



The Emergence of a New Human-animal Conflict? Predation of a Domestic Chicken, *Gallus gallus* (Galliformes: Phasianidae) by a Smoky Jungle Frog, *Leptodactylus pentadactylus* (Anura: Leptodactylidae)

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In the Amazon, an area of high faunal diversity, urban development has resulted in environmental changes to habitats used by wildlife (Achard et al. 2002; Do Couto et al. 2018), which can influence trophic interactions and prey availability (Debinski and Holt 2000; Acevedo-Whitehouse and Duffus 2009). This may lead species to explore and adapt to conditions in new territories and, consequently, to include new food items in their diet (Cecala et al. 2007; Bower et al. 2014; Do Couto et al. 2018). In amphibians, for example, these pressures and environmental changes have caused some groups, such as frogs, to develop generalist and opportunistic diets (Menin et al. 2005).

Frogs of the genus *Leptodactylus* are opportunistic and generalist predators with a variable diet, including small mammals (Ziegler 2003; Coelho et al. 2020), insects (Teixeira and

Vrcibradic 2003; Ziegler et al. 2003; Maneyro et al. 2004; Sanabria et al. 2005; Solé et al. 2009; Sugai et al. 2012; Zaracho et al. 2012; Camera et al. 2014; Camurugi et al. 2017; Ceron et al. 2018; Do Couto et al. 2018; Ganci et al. 2018; Solé et al. 2018; Baia et al. 2020; Montes et al. 2020; Oliveira-Souza et al. 2020), arachnids (Teixeira and Vrcibradic 2003; Ziegler et al. 2003; Maneyro et al. 2004; Solé et al. 2009; Sugai et al. 2012; Zaracho et al. 2012; Camera et al. 2014; Costa-Pereira et al. 2015; Camurugi et al. 2017; Ceron et al. 2018; Do Couto et al. 2018; Solé et al. 2018; Baia et al. 2020; Montes et al. 2020; Oliveira-Souza et al. 2020), molluscs, annelids, myriapods (Teixeira and Vrcibradic 2003; Solé et al. 2009; Sugai et al. 2012; Zaracho et al. 2012; Ceron et al. 2018; Do Couto et al. 2018; Solé et al. 2018; Montes et al. 2020), fishes (Teixeira and Vrcibradic 2003; Solé et al. 2009), lizards (Do Couto and



Fig. 1. A Smoky Jungle Frog (*Leptodactylus pentadactylus*) preying on a Domestic Chicken (*Gallus gallus*) in Leticia, Amazonas, Colombia. Photograph by Darío Alarcón-Naforo.

Menin 2014; Do Couto et al. 2018; Coelho et al. 2020), frogs (Teixeira and Vrcibradic 2003; Ziegler et al. 2003; Sanabria et al. 2005; Solé et al. 2009; Santana et al. 2012; Costa-Pereira et al. 2015; Sales et al. 2015; Camurugi et al. 2017; Ceron et al. 2018; Coelho et al. 2020), and presumably adventitiously ingested plant material (Teixeira and Vrcibradic 2003; Camera et al. 2014; Do Couto et al. 2018; Coelho et al. 2020).

The Smoky Jungle Frog, *L. pentadactylus*, is a large Neotropical anuran, occurring along the Amazon Basin in preserved forest and urban forest fragments of Bolivia, Brazil, Colombia, Ecuador, French Guiana, Peru, and Suriname (Heyer 2005; Menin et al. 2010; Do Couto and Menin 2014; Do Couto et al. 2018). This species has generalist habits and a highly variable diet composed mainly of arachnids, diplopods, insects, and mollusks (Do Couto et al. 2018). However, being a large species, vertebrates such as frogs (Duellman 1978) and lizards (Do Couto and Menin 2014) have been recorded in its diet. Herein we present a new dietary record of *L. pentadactylus* in the Colombian Amazon, which may imply a poorly documented human-animal conflict.

