

It is likely that the observation of interaction with *M. salmoides* and *N. sipedon* by Anderson and Roz-Marynowski (*op. cit.*) was also predator inspection, as they also did not observe any contact. Also of note is how the *M. salmoides* avoided the mouth in their observation, but in our observation the fishes were oriented towards the mouth of the *N. taxispilota*, possibly because our observation involved a *Nerodia* in the process of ingesting prey. The study involving turtle mobbing (Dominey, *op. cit.*) also involved fish following the turtle and not attacking, and is perhaps a situation better defined as inspection (and also territoriality as the turtle was intentionally placed in a spawning colony).

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**OXYRHOPUS GUIBEI (False Coral Snake). PREDATION.** *Oxyrhopus guibei* is a dipsadine snake that occurs in Brazil, Bolivia, Paraguay, Peru, and Argentina (Uetz et al. 2017. www.reptile-database.org; accessed 18 Jun 2017). It is a terrestrial snake that is associated with the edges of forests, open areas, and cultivated areas, and is usually nocturnal or active at twilight (although there are records of individuals moving during the day; Sazima and Abe 1991. Stud. Neotrop. Fauna Environ. 26:159–169). Predators of *O. guibei* include birds (*Herpetotheres cachinnans*; Laughing Falcon) and other snakes (*Erythrolamprus aesculapii*; Sazima and Abe, *op. cit.*). The corvid *Cyanocorax chrysops* (Plush-crested Jay) is an omnivorous bird that feeds on various food items ranging from seeds and fruits (Ramos et al. 2011. Biotemas. 24:153–170) to vertebrates (Farina et al. 2011. Chiropt. Neotrop. 17:993–996). Here, we report a dead *O. guibei* being consumed by a group of *C. chrysops*.

The observation occurred during the day on 18 June 2015, in a ciliary forest in the state of Mato Grosso do Sul, municipality of Angélica, Brazil (22.42223°S, 53.50774°W, WGS 84; Fig. 1). We observed three *C. chrysops* disputing the resource. One individual was carrying the snake, landed, and ate part of it. A second individual stole the prey and exhibited the same behavior as the first. This continued until the birds moved away carrying the dead snake. *Oxyrhopus guibei* showed dull coloration and the body was severely damaged. Thus, rather than being killed by the *C. chrysops* it is possible that this represents a case of scavenging. This behavior is remarkable because ringed patterns of clay models are avoided by many wild avian predators (Brodie and Janzen 1995. Funct. Ecol. 9:186–190; Hinman et al. 1997. Evolution 51:1011–1014), although some birds still prey on coral



FIG. 1. *Cyanocorax chrysops* eating *Oxyrhopus guibei*.

snakes and their mimics (Brugger 1989. Copeia 1989:508–510; Pueta 2002. Herpetol. Rev. 33:215; DuVal, et al. 2006. Biotropica 38:566–568). Perhaps the protective function of mimicry breaks down in a scavenging context, possibly via subtle post-mortem changes to coloration detectable to avian vision, or because of the absence of movement (Titcomb et al. 2014. Curr. Zool. 60:123–130; Paluh et al. 2014. J. Herpetol. 48:249–254).

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**PANTHEROPHIS OBSOLETUS (Texas Ratsnake). VULNERABILITY DURING PREDATION.** At 1430 h on 15 April 2017, a juvenile *Pantherophis obsoletus* ca. 60 cm in length fell over 8 m from a large pecan tree into a grass lawn where children were playing (30.191065, -94.683373, 24.9 m elev.; WGS 84). Two children (GE and NB) immediately reported the event to CMW, who picked up the snake as it continued constriction of an adult male *Glaucomys volans* (Southern Flying Squirrel). CMW and IHW separated the two animals to show both species to the children and then released them into the nearby forest. During this attempted predation event, the *P. obsoletus* and *G. volans* were both vulnerable as the snake refused to yield its would-be prey. This report represents an instance where a semi-arboreal snake feeding upon an arboreal rodent fell a significant distance yet still refused to release its prey even when faced with molestation by a species known to routinely kill snakes.

*Pantherophis* are very careful to avoid falling while they are climbing in search of arboreal prey (Rudolph et al. 1990. Wilson Bull. 102:14–22), but observations on the behavior of other ratsnakes that have fallen while constricting prey suggest that falls between 5 m (*P. alleghaniensis* consuming *Lasiurus intermedius* [Northern Yellow Bat]; Hastings 2010. Herpetol. Rev. 41:371) and 10 m (*P. spiloides* consuming *Sciurus carolinensis* [Gray Squirrel]; Lott and Parker 2003. Herpetol. Rev. 34:149) do not dissuade the snakes from constricting, killing, and consuming their prey, even when human observers are present. Under similar circumstances, a *Chrysopelea ornata* (Paradise Flying Snake) and its prey (Tokay Gecko; *Gekko gekko*) remained motionless for ca. 5 min while eight people observed at a distance of 1–3 m before trying to escape (Mebert and Durso 2014. Sauria 36:41–46). *Pantherophis alleghaniensis* are also known to use constriction in an anti-predator context (e.g., against a *Buteo jamaicensis* [Red-tailed Hawk]; Vandermast 1999. Herpetol. Rev. 30:169; *Buteo lineatus* [Red-shouldered Hawk]; Meshaka et al. 1988. Herpetol. Rev. 19:84), which may result in falls of > 10 m.

