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A new species of *Forcipomyia* (*Microhelea*) Meigen (Insecta: Diptera: Ceratopogonidae) from the Neotropical region

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Abstract

We describe and illustrate a new species of biting midge belonging to the subgenus *Forcipomyia* (*Microhelea*), from the Estação Biológica de Boracéia, São Paulo State, Brazil. We include illustrations of the mouthparts, head, thorax, legs, abdominal setae, and habitus. The new species is similar to the few other recorded Neotropical species of biting midges, such as *Forcipomyia* (*Microhelea*) *alleni*, *Forcipomyia* (*Microhelea*) *castneri*, *Forcipomyia* (*Microhelea*) *grandcolasi*, and *Forcipomyia* (*Microhelea*) *tettigonaris*. However, it can be distinguished by the combination of external characters, such as the number of plates on the maxilla, the number of denticles on the mandible, the size of the labellum, and the morphology of the palpus. The two female specimens examined were found biting on a female stick bug, *Paraphasma paulense* (Phasmida: Pseudophasmatidae), which was attracted to a light trap.

Key words: biting midges, Brazil, diversity, *Paraphasma*, Phasmida, taxonomy

Introduction

The genus *Forcipomyia* Meigen, 1818 is composed of medium-sized midges belonging to the subfamily Forcipomyiinae. According to Borkent and Spinelli (2007) and Borkent (2014), the genus is remarkably diverse and includes 210 species from the Neotropical region, of which 48 species belong to the subgenus *Forcipomyia* (*Microhelea*) Kieffer, 1917. Species belonging to the genus *Forcipomyia* can be found from the coast to the highest elevation at 4000 m. Adult males and females feed on the nectar of small flowers and are pollinators of some cultivated crops, such as cacao (*Theobroma cacao* L.). Adult females are ectoparasites of other insect orders (e.g., Phasmida, Orthoptera, Lepidoptera, Heteroptera, Odonata) (Borkent & Spinelli 2007; Clastrier & Wirth 1995). Unusually, adult females belonging to the subgenus *Forcipomyia* (*Lasiohelea*) Kieffer, 1921 are hematophagous parasites of vertebrates. Adult females belonging to the subgenus *Forcipomyia* (*Microhelea*) are frequently found attached to phasmids and katydids as small ticks, when they are full of developing eggs (Clastrier & Wirth 1995). The subgenus *Forcipomyia* (*Microhelea*) has 102 described species, of which 48 species are from the Neotropical region (Borkent 2014).

During a 13-month survey of nocturnal moths in Estação Biológica de Boracéia (EBB), São Paulo State, Brazil, we collected two specimens of *Forcipomyia* (*Microhelea*) from a female phasmid. Attempts to identify the specimens before depositing them in the Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZUSP) revealed that they did not exactly fit with any of the species previously described or recorded by Clastrier and Wirth (1995). In the present study, we describe and illustrate a new species. We include illustrations of the mouthparts, head, thorax, legs, abdominal setae, and habitus.

The mouthparts have the main diagnostic characters that help to differentiate species belonging to the subgenus *Forcipomyia* (*Microhelea*). *Forcipomyia* (*M.*) *alleni* has two short spines at the extreme distal of the maxilla, followed by six plates, whereas *F. (M.) paulista* **nov. sp.** has 12 transversal plates in the maxilla, and no spines. *Forcipomyia* (*M.*) *castneri* has 25 denticles in the mandible and 21 plates in the maxilla; in addition, the labellum is longer than the other mouthparts and the halter is black. On the other hand, *F. (M.) paulista* **nov. sp.** has only 20 denticles in the mandible and 12 plates in the maxilla; in addition, the labellum is shorter than the other mouthparts and the halter is yellowish. *Forcipomyia* (*M.*) *grandcolasi* has a darker mandible, with 22 denticles, and 22 irregular transversal plates in the maxilla; in addition, the labellum is extremely short, exposing the remaining mouthparts. Finally, *F. (M.) tettigonaris* has 17 denticles in the mandible, and five linear formations and 10 plates in the maxilla; in addition, the labellum is longer than the other mouthparts.

The remaining 28 species treated by Clastrier and Wirth (1995) are easily distinguished from *F. (M.) paulista* **nov. sp.** by the following morphological characters: maxilla with more than a single range of plates; abdominal pleura with modified setae (scales-like setae); and palpus bicolored.

Considering the different biomes that have not yet been sampled in Brazil and South America, especially those biomes where the occurrence of the hosts of *Forcipomyia* (*Microhelea*) is known and recorded, we believe that a considerable part of the diversity of this taxon remains unknown and undescribed.

Type material. Holotype ♀, labeled “BRAZIL, São Paulo, Salesópolis, Estação Biológica de Boracéia, 23°38'S 45°52'W, 900 m, leg. F.F.Albertoni” (MZUSP). Paratype, 1 ♀, same data as holotype (MZUSP).

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