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Notes on South American stingless bees of the genus *Scaptotrigona* (Hymenoptera: Apidae), Part IV: Four new species of group B from the Andean region

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Abstract. This is the fourth installment intended to address outstanding taxonomic matters in the bee genus *Scaptotrigona* Moure (Meliponini). Four new species of the *postica* species group (group B) are described and figured as: *Scaptotrigona (Scaptotrigona) anaulax* Engel, new species, from Ecuador; *S. (S.) vitorum* Engel, new species, from Ecuador; *S. (S.) semiflava* Engel, new species, from Bolivia and Peru; and *S. (S.) grueteri* Engel, new species, from Bolivia.

INTRODUCTION

This is the last of four planned pieces addressing taxonomic matters in the stingless bee genus *Scaptotrigona* Moure (Engel, 2022a, 2022b, 2022c), with the express purpose of making several names available so that they may be referred to by other researchers and in other works. Herein I treat some new species of the subgenus *Scaptotrigona* and belonging to the *postica* species group in its most strict sense (*sensu* Engel, 2022c, or section “B” of Engel, 2022b). This is a seemingly diverse group of species. The four species described here are from the Andean countries, although additional species are certainly to be found in the Peruvian fauna (not considered here) and likely in Brazil. Indeed, there seem to be several taxa related to *Scaptotrigona (Scaptotrigona) postica* (Latreille) that remain to be resolved within this group in the Brazilian fauna and it is hoped that a team of Brazilian researchers will be able to tackle this challenge in the near future.

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MATERIAL AND METHODS

Material reported in this part of the series is deposited in the Division of Entomology, University of Kansas Natural History Museum, Lawrence, Kansas (SEMC), and the American Museum of Natural History, New York, New York (AMNH). The outline of descriptive terminology and means by which images and metrics were taken are already summarized in the earlier parts of this series and are therefore not repeated here (refer to Engel, 2022a, 2022b, 2022c).

SYSTEMATICS

Genus *Scaptotrigona* Moure

Subgenus *Scaptotrigona* Moure, *s.str.*

Scaptotrigona (Scaptotrigona) anaulax Engel, new species

ZooBank: urn:lsid:zoobank.org:act:4C142249-AC9F-4A20-9BFC-F446283B27E2

(Figs. 1–3)

DIAGNOSIS: This is a dark species that can be easily confused with others in this group but is most easily distinguished by the lack of the deep concavity in the lateral part of the preoccipital carina, at most with a faint shallow depression. In this respect, the species resembles *S. extranea* Engel, which also lacks such a concavity and occurs in Pichincha, but in that species the overall coloration is lighter, typical of species in group A (Engel, 2022b). More critically, the facial markings are wholly different (Fig. 3 *cf.* Engel, 2022b: fig. 23) and *S. extranea* seems to be a relatively low-elevation species, occurring around 530 m, while *S. anaulax* is found from 1375–2600 m.

DESCRIPTION: ♀: Total body length approximately 5.5–6.3 mm, forewing length (to base of humeral sclerite) 6.0–6.3 mm. Head wider than long, width 2.50–2.53 mm, length 1.97–2.00 mm; compound eye length 1.33–1.43 mm; upper interorbital distance 1.63 mm, lower interorbital distance 1.50–1.53 mm. Scape length 0.93 mm, slightly longer than torulocellar distance, torulocellar distance 0.87–0.90 mm. Clypeus length 0.63–0.67 mm, width 1.17 mm. Malar area long, length 1.6–1.8× flagellar diameter. Preoccipital carina strong, bordered dorsally by deep medial indentation and briefly lamellate where bordering medial indentation, lateral indentations faint, laterally carina not interrupted by deep concavity, at most with a shallow depression.

Integument generally black to dark brown, with areas of dark brown sometimes nearly black; labiomaxillary complex brown; labrum brown; mandible brown to yellow brown; clypeus largely yellow to yellow brown, with areas of light brown to brown either apicolaterally or paramedially; supraclypeal area yellow to brown; malar space dark brown; face below tangent of antennal toruli largely semitranslucent or diaphanous yellow, with such yellow narrowly tapering upward along inner ocular margin for distance of about 1–2× antennal torular diameter; scape black to dark brown except yellow to yellow brown on ventral half to three-quarters; pedicel and flagellum dark brown; remainder of face dark brown to black; vertex and posterior of head black to dark brown; gena dark brown; postgena dark brown except hypostomal borders yellow. Mesosoma black; tegula dark brown to black; legs largely dark brown except sometimes brown on more proximal podites, tarsi brown to yellow brown, except metabasitarsus largely dark brown with posterior and sometimes anterior margins concolorous with remaining tarsomeres. Wing membranes hyaline and parchment-



