Status of Field Research on *Leontopithecus caissara*: The Black-Faced Lion Tamarin Project

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Introduction

During five years of field research on mammals in the state of Paraná, our attention was consistently drawn to the presence of a third primate species on the northern coast of the state, which was distinct from *Cebus apella* and *Alouatta fusca*. Records go back to the XIX century, when Vieira-dos-Santos (1850) indicated the presence of a *Callithrix* species in the region of Paranaguá. Nearly a century later, this primate caught the interest of the mammalogist Carlos C. Vieira (1944) of the Museum of Zoology of the University of São Paulo, who ascribed the record to the buffy-tufted-ear marmoset, *Callithrix aurita*. At his request, the Paranaense Museum (now called the "Capão de Imbuia" Natural History Museum) carried out an expedition to the area to look for the species, but without success. Further rumours of this third primate arose in the 1980's, this time coming from the municipality of Guarequeçaba. As a result, the Sociedade de Pesquisa em Vida Selvagem (SPVS), based in Curitiba, Paraná, organized a survey in the Guaraqueçaba Environmental Protection Area (APA) from 1987 to 1989. This survey resulted in the conclusion that the third species was identifiable as the masked titi, *Callicebus personatus*, with no evidence for the presence of a callitrichid (Oliveira and Pereira, 1990). However, the rumours persisted, and we were informed of the presence of a "sagüi" (the Brazilian common name for marmosets and tamarins) on the Island of Superagüi, and which in no way corresponded to any description of a titi monkey. We consequently set up an expedition in early 1990 to search for the animal along the northern coastal area of Paraná and adjacent São Paulo. To our surprise, we were able not only to confirm the presence of a callitrichid, but found that it was an undescribed species of *Leontopithecus*. The new species, the black-faced lion tamarin was named *Leontopithecus caissara* (Lorini and Persson, 1990) as a tribute to the inhabitants of the Island of Superagüi called "caiçaras", who participated and helped in our search with such enthusiasm.

At the time of its description, we lacked information which could result in any evaluation of its conservation status, although it was evident that it was locally rare, and that its distribution was very limited; facts which alone were cause for concern. On this basis, we presented an Action Plan for the preservation of the species on the occasion of the *Leontopithecus* Population Viability Workshop, organized by the Fundação Biodiversitas in collaboration with the IUCN/SSC Captive Breeding Specialist Group, in Belo Horizonte, Minas Gerais, in June 1990 (Seal *et al.*, 1990). This plan included five proposals: 1) a survey of the geographic distribution and an evaluation of the populations of *L.caissara*; 2) research on its behavior and ecology; 3) measures for the protection of its habitats; 4) an environmental education program; and 5) a captive breeding program (Teixeira, 1990). Amongst the conclusions drawn up in the final document of the Workshop was the urgent need for basic research on the species, above all examining its distribution and habitat preferences (Seal *et al.*, 1990). In keeping with this recommendation, the Black-Faced Lion Tamarin Project was set up in July 1990 specifically to attend to the first of the proposals in the Action Plan. The Project included the following objectives: 1) delimit the geographic distribution and characterize the habitats available; 2) estimate population sizes; 3) bring together all available information on the biology of the species; and 4) identify threats to its survival and evaluate its conservation status. The project was financed by Conservation International (CI) and the Fundação o Boticário de Proteção a Natureza, and supported by the Brazilian Institute for the Environment and Renewable Natural Resources (Ibama).

Geographic Distribution and Habitat

In order to delimit the distribution, we surveyed a strip of 200 x 50 km along the coast, extending from the

Baia de Guaratuba in Paraná to the mouth of the Rio Ribeira de Iguape, in São Paulo (Fig.1). The first stage of the Project involved a program of interviews adapted specifically for the region, of local people who knew well the forest and fauna where they lived. Any skins or bones found were collected and captive animals (pets) were registered and photographed. In the second stage, surveys were carried out using "play-back" of recordings of *Leontopithecus* long-calls (see Kierulff, 1993; Pinto and Rylands, 1992; Pinto, 1994), some of which were kindly supplied by Devra Kleiman (National Zoological Park, Washington, D.C.). The information obtained to date indicates that the distribution of *L.caissara* is very restricted (Fig.2), totalling approximately 300 km², and divided into the Island of Superagüi and adjacent parts of the continent in the states of Paraná (municipality of Guaraqueçaba) and São Paulo (municipality of Cananéia) (Persson and Lorini, 1991, 1993, 1994). The region is comprised of predominantly flat lowlands with a mosaic of vegetation types. These are being studied and described with the help of botanists and forest engineers from the Federal University of Paraná, the "Capão da Imbuia" Natural History Museum, and the Georg-August University of Göttingen, Germany. Locations suitable for reintroduction or translocation of the lion tamarins are being catalogued. A number of different vegetation types are occupied by *L.caissara*. They include: coastal pioneer sub-xerophilous forest on sandy soil (*restinga*); swamp forest with a predominance of *Tabebuia cassinoides*

