
Notes on South American stingless bees of the genus
Scaptotrigona (Hymenoptera: Apidae),
Part II: Subgroup A of the *postica* species group

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On the cover: A colony entrance of *Scaptotrigona magdalenae*, new species (light morph), in Tolima, Colombia (© Hector Alfonso Martinez Giraldo, used with permission).

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Notes on South American stingless bees of the genus *Scaptotrigona* (Hymenoptera: Apidae), Part II: Subgroup A of the *postica* species group

Michael S. Engel^{1,2}

Abstract. This is the second part of an intended four on various nomenclatural matters regarding South American species of the Neotropical stingless bee genus *Scaptotrigona* Moure (Apinae: Meliponini). Here, the *postica* species group is briefly outlined and organized into two informal subgroups, the first of which is treated herein. A key to these species is provided and the following new species established: *Scaptotrigona ederi* Engel, new species; *S. gonzalezi* Engel, new species; *S. kuperi* Engel, new species; *S. extranea* Engel, new species; *S. rosellae* Engel, new species; *S. magdalenae* Engel, new species; *S. tatacoensis* Engel, new species; *S. macarenensis* Engel, new species; *S. caduceus* Engel, new species; *S. illescasi* Engel, new species; *S. baldwini* Engel, new species; *S. santiago* Engel, new species; *S. yungasensis* Engel, new species; and *S. faviziae* Engel, new species. Lastly, a neotype is designated for *S. ochrotricha* (Buysson).

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INTRODUCTION

The present work builds on an earlier part treating taxonomic concerns among South American species of the Neotropical stingless bee genus *Scaptotrigona* Moure. The first part provided a general introduction to the genus and treated those species of the *tubiba* species group, and also presented a key to the informal groups recognized within the genus (Engel, 2022). The current part concerns a subset of those species in the *postica* species group (largely focused on those of the Andean countries), including some commonly referenced in the literature but until now not formally described.

MATERIAL AND METHODS

The methods for the taxonomic accounts (*i.e.*, morphological terminology, metrics, images, symbols, abbreviations) follow those presented in the first part of this series (Engel, 2022), and rather than repeat such verbiage here the reader is directed to that account. The sole exception is the use of terms of orientation for the hind leg, which follows the recent proposal of Engel *et al.* (2021). The format for the descriptions follows that of Engel (2022), and given that the species are quite similar the first species is described at length and those that follow are presented as diagnoses in reference to that species. In addition, not all species are figured given that their habitus are so similar and would add little to the accounts. As I have typically done in other works, taxonomic summaries are not intended to compile all references to a taxon in the literature but instead only indicate the first usage of particular nomenclatural combinations, and should therefore not be equated with a literature catalog. All type material reported herein is deposited in the Division of Entomology (Snow Entomological Collection), University of Kansas Natural History Museum, Lawrence, Kansas, USA (SEMC) (M.S. Engel, curator).

SYSTEMATICS

Genus *Scaptotrigona* Moure

The *postica* species group

This group has metasomal terga III–V densely covered in yellow tomentum, completely obscuring the integument or with a narrow mediolongitudinal space with the tomentum more diffuse to absent such that the surface is exposed. In one species, however, the medial interruption is characteristically broad and the remaining tomentum is more diffuse. The typically dense tomentum gives the bees the appearance of having a yellow tail. The presence of this tomentum should not be confused with those species of other groups in which there is sometimes diffuse areas of whitish tomentum on terga III–VI, but in those species the tomentum never completely obscures the entire tergal surface as the tomentose patches are in diffuse patches, typically small oval areas, and with broad medial interruptions or even the vast majority of the terga without such tomentum. Often the patches on tergum III, and sometimes on the other terga as well, are so diffuse and small as to be largely obscured by the apical margin of the preceding tergum or are rubbed off entirely. The *postica* group as a whole is assuredly monophyletic although natural groups among the constituent species are unclear at this time.

The *postica* group is a large and diverse assemblage of species in South America, and to my current knowledge with only four species occurring in Central America. Given its number of species and scope, it is arranged into two informal subgroups for strictly practical purposes and it is not implied that these are clades, although the *postica* group as a whole certainly seems to be monophyletic. Subgroup A includes those species that are largely orange or yellowish orange in color or intermixed in color on the mesosoma, legs, and metasoma, while subgroup B covers the darker species, those that are entirely or largely dark brown to black. Species of subgroup A are predominantly found in the Andean region. These species are quite variable in many characters, making their identification rather challenging. Indeed, this variation is sometimes quite dramatic (e.g., *Scaptotrigona magdalenae*, n. sp., *vide infra*). Accordingly, I have tried to make the key to species as simple as possible by minimizing the use of extensive conditional statements.

Key to Species of Subgroup A in South America
(worker caste only)

1. Tegula orange, reddish orange, or translucent yellowish orange, sometimes with a small brown patch; mesepisternum often with extensive patches of yellowish orange, orange, or reddish orange with brown to dark brown patch ventrally, but sometimes wholly dark brown to black, or with orange restricted to hypoepimeral area or posterior half; legs with extensive areas of yellow orange to light reddish brown, brown, or even black [Subgroup A] 2
 - Tegula wholly dark brown or black; mesepisternum wholly black; legs largely dark brown to black Subgroup B
- 2(1). Genal tooth absent 3
 - Genal tooth present 7
- 3(2). Dense yellow tomentum of metasomal terga III–V covering entire dorsal surface, or sometimes with narrow interruptions medially; length of genal concavity, if present, up to about 4× its depth 4
 - Tomentum of metasomal terga III–V broadly absent medially on discs; length of genal concavity about 5× its depth [Brazil: Amazonas] *S. faviziae*, n. sp.
- 4(3). Concavity in lateral portion of preoccipital carina distinctly present and above with ventral extension of carina as translucent lamella entirely terminating in concavity or meeting lower margin of concavity 5
 - Concavity in lateral portion of preoccipital carina shallow, nearly absent, without lamellate extension of carina [Ecuador: Pichincha] *S. extranea*, n. sp.
- 5(4). Gena with large areas of orange and postgena wholly or nearly entirely orange; erect bristles of anterior margin of mesoscutum yellow to black; corbicular bristles dark fulvous to black 6
 - Gena and postgena almost wholly brown; erect bristles of anterior margin of mesoscutum bicolored, fuscous basally and off white apically; corbicular bristles individually bicolored, black basally and off white apically [Ecuador: Morona-Santiago] *S. santiago*, n. sp.
- 6(5). Erect bristles of vertex and anterolateral corners of mesoscutum dark fuscous to black; bristles of metabasitarsus entirely or nearly entirely black; malar space shorter, approximately 1.6× flagellar diameter [Colombia: Valle del Cauca] *S. ederi*, n. sp.
 - Erect bristles of vertex and anterolateral corners of mesoscutum yellow-

- ish to fulvous; bristles of metabasitarsus entirely or nearly entirely fulvous; malar space longer, approximately 2× flagellar diameter [Colombia: Cauca] *S. gonzalezi*, n. sp.
- 7(2). Head with extensive dark markings on at least upper half of frons, often covering majority of frons, and extending at least to vertex, sometimes separated from upper orbits by strip of orange to reddish orange integument 8
- Head with dark markings restricted to area around ocelli and not encompassing entire upper half of frons [Colombia: Magdalena River Valley: Cundinamarca, Tolima] *S. magdalenae*, n. sp., *partim* [light morph]
- 8(7). Mesoscutum with conspicuous reddish orange stripes running along notauli to posterior border, sometimes portion anteriorly along notauli narrower and less conspicuous than posterior section of stripe 9
- Mesoscutum without conspicuous reddish orange stripes 12
- 9(8). Bristles of metatibial margins and corbicula wholly or nearly entirely black 10
- Bristles of metatibial margins yellow to light fulvous, with those more apically sometimes darker fulvous and those of corbicular surface dark fulvous to fuscous [Colombia: Meta: Macarena] *S. macarenensis*, n. sp.
- 10(9). Markings separated from upper inner orbits by strip of reddish orange integument; surface posterior to vertex with paired stripes of black to dark brown extending to dark marking bordering preoccipital ridge; bristles of vertex and anterior of mesoscutum almost wholly fulvous; small bees, head widths 2.27–2.48 mm 11
- Markings meeting inner eye margins and typically wrapping onto posterior orbit on upper gena, without dark stripes posterior to vertex extending to preoccipital ridge; preoccipital ridge not demarcated by dark brown; larger bees, head widths 2.67–2.73 mm [Venezuela] *S. ochrotricha* (Buysson)
- 11(10). Bristles of mesobasitarsus and metabasitarsal margins largely black; smaller bees, head widths 2.27–2.36 mm [Colombia: Huila: Tatacoa Desert] *S. tatacoensis*, n. sp.
- Bristles of mesobasitarsus and metabasitarsal margins largely fulvous, sometimes with some dark fulvous to black setae intermixed; slightly larger bees, head widths 2.42–2.48 mm [Colombia: Valle del Cauca: lower Anchicayá River Valley] *S. rosellae*, n. sp.
- 12(8). Anterior border of mesoscutum with erect bristles black along entire margin 13
- Anterior border of mesoscutum with erect bristles along margin yellow to fulvous, if black bristles present, then restricted to anterolateral corners or with conspicuous white tips contrasting with remainder of rachis 15
- 13(12). Mesepisternum with extensive areas of yellowish to reddish orange; bristles anteriorly on tegula yellow to light fulvous 14
- Mesepisternum wholly black; bristles anteriorly on tegula black [Colombia: Meta] *S. caduceus*, n. sp.
- 14(13). Metasomal terga III–V with abundant conspicuous thick, erect to subdecumbent black to dark fuscous bristles arising amid appressed yellow tomentum; larger bees, head widths 2.69–2.79 mm [Brazil: Amazon Basin] *S. nigrohirta* Nogueira & Santos-Silva
- Metasomal terga III–V with conspicuous thick, erect to decumbent yellow to light fulvous bristles arising amid appressed yellow tomentum; smaller bees,

- head widths 2.45–2.48 mm [north-central Ecuador: Pichincha]
 *S. kuperi*, n. sp.
- 15(12). Metabasitarsus prolateral surface with scattered, erect to suberect, black bristles dominant amid finer yellow to light fulvous setae, margins with prominent black bristles 16
- . Metabasitarsus prolateral surface with yellow to light fulvous bristles dominant, sometimes with 1–4 black bristles, and margins typically with concolorous bristles, rarely with black bristles predominant on margins 17
- 16(15). Protibial bristles light fulvous; forewing marginal apex with strong infumate spot at marginal cell apex and nebulous portion of Rs prominently darkened apically; orange on face extending upward along inner orbit to near summit [Colombia: Magdalena River Valley: Cundinamarca]
 *S. magdalenae*, n. sp., *partim* [dark morph]
- . Protibial bristles black, but if only a few black bristles, then forewing marginal apex with only weakly brownish area at marginal cell apex and nebulous portion of Rs not prominently darkened apically; orange on face not extending along inner orbit much, if at all, above upper tangent of antennal toruli [western Ecuador: Esmeraldas] *S. illescasi*, n. sp.
- 17(15). Inferior and superior corbicular bristles concolorous 18
- . Inferior corbicular bristles lighter than superior bristles, inferior bristles yellowish fulvous to fulvous, superior bristles dark fuscous to black [Bolivia]
 *S. yungasensis*, n. sp.
- 18(17). Tegula with yellow to light fulvous bristles anteriorly; integument, where not dark brown to black, largely yellow; metasomal terga III–V with yellow to light fulvous bristles [Peru: Madre de Dios] *S. baldwini*, n. sp.
- . Tegula with fuscous to black bristles anteriorly; integument, where not dark brown to black, largely orange to reddish orange; metasomal terga III–V with fulvous to dark fulvous bristles [Brazil: southern and eastern Brazil]
 *S. xanthotricha* Moure

Scaptotrigona ederi Engel, new species

ZooBank: urn:lsid:zoobank.org:act:3004F475-B4C8-48ED-8C9A-350A4EAA18D2

(Figs. 1–11)

DIAGNOSIS: This is a comparatively abundant and distinctive species in the western Andean region of Colombia around Cali and currently known to range in elevation from 740–1500 m, making it one of the highest occurrences for *Scaptotrigona* (second only to *S. magdalenae*, *vide infra*). Reports of *S. ederi* (as a *nomen nudum*) from the East of Colombia and elsewhere have generally been based on misidentifications. Among species in this subgroup, *S. ederi* is most superficially similar to those species of subgroup B in relation to its generally dark coloration, although it still falls within subgroup A at the darker end of the spectrum. The species is one of a few that lacks a defined genal tooth projecting upward from the lower margin of the lateral concavity in the preoccipital carina. Among those without such a defined genal tooth, the dark coloration, black or at least dark fuscous bristles of the vertex and mesoscutal anterolateral corners, and nearly entirely black bristles of the metabasitarsus (and frequently the metatibia), serve to distinguish this species most readily. In addition, the prominent bristles of metasomal terga III–V are yellow to fulvous in color.

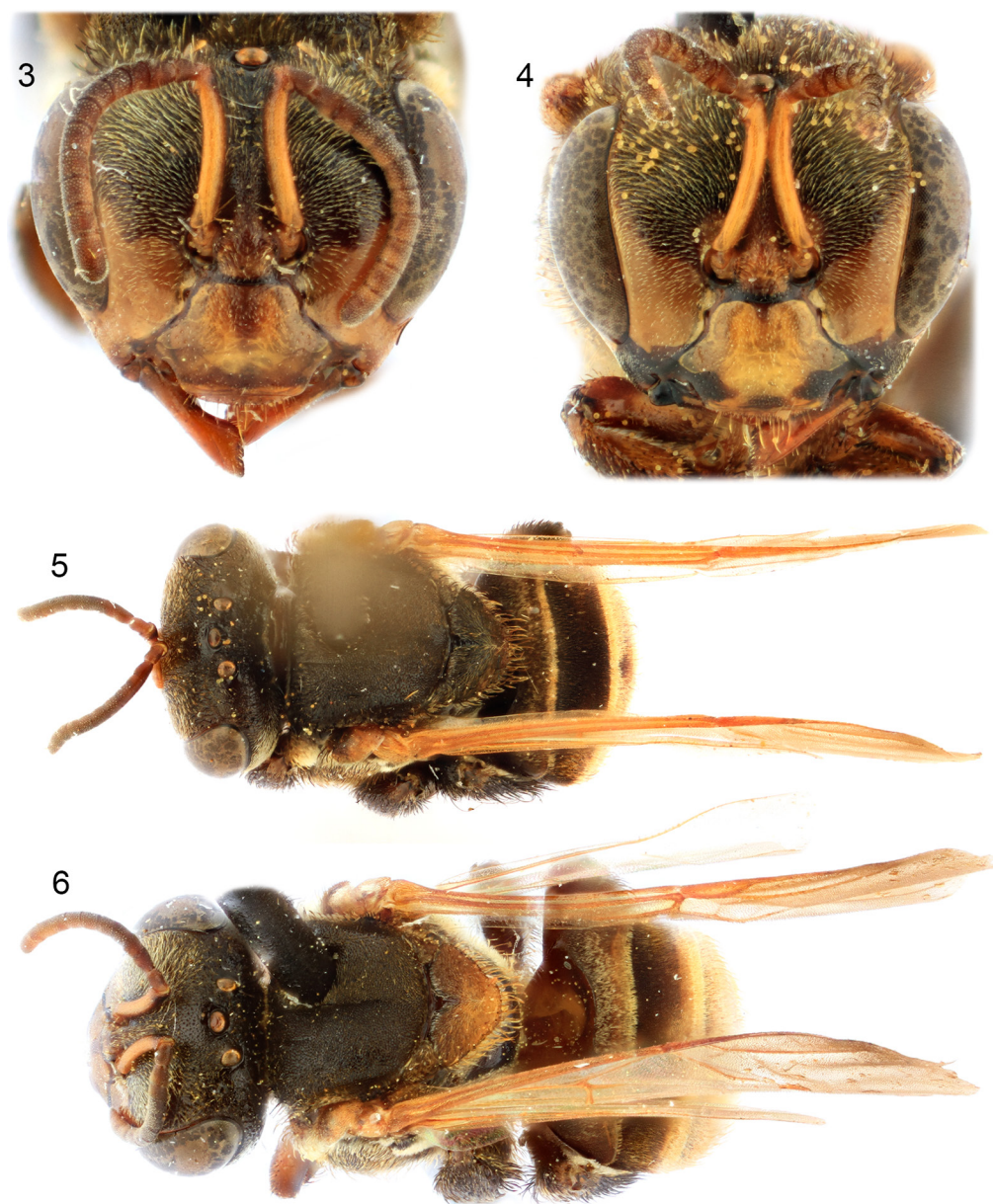


Figures 1–2. Workers of *Scaptotrigona ederi*, new species. **1.** Lateral habitus of individual on the darker end of the color spectrum. **2.** Lateral habitus of individual on the lighter end of the spectrum.

DESCRIPTION: ♀: Total body length approximately 5.8–6.2 mm, forewing length (to base of humeral sclerite) 5.8–6.2 mm. Head wider than long, width 2.30–2.42 mm, length 1.91–2.06 mm; compound eye length 1.36–1.39 mm; upper interorbital distance 1.55–1.61 mm, lower interorbital distance 1.45–1.52 mm. Scape length 0.88–0.91 mm, about as long as torulocellar distance, torulocellar distance 0.88–0.91 mm; flagellomere I longer than wide, longer than flagellomere II, remaining flagellomeres about as long as wide to slightly longer than wide except apical flagellomere longer than wide. Clypeus broader than long, approximately 1.7–1.75× as wide as long, length 0.61–0.64 mm, width 1.06–1.09 mm. Malar area long, length approximately 1.55–1.7× flagellar diameter or 0.75–0.82× basal mandibular width. Preoccipital ridge carinate, weakly lamellate dorsally, with bordering medial indentation shallower than lateral indentations, laterally concavity interrupting carina comparatively shallow, lower margin of concavity with carina forming rounded angle, sometimes slightly acute, without sharply acute lamellate projection (genal tooth) extending upward.

