

Scientific Note

First record of the *Ravinia almeidai* (Lopes, 1946) (Diptera: Sarcophagidae: Sarcophaginae) to the state of Bahia, Brazil

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Abstract. The first record of *Ravinia almeidai* (Lopes, 1946) is reported for the state of Bahia, northeast region of Brazil. The record of this fly species significantly contributes to the knowledge of sarcophagids from the northeast, as well as to the mapping of its distribution in the Brazilian territory.

Keywords: Biodiversity, Geographical distribution, Forensic entomology, Forensic importance, Northeast.

Sarcophagidae (Insecta: Diptera) is one of the most diverse families among the calyptate dipterans, being composed of species with predator, parasite, dung and scavenger habits. Worldwide, more than 3,000 species of sarcophagids are known, and of these, about 800 have been recorded for the Neotropical Region, and 366 for Brazil (Pape 1996; Carvalho & Mello-Patiu 2008; Pape et al. 2011; Mello-Patiu 2016; Buenaventura 2021; Mello-Patiu & Santos 2021).

Adult sarcophagids are morphologically characterized by having three longitudinal black stripes on the dorsum of the chest and a checkered abdomen (Mello-Patiu et al. 2009). Unlike females of other dipterans, females of this family deposit first-instar larvae on the colonization substrate, and are therefore considered ovoviviparous insects. This characteristic may confer some kind of advantage to this group in terms of pioneering the colonization of the substrate, as already reported by Ramos et al. (2018).

As mentioned above, some species of this family can develop in decaying organic matter, including vertebrate carcasses, which makes them an important tool widely used in forensic entomology, mainly for the determination of the post-mortem interval (PMI) (Denno & Cothran 1976; Byrd & Castner 2001; Barros et al. 2008; Carvalho & Mello-Patiu 2008; Lopes et al. 2018; Ramos et al. 2018).

Currently, in Brazil, studies with sarcophagids are mostly centered on the north, south and southeast regions (Pape 1996; Carvalho et al. 2002) and, for this reason, little is known about the fauna of other regions, especially the northeast region, except for the Pernambuco state (e.g. Oliveira & Vasconcelos 2010; Oliveira & Vasconcelos 2018; Barbosa et al. 2017, 2020, 2021; Carmo et al. 2021; Cruz et al. 2021), where knowledge is incipient and limited. The main factors that hinder the expansion of knowledge for the region are the taxonomic difficulties in recognizing these dipterans (since, for many species, only males are safely identified by the terminalia morphology), the lack of adequate literature and, above all, the acting of few taxonomists, which often prevents and discourages research with sarcophagids (Mello-Patiu et al. 2014).

Aiming to reduce the gap in knowledge about the fauna of Sarcophagidae in the northeast region, this paper reports the

unprecedented occurrence of *Ravinia almeidai* (Lopes, 1946) in the state of Bahia, with a representative specimen of this species collected in a rural area of São Sebastião do Passé (12°30'51"S;38°22'23"W), a municipality located in the metropolitan region of the City of Salvador, capital of the state of Bahia. To capture the insects, modified traps of the model proposed by Ferreira (1978) were used, supplied with two types of baits: fresh mixed bait (sardines and chicken gizzards) and human feces. The traps were exposed for 72 hours monthly during 2014, and replaced every 24 hours. The collected insects were sent to the Laboratório de Bionomia, Biogeografia e Sistemática de Insetos - BIOSIS/UFBA, where they were sorted, mounted on entomological pins and identified from taxonomic data (keys or descriptions) available in the specialized literature (e.g. Guimarães 2004), with the identification later confirmed by an expert (one of the authors). After identification, the specimens were deposited at the Museu de História Natural da Bahia (MHNBA/UFBA). For the morphological study and specimen photography, a Leica M165C stereoscopic microscope was used, coupled with a Leica DFC295 digital camera, containing the Leica Application Suite V4.1 Interactive Measurements, Montage Software. For the preparation of the map, the geographic coordinates of the state capitals were used for which there are already records of occurrence for *R. almeidai* in the scientific literature.

