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BRIEF COMMUNICATION

Notes on the stingless bee genera *Scaura* and *Geotrigona* (Hymenoptera: Apidae)

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Abstract. Brief notes are presented on the classifications of *Scaura* Schwarz and *Geotrigona* Moure. A new subgeneric system is proposed for *Scaura* in which three subgenera are recognized: *Scaura* Schwarz, *s.str.*; *Scauracea* Engel, new subgenus; *Schwarzula* Moure. Likewise, a new subgenus is proposed in *Geotrigona* as *Chthonotrigona* Engel, new subgenus.

INTRODUCTION

Recent changes to the supraspecific classification of stingless bees have attempted to improve the systems initially put forward by Moure (1951, 1961) and Michener (1990, 2007) (*e.g.*, Rasmussen *et al.*, 2017; Engel, 2019; Engel *et al.*, 2021). Here two new names are established for subgeneric groups of New World stingless bees. These are proposed now in order to make these names available for use in forthcoming works.

SYSTEMATICS

Genus *Scaura* Schwarz

The genus *Scaura* Schwarz is a distinctive group of small to minute stingless bees (3–6 mm in total length), particularly noteworthy for the expanded metabasitarsus, a trait shared with the species of *Schwarzula* Moure. While *Schwarzula* is sometimes treated as a separate genus sister to *Scaura* (*e.g.*, Silveira *et al.*, 2002; Camargo & Pedro, 2002a), it has more recently been classified as a subgenus or synonym of *Scaura* (*e.g.*,

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Engel *et al.*, 2021). The genus superficially resembles *Plebeia* Schwarz, which led Michener (1990, 2007, 2013) to consider *Scaura* as a subgenus of the former (and *Schwarzula* as a synonym of *Scaura*). Nonetheless, *Scaura* does not appear to be immediately related to *Plebeia* (Rasmussen & Cameron, 2010), and its inclusion therein is unwarranted.

The phylogeny of Rasmussen & Cameron (2010) suggested that *Scaura* was paraphyletic with respect to *Schwarzula*. In their phylogeny, species of the former “*latitarsis*” complex were more closely related to *Schwarzula* than to *Scaura longula* (Lepelletier) and *S. tenuis* (Ducke). Note, however, that in their phylogeny *S. latitarsis* (Friese), the type species of *Scaura*, was represented by its junior synonym *S. tenuis* (*vide* Nogueira *et al.*, 2017, 2019), and that the species identified as “*S. latitarsis*” was instead likely *S. amazonica* Nogueira *et al.* Regarding such paraphyly, an easy solution is the synonymy of *Schwarzula* under *Scaura*. However, this classificatory arrangement obscures some interesting biological differences among these groups of bees. For instance, both *S. latitarsis* and *S. longula* are distinctive for their elongate, thin metasomas and both have brood cells arranged in either irregular clusters or columns (Nogueira *et al.*, 2019, in press). By contrast, the remaining species have broader metasomas similar to those of *Schwarzula* (and are putatively more closely related to this group), and all build brood cells in horizontal discs (Nogueira *et al.*, 2019, in press). Moreover, *Schwarzula* is known to have a unique mutualism with scale insects (Coccidae) (Camargo & Pedro, 2002a, 2002b), and it is therefore itself a practical taxonomic unit. To rectify the situation regarding potential paraphyly of *Scaura* relative to *Schwarzula* it is simple to consider a third subgenus, as proposed herein. Although finely split, the recognition of this group putatively leaves each group monophyletic and allows each subgenus to be associated with a distinctive morphology and biology. Moreover, as subgenera can be ignored easily, it does not burden the classification as those not wishing to employ subgeneric names can simply leave them out.

Key to Subgenera of *Scaura*

1. Metabasitarsus as wide as or wider than metatibia; malar space shorter than flagellar diameter; gena in profile narrower than compound eye; mandible virtually edentate 2
- Metabasitarsus narrower than metatibia; malar space as long as or longer than flagellar diameter; gena in profile broader than compound eye; mandible with two denticles *Schwarzula* Moure
- 2(1). Metasoma elongate, length 3× width or more; metasomal tergum VI with dark fuscous or black setae *Scaura* Schwarz, *s.str.*
- Metasoma subtriangular, length 1.5× width; metasomal tergum VI with white setae *Scauracea*, n. subgen.

