



FIG. 1. Membranous egg dissected from an *Opheodrys vernalis* from Beaver Island, Charlevoix County, Michigan, USA.



FIG. 2. Egg and dissected embryo from an *Opheodrys vernalis* from Beaver Island, Charlevoix County, Michigan, USA.

that appeared to be well-advanced in development (Fig. 2). The deceased offspring was approximately 7.5 cm long with pronounced eyes and an identifiable scale pattern on the body. Its olive-green coloration was within the parameters described for neonates of this species.

The juxtaposition of a near-term developed embryo being found within a membranous, non-calcified egg suggests two possible outcomes, had this female snake survived. The first is that this embryo would have developed to full-term and then been born alive (i.e., true viviparity). The lack of calcification would presumably provide for improved gas and water exchange within the mother. The second possibility is that rapid calcification of the eggshell and oviposition would have occurred, with hatching occurring after a short external incubation period of perhaps only a few days. This observation adds to available information regarding the ability of *O. vernalis* to employ extended intra-utero embryonic development, and supports speculation that this northern species may benefit from the gravid female's ability to facilitate advanced embryonic development through thermoregulation (Sexton and Claypool, 1978. *J. Nat. Hist.* 12:365–370).

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PANTHEROPHIS GUTTATUS (Red Cornsnake). DEFENSIVE BEHAVIOR. *Pantherophis guttatus* is an abundant generalist colubrid endemic to the eastern United States. The behaviors of this species are relatively well characterized. Here we describe a previously unreported anti-predator behavior. On 09 July 2013 at 2115 h we encountered an adult *P. guttatus* on Rattlesnake Bluff

Road, ~ 2.8 km W of Florida State Route 85, Okaloosa Co., Florida, USA (30.68173°N, 86.59986°W; WGS84). As we approached and blocked its escape, the snake flared its quadrate bones, giving its head a triangular appearance (head triangulation; Valkonen et al. 2011. *PLoS One* 6[7]:e22272), and raised its body up into an S-coil and struck at the observers several times, a blocked-flight deimatic behavior typical of the species (Means 2010. *IRCF Reptiles & Amphibians* 17:76–78). While in this S-coil, the snake began to flash the white ventral surface of its chin by rapidly raising and lowering its snout in a twitching motion. During the twitches, the snout moved through a 90-degree angle, fully exposing the white ventral chin shields. To the observers present, it initially appeared that the cornsnake was rapidly popping its mouth open, but further examination, including video taken of the encounter, revealed that the snake's mouth remained closed throughout the encounter. A portion of the interaction was digitally recorded and analyzed using Media Player Classic v1.5.2 (mpc-hc.org). Each individual twitch was completed in an average of 0.125 sec, and the snake twitched an average of once every 1–2 sec for approximately 3 min. The snake also struck at the observers several times during this period but made no attempt to flee.

We conducted a literature search and believe that this is the first published record of this behavior. Although it is difficult to speculate about what anti-predatory function this behavior serves, we offer two possibilities: 1) the rapid head jerking motion could frighten a predator without the snake actually having to strike, avoiding a potentially costly defense; and 2) the sudden flash of the pale chin shields may mimic the visual appearance of the gaping behavior of an *Agkistrodon piscivorus* (Cottonmouth), a common pitviper whose distribution broadly overlaps with the range of the Cornsnake (Conant and Collins 1998. *A Field Guide to Reptiles and Amphibians: Eastern and Central North America*. Houghton Mifflin Harcourt, Boston, Massachusetts. 640 pp.). Mimicry of venomous snakes is a well-documented and worldwide phenomenon, with 25–35% of snakes estimated to be mimics of either elapids or viperids (Greene and McDiarmid 2005. *In* Donnelly et al. [eds.], *Ecology and Evolution in the Tropics: A Herpetological Perspective*, pp. 190–208. University of Chicago Press, Chicago, Illinois). Behavioral mimicry of venomous pitvipers, which possess a strong deterrent of venomous defensive strikes, is known to include both hissing and tail-vibrating, often within dead leaves or other debris, which mimics the sound of rattlesnakes (Greene and McDiarmid, *op. cit.*) as well as defensive displays and changes in body and head shape that allow mimics to appear more like vipers (Pough 1988. *In* Gans and Huey [eds.], *Biology of the Reptilia* vol. 16, pp. 153–234. Alan R. Liss, New York). Behavioral mimicry of Cottonmouth defensive behaviors, including mouth-gaping, is known from *Nerodia fasciata* (Southern Watersnake; Means, *op. cit.*). The white chin scales of the Cornsnake may overlap more with the signal of a gaping Cottonmouth than would a gaping display by the Cornsnake, which possesses a pink inner-mouth lining. The flaring of the snake's quadrate bones, which results in the head appearing more triangular, also suggests mimicry of a pitviper (Valkonen et al., *op. cit.*).

