

Taxonomia (Taxonomy)

A new subgenus of the stingless bee genus *Melipona* (Hymenoptera, Apidae), with a key to the subgenera¹

Um novo subgênero de abelha-sem-ferrão do gênero *Melipona* (Hymenoptera, Apidae), e uma chave para os subgêneros

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Melipona Illiger contains 71 valid species and is by far the largest genus of Meliponini. It is divided in four subgenera, namely *M.* (*Melipona*), *M.* (*Eomelipona*), *M.* (*Michmelia*) and *M.* (*Melikerria*), based on a classification system proposed by MOURE (1992). Except for MICHENER (2007), this subgeneric classification has been adopted in major works dealing with the genus (SILVEIRA et al., 2002; PEDRO & CAMARGO, 2007; RASMUSSEN & CAMERON, 2010; RAMIREZ ET AL., 2010).

The relationships within *Melipona* were investigated most recently by RAMIREZ et al. (2010) using molecular data and their results showed that the subgenus *Eomelipona*, as circumscribed by MOURE (1992), was not monophyletic. Non-monophyly of *M.* (*Eomelipona*) had already been suggested by SILVEIRA et al. (2002), based on morphological grounds. Here a fifth subgenus is proposed to partly accommodate these results. A revised classification system for *Melipona* will be presented in a forthcoming paper.

¹ urn:lsid:zoobank.org:pub:B97ADE47-F947-40BB-9314-54E9A66E5ADF



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MATERIAL AND METHODS

The studied specimens belong to the entomological collection of the Department of Zoology of the Universidade Federal do Paraná, Brazil (DZUP). The general morphological terminology follows URBAN (1967), SILVEIRA et al. (2002) and MICHENER (2007). The color images were obtained on a camera Leica DFC295 associated to a stereomicroscope Leica M125 and processed by the software Zerene Stacker.

TAXONOMY

***Melipona (Meliponiella)* subgen. nov.**

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(Fig. 1A–D)

Type-species: *Melipona illustris* Schwarz, 1932

Comments and Diagnosis. The species assigned here to *M. (Meliponiella)* were previously considered as part of *M. (Eomelipona)*. The new subgenus is the smallest main lineage within *Melipona*, with only four recognized species. They are also the group with the smallest body size in the genus (Fig. 1). The new subgenus can be distinguished from *M. (Eomelipona)* and the remaining subgenera based on the key provided below.

Description (based on the worker caste). Body size around 7 mm. Teeth along cutting edge of mandible relatively small, emargination between basal and second teeth shallow. Malar space shorter than flagellum width; distance eye-clypeus shorter than flagellum width. Clypeus entirely covered with short erect plumose pilosity; lower parocular area, between antennal socket and eye, with mostly simple erect and decumbent plumose pilosity. Area between eye and lateral ocellus on vertex relatively flat; region behind ocelli not raised in relation to surrounding surface; lateral portion of vertex, in frontal view, not raised above eyes; distance between posterior ocelli longer than that between lateral ocellus and eye (about 1.6x); distance between upper margins of compound eyes shorter than eye length, ratio varying between 0.83–0.86. Occipital carina not forming a crest. Pronotal collar not appressed against mesoscutum, central portion very broadly rounded. Long erect pilosity on vertex, mesoscutum and scutellum with ramifications longer than rachis diameter and sparsely distributed, giving a spiny aspect to the hairs; pilosity on

anterior corners of mesoscutum not differing from that on remainder of sclerite. Mesoscutum, axillae and/or scutellum commonly with yellow marks. Color of setae of hind tibia variable. Concavity on anterior surface of tergum 1 strongly developed, its surface mostly glabrous, limit with dorsal portion of tergum marked by a distinct crest.

Etymology. The name refers to the small body size of the workers belonging to this new subgenus, based on a combination of *Melipona* with the Latin suffix *-ella*.

Included species. *Melipona bradleyi* Schwarz, 1932, *M. carrikeri* Cockerell, 1919, *M. illustris* Schwarz, 1932, *M. micheneri* Schwarz, 1951.