Figures 1–3. Workers of *Scaptotrigona* (*Scaptotrigona*) *anaulax*, new species. 1. Lateral habitus. 2. Dorsal habitus. 3. Facial view.

colored; veins largely yellow except yellow brown along anterior of wing. Metasoma dark brown to black except sometimes largely brown or even lighter brown on first two terga and basal sterna.

Integument smooth and shining amid punctures; clypeus and supraclypeal area with minute, shallow, widely scattered punctures; lower face with punctures as on clypeus albeit slightly larger and a bit more numerous, such punctures again minute on frons and separated by 2–4× a puncture width except denser just above antennal toruli and sparser as they blend into ocellocular area; punctures of vertex ill-defined amid irregular integument, blending to coarsely imbricate integument; posterior of head coarsely imbricate; gena with minute punctures separated by 1.5–3× a puncture width; postgena impunctate and finely imbricate. Mesoscutum and mesoscutellum with small contiguous punctures, integument between punctures, where evident, smooth; pleura with small contiguous punctures, punctures becoming somewhat

weaker and a bit more spaced ventrally and posteroventrally; punctures of metepisternum smaller and more distinct than those of mesepisternum; propodeum with small contiguous punctures on lateral surface; basal area of propodeum tessellate to imbricate. Metasomal terga coarsely imbricate and minutely punctate, except anterior-facing surface of tergum I smooth, pregradular areas and exceptionally narrow apical marginal zones finely imbricate and impunctate; tergum VI more finely and faintly imbricate, particularly medially, and largely impunctate; sterna finely imbricate.

Fine pubescence generally consisting of minute to short, appressed or decumbent yellow or golden setae, such minute setae often simple but sometimes plumose, intermixed in places with fuscous to frequently black setae; minute golden setae sparse to absent on lower face, more numerous on frons except upper frons such setae blending to more fuscous setae and erect black setae and bristles; gena with scattered golden setae; postgena with elongate, erect, fuscous to nearly black setae. Pronotal lobe with dense, pale yellow, plumose setae; mesoscutum and mesoscutellum with scattered, minute, simple, subappressed to decumbent, fuscous setae, such setae more noticeable laterally, mesoscutum also with thin, plumose, pale yellow setae at anterolateral corners and somewhat along lateral margins; mesepisternum with short to long, erect to suberect, golden fuscous setae, intermixed with black bristles, with short, pale yellow, plumose setae on hypopimeral area; metepisternum with dense, yellow, plumose setae; propodeum lateral surface with setae similar to that of metepisternum. Legs with largely black setae, except coxae, trochanters, and proximally on femora with long, yellow setae. Metasomal terga with minute, appressed to decumbent, simple, fuscous to golden fuscous setae, except anterior-facing surface of tergum I glabrous, tergum I with diffuse, thin, pale yellow, plumose setae apicolaterally (such setae often difficult to discern, best viewed in profile or obliquely), terga III–VI covered with dense, appressed to subappressed, yellow, plumose tomentum, and apically on tergum II (ranging from apical two thirds to simply near apical margin); sterna with elongate, erect, yellow to pale yellow simple scopal setae, such setae with wavy apices. Black bristles as follows: upper frons and vertex with black bristles, those of vertex longest; black bristles along anterior margin of pronotal lobe; mesoscutum anterior and lateral margins with abundant black bristles and some shorter bristles sparsely scattered on disc; tegula with suberect black bristles anteriorly; mesoscutellum with abundant black bristles, particularly along posterior margin, bristles longest along margin; black bristles scattered over mesepisternum and a distinct line of such bristles along rounded margin with preepisternum; lateral surface of propodeum with long, erect, fuscous to fulvous bristles arising amid tomentum; legs with numerous black bristles, those of distitarsomeres typically fulvous or intermixed black and dark fulvous; metatibial and metabasitarsal bristles black. Metasoma terga III–V with abundant, suberect to subdecumbent golden to fulvous bristles, sometimes a few fuscous, similar bristles longer and more erect on tergum VI, particularly along margin; terga I–II with such bristles short and present apicolaterally.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Ecuador: Pichincha, Mindo, 10.6 km W Mindo Road, 0°4'23''S, 78°45'14''W, 1375 m, 28 Mar 1999, D. Brzoska (SEMC).

