HB Uma publicação da Sociedade Brasileira de Herpetologia

SEÇÃO VOL. 15
História Natural e Conservação NUM. 01

Saurophagy by Brazilian Anura: *Trachycephalus mesophaeus* (Hensel, 1867) and *Itapotihyla langsdorffii* (Duméril & Bibron, 1841) prey on *Hemidactylus mabouia* (Moreau de Jonnès, 1818)

Juliano Moreira de Holanda Pires[1*], Lucas de Souza Almeida[2*], Ivo R. Ghizoni-Jr[3], Rodrigo Castellari Gonzalez[1]

1 Museu de História Natural do Ceará Prof. Dias da Rocha (MHNCE), Universidade Estadual do Ceará, 62770-000, Ceará, Brazil.

2 Universidade Estadual Paulista "Júlio de Mesquita Filho", Instituto de Biociências, Departamento de Biodiversidade e Centro de Aquicultura (CAUNESP), Laboratório de Herpetologia, 13506-900, Rio Claro, São Paulo, Brazil.

3 Universidade Federal de Santa Catarina, Laboratório de Ecologia de Anfíbios e Répteis (LEAR), 88040-000, Trindade, Florianópolis, Santa Catarina, Brazil.

*Corresponding author:
juliano.moreira9797@gmail.com

Editora de Área: Ariadne Sabbag
Submetido em 21/10/2025
Aceito em 19/02/2026
DOI: 10.5281/zenodo.18315751

Resumo

Os anuros desempenham diferentes papéis nas cadeias alimentares terrestres e aquáticas, sendo geralmente descritos como predadores oportunistas de invertebrados. Entretanto, alguns grupos de anuros também incluem vertebrados na sua dieta. Neste trabalho, relatamos dois caso de predação de *Hemidactylus mabouia*, uma espécie de lagartixa invasora, por *Itapotihyla langsdorffii* e *Trachycephalus mesophaeus*, dois anuros presentes na Mata Atlântica. No dia 27 de Outubro de 2018, às 8:33 da noite, um indivíduo de *I. langsdorffii* foi observado predando um *H. mabouia* juvenil. Os dois animais estavam na parede externa de uma casa, em uma propriedade rural no estado do Rio de Janeiro. O segundo caso aconteceu em 26 de Fevereiro de 2025, às 9:51 da noite, no estado de Santa Catarina, quando um *T. mesophaeus* foi flagrado predando um *H. mabouia* em uma calçada. Observações ocasionais de eventos naturais são importantes ferramentas para aumentar os conhecimentos disponíveis a respeito de diferentes espécies, ampliando o que se sabe sobre a ecologia e biologia desses grupos.

Palavras-chave

Anfíbio, Ecologia, Lagarto, Predação.

ABSTRACT

Anurans play different roles in terrestrial and aquatic food chains and are generally described as opportunistic predators of invertebrates. However, some groups of anurans also include vertebrates in their diet. In this study, we report two cases of predation of *Hemidactylus mabouia*, an invasive species of gecko, by *Itapotihyla langsdorffii* and *Trachycephalus mesophaeus*, two anurans found in the Atlantic Forest. On October 27, 2018, at 8:33 p.m., an individual of *I. langsdorffii* was observed preying on a juvenile *H. mabouia*. Both animals were on an external wall of a house, in a rural property in the Rio de Janeiro state, Brazil. The second case occurred on February 26, 2025, at 9:51 p.m., in Santa Catarina state, Brazil, when a *T. mesophaeus* was spotted preying on a *H. mabouia* on a sidewalk. Occasional observations of natural events are important tools for increasing the knowledge available about different species, expanding what is known about the ecology and biology of these groups.

Keywords

Amphibian, Ecology, Lizard, Predation.

Anurans are part of various food chains, playing roles as both prey and predators in aquatic and terrestrial environments (Bernarde, 2012; Vitt & Caldwell, 2014). They are commonly described as generalist predators with opportunistic foraging behavior, usually feeding on invertebrates such as annelids, insects, and arachnids (Bernarde, 2012; Vitt & Caldwell, 2014). However, some large species (i.e. *Ceratophrys* Wied-Neuwied, 1824) may include vertebrates in their diets (Bernarde, 2012). Cases like these occur mostly because of generalism and opportunism rather than food selectivity (Wells, 2007).

