

región mesopatámica de Entre Ríos, Argentina y hasta las vertientes orientales de los Andes en la región centro-sur de Bolivia. Cabe destacar que a pesar de citar a la provincia de Entre Ríos, Argentina, no destaca localidad alguna en el Apéndice II del trabajo. La única referencia, y como más austral para Argentina, la constituye la 149 (Isla Yuruhatá, Corrientes, 28°17'S, 59°07'W). Destacan que las dos especies (*A. caraya* y *A. fusca*) llegan a traspasar el paralelo de 30°, en el estado de Río Grande del Sur, Brasil y Argentina (*A. caraya*), reconocido por Hershkovitz (1977) como límite meridional de este género.

La amplia distribución geográfica del género la sustentan por la combinación de factores como: capacidad de los individuos de habitar áreas abiertas y cruzar barreras ecológicas, hábitos alimentarios no especializados y alta fecundidad.

Di Bitetti *et al.* (1994), haciendo referencia a Rumiz (1990), indican que "el aullador negro vive en muy fragmentadas y perturbadas florestas y tiene una gran capacidad para dispersarse y colonizar manchas y remanentes de floresta en la región del chaco boliviano. Altas densidades de aulladores negros son mantenidos en las islas del río Paraná con una vegetación de crecimiento secundario y una baja concentración de componentes secundarios."

Conclusiones

La distribución geográfica en países limítrofes como Argentina y Brasil muestran una relativa proximidad de grupos salvajes de *A. caraya*. La no especificidad de su dieta que incluye una importante fracción de hojas, la posibilidad de desplazamiento a través de áreas abiertas, el traspasar barreras ecológicas y el área de captura del ejemplar citado, que coincide con la isoterma más alta para el promedio 1946-1970, así como con la mayor isoyeta (1300 lts/m) en el mismo periodo (Lafitte, 1980), sugerirían la posible ocurrencia de esta forma en nuestro territorio. La presencia de un primate, hasta el momento no citado en ninguna lista sistemática dentro de la literatura mastozoológica uruguaya, de confirmarse, ameritaría paralelamente medidas de protección en lo que respecta al hábitat. Zonas muy próximas como el Valle del Lunarejo, no se encuentran protegidas y poseen características naturales excepcionales.

A. caraya está incluida en el Apéndice II de CITES y goza de protección en los países con poblaciones estables, integrantes de la Convención.

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Bibliografía

- Bicca-Marques, J. C. y Calegario-Marques, C. 1994. Twins or adoption? *Neotropical Primates* 2(3): 6-7.
- Di Bitetti, M. S., Placci, G., Brown, A. D. y Rode, D. I. 1994. Conservation and population status of the brown howling monkey (*Alouatta fusca clamitans*) in Argentina. *Neotropical Primates* 2(4): 1-4.
- Hershkovitz, P. 1977. *Living New World Monkeys (Platyrrhini), With an Introduction to Primates, Volume 1*. University of Chicago Press, Chicago.
- Hirsch, A., Landau, A. C., Tedeschi, M. de y Menegheti, J. O. 1991. Estudo comparativo das espécies do género *Alouatta* Lacépède, 1799 (Platyrrhini, Atelidae) e sua distribuição geográfica na América do Sul. In: *A Primatologia no Brasil - 3*, A. B. Rylands y A. T. Bernardes (eds.), pp. 239-262. Sociedade Brasileira de Primatologia y Fundação Biodiversitas, Belo Horizonte.
- Lafitte, A. 1980. Inventario Nacional para Selección de Nuevas Areas para Parques Nacionales. Tesis, Facultad de Agronomía, Universidad de la Republica Oriental del Uruguay. 138pp.
- Mittermeier, R. A. y Coimbra-Filho, A. F. 1977. Primate conservation in Brazilian Amazonia. In: *Primate Conservation*, H.S.H Prince Rainier III of Monaco y G. Bourne, pp.117-166. Academic Press, New York.
- Nowak, R. M. y Paradiso, J. L. 1983. *Walker's Mammals of the World. Vol. 1*. 4th Edition. Johns Hopkins University Press, Baltimore and London.
- Redford, K. H. y Eisenberg, J. F. 1992. *Mammals of the Neotropics. The Southern Cone. Vol. 2. Chile Argentina, Uruguay and Paraguay*. Chicago University Press, Chicago.
- Rumiz, D. I. 1990. *Alouatta caraya*: population density and demography in northern Argentina. *Am. J. Primatol.* 21: 279-294.

THE RED-HANDED HOWLING MONKEY IN THE STATE OF PERNAMBUCO, NORTH-EAST BRAZIL

The red-handed howler, *Alouatta belzebul*, is endemic to Brazil and has a disjunct distribution, being found mainly in eastern Amazonia but also in the northeastern Atlantic forest, an area today separated from the Amazon by wide expanses of dry *caatinga* (thorn scrub) and *cerrado* (bush savanna). The majority of localities are from the south bank of the Rio Amazonas, east of the Rio Purus, but records extend east as far as Miritiba, Maranhão, and south and east into the states of Ceará, Alagoas and Paraíba (Bonvicino, 1989; Bonvicino *et al.*, 1989, Langguth *et al.*, 1987).

