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**ALOUATTA GUARIBA CLAMITANS CABRERA, 1940:
A NEW SOUTHERN LIMIT FOR THE SPECIES AND FOR
NEOTROPICAL PRIMATES**

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Leandro Jerusalinsky

Introduction

The state of Rio Grande do Sul in Brazil has a rich biodiversity due to its geographic location and landscape. Thirty-five percent of the Brazilian mammals, 141 species in 34 families, have been recorded for the state (Silva, 1994). Most of them occur in the Atlantic forest which extends from Rio Grande do Norte in the northeast of Brazil. In Rio Grande do Sul, this forest extends from the municipality of Torres to the Rio Maquiné in the northeast of the state, and marks the southern limit for most tropical plants (Reitz *et al.*, 1988). Few tropical forest plant species reach the region of

Porto Alegre or the Rio Jacuí. Forest fragments are found on the quaternary wet plains, and on the foothills of mountains (up to 900 m, in the region called Serra Geral).

The genus *Alouatta* Lacépède, 1799 is the most widely distributed of Neotropical primates (Neville *et al.*, 1988). Their northern limit is in the Yucatán Peninsula, Mexico (20°N) (Smith, 1970) and their southern limit, as defined until now, was the Rio Jacuí (30°S), Rio Grande do Sul, Brazil (Hirsch *et al.*, 1991). It was Cabrera (1940) who suspected that the southern brown howler, *Alouatta guariba clamitans*, may occur south of the Rio Jacuí, but no concrete evidence was available. Here we report on five expeditions to the region in order to define more exactly the southernmost limits to its range.

Methods

Five expeditions were carried out between December 1998 and September 2000. Our fieldwork began in the forests along the Rios Camaquã and Piratini; along the middle and southern portions of the south-eastern mountain ranges, respectively, 30–31°S, where the forests and original natural vegetation are relatively well conserved. Further south the forests give way to the grassland and bushy savannas of the Rio Grande do Sul Shield (Rambo, 1956; Fernandes, 1998). Geographic co-ordinates were taken using a GPS (Garmin® models 1 and 2):

Police stations and local people (mainly hunters and fishermen) were contacted in the different localities to obtain information on the possible occurrence of howlers. To avoid false positive identifications of howlers, we asked questions about the mammal fauna in general. Photographs were also used to confirm howler monkey identification.

Positive information was selected for field verification according to the location of the area indicated (latitude, if near to forest, rivers or mountains), when the animals were seen, the number of animals reported for each area, and a general feeling for the veracity of the information from the behaviour patterns of the primates described by the observer.

Once an area was sufficiently explored and there were no new indications of the occurrence of howler monkeys, the expedition moved north.

In the localities where the occurrence of *A. guariba clamitans* was verified, we carried out a quick survey of the vegetation using a 50 m transect with one sample point every 2 m. Trees closest to the transect, in any direction, with a 7 cm or greater circumference at breast height were identified. Tree heights and their distance from the transect were also recorded (Filgueiras *et al.*, 1994).

Results

The 11 localities surveyed are shown in Table 1 and Figure 1. There was no evidence of *A. guariba clamitans* in the Rio Piratini basin, but they were found at two sites along the Rio Camaquã, south of the Rio Jacuí:

1) Cristal, municipality of Cristal, Rio Camaquã (31°00'S, 52°04'W), locality 1 (Fig. 1 and Table 1). All reports on the occurrence of *A. guariba clamitans* in upstream sites given by the local population were confirmed. The forests become progressively more fragmented inland, due to agriculture (beans and corn). Along the Rio Camaquã, however, there were good stretches of relatively continuous forest. We visited a farm (5 km from the town of Cristal), where farmers had reported the presence of at least three howler groups. This was confirmed by new and old faeces collected on 31 December 1998, and we eventually saw the monkeys on 5 March 1999.

The forest was between 16 and 18 m tall. "Angico-vermelho" (*Parapiptadenia rigida* - Mimosaceae) was the predominant tree. Other common species found under the canopy were: "camboatá" (*Cupania vernalis* and *Matayba elaeagnoides* - Sapindaceae), "açoita-cavalo" (*Luehea divaricata* - Tiliaceae), and "batinga" (*Eugenia rostrifolia* - Myrtaceae). *Eugenia hiemalis* and *Eugenia uniflora* were common in the understory. Considering the size of the *Parapiptadenia rigida* and *Luehea divaricata* trees, and judging from information obtained from local people, the forest is

Table 1. Localities visited during the "Southern Limit Expedition", their respective co-ordinates, survey results (occurrence or otherwise) and time spent in each site. See Figure 1.

