

Lichtenstein's green racer, *Philodryas olfersii* (Squamata: Dipsadidae), preying on a black rat, *Rattus rattus* (Rodentia: Muridae), in a rural area of Brazil's semiarid region

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Abstract – We report a predation event by the South American dipsadid *Philodryas olfersii* on *Rattus rattus* in a rural area of Ceará State, northeastern Brazil. The snake was observed on the ground in a residential backyard, coiling approximately two loops around the rodent's thorax and abdomen and constricting it tightly for 3–5 min. Ingestion began 6–9 min after prey capture, with the snake swallowing the rat headfirst and completing ingestion within 15–22 min. This report expands the known diet of *P. olfersii* to include a prey item not previously documented in the literature and highlights the species' potential role in controlling small mammals, particularly invasive rodents.

Additional keywords: Caatinga, diet breadth, invasive species, Murinae, predation, Serpentes.

Philodryas olfersii (Lichtenstein, 1823) is a South American, diurnal dipsadid snake well known for its abundance, predominantly green coloration, and terrestrial to arboreal habits (Mesquite et al. 2013; Barros et al. 2015; Farias-de-França et al. 2022). The species occurs across a range of vegetation types within the Amazonia, Atlantic Forest, Caatinga, and Cerrado phytogeographic dominions (Winck et al. 2012; Barros et al. 2015; Aximoff et al. 2016; Ferreira et al. 2022a), and plays an important role in trophic webs, primarily regulating populations of bats (Barros et al. 2015), birds (Aximoff et al. 2016; Ferreira et al. 2022a,b), amphibians (Ávila & Ferreira 2007; Mesquita et al. 2013; Nascimento et al. 2020), reptiles (Winck et al. 2012; Lauvers et al. 2016; Lima et al. 2025), and rodents (Vitt & Vangilder 1983; Sazima & Haddad 1992).

Rattus rattus Linnaeus, 1758 (black, house, roof, or ship rat) is a cosmopolitan and highly invasive rodent widely associated with urban and rural environments (FUNASA 2002; Babolin et al. 2016; Clapperton et al. 2019; Willacy et al. 2023; Taillie et al. 2024). It typically inhabits cultivated areas and elevated structures in buildings, such as ceilings, roofs, and attics. Recognized among the world's most worrisome invasive species (Banks & Hughes 2012), it can reach high population densities (Babolin et al. 2016; Taillie et al. 2024) and exert severe ecological impacts (Shiels et al. 2014; Higgins et al. 2015; Pameda-Gutiérrez et al.

2021), including declines and extinction of native species (Shiels et al. 2013, 2014; Higgins et al. 2015; Taillie et al. 2024). Highly commensal (Shiels et al. 2014) and opportunistic, *R. rattus* is a generalist predator of invertebrates (Copson 1986; Caut et al. 2008; Pisanu et al. 2011) and small vertebrates, as well as their nests (Caut et al. 2008; Pisanu et al. 2011; Clapperton et al. 2019; Gatto-Almeida et al. 2020; Willacy et al. 2023).

Here, we report a predation event by *P. olfersii* on *R. rattus* in the semiarid region of northeastern Brazil. The event was observed on 25 May 2025 (08:10 h) in a rural area of the municipality of Aurora, in the southeastern portion of Ceará State (SIRGAS 2000: 06°52'07"S, 39°08'26"W, 317 m a.s.l.). The region has a hot semiarid climate, with mean temperatures ranging from 23 to 29°C, a rainy season concentrated between February and April, and average precipitation of 884.9 mm (IPECE 2012). Soils are predominantly lithic, Non-Calcic Brown and podzolic (IPECE 2012; FUNCME 2014), supporting a typical *caatinga* vegetation (seasonally dry forests), characterized by xerophilous, deciduous, herbaceous, shrubby, and arboreal formations (Leal et al. 2005; Gariglio et al. 2010; IPECE 2012).

The predation event was observed by a farmer residing at the study site, who photographed an individual of *P. olfersii* (sex undetermined: 120–130 cm total length) capturing an individual of *R. rattus* (sex undetermined: ca. 35 cm in total length) by the head and constricting it in a residential backyard. The snake coiled approximately two loops around the rodent's thorax and abdomen, constricting it tightly for 3–5 min (Figure 1). Constriction, likely aided by envenomation, immobilized the prey within a short time. The snake

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Figure 1. *Philodryas olfersii* preying on *Rattus rattus* in the semiarid region of northeastern Brazil (Photo: Manoel Silva).

then adjusts its bite on the rat's snout by repositioning the anterior portion of its body and jaws, while the prey showed no signs of movement (Figure 1). No escape reaction was observed during the observer's approach for photographic documentation. Ingestion began 6–9 min after prey capture, with the snake swallowing the rat and completing the ingestion within 15–22 min. Throughout the event, the snake remained in the same location and moved away only after consuming the rodent.

Philodryas Wagler, 1830 comprises actively foraging snakes that search for small vertebrates (mainly rodents) during the hottest hours of the day (Brazil & Lira-da-Silva 2010; Mesquita et al. 2011). In the present

case, however, predation was observed in the early morning. Congeners may subdue prey by constriction and/or envenomation (Sales et al. 2020). *Boiruna sertaneja* Zaher, 1996 is another dipsadid recorded as a predator of the black rat in the Caatinga dominion (semiarid region of Pernambuco state, Brazil), but *P. nattereri* is the only congener reported to prey on *R. rattus* in this region (Vitt & Vangilder 1983).

This report expands the known diet of *P. olfersii* to include a previously undocumented prey item and highlights the species' potential role in controlling small mammals, particularly invasive rodents. *Philodryas olfersii* and other dipsadids may help regulate the population size and growth of *R. rattus*, especially in the

seasonally dry forests of the Caatinga dominion. However, further studies on the ecology of dipsadids and other snakes in both natural and disturbed environments are needed to better characterize their diet and clarify their role in controlling populations of small vertebrates, particularly rodents.

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