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## A new species of *Scaptotrigona* from Belize (Hymenoptera: Apidae)

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**Abstract.** A new species of the stingless bee genus *Scaptotrigona* Moure (Meliponini: Meliponina) is described and figured from a series of workers and drones from Belize. *Scaptotrigona* (*Astegotrigona*) *ascheri* Engel, new species, may be distinguished from its congeners most easily by the darker wing venation and somewhat infuscate wing membranes. A key is presented to the species of subgenus *Astegotrigona* Engel.

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### INTRODUCTION

The genus *Scaptotrigona* Moure is one of the more diverse, abundant, and widespread lineages of New World stingless bees, ranging from north-central Mexico south to northern Argentina (Michener, 2007). Currently, the genus includes 50 described species (Engel, 2022a, 2022b), and much of the South American fauna has recently been summarized and keyed, although additional species await description, particularly across Brazil and the Andes. The Central American fauna has traditionally been more well understood than that of South America (e.g., Ayala, 1999), although some challenges persist, such as the numerous references to *Scaptotrigona postica* (Latreille), a species that is really only found in Brazil. During the preparation of a new key to the Central American species of *Scaptotrigona*, a new species presented itself from a large series of workers and drones from Belize. The new species belongs to the subgenus *Astegotrigona* Engel and the opportunity is taken here to provide a description of the species along with a key to the species of this subgenus. The species of the subgenus are exceptionally similar and therefore difficult to distinguish in some cases. Nonetheless, their characters are sufficiently distinct across geography as to make them suffi-

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ciently differentiated. It would be useful to sample populations of these species across their range so as to explore the broader population genetics and phylogeography, particularly as these would seem to be comparatively recent speciations that brought about the current variety in the group.

## MATERIAL AND METHODS

Material of the new species is deposited in the Division of Invertebrate Zoölogy, American Museum of Natural History, New York, New York (AMNH) and the Division of Entomology, University of Kansas Natural History Museum, Lawrence, Kansas (SEMC). The format of the description follows those of Engel (2019, 2022a, 2022c), while the morphological terminology used therein is that of Michener (2007), Engel (2001), and Engel *et al.* (2021). Measurements were taken with an ocular micrometer and an Olympus SZX-12 stereomicroscope, while photographs were prepared with a Canon EOS 6D digital camera.

## SYSTEMATICS

Genus *Scaptotrigona* Moure  
Subgenus *Astegotrigona* Engel

### *Scaptotrigona (Astegotrigona) ascheri* Engel, new species

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(Figs. 1–12)

**DIAGNOSIS:** This species is quite similar to *S. (Astegotrigona) mexicana* (Guérin-Méneville) and *S. (A.) wheeleri* (Cockerell), but differs most notably in the dusky wings, rather than the yellowish to greyish wings of the former two species. There are also noticeable differences in the male terminalia, particularly the form of sternum VIII (*cf.* Fig. 10 vs. Ayala, 1999: fig. 114).

**DESCRIPTION:** ♀: Total body length approximately 4.9–5.3 mm, forewing length (to base of humeral sclerite) 5.3–5.4 mm. Head wider than long, width 2.40–2.50 mm, length 1.80–1.93 mm; compound eye length 1.37–1.47 mm; upper interorbital distance 1.57–1.60 mm, lower interorbital distance 1.40–1.50 mm. Scape length 0.90–0.93 mm, slightly longer than torulocellar distance, torulocellar distance 0.77–0.87 mm. Clypeus length 0.60–0.67 mm, width 1.13–1.17 mm. Malar area long, length 1.3–1.7× flagellar diameter. Preoccipital carina strong, bordered dorsally by modest medial indentation and briefly lamellate where bordering medial indentation, lateral indentations shallow, laterally carina not interrupted by deep concavity, at most with a shallow depression.

