

New Records of *Bradypus torquatus* (Pilosa: Bradypodidae) from Southern Sergipe, Brazil

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One of the main threats to the survival of the endangered maned sloth (*Bradypus torquatus*) is its relatively restricted geographic range, especially in comparison with the other mainland species of the genus (Aguiar and Fonseca, 2008; Chiarello, 2008). This range is basically restricted to the coastal Atlantic Forest between eastern Rio de Janeiro and southern Sergipe (Fonseca and Aguiar, 2004; Lara-Ruiz and Chiarello, 2005), and thus also coincides with the region of Brazil with the longest history of European colonization and deforestation (Dean, 1995). Furthermore, there is some evidence of the existence of three geographically and genetically distinct populations in Bahia, Espírito Santo, and Rio de Janeiro (Lara-Ruiz *et al.*, 2008) which may even represent separate taxa (Fonseca and Aguiar, 2004).

There are recent records of the species from southern Bahia (Prado, 2001), where a few large tracts of Atlantic Forest still remain. On the other hand, Fonseca and Aguiar (2004: p. 7) affirm that the species is absent from Sergipe, where “the forest is gone”. Deforestation has reached critical levels in this state (Siqueira and Ribeiro, 2001), but many relatively small fragments, of up to 900 hectares, still persist. Some of these forests harbor a surprisingly diverse fauna of mammals, including the endangered primates *Callicebus coimbrai* and *Cebus xanthosternos*, and even pumas, *Puma concolor* (Jerusalinsky *et al.*, 2006; Santos Júnior, 2007). Recent surveys have confirmed that *Callicebus coimbrai* occurs in dozens of fragments statewide, including in some of less than ten hectares.

Unexpectedly, ongoing fieldwork—which is directed primarily at the local primate populations—has also resulted in the observation of maned sloths at two sites in the south of the state. These observations not only confirm that the species still occurs as far north as Sergipe, but also suggest that *B. torquatus* may be relatively abundant in this region. It is clear, however, that additional research is needed to confirm the size and status of these populations.

The first record of *B. torquatus* was collected on August 1st, 2004, at the Fazenda Riacho Seco (11°18'S,

37°33'W), in the municipality of Arauá (Figure 1), during a survey of local *Callicebus* populations (Jerusalinsky *et al.*, 2006). The adult sloth was seen at 14–14:30 h moving and feeding approximately 10 m above the ground in the crown of a jitaí tree (*Apuleia leiocarpa*) in a relatively small, disturbed fragment of less than 25 hectares. While local residents indicated that *Callicebus* was also present in the fragment, this was not confirmed during the survey.

Bradypus torquatus was also observed during mammal surveys at the Fazenda Trapsa (11°12'S, 37°14'W), an abandoned farm in the municipality of Itaporanga d'Ajuda, just south of the state capital Aracaju (Figure 1). This site encompasses a mosaic of Atlantic Forest fragments that vary in size from a few dozen to more than a hundred hectares, with a total cover of more than 500 ha. Maned sloths were observed in three of these fragments, denominated Alagado (118 ha.), Viveiro (62 ha.) and Camboinha (15 ha.), in June and July of 2008, and in April and August of 2009.

Alagado is characterized by relatively well-preserved hilltop forest with an open understory, and canopy height of five to 15 m. By contrast, much of the smaller Viveiro fragment caught fire approximately ten years ago, and the forest is now characterized by dense undergrowth and a mostly discontinuous canopy. The much smaller Camboinha fragment was also extensively damaged by fire in early 2009. Nevertheless, much of the vegetation is still well-preserved, with trees of up to 15 m in height and a relatively open understory.

One adult *B. torquatus* (Figure 2) was observed at Alagado on June 1st, 2008, at 13:50 h, moving up a vertical trunk at approximately 10 m height. As soon

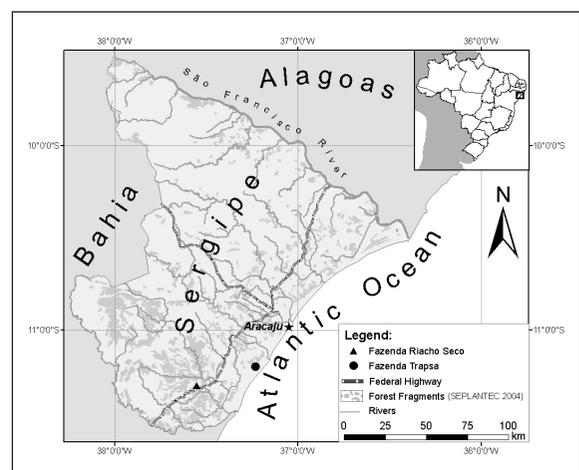


Figure 1. Location of *Bradypus torquatus* sightings in Sergipe, Brazil.

as it perceived the presence of human observers, the animal remained motionless for a few moments, but then continued its upward movement. At 06:44 h on April 17, 2009, an adult was observed at a height of 9 m in a *Dalbergia* sp. tree.