The ocellated treefrog, *Itapotihyla langsdorffii* (Duméril & Bibron, 1841) is a hylid found in the Brazilian Atlantic Forest from Sergipe to northern Rio Grande do Sul, as well as in northeastern Argentina and eastern Paraguay (Forti et al., 2018; Vrcibradic et al, 2025). It has arboreal habits, and exhibits skin covered with small glands, a white membrane around the cloacal region and a lateral vocal sac (Maffei & Almeida, 2019). It is a large species, with males reaching 77 mm and females 99 mm in snout-vent length (SVL; Pimenta & Canedo, 2007). *Itapotihyla langsdorffii* feeds mainly on orthopterans (grasshoppers and crickets), although other anurans such as *Physalaemus crombiei* Heyer & Wolf, 1989 and *Ololygon argyreornata* (Miranda-Ribeiro, 1926) have also been recorded in its diet (Vrcibradic et al., 2009).

Trachycephalus mesophaeus (Hensel, 1867) is endemic to Brazil; its range extends across the Atlantic Forest, from the states of Alagoas to Rio Grande do Sul (Santana et al., 2016), associated with forested areas and often found at the top of trees, shrubs, and bromeliads (Iop et al., 2016). They are also considered a large species, reaching approximately 70 mm SVL and varying from dark brown to beige in color, with a yellow stripe on the sides extending from the postocular to the inguinal region. It secretes a characteristic toxic milky substance when disturbed (Borges-Martins et al., 2007; Duarte, 2025). Previous studies indicated that *T. mesophaeus* diet consists mainly of invertebrates, such as Coleoptera Linnaeus, 1758, Blattodea Brunner von Wattenwyl, 1882 and Oligochaeta Grube, 1850 (Teixeira et al., 2016). Here, we report the first cases of *T. mesophaeus* and *I. langsdorffii* preying on *Hemidactylus mabouia* (Moreau de Jonnès, 1818), an exotic house gecko, with well stablished populations in Brazil. (Agarwal et al., 2021.)

On October 27, 2018, at 8:33 p.m., an individual of *Itapotihyla langsdorffii* was observed preying upon a juvenile of *Hemidactylus mabouia* (Fig. 1A). Both animals were on an external wall of a house, in a rural property in the municipality of Saquarema, Rio de Janeiro state, Brazil (-22.849º, -42.461º). When first observed, the treefrog had the gecko in its mouth, and only the head was still visible. After nine minutes, the prey was completely swallowed.

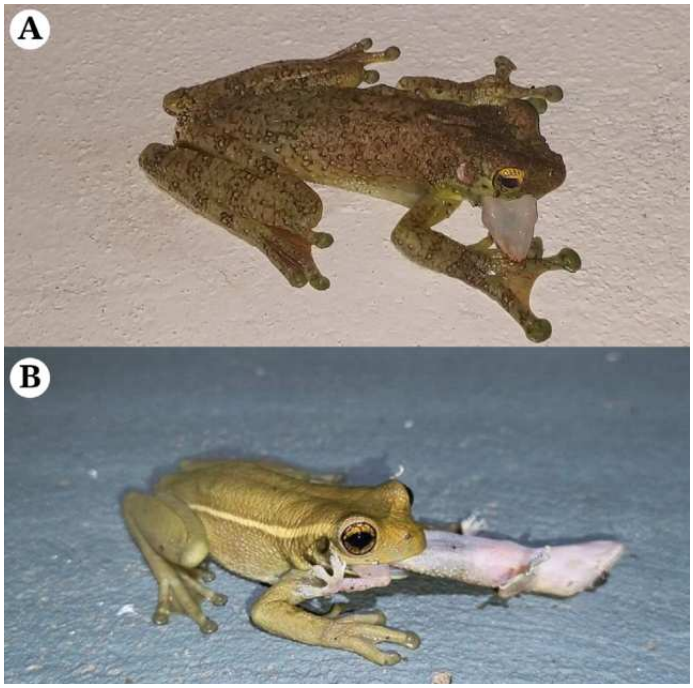


Figure 1. Records of anurans preying on lizard. Fig. 1A: *Itapotihyla langsdorffii* preying upon *Hemidactylus mabouia*. Photo by Maria Mariana Machado Marques. Fig. 1B: *Trachycephalus mesophaeus* preying upon *Hemidactylus mabouia*. Photo by Ivo R. Ghizoni-Jr