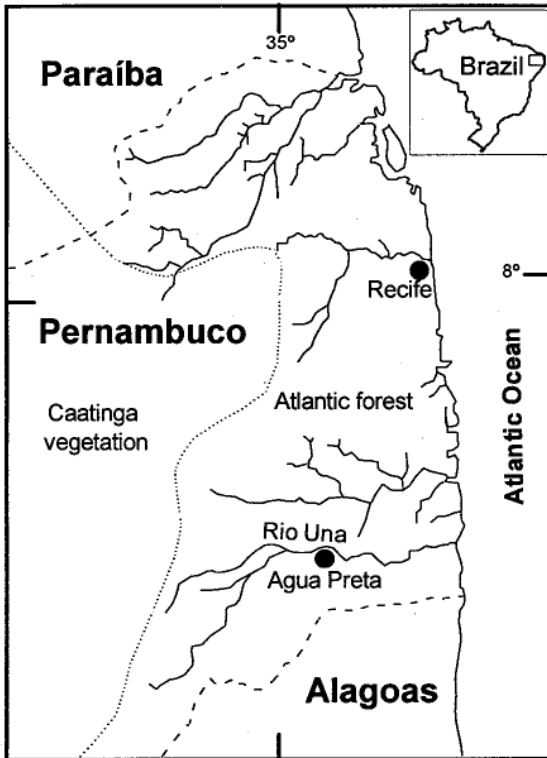


Figure 1. Map showing the location of Água Preta in the state of Pernambuco, Brazil.

The four subspecies recognized are *Alouatta belzebul belzebul*, *A. b. discolor*, *A. b. nigerrima*, and *A. b. ululata* (see Hill, 1962; Bonvicino *et al.*, 1989). Chromosome studies, taken together with phenotype and field observations, suggest, however, that *A. b. belzebul* is phenotypically variable in respect to pelage coloration, which is, therefore, unreliable for identification of the subspecies (Armada *et al.*, 1987). Relatively minor phenotypic differences have been observed in animals which are karyotypically divergent. The possibility remains that the disjunct Amazonian and northeastern Brazilian populations may be different subspecies.

The red-handed howler was first registered for the Atlantic forest of Pernambuco by Marcgrave and Piso in 1648 (Marcgrave, 1648). No further report of its existence in the region was forthcoming over the following 346 years. During primate surveys in the north-east of Brazil, Langguth *et al.* (1987) discovered a few surviving populations in the states of Paraíba and Alagoas, and also registered the existence of specimens collected in the state in the state of Ceará. Recently this species has also been recorded in the southernmost tip of the state of Rio Grande do Norte (M. de F. Arruda, pers. comm.).

Further populations of *A. b. belzebul* were located during surveys of primate distributions in the state of

Pernambuco in 1987 and 1988. The first was a report of howling monkeys in two patches of forest belonging to the Sacramento Sugar Mill, the "Grota da Ferrugem" and "Grota do Inferno", in the municipality of Água Preta (08°42'S, 35°24'W, see Fig. 1). In 1993, eight trips, each of 3-8 days, were made to this area in order to obtain information on these groups. A total of 364 hours were spent searching for the monkeys, but only one group was seen (six times) in the larger of the two forests, the Grota do Inferno, of about 180 ha. Local people reported that *A. belzebul* occurred in three other forest patches on the property, all surrounded by sugar cane plantations (Almeida *et al.*, 1994). Two other primates were observed in these forest patches, *Cebus apella* (believed to be the subspecies *libidinosus*), and *Callithrix jacchus*, and as such are the only forests in the state known to have three primate species (Almeida *et al.*, 1994).

Hunting for food is a common practice in the region, and game include medium-sized birds such as Spix's guan (*Penelope* sp.), the channel-billed toucan (*Ramphastos vitellinus*), and especially such mammals such as *Mazama gouazoubira*, *Tayassu* spp., *Agouti paca*, *Euphractus sexcinctus*, and *Tamandua tetradactyla*. Primates are also killed occasionally, and an adult howling monkey was shot in June 1993.

Further surveys will be carried out by the non-governmental organization Centro Faune and the Natural History Museum of the Federal Rural University of Pernambuco in order to document the now scarce and little-known fauna of the state (Almeida *et al.*, 1990, 1992). Environmental education projects have already been set up in order to promote the protection of the forests in the property of the Sacramento Sugar Mill, and will hopefully improve the dim prospects for the survival of this small, but important population of howling monkeys.

