

PRIMATES OF RORAIMA (BRAZIL). I. NORTHEASTERN PART OF THE TERRITORY

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ABSTRACT – Preliminary surveys of the primates of northeastern Roraima, Brazil, were carried out during the second half of 1987. Most censuses were done on Maracá Island in the Uraricoera River, an ecological station of the Brazilian Special Secretary for the Environment (SEMA). Surveys revealed the occurrence of seven species of primates in the study areas, the most abundant species being the spider monkey *Ateles belzebuth belzebuth*. Review of the Museu Paraense Emílio Goeldi indicate the presence of four additional primates in Roraima. The geographical distributions of the primate species of Roraima and their conservation status are discussed.

KEY WORDS. Primates, Survey, Distribution, Roraima, Maracá Island.

RESUMO – Durante o segundo semestre de 1987, foi feito um levantamento preliminar dos primatas do nordeste do Território Federal de Roraima, dando-se ênfase aos levantamentos na Estação Ecológica da SEMA, na "Ilha de Maracá", Rio Uraricoera. Durante os levantamentos, foram detectadas a presença de pelo menos sete espécies de primatas das quais os coatás (*Ateles belzebuth belzebuth*) foram os mais abundantes. Revisão da literatura e o exame de espécimens na coleção do Museu Goeldi indicam ainda a presença de pelo menos outras quatro espécies em Roraima. No presente trabalho suas distribuições geográficas são discutidas com base nos levantamentos; bem como a situação atual das espécies em relação à ocupação humana na região.

PALAVRAS-CHAVE: Primatas, Levantamentos, Distribuição, Roraima, Ilha de Maracá.

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1. INTRODUCTION

According to recent surveys on the distribution of Amazonian primates (e.g., Hershkovitz, 1977; 1983; 1987 a,b), at least 11 primate species occur in the Territory of Roraima, in the northern part of Brazilian Amazonia. This represents nearly 30% of the Amazonian species of primates.

Until very recently, the fauna of Roraima was one of the least known within the Amazon basin. This territory is located in the northernmost part of Brazil, and has an area of approximately 230,104 km² or 6.7% of the Brazilian Amazon. Until 1980 the total population of Roraima did not exceed 82,018 inhabitants, indicating the smallest population density among Brazilian federative units (0.4 inhabitants/km²) (Kleinpenning & Volbeda 1985). The relief is mainly characterized by the crystalline basement with occurrence of pre-Tertiary sediments and Neogene-Quaternary alluvium (Klammer 1984). The area is quite important relative to faunal distribution because it has a wide variety of vegetation types, ranging from the dense Amazonian lowland forests including flooded habitats, mountain forests, to open savannahs (corresponding to the great Rio Branco – Essequibo depression) and grassland plateaus near the Venezuelan and Guiana borders.

More recently, however, there has been a considerable increase in biological research in the region due to the programs organized by the National Institute for Amazonian Research (INPA / MCT), together with the Royal Geographic Society (RGS). The project, however, is mainly concentrated at the "Ilha de Maracá", an ecological station maintained by SEMA (Secretaria do Meio-Ambiente).

The present report deals with preliminary surveys of the resident primate fauna, with the objective of making a first assessment of the densities, distributions and conservation status of the primate populations in the northeastern and central part of the territory.

2. STUDY AREA AND METHODS

All surveys presented in this report were carried out in the northeastern part of the territory of Roraima, an area corresponding to part of the Rio Branco basin and the Serra de Pacaraima. Predominant vegetation in this part of Roraima are the open savannahs, which account for more than 70% of this area.

Most censuses, however, were conducted at the "Ilha de Maracá" (Ecological Station), at 3° 25'N and 61° 40'W (Figure 1), an island formed by the branching of Rio Uraricoera, near its confluence with the Rio Branco. The island has approximately 92,000 hectares, nearly 60 km in length and ranging between 15 and 25 km in width. The vegetation is mainly dry upland forest

("terra firme"), transitional with isolated pockets of open savannah. The forest is 30 m high on average and emergent trees never exceed 40 m height. Despite the fact that swampy areas do not represent a significative proportion of the total area, these are quite frequent in the eastern part of the island. A previously established trail system for the tortoise study of D. Moskovitz was used for the primate surveys.

