

TAXONOMY AND NOMENCLATURE

Plectoplebeia, a new Neotropical genus of stingless bees (Hymenoptera: Apidae)

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ABSTRACT. A new stingless bee genus, *Plectoplebeia* **gen. nov.**, is proposed to accommodate a peculiar Neotropical species currently placed in *Plebeia* Schwarz, 1938. The brief, but convoluted taxonomic history of its type species, *Trigona nigrifacies* Friese, 1900, is documented, with *Trigona (Plebeia) intermedia* Wille, 1960 being placed as its junior synonym. *Plectoplebeia* **gen. nov.** resembles an enlarged species of *Plebeia*, differing by its larger body size, wider distance between the clypeus and the eye, presence of a shallow depression on the frons above the antennal sockets, coarser punctures on the head and mesosoma, a shorter, convex scutellum, an elongate propodeum and metapostnotum, long wings, with a higher number of hamuli, and by an elongate metasoma, with an unusually long first tergum. The single included species, *Plectoplebeia nigrifacies* **comb. nov.**, is known only from the Bolivian Yungas, an ecoregion extending from west-central Bolivia to southeastern Peru.

KEY WORDS. Bolivia, Meliponini, Peru, taxonomy, Yungas.

Currently a total of 32 genera are recognized for the extant Neotropical fauna of stingless bees (CAMARGO & PEDRO 2007). This classification system was laid down along the 20th century and mostly through the work of Moure, who departed from contemporaneous authors in raising to genus-level the many subgenera of *Trigona* Jurine, 1807 and for proposing additional new genera (MOURE 1942, 1943, 1944, 1946, 1950, 1951, 1953, 1989, CAMARGO & MOURE 1983). In a summary presented by MOURE (1961), a total of 28 genus-group names, involving 11 genera, were then recognized in his classification of the New World stingless bees.

Moure's classification system, including additions from subsequent authors, has close association with biological features of the taxa at genus-level, in particular details of their nesting habits (CAMARGO & MOURE 1988), and more recently has been corroborated, to a great degree, by independent evidence from molecular data (COSTA et al. 2003, RASMUSSEN & CAMERON 2010). In the comprehensive study by RASMUSSEN & CAMERON (2010), however, a few taxa came out as paraphyletic (*Leurotrigona* Moure, 1950 and *Scaura* Schwarz, 1938) or polyphyletic (*Plebeia* Schwarz, 1938), indicating that further studies are needed to improve the current classification.

The purpose of the present contribution is to propose a new genus-level taxon for a peculiar Neotropical species currently placed in the genus *Plebeia*. The distinct features of this taxon have been discussed by WILLE (1960, 1979) and MICHENER (1990). The two most recently proposed stingless bee genera for the Neotropical fauna, *Meliwillea* Roubik, Lobo & Camargo, 1997 and *Paratrigonoides* Camargo & Roubik, 2005, are also both monotypic, each with a single species representing relictual

lineages that fall outside the genera to which they are related (ROUBIK et al. 1997, CAMARGO & ROUBIK 2005).

MATERIAL AND METHODS

Material from the following institutions was examined: DZUP – Coleção de Entomologia Pe. Jesus Santiago Moure, Universidade Federal do Paraná, Curitiba, Brazil; ZMB – Museum für Naturkunde, Berlin, Germany. The following collection is also cited in the text: SEMK – Division of Entomology, Natural History Museum, University of Kansas, Lawrence, USA. In the list of type material, the quotation marks indicate the different labels for the same specimen, the backslashes (\) indicate different lines on the same label.

The format of the genus description follows that of CAMARGO & ROUBIK (2005), with distinctive or autapomorphic characters highlighted in boldface. The general morphological terminology follows URBAN (1967), SILVEIRA et al. (2002) and MICHENER (2007). Antennal flagellomeres are indicated as F1, F2, etc.; metasomal terga and sterna, respectively, as T1 to T7, and S1 to S8. The density of punctation and intervals between the punctures are based on relative puncture diameter, pd (e.g. <1pd: less than 1x the puncture diameter between the punctures). The color images of the holotype of *Trigona nigrifacies* were obtained on a camera Nikon Coolpix 995 attached to a stereomicroscope Leica MZ7, while those of the paratype of *Trigona intermedia* on a Leica DFC295 in a stereomicroscope Leica M125; in both cases the images were processed by the software Zerene Stacker.

