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Juveniles of *Rhinella horribilis* Wiegmann 1833 (Anura, Bufonidae) as potential prey for *Thamnophis cyrtopsis* Kennicott 1860 (Squamata, Natricidae)

Juveniles de *Rhinella horribilis* Wiegmann 1833 (Anura, Bufonidae) como posibles presas de *Thamnophis cyrtopsis* Kennicott 1860 (Squamata, Natricidae)

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The Black Garter Snake *Thamnophis cyrtopsis* (Kennicott 1860) is a diurnal generalist natricid that is distributed from the southwestern United States throughout Mexico to Guatemala in a variety of climates and habitats (Rossman et al. 1996). Reported amphibian prey for *T. cyrtopsis* include adults and larvae of *Lithobates catesbeianus*, possibly some larvae of *L. pipiens* (Flehart 1967), adults of *L. chiricahuensis*, *L. yavapaiensis*, *Dryophytes arenicolor*, and *Eleutherodactylus jaliscoensis* (see Hernández-Austria et al. 2021).

Here, it is reported for the first time a case of predation of a juvenile Mesoamerican Giant Toad *Rhinella horribilis* (Wiegmann 1833) by *T. cyrtopsis* (Fig. 1A). This observation provides an important addition to the natural history and knowledge of predator relationships prey for both species. Through random sampling in the field, this case was observed. *T. cyrtopsis* was manually captured and placed in a cloth bag, later measured with a flexible tape measure and sex was determined using the cloacal probing technique. The individual regurgitated its prey inside the cloth bag when it was transferred to the release site and then we proceeded to measure the individual obtained with a vernier. Finally, both *T. cyrtopsis* and its regurgitated prey were released at the same capture site.

During a field trip on November 20, 2022 in the afternoon (17:30 h) in the Sierra de Badiraguato, Sinaloa, Mexico (locality Surutato; 25.830872° N, -107.567681° O, WGS84; 1509 m) an adult male *T. cyrtopsis* (Snout Vent Length = 430 mm) was found on the pine substrate with a bulge in the middle of the body. The snake appeared to be digesting its prey and its subsequent handling may have stimulated it to regurgitate its prey. The element expelled from the stomach of this individual corresponded to a juvenile *R. horribilis* (35 mm; Fig. 1B).



Figure 1: A) Black garter snake *Thamnophis cyrtopsis* after regurgitating a B) juvenile *Rhinella horribilis*. Photographs by Magdiel Sosa.

From this observation it can be assumed that small and medium-sized juveniles are a common prey for *T. cyrtopsis* because both species overlap and are abundant in their distribution ranges (Rossman et al. 1996, Pereyra et al. 2021). It is probable that adult individuals of *R. horribilis* are not potential prey for *T. cyrtopsis* because they can measure more than 100 mm and weigh up to 0.5 kg. In addition, adults of *R. horribilis* have large paratoid glands with toxic secretions that they can be used as a defense to avoid being ingested by these and other species of snakes (Pereyra et al. 2021).

On the other hand, it is known that the morphology of the skull and type of dentition are important in the capture and specialized feeding strategies among snakes (Manjarrez 2005), however, although in this case it could not be directly observed in which position it was regurgitated the prey it is inferred that the prey was

ingested by the head because the individual obtained had the extremities in a posterior direction (Fig. 1B). In this sense, it may be that *T. cyrtopsis* consumes both juvenile and adult individuals of *R. horribilis* using a strategy that avoids being affected by the toxic secretions of this anuran.

Finally, considering the evidence that some snakes of the genus *Thamnophis* present resistance to tetrodotoxin, a potent neurotoxin found in their prey the newts *Taricha* spp. (Edgehouse 2008), it would be interesting to examine a possible evolutionary relationship between *T. cyrtopsis* and *R. horribilis*.

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