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A new species of *Tropidopedia* from the Amazon rainforest, Brazil (Hymenoptera: Apidae), with a revised phylogenetic overview of the genus

THIAGO MAHLMANN[1] & MARCIO L. DE OLIVEIRA
Instituto Nacional de Pesquisas da Amazônia, Coleção de Invertebrados, Av. André Araujo, 2936, Aleixo - Manaus/AM, Brasil - Caixa Postal 2223—CEP 69060-000. E-mail: thiago.mahlmann@inpa.gov.br, mlolivei@inpa.gov.br
[1]Corresponding author

Abstract. We describe a new species of the bee tribe Tapinotaspidini, *Tropidopedia guaranae* Mahlmann & Oliveira **sp. n.** from the Amazon rainforest, Amazonas, Brazil. We emend the phylogenetic tree of Aguiar & Melo (2007) to include the new species and comment upon some characters presented by those authors.

Kew words: oil-collecting bees, *Tropidopedia, punctifrons* group, Tapinotaspidini, taxonomy

Introduction

The bee tribe Tapinotaspidini contains numerous small to moderate-sized species with diverse morphologies. Most of the species in this tribe are collectors of floral oils, principally from the plant family Malpighiaceae (Silveira et al. 2002). One of these, the Neotropical genus *Tropidopedia* Michener & Moure, 1957 (or subgenus of *Paratetrapedia sensu* Michener 2007), occurs from southern Brazil to Panama (Aguiar, 2012). Aguiar & Melo (2007) recognized 17 nominal valid species in *Tropidopedia* and divided the genus into two distinct groups of species based on a cladistic analysis. The *pallidipennis* group includes the following nine species: *Tropidopedia arcuatilis* (Vachal), *T. danunciae* Aguiar & Melo, *T. friesei* Aguiar & Melo, *T. japuraensis* Aguiar & Melo, *T. nigrita* Aguiar & Melo, *T. ornata* Aguiar & Melo, *T. pallidipennis* (Friese), *T. peruana* Aguiar & Melo, and *T. seabrai* (Michener & Moure). The remaining species are in the *punctifrons* group: *T. caracicola* Aguiar & Melo, *T. carinata* Aguiar & Melo, *T. duckeana* Aguiar & Melo, *T. eliasi* Aguiar & Melo, *T. flavolineata* Aguiar & Melo, *T. nigrocarinata* Aguiar & Melo, *T. punctifrons* (Smith), and *T. venezuelana* Aguiar & Melo. The present paper describes a new species of the *punctifrons* species group occurring on Amazon rainforest, Amazonas, Brazil, and discusses a new phylogenetic overview of the genus *Tropidopedia*.

Material and methods

All material studied were from the Instituto Nacional de Pesquisas da Amazônia—INPA (Manaus, Amazonas, Brazil). The format for the description follows Aguiar & Melo (2007). General morphological terminology follows Michener (2007), with the standard abbreviations as follows: F1, F2, etc.—antennal flagellomeres; T1 to T7 and S1 to S8—metasomal terga and sterna, respectively. All measurements are given in millimeters. The sculpturing description follows Aguiar & Melo (2007): the intervals between the punctures were based on relative puncture diameter, "pd" and the size of punctures finely minute, fine, coarse, and very coarse. Stout and firm cuticular projections are here referred as setae, while those thin and soft as hairs.

Label information from separate labels are segregared by "//" (double slashes). Typographic errors from labels were corrected and the corrections identified with "[ ]" (square brackets). Photomicrographs were prepared using a Leica M205C stereomicroscope coupled with a Leica DFC295 and a Leica Application Suite V4.1 Interactive Measurements, Montage.

Phylogenetic affinities of the new species were determined by adding it to the matrix of Aguiar & Melo (2007) and then re-analyzing the matrix using software NONA (Goloboff, 1999) implemented by WINCLADA ver. 1.00.08 (Nixon, 2002), with all characters treated as nonadditive. A heuristic search was performed with one thousand replications using

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