TAXONOMY

***Plectoplebeia* gen. nov.**

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Type species: *Trigona nigrifacies* Friese, 1900.

Diagnosis and Comments. At a first glance, the type species of *Plectoplebeia* resembles just an enlarged *Plebeia*. The somewhat rounded head shape, a mostly smooth, shiny integument, a relatively short body pilosity and possession of a narrow depressed rim along the posterior margin of the inner surface of the hind tibia suggest a species of *Plebeia*. It differs from *Plebeia* by a larger body size, wider distance between the clypeus and the eye, coarser punctures on the head and mesosoma, a shorter, convex scutellum, a higher number of hamuli, and by an elongate metasoma, with an unusually long first tergum. While these features suggest *Mourella* and *Schwarziana*, *Plectoplebeia* lacks the long plumose body pilosity, the plumose sternal fimbria, and the modified hind tibia characteristic of these two genera. Unique features of *Plectoplebeia* include a shallow depression on the lower portion of the frons, the very short scutellum, the elongate propodeum and metapostnotum, the rectangular first segment of the metasoma, the elongate and sinuous hindtibia, and the long wings.

The type species of *Plectoplebeia*, *Trigona nigrifacies*, has had a brief, but convoluted taxonomic history. It was described by FRIESE (1900) from a single worker collected in Peru (“Callanga”). Friese refers it to *Schwarziana quadripunctata* (Lepeletier, 1836), an indication that could have hinted on the identity of the taxon, but the brief and limited original description was not of much help in the subsequent recognition of the species. The taxon remained completely ignored for more than a century until its mention in CAMARGO & PEDRO (2007). Based on personal communication by Claus Rasmussen, who examined the type specimen (Fig. 1), CAMARGO & PEDRO (2007: 572) attributed it to *Plebeina* Moure, 1961, a stingless bee genus from the Afrotropical region, and excluded the taxon from the Neotropical fauna. Indeed, the type specimen bears a label from C. Eardley, dated from 2003, as “*Plebeinia* [sic] *denoiti* (Vachal)” (Fig. 1). Despite

having examined and labeled the type specimen, EARDLEY (2004) does not mention it in his revision of the African stingless bees. Probably trusting Eardley’s identification as correct, C. Rasmussen also added a label, dated from 2007, to warn of the supposedly wrong locality data (Fig. 1).

This mistaken interpretation of Friese’s species was probably triggered by where the type specimen has been placed in the ZMB collection. It has been curated under the name “*Trigona beccarii* v. *nigrifacies*”, a homonymous taxon described by FRIESE (1912) from Africa (Fig. 2), and likely was placed under this name by a past curator when organizing Friese’s collection following its incorporation to the ZMB. Indeed, under the name “*nigrifacies*”, referring to a stingless bee, a drawer label and catalog card have been made only for the African taxon in the ZMB collection, with the older name from South America being completely ignored. Of course, the peculiar features of this species do not suggest other better known groups of the Neotropical region and could easily mislead someone when doing a quick inspection. A new label indicating the type status was added, as well as a barcode label currently used in the ZMB for digitalization of the collection (Fig. 1). The specimen has also been moved to a new position within the drawer.

As established below, *Trigona (Plebeia) intermedia*, a name proposed by WILLE (1960) for three workers from Bolivia, is considered a junior synonym of Friese’s *Trigona nigrifacies*. This synonymy is based on direct comparisons between type specimens, here illustrated in Figs. 3-11.

Description. Worker. a) Body length about 5.5 to 6.0 mm. b) integument between punctures mostly smooth and shiny, fine rugulosity present on parts of head and mesosoma; metapostnotum with fine transverse rugulosity along basal portion and on middle of dorsal area, remainder finely areolate to reticulate. c) Body dark brown to black except for vestiture and markings described below; mesoscutum black; wing membrane light brown infumated. d) Yellow markings obscured on head, with most of mandible, broad stripe on mid of clypeus, lower parocular area and supraclypeal area dark reddish brown; on mesosoma, yellow markings as follows: a transverse stripe on pronotum, a spot on the pronotal lobe, one stripe on each



Figures 1-2. *Plectoplebeia nigrifacies*: (1) labels of the holotype of *Trigona nigrifacies* Friese, 1900; (2) place under which the holotype of *T. nigrifacies* was found in the ZMB collection.



