

On the diet of *Pliocercus eurizonus* Cope 1862 (Squamata: Dipsadidae)

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Snakes and anurans are fundamental elements of the food webs in the ecosystem, and are generally involved in predator-prey interactions, usually as predator and prey, respectively (Wells, 2007). Although predatory events are rare to observed in nature, these data are important tools for understand the prey-predator interaction of the species involved.

Savage (2002) assumes that *Pliocercus eurizonus* being closely related to *P. elapoides*, their diet may be similar, appearing to feed mainly on small amphibians (e.g., *Bolitoglossa* spp.). Leenders (2019) mentions its main prey is leaf-litter frogs (genus *Craugastor*) and other amphibians (one individual reportedly ate a salamander). In the literature only three records are known in the diet of *P. eurizonus*: a first individual swallowing a *Craugastor* sp. (Greene, 1997), a second case feeding on the eggs of Red-eyed Treefrogs

(*Agalychnis callidryas*) in Panama (Vriesendorp and Robertson, 2007) and a third event with a catfish (*Trichomycterus* sp.) in its stomach contents, in Colombia (Durango *et al.*, 2022).

In July 2006 on the town of Alto de Piedra, edge of Santa Fe National Park, province of Veraguas, Panama (8.5139° N, -81.1163° W, WGS 84; 855 m elevation), during the night in a field trip (unrecorded time), one of the authors (ET) observed the snake Cope's False Coral Snake (*P. eurizonus*) preying on the Masked Tree Frog (*S. phaeota*) on the edge of a small lagoon. After approximately one minute the snake then proceeded to swallow the frog from the rear (Fig. 1). The photo and video (<https://youtu.be/1ZlJpyVw9E0>) clearly show the meal was proportional to the snake. As the frog proved a challenge to the snake, it was allowed to leave after its meal without disturbing the snake.



Figure 1. (A) Predation of *Smilisca phaeota* by *Pliocercus eurizonus*, town of Alto de Piedra, Santa Fe District, province of Veraguas, Panama. (B) Predation of *Craugastor tabasarae* by *Pliocercus eurizonus*, cerro Brewster, Chagres National Park, Panamá. (C) Detail of the head and neck of the snake, the expanded skin is observed while it swallows the prey. Photos credit: (A) Edgar Toribio and (B-C) Ángel Sosa-Bartuano.

At approximately 1900 h on the night of March 16, 2010 in cerro Brewster, Chagres National Park (9.3182° N, -79.2893° W, WGS 84; 833 m elevation), during field work, one of the authors (ASB) observed a *P. eurizonus* preying on a *C. tabasarae*. The moment in which the frog was captured could not be observed, but it was observed in detail how it was swallowing for approximately 5 minutes, including photos (Figure 1 B-C) and video recording (<https://youtu.be/oVdcLgNYz9g>). The frog inflated its body to increase its volume

and make it difficult to be swallowed by the snake. The event occurred on the banks of a stream and could not be observed until the end because the snake hid in the leaf litter to finish its meal.

Zipkin *et al.* (2020) suggest that the decline of amphibians may have negatively affected the survival of some snakes and mention that the occurrence rate of *Pliocercus eurizonus*, in the General de División Omar Torrijos Herrera National Park, decreased after the decline of amphibians in 2004 (Lips *et al.*, 2006).

The *Craugastor* sp. showed by Greene (1997), and the anurans reported in this note were swallowed from the hind limbs towards the head. This is the first recorded interspecific predator for *Craugastor tabasarae*. Previously recorded predators for *Smilisca phaeota* include others amphibians as *Leptodactylus savagei* (Savage, 2002) and snakes as *Bothrops asper*, *Chironius flavopictus*, *Leptodeira septentrionalis*, and *Leptodeira annulata* (Arroyo-Trejos and Mora, Farr and Lazcano 2017, Roberto and Souza 2020). This note provides an additional species of snake as a predator of *Smilisca phaeota*.

References

Arroyo-Trejos, I. & Mora, J.M. (2016) Internal organ ingestion as an alternative feeding behavior

for the Northern Cat-eyed Snake (*Leptodeira septentrionalis*). Mesoamerican Herpetology 3: 153-156.

Durango, J.P., Garzón-Franco, E., Castellanos-Mejía, M.C. & Arredondo, J.C. (2022) Predation by a Cope's False Coralsnake, *Pliocercus euryzonus* (Cope 1862) (Dipsadidae), on a catfish (Trichomycteridae: Trichomycterus) in the northern Andes of Colombia. Reptiles & Amphibians 29: 95-97.

Farr, W.L. & Lazcano, D. (2017) Distribution of *Bothrops asper* in Tamaulipas, Mexico and a review of prey items. The Southwestern Naturalist 62: 77-84.

Greene, H.W. (1997) Snakes: the evolution of mystery in nature. University of California Press.

Leenders, T. (2016) Amphibians of Costa Rica: a field guide. Cornell University Press.

Lips, K.R., Brem, F., Brenes R., Reeve, J.D., Alford, R.A., Voyles, J., Carey, C., Livo, L., Pessier, A.P. & Collins, J.P. (2006) Emerging infectious disease and the loss of biodiversity in a Neotropical amphibian community. Proceedings of the National Academy of Sciences of the United States of America 103: 3165–3170.

Roberto, I. J. & Souza, A.R. (2020) Review of prey items recorded for snakes of the genus *Chironius* (Squamata, Colubridae), including the first record of *Osteocephalus* as prey. Herpetology Notes 13: 1-5.

Savage, J.M. (2002) The amphibians and reptiles of Costa Rica: a herpetofauna between two continents, between two seas. The University of Chicago Press.

Vriesendorp, C.F. & Robertson, J.M. (2007) *Urotheca (Pliocercus) euryzonus* (Halloween Snake). Diet. Herpetological Review 38: 470–471.

Wells, K.D. (2007) Ecology and Behaviour of Amphibians. Chicago and London, The University of Chicago Press.

Zipkin, E.F., DiRenzo, G.V., Ray, J.M., Rossman, S. & Lips, K.R. (2020) Tropical snake diversity collapses after widespread amphibian loss. Science 367: 814-816.