At 1649 h on 17 March 2022, we found a Smoky Jungle Frog feeding on a juvenile Domestic Chicken (*Gallus gallus*) outside the city of Leticia, Amazonas, Colombia. The Smoky Jungle Frog had grabbed the Domestic Chicken by the upper body and proceeded to consume the chicken, swallowing the feet last (Fig. 1). After a few minutes, when the frog had almost completely ingested the chicken, the bird's calls could still be heard. During the event, area locals expressed their intention to kill the frog so that it would not eat the chicken; however, at the end of the predation event, the frog left the area without being harmed. A similar event was recorded in September 2021 at the same locality, again involving a Smoky Jungle Frog and a Domestic Chicken.

Predation on birds by *Leptodactylus* has been described previously (Carvalho et al. 2020); however, in this note we present the first records of predation on a Domestic Chicken by *L. pentadactylus* and for the genus. We consider these predation events as a possible human-wildlife conflict since the loss of breeding animals in productive activities generates economic losses by local inhabitants and could lead to the threat of killing frogs found near farms or dwellings (Morzillo et al. 2014; Conover et al. 2018; Flores-Armillas et al. 2020; Fernández-Badillo et al. 2021).

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Literature Cited

- Acevedo-Whitehouse, K. and A.L. Duffus. 2009. Effects of environmental change on wildlife health. *Philosophical Transactions of the Royal Society B* 364: 3429–3438. <https://doi.org/10.1098/rstb.2009.0128>.
- Achard, F., H.D. Eva, H.J. Stibig, P. Mayaux, J. Gallego, T. Richards, and J.P. Malingreau. 2002. Determination of deforestation rates of the world's humid tropical forests. *Science* 297: 999–1002. <https://doi.org/10.1126/science.1070656>.
- Baia, R.R.J., P.R. Sanches, F.P. Santos, A.C. Florentino, and C.E. Costa-Campos. 2020. Diet overlap of three sympatric species of *Leptodactylus* Fitzinger (Anura: Leptodactylidae) in a protected area in the Brazilian Amazon. *Cuadernos de Herpetología* 34: 175–184.
- Bower, D., E. Pickett, J. Garnham, M. Deboo, M. McCurry, R. Mengerink, M.J. Mahony, and J. Clulow. 2014. Diet of a threatened pond frog differs over a small spatial scale. *Endangered Species Research* 23: 93–98. <https://doi.org/10.3354/esr00559>.
- Camera, B.F., D. Krinski, and I.A. Calvo. 2014. Diet of the Neotropical frog *Leptodactylus mystaceus* (Anura: Leptodactylidae). *Herpetology Notes* 7: 31–36.
- Camurugi, F., F.M. Magalhães, M.H.C. Queiroz, T.C.S.O. Pereira, L. Tavares-Bastos, E.S. Lopes-Marinho, J.M.M. Neves, and A.A. Garda. 2017. Reproduction, sexual dimorphism, and diet of *Leptodactylus chaquensis* (Anura, Leptodactylidae) in northeastern Brazil. *Herpetological Conservation and Biology* 12: 498–508.
- Carvalho, D., B.D. Vasconcelos, Fernandes, M., Álvares, G.F.R. and R.A. Brandao. 2020. Predation on *Amazonetta brasiliensis* (Gmelin, 1789) (Aves: Anseriformes: Anatidae) by *Leptodactylus labyrinthicus* (Spix, 1824) (Anura: Leptodactylidae) in Central Brazil. *Herpetology Notes* 13: 291–292.