Figures 3-7. Holotype worker of *Trigona nigrifacies* Friese, 1900: (3) habitus, side view; (4) head, frontal view; (5) head and mesosoma, dorsal view; (6) metasoma, dorsal view; (7) hind leg, side view.

side of mesoscutum, axilla, distal margin of scutellum, apex of fore femur and basis of all tibiae. e) Vestiture: erect hairs on body uniformly pale-yellow to light brown, darker on inner surface of tarsi, mostly simple, except on pronotal lobe, tegula, anterior margin of mesoscutum and along anterior portion

of mesepisternum; in addition, with a fine shorter pilosity, covering the face, gena, mesoscutum, lateral mesepisternum, metepisternum and propodeum laterally, mostly erect, except for gena, mostly simple on clypeus and mesoscutum, and finely branched on remainder; metapostnotum glabrous; labial palpi



Figures 8-11. Paratype worker of *Trigona (Plebeia) intermedia* Wille, 1960: (8) habitus, side view; (9) head, frontal view; (10) head and mesosoma, dorsal view; (11) specimen labels.

with long, curled, simple setae; setae on metasomal sterna simple. f) Head ca. 1.2x wider than long, about as wide as mesosoma; maximum interorbital distance about 1.15x greater than length of eye; inner orbit of eye slightly convergent below, upper interorbital distance ca. 1.2x the lower distance; upper alveolar tangent at middle of face; vertex rounded, not forming post-ocellar carina; **malar space moderate, approximately 5/8 of diameter of third flagellomere**; preoccipital ridge indicated as a low carina on upper part of head, on lateral portion rounded; gena, at side view, about as wide as compound eye. g) Clypeus 2.0x wider than long, convex; epistomal suture, between subantennal sutures a widely open V; supraclypeal area lacking modifications, not forming a flange at each side; **mid portion of lower frons, adjacent to antennal sockets, slightly depressed and forming a shallow scapal basin**. h) Labrum normal. i) Mandible bidentate. j) Scape slightly longer than alveolo-ocellar distance and slightly narrower than diameter of third flagellomere; pedicel and third flagellomere, respectively, as wide as long. k) Pronotum short, ca. 0.6 x length of scutellum; anterior margin normal, not emarginate, bordered by a short translucent lamella. l) **Scutellum short,**

1.9x wider than long; posterior margin semicircular, when viewed from above leaving a narrow portion of the metanotum visible; surface weakly convex along its mid line; basal fovea lacking. m) **Forewings longer than body length**, ca. 3.0x length of hind tibia; pterostigma ca. 4.2 x longer than wide, 1.4x wider than diameter of third flagellomere; marginal cell ca. 3.8 x longer than wide, lanceolate, slightly open at apex; bifurcation between M and Cu coinciding with cu-anal vein; submarginal angle between Rs and Rs + M straight, ca. 90°; angle between M and Rs + M obtuse, ca. 120°; first abscissa of M ca. 0.9x length of first abscissa of Cu; submarginal cells weakly veined, first r-m almost obsolete; hind wing with jugal lobe about as long as 0.44x vanal lobe length; hamuli 6 to 7. n) **Hind tibia very long, ca. 2.8x longer than wide; anterior margin, in side view, forming a gentle curve**; postero-distal edge slightly pointed; corbicula occupying distal half, gently depressed, more strongly concave at apex; corbicular setae simple, except for tuft on distal edge; internal surface with very wide keirotrichiate area, with a narrow posterior rim, glabrous, depressed, approximately 1/7 the greatest width of keirotrichiate area, depressed rim gradually becoming obsolete toward basis

of tibia and lacking from basal quarter of tibia; tibial comb normal, penicillum covered externally by fine curled hairs. o) Hind basitarsus ca. 0.75x as wide as tibial width and ca. 0.6x its own length, apex 1.3x basal width; posterior margin sinuous, postero-distal edge projecting slightly, rounded; internal surface without basal sericeous area, hairs irregularly distributed. p) **Metapostnotum conspicuously protuberant, slanted dorsal portion about 1.5x as long as posterior vertical portion in side view.** q) Metasoma moderately elongate, approximately rectangular in dorsal view; **tergum 1 about 0.75x as long as its maximum width.** r) Labium normal, approximately 0.75x as long as head length; galea much shorter than length of hind tibia. s) Nest unknown.