Video of the referenced behavior is available at <https://scholarsphere.psu.edu/files/5712mv73t>.

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PHILODRYAS OLFERSII (Lichtenstein's Green Racer). DIET. Snakes of the genus *Philodryas* are large diurnal racers with a broad distribution in South America (Tipton 2005. Snakes of the Americas: Checklist and Lexicon. Krieger Publishing Co., Malabar, Florida. 492 pp.). *Philodryas olfersii* is a non-venomous species that dwells in forest areas and edges in the Atlantic Forest of southeastern Brazil. It is considered terrestrial or semi-arboreal and is known to feed on a variety of vertebrates, including rodents, anurans, lizards, snakes and birds (Hartmann and Marques 2005. Amphibia-Reptilia 26:25–31; Sawaya et al. 2008. Biot. Neotrop. 8:127–149; Almeida and Santos 2011. Bol. Mus. Para. Emilio Goeldi 3:351–354; Morton et al. 2011. Herpetol. Rev. 43:329). Sazima and Marques (2007. Herpetol. Bull. 99:36–38) reported three birds as prey of *P. olfersii*: *Passer domesticus* (House Sparrow), *Coereba flaveola* (Bananaquit), and *Thraupis sayaca* (Sayaca Tanager). Here, we report a *P. olfersii* preying upon an adult *Lepidocolaptes angustirostris* (Narrow-billed Woodcreeper).

This event was sighted and photographed by one of us (SC) in the Environmental Protection Area of Morro da Torre (43.1234°W, 22.0706°S, SIRGAS2000; 500 m elev.), Rio de Janeiro State, Brazil, at 1030 h on 27 August 2014. The snake was seen with the bird's head in its mouth (Fig. 1). The bird tried to escape, but it was eventually subdued and consumed over the course of approximately 50 min. Throughout the predation event, several bird species, including other *L. angustirostris*, gathered around and mobbed the predator, but these failed to prevent predation. This observation suggests that consumption of large birds can be important in the diet of this snake, although our knowledge of this predatory behavior is still incipient.

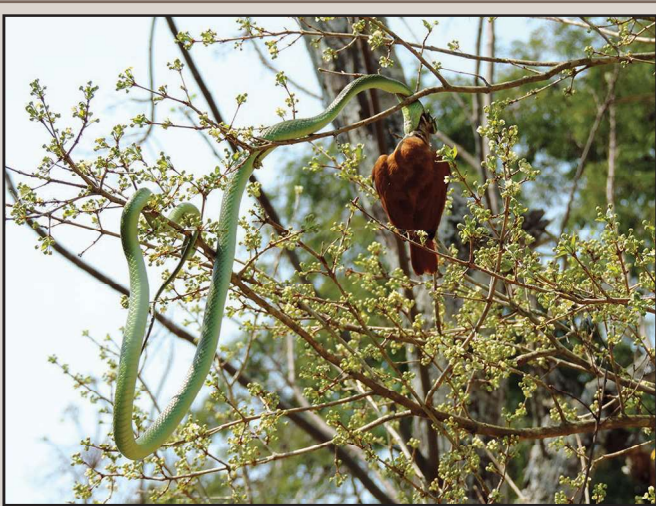


FIG. 1. *Philodryas olfersii* preying upon an adult male *Lepidocolaptes angustirostris* (Narrow-billed Woodcreeper).

