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SHORT COMMUNICATION

Biological data of a population of sloths (*Bradypus variegatus*) in a square of Teófilo Otoni, Minas Gerais, Brazil

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ABSTRACT

An isolated population of 25 three-toed sloths (*Bradypus variegatus,* Xenarthra) from a public center of the town of Teófilo Otoni, Minas Gerais, Brasil was analyzed with regard to plant availability, the health condition, the effects of inbreeding and the karyotype pattern of the population; the plant were considered restricted both in number and in species diversity, when compared to natural populations; the analysis of the chromosomes showed the system 2n=54 XX/XY and 2n=55 XYY, with an additional Y chromosome.

Key words: sloth; diet; chromosomes; *Bradypus variegatus*

The order Xenarthra comprises sloths, armadillos and neotropical anteaters, both their fossil and current forms (Gloss, 1985); they are all distributed in South and Central America, Mexico and South of United States.

Wetzel (1985) groups sloths into two families: Megalonichidae and Bradypodidae which include one living genus of each, *Choloepus* and *Bradypus,* respectively. The genus *Bradypus* includes sloths with three toes in the foreleg, with three living species, *B variegatus*, *B. tridactylus* and *B. torquatus*. Anderson and Handley-Jr (2001; 2002) reported the existence of a fourth species of the genus *Bradypus* (*B. pigmaeus*)found in one of the island (Escudo de Veráguas) located in the complex of islands Bocas del Toro, in the Caribbean in cost of Panama. These island have separated from the continent for about 10,000 years, in the Holecene, due to the elevation in the level of the sea and immersion of the coastal zone of the continent.

Sloths of the genus *Bradypus,* are authentic folivores and are distributed in forest and non-forest ecosystem, such as Caatinga and Cerrado (Queiroz, 1995). Most of the studies about died of the sloths has been done by Chiarello (1998a; 1998b; 1999) using the species *B. torquatus* from Mello Leitão Reservation in Espírito Santo state, Brazil; these studies have revealed a high consumption of leaves instead of flowers and fruits. Globally, the died was composed of 99% of leaves, with a preference for young leaves (68%) opposed to matures ones (7%) throughout the year. In the nutrition of the *B. torquatus,* 21 trees of five lianas of

15 different plant genera were utilized . However, each individual used a smaller number of species in their diets (between seven and twelve). The species *Micropholis venulosa*, *Mandevilla* sp, *Ficus* sp and *Prumus* sp accounted, together, for more than half of the total plants utilized as food. The author concludes that it is a myth the fact that leaves and fruits of embaúba (tree of the genus *Cecropia*) constitute the main food item of sloths. These plants are a small part of the diet: *Cecropia holeleuca* (4,24%) and *Cecropia glaziouli* (0,4%).

The chromosomal analysis done is specimens of *B. variegates* showed the presence of XY and XYY males (mechanisms XX/XY and XX/XYY, respectively) in animals of the Amazon (Jorge, 1981; Jorge *et al*, 1985) and Rio de Janeiro (Goldschmidt, 1992). These mechanism are not common in the other Xenarthra.

We localized a population of 25 sloths of the species *B. variegatus* living in a square (Tiradentes square), in downtown Teófilo Otoni, a city in the state of Minas Gerais, Brazil. According to the old inhabitants of the city, these animals live there since the city was founded, over 100 years ago. Some animals were introduced in the square in the past. The hypothesis is with the urbanization process, the animals were restricted to the square, in the central zone of the city, completely isolated utilizing the vegetation available as food source.

According to Consentino (2004) the introduction of wild animals in squares may have been a habit from inhabitants in the past; this also has occurred in the municipalities of Piraí, Barra Mansa and Valença (state of Rio de Janeiro), which had groups of sloths living in the city environments.

We infer these population became highly endogamic because of the restriction of the physical space.

Because of these facts the present work had the following objectives: a) to verify the food habits of the animals, *i.e.* the predominant types of plants utilized by the sloths; b) to verify the general state of health of the animals by checking for presence of ecto parasites, weight and body temperature; c) to verify the existence of males of *B. variegatus* XY and XYY in the animals of the square, as previously observed by us (Jorge *et al*, 1985) in other populations.

In order to collect the material, trips were arranged to the city of Teófilo Otoni (446 km from Belo Horizonte). Authorization from IBAMA was obtained to collect the material. The Fire Department of the City Hall of Teófilo Otoni have aided in the capture. The population of the square is compounded of 25 individuals. Some animals were randomly chosen from the trees for collecting blood and for the other procedure. In the first trip, 7 animals were sampled for chromosomal analysis. In the second trip 15 animals (9 males and 5 females) and a pup, in which the sex was not identified, was analyzed for weight, temperature and heart beat measurements. In the second sampling a female (# 13) was identified which had no back paws. Also, the birth albinos as well as mortality of newborns have been reported by the caretaker of the square.

For evaluation of the health state of the animals, temperature, heart beat and weight were measured.