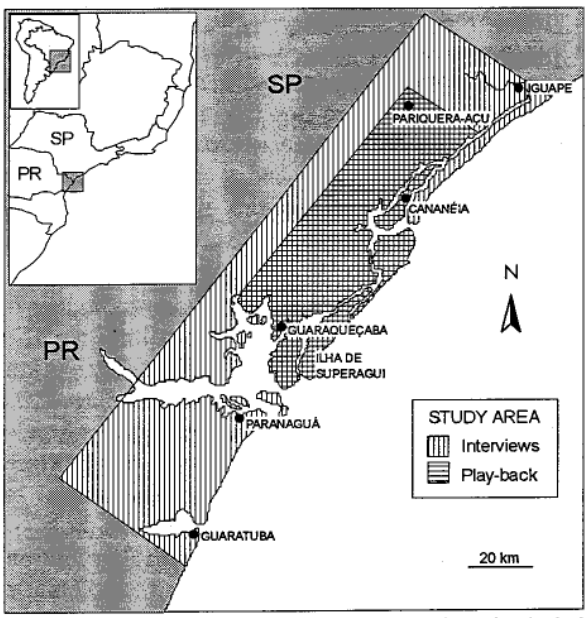

Figure 1. The study area showing the regions included in the interview survey and the playback study.

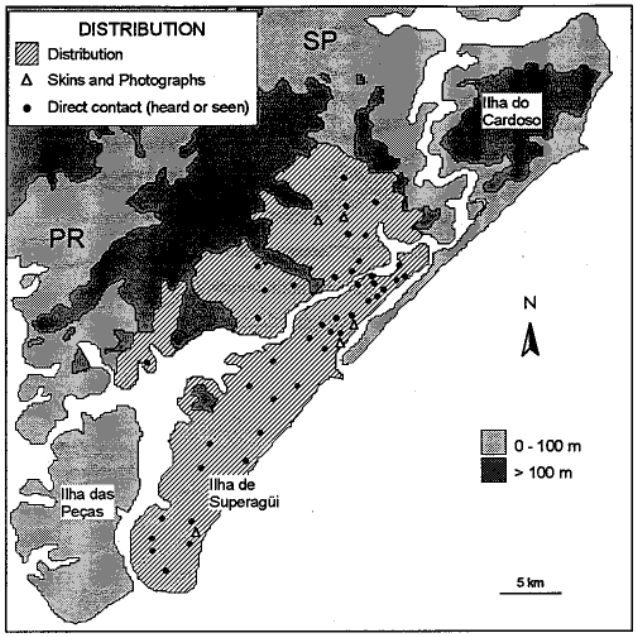

Figure 2. The geographic distribution of *Leontopithecus caissara*.

(Bignoniaceae), referred to as *caxetal*, a pioneer formation of 8-10 m in height near to rivers; and dense, coastal lowland, humid forest on the Quaternary plains (Persson and Lorini, 1991, 1993).

Population Estimate

Besides the geographic distribution, population estimates are fundamental for the elaboration of a conservation strategy for the species. For this reason, we carried out preliminary surveys by the conventional method of linear transect censuses, which resulted in density estimates of 0.3 groups/km² or 1.5 ind./km²; values below those recorded for other *Leontopithecus* species (Lorini and Persson, 1994a). With the available habitat totalling about 17,300 ha throughout its geographic distribution, this gives an estimate of a wild population of about 52 groups or 260 individuals divided into two or three sub-populations. This population size is small enough to indicate that the species is seriously threatened. We are also beginning a survey of the population on the Island of Superagüi using the playback method adopted by Kierulff (1993). This will enable direct counts of all groups in a population, reducing as such the biases inherent in the transect method.