Other survey localities include Rio Apiaú (2° 39'N 61° 12'W) (Figure 1), Pacaraima (4° 05'N 61° 30'W) and Confiança (2° 15'N 60° 45'W) (Figure 1). The Apiaú is a clear-water river, perhaps the largest tributary on the right bank of Rio Mucajal, an affluent of the Rio Branco. This area has a great variability of soils, with a predominance of latosols with sandy and silty spots. A number of elevations are present in the area and these originated from metamorphic rocks. The predominant vegetation at the Apiaú site is dry upland forest ("terra firme"), with a variable biomass depending on soil types. Characteristic species in this area include: *Tetragastris* sp. (Burseraceae), *Manilkara* sp. (Sapotaceae), *Caryocar* sp., (Caryocaraceae) and the palms *Euterpe* sp., *Oenocarpus* spp., *Maximiliana* sp., resembling physiognomically some forested areas on the Precambrian shields of eastern Amazonia. Trails used for censuses were originally used for geological prospection or selective logging, while other were opened for this study.

The other important area investigated corresponds to the northern portion of the territory, on the Venezuelan border, at the Serra do Pacaraima. This area consists of intersected plateaus derived from metamorphic rocks of Precambrian origin and sedimentary basins. All censuses in this area were carried out at altitudes ranging from 600 to 1,000 m above sea level. The forest is mainly characterized by medium sized trees, of 25-30 m height with relatively clear understory. Trails around the villages of Sorocaima and Bananal (Taurepan Indians) were used for most surveys in this area.

Surveys were conducted in the three above cited localities in "terra firme" upland forests. These were divided into two groups: a) those for which the task was only to verify the presence or absence of certain primates; and b) those for which the numbers of groups and their distance from the observer/or path were registered per linear distance and/or area surveyed. All transect surveys were carried out from June to October, 1987, coincident with the middle and late rainy season.

Approximately 442 km of systematic census were carried out in the three main sites and most of these surveys were either in the first part of the morning (6:30 – 11:00 hs) or later in the afternoon (15:00 – 18:30 hs), periods when primates are usually more active. Usual procedures of transect census were employed such as King's method (NRC, 1981), Fourier series (Burnhan et al 1980), and/or the simple counting of groups per distance traveled u.g., Emmons 1984).

3. PRIMATES SPECIES OF RORAIMA

According to recent surveys on the distribution of Amazonian primates, there are 11 species of primates within the area of the territory of Roraima as follows: *Saguinus midas midas*, *Saimiri sciureus sciureus*, *Callicebus torquatus lugens*, *Aotus trivirgatus*, *Cebus apella*, *Cebus nigrivittatus*, *Pithecia pithecia chrysocephala*, *Chiropotes satanas chiropotes*, *Alouatta seniculus*, *Ateles belzebuth belzebuth* and *Ateles paniscus paniscus*.

During our surveys, we were able to confirm the presence of seven of these species in the wild, plus the presence of others held in captivity or through specimens at Museu Goeldi collection. In the next segment we analyse the information gathered during surveys and that available in the literature.

1 – *Saguinus midas midas* (Linnaeus 1758) (see also Plate I) – The Midas Tamarin is perhaps the only callitrichid in Roraima. No individuals of this species were observed during our surveys. Hershkovitz (1977), however, indicated the presence of this species throughout most of the territory with a distribution extending west to the left bank of the Rio Negro and north to the Parima and Pacaraima mountain complexes. Since this callitrichid is quite an abundant primate in other areas of the Brazilian Amazonia (e.g., Martins & Ayres 1987), we suspect that its absence in the areas surveyed (over 200 primate group sightings), weighs for the non-occurrence of the species in these areas. Hershkovitz's (1977) distribution in this area is based on three skins, recorded from the left bank of Rio Branco, and another on the Rio Cuieras, possibly near Manaus, in spite of the probable misplotting of this locality. Since our surveys were carried out on locations of the right bank of Rio Branco, it is possible that this river represents the western limit for the species. *Saguinus, bicolor bicolor*, another callitrichid reported for this region of the Amazon, does not extend its distribution north to Roraima. The northern limit of this subspecies is near km 30 of Manaus-Caracará road (Ayres, Mittermeier & Constable, 1980).