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**PHILODRYAS AESTIVA (Brazilian Green Racer). HABITAT USE AND DEFENSIVE BEHAVIOR.** *Philodryas aestiva* has a large distribution in South America (Celsi et al. 2008. Check List 4:12–14; Sawaya et al. 2008. Biota Neotrop. 8:127–149) and is often found

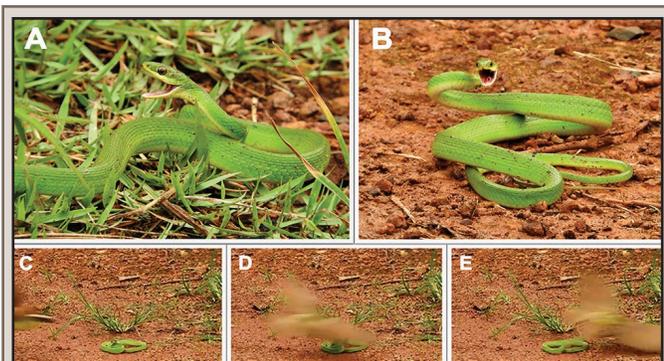


FIG. 1. Pre-strike and gaping behavior in *Philodryas aestiva* (A, B), and attacks by Great Kiskadees defending their nest (C, D, and E).

on the ground in open savannas (Sawaya et al., *op. cit.*). Terrestrial mammals, lizards, and frogs are prey items most commonly consumed, but bats and birds can also be eaten by *P. aestiva* (Carreira-Vidal 2002. Monografia de Herpetologia. Asociación Herpetológica Española, Barcelona. 126 pp.; França et al. 2008. Copeia 2008:23–28). Here we report on the habitat use by this snake and its defensive behavior towards attacks by birds apparently defending their nest.

An individual of *Philodryas aestiva* (total length ca. 80 cm) was observed falling from a papaya tree after being attacked by a pair of Great Kiskadees (*Pitangus sulphuratus*) at 1556 h, on 10 December 2016 at a reforestation area in Cerrado near Parque Nacional da Emas (18.2986°S, 52.9887°W, SAD 69; 800 m elev.), Goiás, Brazil. The snake was in the tree, near a 2 m-high nest with one kiskadee nestling. The adult kiskadees were attacking the snake, which apparently launched from the tree, falling around 1.5 m from its base. After the snake fell on the ground, it kept observing the attackers, while adopting a pre-strike posture with open mouth (Fig. 1A, B). Despite this threatening posture, the snake suffered at least six attacks by both kiskadees (Fig. 1C–E), and rapidly escaped into the surrounding vegetation. A video of the observation is housed at Laboratório de Ecologia e Evolução of Instituto Butantan.

*Philodryas* are fast snakes and usually exhibit a poor defensive repertoire (Marques et al. 2015. Serpentes do Cerrado: Guia Ilustrado. Holos Editora, Ribeirão Preto, São Paulo. 248 pp.). However, the arboreal *P. viridissimus* exhibits a more complex defensive display including lateral compression of the body, pre-strike posture, open mouth, and striking (Marques 1999. Rev. Bras. Zool. 16:265–266). *Philodryas aestiva* and *P. viridissimus* belong to distinct clades (Grazziotin et al. 2008. Cladistics 28:1–23), thus open mouth defensive behavior may be more widespread within *Philodryas* than previously recognized. Although predominantly terrestrial, this report also confirms that *P. aestiva* may climb on vegetation to forage, a common habit among other terrestrial *Philodryas* (Hartmann and Marques 2005. Amphibia-Reptilia 26:25–31).

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**PHILODRYAS NATERRERI (Run-Snake). ENDOPARASITES.** *Philodryas naterteri* is a common and widespread colubrid snake found in the Caatinga domain (step-savanna-forest) in

northeastern Brazil. This species is terrestrial and feeds on small vertebrates such as toad and lizards (Vanzolini et al. 1980. Acad. Bras. de Cien. 1:1–161). Previous studies of endoparasites of *P. naterteri* have identified only pentastomids: *Cephalobaena tetrapoda* (Heymons 1922) and *Raillietiella furcocerca* (Diesing 1863) (Almeida et al. 2007. Braz. J. Biol. 67:759–763; Almeida et al. 2008. Braz. J. Biol. 68:201–205). Acanthocephalan parasites have not previously been reported in this species.

An adult female *P. naterteri* (SVL = 86 cm) was collected on 10 April 2017 in a rural area (7.5741°S, 39.7525°W, SAD 69; 456 m elev.) of the Exu municipality, Pernambuco State, Brazil. Dissection revealed the presence of the 107 conspicuous endoparasites in the large intestine, identified as *Oligacanthorhynchus* sp. based on Travassos (1917. Mem. Inst. Oswaldo Cruz 1:1–91). Acanthocephalans are heteroxenic parasites (indirect life cycle), but their biology is poorly known, especially for snakes. *Oligacanthorhynchus* have been reported from anurans and squamates from South America (Smales 2007. J. Parasitol. 93:392–398; Campião et al. 2016. Comp. Parasitol. 83:92–100). Thus, *P. naterteri* is a new host record for acanthocephalan *Oligacanthorhynchus* sp.

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**PHILODRYAS OLFERSII (Lichtenstein's Green Racer). DIET.** *Philodryas olfersii* is a semi-arboreal (Barros et al. 2015. R. Bras. Bioci. 13:231–236) and diurnal (Martins et al. 2008. South Am. J. Herpetol. 3:60–69) dipsadid with generalist feeding habits. Studies report this species consuming frogs, lizards, snakes, small mammals, and birds (Hartmann and Marques 2005.



FIG. 1. *Philodryas olfersii* preying on a Bananaquit bird (*Coereba flaveola*, Thraupidae) in the municipality of Gurupi, Tocantins State, Brazil.