At the Viveiro forest, sloths were observed on the mornings of July 16 and 21, 2008, at 11:30 h and 09:30 h, respectively. On the first occasion, an adult individual was observed at a height of approximately 7 m in an “açoita-cavalo” (*Luehea divaricata*) tree, close to the area regenerating from the fire. This individual had a head-body length of 570 mm, but its sex was not recorded given the difficulties of identifying the gender in this species (Pinder, 1993; Chiarello, 1998a).

On the second occasion, a female carrying an infant dorsally was observed moving, apparently seeking shelter, in a lapachillo tree (*Poecilanthe parviflora*) in a part of the forest that is still in the initial stages of regeneration. The adult female had a head-body length of 609 mm (length of: head = 100 mm, right arm = 390 mm, right leg = 209 mm, hand = 75 mm, and foot = 79 mm). The infant was about a third the size of the adult, with a head-body length of 209 mm. The body length of the female is typical of the species, considering the values recorded by Pinder (1993: 520–672 mm; see also Lara-Ruiz and Chiarello, 2005).

Finally, one individual was observed at Camboinha on August 22, 2009, at 07:43 h. The animal was apparently a subadult, but its sex was not determined. It was at rest at a height of approximately 10 m.

Additionally, at least two sloths are known to have been captured by local residents during the past year



Figure 2. Adult *Bradypus torquatus* from Fazenda Trapsa, Sergipe, Brazil.

(pers. obs.; E. M. Santos Junior, pers. comm.). Overall, the observations from the Fazenda Trapsa appear to indicate that *B. torquatus* is relatively abundant at this site. These records, together with the one from Riacho Seco, seem to support the assumption that the species is present in at least some of the region's other fragments. In fact, A. Cunha and R. Beltrão-Mendes (pers. comm.) have recently observed the species at two other sites in southern Sergipe, in the municipalities of Santa Luzia do Itanhi and Indiaroba.

The few ecological data available for the species (Chiarello, 1998a; 1998b) indicate that its diet consists almost exclusively of leaves, and that individuals occupy home ranges of a few hectares. *A priori*, then, it seems likely that the species would be able to survive in most fragments. A series of factors ranging from historical processes and ecological constraints, to habitat quality and hunting pressure may, however, determine its presence or absence from a given site.

The answer to the question of why the species had not been recorded in Sergipe in recent decades is probably a simple one—a combination of the lack of specific surveys and the cryptic habits of the animal. With the exception of general observations of terrestrial mammals in the Serra de Itabaiana National Park (Oliveira *et al.*, 2006), most recent fieldwork in the state has been directed specifically at the primate fauna (Sousa, 2003; Jerusalinsky *et al.*, 2006; Santos Júnior, 2007; Chagas, 2008). The fact that the observations recorded here were an indirect result of the latter fieldwork might be indicative of the possible relative abundance of *B. torquatus* in this region.

Good knowledge of a species' geographic distribution is key to the reliable assessment of its conservation status (IUCN, 2008) and the planning of conservation strategies (Primack and Rodrigues, 2001). The records presented here not only extend the known range of *B. torquatus* northwards by a number of hundred kilometers, but also suggest that it may still be present in at least some of the Atlantic Forest fragments that remain in the intervening area in Bahia and Sergipe. It is also possible that the species may still range as far north as the São Francisco River, although there is less forest cover and fewer fragments in Sergipe further north and east of Fazenda Trapsa (Jerusalinsky *et al.*, 2006).

Overall, the main hindrance to the identification of *B. torquatus* populations, such as those reported here, may simply have been the lack of expectations based on the available literature (e.g. Eisenberg and Redford, 2000; Prado, 2001; Fonseca and Aguiar,

2004; Chiarello, 2008). In the light of the evidence presented here, it is clear that such expectations need to be revised, and it would seem recommendable to include the identification of sites at which *B. torquatus* may occur in the aims of any survey conducted within the Northern Atlantic Forest. The species could easily be included in the standardized interviews used to survey primate populations (Jerusalinsky *et al.*, 2006) or even in the objectives of ecological studies.