Integument generally black to dark brown (lighter in younger individuals); labiomaxillary complex brown to light brown; labrum brown to dark brown; mandible dark brown to black in basal half, typically brown in apical half; clypeus largely brown with areas of yellow brown to yellow, particularly centrally and basally or basolaterally; supraclypeal area brown to yellow brown; malar space dark brown to black; face below tangent of antennal toruli largely semitranslucent or diaphanous yellow to yellow brown, with such yellow typically transitioning to a vitreous chestnut brown narrowly tapering upward along inner ocular margin; scape black to dark brown except yellow brown to brown on ventral half to three-quarters; pedicel and flagellum dark



**Figures 1–2.** *Scaptotrigona* (*Astegotrigona*) *ascheri*, new species, from Belize. 1. Worker, lateral habitus. 2. Drone, lateral habitus.

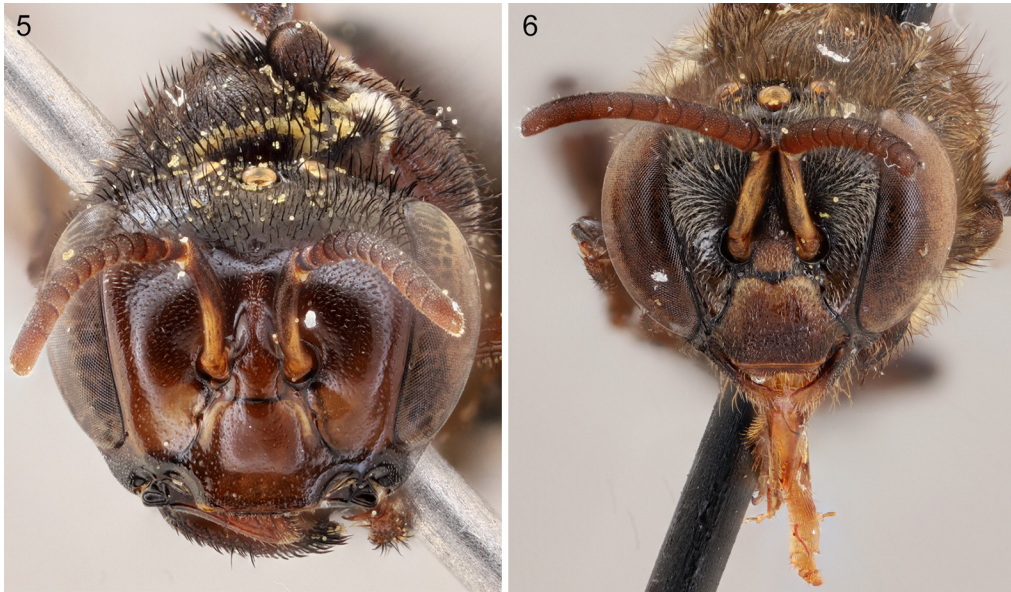
brown except flagellum lighter ventrally; remainder of face black to dark brown; vertex and posterior of head black to dark brown; gena black to dark brown, sometimes brown ventrally; postgena brown to dark brown. Mesosoma typically black, sometimes dark chestnut brown; tegula dark brown to black; legs largely dark brown to black except sometimes brown on more proximal podites, tarsi typically light brown to yellow brown, except metabasitarsus largely dark brown to black and sometimes lighter on superior margins. Wing membranes hyaline and lightly infuscate, dusky; veins largely yellow brown except C and Sc+R brown to dark brown. Metasoma dark brown to black, sometimes a bit lighter tergum I and sternum I, and particularly in younger individuals.

