BioOne COMPLETE

# Bird Predation by an Endangered Primate Species, Callicebus Coimbrai, in the Brazilian Atlantic Forest

Authors: Vinhas, Luana, and Souza-Alves, João Pedro

Source: Neotropical Primates, 21(2) : 195-198

Published By: Conservation International

URL: https://doi.org/10.1896/044.021.0207

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Neotropical-Primates on 30 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

# BIRD PREDATION BY AN ENDANGERED PRIMATE SPECIES, CALLICEBUS COIMBRAI, IN THE BRAZILIAN ATLANTIC FOREST

*Luana Vinhas*
*João Pedro Souza-Alves*

The world faces a significant environmental crisis, in which continuous natural environments are being reduced to disturbed fragments (Ladle and Whittaker, 2011). Some species can take advantage of this process, but the majority of biodiversity is threatened by human activities (IUCN, 2012). Ecological plasticity is regarded as a characteristic that favors species' survival when habitat becomes degraded (McKinney, 1997). Most primates have generalist diets and show some behavioral plasticity (Garber, 1987); however, current knowledge is concentrated on some well studied species, while there is a lack of information for other primates.

Titi monkeys (*Callicebus* spp.) are regarded as primarily frugivorous primates that complement their diets with invertebrate prey and other plant parts, such as leaves, seeds and flowers (Bicca-Marques and Heymann, 2013; DeLuycker, 2012; Heymann and Nadjafzadeh, 2013). These primates tolerate disturbed habitat (Heiduck, 2002; Jerusalinsky *et al.*, 2006; Souza-Alves et al. 2011a) and it has been suggested already that titi monkeys might show some dietary plasticity. For example, Santos *et al*. (2012) report that *C. nigrifrons* can take advantage of temporarily available items, such as synchronous production of seed bamboo (=masting bamboos). Neri (1997) describes a male *C. personatus* driving a dove away from its nest and allowing the female to eat its egg. Souza-Alves *et al*. (2011b) verified a high consumption of insects (i. e., caterpillars) during the dry season by *C. coimbrai*. However, up to now, there are no reports of titis preying on vertebrates.

Here, we report bird predation by one subadult *C. coimbrai* in a large fragment of Atlantic forest in the northeastern Brazil. The observation appears to be the first record of predation of birds by *C. coimbrai* and by titis in general. The events occurred in the largest fragment of the Mata

Downloaded From: https://bioone.org/journals/Neotropical-Primates on 30 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

do Junco Wildlife Refuge - MJWR (10º32'S, 37°03'W), which encompasses 522 ha of Atlantic Forest in the municipality of Capela, state of Sergipe, in northeastern Brazil. Systematic monitoring of the *C. coimbrai* study group has occurred since 2011 until the present time (Chagas *et al.*, 2013). Between January and March 2014 – when the event was recorded – quantitative behavioral data were collected in scan samples at 5-min intervals. In March 2014, when the events were observed, the study group was composed of a breeding pair, one subadult/adult, two juveniles and one infant.

## Results

On March 5th 2014, at approximately 14:50 h, one subadult *Callicebus coimbrai* was observed preying on a nestling Pale-breasted Thrush *(Turdus leucomelas,* Turdidae). The nest was among the branches and foliage at 3 m of height and fixed on a branch of a *Guapira opposita* tree. The titi monkey grabbed its prey with the right hand and started eating it 1 m away from the nest. Two other individuals of *T. leucomelas* - probably the nestling parents - were observed vocalizing intensely nearby. Afterwards, one of the birds tried unsuccessfully to drive the titi away from its nest by attacking the titi's head. The birds continued vocalizing near the nest for approximately four minutes. The titi monkey seemed distressed with the approach of one MJWR employee and moved away from the area after dropping the rest of the nestling body to the ground (Fig. 1).

One day later, at approximately 10:30 h, the same individual was observed preying on another *T. leucomelas* nestling in the same nest. Once again, the titi held its prey with the right hand and ate it at the exact same place. The consumption of the prey lasted for approximately six minutes; meanwhile two *T. leucomelas* individuals flew around and vocalized some 8 m away, without approaching the titi. After eating the nestling, the titi moved away from the area together with other group members. Curiously, one adult male of the same *C. coimbrai* group was observed destroying abandoned nests on two occasions at Mata do Junco and during the monitoring in March 2014, the same individual of the records above was observed preying on eggs in the nest of an unidentified bird species.