Integument of labiomaxillary complex yellow orange except prementum typically brown; labrum yellow orange to dark orange; mandible yellow orange to ferruginous; clypeus largely yellow orange to orange except typically with dark brown mark at medioapical margin and apicolateral corners from apical margin to epistomal sulcus (sometimes absent or faint, and sometimes these all merged medioapically), often with mediolongitudinal brown mark from base to about midlength, epistomal sulcus well delineated by brown to black; supraclypeal area brown to dark brown; malar space often dark brown, sometimes light brown to orange; face below tangent of antennal toruli orange to light yellow brown, typically slightly darker toward lateral borders of antennal toruli and often extending along inner orbit as narrow strip to point slightly above upper tangent of antennal toruli; scape yellow orange except typically brown dorsoapically, sometimes brown extending along entire dorsal surface; pedicel and flagellum typically dark brown above, with narrow underside of flagellum orange to light brown; remainder of face dark brown to black, sometimes with small areas of light brown immediately above antennal toruli; posterior of head dark brown; upper gena dark brown, remainder of gena orange, although if malar space dark brown, then such dark brown extends onto gena ventroapically; postgena orange to yellow orange. Mesosoma typically dark brown to black, with ferruginous apex to mesoscutellum, except sometimes with areas of reddish orange to reddish brown on mesepisternum, typically as small areas posteriorly and ventrally, and sometimes ventrally on propodeum, and mesoscutellum ranging from wholly orange to wholly black, with degrees of intermixing of colors between, V-shaped incision in mesoscutellum typically black; tegula wholly yellow orange and semi-translucent, sometimes with slight brownish darkening anteriorly; legs typically yellow orange on coxae, trochanters, basal portions of tibiae, distitarsomeres, and inferior and superior areas of metabasitarsus, with remainder of tibiae, femora, and tarsi dark brown to black, except sometimes meso- and metacoxae light brown. Wing membranes hyaline clear to lightly parchment colored; veins yellow orange. Metasoma generally dark brown to black except anterior-facing surface of tergum I typically reddish brown to light yellow brown, dorsal-facing disc of tergum I often medially lighter reddish brown to yellowish brown and with exceptionally narrow apical marginal zone of reddish brown to yellow and terga II–IV with variably developed apical marginal zones of light brown to more frequently yellow, sometimes quite broad on terga II and III; tergum II sometimes with light reddish brown laterally and on disc and blending gradually to yellow apical marginal zone; yellow apical marginal zones of terga III and IV typically obscured by dense tomentum; sterna reddish brown to dark brown.

Integument mostly smooth and shining between punctures, punctures of head difficult to see, those of mesosoma and metasoma clear; clypeus with small, shallow, nearly contiguous punctures, in some small areas punctures separated by up to $0.75\times$ a puncture width, punctures somewhat faint; supraclypeal area with small, shallow, nearly contiguous punctures; lower face with small punctures separated less than a puncture width, slightly fainter and more spaced than on clypeus, and slightly sparser along orbital border and in malar space; upper face with small punctures nearly contiguous to contiguous medially, such punctures becoming shallower toward ocelli and giving surface a roughened appearance, laterally punctures smaller and more distinct, separated by a puncture width or less; ocellocular area with punctures of upper lateral face becoming denser and blending posteriorly to slightly larger punctures like those of medial face; vertex and posterior of head punctures with shallow, coarse, contiguous punctures giving surface a roughened appearance, such punctures blend-



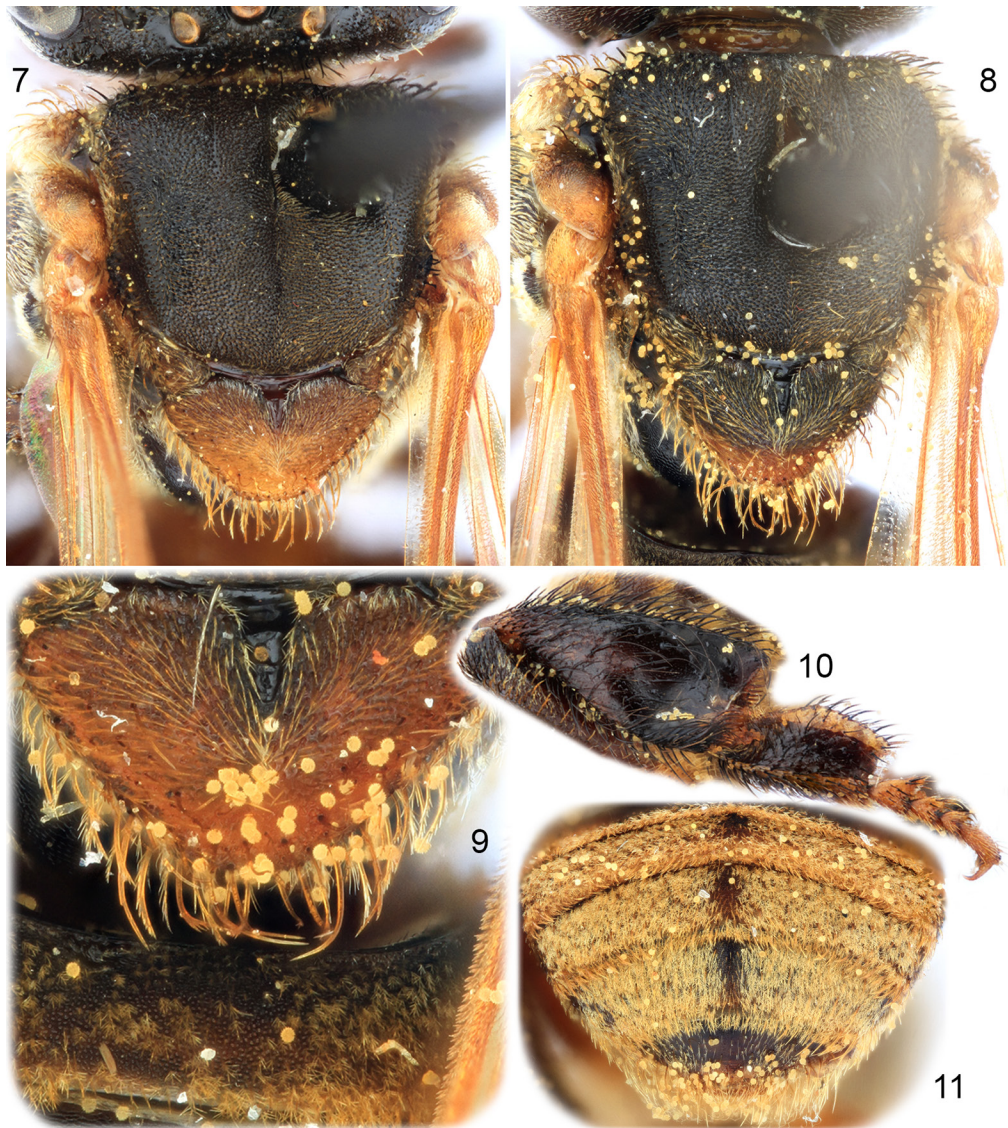
Figures 3–6. Workers of *Scaptotrigona ederi*, new species. 3. Facial view of individual on the lighter end of the color spectrum. 4. Facial view, darker worker. 5. Dorsal habitus, darker worker. 6. Dorsal habitus, lighter worker.

ing to minute, shallow, punctures separated by less than a puncture width on gena; postgena nearly impunctate and smooth. Mesoscutum and mesoscutellum with small contiguous punctures, punctures coarser and more irregular in shape along borders; pleura with punctures as on mesoscutum, those punctures ventrally a bit more separated, posteriorly punctures more irregularly shaped and elongate; metepisternum with small, nearly contiguous punctures; lateral surface of propodeum as on metepisternum; basal area of propodeum tessellate to microalveolate. Metasomal terga with

minute contiguous punctures blending to imbricate integument in apical marginal zones, except anterior-facing surface of tergum I impunctate and smooth; punctures laterally blending to imbricate integument, punctures weaker on tergum V, tergum VI largely impunctate and faintly imbricate; sterna finely and faintly imbricate.

Fine pubescence generally consisting of sparse to scattered, minute to short, appressed or decumbent yellow setae, such setae often simple but sometimes with minute branches or plumose, as well as areas of short, white, plumose setae such as dense on pronotal lobe, largely obscuring integument on metepisternum and lateral surface of propodeum; fine setae sparse on clypeus, more numerous on face and progressively longer on upper face and vertex; scape with sparse, minute, appressed setae and two erect to suberect, simple bristles at base (frequently obscured or even sometimes broken off); terga I–VI with plumose yellow tomentum, on tergum I such setae are diffuse, more suberect, and not obscuring integument, frequently worn such that in some specimens they are completely absent to only scattered in irregular places (most easily seen in profile), tergum II with such setae diffuse to sometimes lacking laterally (most easily seen in profile), but dense in apical marginal zone, terga III–V with such tomentum dense and obscuring integument, tomentum paler and sparser on tergum VI; sterna II–V with scopa composed of elongate, erect, simple setae with characteristically wavy apices, such scopal setae yellowish. Bristles (thick, typically erect, often simple or with minute pectinate branches apically) typically sparse on body except in certain areas as noted. Labrum with sparse, erect, simple, yellow to fulvous bristles, those medially longest; vertex with numerous erect, simple, fulvous to sometimes fuscous bristles, longest medially and extending across vertex to just posterior to upper orbit; pronotal dorsolateral margin near and anterior to pronotal lobe with bristles, sometimes arched apically, yellow to fulvous; mesoscutum anterior and lateral borders with erect bristles, those on lateral border short, bristles largely fulvous to sometimes fuscous along anterior margin, typically fuscous bristles intermixed with fulvous bristles in anterolateral corner but sometimes intermixed along entire anterior margin, bristles on lateral border typically fuscous to black; tegula with short, suberect bristles anteriorly, such bristles typically yellow or fulvous, more uncommonly fuscous; mesoscutellum with abundant, elongate, erect bristles posteriorly, such bristles minutely pectinate apically, mesoscutellar bristles typically light fulvous, sometimes more darkly fulvous; mesepisternum with scattered, subdecumbent fulvous bristles, longer ventrally, along rounded anterior border with preepisternum a line of abundant, suberect to subdecumbent bristles extending ventrally from pronotal lobe, such bristles fulvous to dark fulvous; lateral surface of propodeum with scattered, long, erect, yellow to fulvous bristles emerging amid dense, appressed, white, plumose setae. Legs with abundant bristles, those on basal podites typically yellow to fulvous, those apically on tibiae and tarsi typically black, sometimes with black bristles apically on femora, particularly metafemur, distitarsi typically with fulvous bristles dominant; metatibia with elongate simple black corbicular bristles and margins with long, arched, largely simple, black bristles; penicillum black; rastellum fulvous to fuscous; metabasitarsus with scattered erect black bristles on prolateral surface and numerous black bristles on margins intermixed with fulvous bristles, those of inferior margin most numerous; a few black bristles on distitarsomeres. Metasoma with numerous, prominent, suberect to subdecumbent, yellow to fulvous bristles on terga III–V arising amid tomentum, such bristles sparse to absent on tergum II, and more scattered on tergum VI except longer and more numerous laterally and on margin.

♀: *Latet.*



Figures 7–11. Workers of *Scaptotrigona ederi*, new species. 7. Dorsal view of mesosoma, lighter worker. 8. Dorsal view of mesosoma, darker worker. 9. Mesoscutellum. 10. Prolateral surface of metatibia, metatarsus, and metapretarsus. 11. Apical view of metasoma.

♂: *Latet.*

HOLOTYPE: ♀, Colombia: Prov. Valle, 5 km SE of Dagua, 4 Feb 1977, M.D. Breed & C.D. Michener (SEMC).

PARATYPES: 14♀♀, Colombia: Prov. Valle, 5 km SE of Dagua, 4 Feb 1977, M.D. Breed & C.D. Michener (SEMC); 2♀♀, Colombia: Valle, near Loboguerrera, 6 Oct 1976, Michael Breed (SEMC); 14♀♀, Colombia: Prov. Valle, Loboguerrera, 740 m, 4 Feb 1977, M.D. Breed & C.D. Michener (SEMC); 7♀♀, Colombia: Prov. Valle, Cali, 1000 m, 16 Feb 1977, M.D. Breed & C.D. Michener (SEMC); 2♀♀, Colombia: Valle, Lago Calima, 1500 m, IX-23-76 [23 September 1976], Bell, Breed, & Michener (SEMC); 1♀, Colombia: Valle, km 33, old Buenaventura Rd., 1300 m, IX-27-76 [27 September 1976], Bell, Breed, &

Michener (SEMC); 21♀, Colombia: Valle, El Carmen, 1370 m, IX-22-76 [22 September 1976], Bell, Breed, & Michener (SEMC); 20♀, Colombia: Prov. Valle, 10 km SW Jamundi, 14 Feb 1977, 1200 m, M.D. Breed & C.D. Michener (SEMC); 5♀, Colombia: Prov. Valle, 7 km SW Jamundi, 14 Feb 1977, 1100 m, M.D. Breed & C.D. Michener (SEMC).

ETYMOLOGY: This species has been frequently referenced in the literature but has never been described formally. In order to maintain some continuity the original name is maintained. The specific epithet was first proposed by Herbert F. Schwarz (1883–1960) for an unnamed member of the Eder family. Henry J. (1870–1949) and Walter Eder (*floruit* 1927), son and grandson of the pioneering sugar industrialist James Martin Eder (1838–1921), provided logistical assistance to Schwarz during his 1935 collecting visit to Cali (Schwarz, 1948). Herein, I take the presumption of proposing that the specific epithet honors the patriarch of the family in Colombia, J.M. Eder.

Scaptotrigona gonzalezi Engel, new species

ZooBank: urn:lsid:zoobank.org:act:34D177C8-A8F2-425A-BAF2-D233EC543988

(Figs. 12–17)

DIAGNOSIS: This is one of a few South American species in which the genal tooth is lacking. It is similar to *S. ederi* (*vide supra*), but has a noticeably longer malar space (Fig. 13), yellowish to fulvous bristles on the vertex and anterolateral areas of the mesoscutum, and nearly entirely fulvous bristles on the metabasitarsus (Fig. 14). In addition, the concavity interrupting the preoccipital carina laterally is spanned by a continuation of the translucent lamella of the dorsal portion of the preoccipital ridge.

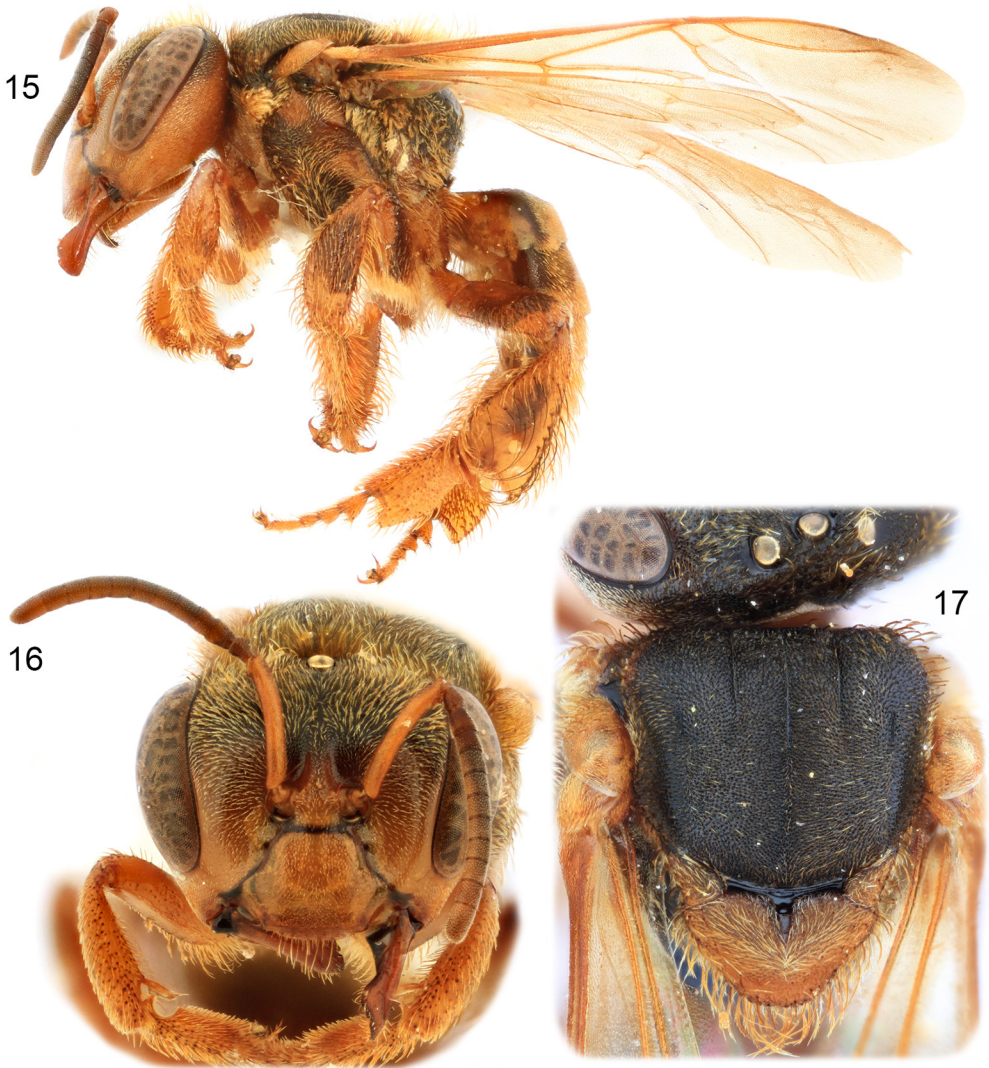
DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.1–6.4 mm, forewing length (to base of humeral sclerite) 6.0–6.1 mm. Head wider than long, width 2.33–2.38 mm, length 2.00–2.08 mm; compound eye length 1.39–1.42 mm; upper interorbital distance 1.63–1.65 mm, lower interorbital distance 1.52–1.53 mm. Scape length 0.91 mm, as long as torulocellar distance, torulocellar distance 0.91 mm. Clypeus approximately 1.7× as wide as long, length 0.61 mm, width 1.06 mm. Malar area approximately 1.9–2.0× flagellar diameter or 0.88–0.92× basal mandibular width. Preoccipital ridge carinate, weakly lamellate dorsally, with bordering medial indentation shallower than lateral indentations, laterally concavity interrupting carina comparatively shallow, lower margin of concavity with carina forming rounded angle, without sharply acute lamellate projection (genal tooth) extending upward, concavity spanned by translucent lamella.