2 – *Callicebus torquatus lugens* (Humboldt 1812) (Plate II) – Titis are not among the most common primates in Roraima, at least in the areas surveyed. This species does not occur either in the "Ilha de Maracá" or in the elevations in the north. Two groups have been seen in the Rio Apiaú area, both with few individuals. One of the troops was seen in a sandy soil area of tall primary forest, while the other was in vegetation characterized by the abundance of the "ubin" palm (*Geonoma baculifera*), over a silty swampy soil. The subspecies is probably limited to the east by Rio Branco. Because of its small body weight, it is not hunted in the area of the Rio Apiaú. The only skins at the Museu Goeldi were collected near the mouth of Rio Mucajá by E. Dente in the 1950's.

3 – *Aotus trivirgatus trivirgatus* (Humboldt 1812) (Plate III) – Night monkeys have not been observed in the few night surveys conducted during this study. Locals, however, report their presence on the "Ilha de Maracá" and the Rio Apiaú. There are only two localities recorded for this subspecies in the literature (Herskovitz 1983). The only specimen in the Museu Goeldi was collected by B. Albert on Rio Tootobi, a tributary of the Rio Demini. The western limit of distribution for this subspecies is not known, but as for other species, it could well be the right bank of the Rio Branco.

4 – *Saimiri sciureus sciureus* (Linnaeus 1758) (Plate IV) – There are four collection localities for this squirrel monkey in Roraima, all near Boa Vista. It probably occurs over most of Roraima, especially near water courses in riverine habitat, flooded forests and swampy areas. It is not found in the mountain complexes to the north and west of the Territory. At "Ilha de Maracá" it was the fifth most abundant species (1.1 – 0.4 groups/km²), probably because surveyed areas included only "terra firme" (Table 1). On the Rio Apiaú site it was the least abundant among observed primates (Table 2). These densities are lower than most other areas surveyed for this species (Robinson & Janson 1987). Groups vary between 20 to 30 individuals in the two areas censused.

5 – *Cebus apella* (Linnaeus 1758) – The Black-capped Capuchin probably occurs in most areas of Roraima, and was observed on "Ilha de Maracá" where mixed bands with *Cebus nigrivittatus* were not uncommon. Troops vary from a few up to 14 individuals and their densities are higher than for its congeneric in the island. No individual of this species has been observed in the Serra de Pacaraima or on the Rio Apiaú site. This is not to say that they do not exist in these areas, but they could have low population densities. There are no specimens at Museu Goeldi of this species from the study area.

6 – *Cebus nigrivittatus* (Wagner 1848) (Plate V) – This species probably occurs in most areas of Roraima, simpatrically with *Cebus apella*. It has been observed on "Ilha de Maracá", lower Rio Mucajaí, Serra do Pacaraima (600 m altitude) and Colônia Confiança (left bank of the Rio Branco). I was the fourth most abundant primate in Maracá and the third at Rio Apiaú. Troops vary from a few to 10 individuals. Observed troops in Maracá were smaller than those seen on the Rio Apiaú. A single troop was observed at Maloca Bananal, but it did not exceed 6 individuals. The habitat is usually tall "terra firme" forest. In a single observation they were seen feeding on ants in the Rio Apiaú area, in a low scrubby forest with a predominance of *Myrcia ehrenbergiana*. Their densities on "Ilha de Maracá" are much lower than those found for the same species in the Venezuelan "llanos" by Robinson (1986).

Table 1 – Primate densities at Maracá Island (Ecological Station – SEMA), Roraima. (Number of troops observed – 81.)

Species	groups per 10 km	King's method g/km ²	Fourier method g/km ²	individuals per km ² (Fourier)	group size (range)
<i>Saimiri sciureus</i>	0.1	1.1	1.1	26.3	+/- (20-30)
<i>Cebus apella</i>	0.5	4.3	3.8	23.4	6.1 (1-14)
<i>Cebus nigrivittatus</i>	0.3	2.3	1.7	4.0	2.3 (2-3)
<i>Alouatta seniculus</i>	0.6	5.2	4.5	14.9	3.3 (1-5)
<i>Ateles belzebuth</i> *	1.2	8.6	8.7	34.0	3.9 (1-9)
Not identified	0.1	–	–	–	–
Total distance surveyed (km)	297.5	149.5	149.5	149.5	–
Number of groups observed	81	57	57	57	–

* subgroups of *Ateles*

Table 2 – Comparative densities of primates for three localities in Roraima.