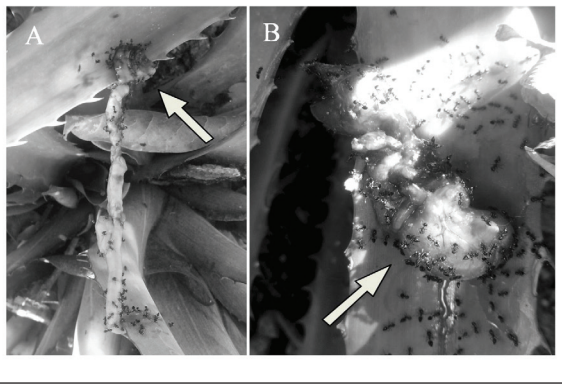


**Figure 1.** Photograph of the remains of two individuals of *Turdus leucomelas* preyed by *Callicebus coimbrai* at the Mata do Junco Wildlife Refuge.

## Discussion

The predation of birds by primate species has been recorded widely in the literature. Marmosets (*Callithrix* spp.) were observed preying on bird eggs and nestlings of at least 15 species, including *T. leucomelas* (Mendes Pontes and Soares, 2005; Lyra-Neves *et al.*, 2007; Begoti and Landsemann, 2008; Gomes and Lima-Gomes, 2011; Alexandrino *et al.*, 2012). In addition, capuchins (*Sapajus* spp.) were also observed preying on *Harpiprion caerulescens* and *Ictinia plumbea* (Olmos, 1990) and specifically *S. apella* was observed in 24 predation events (Ferreira *et al.*, 2002). Woolly monkeys captive (*Lagothrix lagotricha*) has been recorded preying birds in 15 events (Stearns *et al.*, 1988). Estrada and Estrada (1977) have recorded bird predation by stumptail macaques (*Macaca arctoides*) and, also chimpanzees (*Pan troglodytes schweinfurthii*) preyed 15 birds species or their eggs at Mahale Mountains, Tanzania (Nishida and Uehara 1983). Other birds, such as hawks, kites, toucans, and jays; arboreal snakes; and mammals, such as coatis, opossums, and primates are among the potential predators of bird eggs and nestlings in forest fragments (Morre and Robinson, 2004).

In the literature, titi monkeys have been commonly regarded as prey of other vertebrates. For example, there are records of predation of *Callicebus* spp. by crested eagles (*Morphnus guianensis*, Terborgh, 1983), capuchin monkeys (*Sapajus apella*, Sampaio and Ferrari, 2005; *Cebus* spp., Lawrence, 2003), ocelot (*Leopardus pardalis*, Bianchi, 2001; Bianchi and Mendes, 2007), *Boa constrictor* (Cisneros-Heredia *et al.*, 2005), margay (*Leopardus wiedii*, Defler, 2004) and harpy eagles (*Harpy harpyja*, de Luna *et al.*, 2010). Nest predation can negatively impact bird richness and diversity (Argel de Oliveira, 1995); however, given its rarity, predation of birds by titis seems likely to have little effect on bird populations.

The study group have a diet based mainly on fruits and vegetative plant parts (Chagas *et al.*, 2013), which is typical for the genus (Bicca-Marques and Heymann, 2013). However, there are two possible explanations for the absence of other reports of bird predation by titis. First, other titi groups may also prey opportunistically on birds, but this may not have been observed by other researchers given the rarity of these events. Secondly, bird predation may be a response of the study group to habitat degradation. Both potential explanations highlight the possible plasticity and opportunism of titi monkeys, and help our understanding of the persistence of these monkeys in highly degraded landscapes, such as the Atlantic Forest of Northeastern Brazil.

Downloaded From: https://bioone.org/journals/Neotropical-Primates on 30 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

## Acknowledgments

JPS-A is grateful to CNPq for a Postdoctoral Fellowship (Process no. 163414/2013-0). The Sergipe State Environment Secretariat (SEMARH) provided additional logistic support. We also thank Marcelo José and Marcelo Silva, for their assistance during fieldwork. We are also grateful to Renato Hilário, Stuart Semple and Jessica Lynch Alfaro for valuable suggestions on early drafts of the manuscript.