The second observation occurred on February 26, 2025, at 9:51 p.m., in Balneário Barra do Sul, northeast of Santa Catarina, Brazil (-26.436°, -48.640°), when an individual of *T. mesophaeus* was seen preying on another *Hemidactylus mabouia* (Fig. 1B). Both were on a sidewalk, and the treefrog had swallowed the rear part of the gecko up to the pelvic girdle. As it noticed the flashlight and human

presence, the treefrog jumped onto a wall, then onto a glass window, where it remained until it finished swallowing the gecko, approximately 10:10 p.m. After that, it climbed up the wall and disappeared onto the roof.

Hemidactylus mabouia is a nocturnal exotic gecko that primarily feeds on arthropods (Bonfiglio et al., 2006; Rocha & Bergallo, 2011), commonly found in anthropized environments (Fierro-Cabo & Rentfro, 2014), it measures approximately 70 mm SVL, it has dorsal surface covered by granules and small trihedral tubercles (Powell et al., 1998). This gecko is currently widespread across all South American countries, and present in all Brazilian ecoregions (Ribeiro-Junior, 2015). It was introduced in Brazil as they were accidentaly transported by merchant ships that transported enslaved african people during the period of the transatlantic slave trade (Soares et al., 2025). As a successful invader, this species appears to have outcompeted and marginalized previous colonizers of the sites where it was introduced, such other alien species of geckos: *Hemidactylus turcicus* (Linnaeus, 1758), *Hemidactylus frenatus* Duméril & Bibron, 1836, and *Hemidactylus garnotii* Duméril & Bibron, 1836 (Agarwal et al., 2021).

Although these are the first reported cases of *T. mesophaeus* and *I. langsdorffii* preying upon *H. mabouia*, records of saurophagy in amphibians are rarely reported — e.g. *Scinax x-signatus* (Spix, 1824) (Rosa, 2024) and *Osteopilus septentrionalis* (Duméril and Bibron, 1841) (Borroto-Páez & Perez, 2020), but given the opportunistic nature of amphibian feeding, these events are likely to occur.

Predation is an ecological factor of great importance for understanding the structures and interactions between species (Curio, 2012). Occasional observations like ours increase the available information on the biology of different species. Additionally, our records not only reinforce the role of anurans as generalist and opportunistic predators, but also the role of the house gecko as prey for native species.

ACKNOWLEDGEMENTS

We would like to thank the Fundação Cearense de Apoio ao Desenvolvimento Científico e Tecnológico (FUNCAP) for its support in the development of our research, as well as Maria Mariana Machado Marques for providing the photograph of *Itapotihyla langsdorffii*.

REFERENCES

Agarwal I., Ceríaco L.M., Metallinou M., Jackman T.R., Bauer A.M. 2021. How the African house gecko (*Hemidactylus mabouia*) conquered the world. Royal Society Open Science, 8(8), 210749.

Bernarde P.S. 2012. Anfíbios e Répteis: Introdução ao Estudo da Herpetologia Brasileira. Anolisbooks. Curitiba.

Bonfiglio F., Balestrin R.L., Cappellari L H. 2006. Diet of *Hemidactylus mabouia* (Sauria, Gekkonidae) in urban area of southern Brazil. Biociências (On-line) 14: 107-111.

Borges-Martins M., Colombo P., Zank C., Becker F.G., Melo M.T.Q. 2007. Anfíbios. Biodiversidade: Regiões da Lagoa do Casamento e dos Butiazais de Tapes, planície costeira do Rio Grande do Sul (ed. by F.G. Becker, R.A. Ramos, and L.A. Moura), pp. 276–291. Ministério do Meio Ambiente, Secretaria de Biodiversidade e Florestas, Brasília.

