

Short Communication

Leptodactylus chaquensis (Anura, Leptodactylidae) as a predator of *Pseudis platensis* (Anura, Hylidae) in southern Brazil

Fabício Hiroiuki Oda^{1,2*}, Priscilla Guedes Gambale³ & Vinicius Guerra Batista³

1- Universidade Estadual de Maringá (UEM), Núcleo de Pesquisas em Limnologia, Ictiologia e Aqüicultura (Nupélia), Laboratório de Ictioparasitologia, Maringá, PR, Brazil.

2- Bolsista Pós-Doutorado Júnior (PDJ/CNPq).

3- Universidade Estadual de Maringá (UEM), Programa de Pós-Graduação em Ecologia de Ambientes Aquáticos Continentais (PEA). Maringá, PR, Brazil.

*Corresponding author: fabricio_oda@hotmail.com

Abstract

Frogs from the Family Leptodactylidae are among the most important opportunistic feeders on other anuran species. Here we report a case of predation of *Pseudis platensis* by the Ceí's white-lipped frog *Leptodactylus chaquensis* in breeding habitat from agricultural landscape, southern Brazil.

Keywords: aquatic frog, breeding season, opportunistic predation, prey, terrestrial frog.

Large and medium-sized anuran species are carnivorous, generalists and opportunistic feeders that consume various prey items including their own or other species of amphibians (Wells 2007, Santos & Vaz-Silva 2012). Among the Anura some of the most important opportunistic feeders are species from the Family Leptodactylidae (Toledo et al. 2007).

Belonging to the *L. latrans* group, *Leptodactylus chaquensis* Ceí, 1950, is a medium-sized, terrestrial and nocturnal frog distributed in northern Argentina, Chaco and western oriental region of Paraguay, northern Uruguay, lowland Bolivia, and Brazil (de Sá et al. 2014, Frost 2014). In Brazil, *L. chaquensis* has been reported from Acre, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Rondônia, Paraná, Rio Grande do Sul, and São Paulo states (Oda et al. 2014). This species is well adapted to anthropogenic disturbance (Heyer et al. 2004), and is found in permanent and

temporary aquatic habitats of open areas (Uetanabaro et al. 2008, Oda et al. 2014).

Species of *Pseudis* are small and medium-sized aquatic frogs distributed from Guianas, northeastern Venezuela, Trinidad, central to southern Brazil, Paraguay, southeastern Peru, eastern Bolivia, northeastern Argentina, and Uruguay (Frost 2014). This genus currently includes seven valid species (Frost 2014, Segalla et al. 2014), among which *Pseudis paradoxa* (Linnaeus, 1758) and *Pseudis platensis* Gallardo, 1961, occurs in Paraná state, Brazil (Toledo & Batista 2012).

On 23 October 2014 at 9:20 pm, in a permanent pond within sugar cane plantation in the municipality of Diamante do Norte, Paraná state, southern Brazil (-22.623889, -52.886389, 352 m a.s.l.), we observed an adult male *Leptodactylus chaquensis* preying upon an adult *Pseudis platensis*. The male *L. chaquensis* was holding the hind limbs of the aquatic frog,

while it inflated its body as an antipredatory mechanism (Fig. 1). After ten minutes we collected the individual of *L. chaquensis* with the aquatic frog in its mouth, which were placed into a plastic bag. Then, the predator remained with its prey for a few minutes before release it

dead. The predation event was recorded using digital camera. Both frog species are housed at the Zoological Collection of the Universidade Federal de Goiás (*L. chaquensis*: ZUFG 8704; *P. platensis*: ZUFG 8703).



Figure 1. An adult male Ceí's white-lipped frog *Leptodactylus chaquensis* holding an individual *Pseudis platensis* by its hind limbs in a permanent pond within sugar cane plantation in the municipality of Diamante do Norte, Paraná state, southern Brazil (Photo: F.H. Oda).

In general, some anurans species are abundant in water bodies during the breeding season. Males and females of *L. chaquensis* can be found at the edge of water bodies during the rainy season, where the males call on the exposed soil or amidst the short grass-like plants (Heyer & Giaretta 2009). In the study site, males of *P. platensis* were observed in a large chorus with more than 50 individuals

calling on the water surface around the margin of the pond. Furthermore, we observed three individuals of *L. chaquensis* exhibiting “sit-and-wait” strategy near males of *P. platensis* calling in the margin of the pond.

The predatory activity of *Leptodactylus* species upon other anuran species is well documented. In a literature review on vertebrate predators of anurans Toledo et al.

(2007) reported ten cases of predation by *Leptodactylus* species. Recently, Santos & Vaz-Silva (2012) reported the predation of *Physalaemus albonotatus* by *Leptodactylus mystacinus*. Baracho et al. (2013) reported the predation of *Hypsiboas albomarginatus* by *Leptodactylus macrosternum* and Bovo et al. (2014) reported the predation of *Rhinella ornata* by *Leptodactylus latrans*. Therefore, predation on small-sized frogs such as *Pseudis platensis* may be more common than recorded in the literature (Toledo et al. 2007).