PARATYPES: 1♀, Ecuador: Pichincha, Mindo, 10.6 km W Mindo Road, 0°4'23''S, 78°45'14''W, 1375 m, 28 Mar 1999, D. Brzoska (SEMC); 35♀♀, Ecuador: Pichincha, Quito to Sto. Domingo, 2600 m, XII-20-1970 [20 December 1970], L. Peña (AMNH); 2♀♀, Ecuador: Pichincha, Quito to Sto. Domingo, 2600 m, XII-20-1970 [20 December 1970], L.

Peña (SEMC); 3♀♀, Ecuador: Imbabura, Otavalo to Appuela, Sept. 8–10, 1977, 2200 m, L.E. Peña (AMNH); 1♀, Ecuador: Imbabura, Otavalo to Appuela, Sept. 8–10, 1977, 2200 m, L.E. Peña (SEMC).

ETYMOLOGY: The specific epithet is derived from the Ancient Greek noun *αὐλάξ* (*aûlax*, meaning, “furrow”), preceded by the alpha privative for negation (*ἄ-* / *a-*). The name refers to the absence of the deep lateral interruption in the preoccipital carina that is otherwise so distinctive in most species of *Scaptotrigona*.

Scaptotrigona (Scaptotrigona) vitorum Engel, new species

ZooBank: urn:lsid:zoobank.org:act:41C6C879-E0BD-49F1-846B-924224732DC2

(Figs. 4–6)

DIAGNOSIS: This southern Ecuadorian species superficially resembles an exceptionally dark *S. ederi* Engel (from Colombia), and both lack a genal projection on the lower portion of the concavity in the lateral preoccipital carina. Aside from those characters of subgroup B (*S. ederi* belongs to subgroup A: Engel, 2022b), *S. vitorum* can be distinguished by the darker and fainter facial markings (Fig. 6) and the more prevalent minute pubescence on the apical half of the clypeus (Fig. 6). *Scaptotrigona vitorum* occurs in southwestern Ecuador, while *S. ederi* is found across the southern Andes of Colombia.

DESCRIPTION: As described for *S. anaulax* (*vide supra*) except as follows: ♀: Total body length approximately 5.0–5.7 mm, forewing length (to base of humeral sclerite) 5.5–5.8 mm. Head wider than long, width 2.47–2.53 mm, length 1.93–2.00 mm; compound eye length 1.37–1.47 mm; upper interorbital distance 1.60–1.73 mm, lower interorbital distance 1.50–1.57 mm. Scape length 0.93 mm, slightly longer than torulocellar distance, torulocellar distance 0.87–0.93 mm. Clypeus length 0.63–0.70 mm, width 1.13–1.17 mm. Malar area long, length 1.6–1.8× flagellar diameter. Preoccipital carina strong, dorsally lamellate and bordered by medial indentation and shallow lateral indentations, laterally carina interrupted by deep concavity, lamella extends into dorsal half of concavity, lower margin of concavity without genal projection (tooth) extending upward into concavity, at most an acutely rounded angle although typically orthogonal.

Integument almost wholly black to dark brown; labrum dark brown; mandible brown to dark brown, typically darker proximally; clypeus largely brown to dark brown, with areas of yellow to yellowish brown centrally, laterally, or paramedially on either side of brown strip from base to near apical margin; supraclypeal dark brown; malar space dark brown; face below tangent of antennal toruli largely semitranslucent or diaphanous yellow to yellow brown, with such yellow narrowly tapering upward along inner ocular margin for distance of less than antennal torular diameter; scape dark brown except lighter brown ventrally, but sometimes light brown to yellow brown extends over nearly entirety of scape; pedicel and flagellum dark brown except ventral surface of flagellum pale brown; remainder of face dark brown to black; vertex and posterior of head black to dark brown; gena dark brown; postgena dark brown except hypostomal borders yellow. Legs largely dark brown to black except trochanters yellowish brown, tarsi yellowish brown except metabasitarsus dark brown with yellowish brown on margins. Wing membranes hyaline and parchment-colored; veins largely yellow to orange along anterior margin. Metasoma dark brown to black except sometimes largely brown on first tergum and basal sternum.

