



Predation on an Ornate Forest Toad, *Rhinella ornata* (Anura: Bufonidae), by a São Paulo Black Tarantula, *Acanthoscurria* cf. *gomesiana* (Mygalomorphae: Theraphosidae)

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Of the invertebrates that prey on anurans (Duellman and Trueb 1994), spiders, including mygalomorphs of the family Theraphosidae (Menin et al. 2005), are the principal predators, especially of juveniles (Neil 1984; Menin et al. 2005; Toledo 2005). This family includes the world’s largest spiders, which are known as “caranguejeiras” and/or tarantulas (Bertani 2001).

Among the species of anurans that have been reported as prey of theraphosid spiders are the poisonous toads in the genus *Rhinella*, which are widely distributed in Brazil (Caramaschi and Pombal 2006). However, all such reports were recorded from Amazonian regions (Menin et al. 2005; Toledo et al. 2005; Pinheiro-Freitas et al. 2021) and involved only two species of spiders, the Goliath Birdeater (*Theraphosa blondi*) (see Menin et al. 2005) and the Giant Red Rump (*Sericopelma rubronitens*) (see Gray et al. 1999). Among the huge diversity of Brazilian theraphosids, the genus *Acanthoscurria* is one of the most widely distributed

(Gonzalez-Filho et al. 2012); however, no previous records document these spiders preying on amphibians. Herein I report the first record of predation on an Ornate Forest Toad (*Rhinella ornata*) by a São Paulo Black Tarantula (*Acanthoscurria* cf. *gomesiana*).

The Ornate Forest Toad is widely distributed in southeastern Brazil, ranging from the state of Espírito Santo to Paraná, where it inhabits remnants of the Atlantic Forest (Baldissera et al. 2004). The São Paulo Black Tarantula is extremely abundant in the Cerrado and Atlantic Forest of São Paulo and Minas Gerais (Gonzalez-Filho et al. 2012), and is sympatric with *Rhinella ornata* in many areas, particularly in the state of São Paulo. Both species are nocturnal, thus encounters between these very large toads and very large tarantulas are not unexpected.

On 19 January 2021, during a faunal survey on private property in a fragment of Atlantic Forest in a secondary stage of regeneration in the municipality of Vargem Grande



Fig. 1. A tarantula (*Acanthoscurria* cf. *gomesiana*) preying on a juvenile Ornate Forest Toad (*Rhinella ornata*): Detail of the insertion of the left chelicera in the cephalic region of the toad (left) and a lateral view highlighting the large relative size of the toad compared to that of the spider (right). Photographs by R.C.B. Paredero.

Paulista, São Paulo, Brazil (-23.617735°, -47.024554°; WSG84), I encountered a juvenile *Acanthoscurria* cf. *gomesiana* preying on a juvenile *Rhinella ornata* (Fig. 1). I did not collect either the spider or the frog for lack of a permit.

The spider remained motionless for most of an hour, just holding its prey, until it began to move slowly, dragging the toad out of sight behind a pile of wood. The spider's left chelicera had punctured the cephalic region of the anuran just above the eyes, thus the toad's death was likely due to penetration of the skull instead of poisoning.

The large size of some theraphosids allows them to exploit large prey, including bats, birds, lizards, and amphibians (Teixeira et al. 1991; Menin et al. 2005; Toledo 2005; Vieira et al. 2012; Nyffeler and Knörnschild 2013), although the venom is not particularly toxic for vertebrates (Marín-Martínez and Rojas-Morales 2016). Although widely used by all spiders during hunting and feeding, whether *Rhinella* spp. are sensitive to theraphosid spider venoms is unknown. Menin et al. (2005) observed a *Theraphosa blondi* preying on a juvenile *Rhinella marina*, in which, after two hours of observation, the anuran was still alive, suggesting that the spider's venom was unable to kill the toad. However, the size and strength of these spiders' large chelicerae can easily kill small vertebrates, which is likely what happened in the present case.

Toads in the genus *Rhinella* produce toxic substances via two large parotoid glands and smaller poison glands in their skin. These toxins serve to protect the toads against various pathogens and predators (Daly 1995; Tempone et al. 2008; Jared et al. 2009). Unfortunately, because I was unable to monitor the spider after it ingested the toad, I could not determine whether the *Rhinella* poison was toxic when consumed by a theraphosid spider.

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