Predation of the snake *Tantilla melanocephala* (Squamata: Colubridae) by the spider *Latrodectus geometricus* (Araneae: Theridiidae) in Central Brazil

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There are several field observations of predation on vertebrates by large or medium-sized cursorial spiders in the families Ctenidae, Lycosidae, Pisauridae, Sparassidae, Theraphosidae, and Trechaleidae (e.g., Menin et al., 2005; Maffei et al., 2010; Nyffeler and Pusey, 2014). On the other hand, predation on vertebrates by orbicular web spiders (Nephilidae and Araneidae) seems to be less common (Nyffeler and Knörnschild, 2013), whereas predation by small spiders using diffuse webs is apparently rare (Werger, 1978; Garb et al., 2004). Herein we report the first record of a brown widow spider, *Latrodectus geometricus* C.L. Koch, 1841 (Theridiidae), preying on a neotropical snake *Tantilla melanocephala* (Linnaeus, 1758).

*Latrodectus geometricus* is widespread in Africa and the Americas (mainly Central and South America) and has been introduced to some others countries around the world (Levi, 1959; Garb et al., 2004); it is generally considered to be of little medical importance (Vetter and Isbister, 2008; Almeida et al., 2009). The species is commonly found in urban habitats around houses, buildings, gardens, and other anthropogenically-modified areas, such as agricultural plots (e.g., Lamoral, 1968; Anderson, 1972), but it also occurs in natural environments like cerrado (open savannah) in Central Brazil (Motta, 2014). This species is the largest theridiid spider in the Brazilian cerrado biome, with females varying from 0.7–1.2 cm in length and possessing a beige to black brown globose abdomen (depending on local luminosity; Motta, 2014). This species can be identified easily by having characteristic dorsal spots and ventrally an orange or reddish hourglass mark, and also by its spiked egg sacs.

These spiders live in a small, cone-shaped silk retreat from which they build an irregular, framed web (Benjamin and Zschokke, 2003). Generally at night, brown widows extrude diffuse threads impregnated with glue droplets at their terminal ends onto the substrate (Lamoral, 1968; Foelix, 2011). Prey animals become glued to the threads at a touch and, while trying to wrestle free, neighbouring trapping threads are contacted and the prey becomes progressively more entangled, capturing the prey (Levi, 1959; Garb et al., 2004; Foelix, 2011). *Latrodectus geometricus* is a generalist that can feed on a wide range of animals, but it mainly consumes insects and other ground-dwelling arthropods, including spiders, scorpions, and centipedes (Rossi and Godoy, 2005; Lira and Costa, 2014; Rosa et al., 2016).

*Tantilla melanocephala* is a small (19–25 cm in total length) snake with a large range in the Neotropics, occurring from Guatemala to northern Argentina and Uruguay (Santos-Costa et al., 2006) and showing both diurnal and nocturnal habits. This snake is found in many localities in the cerrado, but at low abundance (Marques and Puorto, 1998; França and Araújo, 2006; Braz and França, 2016). *Tantilla melanocephala* feeds on centipedes (Myriapoda: Chilopoda), which are immobilized and killed, and ingested always beginning with the head (Marques and Puorto, 1998; Oliveira, 2016). These snakes commonly use soil debris, termite mounds, or fallen logs as shelters in cerrado habitats.
and have relatively low fecundity, with a clutch size of 1–3 eggs (Marques and Puorto 1998; Santos-Costa et al., 2006).

On 29 January 2017 we found an adult male *Tantilla melanocephala* entangled in the threads of a *Latrodectus geometricus* web, outside of a rural house, close to native cerrado vegetation, near Chapada dos Veadeiros National Park (Alto Paraiso de Goiás, Goiás State, Brazil). The spider’s shelter was located inside an isolated bathroom of the house, near the pipe leading to a sink, about 60 cm above ground level. When first sighted, the dead snake was glued to threads attached to its posterior end and slightly suspended above the ground (Fig. 1). The spider progressively enveloped the snake by its head and body, coiling it (Fig. 2). After three days, the spider discarded the snake, which was dried and covered by silk. The snake showed damaged tissues close to the cloaca, the place that spider was observed feeding on it. Remains of food prey (crickets, cockroaches, moths) were also observed in the same web. The specimens were collected and the *Tantilla melanocephala* was deposited in the herpetology collection, of the Universidade de Brasília, Brazil (accession number CHUNB 76031) and the *Latrodectus geometricus* was deposited in the arachnid collection at the same institution (accession number DZUB 8806).

This predatory encounter could be considered a serendipitous and perhaps random event, but it deserves consideration because of the disproportionate size of predator (spider total length 11 mm) and prey (snake snout-vent length 152 mm, total length 192 mm), with the spider about 18 times smaller than the snake (Fig. 3).

Although rare, vertebrate predation events by *Latrodectus* have been reported in the literature before (e.g., Werger, 1978; Wilson, 1991; Garb et al., 2004). However, there are many more informal reports of

![Figure 1](image1.png)
**Figure 1.** Beginning of the predation process by a brown widow spider (*Latrodectus geometricus*) on a black-headed snake (*Tantilla melanocephala*) in Brazil.

![Figure 2](image2.png)
**Figure 2.** A black-headed snake (*Tantilla melanocephala*) entangled in the threads of a brown widow spider (*Latrodectus geometricus*) web in Brazil.
vertebrate predation by black and brown widows, including predation on snakes, available on the Internet (e.g., at http://www.spiderzrule.com/spidersnake.htm).

It is interesting to consider that, based on the potent neurotoxic and myotoxic effects of *L. geometricus* toxin in vertebrates (Reyes-Lugo et al., 2009) and the high toxicity of *Latrodectus* venom in general (Garb and Hayashi, 2013), predation on vertebrates by black and brown widows is probably not uncommon. As a consequence, local monitoring of the potential impact of brown widow on native vertebrate fauna, as a result of spider colonization in new habitats, should be relevant.

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References