Species	Groups per 10 km surveyed		
	R. Apiaú	Pacaraima	Maracá Island
<i>Callicebus moloch</i>	0.3	–	–
<i>Saimiri sciureus</i>	0.1	–	0.1
<i>Cebus apella</i>	–	–	0.5
<i>Cebus nigrivittatus</i>	0.5	0.1	0.3
<i>Chiropotes satanas</i>	0.3	–	–
<i>Alouatta seniculus</i>	0.6	–	0.6
<i>Ateles belzebuth</i> *	0.8	–	1.2
Total	2.6	0.1	2.7
Distances surveyed	77	67	297.5
Groups observed	20	1	81

* subgroups of *Ateles belzebuth*

7 - *Pithecia pithecia chrysocephala* (I. Geoffroy 1850) (Plate VI) - Hershkovitz (1987a) indicates two localities for this subspecies of saki in Roraima: Maracá (same coordinates as the island) and Forte do Rio Branco (Boa Vista). No individual of this species was observed during our surveys and there is no indication that it occurs west of the Rio Branco in the central and northern areas of Roraima. The locality "Maracá" (reported by Hershkovitz 1987a) could be a mislabeled specimen or equivocal report.

8 - *Chiropotes satanas chiropotes* (Humboldt 1812) (Plate VII) - There are six skins from five localities reported in the literature, indicating the presence of bearded sakis in Roraima (Ayres, 1981; Hershkovitz 1985). Specimens were collected on the lower Rio Mucajá, upper Rio Catrimani, Água Boa stream and Rio Tootobi (B. Albert, pers. obs.). Bearded sakis were observed only at the Rio Apiaú site. It probably does not occur in the eastern part of the "Ilha de Maracá", but there are reports that this species is found in the forests surrounding the island (D. Moskovitz, pers. comm.). Troops range between 20 to 30 individuals in size, but no precise counts were obtained. Densities on the Rio Apiaú are similar to other Amazonian areas censused (Ayres, Martins & Nunes, in prep.).

9 - *Alouatta seniculus* (Linnaeus 1766) (Plate VIII) - Red Howlers occur throughout the territory including the mountain forests up to 1,200 m. Both on the Rio Apiaú and "Ilha de Maracá" it is the second most abundant primate. Densities found in these places are smaller than most other areas surveyed for this species (Crockett & Eisenberg, 1987). Troop size ranges from one to five individuals. Together with *Ateles* they are the largest primates in Roraima (Table 3).

10 - *Ateles belzebuth belzebuth* (E. Geoffroy 1806) (Plate IX) - This species of spider monkey is found in most forested areas of the territory, west of the Rio Branco. Despite the fact that this genus occurs in the northern mountains of Roraima, we do not yet know which species is to be found in these areas. In the two areas surveyed systematically it was the most numerous primate and probably represents the higher biomass (Tables 1 & 2). Subgroups vary from one to nine individuals in Maracá and up to 15 individuals have been seen at Rio Apiaú. They are mainly frugivorous, but preliminary observations at Maracá (APN, pers. obs.) and two stomach contents examined indicate higher proportions of leaves in the diet than other Amazonian *Ateles* studied (see Robinson & Janson 1987). This could be the reason for highest densities observed when compared to other Amazonian areas (Ayres, Martins & Nunes, in prep.; Robinson & Janson 1987). The densities on the Rio Apiaú and "Ilha de Maracá" are comparable to those found in Cosha Cashu, Manu, Peru (Emmons 1984).

11 - *Ateles paniscus paniscus* (Linnaeus 1758) (Plate X) - This species probably occurs east of the Rio Branco according to the sources of animals

kept in captivity in three places (Marco BV-8, Boa Vista and Colônia Confiança). This and the preceding species are the largest primates of Roraima. Reliable informants also indicate the Rio Branco as the limit between the two species as suggested by Konstant, Mittermeier & Nash (1985). Kellog & Goldman (1944) list no specimens from Roraima, but there is a Guianan collecting locality (Maripa) close to the Brazilian border which suggests the presence of the species is Roraima.

Table 3 – Body weights of some primates captured in Roraima.

