

SHORT COMMUNICATION

Envenomation records of *Hemidactylus mabouia* (Squamata: Gekkonidae) by *Ctenus rectipes* (Araneae: Ctenidae) in an urban area of northeastern Brazil

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Hemidactylus mabouia (Moreau-De-Jonnès, 1818), popularly known as Tropical House Gecko, is a nocturnal lizard of African origin that is well adapted to human dwellings (Jesus *et al.* 2001, Short and Petren 2012). This species was introduced in several countries in the Americas a few hundred years ago, probably through slave ships coming from Africa during European colonization (Vanzolini 1968). In Brazil, it currently occurs in anthropogenic environments in all biomes (Amazon Rainforest, Cerrado, Caatinga, Atlantic Forest) and on some

coastal islands (Rocha *et al.* 2011). *Hemidactylus mabouia* is a generalist and opportunist regarding its diet, and is known to feed on diverse groups of arthropods, including spiders (Zamprogno and Teixeira 1998, Bonfiglio *et al.* 2006, Rocha and Anjos 2007, Iturriaga and Marrero 2013).

Like the Tropical House Gecko, wandering spiders (Ctenidae) are also nocturnal (Keyserling 1877). Among the 48 genera of ctenids, the genus *Ctenus* Walkenaer, 1805 is the richest, with 212 species widely distributed on all continents except Antarctica (World Spider Catalog 2020). Wandering spiders can be very abundant and are also generalists, preying on diverse taxa of arthropods (Gasnier and Höfer 2001) and occasionally on small vertebrates such

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as amphibians and reptiles (Barbo *et al.* 2009, Oliveira *et al.* 2017, Nyffeler and Altig, 2020). Consequently, they frequently come into contact with this gecko.

Here, we report four cases of probable envenomation of *Hemidactylus mabouia* by *Ctenus rectipes* in an urban area in municipality of Maceió, state of Alagoas, northeastern Brazil.

Observations were made at a residence at Condomínio Chácaras da Lagoa (09°35'01.0" S, 35°47'12.0" W), in the municipality of Maceió, state of Alagoas, Brazil. We collected the geckos and spiders and took them to the Laboratório de Biologia Integrativa, Universidade Federal de Alagoas to be analyzed and photographed. The specimens were incorporated in the Coleção Aracnológica (MUFAL 605–607 - *Ctenus rectipes*) and in the Coleção Herpetológica (MUFAL 15013–15016 - *Hemidactylus mabouia*), both deposited in the Museu de História Natural, Universidade Federal de Alagoas.

We made four observations of probable envenomation of *Hemidactylus mabouia* by *Ctenus rectipes* within an eight-day period. In three encounters, both prey and predator were found dead. On these occasions, the spider was partially inside the gecko's mouth. Three of the four geckos, even dead, were kept above the floor level by adherence of the left hind limb to the substrate.

The first encounter took place on 17 June 2019 at 11:00h (Figure 1A). The *H. mabouia* male (MUFAL 15013, SVL 61.35 mm; Figure 1B) and an immature male *C. rectipes* (MUFAL 605; cephalothorax + abdomen 12.7 mm; Figure 1C) were about 50 cm above floor level. The gecko had its head turned down. The predation attempt and possible envenomation probably occurred the previous night, because both individuals were not in an advanced state of decomposition. The spider's chelicerae were found still inserted into the anterior region of the gecko's tongue, which had signs of necrosis (Figure 1D–E).

The second observation took place on 21 June 2019 at 15:00h. The *H. mabouia* female

(MUFAL 15014, SVL 58.12 mm) had a male of *C. rectipes* (MUFAL 606) in her mouth, but both were already decomposing, and were found on the floor behind furniture during house cleaning (Figure 2A). The third record occurred on 24 June 2019. A female of *H. mabouia* (MUFAL 15015, SVL 53.52 mm) had a *C. rectipes* male (MUFAL 607) in its mouth. The animals were found at 18:30h two meters high in a window casing with their heads down in a similar situation as the previously observed animals (Figure 2B). The fourth dead gecko individual, a female (MUFAL 15016, SVL 56.06 mm), was found 1.80 m from the floor level and had no visible spider in its mouth (Figure 2C). However, the gecko had the left hind limb extended and appeared to have been paralyzed when it died.

The Brazilian native gecko *Coleodactylus meridionalis* (Boulenger, 1888) has been preyed on by *Ctenus rectipes* (Oliveira *et al.* 2017) and by *Parabatinga brevipes* (Keyserling, 1891) (Almeida *et al.* 2015), both spiders of the family Ctenidae. The spider *Ctenus medius* Keyserling, 1891 was observed preying on the anuran *Adenomera marmorata* Steindachner, 1867 (Barbo *et al.* 2009). In both these cases, the spider subdued and fed on the vertebrates. In a different context, Ramires and Fraguas (2004) conducted an experiment where they induced encounters between *H. mabouia* and the brown spider *Loxosceles intermedia* (Sicariidae). Success of the predation by the gecko depended on the region of the spider that was contacted. Among 123 observations, 10 geckos successfully ate the spider, although two geckos died due to poisoning when the gecko attempted to eat the spider's cephalothorax, which has dermonecrotic venom.

The genus *Ctenus*, which includes cursorial and nocturnal spiders, produces poison with neurotoxic action (Lucas 2015); some species are synanthropic, such as *C. medius* (Brescovit *et al.* 2011). The habits of spiders of this genus would facilitate their encounter with the nocturnal gecko *Hemidactylus mabouia*. Spiders are frequently part of the diet of *H. mabouia*,



Figure 1. Observations of the envenomation of *Hemidactylus mabouia* (MUFAL 15013) by *Ctenus rectipes* (MUFAL 605). (A) Gecko with spider in its mouth 50 cm above floor level. (B) Same animals in the ventral position. (C) Dorsal and ventral views of spider found during the predation event. (D) Detail of the chelicera still inserted in the oral mucosa of the gecko. (E) Detail of the necrosis in the anterior tip of the gecko's tongue.



Figure 2. Specimens of *Hemidactylus mabouia* [(A) MUFAL 15014, (B) MUFAL 15015, (C) MUFAL 15016] and *Ctenus rectipes* [(A) MUFAL 606, (B) MUFAL 607] found dead and in an advanced decomposition stage.

which is a generalist and opportunistic predator of arthropods (Zamprogno and Teixeira 1998, Bonfiglio *et al.* 2006).

Our data suggest that predation of the spider *Ctenus rectipes* by the gecko *Hemidactylus mabouia* may be unsuccessful when the lizard attempts to ingest the spider from the head, because its fast-acting poison can be deadly for the common domestic gecko.

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