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Megaselia Rondani (Diptera: Phoridae) larvae as a Sphingidae (Lepidoptera) parasitoid

Larvas de **Megaselia** *Rondani (Diptera: Phoridae) como parasitoide de Sphingidae (Lepidoptera)*

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ABSTRACT: Detritivoria and parasitism are dietary habits already registered for the phorids of the genus *Megaselia* Rondani. The results of this study confirm the parasitic habit of *Megaselia* larvae. This is the first *Pachylia ficus* (Linnaeus, 1758) (Lepidoptera: Sphingidae) adult record as a host of *Megaselia scalaris* (Loew, 1866) and *Megaselia* sp. (Diptera: Phoridae).

KEYWORDS: phoridae; parasitoid-host relationship; moth.

RESUMO: Detritivoria e parasitismo são hábitos alimentares já registrados para os forídeos do gênero *Megaselia* Rondani. Os resultados do presente estudo confirmam o hábito parasitário das larvas de *Megaselia*. Este é o primeiro registro de adulto de *Pachylia ficus* (Linnaeus, 1758) (Lepidoptera: Sphingidae) como hospedeiro de *Megaselia scalaris* (Loew, 1866) e *Megaselia* sp. (Diptera: Phoridae).

PALAVRAS-CHAVE: forídeos; relação parasitoide-hospedeiro; mariposa.

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The Phoridae (Insecta: Diptera) family gathers 4,000 species distributed in 289 genera present in all biogeographic regions of the world, and in Brazil about 850 species are known (DISNEY, 1990, 1994; DISNEY et al., 2010; PEREIRA et al., 2015; AMENT; PEREIRA, 2017). Because of their great diversity of species, Phoridae differs widely as to its eating habits in the larval and adult stages. They can be scavengers, consuming animal remains and other decaying materials, fungi growers, herbivores, predators and parasitoids, causing agents of myiasis in man (DISNEY, 1994; CELIS, 2013; PEREIRA et al., 2015). These different habits of Phoridae make ecosystems dynamic, as they can meet different ecological services.

The aim of this study was to report the parasitism of *Megaselia scalaris* (Loew, 1866) (Diptera: Phoridae) and of a morphospecies of *Megaselia* in Sphingidae (Lepidoptera).

On July 7, 2014, a lepidopteran adult of the Sphingidae family was found on the Central Pavilion floor of the Universidade Federal Rural do Rio de Janeiro (UFRRJ), Seropédica *Campus*, Rio de Janeiro, Brazil (22º45'S, 43º41'W, altitude of 33 m), and it was inert, but, when touched, it held very short flights. The adult was collected manually and taken to the laboratory of the Integrated Center for Pest Handling (Centro Integrado de Manejo de Pragas — CIMP)/UFRRJ, in which it was packed in a transparent plastic container of 1 L, sealed with a perforated plastic lid and covered with polyvinyl chloride (PVC) film, and it remained alive for a few hours after its collection. The moth was then identified as belonging to the *Pachylia ficus* (Linnaeus, 1758) (Lepidoptera: Sphingidae) species, based on BOONE (2016).

On the day after the collection, dipterous larvae were observed around the moth inside the container. On July 12, 2014 (five days after the collection of the lepidopteran), more larvae were observed coming out of the moth. One week after collection, the larvae became pupae. Most adult dipterans emerged between the 16th and 20th days after collection, and more adults were observed coming from inside the moth between the 25th and 27th days after collection. All adult dipterans were removed from the container and placed in a 30-mL glass vial containing 90% alcohol for specific identification. The lepidopteran adult was observed during 30 days, but there was no emergence of more individuals. After this period, the moth was dissected to observe the presence of pupae that did not result in emergence of adults. After the total observation period, 134 specimens of flies were obtained. Dipterans were identified at a specific level, using morphological characters and following the BORGMEIER (1962) key. All flies belonged to the *Megaselia* (Diptera: Phoridae) genre. The total of 47 flies (17 males and 30 females) were identified as *M. scalaris* (Fig. 1), and 87 flies (32 males and 55 females) as *Megaselia* sp. morphotype, suggesting a case of multiparasitism. This is the first record of *M. scalaris* and *Megaselia* sp. as *P. ficus* adult parasitoids. Insects identified were deposited at the Entomological Collection Costa Lima (Coleção Entomológica Costa Lima — CECL) (record no.: 12,508), Department of Entomology and Phytopathology (Departamento de Entomologia e Fitopatologia — DEnF)/UFRRJ (Seropédica, RJ, Brazil). *Megaselia scalaris* had already been reported as parasitoids of immature forms of pest species of Noctuidae (Lepidoptera) in agricultural crops (CHACÓN DE ULLOA; ROJAS DE HERNANDEZ, 1981; TEFERA, 2004; RUÍZ-NÁJERA et al., 2007; BERTA et al., 2009), and may present as an important way to control agricultural and forest pests.

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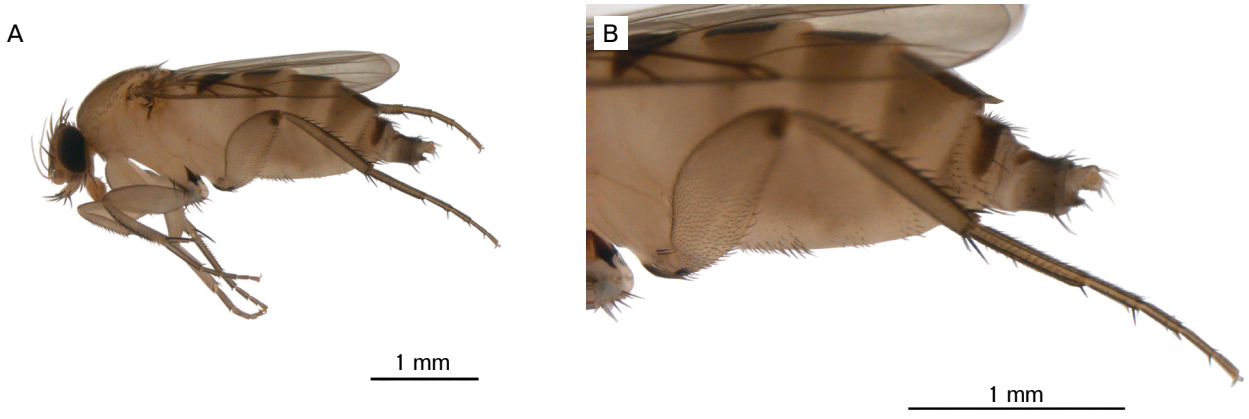

Figure 1. *Megaselia scalaris* Loew (Diptera: Phoridae): (A) female; (B) female abdomen side view, showing the genitalia.

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