Clypeus and supraclypeal area with minute, shallow, nearly contiguous punctures; lower face with punctures as on clypeus albeit slightly larger and more scattered,

such punctures again minute on frons and separated by less than a puncture width, punctures becoming separated up to a puncture width as they blend into ocellular area; gena with minute punctures separated by less than a puncture width; postgena impunctate and finely imbricate. Mesoscutum and mesoscutellum with small contiguous punctures; pleura with irregular, small, contiguous punctures, punctures weak and integument somewhat granular; punctures of metepisternum smaller and more distinct than those of mesepisternum; propodeum with small contiguous punctures on lateral surface.

Mesoscutum and mesoscutellum with scattered, minute, simple, subappressed to decumbent, fuscous to fulvous setae, such setae more noticeable laterally, such setae distinctly more elongate on mesoscutellum, mesoscutum also with thin, plumose, pale yellow setae at anterolateral corners and somewhat along lateral margins; mesepisternum with short to long, erect to suberect, yellow setae, intermixed with fuscous, fulvous, and black bristles anteriorly, such setae more elongate ventrally. Metasomal terga with minute, appressed to decumbent, simple, fuscous to golden setae, except anterior-facing surface of tergum I glabrous, tergum I with diffuse, thin, pale yellow, plumose setae apicolaterally (such setae often difficult to discern, best viewed in profile or obliquely), terga I–VI covered with dense, appressed to subappressed, yellow, plumose tomentum, such tomentum frequently worn on terga I, II, and sometimes areas of III. Bristles, typically black, as follows: upper frons and vertex with black bristles, those of vertex longest; golden to fuscous bristles along anterior margin of pronotal lobe; mesoscutum anterior and lateral margins with abundant black to golden fuscous or fulvous bristles and some shorter bristles sparsely scattered on disc; tegula with suberect fuscous bristles anteriorly; mesoscutellum with abundant black bristles, intermixed with golden fuscous to fulvous bristles, lower margins with golden bristles; bristles scattered over mesepisternum typically golden except fuscous, golden fuscous, fulvous, and black anteriorly; lateral surface of propodeum with long, erect, yellow bristles arising amid tomentum; legs with numerous black bristles, those of distitarsomeres typically fulvous or intermixed black and dark fulvous; metatibial and metabasitarsal bristles black, intermixed with golden bristles along margins. Metasoma terga II–V with abundant, suberect to subdecumbent yellow or golden bristles, sometimes a few are fulvous, similar bristles longer and more erect on tergum VI, particularly along margin; terga I–II with minute golden bristles apicolaterally.

♀: *Latet.*

♂: *Latet.*

HOLOTYPE: ♀, Ecuador: Prov. El Oro, 10 de Augusto, Palo Solo, Moromoro, Piñas, 3-X-2014 [3 October 2014], P. Vit (collection #108) (SEMC).

PARATYPES: 12♀♀, Ecuador: Prov. El Oro, 10 de Augusto, Palo Solo, Moromoro, Piñas, 3-X-2014 [3 October 2014], P. Vit (collection #108) (SEMC); 15♀♀, Ecuador: Prov. El Oro, 10 de Augusto, Palo Solo, Moromoro, Piñas, 3-X-2014 [3 October 2014], P. Vit (collection #109) (SEMC); 5♀♀, Ecuador: Prov. El Oro, 10 de Augusto, Palo Solo, Moromoro, Piñas, 3-X-2014 [3 October 2014], P. Vit (collection #112) (SEMC); 4♀♀, Ecuador: Prov. El Oro, 10 de Augusto, Palo Solo, Moromoro, Piñas, 3-X-2014 [3 October 2014], P. Vit (collection #107) (SEMC); 7♀♀, Ecuador: Prov. El Oro, Machala, 7-I-2015 [7 January 2015], P. Vit (collection #199) (SEMC); 5♀♀, Ecuador: Prov. El Oro, Ciudad Amarillos, La Libertad, Las Lajas, 22-VII-2014 [22 July 2014], P. Vit (collection #42) (SEMC); 5♀♀, Ecuador: Prov. El Oro, Via El Carmen, Las Lajas, finca Miraflores, 22-VII-2014 [22 July 2014], P. Vit (collection #40) (SEMC); 4♀♀, Ecuador: Prov. El Oro, Moromoro, Piñas, 20-VII-2014 [20 July 2014], P. Vit (collection #38) (SEMC); 2♀♀, Ecuador: Prov. El



Figures 4–6. Workers of *Scaptotrigona* (*Scaptotrigona*) *vitorum*, new species. 4. Lateral habitus. 5. Dorsal habitus. 6. Facial view.