**Luana Vinhas**, Universidade Católica do Salvador. Av. Profº. Pinto de Aguiar, nº 2589, Pituaçu, CEP 41740-090, Salvador, Bahia, Brazil, and **João Pedro Souza-Alves**, Universidade Federal de Sergipe, Departamento de Ecologia, Cidade Universitária Prof. José Aloísio de Campos, Av. Marechal Rondon, s/n Jardim Rosa Elze, CEP 49100-000. São Cristóvão, Sergipe, Brazil. E-mail: < souzaalves1982@gmail.com>.

## References

Alexandrino, E. R., Luz, D. T. A., Maggiorini, E. V. & Ferraz, K. M. P. M. B. 2012. Nest stolen: the first observation of nest predation by an invasive exotic marmoset (*Callithrix penicillata*) in an agricultural mosaic. *Biota Neotrop*.12: 211–215

Argel-de-Oliveira, M. M. 1995. Aves e vegetação em um bairro residencial da cidade de São Paulo (São Paulo, Brasil). *Rev. Brasil. Zool.* 12(1): 81– 92.

Begotti, R. A. and Landesmann, L. F. 2008. Predação de ninhos por um grupo híbrido de Saguis (*Callithrix jacchus/penicillata*) introduzidos em área urbana: implicações para a estrutura da comunidade. *Neotrop. Primates.* 15: 28–29

Bianchi, R. C. 2001. Estudo comparativo da dieta da jaguatirica, *Leopardus pardalis* (Linnaeus, 1758), em Mata Atlântica. Dissertação de Mestrado, Universidade Federal do Espírito Santo, Vitória.

Bianchi, R. D. C. and Mendes, S. L. 2007. Ocelot *(Leopardus pardalis)* predation on primates in Caratinga Biological Station, Southeast Brazil. *Am. J. Primatol.* 69: 1173–1178.

Bicca-Marques, J. C. and Heymann, E.W. 2013. Ecology and Behaviour of titi monkey (genus *Callicebus*). In: *Evolutionary Biology and Conservation of Titis, Sakis, and Uacaris*, A. A. Barnett, L. M. Veiga, S. F. Ferrari, and M. A. Norconk (eds.), pp.196–207. Cambridge University Press.

Chagas, R. R. D., Santana, M. M., Souza-Alves, J. P. and Ferrari, S. F. 2013. Seasonal variation in the diet of *Callicebus coimbrai* (Platyrrhini: Pitheciidae) in the Mata do Junco Wildlife Refuge, northeastern Brazil. In: Anais do II Congresso Latino Americano e XV Congresso Brasileiro de Primatologia, Recife, Pernambuco, Brasil.

Cisneros-Heredia, D., Leon-Reyes, A. and Seger S. 2005. *Boa constrictor* predation on a titi monkey, *Callicebus discolor*. *Neotrop. Primates.* 13:11–12.

Defler, T. 2004. *Primates de Colombia* . Bogotá, Conservación International.

De Luna, A. G., Sanmiguel, R., Di Fiori, A. and Duque E. F. 2010. Predation and predation attempts on red titi monkeys (*Callicebus discolor*) and equatorial sakis (*Pithecia aequatorialis*) in Amazonian Ecuador. *Folia Primatol.* 81: 86–95.

DeLuycker, A. M. 2012. Insect prey foraging strategies in *Callicebus oenanthe* in Northern Peru. *Am. J. Primatol.* 74: 450–461.

Estrada, A. and Estrada, R. 1977. Pattern of predation in a free-ranging troop of stumptail macaques (*Macaca arctoides*): Relations to the Ecology II. *Primates*, 18:633–646.

Ferreira, R., Resende, B. D., Mannu, M., Ottoni, E. B. and Izar, P. 2002. Bird predation and prey-transfer in brown capuchin monkeys (*Cebus apella*). *Neotrop. Primates*. 10:84–89.

Garber, P. A. 1987. Foraging strategies among living primates. *Ann. Rev. Anthropol*. 16: 339–364.

Gomes, F. B. R. and Lima-Gomes, R. C. 2011. Registro ocasional da predação da pomba-de-bando (*Zenaida auriculata* des Murs, 1847) pelo sagüi-do-cerrado (*Callithrix penicillata* é. Geoffroy, 1812) no interior de São Paulo,SP. *Neotrop. Primates*. 18: 68–70.

Heiduck, S. 2002. The use of disturbed and undisturbed forest by marked titi monkey *Callicebus personatus melanochir* is proportional to food availability. *Oryx*, 36:133–139.