Borroto-Páez R., Pérez D.R. 2020. Predation by a Cuban Treefrog (*Osteopilus septentrionalis*) and a Domestic Cat (*Felis catus*) on Tropical House Geckos (*Hemidactylus mabouia*) in central Cuba, with a review of predators and vertebrate prey of Tropical House Geckos. *Reptiles & Amphibians* 27: 120–128.

Curio E. 2012. The ethology of predation (Vol. 7). Springer Science & Business Media. Berlim.

Duarte C.M. 2025. Perereca-leiteira (*Trachycephalus mesophaeus*). Acessível em: https://www.ufrgs.br/faunadigitalrs/perereca-leiteira-trachycephalus-mesophaeus. Universidade Federal do Rio Grande do Sul. Acesso em 05 de Outubro de 2025.

Duméril A.M.C., Bibron G. 1836. Erpetologie Générale ou Histoire Naturelle Complete des Reptiles. Vol. 3. Libr. Encyclopédique Roret, Paris.

Duméril A.M.C., Bibron G. 1841. Erpétologie Genérale ou Histoire Naturelle Complète des Reptiles. Volume 6. Librarie Encyclopedique de Roret. Paris.

Fierro-Cabo A., Rentfro A. 2014. First record of the tropical house gecko *Hemidactylus mabouia* (Moreau de Jonnès, 1818) in Texas. *BioInvasions Records* 4: 309-312.

Forti L.R., Foratto R.M., Márquez R., Pereira V.R., Toledo L. F. 2018. Current knowledge on bioacoustics of the subfamily Lophyohylinae (Hylidae, Anura) and description of Ocellated treefrog *Itapotihyla langsdorffii* vocalizations. PeerJ 6:e4813.

Grube A.E. 1850. Die familien der Anneliden: mit Angabe ihrer Gattungen und Arten. Berlin.

Hensel R. 1867. Beiträge zur Kenntnis der Wirbelthiere Südbrasilens. *Archiv für Naturgeschichte Berlin* 33: 120–162.

Heyer W.R., Wolf A.J. 1989. *Physalaemus crombiei* (Amphibia: Leptodactylidae), a new frog species from Espírito Santo, Brazil, with comment on the *P. signifer* group. *Proceedings of the Biological Society of Washington* 102: 500–506.

Iop S., Santos T.D., Cechin S. 2016. Anfíbios anuros dos Campos Sulinos: espécies com ocorrência nas áreas campestres do Pampa e da Mata Atlântica. *Porto Alegre: UFRGS*.

Linnaeus C. 1758. Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. (10ª ed., Vol. 1). Laurentius Salvius.

Maffei F., Almeida S.C. 2019. Anuros de Botucatu. Acessível em: https://anurosbtu.wixsite.com/anurosbtu/itapotihyla-langsdorffii. Acesso em 18 Outubro de 2025.

Miranda-Ribeiro A. 1926. Notas para servirem ao estudo dos Gymnobatrachios (Anura) Brasileiros. *Arquivos do Museu Nacional* 27: 1–227.

Moreau de Jonnès A. 1818. Monographie du mabouja des murailles, on Gecko Mabouja des Antilles. *Bulletin des sciences (Société philomathique de Paris)* 3,5:138–139.

Pimenta B.V., Canedo C. 2007. Description of the tadpole of *Itapotihyla langsdorffii* (Anura: Hylidae). *Zootaxa* 1387: 39–46.

Powell R., Crombie R.I., Boos H.E.A. 1998. *Hemidactylus mabouia* (Moreau de Jonnès). *Catalogue of American Amphibians and Reptiles* 674: 1–11.

Ribeiro-Junior M.A. 2015. Catalogue of distribution of lizards (Reptilia: Squamata) from the Brazilian Amazonia. II. Gekkonidae, Phyllodactylidae, Sphaerodactylidae. *Zootaxa* 3981: 1–55.

Rocha C.F.D., Bergallo H.G. 2011. Occurrence and distribution of the exotic lizard *Hemidactylus mabouia* Moreau de Jonnès, 1818 in Ilha Grande, RJ, Brazil. *Brazilian Journal of Biology* 71: 447–450.

Rosa L.C. 2024. Predation attempt by a Venezuelan Snouted Treefrog (*Scinax x-signatus*) on a Tropical House Geckos (*Hemidactylus mabouia*) in northeastern Brazil. *Reptiles & Amphibians* 31: e21423–e21423.