Integument of labiomaxillary complex orange; clypeus largely orange to yellow orange except sometimes with small, triangular brown mark at mediobasal margin and apicolateral corners, epistomal sulcus well delineated by brown to black and subantennal areas sometimes infused with brown; supraclypeal area yellow orange to orange; malar space orange to yellow orange although sometimes blending to dark brown apically near mandibular base; face below tangent of antennal toruli orange to yellow orange, sometimes slightly darker toward lateral apical portion of epistomal sulcus; scape yellow orange to orange except with brown dorsoapically; pedicel and flagellum typically dark brown above, with underside of flagellum orange; face above antennal toruli orange to yellow orange below, blending to dark brown or black above, orange area either extending across width of face or with areas of dark brown extending downward to antennal toruli remainder of face dark brown to black, sometimes with small areas of light brown immediately above antennal toruli; vertex, posterior of head, and uppermost gena dark brown to black; remainder of gena and



Figures 12–14. Worker of *Scaptotrigona gonzalezi*, new species. **12.** Lateral habitus, darker worker. **13.** Facial view, darker worker. **14.** Prolateral surface of metatibia, metatarsus, and metapretarsus, darker worker.

postgena orange to yellow orange. Mesosoma dark brown to black except pronotum largely brown to orange and pronotal lobe orange, mesoscutellum either largely orange or black blending to fulvous or orange apical margin, mesepisternum with areas of orange to fulvous on hypoepimeral area and sometimes upper mesepisternum anterior to hypoepimeral area, and sometimes as orange patch posteriorly along mesepisternal-metepisternal suture; legs typically yellow orange to dark reddish brown,



Figures 15–17. Worker of *Scaptotrigona gonzalezi*, new species. **15.** Lateral habitus, lighter worker. **16.** Facial view, lighter worker. **17.** Mesosomal dorsum, lighter worker.

lighter morphs with legs almost wholly yellow orange except patches of dark brown on femora and centrally on prolateral surfaces of meso- and metatibiae, dark morphs with legs largely reddish brown except lighter on coxae, trochanters, femoral basally, protibia and extreme bases of meso- and metatibiae, and all tarsi. Wing membranes lightly parchment colored, faintly darker around marginal cell apex. Metasoma generally dark brown to black except anterior-facing surface of tergum I typically reddish brown, dorsal-facing disc of tergum I medially lighter orange brown to orange, terga II–IV with variably developed apical marginal zones of orange brown to yellow orange, typically large on tergum II and narrow on remaining terga; sterna dark brown to reddish brown except orange in apical portions from which setae arise.

As in *S. ederi* except lacking areas of short, white, plumose setae, instead such setae yellow to pale yellow; scape with one suberect, simple bristle at base (frequently

obscured or even sometimes broken off). Vertex with numerous erect, simple, yellow to fulvous bristles, sometimes a few lightly fuscous; pronotal dorsolateral margin near and anterior to pronotal lobe with yellow bristles, sometimes arched apically; mesoscutum anterior and lateral borders with erect yellow to dark fulvous bristles; tegula with short, suberect bristles anteriorly, such bristles typically yellow or lightly fulvous; mesoscutellum with abundant, elongate, erect bristles posteriorly, such bristles minutely pectinate apically, mesoscutellar bristles typically yellow to fulvous; mesepisternum with scattered, subdecumbent yellow to light fulvous bristles. Legs with abundant bristles, those on basal podites typically yellow to fulvous, those on meso- and metatibiae intermixed with fuscous bristles, except those of metatibia mostly black to dark fuscous and intermixed with fewer yellow bristles, although in lighter morph black bristles confined to prolateral surface along superior margin and corbicular surface apicad fundus; penicillum dark to light fulvous; rastellum yellow to fulvous; metabasitarsus with bristles yellow to light fulvous, sometimes with a few dark fulvous to lightly fuscous bristles in dark morph along proventral margin.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Colombia, Cauca, Bolivar, Vda. La Carbonera, 2010, col. D. Gómez (SEMC).

PARATYPE: ♀, Colombia, Cauca, El Patia, Carretera Bomba Chontural, 4-Jun-2010, col. G. Zambrano (SEMC).

ETYMOLOGY: The specific epithet honors Victor H. Gonzalez, good friend and prominent leader in melittological research, particularly of the Colombian fauna.

Scaptotrigona kuperi Engel, new species

ZooBank: urn:lsid:zoobank.org:act:B0B9A59F-557D-4FE7-B00B-2B68A04ADA4C

(Figs. 18–20)

DIAGNOSIS: This species is superficially similar to *S. ederi*, which also occurs west of the Cordillera Occidental but more northerly in Colombia (versus in north-central Ecuador in *S. kuperi*). It can most easily be distinguished from *S. ederi* by the presence of a distinct genal tooth.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.1–6.3 mm, forewing length (to base of humeral sclerite) 6.0–6.1 mm. Head wider than long, width 2.45–2.48 mm, length 1.91–2.00 mm; compound eye length 1.36–1.39 mm; upper interorbital distance 1.58–1.64 mm, lower interorbital distance 1.52–1.56 mm. Scape length 0.88–0.91 mm, about as long as torulocellar distance, torulocellar distance 0.88–0.91 mm. Clypeus approximately 1.8× as wide as long, length 1.12–1.15 mm, width 0.61–0.63 mm. Malar area approximately 1.6–1.8× flagellar diameter or 0.73–0.81× basal mandibular width. Preoccipital ridge carinate, weakly lamellate dorsally, with bordering medial indentation as deep as lateral indentations, laterally concavity interrupting carina distinct and deep, lower margin of concavity with carina forming short, upward-projecting, acute, lamellate tooth.

Integument of labiomaxillary complex yellow orange; labrum yellow orange; mandible yellow orange; clypeus yellow orange to orange except apical margin often stained with brown, epistomal sulcus well delineated by brown to black; supraclypeal area yellow orange to orange; malar space yellow orange to orange; face largely yellow orange to orange except upper half of frons, vertex, posterior of head, and sometimes uppermost portion of gena dark brown to black; remainder of gena and postgena yellow



Figures 18–20. Worker of *Scaptotrigona kuperi*, new species. 18. Lateral habitus. 19. Dorsal habitus. 20. Facial view.

low orange to orange; scape yellow orange to orange, sometimes with stain of brown dorsoapically; pedicel and flagellum typically brown, with narrow underside of flagellum orange to light brown. Mesosoma largely yellow orange to orange except mesoscutum black, metanotum black, V-shaped incision in mesoscutellum dark reddish brown to black, mesepisternum either black on ventral half or anterior half; propodeum black to dark reddish brown; tegula wholly yellow orange and semi-translucent; legs typically yellow orange to orange except sometimes with brown to dark brown on prolateral surfaces of tibiae, metafemur apically, and centrally on prolateral surface of metabasitarsus. Metasoma generally dark brown to black except anterior-facing surface of tergum I typically light brown to yellow brown, dorsal-facing disc of tergum

I often medially lighter yellow brown with exceptionally narrow apical marginal zone of yellow; tergum II with broad medial area of light orange blending to yellow brown on disc and narrow apical marginal zone of yellow; terga III–IV with apical marginal zones of yellow, typically obscured by tomentum; sterna dark reddish brown to dark brown.

As for *S. ederi* except areas of short, plumose setae yellow to pale yellow instead of white. Bristles of vertex erect, simple, yellow to fulvous, with those short bristles near upper orbit often fuscous and sometimes a few longer fuscous bristles intermixed posteriorly on vertex medially; pronotal dorsolateral margin near and anterior to pronotal lobe with long, arched, yellow bristles; mesoscutum anterior and lateral borders with erect bristles, those on lateral border short, anterior margin with mix of yellow and dark fulvous to black bristles, such bristles intermixed along entire margin; tegula with short, suberect, yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect bristles posteriorly, such bristles minutely pectinate apically, discal bristles shorter, mesoscutellar bristles yellow; mesepisternal bristles as in *S. ederi* except yellow. Legs with abundant bristles, bristles typically yellow except noticeably intermixed with black bristles on prolateral surface of protibia apically, prolateral surface of probasitarsus, prolateral and marginal surface of mesotibia, prolateral surface of mesobasitarsus, metafemur apically, metatibia, and metabasitarsus marginal bristles; prolateral surface of metabasitarsus with scattered fine, simple, black setae (noticeably thinner than marginal bristles) intermixed with similar yellow setae and bristles. Metasoma with numerous, prominent, subdecumbent, yellow bristles on terga III–V arising from tomentum.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Ecuador: Pichincha, Pedro Vicente Maldonado, 3.5 km N, 530 m, 0°6'44"N, 79°3'21"W, 29 Mar 1999, R. Brooks (SEMC).

PARATYPE: ♀, Ecuador: Pichincha, Pedro Vicente Maldonado, 3.5 km N, 530 m, 0°6'44"N, 79°3'21"W, 29 Mar 1999, R. Brooks (SEMC).

ETYMOLOGY: The specific epithet honors Peter Kuper, acclaimed illustrator, thought-provoking visual artist, inspiring author, devoted and life-long entomologist, and friend.

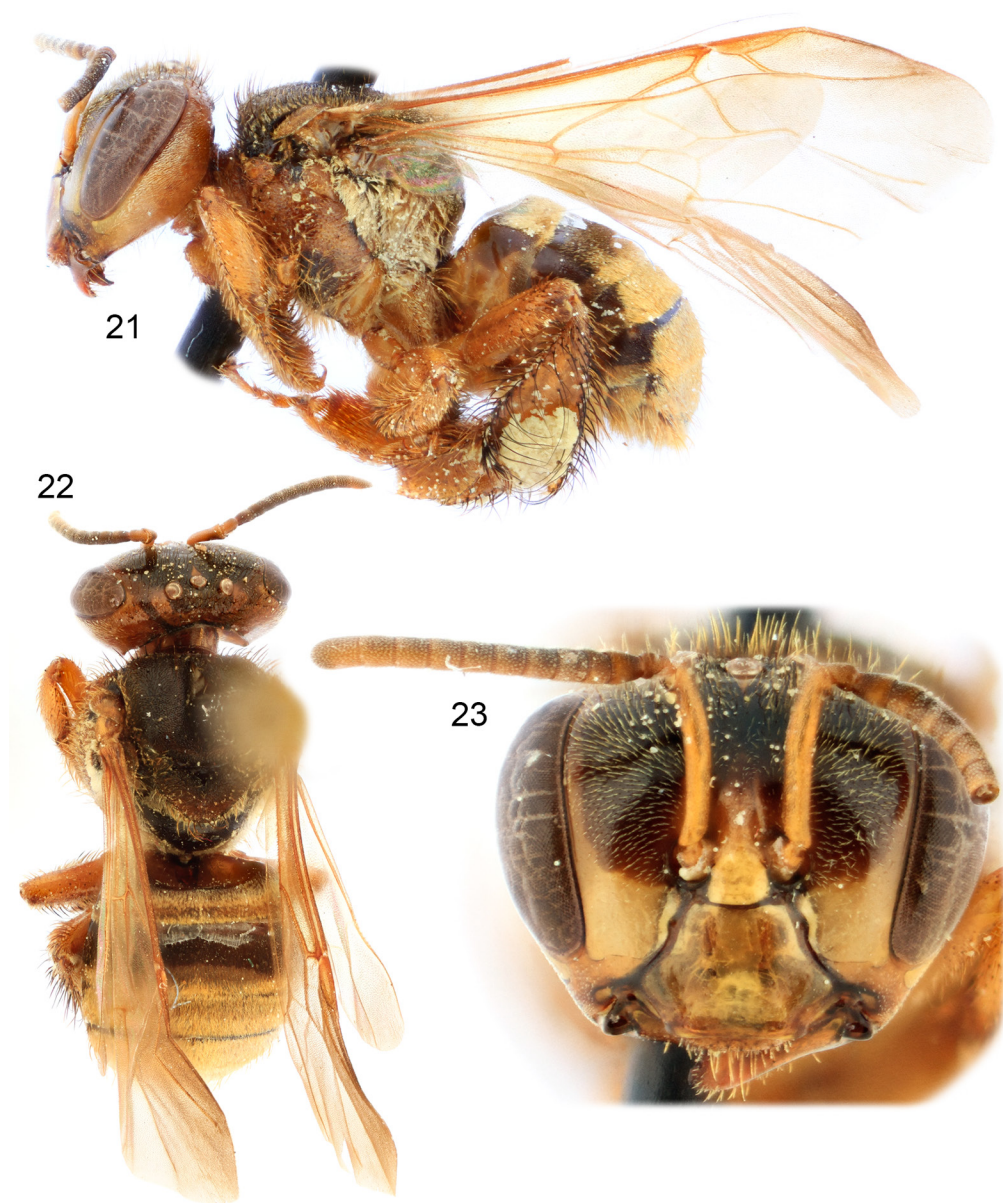
Scaptotrigona extranea Engel, new species

ZooBank: urn:lsid:zoobank.org:act:29C44161-56F9-4AE4-8326-D8A51217F494

(Figs. 21–25)

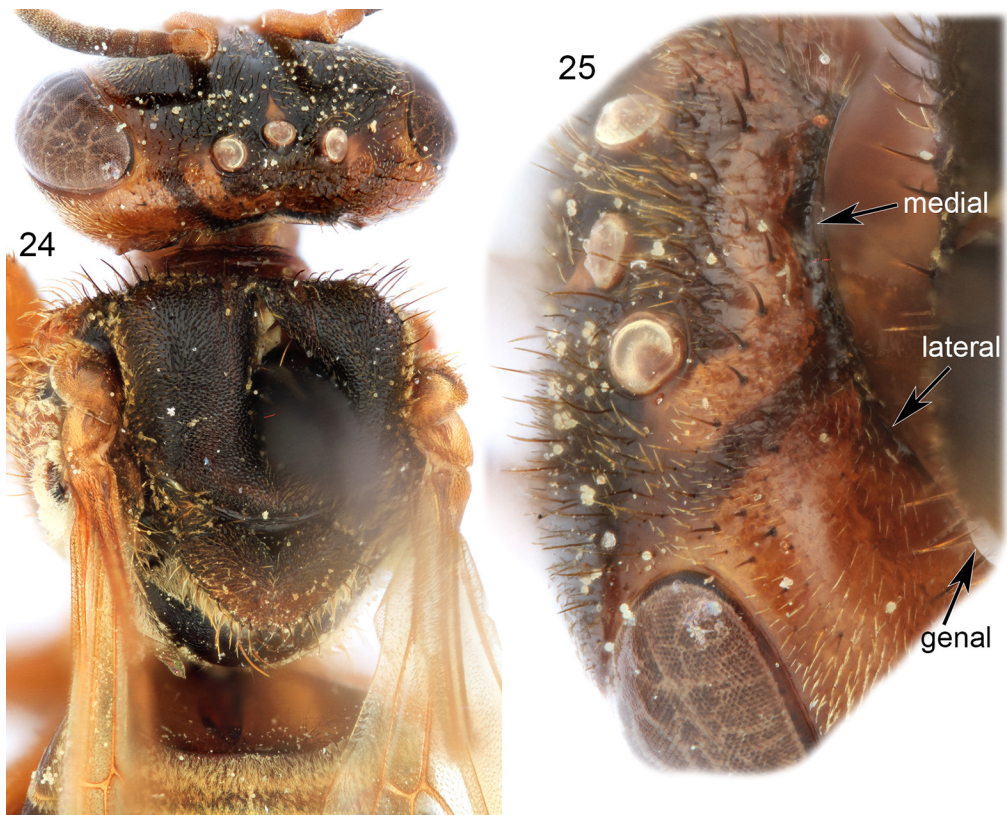
DIAGNOSIS: This is a rather unique species in that the concavity that typically interrupts the preoccipital carina laterally is exceptionally shallow and faint and does not disrupt the carina (Fig. 25). In addition, the preoccipital ridge is faintly lamellate dorsally and the bordering medial and lateral indentations are weak and shallow (Fig. 25). It is similar in several respects to *S. kuperi*, but can also be distinguished by the facial coloration in which the frons is largely dark brown to black, with yellow to yellow orange extending upward along the inner orbits (Fig. 23), while in the former the entire lower part of the frons orange (Fig. 20). In addition, the back of the head is entirely dark brown to black in *S. kuperi*, versus orange and marked with dark brown stripes in *S. extranea* (Figs. 22, 24, 25).

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.3 mm, forewing length (to base of humeral



Figures 21–23. Worker of *Scaptotrigona extranea*, new species. 21. Lateral habitus. 22. Dorsal habitus. 23. Facial view.

sclerite) 5.8 mm. Head wider than long, width 2.30 mm, length 1.91 mm; compound eye length 1.33 mm; upper interorbital distance 1.48 mm, lower interorbital distance 1.42 mm. Scape length 0.88 mm, as long as torulocellar distance, torulocellar distance 0.88 mm. Clypeus approximately 1.7× as wide as long, length 0.58 mm, width 1.00 mm. Malar area approximately 1.6× flagellar diameter or 0.73× basal mandibular width. Preoccipital ridge carinate, faintly lamellate dorsally, with bordering medial and lateral indentations weak and shallow, carina not interrupted laterally, merely a faint concavity not interrupting carina.



Figures 24–25. Worker of *Scaptotrigona extranea*, new species. 24. Dorsal view, head and mesosoma. 25. Dorsal oblique view of vertex and upper gena.

Punctures of face fainter and sparser than in *S. ederi*.

Integument of labiomaxillary complex yellow orange; labrum yellow orange; mandible orange; clypeus yellow orange stained with areas of brown laterally and mediobasally, apical margin stained with brown, epistomal sulcus well delineated by dark brown to black; supraclypeal area yellow orange; malar space orange; face below lower tangent of antennal toruli yellow, with narrow yellow strip extending upward along inner orbit, frons and vertex dark brown to black albeit dark reddish brown above antennal toruli, separated from upper orbit by strip of orange to reddish brown, yellow orange mark anterior to median ocellus, most of ocellocular area orange; posterior of head largely orange except with oblique lateral strips of reddish brown extending from ocellocular area to preoccipital carina, preoccipital carina black; gena and postgena orange to yellow orange; scape orange; pedicel and flagellum brown, with flagellum orange ventrally. Mesosoma largely orange except mesoscutum black, mesoscutellum largely black except dark fulvous to ferruginous apically, metanotum black, basal area and posterior surface of propodeum black; mesepisternum with dark brown ventrally and metepisternum dark brown long borders; tegula wholly yellow orange and semi-translucent; legs orange. Metasoma generally dark brown to black except anterior-facing surface of tergum I reddish brown, dorsal-facing disc of tergum I dark orange to brown apically; tergum II with broad apical zone of brown; sterna dark reddish brown to dark brown.