Etymology. The new genus is named as a combination of *plecto*, from Latin meaning “weave, twine, twist”, with *Plebeia*, the name of the stingless bee genus which it resembles.

***Plectoplebeia nigrifacies* (Friese, 1900) comb. nov.**

Trigona nigrifacies Friese, 1900: 387. Holotype worker, Peru: Cusco, “Callanga” (ZMB, examined).

Trigona (Plebeia) intermedia Wille, 1960: 219. Holotype worker, Bolivia: Cochabamba, Chapare, Yungas del Palmar (SEM, not examined). **Syn. nov.**

Diagnosis and Comments. For species diagnosis, see above “Diagnosis and Comments” for the genus. The species is known from only five workers collected in three different localities: Callanga, Cusco, in Peru (FRIESE 1900), Yungas del Palmar, Chapare and Mapiri, Larecaja, in Bolivia (WILLE 1960, CAMARGO 1988). Based on information provided by GADE (1999), RASMUSSEN & VIVALLO (2014) have recently pointed out that Callanga, in Peru, refers to the zone in Cusco covering the watersheds of a river under the same name and tributary of the river Madre de Dios. All three localities are within the domain of the Bolivian Yungas, an ecoregion extending from west-central Bolivia to southeastern Peru.

Redescription. Holotype worker. Approximate body length: 5.5 mm; maximum head width: 2.33 mm; length of forewing: 6.0 mm; maximum width of T2: 2.0 mm. *Color*: head and mesosoma predominantly dark brown to black, with the following yellow maculae: a narrow band on each side of the pronotal collar and a small spot on anterior portion of pronotal lobe; a narrow stripe along each side of the mesoscutum; entire dorsal portion of axilla; a broad band along posterior margin of scutellum; a small spot on the apex of the fore femur; a small spot on the basis of all three tibia, more conspicuous on the fore tibia and almost entirely obscured on the hind tibia. Reddish brown are the entire mandible, except for dark brown basis and apical margin, most of the labrum, a broad band along the midline of the clypeus and on the lower parocular area, the entire supraclypeal area, most of the pronotal lobe, the fore tarsus and the last tarsomeres of the mid and hind legs, the inner surface of the hind tibia and of the hind basitarsus. Wing veins

and pterostigma brown; wing membrane very lightly brown infumated. Metasoma mostly dark brown; most of T1, a broad semicircular band on the basis of the T2, a smaller band on T3 and most of the sterna reddish brown. *Pubescence*: predominantly pale-yellow to light brown; tarsi with brown setae; erect pilosity well developed on head and mesosoma, mostly simple, except on pronotal lobe, tegula, anterior margin of mesoscutum and along anterior portion of mesepisternum. Clypeus densely covered with short pubescence, mostly simple on upper two-thirds and plumose on lower one-third; longer erect simple setae abundant, about 2-3x longer than short hairs. Entire frons with a dense pile of short plumose pubescence and sparser intermingled simple and longer hairs, longest setae on upper frons and vertex about 0.24-0.28 mm in length; erect setae on scape short, longest ones on upper surface about as long as diameter of scape (0.12:0.12); upper two-thirds of gena with a dense pile of short decumbent plumose pilosity. Mesoscutum with a dense pile of short simple pubescence and sparser intermingled longer hairs; setae along anterior margin mostly plumose, longest ones about 0.36-0.40 mm in length, those on remainder of sclerite simple and shorter (0.18-0.22 mm); longest setae on scutellum about 0.40-0.44 mm in length. Lateral portion of mesepisternum with conspicuously long erect setae, those near wing and along ocellular region mostly plumose and those on remainder of sclerite simple; also with a stratum of finely plumose hairs, which are relatively short and not very dense, leaving the integument clearly visible; metepisternum and lateral portion of propodeum with similar vestiture, shorter plumose pilosity denser compared to mesepisternum. Metapostnotum entirely glabrous. Tergum 1 mostly glabrous, with only sparse minute hairs around basal depression and on lateral portion near the spiracle; T2 with only sparse minute hairs along marginal zone, pubescence becoming denser on lateral portion of sclerite; T3-T5 with pubescence restricted to marginal zone, forming a band of relatively short, mostly erect, simple setae, longest setae with 0.12-0.14 mm in length; pubescence of T6 mostly similar to that of T3-T5, its posterior margin, when seen from above, with a fringe of dense and short plumose hairs. Sterna with erect simple hairs, most of them with a gently curved apex; longest setae on S2 with 0.34-0.38 mm in length. *Integumental surface*: clypeus and supraclypeal area finely reticulate-rugulose and somewhat dull, piligerous punctures not evident. Lower parocular area smooth and shiny, except for fine piligerous punctures. Frons with relatively coarse punctures; puncture density about 1-3 pd on mid portion and upper frons; mid portion of frons, above antennal alveoli, upper frons around ocelli and vertex finely rugulose and somewhat dull; integument around basis of longer setae on upper frons and vertex distinctly raised in relation to remainder of surface; punctures on gena about as coarse as those on frons, but denser (about 0.5-1 pd). Punctures on mesoscutum with size and density similar to those on frons, interspace between them mostly smooth and shiny, except for conspicuous reticulation along anterior margin and along lateral yellow stripe; punctures on scutellum slightly larger