- Cecala, K.K., S.J. Price, and M.E. Dorcas. 2007. Diet of larval red salamanders (*Pseudotriton ruber*) examined using a nonlethal technique. *Journal of Herpetology* 41: 741–745.
- Ceron, K., M. Moroti, R.A. Benício, Z.P. Balboa, Y. Marçola, L.B. Pereira, and D.J. Santana. 2018. Diet and first report of batracophagy in *Leptodactylus podicipinus* (Anura: Leptodactylidae). *Neotropical Biodiversity* 4: 70–74. <https://doi.org/10.1080/23766808.2018.1467173>.
- Coelho, F.E., F.M. Magalhães, A.F. Silva-Neta, and R. Marques. 2020. *Leptodactylus vastus* (Leptodactylidae) predation on an endemic frog, and a compilation of its diet. *Acta Biológica Colombiana* 27: 135–139. <https://doi.org/10.15446/abc.v27n1.90678>.
- Conover, M.R., E. Butikofer, and D.J. Decker. 2018. Wildlife damage to crops: Perceptions of agricultural and wildlife leaders in 1957, 1987, and 2017. *Wildlife Society Bulletin* 42: 551–558. <https://doi.org/10.1002/wsb.930>.
- Costa-Pereira, R., J.L.M.M. Sugai, S. Duleba, L.S.M. Sugai, S.J. Terra, and F.L. Souza. 2015. Predation on *Physalaemus centralis* by the Chaco Frog *Leptodactylus chaquensis*. *Herpetology Notes* 8: 345–346.
- Debinski, D.M. and R.D. Holt. 2000. A survey and overview of habitat fragmentation experiments. *Conservation Biology* 14: 342–355. <https://doi.org/10.1046/j.1523-1739.2000.98081.x>.
- Do Couto, A.P., R. Da Silveira, A.M. Soares, and M. Menin. 2018. Diet of the Smoky Jungle Frog, *Leptodactylus pentadactylus*, (Anura, Leptodactylidae) in an urban forest fragment and in a preserved forest in Central Amazonia, Brazil. *Herpetology Notes* 11: 519–525.
- Do Couto, A.P. and M. Menin, M. 2014. Predation on the lizard *Alopoglossus angulatus* (Squamata: Gymnophthalmidae) by the Smoky Jungle Frog, *Leptodactylus pentadactylus* (Anura: Leptodactylidae) in Central Amazonia. *Herpetology Notes* 7: 37–39.
- Duellman, W.E. 1978. The biology of an equatorial herpetofauna in Amazonian Ecuador. *University of Kansas Museum of Natural History, Miscellaneous Publication* 65: 1–352.
- Fernández-Badillo, L., I. Zuria, J. Sigala-Rodríguez, G. Sánchez-Rojas, and G. Castañeda-Gaytán. 2021. Revisión del conflicto entre los humanos y las serpientes en México: origen, mitigación y perspectivas. *Animal Biodiversity and Conservation* 44: 153–174. <https://doi.org/10.32800/abc.2021.44.0153>.
- Flores-Armillas, V.H., D. Valenzuela-Galván, J.L. Peña-Mondragón, and X. López-Medellín. 2020. Human-wildlife conflicts in Mexico: Review of status and perspectives. *Ecosistemas y Recursos Agropecuarios* 7: 1–10. <https://doi.org/10.19136/era.a7n1.2274>.
- Ganci, C.C., L.A. Silva, E.O. Pacheco, T.M. Nogueira, and D.J. Santana. 2018. Diet and sexual dimorphism of *Leptodactylus labyrinthicus* (Anura, Leptodactylidae) in a Cerrado area in Central Brazil. *North-Western Journal of Zoology* 14: 250–254.
- Heyer, W.R. 2005. Variation and taxonomic clarification of the large species of the *Leptodactylus pentadactylus* species group (Amphibia: Leptodactylidae) from Middle America, northern South America, and Amazonia. *Arquivos*