As for *S. ederi* except areas of short, plumose setae yellow to pale yellow instead of

white; metepisternum and lateral surface of propodeum obscured by dense, plumose, yellow setae; dorsal-facing surface of tergum I densely covered with minute, decumbent, yellow, plumose setae similar to tomentum of apical margin of tergum II and discs of terga III–IV. Bristles of vertex erect, simple, yellow to fulvous; pronotal dorsolateral margin near and anterior to pronotal lobe with long, arched, yellow bristles; mesoscutum anterior and lateral borders with erect bristles, those on lateral border short, anterior margin with mix of yellow and dark fulvous to black bristles, such bristles intermixed along entire margin; tegula with short, suberect, yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect bristles posteriorly, such bristles minutely pectinate apically, discal bristles shorter, mesoscutellar bristles largely yellow except medioapically more fulvous to fuscous; mesepisternal bristles as in *S. ederi* except yellow. Legs with abundant bristles, bristles typically yellow to orange except noticeably intermixed with fuscous to black bristles margin of protibia, prolateral surface of probasitarsus, prolateral and marginal surface of mesotibia, prolateral surface of mesobasitarsus, metafemur apically, metatibia, and a few metabasitarsus marginal bristles; corbicular bristles black, contrasting fulvous marginal bristles, some of latter with fuscous bases; prolateral surface of metabasitarsus with scattered fine, simple, yellow to fulvous setae (noticeably thinner than marginal bristles), without black setae; penicillum black; rastellum yellow. Metasoma with numerous, prominent, suberect to subdecumbent, yellow bristles on terga III–V arising from tomentum.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Ecuador: Pichincha, Pedro Vicente Maldonado, 3.5 km N, 530 m, 0°6'44''N, 79°3'21''W, 29 Mar 1999, R. Brooks (SEMC).

ETYMOLOGY: The specific epithet is the Latin adjective *extrāneus*, meaning, "strange", and refers to the near absence of a concavity in the lateral portion of the preoccipital ridge.

Scaptotrigona rosellae Engel, new species

ZooBank: urn:lsid:zoobank.org:act:115BA1F9-566A-43A4-B717-6130B3324BCD

(Figs. 26–28)

DIAGNOSIS: This species is currently known only from the lower Anchicayá River Valley of Colombia, an area known for its considerable biodiversity and endemism. The species superficially resembles a lighter form of *S. ederi* but is immediately distinguished by the presence of a genal tooth, the presence of weak striping on the mesoscutum, and the generally yellow to fulvous bristles.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.1–6.2 mm, forewing length (to base of humeral sclerite) 6.0–6.1 mm. Head wider than long, width 2.42–2.48 mm, length 1.97–2.03 mm; compound eye length 1.36–1.42 mm; upper interorbital distance 1.52–1.58 mm, lower interorbital distance 1.45–1.52 mm. Scape length 0.91 mm, about as long as torulocellar distance, torulocellar distance 0.88–0.91 mm. Clypeus approximately 1.7–1.8× as wide as long, length 0.64 mm, width 1.11–1.15 mm. Malar area approximately 1.8× flagellar diameter or 0.82× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming acutely rounded angle projecting upward as a sharp, lamellate tooth, upper margin of concavity with lamella extending ventrally a third to half of concavity.



Figures 26–28. Worker of *Scaptotrigona rosellae*, new species. 26. Lateral habitus. 27. Facial view. 28. Dorsal view of vertex and mesosoma.

Integument of labiomaxillary complex yellow orange; labrum yellow orange; mandible yellow to reddish orange; clypeus yellow orange, epistomal sulcus well delineated by orange brown to brown; supraclypeal area yellow orange; malar space yellow orange; face below upper tangent of antennal toruli yellow orange; lower frons yellow orange blending to reddish orange to brown on upper frons, separated from inner and upper orbit by strip of yellow orange to reddish orange; vertex reddish brown to dark brown; ocellocular area reddish brown to dark brown except laterally where separated from upper orbit; posterior of head orange with strips of reddish brown to dark brown extending from ocellocular area to preoccipital carina, preoccipital carina dark brown to black; gena and postgena yellow orange to orange; scape yellow or-

ange except sometimes with brown dorsoapically; pedicel and flagellum brown, with flagellum more orange ventrally. Mesosoma largely yellow orange to orange except mesoscutum black with reddish brown laterally and posteriorly, faint longitudinal strips of reddish brown from notauli to posterior border; mesepisternum with brown to dark brown patch ventrally; basal area and posterior surface of propodeum reddish brown to dark brown; metepisternum sometimes stained brown; tegula wholly yellow orange and semi-translucent; legs yellow orange. Metasoma generally brown to dark brown except anterior-facing surface of tergum I yellow orange, dorsal-facing disc of tergum I largely yellow orange with yellow brown laterally, sometimes lateral areas dark brown and more encroaching on yellow orange disc; tergum II largely yellow orange with small areas of brown laterally, although sometimes largely dark brown and blending to orange posteriorly before broad yellow marginal zone; terga III–IV brown to dark brown with broad yellow marginal zones, largely obscured by tomentum; sterna largely yellow orange to yellow brown.

As for *S. ederi* except areas of short, plumose setae yellow to pale yellow instead of white; metepisternum and lateral surface of propodeum obscured by dense, plumose, yellow setae; dorsal-facing surface of tergum I with largely simple setae. Bristles of vertex erect, simple, yellow to fulvous; pronotal dorsolateral margin near and anterior to pronotal lobe with long, arched, yellow bristles; mesoscutum anterior and lateral borders with erect bristles, those on lateral border short, anterior margin with largely fulvous bristles, sometimes intermixed with yellow to dark fulvous bristles; tegula with short, suberect, yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect bristles posteriorly, such bristles minutely pectinate apically, discal bristles shorter, mesoscutellar bristles yellow to fulvous; mesepisternal bristles as in *S. ederi* except yellow to fulvous. Legs with abundant bristles, bristles typically yellow to fulvous except sometimes noticeably intermixed with fuscous to black bristles on prolateral surface of mesotibia apically, prolateral surface of mesobasitarsus, metafemur at extreme apex; corbicular bristles fuscous to black, marginal bristles intermixed with some yellow to fulvous bristles; prolateral surface of metabasitarsus with scattered fine, simple, yellow setae (noticeably thinner than marginal bristles), but without black setae, margins with black bristles intermixed with yellow to fulvous bristles; penicillum dark fulvous to fuscous; rastellum fulvous. Metasoma with numerous, subdecumbent, yellow bristles on terga III–V arising from tomentum, similar bristles sparser on tergum II.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Colombia: Prov. Valle, Rio Anchicaya, 400 m, 11 Feb. 1977, M.D. Breed & C.D. Michener (SEMC).

PARATYPE: ♀, Colombia: Prov. Valle, Rio Anchicaya, 400 m, 10 Feb. 1977, M.D. Breed & C.D. Michener (SEMC).

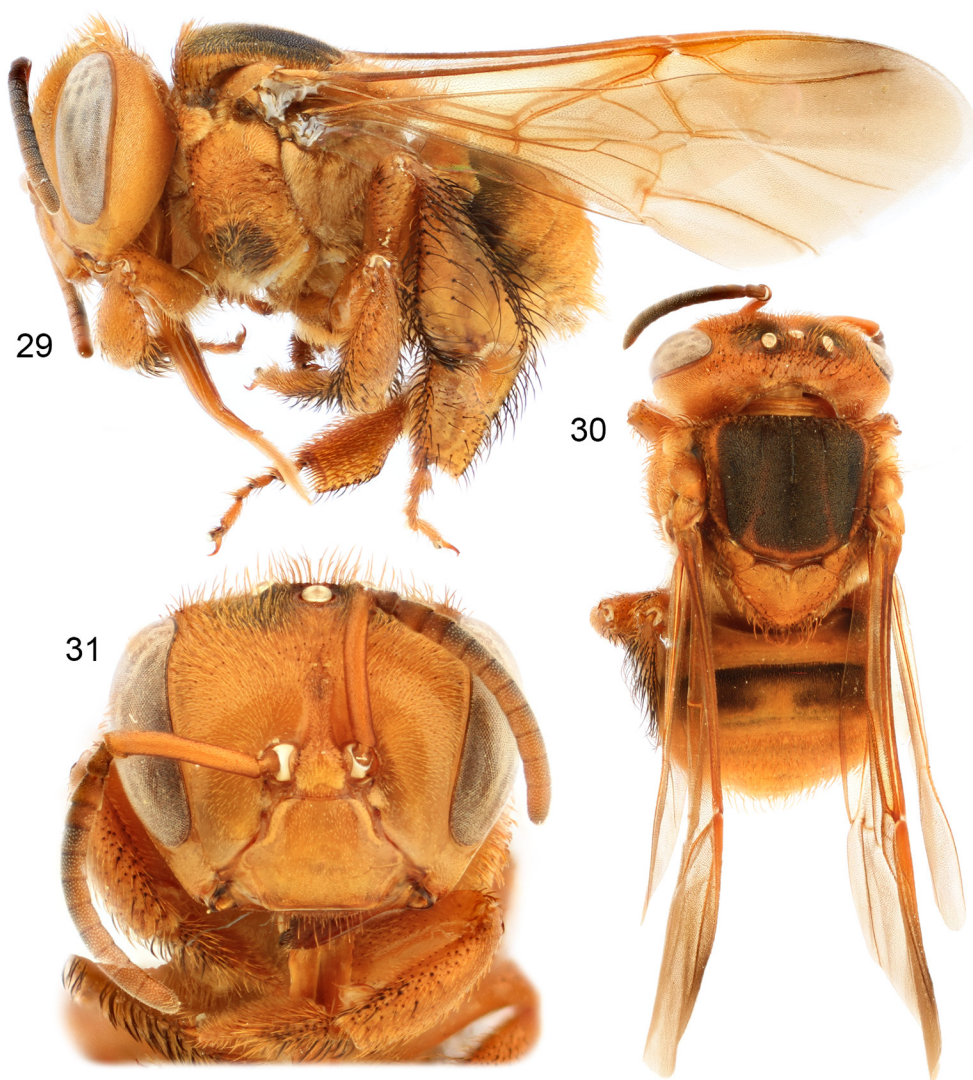
ETYMOLOGY: The specific epithet honors my goddaughter, Ms. Rosella Amparo Betancourt, a brilliant young poet and budding scholar.

Scaptotrigona magdalenae Engel, new species

ZooBank: urn:lsid:zoobank.org:act:A8381269-236C-42AB-897A-5B2B10E21A04

(Figs. 29–43, cover)

DIAGNOSIS: This is a smaller species of *Scaptotrigona* with mesoscutal striping currently known only from the Magdalena Valley, from Tolima to Cundinamarca. It is



Figures 29–31. Worker of *Scaptotrigona magdalenae*, new species, light morph. 29. Lateral habitus. 30. Dorsal habitus. 31. Facial view.

somewhat similar to the neighboring *S. tatacoensis*, but lacks the distinctive color patterns of that species (*vide infra*). While most *Scaptotrigona* have a faintly darker area at the apex of the marginal cell, usually merely a darkening of the background color of the wing membrane, this species has a more distinct infumate spot in this position, and appearing infused with black relative to the otherwise parchment color of the membrane (Figs. 29, 34). This is not a feature unique to the genus, but is distinctive among the subset of species in subgroup A of the *postica* group.

This species occurs in two distinct color morphs. Two years ago, I had originally considered each to be a distinct species as they originally seemed to be biogeographically distinct, albeit quite close to one another in the Magdalena River Valley. Given the small distances involved, that both were found together in a single collecting event at one locality, and that two individuals of the dark morph showed some progression

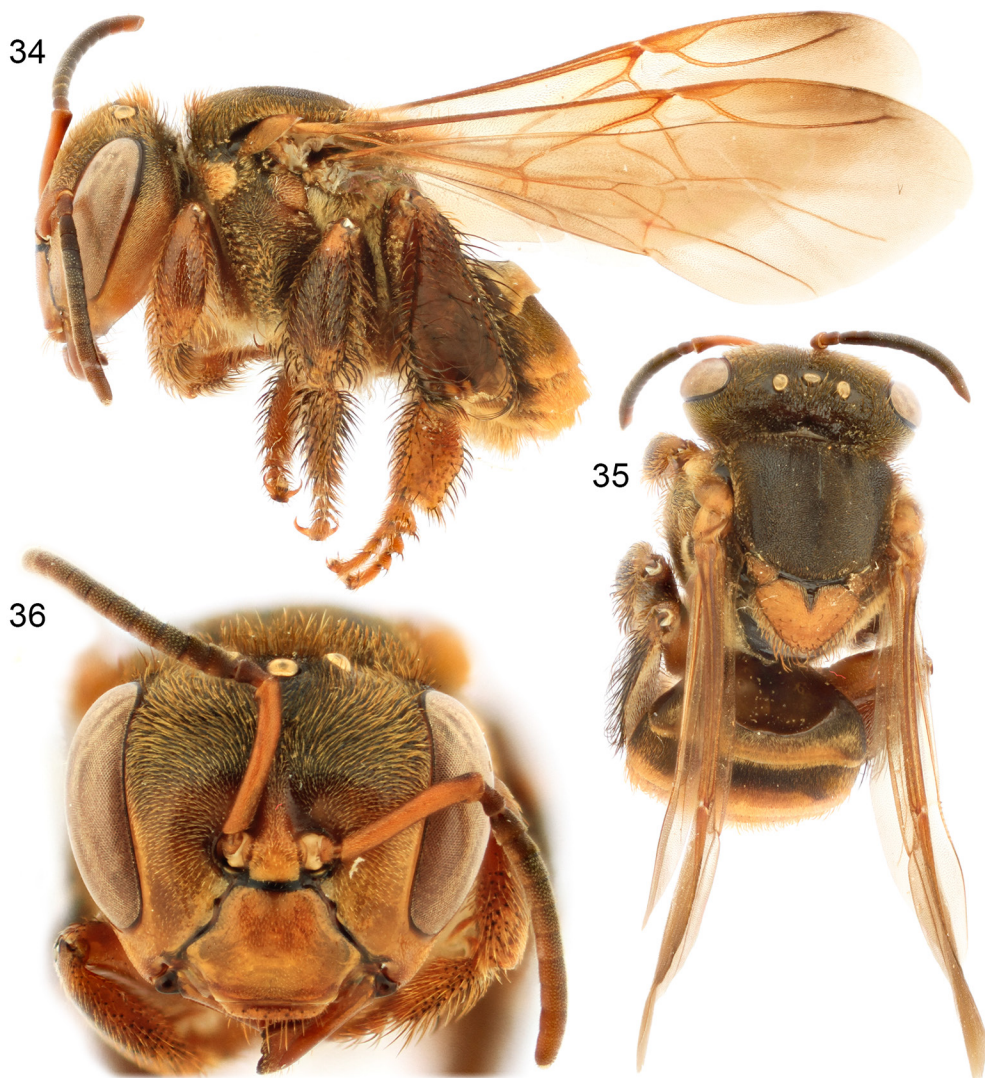


Figures 32–33. Worker of *Scaptotrigona magdalenae*, new species, light morph. **32.** Dorsal view of vertex and mesosoma. **33.** Pro-lateral surface of metatibia, metatarsus, and metapretarsus.

toward the lighter morph, I ultimately concluded that they represent extremes of a range of variation within a single taxon. Thankfully, observations made last year by Victor H. Gonzalez clarified the matter as he was able to confirm that these are one cohesive species, as he collected both color forms from a single nest.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 5.2–5.9 mm, forewing length (to base of humeral sclerite) 5.0–6.0 mm. Head wider than long, width 2.33–2.42 mm, length 1.91–2.00 mm; compound eye length 1.33–1.39 mm; upper interorbital distance 1.53–1.55 mm, lower interorbital distance 1.42–1.52 mm. Scape length 0.88–0.91 mm, about as long as torulocellar distance, torulocellar distance 0.85–0.88 mm. Clypeus approximately 1.65–1.8× as wide as long, length 0.64–0.67 mm, width 1.06–1.21 mm. Malar area approximately 1.8× flagellar diameter or 0.80–0.82× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations comparatively deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming acutely rounded angle, slightly projecting upward as a short lamellate tooth, upper margin with preoccipital lamella extending into concavity about half length, sometimes less.

Light morph. Integument of labiomaxillary complex orange except prementum brown; labrum orange; mandible orange to reddish orange apically; clypeus orange, epistomal sulcus well delineated by orange brown to black; supraclypeal area orange; malar space orange; face below and above tangent of antennal toruli orange except reddish brown to black around ocelli and extending slightly onto upper frons, such marking not extending to orbits and sometimes medially divided by thin strip of orange from frons to median ocellus; scape orange, sometimes with brown dorsoapi-



Figures 34–36. Worker of *Scaptotrigona magdalenae*, new species, dark morph. 34. Lateral habitus. 35. Dorsal habitus. 36. Facial view.

cally; pedicel and flagellum typically dark brown above, with narrow underside of flagellum orange to light brown; vertex and posterior of head orange except for marking around ocelli; gena and postgena orange, hypostomal borders yellow. Mesosoma largely orange except mesoscutum black with orange along lateral borders and reddish brown to reddish orange strips from notauli to reddish orange posterior border, and mesepisternum with reddish brown to dark brown area anteroventrally; tegula wholly orange and semi-translucent; legs wholly orange except lighter on corbicula and tarsi. Wing membranes hyaline clear posteriorly to lightly parchment colored anteriorly, with lightly infumate area at marginal cell apex; veins orange. Metasoma generally yellow orange to orange, with tergal discs largely yellow except brown to dark brown laterally on terga I and II, and at extreme base of tergum II; terga III–V

with brown to dark brown at extreme bases, often obscured by overhanging tergal margins; tergum VI brown basally and light brown to yellow apically; sterna yellow orange to orange.