and sparser than those on mesoscutum, interspace smooth and shiny, except for finely rugulose and somewhat dull integument along posterior margin of sclerite. Mesepisternum laterally mostly shiny, surface sparsely punctate and with some irregular and weak reticulation, integument around basis of longer setae distinctly raised in relation to remainder of surface; metepisternum finely rugulose-reticulate, somewhat dull. Punctures on lateral portion of propodeum with size and density similar to those on gena, interspace between smooth to finely reticulated; surface of posterior portion mostly shiny and finely reticulated. Metapostnotum finely rugulose-striate and mostly dull along anterior margin, remainder finely reticulate and mostly shiny. Outer surface of hind tibia finely reticulated and somewhat dull on basal one-third, reticulation gradually becoming weaker on remainder of surface, apical one-third entirely smooth and shiny. Terga mostly shiny, with fine reticulation visible along marginal zone of T1, on posterior half of T2 and on visible portions of T3-T6. *Structure* (measurements in mm): head about 1.2x wider than long (2.33:1.90); inner orbits slightly converging below (upper to lower interorbital distance, 1.55:1.27); clypeus 2.0x wider than long (1.13:0.57); F2 wider than long (0.15:0.125), and F3 as long as wide (0.15:0.15); minimum distance between clypeus and eye about 0.83x the width of F2 (0.125:0.15); malar space about 0.67x as long as F2 width (0.10:0.15); eye about 2.8x longer than its maximum width (1.48:0.53), in side view about as wide as gena (0.43:0.43). Intertegular distance subequal to mesoscutum length (1.50:1.43); scutellum about 1.9x wider than long (0.97:0.50), relatively short and not completely hiding the mid portion of metanotum in dorsal view, basal fovea lacking, but with a shallow emargination on the center of the slanted anterior margin. Hind wings with 6 hamuli. Corbicular depression occupying about distal half of hind tibia; anterior border of apex of tibia not raised in relation to remainder of surface; anterior margin of hind tibia following a gentle curve in side view.

Type material examined. Holotype worker of *Trigona nigrifacies* (ZMB), "Peru \Callanga\98" "Trigona [worker symbol] \nigrifacies\1900 Friese det. \Fr.", "Type" (plus additional labels, as shown in Fig. 1). The specimen is in good condition, except for lacking the right hind leg; the left mid leg is also broken between the femur and trochanter and has been glued back. Paratype worker of *Trigona (Plebeia) intermedia* (DZUP), "Yungas del Pal-\mar Boliva [sic] VI\10-1950 Zischka" "KU" "Paratype \Trigona intermedia \A. Wille".

Distribution. Northern portion of the Yungas, in Bolivia (Chapare, Larecaja) and Peru (Cusco).