Only one specimen of *R. almeidai* (Fig. 1 A-B) was sampled in the present experiment, which was captured in a trap supplied with human feces bait. It is worth mentioning that, although some species of the genus *Ravinia* Robineau-Desvoidy, 1863 are routinely associated with decaying vertebrate carcasses (Pickens 1981), *R. almeidai* has been little recorded in studies on forensic entomology. Perhaps the absence of this species in most forensic studies is justified by the fact that it has a coprophagous and not a scavenger habit, as had been inferred for most species of this genus (Buenaventura 2021), based on those species that visit carcasses reported in the survey works of necrophagous Diptera of forensic importance. It is likely that the presence of this species in the few works that report its presence in forensic studies is linked to the fecal content of the carcasses, and not to the scavenger habit itself, but this hypothesis still needs confirmation.

According to Guimarães (2004), *R. almeidai* can be characterized by the following set of morphological characters of the phallus: presence of dorsal stalk, median style and hairiness in the distiphallus, absence of spines in the basal region of the postgonite, hillae with sub-triangular format and juxta with the straight margin (Fig. 1B). The species is exclusive to the Neotropical Region and has been recorded only in Brazil (Fig. 2), in the south (Paraná), southeast (Minas Gerais, Rio de

Janeiro, São Paulo), midwest (Mato Grosso, Mato Grosso do Sul) and the northeast (Maranhão, Ceará) regions (Pape 1996; Guimarães 2004; Mello-Patiu et al. 2009; Mello-Patiu et al. 2017). Therefore, the present work reports the first record of *R. almeidai* for the state of Bahia, as confirmation of its distribution from the south to the northeast of Brazil (Fig. 2).

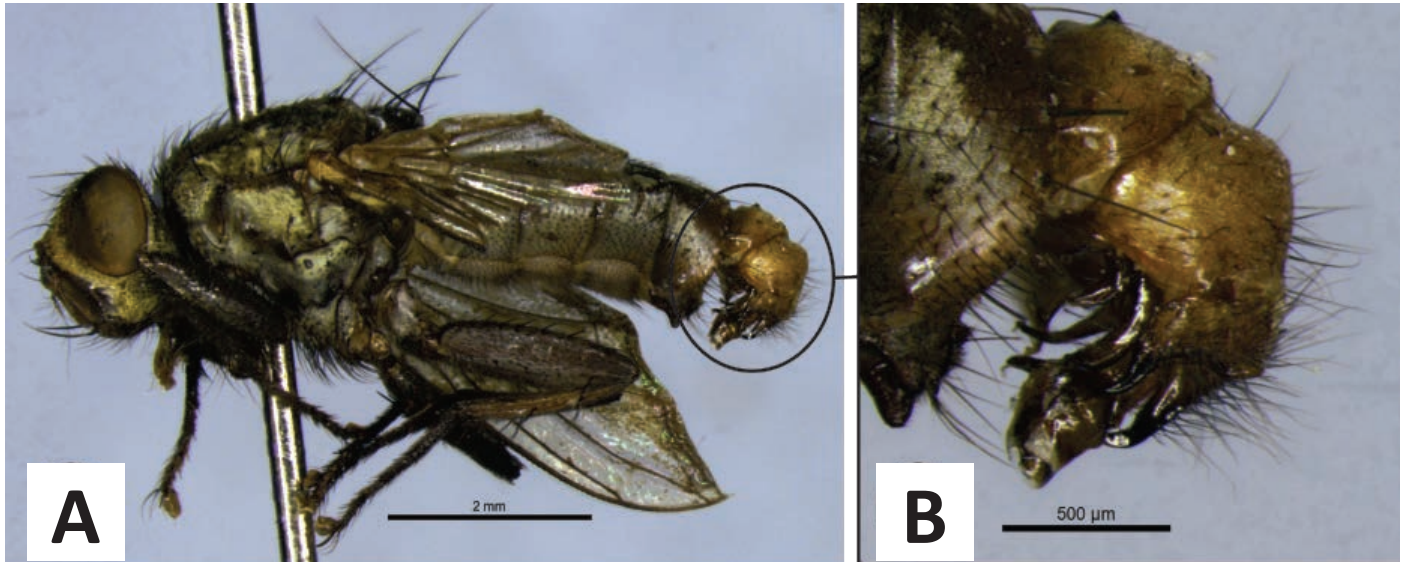


Figure 1. Male of *Ravinia almeidai* (Lopes, 1946). (A) Lateral habitus. (B) Phallus detail.

