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NOTES AND COMMENTS

# First record of *Melaloncha* (Diptera: Phoridae) parasitoid associated with *Bombus* (Apidae: Bombini) in Argentina

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The bumble bees (genus *Bombus* Latreille) are among the most efficient insect pollinators in natural and agricultural ecosystems; most species are polylectic and depend on pollen and nectar of great variety of plants (Goulson, 2003a; Abrahamovich *et al.*, 2001). Pollinator declines have been noted in many regions of the world and are thought to be related to changes in the use of agricultural land, effects of pesticides, pathogens, and also to the effects of parasites (Goulson, 2003b; Williams, 2005; Otti and Schmid-Hempel, 2007). Bumble bees are attacked in various stages of their life cycle by a diverse range of predators, parasites and parasitoids (Goulson and Brown, 2009). The bee-killing flies, genus *Melaloncha*, are a group of phorids almost restricted to the Neotropics and represented by 167 described species (Brown, 2009). They are endoparasitoids of different bees, including stingless bees, honey bees (*Apis mellifera*) and bumble bees (*Bombus*),

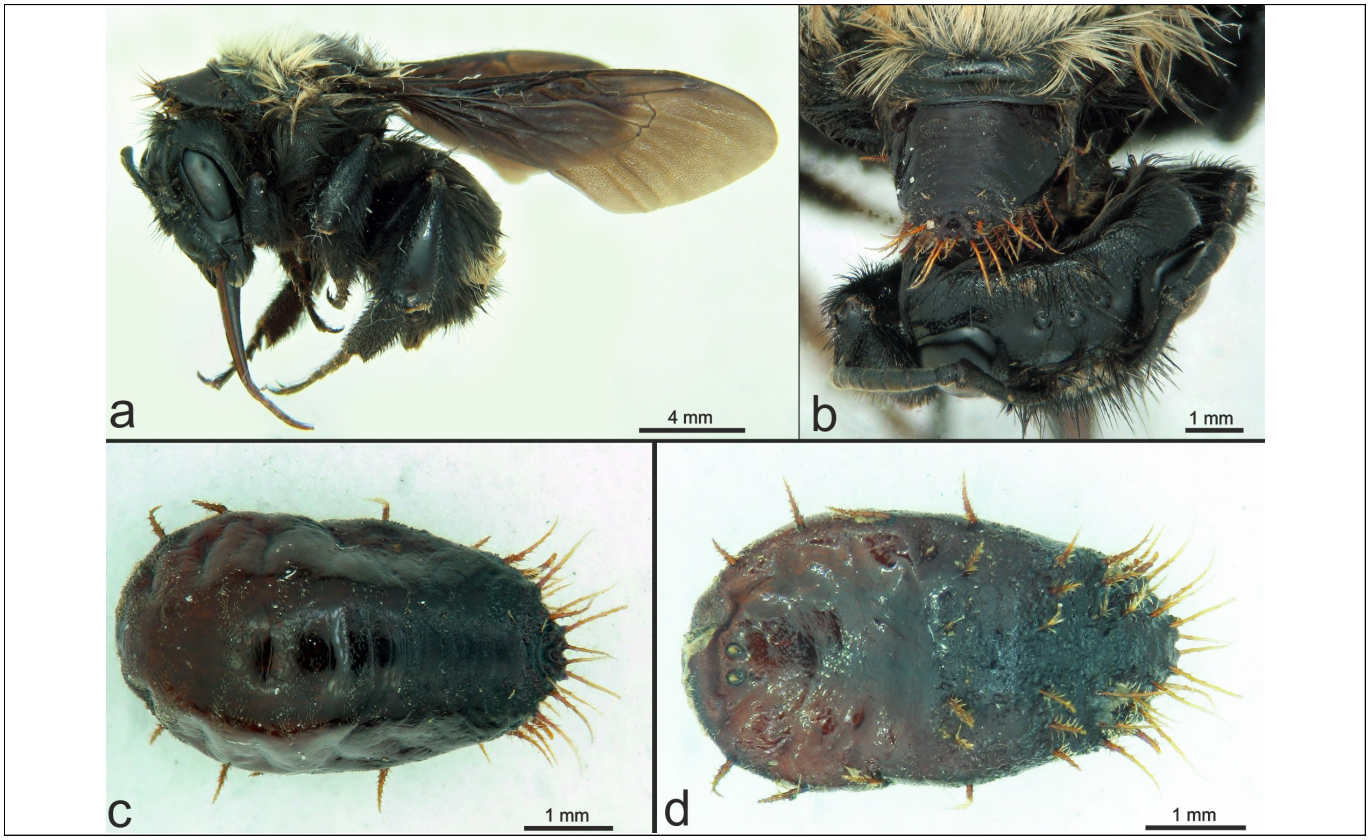


***Fig. 1. a-d.*** a, Body lateral view of *Bombus atratus*; b, emergence of the puparium of *Melaloncha* sp. between mesothorax and protorax of *Bombus atratus* worker; c-d, Pupariun of *Melaloncha* sp., ventral and dorsal view respectively.

with most records occurring in the family Apidae and with one case in the family Halictidae (Wcislo *et al*., 2004). The females of *Melaloncha* oviposit through the intersegmental membranes of the abdomen of a bee host, where the first larval stages develop. Later, the larva migrates to the thorax, complete the development and pupates causing the death of the bee (Clausen, 1972). However, Brown and Kung (2006) observed that in three species of *Melaloncha*, the female of the phorid apparently oviposits on the head of the host.

We found a puparium of *Melaloncha* sp. (Diptera: Phoridae) inside the mesosoma, between the mesothorax and the protorax, of a worker of *Bombus atratus* Franklin from Argentina (Fig. 1a, b). The absence of an adult made the identification difficult, but the puparium was similar to that of *Melaloncha ronnai* described by Borgmeier in 1935. The puparium was dark-brown and measured approximately 5 mm in length and had a maximum width of 2.7 mm (Fig. 1c, d). In lateral view it was S-shaped, with concave anterior dorsal area and convex posterior. Two horns were presents on each side of the second abdominal segment.

There is one record of a parasitized *Bombus mexicanus* Cresson in Costa Rica (Ramirez, 1982) but unfortunately the fly specimen has been lost (Brown, 2004), and this was the only record of parasitism of *Melaloncha* in the genus *Bombus*. Ours is the first record of a *Bombus* -*Melaloncha* association in South America and future studies on the biology of this parasitoid, will demonstrate if theses flies parasitize species of others bees and if there is any sanitary implication.

MATERIAL EXAMINED: one puparium of *Melaloncha* sp. ARGENTINA, Misiones, El Soberbio (27°16'39″S, 54°11' 34″W, 139 mts), 19-22-xi-2007, Col. M Lucia-Alvarez. L (MLP) (ex. worker of *Bombus atratus*). The bee was collected foraging on *Leonurus japonicus* Houtt. (Lamiaceae).

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