Heymann, E. W. and Nadjafzadeh, M. 2013. Insectivory and prey foraging in titi monkeys - a case study of *Callicebus cupreus* and a comparison to other pitheciids. In: *Evolutionary Biology and Conservation of Titis, Sakis and Uacaris*. A. A. Barnett, L. M. Veiga, S. F. Ferrari, and M. A. Norconk (eds.), pp.215–224. Cambridge University Press.

IUCN. 2012. Highlights of the 2012 IUCN World Conservation Congress.

Jerusalinsky, L., Oliveira, M. M., Pereira, R. F., Santana, V., Bastos, P. C. R. and Ferrari, S. F. 2006. Preliminary evaluation of the conservation status of *Callicebus coimbrai* (Kobayashi &Langguth, 1999) in the Brazilian state of Sergipe. *Primate Conservation*. 21: 25–32.

Ladle, R. J. and Whittaker, R. J. 2011. Conservation biogeography. Wiley-Blackwell, Oxford.

Lawrence, J. 2003. Preliminary report on the natural history of brown titi monkeys (*Callicebus brunneus*) at Los Amigos Research Station, Madre de Dios, Peru. *Am. J. Phys. Anthropol.* Supplement 36: 136.

Lyra-Neves, R. M., Oliveira, M. A., Telino-Júnior, W. R., and Santos, E. M. 2007. Comportamentos interespecíficos entre *Callithrix jacchus* (Linnaeus) (Primates, Callitrichidae) e algumas aves de Mata Atlântica, Pernambuco, Brasil. *Rev. Brasil. Zool.* 24 (3): 709–716.

McKinney, M. L. 1997. Extinction vulnerability and selectivity: combining ecological and paleontological views. *An. Rev. Ecol. Syst.* 28.1: 495–516.

Mendes Pontes, A. R. and Soares, M. L. 2005. Sleeping sites of common marmosets (*Callithrix jacchus*) in

Downloaded From: https://bioone.org/journals/Neotropical-Primates on 30 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

defaunated urban forest fragments: a strategy to maximize food intake. *J. Zool.* 266: 55–63.

Morre, R. P. and Robinson, D. 2004. Artificial bird nests, external validity, and bias in ecological field studies. *Ecology*, 85: 1562–1567.

Neri, F. M. 1997. Manejo de *Callicebus personatus*, Geoffroy 1812, resgatados: Uma tentativa de reintrodução e estudos ecológicos de um grupo silvestre na Reserva do Patrimônio Natural Galheiro - Minas Gerais. Dissertação de Mestrado, Universidade Federal de Minas Gerais.

Nishida, T. and Uehara, S. Natural diet of chimpanzés (*Pan troglodityss schweinfurthii*): Long-term record from the Mahale Mountains, Tanzania. *Afr. Studies* 3:109–130.

Sampaio, D. T. and Ferrari, S. F. 2005. Predation of an infant titi monkey (*Callicebus moloch*) by a tufted capuchin (*Cebus apella*). *Folia Primatol.* 76(2): 113–155.

Santos, G. P., Galvão, C. and Young, R. J. 2012. The diet of wild black-fronted titi monkeys *Callicebus nigrifrons* during a bamboo masting year. *Primates.* 53: 265–272.

Souza-Alves, J. P., Fontes, I. P. and Ferrari, S. F. 2011a. Use of sleeping sites by a titi monkey group (*Callicebus coimbrai*) in the Brazilian Atlantic Forest. *Primates* 52: 155–161.

Souza-Alves, J. P., Fontes, I. P., Chagas, R. R. and Ferrari, S. F. 2011b. Seasonal versatility in the feeding ecology of a group of titis (*Callicebus coimbrai*) in the northern Brazilian Atlantic Forest. *Am. J. Primatol.* 73: 1199–1209.

Stearns, M. J., White, B. C., Schneider, E. and Bean, E. 1998. Bird predation by captive woolly monkeys (*Lagothrix lagotricha*). *Primates* 29:361–367.

Terborgh, J. 1983. *Five New World Primates.* Princeton, NJ, Princeton University Press.

Olmos, F. 1990. Nest predation of plumbeous ibis by capuchin monkeys and greater black hawk. *Wilson Bulletin* 102(1): 169–170.

Downloaded From: https://bioone.org/journals/Neotropical-Primates on 30 Apr 2024
Terms of Use: https://bioone.org/terms-of-use