

New record of anuran predation by *Trachops cirrhosus* (Mammalia, Chiroptera, Phyllostomidae) in a varzea forest in the estuary of the Amazon River, Eastern Amazon

Isaí Jorge Castro^{1*} e Carlos Eduardo Costa-Campos²

1. *Biólogo e Doutor em Biodiversidade Tropical (Universidade Federal do Amapá). Pesquisador do Instituto de Pesquisas Científicas e Tecnológicas do Amapá, Brasil.*

2. *Biólogo (Universidade Potiguar). Doutor em Psicobiologia (Universidade Federal do Rio Grande do Norte). Professor da Universidade Federal do Amapá.*

*Autor para correspondência: isaí.j.castro@gmail.com

ABSTRACT

We report here an observation of predation of the *Trachops cirrhosus* on the hylid frog *Osteocephalus oophagus* in a várzea forest in the estuary of the Amazon River. This is the second record of predation reported for *O. oophagus* by *T. cirrhosus* supporting the hypothesis that anurans are commonly recorded in the species diet.

Keywords: Predation; anuran; foraging.

Novo registro de predação de anuros por *Trachops cirrhosus* (Mammalia, Chiroptera, Phyllostomidae) em uma floresta de várzea no estuário do rio Amazonas, Amazônia Oriental

RESUMO

Relatamos aqui uma observação de predação de um hílideo *Osteocephalus oophagus* por *Trachops cirrhosus* em uma floresta de várzea no estuário do rio Amazonas. Este é o segundo registro de predação relatado para *O. oophagus* por *T. cirrhosus* apoiando a hipótese de que os anuros são comumente registrados na dieta desta espécie.

Palavras-chave: Predação, anuro, forrageamento.

Amphibians are a common food resource for a wide variety of invertebrates (FACURE; GIARETTA, 2009), beetles (WIZEN; GASITH, 2011), water insects (TOLEDO, 2003), spiders (MOURA; AZEVEDO, 2011), mantis (COSTA-PEREIRA et al., 2010; CAMPOS; SOUSA, 2014) and crabs (GUTSCHE; ELEPFANDT, 2007), as well as vertebrates, such as fishes, anurans, reptiles, birds and mammals (TOLEDO, 2005; TOLEDO et al., 2007; WELLS, 2007; SOUSA et al., 2016).

Osteocephalus oophagus is a medium-sized arboreal and nocturnal hylid frog, and occurs in continuous forest, distributed in the Amazonian regions of Brazil and Colombia, French Guiana, Surinam and presumably to be found in Amazonian Venezuela and the remainder of the Guianas (FROST, 2016). The males mainly call at night from perches and egg clutches are deposited in small bodies of water formed in epiphytes, terrestrial bromeliads, and holes in trees (LIMA et al., 2008).

The fringe-lipped bat (*Trachops cirrhosus*) is a medium-sized bat found from southern México to south Brazil (WILLIAMS; GENOWAYS, 2007). Often called “the frog eating bat”, their diet includes insects and small vertebrates, such as frogs (ROCHA et al., 2012), lizards (BONATO et al., 2004), birds (RODRIGUES et al., 2004) and small mammals (FERRER et al., 1999; BONATO et al., 2004), as well as fruits and seeds (HUMPHREY et al., 1983). *Trachops cirrhosus*, there are probably several steps at which prey quality can be assessed and toxic prey rejected: the first is the use of prey-emitted acoustic cues, the mating calls produced by male frogs, accessing prey palatability based on these acoustic cues (RYAN; TUTTLE, 1983); next, *T. cirrhosus* can use echolocation

and/or vision to assess prey size and shape (BARCLAY et al., 1981).

Here, we report a predation event of *T. cirrhosus* upon *O. oophagus*, in a varzea forest in the estuary of the Amazon River, located in the municipality of Mazagão, southeastern Amapá state, northern Brazil (0.447896°S, 51.462235°W; WGS 84). The forests of the estuary of the Amazon River have a peculiarity: due to the closeness to the Atlantic Ocean, water level peaks are regulated by the tides, and the forests are flooded twice a day (LIMA et al., 2001). The climate of the region is Am climate according to the classification Köppen and the average temperature is 27.6 °C, varying seasonally between 25.8 to 29.0 °C, with annual rainfall around 2,850 mm with monsoon period between February and May, when the monthly rainfall is around 400 mm (ALVARES et al., 2014).

