

A new species of *Megaselia* Rondani (Diptera: Phoridae) associated with a tarantula spider (Araneae: Theraphosidae)

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Article history: Received: 1 August 2022; Accepted: 15 September 2022; Published: 28 October 2022

ABSTRACT

Megaselia cumtarantula sp. n. is described for Peru. The entire life cycle of these flies takes place on tarantulas of the species *Pamphobeteus antinous* Pocock. Adults, pupae and larvae were found on the prosoma and femur of the legs of adult tarantulas and only larvae were found on the opisthosoma of juvenile tarantulas.

Keywords: Phoridae, *Megaselia*, *Pamphobeteus*, commensalism, Peru

INTRODUCTION

In 1997 and 1998, the first records of phorid flies associated with tarantulas were made for South America: *Megaselia dimorphica*, *Megaselia praedafura*, and *Megaselia tinteri* were described from French Guiana, Colombia, and Ecuador, respectively (Weinmann & Disney 1997; Disney & Weinmann 1998). The tarantulas provide shelter and food for the phorid flies, and the flies develop through all their life stages (larva, pupa and adult) in the same tarantula.

During a recent study in the Peruvian jungle, some specimens of *Pamphobeteus antinous* Pocock tarantulas were found infested with larvae, pupae and adult phorid flies. The fly specimens belonged to the giant genus *Megaselia* Rondani, whose neotropical species have primarily been identified by Borgmeier (1962, 1969a&b, 1971) with many additions since, and with all but the most recent listed by Brown (2010).

The phorid specimens from Peru proved to be a new species (described below) that is more closely related to earlier species recorded with tarantula spiders. In addition, a mite was attached to the abdominal tergite 2 of a female fly.

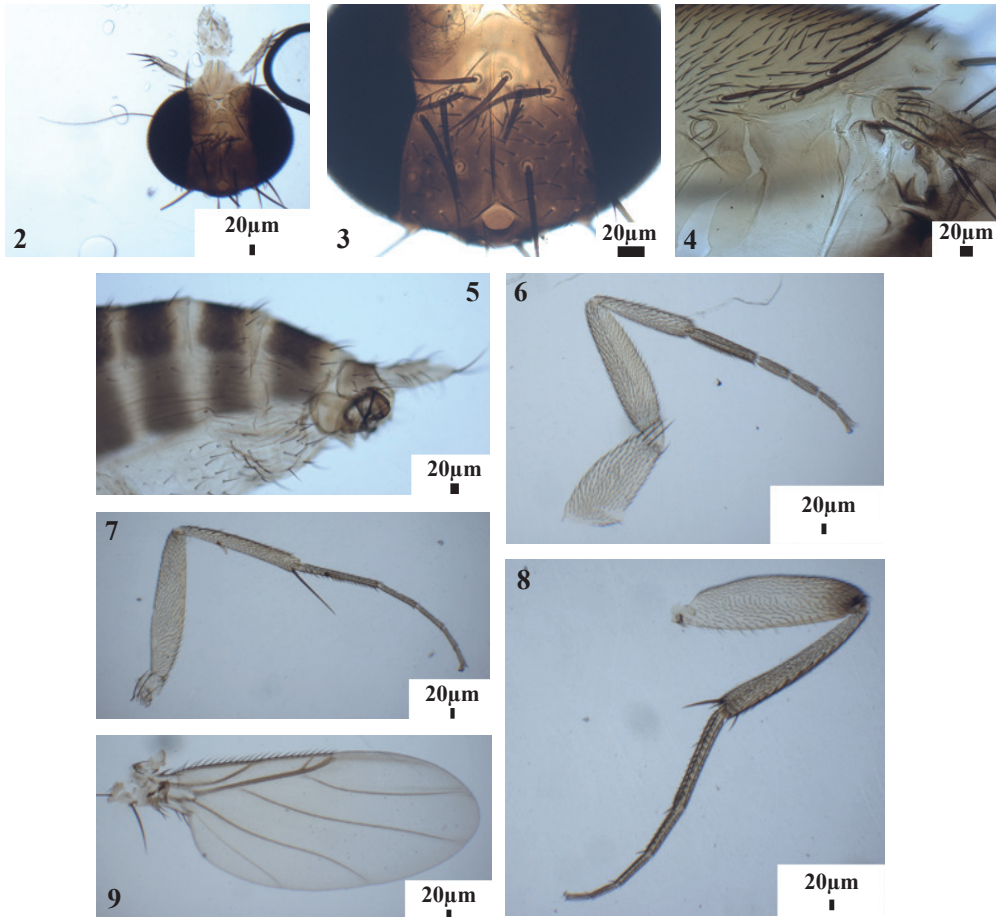
METHODS

The field studies were carried out at the Kawsay Biological Station, Tambopata Province, Madre de Dios Department, Peru, between 187 and 203m asl. The *Pamphobeteus antinous* tarantulas were captured and the phorid flies and larvae extracted. The phorid specimens were collected by hand with tweezers and stored in microtubes; later the tarantulas were released. The specimens were preserved in 70% ethanol and mounted on slides in Berlese Fluid (see Disney 2001). The specimens are deposited in the University of Cambridge Museum of Zoology (UCMZ).