For the chromosomal study, about 5 ml of blood were taken from the jugular vein with the syringe containing 0.05 ml of heparin (Liquemine). The material was transported to the Cytogenetic Laboratory, on the same day, in thermal box containing ice. In the following day, the material was processed using the usual technique for culture of lymphocytes; for chromosomal visualization on the microscope conventional staining was utilized according to Oliveira (2000).

The trees of Tiradentes Square, the place where the sloths of Teófilo Otoni live, are their only sources of food. The analysis done by Chiarelo (1998b) *Ficus sp* constituted 19,51% of *B. torquatus* diet. Out of 85 trees that exist in the square, only *Ficus sp* has been pointed out as part of the diet of sloth in nature. However, this tree constituted only 10,58% of the trees of the square. It was not clear whether Ficus was the only source of leaves for the sloths or not. In nature, other types of plants also serve as food, specially Saponaceae and Apocynaceae families, with a total of 30,12% of leaves consumed. These two families were not found in Tiradentes square. The remaining are species of exotic ornamental plants and/or utilized in the arborization of streets and avenues cities of the region. The only source of this information is the old inhabitants of the city.

These are shown in the following (number of tree and percentage) in the square identified by specialist from Universidade Federal de Minas Gerais (Departmento de Botânica):

Flamboyant (*Delonix regia*) : 16 (18,82%)

Ipê (*Tabebuia, sp*): 13 (15,29%)

Oiti (*Licania tomentosa*): 11 (12,94%)

Lantanea palm tree (Livistana chinensis): 10 (11,76%)

Chestnut tree (Lecytidaceae): 5 (5,88%)

Cassia ; Gold rain cassia (*Cássia fistula*) : 3 (3,52%)

Pau-Brasil (*Caesalpinea echinata*): 3 (3,52)

Sibipiruna (*Caesalpinea peltophoriodes*): 3 (3,52)

Espatodea (*Spatonea camponulata*): 2 (2,35%)

The remaining plants with only one specimen were not listed here.

The restricted availability of plants species could be leading to two newborns, in the last ten years, probably due to deficient nutrition of the mother. On the other hand, the selectivity in the choice of food is a factor of survival. The variability of the plants is also necessary so that each animal could choose its own diet, allowing that some plants they eat to neutralize toxic compounds of other plants. In case it is decided that the sloths should continue to live in the square, it is recommended that new plants should be used based on the species known to be utilized in the died of animals of the same genus or species in the wild. If the opinion is for their reintroduction in nature, a more detailed study should be done with the aid of ecologists.

The weight, temperature and heart beats measurements of each animal are summarized in Table 1. According to the data, the average weight for males is 3.961 kg and 4.098 kg for the females. For heart beats, the average was 88.0 bpm in the males and 70.67 bpm in the females. The average oscillation in the temperature (difference between the first and second measurement) was 0.425°C in the males and 0.667°C in the females.

Table 1 – Weight, temperature, and heart beats (bpm) measurements. For heart beat the first value was obtained in the morning and the second in the afternoon. The mark *** means: the temperature was not measure in the morning.

Animal	Sex	Weight (kg)	Temperature (°C)	Heart beats / minute
1	♀	3, 750	35,0 35,6	Not determined
2	♀	4,090	34, 8 35,2	Not determined
3	Not determined	0,485	*** 34,6	Not determined
4	♀	5,000	34,6 33,9	80
5	♀	3,700	34,7 34,2	56
6	♀	3,500	34,6 35,0	80
7	♀ (pregnant)	4,950	*** 34,3	64
8	♀	4,630	*** 34,6	96
9	♀	3,650	*** 34,8	68
10	♀	4,350	34,2 35,3	84
11	♀	3,750	*** 34,2	84
12	♀	3,900	34,0 34,0	68
13	♀ (malformation)	3,400	*** 36,2	Not determined
14	♀	3,770	*** 35,7	124
15	♀	3,700	*** 35,8	104

For the examination of ectoparasites, a lice comb was utilized. No ectoparasites was found in any of the 15 animals analyzed.

Temperature, weight, heart beats were in the same range that other researches found in wild animals. Since there are no data on daily variation of temperature, we cannot say if the difference found was significant. It should also be

assigned that Xenarthra are considered imperfect homeothermic animals, due to the great variation in body temperature.

The absence of ectoparasites were surprising since data from literature confirmed that in natural populations they are present . However, because these animals live in an environment with great anthropic impacts (pollution, noise, physical isolation, etc) the sources of transmitters and reproduction of the parasites may be absent.

The karyotype patterns of the males analyzed was identical to those found by our group (Jorge *et al* 1985), with two groups: XX/XY and XX/XYY. The X chromosome is a large submetacentric, comparable to the first pair of autosomes and the Y is a small submetacentric, with size comparable to the 26th pair. In males with an extra very small chromosome was seen, and was considered as a second Y. It has been speculate how these two systems have been maintained in such distant and distinct *B. variegatus* populations: one with a small number of isolated individuals in a square and another from a sample collected in the forest in the region of Manaus, Brazil.

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