Locality	River Basin	Coordinates	Occurrence	Time (days)
1. Cristal	Camaquã	31°00'S; 52°04'W	Yes	4*
2. Cascavel	Camaquã	31°05'S; 52°17'W	No	1
3. Canta Galo	Camaquã	31°10'S; 52°19'W	Yes	6*
4. Turuçu	Turuçu	31°21'S; 52°28'W	No	1
5. Torrinhãs	Jaguarão	31°22'S; 53°33'W	No	1
6. Hulha Negra	Jaguarão	31°24'S; 53°21'W	No	1
7. Canguçu	Pelotas	31°24'S; 52°40'W	No	4*
8. 7 ^o Distrito de Pelotas	Pelotas	31°26'S; 52°27'W	No	1
9. Candiota	Jaguarão	31°38'S; 53°44'W	No	1
10. Pedro Osório	Piratini	31°52'S; 52°46'W	No	1
11. F. Capão Redondo	Piratini	31°57'S; 52°33'W	No	2

* non consecutive days

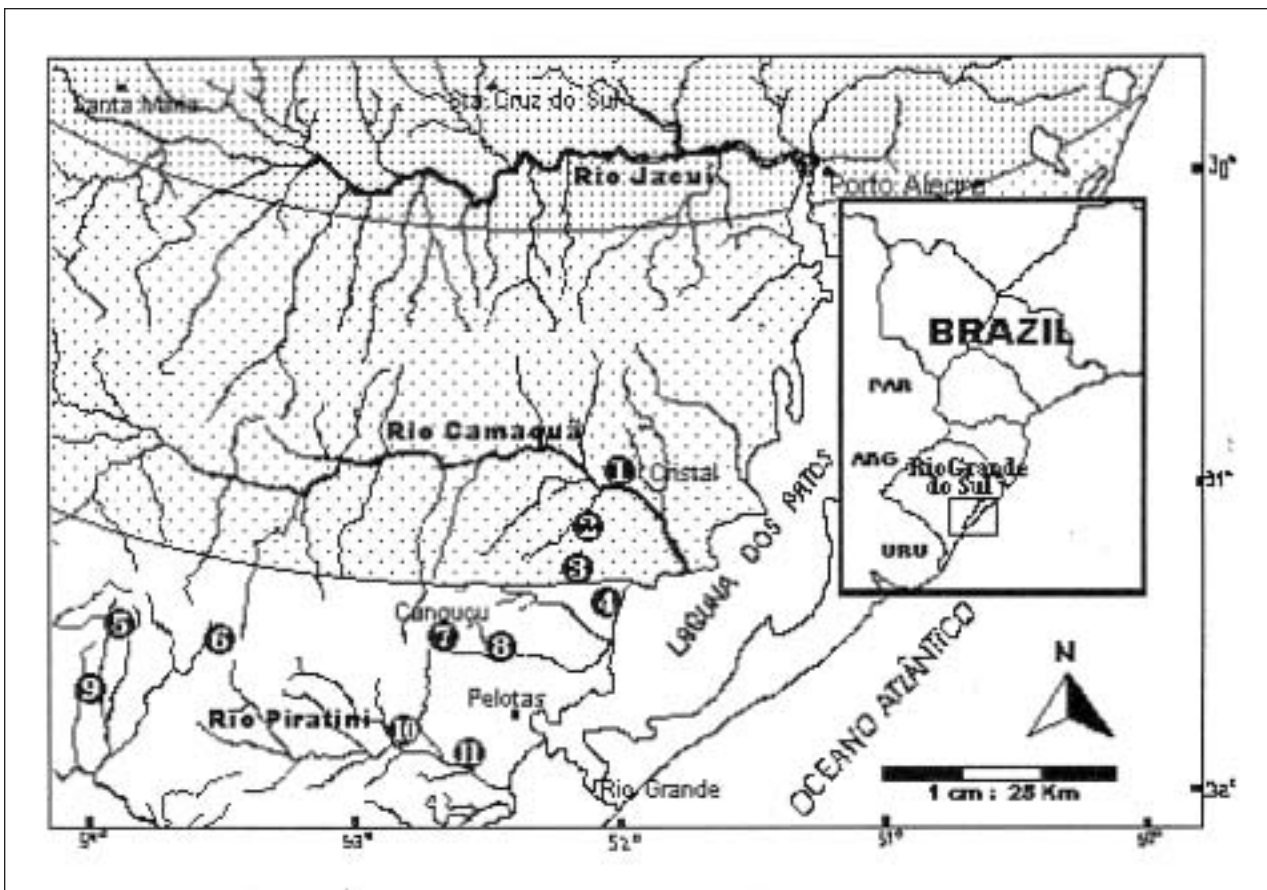


Figure 1. Localities visited during the "Southern Limit Expedition" (the old limit for *A. guariba clamitans* is shaded dark; the new limit is lighter): (1) Cristal, 31°00'S; 52°04'W; (2) Cascavel, 31°05'S; 52°17'W; (3) Canta Galo, 31°10'S; 52°19'W; (4) Turuçu, 31°21'S; 52°28'W; (5) Torrinhas, 31°22'S; 53°33'W; (6) Hulha Negra, 31°24'S; 53°21'W; (7) Canguçu, 31°24'S; 52°40'W; (8) 7ª Distrito de Pelotas, 31°26'S; 52°27'W; (9) Candiota, 31°38'S; 53°44'W; (10) Pedro Osório, 31°52'S; 52°46'W; (11) Faz. Capão Redondo, 31°57'S; 52°33'W.

relatively undisturbed and well conserved. The entire area is occasionally inundated, and forests along the banks of the Rio Camaquã are seasonally covered by water. Other mammals recorded for this site were: paca (*Agouti paca*), raccoon (*Procyon cancrivorus*), deer (*Mazama* sp.), nine-banded armadillo (*Dasybus novemcinctus*), and jaguarundi (*Herpailurus jagouarundi*).