The diet of *Leptodactylus chaquensis* presents a wide variety of items, composed mainly of arthropods, such as insects, arachnids, myriapods and crustaceans (Dure 1999, Schaefer et al. 2006, Piatti & Souza 2011). Although fish and anurans (species not identified) have also been reported as prey of *L. chaquensis* (Dure 1999, Piatti & Souza 2011), this is the first record of a *P. platensis* in its diet.

Acknowledgements

We are grateful to Natan M. Maciel for the identification of the anuran species, and to Valdir L. da Silva for field assistance. Mariana F. Felismino reviewed the English language. The Estação Ecológica do Caiuá and Nupélia provided logistical support during fieldwork. The CAPES/PROEX provided financial support. FHO received postdoctoral fellowship from CNPq. PGG and VGB received doctoral fellowships from CAPES. Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio/RAN) and Instituto Ambiental do Paraná (IAP) provided collecting permits (ICMBIO/RAN #25916-1 and IAP #278/10).

References

Baracho, E.B.O.; Queiroz, M.H.C & Mângia, S. 2013. Predation of *Hypsiboas albomarginatus* (Spix, 1824) (Anura: Hylidae) by Miranda's White-lipped Frog *Leptodactylus macrosternum* (Miranda-Ribeiro, 1926) (Anura: Leptodactylidae). *Herpetology Notes* 6: 599-601.

Bovo, R.P; Bandeira, L.N. & Condez, T.H. 2014. *Rhinella ornata* (Mexican Spadefoot). Predation by *Leptodactylus latrans*. *Herpetological Review* 45: 115.

de Sá, R.O.; Grant, T.; Camargo, A.; Heyer, W.R.; Ponssa, M.L. & Stanley, E. 2014. Systematics of the Neotropical Genus *Leptodactylus* Fitzinger, 1826 (Anura: Leptodactylidae): Phylogeny, the Relevance of Non-molecular Evidence, and Species Accounts. *South American Journal of Herpetology* 9: S1-S128.

Dure, M.I. 1999. *Leptodactylus chaquensis* (NCN). Diet. *Herpetological Review* 30: 92.

Frost, D.R. 2014. Amphibian Species of the World: an Online Reference. Version 6.0. American Museum of Natural History, New York, USA. Available at: <http://research.amnh.org/herpetology/amphibia/index.html>. Last accessed on: 19 November 2014.

Heyer, R.; Reichle, S.; Silvano, D.; Lavilla, E. & di Tada, I. 2004. *Leptodactylus chaquensis*. The IUCN Red List of Threatened Species. Version 2014.3. Available at: <http://www.iucnredlist.org>. Last accessed on: 19 November 2014.

Heyer, W.R. & Giaretta, A.A. 2009. Advertisement calls, notes on natural history, and distribution of *Leptodactylus chaquensis* (Amphibia: Anura: Leptodactylidae) in Brazil. *Proceedings of the Biological Society of Washington* 122: 292-305.

Oda, F.H.; Santos, D.L.; Gambale, P.G.; Campos, V.A.; Batista, V.G.; Affonso, I.P. & Strüssmann, C. 2014. New Brazilian records of *Leptodactylus chaquensis* CEI, 1950, at the species southern range limit. *Herpetozoa* 26: 195-200.

Piatti, L. & Souza, F.L. 2011. Diet and resource partitioning among anurans in irrigated rice fields in Pantanal, Brazil. *Brazilian Journal of Biology* 71: 653-661.

Santos, D.L. & Vaz-Silva, W. 2012. *Physalaemus albonotatus* (Amphibia, Anura, Leiuperidae): Predação por *Leptodactylus mystacinus*. *Herpetologia Brasileira* 3: 113-115.

- Schaefer, E.F.; Hamann, M.I.; Kehr, A.I.; González, C.E. & Duré, M. 2006. Trophic, reproductive and parasitological aspects of the ecology of *Leptodactylus chaquensis* (Anura: Leptodactylidae) in Argentina. *Herpetological Journal* 16: 387-394.
- Segalla, M.V.; Caramaschi, U.; Cruz, C.A.G.; Grant, T.; Haddad, C.F.B.; Langone, J.A. & Garcia, P.C.A. 2014. Brazilian Amphibians: List of Species. *Herpetologia Brasileira* 3: 37-48.
- Toledo, L.F. & Batista, R.F. 2012. Integrative study of Brazilian anurans: geographic distribution, size, environment, taxonomy, and conservation. *Biotropica* 44: 785-792.
- Toledo, L.F.; Ribeiro, R.S. & Haddad, C.F.B. 2007. Anurans as prey: an exploratory analysis and size relationships between predators and their prey. *Journal of Zoology* 271: 170-177.
- Uetanabaro, M.; Prado, C.P.A.; Rodrigues, D.J.; Gordo, M. & Campos, Z. 2008. Guia de Campo dos Anuros do Pantanal Sul e Planaltos de Entorno. Campo Grande, MS, Editora UFMS/UFMT, 196 p.
- Wells, K.D. 2007. The ecology and behavior of amphibians. Chicago, University of Chicago Press, 1148 p.