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THE VENOMOUS BEETLE *ONYCHOCERUS ALBITARSIS* PASCOE, 1859 (COLEOPTERA: CERAMBYCIDAE): FIRST REPORT IN MINAS GERAIS STATE, BRAZIL

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Introduction

Venom inoculation systems originated independently in different lineages throughout animal evolution, and may be used for predation, defense, competition for sex partners, or reproduction (Arbuckle, 2017). Venom inoculation structures are found in different body parts according to the adaptations of each animal group, for instance in mouth parts (snakes, spiders and ticks), modified legs (centipedes), the posterior end of the body (scorpions) and antennae (scorpion beetles) (Arbuckle, 2017; Herzig, 2019).

Exposure to venomous invertebrates, such as bees, scorpions and spiders, can cause anemia, dermatitis, edema, leukocytosis, necrosis and even death to humans (Chippaux, 2015; Santana et al., 2015; Vikrant et al., 2019). Urbanization can be linked with precarious sanitation conditions that increase the food and shelter supply available to pests which, consequently, may result in higher exposure to venomous animals (Freitas et al., 2006; Santana et al., 2015).

The long-horned beetle, *Onychocerus albitarsis* Pascoe, 1859 (Coleoptera: Cerambycidae), has been reported in Bolivia, Brazil, Paraguay and Peru (Monné & Chaboo, 2015; Le Tirant & Limoges, 2016; Monné, 2020). In Brazil, it is known as the "besouro-escorpião" (scorpion beetle) (Amaral et al., 2018). This is the only beetle of approximately 350,000 described species that is known to inject a venomous secretion through stingers located at the ends of the antennae (Berkov et al., 2008). This venomous secretion can cause skin and subcutaneous inflammation in humans (Berkov et al., 2008; Amaral et al., 2018). The secretion is released by two pores in the last antennal segment, which open into channels and transport the toxin to the end of the segment (Berkov et al., 2008). The nature of this secretion is unknown.

Previously collected materials were examined due to the growing interest in *O. albitarsis* and the recent loss of type specimens in a fire at the

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"Museu Nacional de Zoologia (MNRJ)". The main purpose of this report is to document the occurrence of *Onychocerus albitarsis* in a secondary forest area of the Atlantic forest biome in Minas Gerais State, Brazil.

Material and methods

The study was carried out in a secondary forest area in the southern part of the Rio Doce State Park in the Atlantic Forest biome of Minas Gerais State, Brazil (next to 19.771225°S, 42.626844°W) (Carvalho & Ribeiro, 2018). The studied area has 36,000 ha of Atlantic rainforest surrounding 44 natural lakes, and is predominantly composed of semi-deciduous forest (Silva, 2001; Fonseca-Silva et al., 2015). A section of the park was burned in 1967. Since then, the area has been preserved without other significant disturbances. *Anadenanthera colubrina* (Vell.) Brenan, *Anadenanthera macrocarpa* (Benth.) Brenan (Fabaceae), *Cecropia* spp. (Urticaceae), *Lecythis pisonis* Cambess. (Lecythidaceae), *Mabea fistulifera* Mart. (Euphorbiaceae) and *Maclura tinctoria* (L.) Don ex Steud. (Moraceae) are the most common trees in the area (Silva, 2001; Fernandes, personal communication).

Fifteen plots (20 × 20m) were sampled during the beginning of the rainy season between September and November 2013. Each plot was sampled once for 5 hr at night from 7:00 to 12:00 P.M. with a light trap, consisting of a white sheet stretched across a rope fixed between two trees and with three 15W bulbs, two fluorescent and one black light powered by a 12v/4ah motorcycle battery. The trap light was illuminated once per night in only one plot. The insects were collected, packed in glass jars and transported to the laboratory for identification. The specimens were deposited in the "Laboratório de Ecologia do Adoecimento e Florestas" in the "Universidade Federal de Ouro Preto (UFOP)" in Ouro Preto, Minas Gerais state, Brazil.

Results

Three individuals of *O. albitarsis* were collected in the study; two on October 6 and one on November 2, 2013 (Fig. 1).

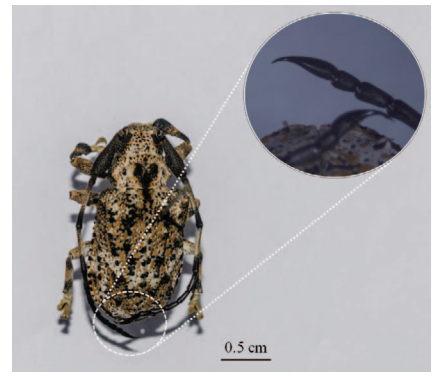

Fig. 1. Dorsal view of *Onychocerus albitarsis* Pascoe, 1859 (Coleoptera: Cerambycidae) with detail of the sting at the end of its antennae.

Discussion

This is the first record of *O. albitarsis* in Minas Gerais state, Brazil, after reports of its occurrence in the Brazilian states of Amazonas, Bahia, Ceará, Espírito Santo, Goiás, Maranhão, Mato Grosso, Paraná, Rio de Janeiro and São Paulo (Julio & Monné, 2001; Barros et al., 2019; Monné, 2020). People stung by *O. albitarsis* in São Paulo state reported pain, irritation, inflammation and swelling at the wound site, with the inflammation lasting up to seven days (Amaral et al., 2018).

The record of *O. albitarsis* in the Atlantic Forest biome of Minas Gerais State, Brazil, spans the geographic range of this insect in Brazil. The importance of collecting this insect increased after fire destroyed a large portion of the scientific collection of the "Museu Nacional de Zoologia (MNRJ)." This was a terrible tragedy that resulted in the loss of irreplaceable specimens collected in habitats that by now are probably modified or no longer exist. *Onychocerus albitarsis* is present in a secondary forest of the Atlantic Forest biome and is the only venomous beetle ever recorded. This beetle is able to inoculate a secretion through stingers located at the ends of its antennae, but its biology and the nature of its toxin are unknown.

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