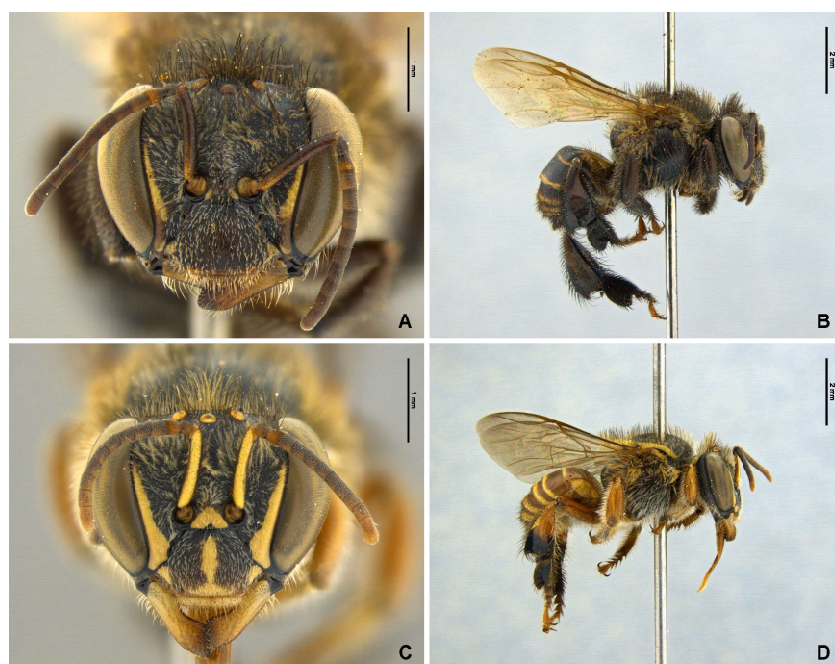


Figure 1. Representative species of *Melipona* (*Meliponiella*) subgen. nov. A, B. *Melipona carrikeri* Cockerell, 1919, worker from Costa Rica. A, Head, frontal view; B. Habitus, lateral view. C, D. *Melipona illustris* Schwarz, 1932, worker from Brazil. C, Head, frontal view; D. Habitus, lateral view.

**Key to the subgenera of *Melipona* based on the worker caste
(modified from SILVEIRA et al., 2002)**

1. Disc of clypeus and lower paraocular area with extremely minute, non-evident pilosity; clypeal surface in most species finely and uniformly microreticulated and dull, or polished and shiny in a few species. Minimum distance between clypeus and eye wider than flagellum width.....*M. (Melipona)*
– Disc of clypeus and lower paraocular area almost always with conspicuous erect setae and/or with decumbent pubescence; clypeal surface with variable microsculpture. Distance between clypeus and eye variable.....2
2. Anterior corners of mesoscutum each with a dense tuft of reddish-brown plumose setae, distinctly contrasting with pilosity on remainder of mesoscutum. Teeth along cutting edge of mandible strong, emargination between basal and second teeth relatively short and deep.....*M. (Melikerria)*
– Pilosity on anterior corners of mesoscutum not differing from that on remainder of sclerite. Teeth along cutting edge of mandible relatively small, emargination between basal and second teeth shallow.....3
3. Malar space broad, at least as long as diameter of flagellum. Distance between posterior ocelli almost always shorter than distance between lateral ocellus and compound eye (if slightly longer, than less than 1.1x).....*M. (Michmelia)*
– Malar space narrow, distinctly shorter than diameter of flagellum. Distance between posterior ocelli at least 1.2x longer than distance between lateral ocellus and compound eye.....4
4. Disc of clypeus with only short decumbent pilosity, which can be sparse and composed mostly by simple hairs or dense and formed by both simple and plumose hairs. Propodeum without yellow marks. Occipital carina, when seen from above, forming a transverse crest behind the head.....*M. (Eomelipona)*
– Clypeus covered with conspicuous pilosity formed by a mixture of longer simple setae and shorter erect plumose hairs (Fig. 1A, C). Propodeum with a pair of yellow longitudinal stripes along its limit with the metapostnotum (Fig. 1B, D). Occipital carina very low, not forming a crest behind the head.....*M. (Meliponiella)* subgen. nov.

DISCUSSION

The species placed in *M. (Eomelipona)* by CAMARGO & PEDRO (2007) came out in four different places in the analyses conducted by RAMÍREZ ET AL. (2010). The species here assigned to *M. (Meliponiella)* subgen. nov. did not come out in the clade containing *M. marginata* Lepeletier, the type species of *M. (Eomelipona)*.

The species of *M. (Meliponiella)* occur only in Central America and in the Amazon basin, being absent from other Neotropical regions. They form two distinct clades, one containing the Central American forms, *M. carrikeri* and *M. micheneri*, and the other with the two Amazonian forms, *M. bradleyi* and *M. illustris*. These two clades are relatively old, their split having occurred quite early in the Miocene. The two forms in each clade are very similar structurally to one another and future investigation might show that they represent a single species each.

ACKNOWLEDGMENTS

I thank Rodrigo Gonçalves, the new editor of the Acta, for kindly handling this small contribution and for reviewing the manuscript, and Diego Barbosa for comments that helped improve it. Financial support has been provided by Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq (grant 309641/2016-0).

The author declares no conflicts of interest.

SUMMARY

A new subgenus, *Melipona (Meliponiella)* (type-species: *Melipona illustris* Schwarz, 1932), is proposed to remedy the non-monophyly of *M. (Eomelipona)*. A key to the subgenera of *Melipona*, based on the worker caste, is provided.

KEYWORDS: Meliponini, Neotropical, taxonomy

SUMÁRIO

Um novo subgênero, *Melipona (Meliponiella)* (espécie-tipo: *Melipona illustris* Schwarz, 1932), é proposto para resolver parcialmente a não-monofilia de *M. (Eomelipona)*. É proposta uma chave baseada em operárias para os subgêneros de *Melipona*.

PALAVRAS-CHAVE: Meliponini, Neotropical, taxonomia

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Received 5 October 2021

Accepted 7 October 2021

Available Online 7 October 2021

Edited by Rodrigo B. Gonçalves