Species	sex/age	body weight (g)	locality
Saimiri sciureus	F / ad.	800	R. Apiaú
Saimiri sciureus	F / ad.	650	R. Apiaú
Cebus nigrivittatus	M / ad.	3,400	R. Apiaú
Cebus nigrivittatus	M / ad.	—	Bananal
Cebus nigrivittatus	F / ad.	3,000	R. Apiaú
Alouatta seniculus	F / ad.	8,100	R. Apiaú
Alouatta seniculus	M / ad.	8,500	R. Apiaú
Alouatta seniculus	M / ad.	8,100	Bananal
Ateles b. belzebuth	F / ad.	9,000	R. Apiaú
Ateles b. belzebuth	F / ad.	8,000	R. Apiaú
Ateles b. belzebuth	F / subad.	5,400	R. Apiaú
Ateles b. belzebuth	F / subad.	5,000	R. Apiaú

M = males; F = females

4. CONSERVATION

Despite the fact that Roraima has the smallest human density within the Brazilian Amazon, it had the largest population growth rate for the region during 1970-1980 (93%) as shown by the last two censuses of the territory (Benchimol 1985). Until the sixties most of the human population of Roraima was Amerindian (e.g. Yanomamo, Macuxi, Taurepan, Uapixana, Xiriana, Waiwai) (Oliveira 1983). From 1970 onwards, the number of development projects has increased substantially, bringing colonists from other areas of Brazil, especially from the southern and northeastern part of the country, and also a great number of miners in search of gold, diamonds, cassiterite and copper (Santos 1981). The implantation of the Manaus – Caracará (BR – 174) and Boa-Vista to Marco (BV-8) roads has linked Roraima to other areas of Amazonia and to the northern part of the continent (via Caracas) and has probably been the main cause for the rapid growth observed in the territory.

Another development project which will have considerable impact on the local fauna is the hydroelectric dam being built at Paredão, located between

Boa-Vista and Mucajai, on a tributary of the Rio Branco. This dam itself will flood an area of less than 6 km², however the area covered by its influence is much greater. In addition, plans for the implantation of the "Calha-Norte" program, to stimulate colonization in the Brazilian border with Venezuela, Colombia and the Guianas, may accelerate habitat disturbance rates in Roraima.

Despite the increasing disturbance of habitat in Roraima, habitat deforestation until 1978 was the lowest within Amazonia (0.062%) (Fearnside 1984). This is mainly due to the fact that over 60.5% of the total human population is concentrated in urban areas, especially in Boa Vista and Caracará. Because of the poor quality of soils given to colonists, the settlement program partially failed and most migrants moved to the outskirts of Boa Vista. Due to the low carrying capacity of the soil, settlers turned into logging activity, disturbing greater areas than expected if agriculture were viable. Colonization areas are concentrated in the northeastern part of the territory (areas with road access), the same areas as the present survey.

The hunting of primates is mainly done on a subsistence basis in the colonization areas (along the Rio Branco) and among Indians from the western part of the territory. The most affected species are the Red Howler (*Alouatta seniculus*) and, to a smaller extent, the Spider Monkey (*Ateles spp.*). Medium-sized primates, such as *Cebus spp.* and *Chiropotes*, are also hunted but to a smaller degree. The preference for *Alouatta seniculus* is probably an acquired habit brought from other areas of the country where this genus occurs.

Taurepan Indians, near the border with Venezuela, do not hunt primates for food. Recent cultural changes, introduced by Seventh Day Adventists, established restrictions on the number of species which can be used as food sources. For example, besides primates, the wild pigs (*Tayassu*), armadillos, tapir, agoutis can not be eaten, and only one species of deer (*Mazama sp.*), curassows, tinamous and guans. This would be the ideal religion for conservacionists if the Indians did not capture other game for selling at the market in Marco BV-8. This is, however, a quite limited activity at the moment. The main threats to primates and other larger game in the Pacaraima region are the small-scale placer-miners, working with rudimentary tools to extract gold and diamond, coming both from Brazil and Venezuela. For these miners, hunting is the main protein source.

Primate densities obtained for "Ilha de Maracá" are very similar to those found for the unprotected area in the Rio Apiaú basin (Tables 1 & 2), but the primate composition is slightly different due to the presence of *Chiropotes satanas chiropotes* and *Callicebus torquatus lugens* in the latter area. These sites, however, are quite different in abundance when compared to the northern part of Roraima, around the mountains of the Serra de Pacaraima.

