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The Diet of Muriqui Females, *Brachyteles arachnoides*, in Different Reproductive Conditions

In September, 1996, Cláudio Pereira Nogueira defended his Master's thesis in Biological Sciences, comparing the diets and activity budgets of female muriquis, *Brachyteles arachnoides*, in different reproductive conditions. The degree was awarded by the Faculty of Applied Sciences of the University of Guarulhos, São Paulo, Brazil. The research was supervised by Dr. Mário Sérgio Galvão Bueno in collaboration with Dr. Karen B. Strier of the Department of Anthropology, University of Wisconsin, Madison, and was supported by grants from the Liz Claiborne and Art Ortenberg Foundation, and the Chicago Zoological Society - NSF BNS 8958298 (through Karen B. Strier). The following is a summary of the thesis.

From August 1992 to July 1993, a field study of a group of 17 female muriquis (*Brachyteles arachnoides*) was carried out in the forest of the Biological Station of Caratinga (Fazenda Montes Claros), Minas Gerais, Brazil (see Strier, 1992). Behavioral data was obtained from 1,764 focal samples (of 10 minutes each) of four classes of females: nonreproductive, pregnant, lactating with infant up to 12 months old, and lactating with offspring more than 12 months old. The data indicated that females spend an average of 51.6% of their time resting, 36.0% feeding, 11.2% traveling, 0.5% in social behavior and 0.3% drinking water. Females devoted an average of 60.2% of their feeding time to leaves, 26.9% to fruits, 9.3% to flowers and 3.6% to bamboo, bark and ferns. The increase in time spent feeding compared to other studies may be due to the increase in size of the Matão group and the change in group composition, with a larger number of females with greater energetic requirements. Comparing the females in different reproductive conditions revealed significant differences in their activity budgets. Nonreproductive females devoted an average of 57.6% of their time to resting, 31.4% to feeding, 10.3% to traveling, 0.6% to social behavior, 0.1% to drinking and 64.4% of their feeding time to leaves, 27.1% to fruits, 6.7% to flowers, 1.2% to bamboo, 0.5% to bark and 0.1% to ferns. The pregnant females devoted an average of 54.4% of their time to resting, 31.4% to feeding, 13.2% to traveling, 0.3% to social behavior, 0.1% to drinking and 56.1% of their feeding time to leaves, 27.2% to fruits, 12.5% to flowers, 3.8% to bamboo and 0.4% to ferns. The lactating females with infants up to 12 months old devoted an average of 50.3% of their time to resting, 38.8% to feeding, 9.7% to traveling, 0.5% to social behavior, 0.7% to drinking, and 58.2% of their feeding time to leaves, 30.5% to fruits, 8.2% to flowers, 1.6% to bamboo, 1.0% to barks and 0.5% to ferns. The lactating females with offspring over 12 months of age devoted an average of 47.2% of their time to resting, 39.5% to feeding, 12.5% to traveling, 0.5% to social behavior, 0.3% to drinking water and 60.2% of their feeding time to leaves, 23.9% to fruits, 10.9% to flowers, 1.7% to bamboo, 2.6% to bark and 0.7% to ferns. The results indicated that the females with lower energetic requirements (nonreproductive females) spent less time feeding and adopted an energy-saving strategy, spending less time in traveling and more time in resting, while including a larger proportion of leaves in their diet. The pregnant females spent less time in feeding but consumed more high energy food and avoided feeding competition by varying their diet. The females with the highest energetic requirements (lactating) spent more time in feeding and consumed more high-energy food (fruits and flowers).

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Cytogenetic and Phylogenetic Studies of *Alouatta* from Brasil and Argentina

Edivaldo Herculano Corrêa de Oliveira completed his Master's thesis on the cytogenetics of howling monkeys, *Alouatta*, at the Federal University of Paraná (UFPR), Curitiba in May 1996. He was supervised by Dr Ives José Sbalqueiro (UFPR), in collaboration with Prof. Margarida M. C. de Lima (Federal University of Pará, Belém). The research was financed by the Brazil National Science Council (CNPq), the Brazilian Higher Education Authority (CAPES), and the Federal

Universities of Paraná and Pará, Brazil.

The study comprised the first intrageneric (G, C and NOR banding) and phylogenetic study of the genus *Alouatta* (Primates, Atelidae), including representatives of all four species found in Brazil and Argentina: *A. fusca, A. seniculus, A. belzebul* and *A. caraya. A. palliata*, was compared from the literature (Ma *et al.*, 1975). The aim was to characterize each species karyologically, as well as to determine the different chromosomal rearrangements involved in inter-and intraspecific variation. The results were converted to numerical data and submitted to cladistic analysis, which was performed using the PAUP program. *Cebus apella* and *Chiropotes satanas* were used as outgroups. The platyrrhine ancestral karyotype proposed in the literature was used in the polarization. The results obtained allowed for the following conclusions.

1) *Alouatta* is very variable in its karyotype, both inter- and intraspecifically.

2) The most important chromosomal rearrangements found in their karyotypic evolution were fusion/fission, inversions, translocations and complex rearrangements.

3) *Alouatta fusca* showed the greatest variation, having diploid numbers of 45, 46, 49 and 52. The odd numbers were due to Y-autosome translocations. The different diploid numbers could be related to different geographic localities.

4) *Aloatta belzebul belzebul*, from our samples, and *A. b. nigerrima*, from the literature, had very different karyotypes: although the both have the same diploid number (2n = 50 in females), the G-banding pattern of *A. b. nigerrima* was more similar to *A. seniculus* than to *A. b. belzebul.*

5) *Alouatta caraya* showed the most conservative karyotype: All the specimens from a number of different localities had 2n = 52.

6) The cladistic analysis clearly separates *Cebus* and *Chiropotes* from *Alouatta.*

7) *Alouatta* could be divided into four different groups: "Palliata" Group (*Alouatta palliata*, 2n = 54, with the least derived karyotype); "Caraya" Group (*Alouatta caraya*, 2n = 52); "Fusca" Group (*Alouatta belzebul belzebul* and *Alouatta fusca*); and "Seniculus" Group (*Alouatta seniculus* and *Alouatta belzebul nigerrima*).

8) On the basis of information obtained from chromosomes, and taking into account the evolutionary theories for platyrrhine monkeys, it was possible to suggest that there is a tendency in *Alouatta* for a reduction in the diplold number in the more derived karyotypes found, probably due to fusions and complex rearrangements such as multiple translocations and tandem fusions.

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Mesoamerican Biological Corridor Project

The "Regional Mesoamerican System of Protected Areas, Buffer Zones, and Biological Corridors", better known as the Mesoamerican Biological Corridor, is being created in the countries of the region. The project is currently studying opportunities to fund the future operation of a Mesoamerican corridor that will serve to facilitate connections among the Regional System of Protected Areas, and create a migratory route providing some protection for the species that move from one country to another. This is being undertaken by a project developed by the Central American Commission for the Environment and Development (CCAD), which received funding from the Global Environment Facility (GEF), channeled through the local offices of the United Nations' Development Program (UNDP) in each country. The project is coordinated by a regional consultant based in Costa Rica and by national consultants that serve as contacts with the responsible national offices, since it forms part of the framework of regional presidential obligations regarding the environment, such as the Central American Biodiversity Convention, the Central American Forests Agreement, and the Alliance for Sustainable Development.

The Consultants held their first meeting in San Salvador in March 1996, together with personnel from the Wildlife Conservation Society (WCS). A second meting was held in June 1996 at the Santa Rosa National Park, Costa Rica. The Project is strongly supported by the environment and natural resources ministries of the Mesoamerican countries. It is also supported by UNEP,