During an inventory of the bat species in Maracá river a tributary of Amazon River, we selected six sampling sites, with a minimum distance of 1 km among them. Bats were captured with mist nets (3 × 12 m, 14 mm mesh) set up along a 150 m linear transect in each sampling site between November and December 2013. In each sampling night, we set up 10 nets, which were opened at sunset, checked at intervals of 20-30 min, and closed after six hours of exposure.

At 19:00 h on 11 December 2013 an adult male *T. cirrhosus* (forearm length 59.3 mm; body mass of 33 g) was captured in an understory mist-nest carrying a dead frog. The frog had bites in its lateral region, close to the posterior limb; it was collected and identified as an adult *O. oophagus* (Figure 1).



Figure 1. A adult male of fringe-lipped bat, *Trachops cirrhosus*, and an *Osteocephalus oophagus* dead, captured in a mist-net during bat sampling in varzea forest in an estuary of the Amazon River, Amapá, Northern Brazil. / **Figura 1.** Um macho adulto de *Trachops cirrhosus* e um *Osteocephalus oophagus* morto, capturado em uma rede de neblina durante a amostragem na floresta de várzea em um estuário do rio Amazonas, Amapá, norte do Brasil.

Predation events of anurans by *T. cirrhosus* is few documented (AMÉZQUITA; HÖDL, 2004; ROCHA et al., 2012; ROCHA et al., 2016). This is the second record of predation reported for *O. oophagus* by *T. cirrhosus* supporting the hypothesis that anurans appear to be the most common species in food items (ROCHA et al., 2016). Despite *T. cirrhosus* be one of the most abundant bat species of the Eastern Amazon, knowledge of its feeding habits is extremely scarce and recorded.

Literature Cited

- ALVARES, C. A.; STAPE, J. L.; SENTELHAS, P. C.; GONÇALVES, J. L. M.; SPAROVEK, G. Köppen's climate classification map for Brazil. *Meteorologische Zeitschrift*, v. 22, n. 6, p. 711-728, 2014.
- AMÉZQUITA, A.; HÖDL, W. How, when, and where to perform visual displays: the case of the Amazonian frog *Hyla parviceps*. *Herpetologica*, v. 60, p. 420-429, 2004.
- BARCLAY, R. M. R.; FENTON, M. B.; TUTTLE, M. D.; RYAN, M. J. Echolocation calls produced by *Trachops cirrhosus* (Chiroptera: Phyllostomatidae) while hunting for frogs. *Canadian Journal of Zoology*, v. 59, p. 750-753, 1981.
- FERRER, A. P.; LEW, D.; LASSO, C. A. A. Nota sobre depredación por *Trachops cirrhosus* Spix, 1823 (Chiroptera, Phyllostomidae) en Venezuela. *Memoria, Sociedad de Ciencias Naturales La Salle*, v. LVIII, n. 149, p. 145-148, 1999.
- BONATO, V.; FACURE, K. G.; UIEDA, W. Food habits of bats of subfamily Vampyrinae in Brazil. *Journal of Mammalogy*, v. 85, p. 708-713, 2004.
- COSTA-CAMPOS, C. E.; SOUSA, J. C. *Trachycephalus typhonius* (Common Milk Frog). Predation. *Herpetological Review*, v. 45, p. 307, 2014.
- COSTA-PEREIRA, R.; MARTINS, F. I.; SCZESNY-MORAES, E. A.; BRESOVIT, A. Predation on young treefrog (*Osteocephalus taurinus*) by arthropods (Insecta, Mantodea and Arachnida, Araneae) in Central Brazil. *Biota Neotropica*, v. 10, n. 3, p. 469-472, 2010
- FACURE, K. G.; GIARETTA, A. A. Semi-terrestrial tadpoles as a vertebrate prey of trap-jaw ants (*Odontomachus*, Formicidae). *Herpetology Notes*, v. 2, p. 63-66, 2009.
- FROST, D. R. 2016. Amphibian Species of the World: an Online Reference. Version 6.0. Disponível em <http://research.amnh.org/herpetology/amphibia/index.html> (Acessada em 02/01/2016).
- GUTSCHE, A.; ELEPFANDT, A. *Xenopus laevis* (African clawed frog). Predation. *Herpetological Review*, v. 38, p. 198-199, 2007.
- HUMPHEY, S. R.; BONACCORSO, F. J.; ZINN, T. L. Guild structure of surface-