Photo: Juan Daniel Valencia Malaga

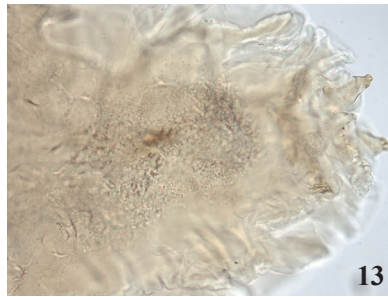
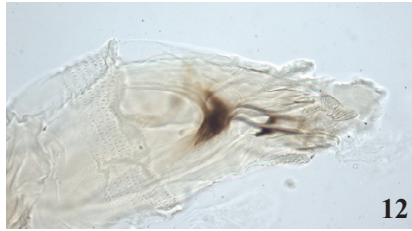
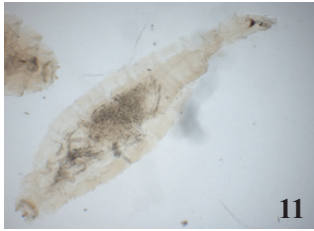
Fig. 1. — Females of *Megaselia cumtarantula* sp. n. on top of a tarantula *Pamphobeteus antinous* (photo by Juan Daniel Valencia Malaga).



Figs 2–9. — *Megaselia cumtarantula* sp. n., ♂: 2, head; 3, frons; 4, side of thorax; 5, side of abdomen; 6, front leg; 7, middle leg; 8, hind leg; 9, wing.



Fig. 10. — *Megaselia cumtarantula* sp. n., ♀ abdomen.



Figs 11–13. — *Megaselia cumtarantula* sp. n., larva: 11, whole larva; 12, head end; 13, tail end.



Fig. 14. — Pre-adult epiparasitic mite.

***Megaselia cumtarantula* sp. n.**
(Figs 1–13)

Description

Fig. 1 depicts some female phorids on the top of a tarantula spider (photographed by Juan Daniel Valencia Malaga).

♂: Head as shown in Fig. 2, with details of frons as shown in Fig. 3. Postpedicels lacking SPS vesicles. The side of thorax as in Fig. 4, the mesopleuron being bare and with 2 notopleural bristles. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Side of the abdomen as in Fig. 5. Front leg as in Fig. 6. Middle leg as in Fig. 7. Hind leg as in Fig. 8. Wing as in Fig. 9 (length 1.75mm). The costal index 0.54. Costal ratios 4.46:3.17:1. The hair at base of vein 3 is 0.29mm long. The outer axillary bristle is 0.45mm long. Haltere yellow.

♀: Head and thorax similar to ♂. Abdomen as in Fig. 10. Legs similar to ♂. The wing as in Fig. 9 (length 1.87mm). The costal index 0.55. Costal ratios 4.46:3.17:1. Hair at base of vein 3 is 0.29mm long. The outer axillary bristle is 0.45mm long. Haltere as in ♂.

Larva: Whole larva as in Fig. 11. Anterior (head) end as Fig. 12 and posterior (tail) end as in Fig. 13.

Diagnosis. *Megaselia cumtarantula* sp. n. most closely resembles the previous species reported to be associated with tarantula spiders (Weinmann & Disney 1997; Disney & Weinmann 1998). The hypopygia of the males and the differences in the shapes of the females abdominal tergites, however, readily distinguish the new species from all the others.

Etymology. The new species is named after its association with (*cum*) a tarantula spider.

Note. An epiparasitic mite (Fig. 14) was attached by its proboscis to a female fly's abdomen (second tergum).

Material examined

Holotype: ♂ with *Pamphobeteus antinous* Pocock tarantula, at the Kawsay Biological Station, Tambopata District, Tambopata Province, Madre de Dios Department, Peru (12°31'54.92"S, 69°00'30.16"W) at 201m asl, collected on 10 March 2022, by Juan V. and Lorena M.

Paratypes: 1♂, 3♀♀ (UCMZ, 42-72), plus several larvae.

ACKNOWLEDGEMENTS

We thank Raúl Bello Santa Cruz for access to the facilities of the Conservation Area: Kawsay Biological Station, Madre de Dios, Peru, allowing us to make this new discovery. JDVM thanks Lorena Málaga, Laura Böttges, Sofia Rosales, Victor Ramos, Waldir Ccoa and George Cartwright for their help in the fieldwork for the search and collection of specimens.

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