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References

Almeida, R. T. and Silva, F. J. L. 1990. Distribuição da fauna primatológica no estado de Pernambuco,

- Região Nordeste do Brasil. In: *Resumos. VIII Encontro de Zoologia do Nordeste*, p.5. Universidade Federal de Sergipe, Aracajú.
- Almeida, R. T., Pimentel D. S. and Silva, F. J. L. 1992. Mamíferos ameaçados de extinção do estado de Pernambuco. In: *Resumos. IX Encontro de Zoologia do Nordeste*, p.146. Universidade Federal de Pernambuco, Recife.
- Almeida, R. T., Pimentel D. S. and Silva, E. M. S. 1994. Guariba-de-mão-ruiva *Alouatta belzebul belzebul* no estado de Pernambuco. In: *Resumos. XX Congresso Brasileiro de Zoologia*, p.143. Universidade Federal do Rio de Janeiro, Rio de Janeiro.
- Armada, J. L. A., Barroso, C. M. L., Lima, M. M. C., Muniz, J. A. P. C. and Seuánez, H. N. 1987. Chromosome studies in *Alouatta belzebul*. *Am. J. Primatol.* 13: 283-296.
- Bonvicino, C. R. 1989. Ecologia e comportamento de *Alouatta belzebul* (Primates: Cebidae) na Mata Atlântica. *Rev. Nordestina Biol.* 6(2): 149-179.
- Bonvicino, C. R., Langguth, A. and Mittermeier, R. A. 1984. A study of pelage color and geographic distribution in *Alouatta belzebul* (Primates: Cebidae). *Rev. Nordestina Biol.* 6(2): 139-148.
- Hill, W. C. O. 1962. *Primates: Comparative Anatomy and Taxonomy V. Cebidae Part B*. Edinburgh University Press, Edinburgh.
- Langguth, A., Teixeira, D. M., Mittermeier, R. A. and Bonvicino, C. R. 1987. The red-handed howler monkey in northeastern Brazil. *Primate Conservation* (8): 36-39.
- Marcgrave, G. 1648. *Historiae Rerum Naturalium Brasiliae. Libri sextus: De Quadrupedibus et Serpentibus*. Leiden and Amsterdam. 293pp.

ON THE GEOGRAPHIC DISTRIBUTION OF THE RED-HANDED HOWLING MONKEY, *ALOUATTA BELZEBUL*, IN NORTH-EAST BRAZIL

The red-handed howling monkey, *Alouatta belzebul*, has a wide geographic distribution which includes a large part of the lower Amazon, south of the Rio Amazonas, in the states of Amazonas, Pará, and Maranhão, and also North-east Brazil (Hill, 1962; see also Hirsch *et al.*, 1991). Langguth *et al.* (1987) and Bonvicino *et al.* (1989) reviewed the distribution of this species and the sparse information available regarding the non-Amazonian part of its range. They listed records for the coastal regions of the states of Ceará, Paraíba and Alagoas (Fig. 1), and indicated that the original range also included Piauí, Rio Grande do Norte, and Pernambuco, and that the southern limit to the Atlantic forest population was the Rio São Francisco. They argued that the similarity in pelage

coloration with Amazonian populations of *A. b. belzebul* indicates that the connections between the now disjunct populations were through the interior, western portions of these states as well as along the coast. Since these reviews, further, very small, remnant populations have been recorded for the states of Pernambuco and Rio Grande do Norte, again near the coast (Fig. 1). Due to the widespread and almost total destruction of the Atlantic forest of North-east Brazil information concerning the extent of its non-Amazonian distribution is extremely scarce and difficult to obtain.

The first reference to *A. belzebul* was by Marcgrave (1648) who obtained specimens from rain forest in the state of Pernambuco. Two-hundred and sixty-six years later, Marcgrave (1648) was probably the source that led Ihering (1914) to give the Rio São Francisco as the southern limit to its distribution, besides the fact that extensive rain forest still existed along the coast of Alagoas at the beginning of the century. Ihering's (1914) supposition was endorsed by Hill (1962) who, lacking further concrete information however, merely placed an arrow on the distribution map for the genus (opposite p.136), which extended the range of *A. b. ululata*, otherwise known from coastal Maranhão.

As was recorded by Ihering (1914) and Bonvicino *et al.* (1989), Burmeister (1854) registered the distribution of the brown howling monkey, *A. fusca*, as extending north in the Atlantic forest as far as the Rio São Francisco. The presence of gallery forests along the tributaries of the Rio São Francisco in the 16th Century would indicate that both species extended well inland, and that a large part of the basin was occupied by howling monkeys: *A. fusca* along its right margin and *A. belzebul* along its left margin. *A. fusca* is extinct throughout a large part of Bahia, with very small populations possibly still surviving only in the southernmost regions of the state, but in the past it undoubtedly occupied gallery forests and forests along the slopes of the mountain ranges inland, from the coast as far west as the Rio São Francisco, in regions which are today characterized by semi-desert scrub.

The survival of *A. belzebul* in North-east Brazil was first documented during an expedition of Olivério Pinto to Alagoas in 1967, when two specimens were collected in the forest of the Usina Sinimbu, although this fact was only recorded in 1981 by Silva (p.899). Nearly a decade later, Paiva (1973, 1974) referred to the existence of howling monkeys in Ceará, but confused *A. belzebul* with the black howling monkey, *A. caraya*, typical of central and southern Brazil. Coimbra-Filho and Maia (1979) were also mistaken