2) Canta Galo, municipality of São Lourenço, Rio Camaquã basin (31°10'S, 52°19'W), Locality 3 (Fig. 1 and Table 1). Local people reported the occurrence of *A. guariba clamitans* on the opposite bank of the Rio Camaquã to Cristal. According to the reports, the howlers could be seen there only during the summer, when the grapes are ripening, which the howlers feed on. Old howler excrement was found in a forest patch on a farm 8 km away from Canta Galo, on 2 February 2000.

The forest was humid, 40 ha in size, and surrounded by corn crops. "Batinga" (*Eugenia rostrifolia*) was the most common tree in the canopy, and its fruits, probably eaten by the howlers, also mature during the summer (usually in February). Some of the trees reach 16 m in height. The understory was well shaded, and the most common species

found were *Sorocea bonplandii* (Moraceae) and *Trichilia clausenii* (Meliaceae).

Discussion

Being sub-tropical, the extreme south of Brazil is marked by distinct seasonal patterns of spring, summer, autumn and winter, and forests are semi-deciduous. This seasonality, and even the occasional occurrence of snow, probably limits the occurrence of primates to only the larger monkeys, *Cebus* and *Alouatta*. The Rio Camaquã basin marks the transition between the Atlantic Forest and the Pampas (Rambo, 1956) with a gradual loss of forest and a reduced tree diversity, which makes even folivory a difficult diet to maintain.

The Rio Jacuí was considered to be the southern limit for *Alouatta guariba clamitans* until 1991 (Hirsch *et al.*, 1991). However, the results presented here show that this species occurs on both margins of the Rios Jacuí and Camaquã (200 km south of the Rio Jacuí). It is probable that the howlers of the Rio Camaquã have to move long distances during times of flooding, and to exploit perhaps relatively few key resources, such as cultivated grapes and the fruits of *Eugenia rostrifolia*.

Villalba *et al.* (1995) indicated the possible natural occurrence of *Alouatta caraya* in northern Uruguay (31°00'S, 56°00'W) which, although not yet confirmed, is just a little north of the localities we have identified on the Rio Camaquã. The most southerly record for this species is the town of Canta Galo (31°10'S, 52°19'W), in the municipality of São Lourenço do Sul, Rio Grande do Sul, Brazil. This locality is also the new southern limit for all Neotropical primates.

We conclude that the key factors determining the distributional limits of primates in the south of South America are: 1) The seasonal inundation of rivers in the Camaquã basin; 2) the reduction in tree species diversity; 3) the gradual predominance of deciduous trees; and 4) the low temperatures during winter.

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TWO TAXONOMIES OF THE NEW WORLD PRIMATES – A COMPARISON OF RYLANDS *ET AL.* (2000) AND GROVES (2001)

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Two listings of the New World Primates were published recently. The first by Rylands *et al.* (2000) arose from a review of the species and subspecies during the workshop “Primate Taxonomy for the New Millennium”, organized by the IUCN/SSC Primate Specialist Group (PSG) at the Disney Institute, Orlando, Florida, in February 2000. The second was published by Colin P. Groves of the Australian National University, Canberra, in his book *Primate Taxonomy*, published in April 2001 by the Smithsonian Institution Press, Washington, DC. Rylands *et al.* listed 110 species and 205 species and subspecies of New World primates. Groves also listed 110 species, but only 177 species and subspecies.

In this note, I point out and comment on the (minor) differences between these listings, the most significant of which is in the names used for the families and subfamilies. Rylands *et al.* opted for five families, using the traditional names, as follows: Callitrichidae (the marmosets and tamarins), Cebidae (capuchin monkeys and squirrel monkeys), Aotidae (night monkeys), Pitheciidae (sakis, uakaris and titi monkeys) and Atelidae (howling monkeys, spider monkeys, muriquis, and woolly monkeys). Groves followed a very similar arrangement, but defined the Cebidae differently, with three subfamilies: the marmosets and tamarins, the squirrel monkeys, and the capuchin monkeys (as proposed by Rosenberger in 1981). However, regarding the correct names of the family-groups, Groves, with the *International Code of Zoological Nomenclature* (2000) in hand, winkled out some synonyms and has suggested changes in some of the family and subfamily names (Table 1):

The first is his argument that the correct family-group name for the marmosets and tamarins is not Callitrichidae Thomas, 1903, but Hapalidae Gray 1821 (Hapalinae as a subfamily of the Cebidae). I quote his reasoning here verbatim (pp.126–127):