Despite the fact that howlers could be heard at some distance from survey trails, only a single group of *Cebus nigrivittatus* was observed after 67 km of census. Since most surveys were taken on Indian areas, where primate hunting is inexpressive do to religious beliefs, we are inclined to think that low primate densities in the mountain forests are due to other reasons. Altitude, allied with vegetational differences may be the main cause for the absence of other species and the low densities in the resident primates.

The overall primate densities found in the two former areas are quite low when compared to sites in the western part of Amazonia but similar to sites on the crystalline embasement (Table 4). One of the most interesting findings from our surveys is that *Saimiri*, *Cebus* spp. and *Alouatta* presented small densities when compared with other surveys (Robinson & Janson 1987; Crockett & Eisenberg 1987), but *Ateles belzebuth* presented unusually high densities for a frugivore of its size. Densitis found for this genus are among the highest within Amazonia (Robinson & Janson 1987) and are similar to those found in Cosha Cashu (Emmons 1984).

Table 4 – Comparative densities of primates at several Amazonian localities.

Locality	groups per 10 km	number of species	distance suveyed (km)	source
Maracá Island	2.7	6	297.5	this study
R. Apiaú	2.6	6	77.0	this study
R. Xingú-Iriri	3.8	8	96.0	Ayres & Martins, pers obs.
R. Jarí	1.8	7	120.0	Martins & Ayres, (1987)
R. Jamarí	4.0	7	97.0	Martins & Schneider, pers. obs.
R. Japurá (t. firme)	5.7	9	655.0	Ayres (1986) & John (1986)
R. Japurá (varzea)	10.2	4	249.0	Ayres (1986)
R. Aripuanã	2.2	10	82.0	Ayres (1982)
R. Tapajós	3.1	9	34.0	Ayres & Milton (1981)
Manaus (north)	1.1	7	80.0	Ayres (1981)
R. Manu	8.2	9	67.0	Emmons (1984)
Tombeopata	2.5	8	52.0	Emmons (1984)
CMSE* (nort Manaus)	3.0	6	49.0	Emmons (1984)

* CMSE – Critical Minimum Size Ecosystem (WWF project)

Both species of *Ateles* are listed in the IUCN Red Data Book (Thornback & Jenkins 1982) as "vulnerable". Because of its high population density, *Ateles belzebuth belzebuth* is probably not threatened at the moment in Roraima, due to the fact that human activity is quite localized. Other species occurring in Roraima have a quite extensive geographical range within Amazonia and are not threatened at present.

At the moment, Roraima has two SEMA Ecological Stations (Maracá — already implanted; Caracará — being implanted) which probably contain all primates occurring west of the Rio Branco. The establishment of a third area for preservation is necessary for those primate species found east of the Rio Branco. In addition, a number of Indian reserves may partially serve as reservoirs for most Roraima primates. There are also two preservation areas near the Venezuelan border (El Caura — Fauna Reserve and Canaima — Forest Reserve) together covering an area of 81,340 km².

Because primates are quite linked with forest habitats, they are not the best models for biological preservation in Roraima with its great diversity of non-forest habitats such as the "cerrados" and the mountain vegetation found in the northern and eastern part of the territory. Another important issue is that despite the low human population density in the territory, disputes due to land ownership are increasing at alarming rates and any plans for the conservation of biological diversity must soon be carried out. Programs such as those being carried out by INPA and the RGS are necessary, especially those studies related to the biogeography and autoecology of the region.

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Note: All drawings were based on skins of monkeys collected in Roraima, except plates I, VI and XI for which there were no specimens in the Museu Goeldi collection. For these animals, skins collected in neighboring areas were used. Since there is much variation in *Cebus apella* populations within Amazonia, no plate was prepared for this species for which there are no skins from Roraima in the Museu Goeldi collection.

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PLAT I -- SAGUINUS MIDAS MIDAS



PLATE II – CALLICEBUS TORQUATUS LUGENS



PLATE III – AOTUS TRIVIRGATUS TRIVIRGATUS



PLATE IV – SAIMIRI SCIUREUS SCIUREUS



PLATE V – CEBUS NIGRIVITTATUS



PLATE VI — PITHECIA PITHECIA CHRYSOCEPHALA



AMANT

PLATE VII – CHIROPOTES SATANAS CHIROPOTES



PLATE VIII - ALOUATTA SENICULUS



PLATE IX — ATELES BELZEBUTH BELZEBUTH



MARTINS

PLATE X — ATELES PANISCUS PANISCUS

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