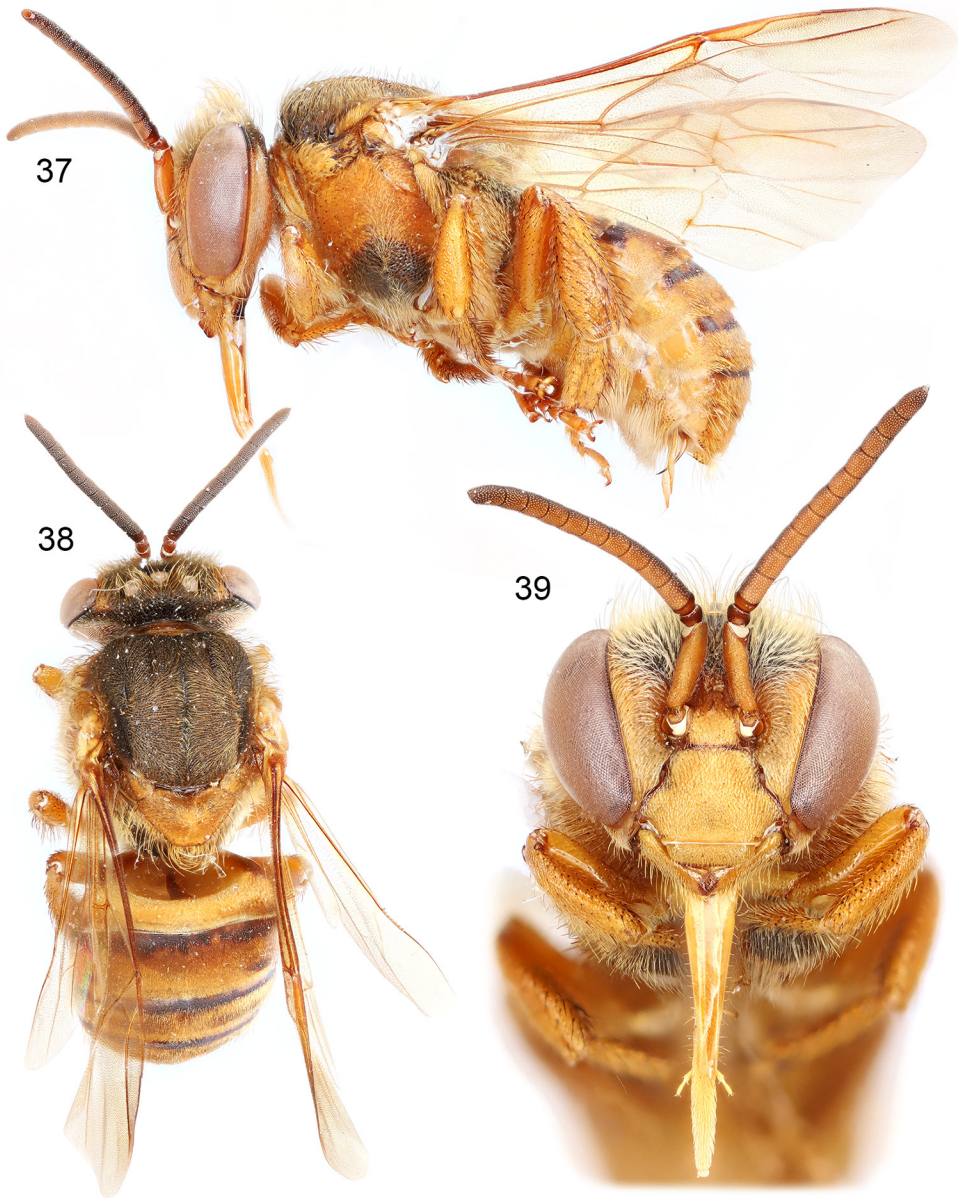
Fine pubescence generally consisting of scattered, minute to short, appressed or decumbent yellow setae, such setae often simple but sometimes with minute branches or plumose, such plumose setae sometimes blending to yellow or pale yellow when dense around pronotal lobe, and on metepisternum and lateral surface of propodeum; sterna II–V with scopa composed elongate, erect, simple setae with characteristically wavy apices, such scopal setae yellow. Bristles as follow: Labrum with sparse, erect, simple, yellow bristles; vertex with numerous erect, simple, yellow to sometimes light fulvous bristles; pronotal dorsolateral margin near and anterior to pronotal lobe with yellow to fulvous bristles; mesoscutum with anterior and lateral borders with erect bristles, those on lateral border short, bristles largely yellow to fulvous, although along anterior margin some with dark fuscous bases and some entirely black bristles antero-laterally; tegula with short, suberect, yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect, yellow to light fulvous bristles; mesepisternum with scattered, yellow to fulvous bristles, along rounded anterior border with præpisternum a line of abundant, suberect yellow to fulvous bristles extending ventrally from pronotal lobe; lateral surface of propodeum with scattered, long, erect, yellow to light fulvous bristles. Legs with abundant yellow to fulvous bristles except some black bristles on prolateral surface of protibia, abundant on prolateral surfaces of mesotibia, pro- and mesobasitarsus, and apically on metafemur; metatibia and metabasitarsus with black bristles. Metasoma with numerous, prominent, suberect to subdecumbent, light fulvous to sometimes yellow bristles on terga III–V arising amid tomentum.

Dark morph. As for the light morph except as follows: upper two-thirds of frons dark brown to black, except often separated from inner orbit by thin strip of orange, rarely by broader strip that then extends into ocellocular area; vertex, posterior of head, and uppermost gena dark brown to black. Mesosoma largely dark brown to black except pronotal lobe, mesoscutellum, metanotum, and hypoepimeral area orange. Legs largely orange except prolateral surfaces of tibiae and upper surfaces of femora, except at joints reddish brown to brown. Metasoma generally dark brown to black except anterior-facing surface of tergum I brown, dorsal-facing surface of tergum I with orange brown apically and terga II–V with yellow apical marginal zones; tergum VI brown to dark brown; sterna brown to dark brown.

♀: *Latet.*

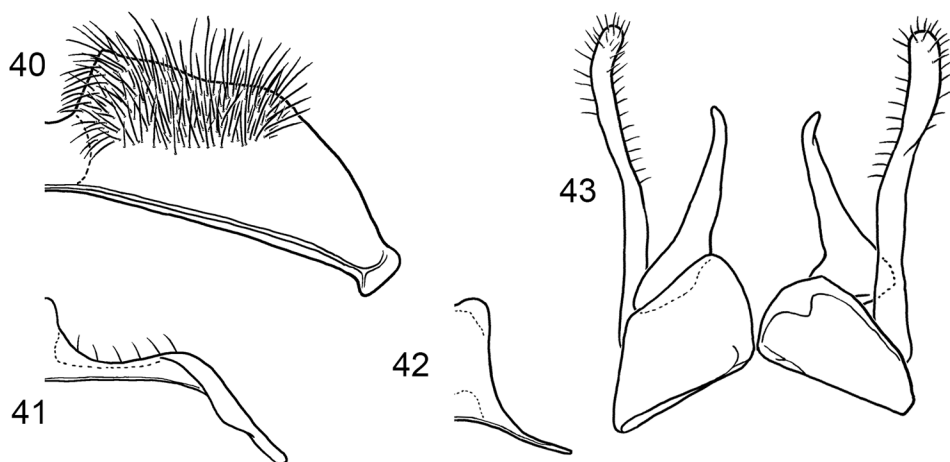
♂: As described for worker except as follows: Total body length approximately 5.5–6.0 mm, forewing length (to base of humeral sclerite) 5.6–5.8 mm. Head wider than long, width 2.24–2.30 mm, length 1.85–1.88 mm; compound eye length 1.48 mm; upper interorbital distance 1.30–1.36 mm, lower interorbital distance 0.97–1.06 mm. Scape length 0.61–0.67 mm, much shorter than torulocellar distance, torulocellar distance 0.76–0.79 mm. Clypeus approximately 1.39–1.44× as wide as long, length 0.67–0.70 mm, width 0.97 mm. Malar area approximately 0.8× flagellar diameter or 0.4× basal mandibular width. Gena narrower than compound eye. Preoccipital ridge weakly carinate dorsally, sharply angled at best laterally, without concavity or bordering indentations. Terminalia in figures 40–43.

Integument of labiomaxillary complex yellow to orange except prementum brown; labrum yellow to orange; mandible yellow to orange with reddish orange apically; clypeus yellow to orange, epistomal sulcus well delineated by dark brown to black; supraclypeal area yellow to orange; malar space yellow to orange; face below tan-



Figures 37–39. Drone of *Scaptotrigona magdalenae*, new species. 37. Lateral habitus. 38. Dorsal habitus. 39. Facial view.

gent of antennal toruli yellow to orange; frons largely brown to black except in broad yellow to orange triangular areas continuing from lower face on lower frons, such coloration extending as thin line along inner orbit to summit, sometimes with a small spot of yellow to orange anterior to median ocellus; vertex and posterior of head dark brown to black, uppermost margin of gena brown to black, remainder yellow to orange; postgena yellow to orange; scape orange; pedicel and flagellum typically brown to dark brown, flagellum lighter beneath. Mesosoma largely yellow to orange except



Figures 40–43. Male terminalia of *Scaptotrigona magdalenae*, new species. **40.** Sternum VI. **41.** Sternum VII. **42.** Sternum VIII. **43.** Genital capsule, left is dorsal view, right is ventral view.

mesoscutum black, sometimes with weak orange to reddish orange along lateral borders, mesepisternum with dark brown to black ventrally, sometimes more restricted posteroventrally or even with mesepisternum largely black with orange to reddish orange posterodorsally; metepisternum sometimes dark brown to black; metanotum sometimes dark brown; mesoscutellum sometimes more reddish orange to reddish brown and lighter medioapically; propodeum dark brown to black; tegula wholly orange and semi-translucent; legs entirely yellow orange to orange except in darker forms with spots of dark brown to black on protibia, prolateral surface of meso- and metabasitarsi entirely dark brown to black, and metatibia with line of dark brown to black on superior margin of prolateral surface in apical two-thirds. Metasoma generally yellow orange to black, either with terga dark brown to black with tergum I and tergum II to varying degrees broadly orange, tergum VII apically yellow, and sterna largely yellow brown, or in lighter individuals terga largely yellow to orange, with areas of brown to dark brown laterally on tergum I, basally and laterally on terga II–V, with tergum VI largely brown and tergum VII yellow.

Appressed, simple, short, yellow setae of mesoscutum more abundant and more transversely directed; sterna without scopal setae as in worker but with dense, sub-decumbent to decumbent, mesial-posteriorly directed, simple, elongate, yellow setae. Bristles as follow: bristles of drone generally more elongate than those of worker; *e.g.*, bristles of vertex much more elongate than in worker, and gently arched. Legs with abundant yellow to fulvous bristles except numerous black bristles on prolateral surface of pro- and mesotibiae and pro- and mesobasitarsi; such black bristles apically on metafemur; black bristles dominant and scattered over prolateral surface of metatibia; a few on prolateral surface and dominant on superior margin of metabasitarsus.

HOLOTYPE: ♀, Colombia: Cundinamarca, Boqueron, El cruce a Pandi, 21-XII-2011, 460 m, 4°15.601'N, 74°32.726'W, V.H. Gonzalez [light morph] (SEMC).

PARATYPES: 32♂♂, Colombia: Cundinamarca, Boqueron, El cruce a Pandi, 21-XII-2011, 460 m, 4°15.601'N, 74°32.726'W, V.H. Gonzalez (SEMC). **Dark morph.** 4♀♀, Colombia: Cundinamarca, Boqueron, El cruce a Pandi, 21-XII-2011, 460 m, 4°15.601'N, 74°32.726'W, V.H. Gonzalez (SEMC). **Light morph.** 6♀♀, Colombia: Cundinamarca,

Boqueron, El cruce a Pandi, 21-XII-2011, 460 m, 4°15.601'N, 74°32.726'W, V.H. Gonzalez (SEMC); 15♀♀, Colombia: Tolima, El Guamo Vereda Chontaduro, La Guaraperia, 337 m, 4°0.3662'N, 74°56.958'W, 21-XII-2011, V.H. Gonzalez (SEMC).

ADDITIONAL MATERIAL (each series from a different nest): 6♀♀ [dark], 3♀♀ [light] [from same nest], Colombia, Cundinamarca, San Antonio de Tequendama, 4°38.107'N, 74°21.331'W, 1581 m, 13 March 2021, V.H. Gonzalez [examined three managed hives] (SEMC); 4♀♀ [light], 1♀ [dark], Colombia, Cundinamarca, Beltrán, 4°48.020'N, 74°44.394'W, 237 m, 21 Feb 2021, V.H. Gonzalez (SEMC); 4♀♀ [light], Colombia, Cundinamarca, Beltrán, 4°48.020'N, 74°44.394'W, 237 m, 21 Feb 2021, V.H. Gonzalez (SEMC); 2♀♀ [light], Colombia, Cundinamarca, Beltrán, 4°48.020'N, 74°44.394'W, 237 m, 21 Feb 2021, V.H. Gonzalez (SEMC); 2♀♀ [light], 1♀ [dark], Colombia, Cundinamarca, Beltrán, 4°48.020'N, 74°44.394'W, 237 m, 28 March 2021, V.H. Gonzalez (SEMC); 4♀♀ [dark], Colombia, Cundinamarca, Beltrán, 4°48.020'N, 74°44.394'W, 237 m, 30 March 2021, V.H. Gonzalez (SEMC); 9♀♀ [dark], Colombia, Cundinamarca, Beltrán, 4°48.020'N, 74°44.394'W, 237 m, 30 March 2021, V.H. Gonzalez (SEMC).

ETYMOLOGY: The specific epithet refers to the Magdalena River Valley and the occurrence of the species in area around the joining of the Saldaña River with the Magdalena River and northward. The name is formed of Magdalena and the Latin suffix *-us* (*-ae*, feminine genitive singular; *-i*, masculine genitive singular), which forms adjectives from nouns and is used for commemoration and dedication.

COMMENTS: Victor H. Gonzalez examined several managed nests of this species in Cundinamarca and made the following observations, which he has kindly shared with me: In Beltrán, I found nests inside living trees of *Albizia guachapele* (Kunth) Dugand (Fabales: Fabaceae: Caesalpinioideae: Mimosoid clade: *Acacia* clade: Ingeae grade; local common name: Igua), *Pithecellobium duce* (Roxb.) Benth. (Fabales: Fabaceae: Caesalpinioideae: Mimosoid clade: *Acacia* clade: *Pithecellobium* group; local common name: Payandé), and *Astronium graveolens* Jacq. (Sapindales: Anacardiaceae: Anacardioidae; locally known as Diomate). Nests are found from ground level to up to 12 m above ground. The nest entrance is a tube of brown wax of 2.5–3.0 cm long and a diameter of 12 mm × 8 mm. According to our local informant, bees are known as “enreda” — literally, “entangle” — because the bees are quite defensive and they get into people’s hair. Honey is sometimes used for human consumption (Gonzalez, *in litteris*).

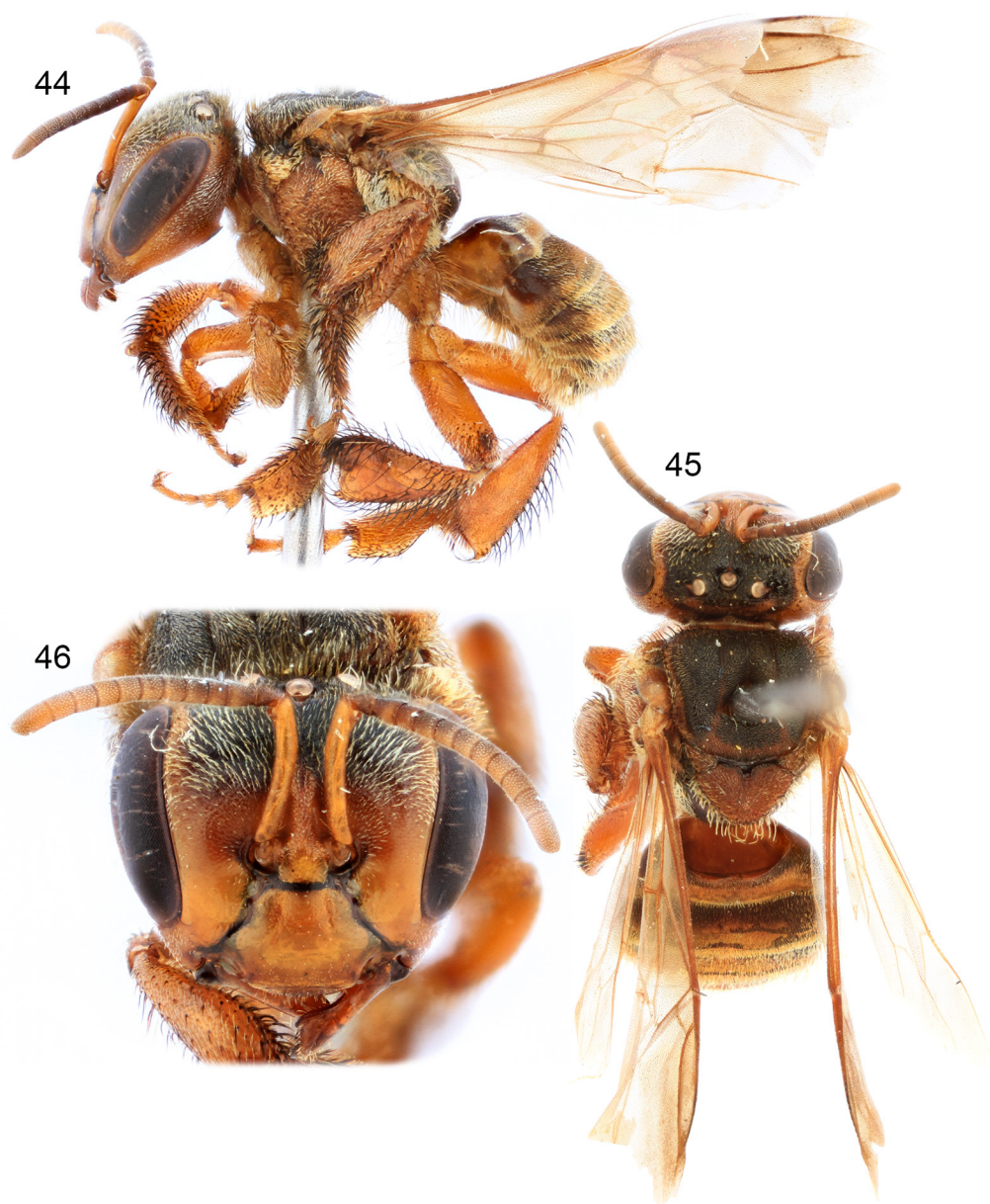
Scaptotrigona tatacoensis Engel, new species

ZooBank: urn:lsid:zoobank.org:act:BA469BDE-2AFE-45CF-AD59-23758A10EC89

(Figs. 44–48)

DIAGNOSIS: This is a distinctive, smaller species of *Scaptotrigona*, currently known only from the Tatacoa “desert” (tropical dry forest) of Colombia. Like some larger species, it has striped markings on the mesoscutum, but can be distinguished by the separation of the dark region of the frons from the inner orbits by a strip of yellow orange to reddish orange, by the striping on the posterior of the head, and the black bristles of the mesobasitarsus and metabasitarsal margins.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 5.5–6.0 mm, forewing length (to base of humeral sclerite) 5.4–5.8 mm. Head wider than long, width 2.27–2.36 mm, length 1.88–1.91 mm; compound eye length 1.33 mm; upper interorbital distance 1.52–1.53 mm, lower interorbital distance 1.42–1.44 mm. Scape length 0.88 mm, slightly longer than torulocellar distance, torulocellar distance 0.82–0.85 mm. Clypeus approximately 1.75–1.8×



Figures 44–46. Worker of *Scaptotrigona tatacoensis*, new species. 44. Lateral habitus. 45. Dorsal habitus. 46. Facial view.

as wide as long, length 0.61 mm, width 1.06–1.09 mm. Malar area approximately $1.6\times$ flagellar diameter or $0.73\text{--}0.75\times$ basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming acutely rounded angle projecting upward as a short lamellate tooth, upper margin of concavity with preoccipital lamella extending into upper third of concavity.

