

NECROPHAGY BY *ERYTHROLAMPRUS POECILOGYRUS* (WIED, 1824) (REPTILIA: DIPSADIDAE) IN PARAGUAY

NECROFAGIA EN *ERYTHROLAMPRUS POECILOGYRUS* (WIED, 1824) (REPTILIA: DIPSADIDAE) EN PARAGUAY

Paul Smith^{1,2*} & Francisco Rojas²

¹ Para La Tierra, Centro IDEAL, Mariscal Estigarribia 321 c/ Tte. Capurro, Pilar, Dpto. Ñeembucú, Paraguay, www.paralatierra.org.

² FAUNA Paraguay, Encarnación, Dpto. Itapúa, Paraguay www.faanaparaguay.com

*Correspondence: faunaparaguay@gmail.com.

Received: 2023-04-05. Accepted: 2023-06-07. Published: 2023-07-07.

Editor: Leticia M. Ochoa-Ochoa, México.

Resumen.— Se reporta el primer registro de necrofagia en *Erythrolamprus poecilogyrus* y el primer reporte de este comportamiento en serpientes paraguayas. El individuo fue fotografiado alimentándose de una rana aplastada en una ruta asfaltada en el Chaco Paraguayo.

Palabras claves.— Anura, carroña, Chaco.

Abstract.— We report the first record of necrophagous feeding in *Erythrolamprus poecilogyrus* and the first report of necrophagy in snakes from Paraguay. The individual was photographed feeding on a roadkill frog in the Paraguayan Chaco.

Key Words.— Anura, carrion, Chaco.

The Yellow-bellied Ground Snake *Erythrolamprus poecilogyrus* (Wied, 1824) is a small, variable, terrestrial snake found across much of South America, south to Buenos Aires, Argentina (Giraud, 2004). In Paraguay, it is distributed throughout the country (Cacciali et al., 2016) in grassy or bushy habitats close to water. It is particularly abundant in the Paraguayan Chaco, west of the Paraguay River where it is active mainly at night. The subspecific taxonomy of this species has been much-debated (Amaral, 1944; Dixon & Markezich, 1992), but the subspecies generally considered to be present in the Paraguayan Chaco is *E. p. caesius* (Cope, 1862).

Erythrolamprus poecilogyrus is an active hunter and is known to have a wide diet predominantly consisting of amphibians, but also including insects, fish, reptiles and small mammals (Serié, 1919; Lema et al., 1983; Carreira, 2002; Pinto & Fernandes, 2004; Prieto et al., 2012; Corrêa et al. 2016; Andrade et al. 2020). Previous dietary information for the species in Paraguay suggests that frogs form the bulk of the diet (Cacciali & Motte, 2010; Cabral et al., 2017).

Necrophagy has only been documented in the scientific literature in very few Neotropical snake species: *Boiruna sertaneja* Zaher, 1996, *Bothrops jararaca* (Wied, 1824), *Erythrolamprus miliaris*

(Linnaeus, 1758), *Helicops modestus* Günther, 1861, *Hydrodynastes gigas* (Duméril, Bibron & Duméril, 1854), *Leptodeira annulata* (Linnaeus, 1758), *L. ashmeadii* (Hallowell, 1845), *Micrurus surinamensis* (Cuvier, 1817), *Micrurus frontalis* (Duméril, Bibron and Duméril, 1854), and *Philodryas patagoniensis* (Girard, 1858) (Sazima & Strüßmann, 1990; Mora-Benavides, 1999; Gomes et al., 2017; Marques et al., 2017; Ucha & dos Santos, 2017; Sales et al., 2019; Eisfeld et al., 2021; Oliveira et al., 2023). In this note, we add *Erythrolamprus poecilogyrus* to this list.

At 23:00h at km743 on the Ruta Transchaco (area of Infante Rivarola, Boquerón department) on 16 March 2023, an adult individual of *E. poecilogyrus caesius* was encountered on a tarmac road tugging at the leg of a road-killed frog (*Leptodactylus* sp.) that was attached to the road surface (Fig. 1A). The weather was humid, threatening rain, and a large number of frogs had been observed on and around the road surface during the course of the evening, with many killed by passing vehicles. The snake was observed pulling hard at least three times on the frog's leg before being able to detach it from the road surface (Fig. 1B). Following disturbance, the snake fled to roadside vegetation.