DISCUSSION

The new genus proposed here certainly belongs to the lineage containing *Plebeia* and related genera. Traditionally, based on morphological evidence, this lineage has been considered to contain *Plebeia*, *Friesella* Moure, 1946, *Mourella*

Schwarz, 1946, *Schwarziana* Moure, 1943, *Scaura* and *Schwarzula* Moure, 1946 (MOURE 1951). Molecular evidence, however, has not corroborated such an arrangement, but indicated that two genera previously considered unrelated to the *Plebeia* line, *Lestrimelitta* Friese, 1903 and *Nannotrigona* Cockerell, 1922, should be added to it (COSTA et al. 2003, RASMUSSEN & CAMERON 2010). In the topology recovered in the comprehensive study by RASMUSSEN & CAMERON (2010), the *Plebeia* line in its strict sense would include *Plebeia*, which resulted in two independent clades, with *Friesella* and *Lestrimelitta* coming out between them, plus a clade containing *Nannotrigona* as sister group to *Mourella* and *Schwarziana*. The clade formed by *Scaura* and *Schwarzula* was more remotely related to them. To facilitate further discussion, the smaller clade containing *Plebeia*, *Friesella* and *Lestrimelitta* is here referred as the *Plebeia* clade to differentiate it from the *Plebeia* line (see Fig. 12), as specified above based on the results of RASMUSSEN & CAMERON (2010).

The positioning of *Plectoplebeia* within the *Plebeia* line has also been advocated by WILLE (1960, 1979) when discussing the placement of his *Trigona (Plebeia) intermedia*, here treated as a junior synonym of *Plectoplebeia nigrifacies*. Wille recognized the unique features of his *T. intermedia* and argued that the species filled the gap between *Plebeia* and *Schwarziana*. In his opinion, the latter genus should therefore be subsumed under the former (both genera were treated by Wille then as subgenera of *Trigona*). Wille's classification system, however, was very conservative and adopted broad genus-level concepts, which made most of his genera clearly non-monophyletic. MICHENER (1990, 2007), who also advocates broad genus-level concepts, referred to the peculiar features of Wille's *T. intermedia*, but maintained it in his very inclusive and non-monophyletic *Plebeia*.

Evidence for the inclusion of *Plectoplebeia* in the *Plebeia* line comes from possession of a narrow depressed rim along the posterior margin of the inner surface of the hind tibia, as well as for a set of non-specialized features in the worker caste suggestive of the genera *Plebeia* and *Mourella*. Among the Neotropical genera, a narrow depressed rim in the hind tibia is present only in *Scaura*, *Schwarzula* and in the *Plebeia* line, although it is absent in *Nannotrigona* and at most only weakly indicated in *Lestrimelitta*. In *Plebeia*, *Friesella* and *Mourella*, the depressed rim continues almost to the basis of the tibia while in *Plectoplebeia* and *Schwarziana* it is lacking on the basal quarter of the tibia. *Plectoplebeia* departs from all these other genera for exhibiting a reduced difference in height between the rim and the keirotrichiate area. The transition between these two areas in the tibia is not strongly marked, their border being indicated by a shallow sulcus and not by a conspicuous step as in the other genera.

While the non-specialized features suggest its inclusion in *Plebeia*, the larger body size, the wider distance between the clypeus and the eye, the shorter, convex scutellum and the more elongate metasoma, with an unusually long first tergum, resemble more *Mourella* and *Schwarziana*. The somewhat coarse punctures on the head and mesosoma also resemble those on