Integument of labiomaxillary complex yellow orange; labrum reddish orange;



47



48

Figures 47–48. Worker of *Scaptotrigona tatacoensis*, new species. 47. Dorsal, slightly oblique, view of head. 48. Prolateral surface of metatibia, metatarsus, and metapretarsus.

mandible reddish orange; clypeus orange, epistomal sulcus well delineated by dark brown to black; supraclypeal area orange to reddish orange; malar space orange; face below upper tangent of antennal toruli orange blending to reddish orange and reddish brown on lower frons medially above antennal toruli, narrow strip of orange extending upward along inner and upper orbit, frons and vertex dark brown to black except typically small areas of orange anterior to median ocellus and lateral to lateral ocelli; ocellocular area dark brown except laterally where separated from upper orbit; posterior of head orange to reddish orange with strips of dark brown extending from ocellocular area to preoccipital carina, preoccipital carina black; gena and postgena orange to reddish orange; scape orange to reddish orange; pedicel and flagellum brown, with flagellum more orange ventrally. Mesosoma largely dark brown to black except orange to reddish orange on pronotum; pronotal lobe; mesoscutum except along extreme lateral border, posterior border, and with faint longitudinal strips from notauli

to posterior border; mesoscutellum (except V-shaped incision); most of mesepisternum except large ventral area of dark brown; small area on metepisternum anteriorly; and lateral surface of propodeum centrally; tegula wholly yellow orange and semi-translucent; legs orange to reddish orange. Metasoma generally dark brown to black except anterior-facing surface of tergum I orange to reddish orange or reddish brown, dorsal-facing disc of tergum I posteriorly orange, sometimes with orange encompassing nearly entire dorsal surface; tergum II with broad areas of orange apically and narrow yellowish marginal zone; terga III–IV with narrow yellow marginal zones obscured by tomentum; sterna largely orange to reddish brown.

As for *S. ederi* except areas of short, plumose setae yellow to pale yellow instead of white; metepisternum and lateral surface of propodeum obscured by dense, plumose, yellow setae; dorsal-facing surface of tergum I with largely simple setae, minute, decumbent, yellow, plumose setae sparse, typically in small areas laterally. Bristles of vertex erect, simple, yellow to fulvous, sometimes even dark fulvous; pronotal dorso-lateral margin near and anterior to pronotal lobe with long, arched, yellow to fulvous bristles; mesoscutum anterior and lateral borders with erect bristles, those on lateral border short, anterior margin with largely fulvous bristles, sometimes intermixed with yellow or dark fulvous bristles; tegula with short, suberect, yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect bristles posteriorly, such bristles minutely pectinate apically, discal bristles shorter, mesoscutellar bristles largely yellow fulvous to dark fulvous on disc, those on apical margin yellow to fulvous; mesepisternal bristles as in *S. ederi* except yellow to fulvous. Legs with abundant bristles, bristles typically yellow to fulvous except noticeably intermixed with fuscous to black bristles on prolateral surface of protibia apically, prolateral surface of probasitarsus, prolateral and marginal surfaces of mesotibia, prolateral surface of mesobasitarsus, metafemur apically, metatibia, along metabasitarsal margins; corbicular and marginal bristles black, marginal bristles intermixed with some yellow to fulvous bristles; prolateral surface of metabasitarsus with scattered fine, simple, yellow setae (noticeably thinner than marginal bristles), intermixed with some fine black setae; penicillum black; rastellum fulvous. Metasoma with numerous, prominent, suberect to subdecumbent, yellow bristles on terga III–V arising from tomentum, as well as similar bristles scattered on tergum II.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Colombia: Huila, Villavieja, Desierto de la Tatacoa, 3°13'N, 75°10'W, Enero 4–8 2006 [4–8 January 2006], J. Florez (SEMC).

PARATYPES: 6♀♀, Colombia: Huila, Villavieja, Desierto de la Tatacoa, 3°13'N, 75°10'W, Enero 4–8 2006 [4–8 January 2006], J. Florez (SEMC).

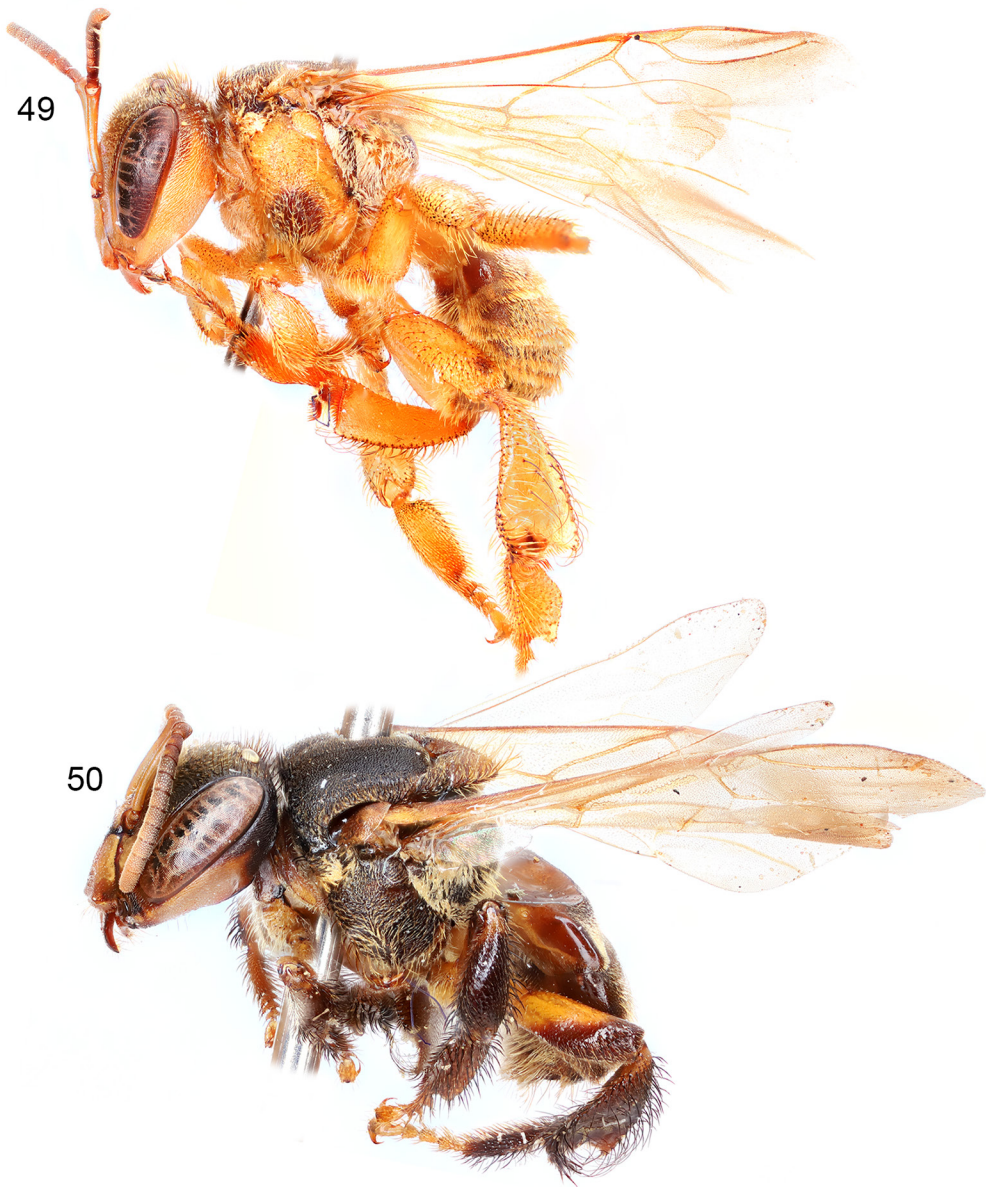
ETYMOLOGY: The specific epithet is taken from the type locality, the Tatacoa Desert of Huila Department, Colombia. The name is formed from Tatacoa and the Latin suffix *-ēnsis*, which is added to a toponym to indicate “from” or “of”.

Scaptotrigona macarenensis Engel, new species

ZooBank: urn:lsid:zoobank.org:act:E26E55DA-844C-47C5-B518-F484DE092234

(Fig. 49)

DIAGNOSIS: This is a larger species much like *S. ochrotricha* (Buysson), *S. nigrohirta* Nogueira & Santos-Silva, and *S. xanthotricha* Moure, and, owing to the stripes of the mesoscutum most closely resembles the first of these. Unlike *S. ochrotricha*, however,



Figures 49–50. Workers of *Scaptotrigona* Moure. **49.** Lateral habitus of *Scaptotrigona macarensis*, new species. **50.** Lateral habitus of *S. caduceus*, new species.

the fore and mid-legs lack black bristles and the metatibia is dominated by yellow to fulvous bristles. There is the possibility that this is a much lighter form of *S. ochrotricha* (if this species exhibited color dimorphism), but until more sampling is made across the region and nests found it seems that they are quite distinct.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.3–6.8 mm, forewing length (to base of humeral sclerite) 6.3–6.5 mm. Head wider than long, width 2.61–2.73 mm, length 2.09–2.18 mm; compound eye length 1.45–1.52 mm; upper interorbital distance 1.67–1.71 mm,

lower interorbital distance 1.55–1.64 mm. Scape length 0.97–1.00 mm, about as long as torulocellar distance, torulocellar distance 0.91–0.94 mm. Clypeus approximately 1.7–1.75× as wide as long, length 0.67–0.75 mm, width 1.18–1.27 mm. Malar area approximately 2.0× flagellar diameter or 0.83–0.85× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming acutely rounded angle projecting upward as a large lamellate tooth.

Integument of labiomaxillary complex yellow; labrum yellow; mandible yellow, sometimes blending to slightly orange apically; clypeus yellow, epistomal sulcus nearly concolorous with clypeus, delineated by light brown to orange; supraclypeal area yellow; malar space yellow; face below upper tangent of antennal toruli yellow; lower frons yellow and blending to brown or dark brown on upper frons, with brown extending slightly ventrally along inner orbit; ocellocular area and vertex brown to dark brown; uppermost gena brown; remainder of gena and postgena yellow; scape yellow, sometimes with patch of brown dorsoapically; pedicel and flagellum brown, with flagellum lighter ventrally. Mesosoma largely yellow except mesoscutum black and with longitudinal strips of reddish orange laterally, along posterior border, and from notauli to posterior border; metanotum sometimes dark brown to black; propodeum sometimes dark brown to black, but always with lateral surface largely yellow; metepisternum sometimes with dark brown along posterior border; mesepisternum sometimes with dark brown patch ventrally; tegula yellow and semi-translucent; legs yellow except sometimes with brownish mark on metafemur dorsoapically. Metasoma generally dark brown except anterior-facing surface of tergum I yellow, dorsal-facing disc of tergum I largely yellow except brown to dark brown laterally; tergum II yellow to yellow brown on disc, with broad areas of brown laterally and yellow apical marginal zone; terga III–V dark brown with large yellow marginal zones obscured by tomentum; sterna largely yellow to yellow brown.

As for *S. ederi* except areas of short, plumose setae yellow to pale yellow instead of white; metepisternum and lateral surface of propodeum obscured by dense, plumose, yellow setae; dorsal-facing surface of tergum I with largely simple setae, minute, decumbent, yellow, plumose setae nearly absent. Bristles of vertex erect, simple, yellow to fulvous; pronotal dorsolateral margin near and anterior to pronotal lobe with long, arched, yellow bristles; mesoscutum anterior and lateral borders with erect bristles, those on lateral border short, anterior margin with yellow to fulvous bristles; tegula with short, suberect, yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect bristles posteriorly, such bristles minutely pectinate apically, discal bristles shorter, mesoscutellar bristles yellow; mesepisternal bristles as in *S. ederi* except yellow. Legs with abundant bristles, bristles yellow to fulvous; corbicular bristles dark fulvous to fuscous, marginal bristles yellow to fulvous; prolateral surface of metabasitarsus with scattered fine, simple, yellow setae (noticeably thinner than marginal bristles), without black setae or bristles; penicillum dark fulvous; rastellum fulvous. Metasoma with numerous, prominent, suberect to subdecumbent, yellow to fulvous bristles on terga III–V arising from tomentum, as well as similar bristles scattered on tergum II.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Colombia: Meta, Reserva La Macarena, between Rio Duda and Rio Guayabero, 1 April 1988, F. Fernández (SEMC).

PARATYPES: 2♀♀, Colombia: Meta, Reserva La Macarena, between Rio Duda and

Rio Guayabero, 1 April 1988, F. Fernández (SEMC); 3♀♀, Colombia: Macarena Mts., I-11-1950 [11 January 1950], 500–650 m, L. Richter (SEMC).

ETYMOLOGY: The specific epithet refers to the Serranía de la Macarena and its associated national ecological reserve in Meta Department, Colombia. The name is formed from Macarena and the Latin suffix *-ensis*, which is added to a toponym to indicate “from” or “of”.

Scaptotrigona caduceus Engel, new species

ZooBank: urn:lsid:zoobank.org:act:EF8500B6-79DB-49AF-8DFE-BAA722A896D5

(Fig. 50)

DIAGNOSIS: This is a species easily confused with *S. ederi*, but occurring to the East of the Andes. A distinct genal tooth is present and among such species it is perhaps most similar to *S. illescasi* (*vide infra*) but differing in the wholly black mesepisternum, the black tegular bristles, and the bristles along the entire mesoscutal margin black.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 5.9–6.0 mm, forewing length (to base of humeral sclerite) 5.5–5.6 mm. Head wider than long, width 2.27–2.33 mm, length 1.88–1.97 mm; compound eye length 1.33–1.39 mm; upper interorbital distance 1.39–1.45 mm, lower interorbital distance 1.33–1.36 mm. Scape length 0.85–0.88 mm, about as long as torulocellar distance, torulocellar distance 0.85–0.88 mm. Clypeus approximately 1.7–1.9× as wide as long, length 0.55–0.61 mm, width 1.06–1.08 mm. Malar area approximately 1.2–1.4× flagellar diameter or 0.55–0.65× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming acutely rounded angle projecting upward as sharp, lamellate tooth; upper margin with lamella extended ventrally one third into concavity.

Integument of labiomaxillary complex yellow orange; labrum orange; mandible reddish orange; clypeus largely yellow orange to orange with brown along apical margin except sometimes with brownish stain on disc, triangular brown stain mediobasally, brown at apicolateral corners, epistomal sulcus well delineated by dark brown to black; supraclypeal area orange with stain of brown at epistomal sulcus; malar space often dark brown; face below tangent of antennal toruli orange, orange extending upward along inner orbit as narrow strip until about one antennal torular diameter above upper tangent of antennal toruli, remainder of face dark brown to black; scape orange, sometimes with brown dorsally; pedicel and flagellum brown above, flagellum orange underneath; vertex dark brown to black; posterior of head dark brown to black; upper third of gena dark brown to black, remainder of gena orange; postgena orange to yellow orange. Mesosoma black except pronotum orange to brown, mesoscutellum dark fulvous to ferruginous; tegula orange and semi-translucent; legs largely yellow orange to orange except dark brown on prolateral surface of protibia, posterior surface and anterior and dorsal surfaces apically on mesofemur, prolateral surface of mesotibia, prolateral surface of mesobasitarsus, metafemur apically, prolateral surface of metatibia except extreme base of fundus, superior and inferior margins of retrolateral surface of metatibia, and prolateral surface of metabasitarsus. Wing membranes hyaline clear to lightly parchment colored; veins light brown. Metasoma generally dark brown to black except anterior-facing surface of tergum I orange brown to brown, dorsal-facing disc of tergum I posteriorly coppery orange, tergum II posteriorly coppery orange, with narrow yellow marginal zone; terga III–IV with narrow apical marginal zones of

light brown to yellow, typically obscured by tomentum; sterna dark brown to brown.

Areas of short, white, plumose setae in *S. ederi* instead yellow. Vertex with numerous erect, simple, dark fulvous bristles, a few short black bristles laterally near upper orbit; pronotal dorsolateral margin near and anterior to pronotal lobe with yellow and black bristles; mesoscutum anterior and lateral borders with largely black bristles, laterally black bristles intermingled with fulvous bristles; tegula with suberect black and fulvous bristles anteriorly; mesoscutellum with abundant, elongate, erect fulvous bristles posteriorly; mesepisternum with scattered, subdecumbent fulvous bristles, longer ventrally, along rounded anterior border with preepisternum a line of abundant, suberect to subdecumbent black to dark fulvous bristles extending ventrally from pronotal lobe; lateral surface of propodeum with scattered, long, erect, fulvous bristles emerging amid dense, appressed, yellow, plumose setae. Legs with abundant black bristles except yellow to fulvous on coxae, trochanters, femora except metafemur apically, and distitarsomeres; metabasitarsus with erect black bristles on prolateral surface and margins. Metasoma with numerous, prominent, suberect to subdecumbent, yellow to fulvous bristles on terga III–V arising amid tomentum, such bristles sparser on tergum II.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Colombia: Meta, San Martin, 11-XI-1975 [11 November 1975], Moncuta leg. (SEMC).

PARATYPE: ♀, Colombia: Meta, San Martin, 11-XI-1975 [11 November 1975], Moncuta leg. (SEMC).

ETYMOLOGY: The specific epithet is the Latin noun *cādūceus*, meaning, “herald’s staff” and specifically the famed staff of the Roman god Mercury (Ancient Greek *Hermês* / Ἑρμῆς), and from which the name of the neighboring Reserva El Caduceo is derived.