The only previous report of necrophagy in the genus *Erythrolamprus* was by *E. miliaris* scavenging a roadkill *Scinax*



Figura 1. A) *Erythrolamprus poecilogyrus caesius* hurgando en una rana atropellada en el km 743 de la Ruta Transchaco (área de Infante Rivarola, departamento de Boquerón), Paraguay el 16 de marzo de 2023; B) El mismo individuo tras arrancarle un trozo a la rana. Fotos: Paul Smith.

Figure 1. A) *Erythrolamprus poecilogyrus caesius* scavenging on a roadkill frog at km743 on the Ruta Transchaco (area of Infante Rivarola, Boquerón department), Paraguay on 16 March 2023; B) The same individual after tearing off a piece of the frog. Photos: Paul Smith.

(Hylidae) on Guapiagu road, Cachoeiras de Macacu, Rio de Janeiro, Brazil (Gomes et al., 2017). The present report is apparently the first of necrophagy by *Erythrolamprus poecilogyrus* and the first report of necrophagy in snakes from Paraguay. Snakes typically prefer live prey, and, despite the obvious nutritional benefits that it provides, necrophagy is apparently a rare occurrence (Cowles, 1946; Raney & Roecker, 1947; Patten & Banta, 1980; Shine, 1986; Shivik & Clark, 1997; De Vault & Krochmal, 2002; Phelps, 2006; Trembath et al., 2007; Muszynska et al., 2022). Foraging behaviour in snakes is difficult to observe and under-observation perhaps contributes to the scarcity of records (Oliveira et al., 2023). On the other hand, for active-foraging snakes such as *E. poecilogyrus*, movement of prey may be important in prey detection, and thus necrophagy may genuinely be a rare and opportunistic dietary tactic. The extremely damaged condition of the frog in this observation, to the point that it was barely-recognisable as such, suggests that olfactory or other prey detection tactics were likely employed in addition to vision in order to successfully identify it as a potential prey item.

Acknowledgements.– We are grateful to Olivia Zickgraf for producing the figure. PS thanks the Pronii program of CONACYT Paraguay for its support.

LITERATURE CITED

- Amaral, A. do. 1944. Notas sobre a ofologia neotropical e brasílica X. Distribuição geográfica e racial de *Leimadophis poecilogyrus* (Wied). Papeis Avulsos de Zoologia 5:75-82.
- Andrade, H., S.M. da Costa, M.A. dos Santos & E.J. dos Reis Dias. 2020. Diet review of *Erythrolamprus poecilogyrus* (Wied-Neuwied, 1825) (Serpentes: Dipsadidae), and first record of *Dermatonotus muelleri* (Boettger, 1885) (Anura: Microhylidae) as a prey item in Sergipe State, northeastern Brazil. Herpetology Notes 13:1065-1068.
- Cabral, H., D. Bueno-Villafañe & L. Romero-Nardelli. 2017. Comments on the diet of juvenile *Erythrolamprus poecilogyrus caesius* (Serpentes: Dipsadidae) in the Paraguayan Chaco. Phyllomedusa 16:299-302.
- Cacciali, P. & M. Motte. 2010. Hábitos predatórios de *Liophis poecilogyrus schotti* (Serpentes: Dipsadidae) sobre anfíbios de la familia Microhylidae. Reportes Científicos de la FACEN 1:60-61.
- Cacciali, P., N. Scott, A.L. Aquino, L.A. Fitzgerald & P. Smith. 2016. The reptiles of Paraguay: literature, distribution, and an annotated taxonomic checklist. Special Publications of the Museum of Southwestern Biology 11:1-373.
- Carreira, S. 2002. Alimentación de los Ofidios de Uruguay. Monografías de Herpetología 6, Asociación Herpetológica Española, Madrid.
- Corrêa, D.N., F.M. Quintela & D. Loebmann. 2016. Feeding ecology of *Erythrolamprus jaegeri jaegeri* (Günther, 1858) and *Erythrolamprus poecilogyrus sublineatus* (Cope, 1860) in the coastal zone of subtropical Brazil (Serpentes, Dipsadidae). Anais da Academia Brasileira de Ciências 88:293-308.
- Cowles, R.B. 1946. Carrion eating by a snake. Herpetologica 3:121-122.
- DeVault, T.L. & A.R. Krochmal. 2002. Scavenging by snakes: an examination of the literature. Herpetologica 58:429-436
- Dixon, J.R. & A.L. Markezich. 1992. Taxonomy and geographic variation of *Liophis poecilogyrus* (Wied) from South America (Serpentes: Colubridae). The Texas Journal of Science 44:131-166.
- Eisfeld, A., L. Pizzatto & D. Vrcibradic. 2021. Diet of the semiaquatic snake *Erythrolamprus miliaris* (Dipsadidae, Xenodontinae) in the Brazilian Atlantic Forest. Journal of Herpetology 55:330-337.
- Giraud A. 2004. Serpientes de la Selva Paranaense y del Chaco Húmedo. LOLA, Buenos Aires.
- Gomes, D.F., R.C. Gonzalez & T. Silva-Soares. 2017. *Erythrolamprus miliaris* (Linnaeus, 1758) (Serpentes: Dipsadidae): report on an unusual event of necrophagy. Herpetology Notes 10:417-419.
- Lema, T., M. Araújo & A. Azevedo. 1983. Contribuição ao conhecimento da alimentação e do modo alimentar de serpentes do Brasil. Comunicações do Museo de Ciências Naturais da Pontificia Universidade Católica de Rio Grande do Sul 26:41-121.
- Marques, O.A., R.Z. Coeti, P.A. Braga & I. Sazima. 2017. A rotten choice: feeding attempt by a coral snake (*Micrurus frontalis*) on a dead pitviper (*Bothrops jararaca*) that had swallowed a bulky rodent. Herpetology Notes 10:137-139.
- Mora-Benavides, J.M. 1999. *Leptodeira annulata* (Culebra Destenida, Banded Cat-eyed Snake): Diet. Herpetological Review 30:102.
- Muszyńska, A., M. Matuszewska, M. Smutyło & B. Borczyk. 2022. One death follows another: scavenging and road mortality in the grass snake, *Natrix natrix* (Serpentes: Colubridae). Herpetology Notes 15:295-296.