Oro, Moromoro, Piñas, 20-VII-2014 [20 July 2014], P. Vit (collection #39) (SEMC); 1♀, Ecuador: Prov. El Oro, Moromoro, Piñas, 20-VII-2014 [20 July 2014], P. Vit (collection #36) (SEMC); 2♀♀, Ecuador: Prov. El Oro, La Moquillada, Las Lajas, 22-VII-2014 [22 July 2014], P. Vit (collection #47) (SEMC); 6♀♀, Ecuador: Prov. El Oro, La Moquillada, Las Lajas, 15-VIII-2014 [15 August 2014], P. Vit (collection #51) (SEMC); 8♀♀, Ecuador: Prov. El Oro, Ñalacapa, Iuego Moromoro, Saracay, Piñas, 2-X-2014 [2 October 2014], P. Vit (collection #101) (SEMC); 5♀♀, Ecuador: Prov. El Oro, Ñalacapa, Moromoro, Piñas, 10-X-2014 [10 October 2014], P. Vit (collection #116) (SEMC); 6♀♀, Ecuador: Prov. El

Oro, Ñalacapa, Moromoro, Piñas, 10-X-2014 [10 October 2014], P. Vit (collection #117) (SEMC); 1♀, Ecuador: Prov. El Oro, Zaruma, 3-X-2014 [3 October 2014], P. Vit (collection #105) (SEMC); 4♀♀, Ecuador: El Oro, Juan XXIII, Atahualpa, Piñas, 14-X-2014 [14 October 2014], P. Vit (collection #67) (SEMC); 4♀♀, Ecuador: El Oro, Juan XXIII, Atahualpa, Piñas, 14-X-2014 [14 October 2014], P. Vit (collection #66) (SEMC); 4♀♀, Ecuador: El Oro, San Roque, Saracay, Piñas, 2-X-2014 [2 October 2014], P. Vit (collection #96) (SEMC); 14♀♀, Ecuador: El Oro, San Roque, Saracay, Piñas, 2-X-2014 [2 October 2014], P. Vit (collection #98) (SEMC); 2♀♀, Ecuador: El Oro, San Isidro, Las Lajas, 15-VIII-2014 [15 August 2014], P. Vit (collection #60) (SEMC); 5♀♀, Ecuador: El Oro, Chica Chica, Paccha, Piñas, 14-IX-2014 [14 September 2014], P. Vit (collection #64) (SEMC); 3♀♀, Ecuador: El Oro, Chica Chica, Paccha, Piñas, 14-IX-2014 [14 September 2014], P. Vit (collection #63) (SEMC); 3♀♀, Ecuador: El Oro, Chica Chica, Paccha, Piñas, 14-IX-2014 [14 September 2014], P. Vit (collection #62) (SEMC); 5♀♀, Ecuador: Prov. Loja, Olmeda, W Andes, 16-X-2014 [16 October 2014], P. Vit (collection #124) (SEMC); 1♀, Ecuador: Prov. Loja, Olmeda, W Andes, 16-X-2014 [16 October 2014], P. Vit (collection #125) (SEMC); 2♀♀, Ecuador: Prov. Loja, Olmeda, W Andes, 16-X-2014 [16 October 2014], P. Vit (collection #125) (SEMC); 7♀♀, Ecuador: Prov. Loja, Balsa Real, 30-X-2014 [30 October 2014], P. Vit (collection #185) (SEMC); 9♀♀, Ecuador: Prov. Loja, Balsa Real, 30-X-2014 [30 October 2014], P. Vit (collection #186) (SEMC); 2♀♀, Ecuador: Prov. Loja, Zapotillo, 30-X-2014 [30 October 2014], P. Vit (collection #187) (SEMC); 1♀, Ecuador: Prov. Loja, Zapotillo, 30-X-2014 [30 October 2014], P. Vit (collection #188) (SEMC); 2♀♀, Ecuador: Prov. Loja, Zapotillo, 30-X-2014 [30 October 2014], P. Vit (collection #190) (SEMC); 4♀♀, Ecuador: Prov. Loja, Zapotillo, 30-X-2014 [30 October 2014], P. Vit (collection #191) (SEMC); 5♀♀, Ecuador: Prov. Loja, Pindal, 12-XII-2014 [12 December 2014], P. Vit (collection #197) (SEMC); 9♀♀, Ecuador: Prov. Loja, El Trapiche Portovelo-Loja, 5-VII-2014 [5 July 2014], P. Vit (collection #18) (SEMC); 5♀♀, Ecuador: Prov. Loja, Valle de Longevidad, Vilcabamba, 27-VII-2014 [27 July 2014], P. Vit (collection #49) (SEMC).