Scauracea Engel, new subgenus

ZooBank: urn:lsid:zoobank.org:act:AC071DFD-EF46-4149-BB3D-3835FD5B2A47

TYPE SPECIES: *Trigona argyrea* Cockerell, 1912.

DIAGNOSIS: The new subgenus can be distinguished by the following combination of features: mandible virtually edentate (as in *Scaura s.str.*); malar space shorter than flagellar diameter (as in *Scaura s.str.*); gena in profile narrower than compound eye (as in *Scaura s.str.*); metabasitarsus as wide as or wider than metatibia (as in *Scaura s.str.*);

metasoma subtriangular, length 1.5× width (as in *Schwarzula*); metasomal tergum VI with white setae (as in *Schwarzula*); penis valves not strongly arched apically (pronouncedly arched apically in *Schwarzula* and *Scaura s.str.*). In addition, brood cells are arranged in horizontal discs rather than the irregular or columnar arrangements of *Schwarzula* and *Scaura s.str.*

ETYMOLOGY: The new subgeneric name is a combination of *Scaura* Schwarz (Latin, *scaurus*, meaning, “with a clubfoot”, as a reference to the expanded metabasitarsus) and the Latin suffix *-aceus* (meaning, “belonging to” or “having the nature of”). The gender of the name is feminine.

INCLUDED SPECIES: *Scaura amazonica* Nogueira, F. Oliveira, & M. Oliveira; *S. argyrea* (Cockerell); *S. aspera* Nogueira & M. Oliveira; *S. atlantica* Melo; and *S. cearensis* Nogueira, Santos Júnior, & M. Oliveira.

Genus *Geotrigona* Moure

The genus *Geotrigona* Moure includes 22 species of small, robust, short-legged, typically black or dark brown species of stingless bees occurring from southern Mexico to northern Argentina (Michener, 2007; Gonzalez & Engel, 2012). As the name implies, where known species nest in the cavities in the ground. Gonzalez & Engel (2012) provided a key to the species. Here the genus is organized into two subgenera.

1. Metatibia with apical margin rounding continuously to broadly rounded superior distal curve, not projected into a distinct angle or tooth before superior angle; apical margin straight or weakly concave *Geotrigona* Moure, *s.str.*
- Metatibia with apical margin distinctly projecting into an angle or tooth before superior angle; apical margin, between apex of tooth and penicillum, deeply concave *Chthonotrigona*, n. subgen.

Chthonotrigona Engel, new subgenus

ZooBank: urn:lsid:zoobank.org:act:EE5877AE-AFEC-40A6-BB9C-C08EE24AF89D

TYPE SPECIES: *Trigona fulvohirta* Friese, 1900.

DIAGNOSIS: This subgenus includes a group of distinctive species in which the apical margin of the metatibia has a distinctive tooth or angle posteriorly toward the broadly rounded superior angle, as well as a deep concavity in the apical margin inferior to the tooth (between the tooth and the penicillum). The result of this configuration is that the straight or rounded margin superior to the tooth and to the superior angle is projected apically relative to that portion of the apical margin inferior to the tooth. In the analysis of Rasmussen & Cameron (2010), this group was recovered as sister to all other *Geotrigona*.

ETYMOLOGY: The new subgeneric name is a combination of the Ancient Greek adjective *khthónios* (χθόνιος, meaning, “subterranean”) and *Trigona* Jurine. The gender of the name is feminine.

INCLUDED SPECIES: *Geotrigona acapulconis* (Strand), *G. chiriquiensis* (Schwarz), *G. fulvohirta* (Friese), *G. fumipennis* Camargo & Moure, *G. joearroyoi* Gonzalez & Engel, *G. kaba* Gonzalez & Sepúlveda, *G. leucogastra* (Cockerell), *G. lutzii* Camargo & Moure, and *G. terricola* Camargo & Moure.

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