- gleaning bats in Panamá. *Ecology*, v. 64, p. 284-294, 1983.
- LIMA, R. R.; TOURINHO, M. M.; COSTA, J. P. C. *Várzeas Flúvio-Marinhas da Amazônia Brasileira: Características e possibilidades agropecuárias*. 2ª. Belém: FCAP, 2001. 342 p.
- LIMA, A. P.; MAGNUSSON, W. E.; MENIN, M.; ERDTMANN, L. K.; RODRIGUES, D. J.; KELLER, C.; HÖDL, W. *Guia de Sapos da Reserva Adolpho Ducke: Amazônia Central*. Manaus: Attema Design Editorial Ltda, 2008.
- MOURA, M. R.; AZEVEDO, L. P. Observation of predation of the giant fishing spider *Ancylometes rufus* (Walckenaer, 1837) (Araneae, Ctenidae) on *Dendropsophus melanargyreus* Cope, 1877 (Anura, Hylidae). *Biota Neotropica*, v. 11, p. 349-351, 2011.
- ROCHA, R.; GORDO, M.; LÓPEZ-BAUCELL, A. Completing the menu: addition of *Scinax Cruentommu* and *Scinax cf. garbei* (Anura: Hylidae) to the diet of *Trachops cirrhosus* (Chiroptera: Phyllostomidae) in Central Amazon. *North-Western Journal of Zoology*, v. 12, p. 199-204, 2016.
- ROCHA, R.; SILVA, I., dos REIS, A. M.; ROSA, G. M. Another frog on the menu: predation of *Trachops cirrhosus* (Chiroptera: Phyllostomidae) upon *Osteocephalus oophagus* (Anura: Hylidae). *Chiroptera Neotropical*, v. 18, p. 1136-1138, 2012.
- RODRIGUES, F. H. G.; REIS, M. L.; BRAZ, V. S. Food habits of the frog-eating bat, *Trachops cirrhosus*, in Atlantic Forest of Northeastern Brazil. *Chiroptera Neotropical*, v. 10, p. 180-182, 2004.
- RYAN, M. J.; TUTTLE, M. D. The ability of the frog-eating bat to discriminate among novel and potentially poisonous frog species using acoustic cues. *Animal Behaviour*, v. 31, p. 827-833, 1983
- SOUSA, J. C., BAÍA, R. R. J.; COSTA-CAMPOS, C. E. *Rhinella major* (Anura: Bufonidae) and *Leptodactylus macrosternum* (Anura: Leptodactylidae): predation and cannibalism by *Leptodactylus macrosternum*. *Cuadernos de Herpetología*, v. 30, p. 25-27, 2016.
- TOLEDO, L. F. Predation on seven South American anuran species by water bugs (Belostomatidae). *Phyllomedusa*, v. 2, p. 105-108, 2003.
- TOLEDO, L. F. Predation of juvenile and adult anurans by invertebrates: current knowledge and perspectives. *Herpetological Review*, v. 36, p. 395-400, 2005.
- TOLEDO, L. F.; RIBEIRO, R. S.; HADDAD, C. F. B. Anurans as prey: an exploratory analysis and size relationships between predators and their prey. *Journal of Zoology*, v. 271, p. 170-177, 2007.
- WELLS, K. D. *The Ecology and Behavior of Amphibians*. Chicago: The University of Chicago Press, 2007.
- WILLIAMS, S. L.; GENOWAYS, H. H. Subfamily Phyllostominae. In: Gardner A. L. (Ed.). *Mammals of South America*. Chicago: The University of Chicago Press, 2007. p. 255-299.
- WIZEN, G.; GASITH, A. Predation of amphibians by carabid beetles of the genus *Epomis* found in the central coastal plain of Israel. *ZooKeys*, v. 100, p. 181-191, 2011.