ETYMOLOGY: The specific epithet honors the extended family of Patricia Vit (her, her parents Giovanna Olivier de Vit and Giovanni Vit, and brothers Daniele, Massimo, and Leonardo) as well as her many years of study in stingless bee biology. Patricia collected the type series and made it available for study. The epithet combines her surname with the genitive plural of the Latin suffix *-us* (i.e., *-orum*). The genitive case of this suffix is used to form possessive commemorative epithets (masculine/neuter genitive *-i*, feminine genitive *-ae*, masculine/neuter plural *-orum*, feminine plural *-arum*, whereby the neuter plural is used for a group of individuals of differing genders).

Scaptotrigona (Scaptotrigona) semiflava Engel, new species

ZooBank: urn:lsid:zoobank.org:act:62643C79-818F-4C7F-B6A6-670EBE15756C

(Figs. 7–9)

DIAGNOSIS: This species is most similar to *S. grueteri*, n. sp., described below (*vide infra*), but differs most notably in the facial coloration (Fig. 9) and the sparse pubescence of the lower face, clypeus, and supraclypeal area (Fig. 9). The punctuation of the clypeal disc are sparser in *S. semiflava* than that of *S. grueteri*, the former with punctures separated by a puncture width or frequently more, while the punctures of the latter are separated by a puncture width or less. *Scaptotrigona semiflava* occurs at comparatively low elevations (317 m), while *S. grueteri* is a high-elevation species, occurring from 1700–2300 m. Refer to the diagnosis of *S. grueteri* for further details.

DESCRIPTION: As described for *S. anaulax* (*vide supra*) except as follows: ♀: Total



Figures 7–9. Workers of *Scaptotrigona* (*Scaptotrigona*) *semiflava*, new species. 7. Lateral habitus. 8. Dorsal habitus. 9. Facial view.

body length approximately 4.8–5.8 mm, forewing length (to base of humeral sclerite) 5.3–5.9 mm. Head wider than long, width 2.30–2.53 mm, length 1.83–2.00 mm; compound eye length 1.30–1.47 mm; upper interorbital distance 1.53–1.63 mm, lower interorbital distance 1.40–1.50 mm. Scape length 0.87–0.93 mm, slightly longer than torulocellar distance, torulocellar distance 0.80–0.83 mm. Clypeus length 0.63–0.67 mm, width 1.13–1.17 mm. Malar area long, length 1.6–1.8× flagellar diameter. Preoccipital carina strong, lamellate dorsally and bordered by deep medial and lateral indentations, laterally carina broadly interrupted by deep concavity, lamella not extending into concavity, lower angle of concavity projected upward as a short, acute projection

(short genal tooth present).

Integument generally black to dark brown; labiomaxillary complex brown to yellow; labrum yellow to yellow brown; mandible yellow to yellow brown; clypeus largely yellow, with areas of brown to yellow brown, brown markings typically forming paramedial longitudinal stripes, and along apical margin although sometimes interrupted medially; supraclypeal area yellow to yellow brown; malar space brown to dark brown; face below tangent of antennal toruli brown below but otherwise largely yellow from clypeus and torulus to ocular margin; scape dark brown except yellow on proximal half to two thirds ventrally; pedicel and flagellum dark brown except flagellum ventrally yellow brown; remainder of face dark brown to black except thin extension of yellow from lower face upward along ocular margin to point about one torular diameter above upper torular tangent; vertex and posterior of head dark brown to black; gena dark brown; postgena dark brown except hypostomal borders yellow. Legs dark brown to black except apex of apicalmost tarsomeres yellow to yellowish brown, superior margin of prolateral surface of metabasitarsus yellow brown, and superior distal angle of metatibia often yellow brown to brown. Wing membranes hyaline and clear; veins yellow. Metasoma dark brown to black except sometimes lighter on anterior-facing surface of tergum I, sterna lighter than terga.

