and easily overexploited by hunters. Coupling this with the fact that muriqui meat is a favored food for "traditional" inhabitants (locally called "caboclos" and "caiçaras") living in or around the reserves, it is easy to see that the problems are serious (most of our records are of animals killed for food). The monkeys from the Ilha do Cardoso were eaten to extinction by the local caiçaras, one of whom reported killing 15 muriquis in the Juréia Ecological Station over the last few years.

The recent trend, widely adopted by anthropologists, sociologists, and politicians, that views "traditional" communities as living in harmony with the natural environment, that they are an integral part of it, and therefore, should be allowed to live in parks and reserves, has taken a hold even within official agencies. Such an unfortunate policy has already produced disastrous

results in several reserves and is one of the greatest threats for the conservation not only of muriquis, but of all that remains of the Atlantic forest.

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