Biological Aspects

Due to the fact that nothing was known of the biology

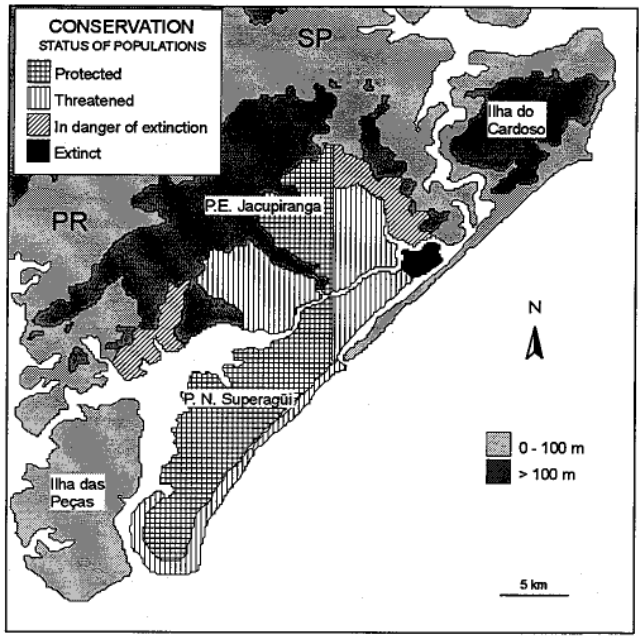

Figure 3. The distribution of *Leontopithecus caissara* (cross- hatched), indicating the conservation status of the populations on the basis of the degree of isolation and threats to each.

of *L.caissara*, we collected any information we could on the species during our censuses. Alhough scant and preliminary, our findings suggest that it is, like other lion tamarins, a frugivore-insectivore: including to date 27 plant food items and eight species of invertebrates recorded in its diet. The invertebrates resulted from the analysis of one stomach (MN28861, the holotype; Person and Lorini, 1991), in which we found 12 items (one mollusc, two spiders and nine insects). The number of insects in one stomach, the results of one morning of feeding, confirm its categorization as a specialized predator (see Coimbra-Filho, 1981). Fruits are important in the plant part of the diet, with Myrtaceae being predominant, but we have also recorded them eating the leaf bases of small bromeliads (for example, *Vriesia* sp.), and the nectar of the inflorescences of *Norantea brasiliensis* (see Lorini and Persson, 1994b). Shelters used by *L.caissara* include bunches of bromeliads, moss-covered dens among root tangles, and holes in trees. We have no evidence to suggest other than once-yearly breeding, with newborn infants being carried in November and December, and juveniles being present in the groups in April and May.

Conservation and Status

The most serious threats faced by *L.caissara* result from its small geographic distribution and very small population size, estimated at less than 300 individuals. The total population is divided into three isolated sub-populations: the Island of Superagüi (121 individuals), and the continental valleys of the Rios Patos and Branco (35 individuals) and the Rios Varadouro and Araçaúba (100 individuals). It range is approximately 300 km^2, smaller than the known distribution of any of the *Leontopithecus* species (Persson and Lorini, 1993, 1994). Only one-third of its distribution is within protected areas (Fig.3), represented by the Ilha de Superagüi National Park (21,400 ha), Paraná, and the Jacupiranga State Park (150,000 ha), São Paulo. The remainder falls within the Environmental Protection Areas (APA) of Guaraqueçaba (291.500 ha), Paraná, and Cananéia-Iguape-Peruíbe (160,000 ha), São Paulo; conservation units which do no more than provide for the regulation or prohibition of activities prejudicial to the environment. Such activities in the region include buffalo farming, extractivism (*caxeta*, firewoood and timber, and notably palmheart), agriculture (manioc, bananas, rice), uncontrolled tourism, road construction (notably the planned federal highway, BR-101), and most recently the occupation of the area by indigenous tribes (principally in the Superagüi National Park) (Lorini and Persson, 1991; Câmara, 1994). The local population do not hunt the lion tamarins, although they do capture them occasionally for pets. We have recorded at least 25 cases as occurring in the last 50 years (Lorini and Persson, 1991), but one cannot rule out the possibility of illegal traffic on a greater scale, as has occurred recently for another local endemic, the highly threatened blue-cheeked parrot, *Amazona brasiliensis*, when more than 100 were captured (Lorini and Persson, 1991). It is important to emphasize that environmental controls and supervision in the region are extremely precarious, lacking sufficient personnel and equipment compatible with the size and characteristics of the conservation units involved.

With the information currently available, *L.caissara* is clearly an endangered species, following the traditional categories of The World Conservation Union (IUCN) *Red Lists of Threatened Animals* (Groombridge, 1993). The more recent Mace-Lande System (Mace and Lande, 1991; Mace, 1993; Mace and Stuart, 1994) places the status of this animal as "Critical", the highest threatened category, on the basis of its population size and geographic distribution alone. We intend to continue our research to obtain a more detailed and accurate appraisal of its status, along with the development of management strategies,

using also computer models to analyze extinction probabilities and the loss of genetic variability. The black-faced lion tamarin is undoubtedly the most threatened of the Neotropical primates and initiatives to promote its survival and well-being should be considered the highest priority for primate conservation in South America.

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