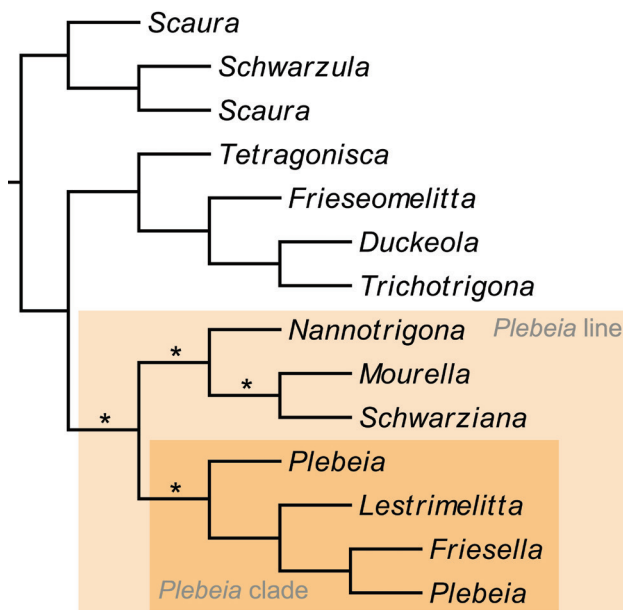


Figure 12. Summary of the phylogenetic relationships, at genus level, recovered in the study of RASMUSSEN & CAMERON (2010) for the stingless bee taxa related to *Plebeia*. The color boxes highlight the *Plebeia* line and the *Plebeia* clade, two lineages discussed in the text. The putative placements predicted herein for *Plectoplebeia* gen. nov. are indicated by asterisks (see text for further details).

Mourella. The number of hamuli is also higher than that present in *Plebeia*, *Friesella* and *Lestrimelitta*, which all have 5, while *Plectoplebeia* has 6 to 7 (see also WILLE 1960). *Nannotrigona* has 5 (or sometimes 6) and *Mourella* and *Schwarziana*, 8 (most commonly 8 in *Schwarziana*, but varying from 7 to 10). *Plectoplebeia*, however, does not have the long plumose body pilosity, including the plumose sternal fimbria, and the modifications on the anterior distal part of the hind tibia, with an upturned border and a reticulate surface, characteristic of *Mourella* and *Schwarziana*.

The shallow emargination on the center of the slanted anterior margin of the scutellum is reminiscent of the basal fovea present in *Nannotrigona* and *Scaptotrigona* Moure, 1942. A similar condition can be observed in some *Plebeia* and to a certain degree in *Friesella* and *Mourella*, and likely represents only a plesiomorphy.

Unique features are the shallow depression on the lower frons, the short scutellum, the elongate propodeum and metapostnotum, the rectangular first segment of the metasoma, the elongate and sinuous hindtibia, with a shallow rim on the inner surface, and the long wings. It is interesting to point out that long wings, in relation to body length, are also exhibited by workers of *Parapartamona* Schwarz, 1948, a genus containing only species restricted to cloud forests in Colombia and Ecuador (MOURE 1995). Although a thorough study of the relative wing length in stingless bees is wanting, one can suggest that

long wings possibly facilitate flying under a constantly dump atmosphere.

Taking into consideration the characters discussed above it is hard to predict if further evidence will favor a closer relationship of *Plectoplebeia* with the *Plebeia* clade or with that containing *Mourella* and *Schwarziana*. Judging from the high plasticity in the evolution of the external morphology of workers of stingless bees, as exemplified by major differences between the cleptobiotic *Lestrimelitta* and the related genera *Friesella* and *Plebeia*, both possibilities seem equally likely. An additional alternative position would be a sister group relationship with the *Plebeia* line. The putative placements predicted herein are indicated by asterisks in Fig. 12.

The recognition of *Plectoplebeia* as a new genus follows the pattern of the last two genera proposed for the Neotropical fauna, *Meliwillea* and *Paratrigonoides* (ROUBIK et al. 1997, CAMARGO & ROUBIK 2005). Like *Plectoplebeia*, these genera have each a single species, which represent isolated lineages that fall outside the genera to which they are related. After its proposal as sister group of *Scaptotrigona* based on morphological features, this positioning for *Meliwillea* has been corroborated also by molecular evidence (COSTA et al. 2003). In this sense, ideally a phylogenetic analysis should be carried out to support the proposal of *Plectoplebeia* as a new genus, but the current set of morphological characters used in the classification of the stingless bees is still limited and a deeper phylogenetic investigation would require dissection and thorough examination of a high number of taxa, preferably using both sexes and castes, something well beyond the scope of the present work. A study of the phylogenetic relationships within the *Plebeia* clade, using molecular data, is currently under way (H.A. Werneck, L.A.O. Campos & G.A.R. Melo, unpubl. data) and hopefully fresh specimens of *Plectoplebeia nigrifacies* will become available to be included in it.

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