Integument smooth and shining amid punctures; clypeus with sparse, shallow, irregular punctures typically separated by much more than a puncture width; supra-clypeal area similar to clypeus except punctures minute, like pin pricks; lower face with punctures as on clypeus; punctures gradually smaller, more defined, and more



**Figures 3–4.** *Scaptotrigona* (*Astegotrigona*) *ascheri*, new species, from Belize. 3. Worker, dorsal habitus. 4. Drone, dorsal habitus.

numerous across frons, until separated by less than a puncture width on upper frons, punctures then sparser again in ocellular area; punctures of vertex ill-defined amid irregular integument, blending to coarsely imbricate integument; posterior of head coarsely imbricate and irregular; gena with minute punctures separated by 1–2× a puncture width; postgena impunctate and imbricate. Mesoscutum and mesoscutellum with small contiguous punctures; pleura irregular coarse punctures giving integument a roughened appearance, punctures more well defined posteriorly and ventrally; 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



**Figures 5–6.** Facial views of *Scaptotrigona* (*Astegotrigona*) *ascheri*, new species, from Belize. 5. Worker. 6. Drone.

finely imbricate, particularly medially, and largely impunctate; sterna finely imbricate.

Fine pubescence generally consisting of minute to short, appressed or decumbent whitish, yellow, or golden setae, such minute setae often simple but sometimes plumose, intermixed in places with fuscous to black setae; clypeus, supraclypeal area, and lower face glabrous, upper lower face with some sparse minute golden setae gradually becoming more numerous on frons; gena with such minute golden setae lighter in color and more numerous than on face; postgena with long, erect, sparse, fuscous to nearly black bristles. Pronotal lobe with dense, white (sometimes tinged slightly yellow), plumose setae; mesoscutum and mesoscutellum with scattered, minute, simple, subappressed to decumbent, golden to fuscous golden setae; mesepisternum with minute to short setae similar to that of mesoscutum, such setae slightly longer ventrally; metepisternum with dense, minute, white, plumose setae; propodeum lateral surface with setae similar to that of metepisternum except longer. Legs with largely fuscous setae, except coxae, trochanters, and proximally on femora with long, yellow setae. Metasomal terga with minute, scattered, appressed to decumbent, simple, white to golden setae, except anterior-facing surface of tergum I glabrous; sterna with elongate, erect to suberect, yellow simple scopal setae, such setae with wavy apices. Black bristles as follows: upper frons, vertex, and upper posterior of head with erect black bristles, those of vertex longest; black bristles along anterior margin of pronotal lobe; mesoscutum anterior and lateral margins with abundant black bristles and scattered across entire surface; tegula with suberect black bristles anteriorly; mesoscutellum with abundant black bristles, particularly along posterior margin, bristles longest along margin; long black bristles scattered over anterior three-quarters of mesepisternum and a line of such bristles along rounded margin with preepisternum; lateral surface of propodeum with long, erect, black bristles arising amid tomentum; legs with numerous black bristles, those of distitarsomeres intermixed black, brown, and dark fulvous. Metasomal terga I–V without bristles; tergum VI with long, erect, black bristles apically, those lower down more fuscous to dark brown.

♂: As described for worker for typical caste and gender differences and as follows: Total body length approximately 4.7–5.5 mm, forewing length (to base of humeral sclerite) 4.9–5.4 mm. Head wider than long, width 2.13–2.37 mm, length 1.70–1.77 mm; compound eye length 1.43–1.47 mm; upper interorbital distance 1.27–1.33 mm, lower interorbital distance 0.93–1.03 mm. Scape length 0.63–0.67 mm, much shorter than torulocellar distance, torulocellar distance 0.73–0.80 mm. Clypeus length 0.53–0.63 mm, width 0.93–1.00 mm. Malar area nearly linear, 0.2–0.4× flagellar diameter. Gena narrower than compound eye. Preoccipital ridge rounded, somewhat angled but not carinate, without lateral concavity or depression, without bordering dorsal indentations. Terminalia in figures 7–12.