Scaptotrigona illescasi Engel, new species

ZooBank: urn:lsid:zoobank.org:act:5C5ED6EA-EAEF-4564-9D13-DCBF02803F4F

(Figs. 51–56)

DIAGNOSIS: This western Ecuadorian species is comparatively dark, in this respect similar to *S. ederi*, but possessing a distinct genal tooth and yellow to dark fulvous bristles along the entire mesoscutal margin, although sometimes with a few black bristles intermixed. The tegular bristles are yellow, the mesepisternum is marked with areas of yellow to reddish orange, and the metabasitarsal bristles are predominantly black, including on the prolateral surface.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 5.8–6.0 mm, forewing length (to base of humeral sclerite) 5.8–5.9 mm. Head wider than long, width 2.36–2.42 mm, length 1.94–1.97 mm; compound eye length 1.39–1.42 mm; upper interorbital distance 1.52–1.55 mm, lower interorbital distance 1.42–1.45 mm. Scape length 0.91 mm, about as long as torulocellar distance, torulocellar distance 0.85–0.91 mm. Clypeus approximately 1.75–1.8× as wide as long, length 0.61 mm, width 1.06–1.09 mm. Malar area approximately 1.6× flagellar diameter or 0.73–0.75× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming



Figures 51–52. Workers of *Scaptotrigona illescasi*, new species. **51.** Lateral habitus, darker individual. **52.** Lateral habitus, lighter individual.

acutely rounded angle projecting upward as short, lamellate tooth; upper margin with lamella extended ventrally about half way into concavity.

Integument of labiomaxillary complex yellow orange; labrum orange; mandible reddish orange; clypeus largely yellow orange to orange with brown along apical margin and sometimes with brownish stain laterally and at apicolateral corners, epistomal sulcus well delineated by brownish orange to black; supraclypeal area orange with stain of brown at epistomal sulcus; malar space often orange to reddish orange; face below tangent of antennal toruli orange, albeit blending to more reddish orange toward antennal toruli, lower frons orange to reddish orange, sometimes largely brown to dark brown except around antennal toruli; scape orange to brownish orange, some-



Figures 53–56. Workers of *Scaptotrigona illescasi*, new species. 53. Facial view, darker individual. 54. Facial view, lighter individual. 55. Mesosomal dorsum, darker individual. 56. Mesosomal dorsum, lighter individual.

times with brown dorsally; pedicel and flagellum brown to dark brown, flagellum orange underneath; vertex dark brown to black; posterior of head dark brown to black; upper third of gena dark brown to black, remainder of gena orange; postgena orange to yellow orange. Mesosoma black except pronotum orange to brown, mesoscutellum orange but sometimes with axilla black, mesepisternum reddish orange posteriorly but sometimes reddish orange anteriorly and orange posteriorly, sometimes propodeum orange with brown centrally on lateral surface; tegula yellow orange and semi-transparent; legs largely yellow orange to orange except dark brown on femora apically,

on prolateral surfaces of pro- and mesotibiae, prolateral surface of pro- and mesobasitarsus, prolateral surface of metatibia except extreme base of fundus and sometimes superior distal angle, and prolateral surface of metabasitarsus except margins, sometimes dark brown areas reddish orange to reddish brown. Wing membranes lightly parchment colored; veins orange to orange brown. Metasoma generally dark brown to black except anterior-facing surface of tergum I orange to orange brown, dorsal-facing disc of tergum I posteriorly coppery orange, tergum II posteriorly coppery orange, with yellow marginal zone; terga III–IV with yellow apical marginal zones, typically obscured by tomentum; sterna dark brown basally and yellow to yellow brown apically in setal areas.

Areas of short, white, plumose setae in *S. ederi* instead yellow. Vertex with numerous erect, simple, yellow to dark fulvous bristles, sometimes with a few short black bristles laterally near upper orbit in darker forms; pronotal dorsolateral margin near and anterior to pronotal lobe with yellow to fulvous bristles; mesoscutum anterior and lateral borders with largely yellow to dark fulvous bristles sometimes intermixed with a few black bristles, typically anterolaterally; tegula with suberect yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect yellow to fulvous bristles posteriorly; mesepisternum with scattered, erect to subdecumbent yellow fulvous bristles, longer ventrally, along rounded anterior border with preepisternum a line of abundant, suberect to subdecumbent fulvous to dark fulvous bristles extending ventrally from pronotal lobe; lateral surface of propodeum with scattered, long, erect, yellow bristles emerging amid dense, appressed, yellow, plumose setae. Legs with abundant yellow to fulvous bristles except intermixed with dark fulvous to black bristles on protibia apically, prolateral surface of pro- and mesobasitarsi, and metafemur apically; metatibia with almost entirely black bristles; metabasitarsus with erect black bristles on margins intermixed with some yellow to fulvous bristles, prolateral surface with scattered fine, dark fulvous to black setae amid otherwise yellow to fulvous setae. Metasoma with numerous, prominent, suberect to subdecumbent, yellow bristles on terga III–V arising amid tomentum, such bristles sparser on tergum II.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Ecuador: Prov. San Mateo, Esmeraldas [Province Esmeraldas, San Mateo, approximately 2 miles south of the municipality of Esmeraldas], 9 October 1956, Foerster (SEMC).

PARATYPES: 23♀♀, Ecuador: Prov. San Mateo, Esmeraldas [Province Esmeraldas, San Mateo, approximately 2 miles south of the municipality of Esmeraldas], 9 October 1956, Foerster (SEMC); 13♀♀, Ecuador: Esmeraldas, San Mateo, 19 Sept 1956 (SEMC).

ETYMOLOGY: The specific epithet honors Alonso de Illescas (*floruit* 1528–circa 1596), leader of the African Maroons in the area of Esmeraldas, which encompasses the type locality.

Scaptotrigona baldwini Engel, new species

ZooBank: urn:lsid:zoobank.org:act:875A20FC-7ECC-46CA-BA97-924EADF05EB5

(Fig. 57)

DIAGNOSIS: This is a noticeably yellow species (Fig. 57), and generally resembles species such as *S. nigrohirta* and *S. xanthotricha*, both of which are typically darker. From *S. nigrohirta* it is most easily distinguished by the presence of yellow bristles on metasomal terga III–V (rather than the dark fuscous bristles of *S. nigrohirta*), and from

S. xanthotricha by the presence of yellow bristles on the tegula and metasomal terga III–V (fuscous to black on the tegula, and fulvous to dark fulvous on the metasoma in *S. xanthotricha*).

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.0–6.5 mm, forewing length (to base of humeral sclerite) 5.9–6.4 mm. Head wider than long, width 2.51–2.67 mm, length 2.15–2.24 mm; compound eye length 1.45–1.55 mm; upper interorbital distance 1.61–1.79 mm, lower interorbital distance 1.52–1.70 mm. Scape length 0.97–1.03 mm, about as long as torulocellar distance, torulocellar distance 0.91–1.03 mm. Clypeus approximately 1.7× as wide as long, length 0.67–0.73 mm, width 1.16–1.24 mm. Malar area approximately 2.2–2.4× flagellar diameter or 0.96–0.98× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming acute angle projecting upward as a sharp lamellate tooth.

Integument of labiomaxillary complex yellow; labrum yellow; mandible yellow orange to orange; clypeus largely yellow to yellow orange, epistomal sulcus well delineated by yellow brown to dark brown; supraclypeal area yellow to yellow orange; malar space yellow to yellow orange; face below tangent of antennal toruli yellow orange; scape yellow to yellow orange except with patch of brown dorsoapically; pedicel and flagellum brown, with narrow underside of flagellum orange; lowermost frons as on face below antennal toruli, blending above to reddish brown and brown, vertex and ocellocular as on upper frons, except sometimes with small spot of orange in ocellocular area bordering upper orbit; posterior of as on upper frons; uppermost edge of gena as on vertex, remainder of gena orange; postgena orange to yellow orange. Mesosoma largely orange except mesoscutum black, mesepisternum with large patch of dark brown ventroanteriorly, and sometimes brown on lateral margins of basal area of propodeum; tegula wholly yellow orange and semi-translucent; legs yellow orange to orange. Wing membranes lightly parchment colored except with noticeable infumate patch at apex of marginal cell; veins orange. Metasoma generally dark brown except anterior-facing surface of tergum I orange, dorsal-facing disc of tergum I largely yellow medially and posteriorly, with lateral area dark brown; tergum II with large medial area of yellow and laterally with broad dark brown patches tapering mesally, apical marginal zone yellow; terga III–V dark brown with yellow apical marginal zones; tergum VI dark brown; sterna orange to light brown.

Vertex with numerous erect, simple, yellow to fulvous bristles; pronotal dorsolateral margin near and anterior to pronotal lobe with yellow to fulvous bristles; mesoscutum anterior and lateral borders with yellow to fulvous bristles; tegula with suberect yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect yellow bristles posteriorly; mesepisternum with scattered, erect to subdecumbent yellow to fulvous bristles, longer ventrally, along rounded anterior border with preepisternum a line of abundant, suberect to subdecumbent fulvous bristles extending ventrally from pronotal lobe; lateral surface of propodeum with scattered, long, erect, yellow bristles emerging amid dense, appressed, yellow, plumose setae. Legs with abundant yellow to fulvous bristles except corbicular bristles dark fuscous to black contrasting with yellow marginal bristles, sometimes with a few black bristles intermixed on margins; metabasitarsus with yellow bristles except sometimes with a few dark fulvous to black bristles intermixed on proventral margin, but prolateral surface uniformly with fine, erect, simple, yellow setae. Metasoma with numerous, prominent, suberect to subdecumbent, yellow to fulvous bristles on terga III–V arising amid tomentum.



Figures 57–58. Workers of *Scaptotrigona* Moure. 57. Lateral habitus of *Scaptotrigona baldwini*, new species. 58. Lateral habitus of *S. santiago*, new species.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Peru: Madre de Dios, Pakitza Bio. Stn., Reserved Zone, Manu National Park, 317 m, 11°56'41''S, 71°17'0''W, 16 Oct. 2000, R. Brooks, ex: wet area near stream (SEMC).

PARATYPES: 2♀♀, Peru: Madre de Dios, Pakitza Bio. Stn., Reserved Zone, Manu National Park, 317 m, 11°56'41''S, 71°17'0''W, 16 Oct. 2000, R. Brooks, ex: wet area near stream (SEMC).

ETYMOLOGY: The specific epithet honors the inspiring writings and life of James A. Baldwin (1924–1987), whose energies and moral essays identified paths and placed crucial paving stones toward a more just, equitable, and healed world.

COMMENT: One of the paratypes exhibits an interesting aberration in the form of

the right mesotibial spur. Rather than being a slender serrate spur it is instead formed like the protibial spur, complete with a velum and short malus.

Scaptotrigona santiago Engel, new species

ZooBank: urn:lsid:zoobank.org:act:B250EC5E-B712-4D57-850A-EE821FEFE6BE

(Fig. 58)

DIAGNOSIS: This is another species lacking a genal tooth and similar to *S. ederi* in its overall darker coloration. It can be distinguished from *S. ederi* by the wholly brown genae (Fig. 58) and the uniquely bicolored bristles of the mesoscutum and corbícula, where the majority of the rachis is black before blending to off white apically.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.1 mm, forewing length (to base of humeral sclerite) 6.1 mm. Head wider than long, width 2.42 mm, length 1.94 mm; compound eye length 1.39 mm; upper interorbital distance 1.52 mm, lower interorbital distance 1.42 mm. Scape length 0.91 mm, about as long as torulocellar distance, torulocellar distance 0.88 mm. Clypeus approximately 1.6× as wide as long, length 0.67 mm, width 1.06 mm. Malar area approximately 1.8× flagellar diameter or 0.80× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming rounded angle, without sharply acute lamellate tooth.

Integument of labiomaxillary complex orange; labrum yellow; mandible orange; clypeus largely yellow orange with stains of orange paramedially, epistomal sulcus delineated yellow orange; supraclypeal area orange; malar space yellow; face below tangent of antennal toruli yellow; scape yellow to yellow orange below, brown dorsally; pedicel and flagellum brown, with narrow underside of flagellum orange; face above antennal toruli brown, vertex, ocellocular, and posterior of head as on upper frons; gena and postgena as on upper frons except area immediately bordering malar space yellow orange to orange. Mesosoma largely dark brown to black except mesoscutellum, metanotum, and basal area and posterior surface of propodeum yellow; tegula brownish orange and semi-translucent; legs largely dark brown except coxae and trochanters orange, apices of femora and tibiae orange including corbicular surface, and apical tarsomeres orange. Wing membranes parchment colored; veins orange. Metasoma generally dark brown except anterior-facing surface of tergum I brown, dorsal-facing disc of tergum I yellow posteriorly; tergum II yellow posteriorly; terga III–V dark brown with yellow apical marginal zones; tergum VI dark brown; sterna brown to dark brown.

Vertex with numerous erect, simple, fuscous bristles, typically with off white tips, some bristles near upper orbits black; pronotal dorsolateral margin near and anterior to pronotal lobe with yellow to dark fuscous bristles; mesoscutum anterior and lateral borders with fuscous bristles, typically with off white tips; tegula with suberect fuscous bristles anteriorly; mesoscutellum with abundant, elongate, erect fuscous to dark fulvous bristles; mesepisternum with scattered, erect to subdecumbent pale yellow to off white bristles, longer ventrally, along rounded anterior border with preepisternum a line of abundant, suberect to subdecumbent fuscous bristles with off white tips extending ventrally from pronotal lobe; lateral surface of propodeum with scattered, long, erect, yellow bristles emerging amid dense, appressed, white, plumose setae. Legs with abundant fuscous, dark fulvous, or fulvous bristles; corbicular bristles dark fulvous to black with pale yellow to off white apical halves, profundal bristles fuscous

to black, marginal bristles dark fulvous to fuscous, some with off white tips; metabasitarsus with dark fulvous to fuscous bristles, sometimes with off white tips, prolateral surface with fine, erect, simple, fuscous to black setae. Metasoma with numerous, prominent, suberect to subdecumbent, yellow bristles on terga III–V arising amid tomentum, intermixed with a few fuscous to dark fulvous bristles with yellow tips.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Ecuador, Morona-Santiago, Santiago, II-86 [February 1986], legit L. Coloma (SEMC).

ETYMOLOGY: The specific epithet is taken from both the province in which the holotype was collected (*i.e.*, Morona-Santiago), as well as the middle name of Jesus Santiago Moure (1912–2010), who established the genus *Scaptotrigona*.

Scaptotrigona yungasensis Engel, new species

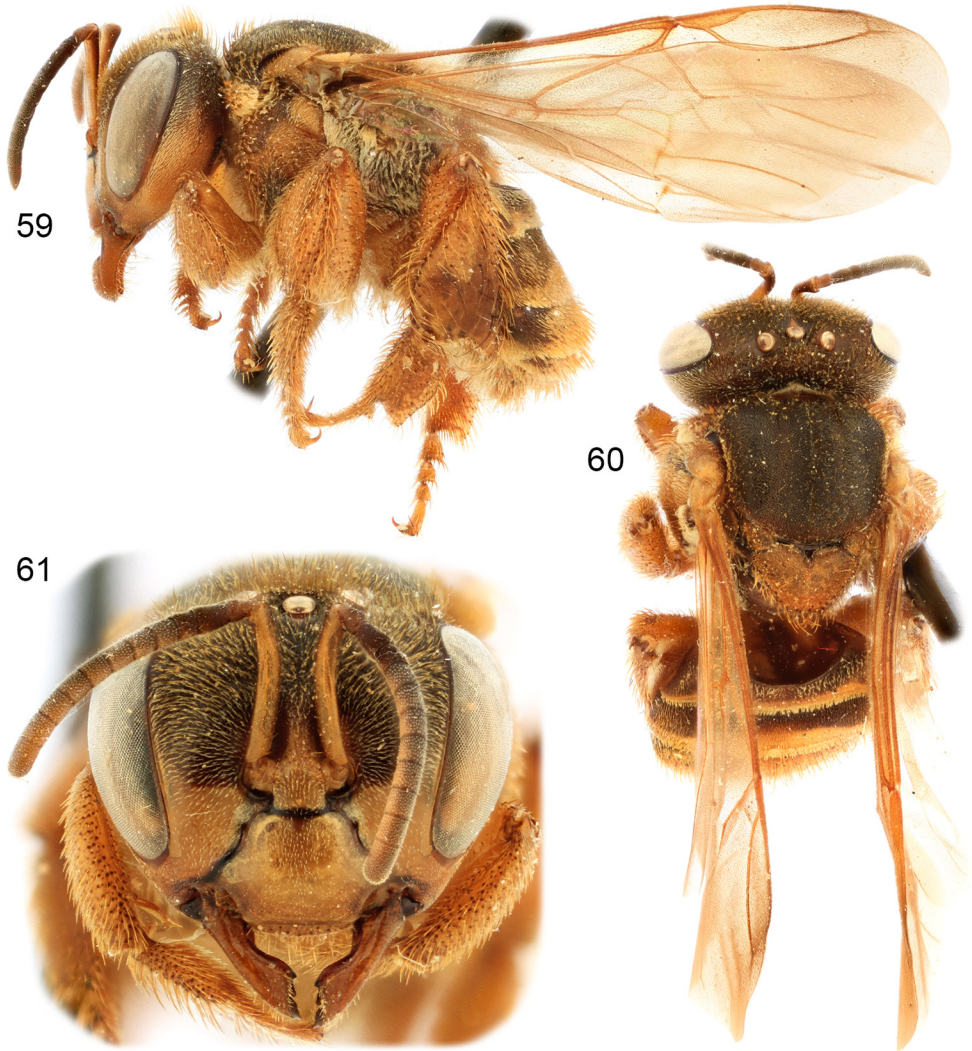
ZooBank: urn:lsid:zoobank.org:act:77DD467E-37B2-4CB3-B659-85CA7549EFA6

(Figs. 59–61)

DIAGNOSIS: In many respects this species is much like the Venezuelan *S. ochrotricha* (*vide infra*), as both are comparatively large species with a generally similar coloration. However, in the new species the corbicular bristles differ in color between the inferior and superior margins and the fringes are typically yellow to light fulvous, while in *S. ochrotricha* they are dark fuscous to black on the corbicula while the marginal fringes range from fulvous to more typically black. Additionally, *S. yungasensis* lacks the conspicuous mesoscutal stripes present in the former species (*cf.* Figs. 60, 67), as well as the dark fulvous to black bristles otherwise present on the mesotibia and mesepisternum of *S. ochrotricha* (*cf.* Figs. 59, 64).

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.4–7.0 mm, forewing length (to base of humeral sclerite) 6.6–6.9 mm. Head wider than long, width 2.61–2.67 mm, length 2.21–2.27 mm; compound eye length 1.52–1.55 mm; upper interorbital distance 1.73–1.76 mm, lower interorbital distance 1.64–1.67 mm. Scape length 0.97–1.03 mm, about as long as torulocellar distance, torulocellar distance 0.91–0.94 mm. Clypeus approximately 1.7–1.8× as wide as long, length 0.70–0.73 mm, width 1.24–1.27 mm. Malar area approximately 1.8× flagellar diameter or 0.70–0.73× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep concavity, lower margin of concavity with carina forming acute angle projecting upward as sharp tooth.