- de *Zoologia* 37: 269–348. <https://doi.org/10.11606/issn.2176-7793.v37i3p269-348>.
- Maneyro, R., D.E. Naya, I. Da Rosa, A. Canavero, and A. Camargo. 2004. Diet of the South American frog *Leptodactylus ocellatus* (Anura, Leptodactylidae) in Uruguay. *Iheringia, Série Zoologia* 94: 57–61. <https://doi.org/10.1590/S0073-47212004000100010>.
- Menin, M., A.P. Lima, and D.J. Rodrigues. 2010. The tadpole of *Leptodactylus pentadactylus* (Anura: Leptodactylidae) from Central Amazonia. *Zootaxa* 2508: 65–68. <https://doi.org/10.11646/zootaxa.4722.5.9>.
- Menin, M., D.C. Rossa-Feres, and A.A. Giarretta. 2005. Resource use and coexistence of two syntopic hylid frogs (Anura, Hylidae). *Revista Brasileira de Zoologia* 22: 61–72. <https://doi.org/10.1590/S0101-81752005000100008>.
- Montes, L.F., O.F. Hernández, J.L. Martínez, J.A. Jarava, and J.A. Díaz. 2020. Dietary composition and feeding strategy of *Leptodactylus fuscus* (Anura: Leptodactylidae) from a suburban area of the Caribbean Region of Colombia. *Cuadernos de Herpetología* 34: 279–283. <https://doi.org/10.31017/CdH.2020>.
- Morzillo, A., K. De Beurs, and C. Matin-Mikle, C. 2014. A conceptual framework to evaluate human wildlife interactions within coupled human and natural systems. *Ecology and Society* 19: 44. <http://dx.doi.org/10.5751/ES-06883-190344>.
- Oliveira-Souza, A.E., M.M.S. Santana, T.S. Reis, C.E. Costa-Campos, C. Albuquerque, and F.T.V. Melo. 2020. Helminth parasites and diet of *Leptodactylus petersii* (Steindachner, 1864) (Anura: Leptodactylidae) from Amapá state, eastern Amazon, Brazil. *Helminthologia* 57: 388–393. <https://doi.org/10.2478/helm-2020-0044>.
- Sanabria, E.A., L.B. Quiroga, and J.C. Acosta. 2005. Dieta de *Leptodactylus ocellatus* (Linnaeus, 1758) (Anura: Leptodactylidae) en un humedal del oeste de Argentina. *Revista Peruana de Biología* 12: 472–477.
- Sales, R.F.D., J. da Silva Jorge, M.N.C. Kokubum, and E.M.X. Freire. 2015. Predation of *Leptodactylus troglodytes* by *Leptodactylus macrosternum* (Anura: Leptodactylidae) in the Brazilian Caatinga. *Herpetology Notes* 8: 421–423.
- Santana, D.O., S.M. Rocha, I.R.S. Silva, and R.G. Faria. 2012. Predation of *Leptodactylus latrans* (Anura, Leptodactylidae) and *Hypsiboas albomarginatus* (Anura, Hylidae) by *Leptodactylus vastus* (Anura, Leptodactylidae) in north-eastern Brazil. *Herpetology Notes* 5: 449–450.
- Solé, M., I.R. Dias, E.A.S. Rodrigues, E. Marciano-Jr., S.M.J. Branco, K.P. Cavalcante, and D. Rödder. 2009. Diet of *Leptodactylus ocellatus* (Anura: Leptodactylidae) from a cacao plantation in southern Bahia, Brazil. *Herpetology Notes* 2: 9–15.
- Solé, M., I.R. Dias, E.A.S. Rodrigues, E. Marciano-Jr., S.M.J. Branco, and D. Rödder. 2018. Diet of *Leptodactylus spixi* (Anura: Leptodactylidae) from a cacao plantation in southern Bahia. *North-Western Journal of Zoology* 15: 62–66.
- Sugai, J.L.M.M., J.S. Terra, and V.L. Ferreira. 2012. Diet of *Leptodactylus fuscus* (Amphibia: Anura: Leptodactylidae) in the Pantanal of Miranda river, Brazil. *Biota Neotropica* 12: 99–104.
- Teixeira, R.L. and D. Vrcibradic. 2003. Diet of *Leptodactylus ocellatus* (Anura; Leptodactylidae) from coastal lagoons of southeastern Brazil. *Cuadernos de herpetología* 17: 111–118.
- Zaracho, V.H., J.L. Acosta, and M.F. Lamas. 2012. Dieta y parasitismo de *Leptodactylus diptyx* (Anura: Leptodactylidae) del nordeste Argentino. *Revista Mexicana de Biodiversidad* 83: 1180–1186.
- Ziegler, T. 2003. Diet and natural history notes of *Leptodactylus laticeps* (Anura: Leptodactylidae) in the Gran Chaco of Paraguay. *Salamandra* 39: 39–48.