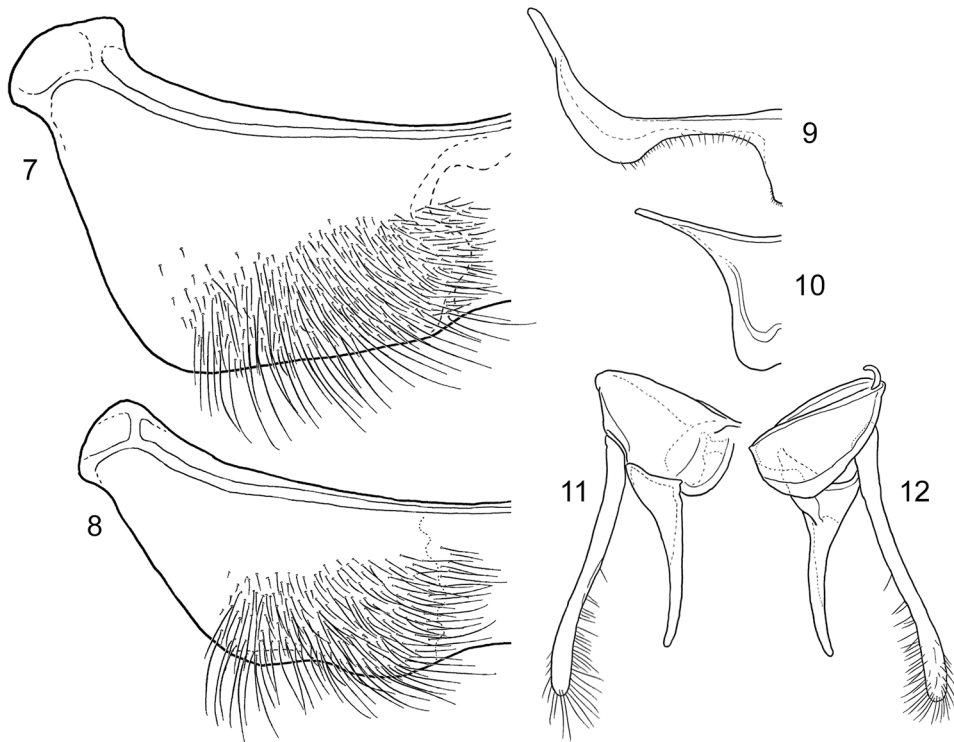
Clypeus largely brown except basally yellow brown to yellow; face below tangent of antennal toruli light brown to yellow brown, remainder of face black; vertex, posterior of head, and majority of gena black; postgena dark brown to black; scape black except yellow brown ventrally; pedicel and flagellum dark brown, lighter ventrally. Legs dark brown to black except tarsi lighter brown to yellow brown, metabasitarsus dark brown, sometimes apically or superiorly lighter. Metasomal terga black to dark brown, sterna somewhat lighter.

Minute, appressed, simple setae on clypeus and supraclypeal area; setae of face long, subappressed to suberect, simple to apically plumose, such setae quite abundant but not obscuring integument; setae of mesosoma longer and more abundant than in worker, giving mesosoma more of a shaggy appearance; tegula with numerous, subappressed, plumose setae on anterior half; sterna without scopal setae, but with dense, appressed to subdecumbent, mesially directed, simple, elongate, yellow setae on sterna III–VI. Bristles often more fuscous than black on head and mesosoma and typically more elongate (contrasting with shorter and more black in worker).

♀: *Latet.*

HOLOTYPE: ♀, Belize: Cayo Dist., Five Sisters Lodge, 30 April 2009, J.S. Ascher (AMNH).