Integument of labiomaxillary complex yellow orange except prementum typically brown; labrum yellow orange to orange; mandible orange basally and reddish orange apically; clypeus largely yellow orange to orange, epistomal sulcus well delineated by brownish orange to black; supraclypeal area yellow orange to orange; malar space yellow orange to orange; face below tangent of antennal toruli yellow orange to orange; scape yellow except brown dorosapically; pedicel and flagellum brown to dark brown, flagellum orange underneath; face above antennal toruli reddish brown to dark brown, even black in some specimens, sometimes with areas of orange immediately above antennal toruli; vertex and posterior of head dark brown to black; uppermost portion of gena dark brown to black, remainder of gena orange to yellow orange; postgena yellow orange to yellow. Mesosoma largely yellow orange to orange except mesoscutum black; propodeum orange to black, often reddish brown;



Figures 59–61. Worker of *Scaptotrigona yungasensis*, new species. 59. Lateral habitus. 60. Dorsal habitus. 61. Facial view.

mes- and metepisternum reddish brown to dark brown ventrally, mesepisternum also often with black above between pronotal lobe and hypoepimeral area; lateral surface of propodeum reddish brown to black except upper third to quarter typically orange; tegula yellow to yellow orange and semi-translucent; legs largely yellow orange to orange except reddish brown to dark brown medially on corbicula and sometimes on prolateral surface of metabasitarsus. Wing membranes hyaline clear to lightly parchment colored; veins orange. Metasoma generally dark brown to black except anterior-facing surface of tergum I yellow orange to orange, dorsal-facing surface of tergum I and terga II–V posteriorly brownish orange blending to yellow apical marginal zones; sterna yellow brown to orange.

Areas of short, white, plumose setae in *S. ederi* instead yellow. Vertex with numerous erect, simple, yellow to light fulvous bristles; pronotal dorsolateral margin near

and anterior to pronotal lobe with yellow to light fulvous bristles; mesoscutum anterior and lateral borders with largely yellow to sometimes light fulvous bristles; tegula with suberect yellow bristles anteriorly; mesoscutellum with abundant, elongate, erect yellow to sometimes light fulvous bristles; mesepisternum with scattered, erect to subdecumbent yellow to light fulvous bristles, longer ventrally, along rounded anterior border with preepisternum a line of abundant, suberect yellow to light fulvous bristles extending ventrally from pronotal lobe; lateral surface of propodeum with scattered, long, erect, yellow bristles. Legs with abundant yellow to sometimes light fulvous bristles except metatibial marginal fringes yellow to fulvous, inferior corbicular bristles light fulvous to fulvous, superior corbicular bristles dark fulvous to nearly black. Metasoma with numerous, prominent, suberect to subdecumbent, light fulvous to yellow bristles on terga III–V arising amid tomentum.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Bolivia: Yungas del Palmar, 1000m, Oct. 1950, Zischka (SEMC).

PARATYPES: 116♀♀, Bolivia: Yungas del Palmar, 1000m, Oct. 1950, Zischka (SEMC); 1♀, Bolivia: Depto. La Paz, Alto Marani, N of Rurrenbeque, 10 Nov 1966, L. Peña (SEMC); 2♀♀, Bolivia: Pto. Fon Beni, Beni, 12 Nov. 1956, L. Peña (SEMC); 2♀♀, Bolivia: Reyes Chitihuara, 14/30 Nov 1956 (SEMC).

ETYMOLOGY: The specific epithet is taken from the type locality, Yungas del Palmar. The name is formed from Yungas and the Latin suffix *-ēnsis*, which is added to a toponym to indicate “from” or “of”.

Scaptotrigona faviziae Engel, new species

ZooBank: urn:lsid:zoobank.org:act:F8A5DB93-F70B-41FD-95FF-0075A8A3F05F

(Figs. 62–63)

DIAGNOSIS: This species is noteworthy for the weaker development and coverage of the yellow tomentum on metasomal terga III–V, with the tomentum widely interrupted medially and weaker laterally. In addition, the size of the concavity interrupting the preoccipital carina laterally is exceptional in this species. Usually, the length of the concavity is about 4× its depth or a bit less, but in *S. faviziae*, the concavity’s length is 5× its depth.

DESCRIPTION: As described for *S. ederi* (*vide supra*), with the following modifications: ♀: Total body length approximately 6.5 mm, forewing length (to base of humeral sclerite) 6.0 mm. Head wider than long, width 2.42 mm, length 2.03 mm; compound eye length 1.42 mm; upper interorbital distance 1.55 mm, lower interorbital distance 1.45 mm. Scape length 0.91 mm, about as long as torulocellar distance, torulocellar distance 0.88 mm. Clypeus approximately 1.7× as wide as long, length 0.64 mm, width 1.06 mm. Malar area approximately 1.8× flagellar diameter or 0.80× basal mandibular width. Preoccipital ridge carinate, lamellate dorsally, with bordering medial and lateral indentations deep, carina interrupted laterally by deep and unusually long concavity, lower margin of concavity with carina forming sharply acute angle, angle projecting upward as a large lamellate tooth.

Integument of labiomaxillary complex orange; labrum orange; mandible yellow orange basally, blending to reddish orange apically; clypeus yellow orange, epistomal sulcus delineated by orange; supraclypeal area yellow orange; malar space yellow orange; face below tangent of antennal toruli yellow orange; scape dark brown except yellow orange ventrally; pedicel and flagellum dark brown; face above tangent of an-

tennal toruli reddish brown; vertex and posterior of head reddish brown; gena largely reddish brown except bordering malar space yellow to yellow orange; postgena yellow. Mesosoma largely orange to reddish orange except mesoscutum black, mesepisternum anteriorly and propodeum reddish orange; tegula yellow orange and semi-translucent except brown on posterior quarter; legs largely reddish orange to brown except coxae, trochanters, underside of metafemur, and apicalmost tarsomeres lighter, yellow orange to yellow. Wing membranes clear to lightly parchment colored; veins orange. Metasoma generally reddish brown to dark brown except anterior-facing surface of tergum I orange, and terga I–V apically yellow orange to yellow; sterna brown.

Areas of short, white, plumose setae in *S. ederi* instead white to pale yellow or golden; metasomal terga II–V with apical fimbriae of minute, fine, simple, golden setae; terga III–V with dense, plumose, appressed, yellow tomentum absent mediolongitudinally. Vertex with numerous erect, simple, black bristles; pronotal dorsolateral margin near and anterior to pronotal lobe with fulvous to black bristles; mesoscutum anterior and lateral borders with black bristles, disc with sparsely scattered, minute, erect, fulvous bristles; tegula with suberect fulvous to black bristles anteriorly; mesoscutellum with abundant, elongate, erect yellow to fulvous bristles, except a few black bristles basolaterally; mesepisternum with scattered, erect to subdecumbent yellow to fulvous bristles, longer ventrally, along rounded anterior border with preepisternum a line of abundant, suberect fulvous bristles extending ventrally from pronotal lobe, a few dorsally near lobe black; lateral surface of propodeum with scattered, long, erect, yellow fulvous bristles. Legs with abundant fulvous bristles except intermixed with black bristles on protibia apically, prolateral surface of mesotibia, pro- and mesobasitarsi, and metafemur apically; metatibia and metabasitarsus with almost entirely black bristles, some with fulvous apices. Metasoma with numerous, prominent, suberect to subdecumbent, dark fulvous to yellow bristles on terga III–V.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Brazil: Amazonas, Manaus, INPA, 15 Aug 76, D. Roubik (SEMC).

ETYMOLOGY: The specific epithet honors Favízia Freitas de Oliveira, dear friend and renowned specialist of Meliponini. The name combines her forename and the Latin suffix *-us* (*-ae*, feminine genitive singular; *-i*, masculine and neuter genitive singular), which forms adjectives from nouns and is used for commemoration and dedication.

Scaptotrigona ochrotricha (Buysson)
(Figs. 64–68; additional figures in Engel, 2022)

Trigona ochrotrichus Buysson in Buysson & Marshall, 1892: 54.

Melipona ochrotricha (Buysson); Dalla Torre, 1896: 582.

Trigona (*Nannotrigona*) *ochrotricha* (Buysson); Schwarz, 1938: 482.

Scaptotrigona ochrotica (Buysson); Vit & Pulcini, 1996: 58, *lapsis calami*.

DIAGNOSIS: The identity of this species has been in question for quite some time given that the original series is lost. The material reported here is within the greater vicinity of the type locality, is of the same caste, and matches the original description quite well. Accordingly, I have selected one worker to serve as neotype in order to stabilize the application and circumscription of this species.

This rather robust species is most similar to *S. nigrohirta*, as well as to *S. macarenensis*, *S. yungasensis*, and *S. xanthotricha*, the assemblage perhaps forming a distinct clade

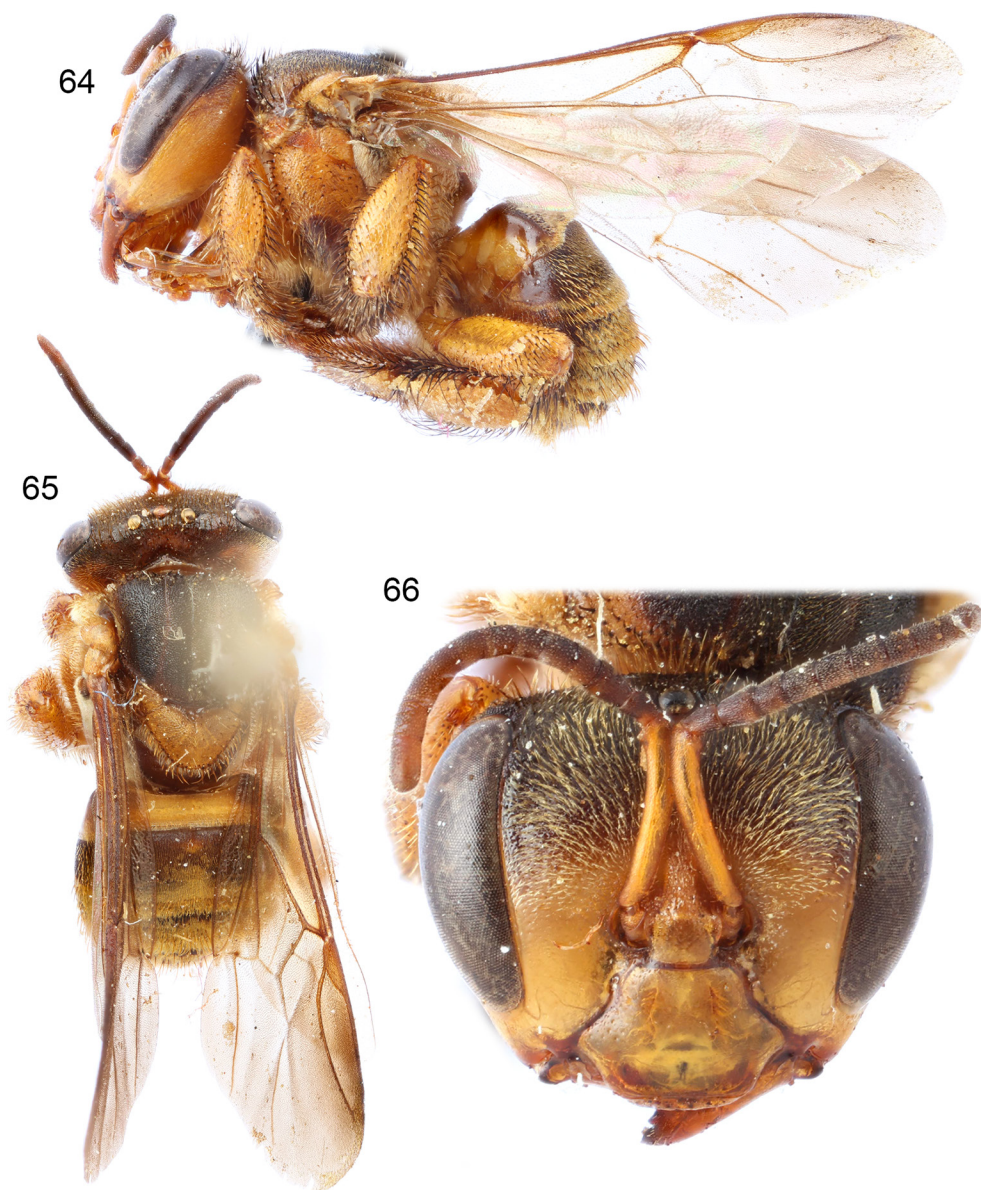


Figures 62–63. Worker of *Scaptotrigona faviziae*, new species. **62.** Lateral view of head, arrow indicating genal tooth. **63.** Lateral habitus.

in the *postica* group. From *S. nigrohirta*, *S. ochrotricha* differs most notably in the presence of distinct striping on the mesoscutum and the absence of dark fuscous to black bristles on metasomal terga III–V.

NEOTYPE (*hic designatus*): ♀, Venezuela, Bolivar, Rancho Las Nieves, 6°20'N, 66°50'W, 500 m, 5–7 February 1990, C.D. Michener (SEMC); the neotype is here designated for the express purpose of stabilizing the application of this specific epithet.

ADDITIONAL MATERIAL: 24♀♀, Venezuela, Bolivar, Rancho Las Nieves, 6°20'N, 66°50'W, 500 m, 5–7 February 1990, C.D. Michener (SEMC).



Figures 64–66. Worker of *Scaptotrigona ochrotricha* (Buysson). **64.** Lateral habitus. **65.** Dorsal habitus. **66.** Facial view.

Scaptotrigona xanthotricha Moure

Melipona trombeta Müller, 1875: 43, *nomen nudum*.

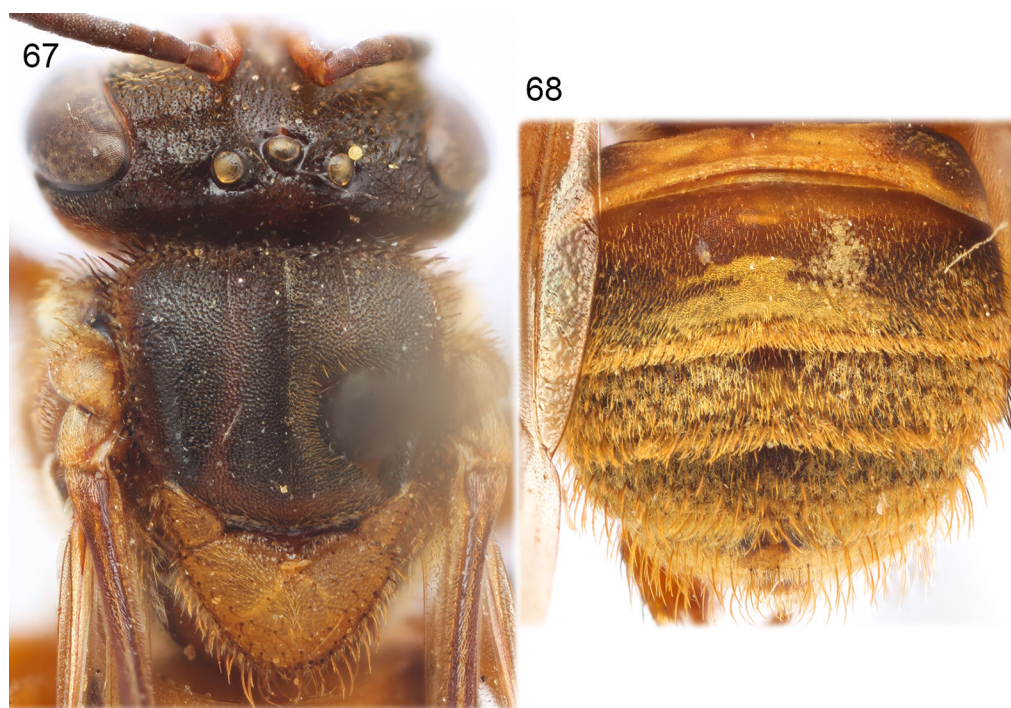
Trigona aethiops Müller, 1921: 302, *nomen nudum*.

Trigona trombeta foetida Müller, 1921: 320, *nomen nudum*.

Scaptotrigona postica xanthotricha Moure, 1950: 78.

Nannotrigona (Scaptotrigona) postica xanthotricha (Moure); Moure, 1953: 136.

Trigona (Scaptotrigona) xanthotricha (Moure); Kerr, 1960: 386.



Figures 67–68. Worker of *Scaptotrigona ochrotricha* (Buysson). **67.** Dorsal view of head and mesosoma. **68.** Dorsal view of metasoma.

Trigona (*Scaptotrigona*) *xanthotrycha* (Moure); Sakagami *et al.*, 1963: 116, *lapis calami*.
Scaptotrigona xanthotricha (Moure); Nogueira-Neto, 1970: 34, *lapis calami*.

DIAGNOSIS: Like the previous species, this is a robust bee similar to the Amazonian *S. nigrohirta*, but occurring in southern and eastern Brazil. It can be distinguished from *S. nigrohirta* by the typical presence of more minute plumose setae on tergum I in *S. nigrohirta* (although not all *S. nigrohirta* have such setae, either worn or truly lacking), versus their absence in *S. xanthotricha*; and by the typically black bristles of the mesoscutal anterior border in *S. nigrohirta* versus the fulvous to dark fulvous bristles of *S. xanthotricha*.

MATERIAL EXAMINED: 4♀♀, Brazil: Retiro, Pedro do Rio, Est. do Rio, III-1954 [March 1954], C.A.C. Seabra coll. (SEMC); 3♀♀, Brazil: Ritapolis, MG [Minas Gerais], SF-23, 44-21d/19-I-1974 [19 January 1974], M. Mazucato, Velthuis, J.M.F. Camargo leg. (SEMC); 2♀♀ [on same pin], Brazil: S.J. Petropolis, Espirito Santo, II-1955 [February 1955], P. Tetes e F. Oliveira (SEMC).

Scaptotrigona nigrohirta Nogueira & Santos-Silva

Scaptotrigona nigrohirta Nogueira & Santos-Silva in Nogueira *et al.*, 2022: 2.

DIAGNOSIS: A full and excellent description of this Amazonian species was recently provided by Nogueira *et al.* (2022), and so I have foregone an account or figures of the species, except to note that it is generally similar to the previous two species as well as *S. macarenensis* and *S. yungasensis*. It is distinguished from those species in the various

accounts of each (*vide supra*).

MATERIAL EXAMINED: 10♀♀, Brazil, Pará, Jacareacanga, October 1959, M. Alvarenga (SEMC); 6♀♀, Brasil, Rondônia, Porto Velho, 12–22 X 1966 [12–22 October 1966], col. Camargo (SEMC).

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