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References

- Aguiar, J. M. and Fonseca, G. A. B. da. 2008. Conservation status of the Xenarthra. In: *The Biology of the Xenarthra*, W. J. Loughry and S. F. Vizcaino (eds.), pp. 215–231. University of Florida Press, Gainesville.
- Chagas, R. R. D. 2008. *Levantamento das populações de Callicebus coimbrai Kobayashi & Langguth, 1999 em fragmentos de Mata Atlântica no sul do estado de Sergipe, Brasil*. MSc. Dissertation, Universidade Federal de Sergipe, São Cristóvão, Brazil.
- Chiarello, A. G. 1998a. Activity budgets and ranging patterns of the Atlantic forest maned sloth *Bradypus torquatus* (Xenarthra: Bradypodidae). *J. Zool.* 246: 1–10.
- Chiarello, A. G. 1998b. Diet of the Atlantic forest maned sloth *Bradypus torquatus* (Xenarthra: Bradypodidae). *J. Zool.* 246: 11–19
- Chiarello, A. G. 2008. Sloth ecology: an overview of field studies. In: *The Biology of the Xenarthra*, W. J. Loughry and S. F. Vizcaino (eds.), pp. 638–671. University of Florida Press, Gainesville.
- Dean, W. 1995. *With Broadax and Firebrand: The Destruction of the Brazilian Atlantic Forest*. University of California Press, Berkeley.
- Eisenberg, J. F. and Redford, K. H. 2000. *Mammals of the Neotropics, Volume 3: The Central Neotropics: Ecuador, Peru, Bolivia, Brazil*. The University of Chicago Press, Chicago.
- Fonseca, G. A. B. da and Aguiar, J. M. 2004. The 2004 Edentate Species Assessment Workshop. *Edentata* 6: 1–26.
- IUCN 2008. *2008 IUCN Red List of Threatened Species*. <www.iucnredlist.org>.
- Jerusalinsky, L., Oliveira, M. M., Pereira, R. F., Santana, V., Bastos, P. C. and Ferrari, S. F. 2006. Preliminary evaluation of the conservation status of *Callicebus coimbrai* Kobayashi & Langguth, 1999 in the Brazilian state of Sergipe. *Primate Conserv.* 21: 25–32.
- Lara-Ruiz, P. and Chiarello, A. G. 2005. Life-history traits and sexual dimorphism of the Atlantic Forest maned sloth *Bradypus torquatus* (Xenarthra: Bradypodidae). *J. Zool.* 267: 63–73.
- Lara-Ruiz, P., Chiarello, A. and Santos, F. R. 2008. Extreme population divergence and conservation implications for the rare endangered Atlantic Forest sloth, *Bradypus torquatus* (Pilosa: Bradypodidae). *Biol. Conserv.* 141: 1332–1342.
- Oliveira, F. F., Ferrari, S. F. and Silva, S. D. B. 2006. Mamíferos não-voadores. In: *Parque Nacional Serra de Itabaiana Levantamento da Biotá, C. M. Carvalho and J. C. Vilar (eds.)*, pp. 77–91. IBAMA/UFS, Aracaju.
- Pinder, L. 1993. Body measurements, karyotype, and birth frequencies of maned sloth (*Bradypus torquatus*). *Mammalia* 57: 43–48.
- Prado, P. I. 2001. *Corredor Central da Mata Atlântica*. CD-ROM. Instituto de Pesquisas Sócio-Ambientais do Sul da Bahia, Ilhéus, BA.
- Primack, R. and Rodrigues, E. 2001. *Biologia da Conservação*. Midiograf, Londrina.

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- Santos Júnior, E. M. 2007. *Observações preliminares sobre a ecologia comportamental do Callicebus coimbrai na Mata Atlântica de Sergipe*. Undergraduate monograph, Universidade Federal de Sergipe, São Cristóvão, Brazil.
- Siqueira, E. R. and Ribeiro, F. E. 2001. *A Mata Atlântica de Sergipe*. Embrapa Tabuleiros Costeiros, Aracaju.
- Sousa, M. C. 2003. Distribuição do guigó (*Callicebus coimbrai*) no Estado de Sergipe. *Neotrop. Primates* 11: 89–91.