PARATYPES: 8♀♀, 11♂♂, Belize: Cayo Dist., Five Sisters Lodge, 30 April 2009, J.S. Ascher (AMNH); 2♂♂, Belize: Cayo Dist., Five Sisters Lodge, 30 April 2009, J.S. Ascher (SEMC); 42♀♀, 13♂♂, Belize: Cayo District, Five Sisters Lodge, 17°02.271'N, 88°59.070'W, 30 Apr 2009, J.S. Ascher (AMNH); 1♂, Belize: Cayo Dist., Pine Ridge, Five Sisters Lodge, 1 May 2009, J.S. Ascher (AMNH); 2♀♀, Belize: Cayo Dist., Guacamayo Bridge, II-26-2007, N.17°05'51" W.89°04'18", J.G. Rozen, J.S. Ascher (AMNH); 2♀♀, Belize: Cayo Dist., Guacamayo Bridge, II-26-2007, J.S. Ascher (AMNH); 1♀, Belize: Cayo, Belize Botanical Gardens, 10 May 2007, J.S. Ascher, S.K. Javorek (AMNH); 1♀, Belize: Cayo Dist., Belize Botanical Gardens, N.17°05'51", W.89°04'18", II-25-2007, J.S. Ascher (AMNH); 1♀, Belize: Cayo Dist., Belize Bot. Gardens, N17°05'51", W89°04'18", II-26-2007, J.S. Ascher (SEMC); 1♀, Belize: Cayo, Las Cuevas Resrch Stn., Monkey Tail Trail, River Trail, 2 May 2007, N16°44'19.5", W88°57'42.1", 576 m, J.S. Ascher (AMNH); 1♀, Belize: Cayo Dist., Las Cuevas Res. Sta., Monkey Tail River, 28 April 2009, J.S. Ascher (SEMC); 1♀, Belize: Cayo Dist., Las Cuevas Research Stn., Monkey Tail Trail, II-25-2007, J.S. Ascher (AMNH); 2♀♀, Belize: Cayo Dist., Las Cuevas Research Stn., 552 m, II-22-2007, J.G. Rozen, J.S. Ascher (AMNH); 1♀ [callow], Belize: Cayo District, Las Cuevas Research Station, 16°43'59"N, 88°59'11"W, 552 m, 21 February 2007, J.G. Rozen, J.S. Ascher, S.K. Javorek (AMNH); 5♀♀, Belize: Cayo Dist., Las Cuevas Res. Station, 23 Nov 2007, J.S. Ascher (AMNH); 3♀♀, Belize: Cayo Dist., Caracol-Las Cuevas jct., 29 Apr 2009, J.S. Ascher (AMNH); 5♀♀, Belize: Cayo Dist., 4 km S of San Ignacio, 26 April 2009, J.S. Ascher (AMNH).



**Figures 7–12.** Male terminalia of *Scaptotrigona (Astegotrigona) ascheri*, new species. 7. Sternum V. 8. Sternum VI. 9. Sternum VII. 10. Sternum VIII. 11. Genital capsule, ventral view. 12. Genital capsule, dorsal view.

**ETYMOLOGY:** The specific epithet honors John S. Ascher, for his varied contributions to the study of bees and who collected the type series.

Key to species of *Astegotrigona*  
(worker caste)

- 1. Forewing venation largely yellow; pterostigma yellow; membrane greyish hyaline to yellow ..... 2
- Forewing venation largely brown; pterostigma orangish brown; membrane somewhat infuscate and dusky [Belize] ..... *S. ascheri*, n. sp.
- 2(1). Wing membranes yellowish [Guatemala; México: Chiapas] ..... *S. wheeleri* (Cockerell)
- Wing membranes greyish hyaline [Guatemala; México: Chiapas, Guerrero, Hidalgo, México, Oaxaca, Puebla, San Luis Potosí, Tamaulipas, Veracruz] ..... *S. mexicana* (Guérin-Méneville)

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# Journal of Melittology

A Journal of Bee Biology, Ecology, Evolution, & Systematics

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The *Journal of Melittology* is an international, open access journal that seeks to rapidly disseminate the results of research conducted on bees (Apoidea: Anthophila) in their broadest sense. Our mission is to promote the understanding and conservation of wild and managed bees and to facilitate communication and collaboration among researchers and the public worldwide. The *Journal* covers all aspects of bee research including but not limited to: anatomy, behavioral ecology, biodiversity, biogeography, chemical ecology, comparative morphology, conservation, cultural aspects, cytogenetics, ecology, ethnobiology, history, identification (keys), invasion ecology, management, melittopalynology, molecular ecology, neurobiology, occurrence data, paleontology, parasitism, phenology, phylogeny, physiology, pollination biology, sociobiology, systematics, and taxonomy.

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