Santana D.O., Almeida R.P.S., Caldas F.L.S., Dias E.J.R., Faria R.G. 2016. New records of *Trachycephalus mesophaeus* (Hensel, 1867) (Anura: Hylidae) from Atlantic Forest in Sergipe state, *Brazil. Herpetology Notes* 9: 255–260.

Soares D., Coelho T.A., Chagas-de-Souza D., Trindade A.W., Chagas L.C., Ribeiro S., Santos-Jr A.P. 2025. An unexpected encounter: first record of predation on *Hemidactylus mabouia* (Squamata: Gekkonidae) by a juvenile *Mastigodryas boddaerti* (Squamata: Colubridae). *Herpetologia Brasileira* 14.

Spix J.B. 1824. Animalia nova sive Species novae Testudinum et Ranarum quas in itinere per Brasiliam annis MDCCCXVII–MDCCCXX jussu et auspiciis Maximiliani Josephi I. Bavariae Regis. F. S. Hübschmann. München.

Teixeira R.L., Mageski M.M., Jesus P.R., Ferreira R.B. 2016. *Trachycephalus mesophaeus* (Porto alegre Golden-eyed Tree Frog). Diet. *Herpetological Review*, 47: 282.

Vitt L.J., Caldwell J.P. 2014. Herpetology - an introductory biology of Amphibians and Reptiles. Academic Press. London.

Vrcibradic D., Teixeira R.L., Borges-Junior V.N. 2009. Sexual dimorphism, reproduction and diet of the casque-headed treefrog *Itapotihyla langsdorffii* (Hylidae: Lophiohylini). *Journal of Natural History* 43: 2245–2256.

Vrcibradic D., Melo F.T.V., Campião K.M. 2025. Helminth parasites of the Neotropical treefrog *Itapotihyla langsdorffii* in southeastern Brazil. *Anais da Academia Brasileira de Ciências* 97: e20250290.

Wattenwyl B.V. 1882. Prodromus der Europäischen Orthopteren. W. Engelmann. Leipzig.

Wells K.D. 2007. The ecology and behavior of Amphibians. The University of Chicago Press. Chicago.

Wied-Neuwied M.A.P., Prinz Z. 1824. Verzeichnis der Amphibien welche in zweiten Bande der Naturgeschichte Brasiliens von Prinz Max von Neuwied werden beschreiben Werden. *Isis von Oken* 14: 661–673.



Pires, J. M. H. is a Biologist graduated by the Universidade da Integração Internacional da Lusofonia Afro-Brasileira (Unilab), member of the Grupo de Pesquisa sobre Interações Animais (InterZoa) at UNILAB, volunteer associated with Museu de História Natural do Ceará Prof. Dias da Rocha. ORCID: 0009-0002-9341-3885.



Almeida, L. S. is a researcher, environmental consultant, and science communicator specializing in herpetology in the areas of natural history, biogeography, ecology, systematics, and taxonomy. Master's degree in Ecology, Evolution, and Biodiversity from UNESP in Rio Claro, where he also completed his undergraduate degree in Biological Sciences. He also holds an MBA in ESG from Trevisan Escola de Negócios. ORCID: 0000-0002-5076-1807.



Ghizoni Jr., I. R. is a biologist with a bachelor's degree by the Universidade Federal de Santa Catarina and an MSc degree by the Instituto Nacional de Pesquisas da Amazônia (INPA), where he studied population dynamics of a rodent in the Cerrado. He is currently an environmental consultant working with monitoring and distribution of birds, amphibians and reptiles in the State of Santa Catarina, Southern Brazil. ORCID: 0000-0002-0316-5682.



Gonzalez, R. C. is a Biologist graduated from Universidade Presbiteriana Mackenzie. Doctor's degree in Zoology by the Museu Nacional da Universidade Federal do Rio de Janeiro (MN/UFRJ). Curator of the Coleção de Herpetologia do Museu de História Natural do Ceará Prof. Dias da Rocha (MHNCE), Universidade Estadual do Ceará (UECE). ORCID: 0000-0001-7164-8363.