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PHILODRYAS TRILINEATA (Mousehole Snake). REPRODUCTION / CLUTCH SIZE. The genus *Philodryas* includes 22 species with a wide distribution on the American continent. *Philodryas trilineata* is endemic to Argentina and has a wide range in ecotonal and Patagonian areas of Rio Negro y Neuquén, northwards towards Mendoza, San Luis, San Juan, La Pampa, La Rioja, Tucuman, Salta, and Catamarca. It probably is also found in the Bolivian Chaco (Ceí 1993. Reptiles del Noroeste, Nordeste y Este de la Argentina. Herpetofauna de las Selvas Subtropicales, Puna y Pampas. Mus. Reg. Sci. Nat. Torino. 945 pp.; Giraud 2012. Cuad. Herpetol. 26:327–374). Although there are sufficient data on the reproduction of the genus (Vaz Ferreira et al. 1970. Physis 29:431–459; Williams 1982. Neotropica 28:61–70; Fowler and Salomão 1995. Stud. Neotrop. Fauna Environ. 30:149–157; Fowler et al. 1998. The Snake 28:71–78; Gallardo and Scrocchi 2006. Cuad. Herpetol. 20:33–36; Lopez and Giraud 2008. J. Herpetol. 42:474–480; Rivera et al. 2009. Cuad. Herpetol. 23:51–54), there have been no reports of concrete reproductive data for *P. trilineata* (Ceí, *op. cit.*).

During examination of preserved specimens in the herpetological collection of the National University of San Juan, a female *P. trilineata* (UNSJ 2257: SVL = 445 mm, tail length = 155 mm; mass = 18.1 g without eggs) was dissected and found to contain four oviductal eggs. The specimen was collected in the county of Zonda, in the San Juan province (31.52°S, 68.75°W, WGS 84; 810 m elev.) in December 2002. The lengths of the eggs were 25.49, 25.66, 22.77, and 25.16 mm; widths were 7.15, 7.22, 6.72, and 7.13 mm; total weight of the clutch was 3.1 g. It is relevant to mention that the measurements are approximated due to the fact that the specimen was preserved in 70% ethanol. Given that female *P. trilineata* reach 1.7 m total length, the small size of this female may set a baseline minimum size at maturity for the species.

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PSEUDOBOA NIGRA (Black False Boa). FORAGING BEHAVIOR. *Pseudoboa nigra* is a widely distributed snake in South America that feeds primarily on lizards but may also prey on small mammals and lizards eggs (Gaiarsa et al. 2013. Pap. Avul. Zool. 53:261–283). However, records about *P. nigra* feeding behavior in natural environments are extremely scarce. Here, we present a record of predation behavior of *P. nigra* feeding on an *Ameiva ameiva* (Teiidae) in the wild.

At 2300 h on 20 August 2014, we found a *P. nigra* feeding on an *A. ameiva* in a section of Atlantic Forest area in RPPN Gargaú, municipality of Santa Rita, Paraíba State, Brazil (6.9920°S, 34.9590°W, WGS84; 26 m elev.). The *P. nigra* (SVL = 102 cm; tail length = 28 cm; mass = 385 g) was on the ground and had apparently just seized the *A. ameiva* (SVL = 16.7 cm; tail length = 15.5 cm) by the head. The lizard was still alive and the snake was not performing constriction, which may be typical feeding behavior of pseudoboine snakes on lizards (e.g., Andrade and Silvano 1996. Rev. Bras. Zool. 13:143–150). Despite struggling by the lizard, the snake began the process of swallowing it