Integument smooth and shining amid punctures; clypeus and supraclypeal area with minute, shallow punctures separated by a puncture width or more, although punctures sparse in lateral areas of clypeus; lower face with punctures sparse as on margin of clypeus, such punctures minute on frons and separated by a puncture width or less except somewhat denser centrally and toward ocellocular area; gena with minute punctures separated by less than a puncture width; postgena impunctate and finely imbricate.

Fine pubescence generally consisting of minute to short, appressed or decumbent golden, pale yellow, or off-white setae. Pronotal lobe with dense, off-white, plumose setae; mesoscutum and mesoscutellum with scattered, minute, simple, subappressed to decumbent, golden to fuscous setae, mesoscutum with off-white plumose setae anterolaterally and laterally; mesepisternum with short to long, erect to suberect, black to golden setae, intermixed with black bristles, with short, off-white, plumose setae on upper part of hypoepimeral area; metepisternum with dense, off-white (sometimes tinged slightly yellowish), plumose setae; propodeum lateral surface with setae similar to that of metepisternum. Legs with largely black setae, except coxae, trochanters, and proximally on femora with long, yellow setae. Metasomal terga with minute, appressed to decumbent, simple, fuscous setae, except anterior-facing surface of tergum I glabrous, tergum I with patches of diffuse yellow plumose setae apicolaterally, terga III–V covered with dense, appressed to subappressed, bright yellow, plumose tomentum, such setae also on apical margin of tergum II as an apical fringe and diffuse on tergum VI. Bristles, typically black, as follows: lateral surface of propodeum with long, erect, yellow bristles arising amid off-white tomentum; legs with black bristles. Metasoma terga III–V with abundant, suberect to subdecumbent yellow to golden bristles, rarely a few bristles fuscous, yellow bristles longer and more erect on tergum VI, particularly along margin; tergum I without bristles, tergum II with some short bristles laterally.

♀: *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, 15 Oct 2000, R. Brooks, ex: on wet mud near

stream (SEMC).

PARATYPES: 1♀, 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); 1♀, Peru: Madre de Dios, Pakitza Bio. Stn., Reserved Zone, Manu National Park, 317 m, 11°56'41''S, 71°17'0''W, 15 Oct 2000, R. Brooks, ex: on wet mud near stream (SEMC); 2♀♀, Bolivia: Nueva Moka, II-1951 [February 1951], F.H. Walz (SEMC).

ETYMOLOGY: The specific epithet is a combination of the Latin prefix *sēmi-* (meaning, "half") and the adjective *flāvus* (meaning, "yellow").

Scaptotrigona (Scaptotrigona) grueteri Engel, new species

ZooBank: urn:lsid:zoobank.org:act:680C6411-FF1B-4662-9935-AD040C6C2F91

(Figs. 10–12)

DIAGNOSIS: This species is superficially quite similar to *S. semiflava* (*vide supra*), but can be easily distinguished by the lack of extensive facial markings, the areas of yellow restricted to small circular patches near the upper clypeus (Fig. 12), the more prevalent minute white pubescence of the lower face, clypeus, and supraclypeal area (Fig. 12), and the denser punctation on the clypeal disc. *Scaptotrigona grueteri* occurs from 1700–2300 m and this may account for the generally darker coloration of the species. In addition, the wings of *S. grueteri* are less intensely colored than those of *S. semiflava*, the yellowish parchment tinge being noticeably lessened by comparison (*cf.* Figs. 7, 10), and on average the malar space is typically shorter than that of *S. semiflava*, although they do overlap in lengths at the shorter end of the range for the latter species.

DESCRIPTION: As described for *S. anaulax* (*vide supra*) except as follows: ♀: Total body length approximately 5.3–5.6 mm, forewing length (to base of humeral sclerite) 6.0–6.2 mm. Head wider than long, width 2.40–2.50 mm, length 1.90–2.00 mm; compound eye length 1.33–1.40 mm; upper interorbital distance 1.60–1.63 mm, lower interorbital distance 1.47–1.57 mm. Scape length 0.90–0.97 mm, slightly longer than torulocellar distance, torulocellar distance 0.83–0.87 mm. Clypeus length 0.63–0.67 mm, width 1.20–1.23 mm. Malar area long, length 1.6× flagellar diameter. Preoccipital carina strong, lamellate dorsally and bordered by deep medial indentation and modest lateral indentations, laterally carina broadly interrupted by deep concavity, lamella scarcely extending into concavity, lower angle of concavity projected upward as a short, acute projection (short genal tooth present).