- Oliveira, I.B. de, A.A. Camacho, A.M. Rocha & P.F. Viana. 2023. Unusual behaviours or just random and rare findings? Report of an event of necrophagy by the Cat-eyed Snake, *Leptodeira ashmeadii* (Squamata: Dipsadidae). *Herpetology Notes* 16:63-64.
- Patten, R.B. & B.H. Banta 1980. A rattlesnake, *Crotalus ruber*, feeds on a road-killed animal. *Journal of Herpetology* 14:111-112.
- Phelps, T. 2006. *Naja nivea* (Linnaeus, 1758) Cape cobra. Scavenging. *African Herpetological News* 40:24.
- Pinto, R. & R. Fernandes. 2004. Reproductive biology and diet of *Liophis poecilogyrus* (Serpentes: Colubridae) from Southeastern Brazil. *Phyllomedusa* 3:9-14.
- Prieto, Y.A., A.R. Giraudo & M.S. López. 2012. Diet and sexual dimorphism of *Liophis poecilogyrus* (Serpentes, Dipsadidae) from the wetland regions of northeast of Argentina. *Journal of Herpetology* 46:402-406.
- Raney, E.C. & R.M. Roecker. 1947. Food and growth of two species of watersnakes from western New York. *Copeia* 1947:171-174.
- Sales, R.F.D., M.L.S. Lima & B.R. de Albuquerque França. 2019. Dead but delicious: an unusual feeding event by the Sertão Muçurana snake (*Boiruna sertaneja*) on a bird carcass. *Herpetology Notes* 12:941-943.
- Sazima, I. & C. Strussman. 1990. Necrofagia em serpentes brasileiras: exemplos e Previsões. *Revista Brasileira de Biologia* 50:463-468.
- Serié, P. 1919. Notas sobre la alimentación de algunos ofidios. *Revista del Jardín Zoológico de Buenos Aires* 15:305-328.
- Shine, R. 1986. Ecology of a low-energy specialist: food habits and reproductive biology of the Arafura filesnake (Acrochordidae). *Copeia* 1986:424-437.
- Shivik, J.A. & L. Clark. 1997. Carrion seeking in brown tree snakes: importance of olfactory ad visual cues. *Journal of Experimental Zoology* 279:549-553.
- Trembath, D.F., J.L. Blackburn III & J.J.L. Rowley. Road kill predation by Childrens' python *Antaresia childreni* (Serpentes: Boidae) at Adelaide River, Northern Territory. *Northern Territory Naturalist* 19:58-59.
- Ucha, J. & T.G. dos Santos. 2017. Death and life on the roadway: scavenging behaviour of the green racer snake *Philodryas patagoniensis* (Girard, 1858) (Dipsadidae). *Herpetology Notes* 10:439-441.

