



Predation of a Legler’s Stream Frog, *Duellmanohyla legleri* (Anura: Hylidae), by an Ornate Cat-eyed Snake, *Leptodeira cf. ornata* (Squamata: Dipsadidae)

Juan G. Abarca¹, Esteban Hidalgo-Mora², Rolando Ramírez-Campos³, and Alejandro Valverde-Castillo²

¹Laboratorio de Recursos Naturales y Vida Silvestre, Escuela de Ciencias Biológicas, Universidad Nacional, Heredia, Costa Rica (barcazajuan@gmail.com [corresponding author])

²Laboratorio de Ecología Funcional y Ecosistemas Tropicales, Escuela de Ciencias Biológicas, Universidad Nacional, Heredia, Costa Rica (jairoh.m.9@gmail.com, valverde7740@gmail.com)

³Escuela de Ciencias Exactas y Naturales, MARENA, Universidad Estatal a Distancia (UNED), San José, Costa Rica (roloramirez@gmail.com)

Legler’s Stream Frog (*Duellmanohyla legleri*) is distributed in the highlands of Costa Rica and adjacent Panama,

where it occurs on the Pacific slope of the Talamanca Mountain Range at elevations of 880–1,524 m asl (Savage



Fig. 1. Predation on an adult Legler’s Stream Frog (*Duellmanohyla legleri*) by an Ornate Cat-eyed Snake (*Leptodeira cf. ornata*). Photographs by Juan G. Abarca (A,B,D) and Rolando Ramírez-Campos (C).

2002). This species has suffered dramatic population declines throughout its range and currently is considered an endangered species (IUCN SSC Amphibian Specialist Group 2020). Only two stable populations were known in Costa Rica (IUCN SSC Amphibian Specialist Group 2020) until Esteban Hidalgo-Mora recently discovered a third population in the district of San Lorenzo in the canton of Tarrazú, Costa Rica. Very little is known about the natural history of this species and certain aspects of reproduction and behavior are completely unexamined (Leenders 2016). Herein we describe a predation event on this endangered species.

At 2100 h on 27 March 2021, while monitoring the diversity of amphibians and reptiles in the agricultural ecosystems of Tarrazú, San José, Costa Rica, where the Legler's Stream Frog population appears to be healthy, we encountered a subadult Ornate Cat-eyed Snake (*Leptodeira cf. ornata*) preying on an adult male *Duellmanohyla legleri* on an exotic ginger plant (*Hedychiium coronarium*) next to a stream in a coffee plantation in Santa Marta, San Lorenzo District (9.6206°N, 84.0458°W; elev. 1,380 m asl). The snake had initially seized the frog by one of its hindlimbs, which it then completely swallowed before continuing on to the frog's body (Fig. 1). The frog attempted to escape by clinging to nearby leaves. Throughout the event, the snake remained tightly coiled around the stem of the plant.

During the attempt to escape, the frog gave a distress call, which we analyzed with the Raven Pro 1.4 Interactive Sound Analysis Software (Cornell Lab of Ornithology, Ithaca, New York, USA), using it to eliminate the background sound of the stream. The distress call consists of a squeak of an unpulsed note, modulated downward, with 3–17 harmonics. The call was emitted with a time lapse of 2.27–3.25 sec between each squeak, with a call duration of 0.24–0.50 sec and a predominant frequency of 0.381–0.523 kHz (Fig. 2). A video of the distress call can be seen at: <https://www.youtube.com/watch?v=ozIXRV1ODhs>. Although we did not see the snake completely consume the frog, it had ingested more than half of the frog's body when we ceased the observation.

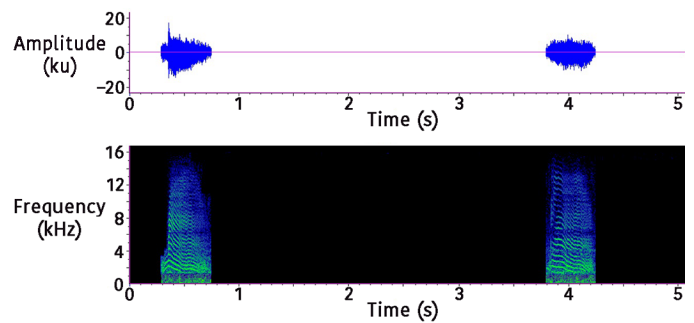


Fig. 2. Waveform and spectrogram of two notes in the distress call emitted by a Legler's Stream Frog (*Duellmanohyla legleri*) during the predation event described herein.

We are unaware of any previous reports of predation on *Duellmanohyla legleri*; however, snakes of the genus *Leptodeira* are common predators of frogs (Arias et al. 2015; Leenders 2016; Nuñez-Escalante and Garro 2020). This is the first known predator of *D. legleri*, although many other species likely feed on this frog.

Acknowledgement

We thank Dani Hidalgo Ureña for help in the field.

Literature Cited

- Arias, E., G. Chaves, A. García-Rodríguez, and M. Ryan. 2015. Predation of *Rhaebo haematiticus* (Anura: Bufonidae) by *Leptodeira septentrionalis* (Serpentes: Dipsadidae) in Costa Rica. *Mesoamerican Herpetology* 2: 563–566.
- IUCN SSC Amphibian Specialist Group. 2020. *Ptychohyla legleri*. *The IUCN Red List of Threatened Species* 2020: e.T55912A130983840. <https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T55912A130983840.en>.
- Leenders, T. 2016. *Amphibians of Costa Rica. A Field Guide*. A Zona Tropical Publication. Comstock Publishing Associates, Cornell University Press, Ithaca, New York, USA.
- Nuñez-Escalante, R. and D. Garro. 2020. Predation of a Plantation Glassfrog, *Hyalinobatrachium colymbiphylum* (Anura: Centrolenidae), by an Ornate Cat-eyed Snake, *Leptodeira ornata* (Squamata: Dipsadidae), in Costa Rica. *Reptiles & Amphibians* 27: 489–490. <https://doi.org/10.17161/randa.v27i3>.
- Savage, J.M. 2002. *The Amphibians and Reptiles of Costa Rica: A Herpetofauna Between Two Continents, Between Two Seas*. The University of Chicago Press, Chicago, Illinois, USA.