Integument generally black to dark brown; labiomaxillary complex brown to yellow brown; labrum dark brown; mandible brown except darker proximally; clypeus brown; supraclypeal area brown to dark brown; malar space brown to dark brown; face below tangent of antennal toruli largely brown except with small semitranslucent or diaphanous yellow to yellowish brown spot bordering epistomal sulcus between anterior tentorial pit and lower outer margin of torulus, spot about as wide as torular diameter (sometimes spot is merely represented by thin area of lighter brown relative to bordering brown integument); scape dark brown except yellowish brown near base and sometimes brown on proximal half ventrally; pedicel and flagellum dark brown; remainder of face dark brown to black; vertex and posterior of head dark brown to black; gena dark brown; postgena dark brown except hypostomal borders yellow. Mesosoma black; tegula dark brown to black; legs dark brown to black except apex of apicalmost tarsomeres yellow to yellowish brown. Wing membranes hyaline and faintly yellowed, less so posteriorly; veins largely yellow except brownish along anterior margin. Metasoma dark brown to black except sometimes lighter on anterior-



Figures 10–12. Workers of *Scaptotrigona (Scaptotrigona) grueteri*, new species. **10.** Lateral habitus. **11.** Dorsal habitus. **12.** Facial view.

facing surface of tergum I, sterna somewhat lighter than terga.

Integument smooth and shining amid punctures; clypeus and supraclypeal area with minute, shallow punctures separated by a puncture width or less, although punctures sparse in lateral areas of clypeus and separated by less than a puncture width on supraclypeal area; lower face with punctures as on clypeus albeit sparser and sometimes larger, such punctures again minute on frons and separated by a puncture width or less except somewhat denser centrally and separated by up to 2× width toward ocellular area; gena with minute punctures separated by a puncture width or typically much less; postgena impunctate and finely imbricate.

Fine pubescence generally consisting of minute to short, appressed or decumbent golden, pale yellow, or off-white setae. Pronotal lobe with dense, pale yellow to off-white, plumose setae; mesoscutum and mesoscutellum with scattered, minute, simple,

subappressed to decumbent, golden to fuscous setae, mesoscutum without plumose setae anterolaterally and laterally; mesepisternum with short to long, erect to suberect, black to off-white setae, intermixed with black bristles, with short, off-white, plumose setae on upper part of hypoepimeral area; metepisternum with dense, off-white, plumose setae; propodeum lateral surface with setae similar to that of metepisternum. Legs with largely black setae, except coxae, trochanters, and proximally on femora with long, off-white to pale yellow setae. Metasomal terga with minute, appressed to decumbent, simple, fuscous setae, except anterior-facing surface of tergum I glabrous, tergum I without diffuse plumose setae, terga III–VI covered with dense, appressed to subappressed, bright yellow, plumose tomentum, such setae also on apical margin of tergum II as an apical fringe. Bristles, typically black, as follows: lateral surface of propodeum with long, erect, fuscous bristles arising amid off-white tomentum; legs with black bristles. Metasoma terga III–V with abundant, suberect to subdecumbent yellow bristles, sometimes a few bristles fuscous to black but yellow bristles dominate, similar yellow bristles longer and more erect on tergum VI, particularly along margin; tergum I without bristles, tergum II with some short fuscous bristles laterally.

♀: *Latet*.

♂: *Latet*.

HOLOTYPE: ♀, Bolivia: La Paz, 9.4 km E Chulumani, Apa Apa Ecol. Reserve, 2100–2300 m, 16°20.99'S, 67°30.30'W, 21-I-2001 [21 January 2001], J.S. Ashe, R.S. Hanley (SEMC).

PARATYPES: 6♀♀, Bolivia: La Paz, 9.4 km E Chulumani, Apa Apa Ecol. Reserve, 2100–2300 m, 16°20.99'S, 67°30.30'W, 21-I-2001 [21 January 2001], J.S. Ashe, R.S. Hanley (SEMC); 1♀, Bolivia: La Paz, San Tacinto, 1700 m, 5/8 Dec 1955, L.E. Peña (SEMC).

ETYMOLOGY: The specific epithet honors Christoph Grüter for his considerable contributions to the biology of Meliponini and particularly his wonderful book on stingless bees (Grüter, 2020).

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