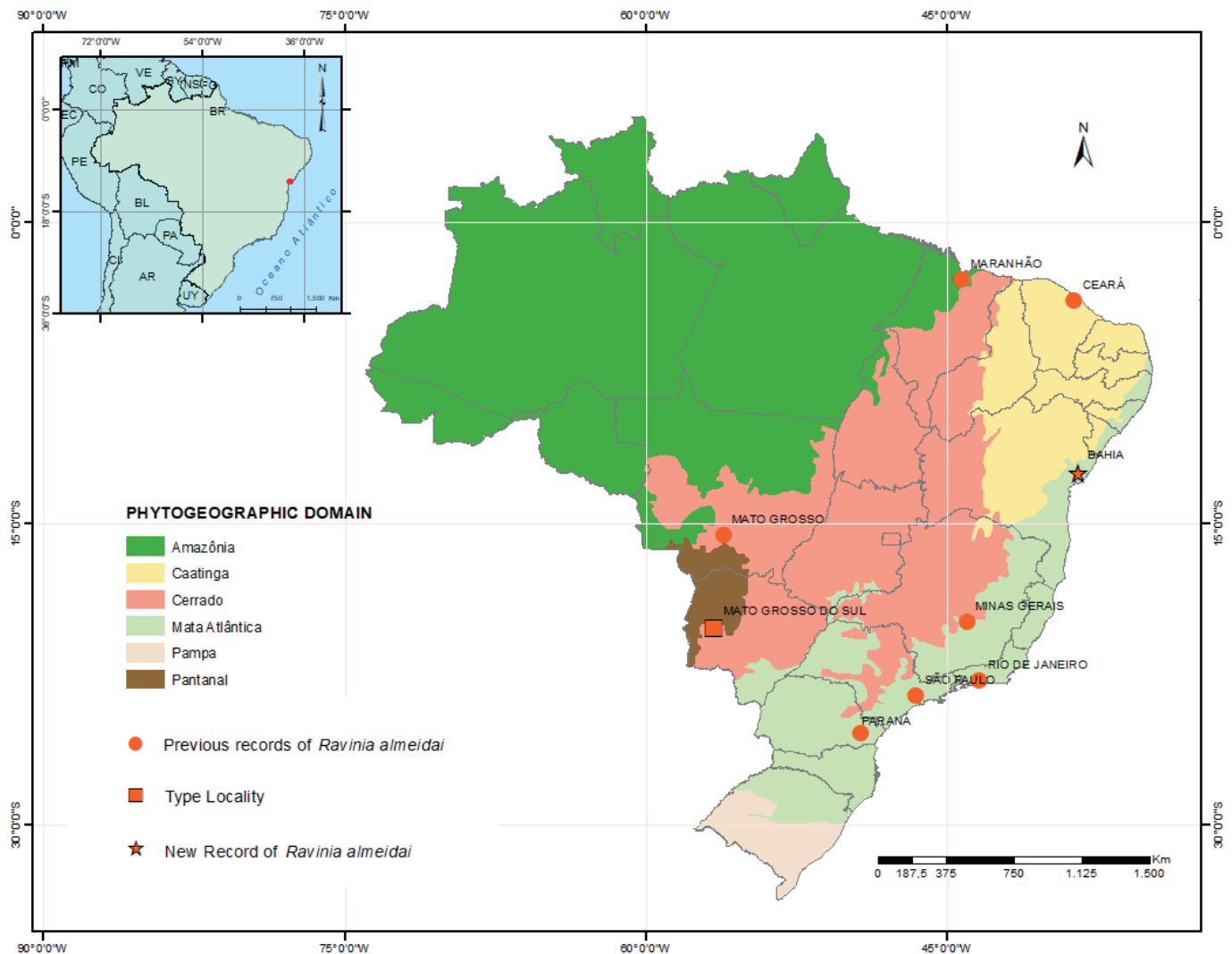


Figure 2. Geographic distribution of *Ravinia almeidai* (Lopes, 1946) in Brazilian.

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Authors' contributions

RLR collected the specimen. All authors contributed substantially to review the literature and writing the manuscript.

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