

## A New Species of Stingless Bee (Meliponini) from Costa Rica

by

Alvaro Wille\*

(Received for publication October 7, 1962)

The species described below is especially interesting because it occupies an intermediate position between Moure's group *Tetragonisca* (MOURE, 2) and Ihering's group *Frieseomelitta* (IHERING, 1). The last group has been recently reestablished by MOURE (4), who considers both groups as subgenera of *Trigona* s. str. (MOURE, 3, 5).

The new species was collected in the jungles of the Pacific lowland of Costa Rica by using a bait (WILLE, 7). The specimens were collected by Dr. C. D. Michener and the author. Only workers were obtained.

### *Trigona (Tetragona) costaricensis*, n. sp.

LENGTH: 5 mm; length of forewing excluding tegula 4.5 to 4.8 mm.

COLORATION: Black, except for some vague yellowish and ferruginous maculations on clypeus, scape, mandibles, and a very small yellowish spot on anterior and inner border of each axilla; first abdominal segment and underside of abdomen usually dark ferruginous; wings of a uniform reddish gray color, but when alive and exposed to sunlight the wings are remarkably dark red in color.

SCULPTURE AND PUBESCENCE: Tegument polished, with punctuation very sparse and delicate. Pubescence short and rather thinly scattered; hairs for the most part silvery gray.

HEAD: Width 1.3 times length; length of eye 2.4 times breadth; scape not reaching anterior ocellus; interantennal space slightly less (0.8) than width of flagellum; clypeus slightly convex; width of clypeus about twice its length;

\* Department of Entomology, University of Costa Rica.

lateral portions of epistomal suture almost straight and diverging anteriorly; length of malar space about half width of flagellum; preoccipital carina absent; labrum slightly emarginate; inner third of apex of mandible bidentate; length of glossa slightly less than length of prementum; hairs of labial palpi and maxillae with straight tips.

**THORAX:** Length of pronotum slightly more (1.3) than width of flagellum; anterior border of pronotum concave; length of mesoscutum slightly less than its width; scutellum short but extending backward enough to cover mesal portion of metanotum as seen from above; width of scutellum about twice its length; distance between lower metapleural suture and second coxa less than half width of flagellum; basal area of propodeum glabrous; length of propodeal spiracle 3.5 times its width.

**HIND TIBIA (Fig. 2):** Length 3 times its width; shape claviform and slightly inflated, with posterior distal extremity rounded; corbicula short and shallow, restricted to apical one-fourth; rostellum<sup>2</sup> composed of 21 strong bristles, about as long as half width of flagellum; inner surface with a distinct raised pubescent area and a relatively wide glabrous depression along posterior margin; posterior margin with simple and plumose hairs.

**HIND BASITARSUS (Fig. 3):** Basitarsus relatively wide, more than half (0.7) width of tibia; length 1.8 times its width; distal angles about same level; inner surface with a basal sericeous and bristleless area of suboval shape.

**WINGS (Fig. 1):** Length of pterostigma 4 times its width; length of marginal cell 4 times its width; submarginal angle (basal angle of cell first  $R_1$ ) a right angle; vein separating second and third submarginal cells poorly indicated, that separating second and third virtually absent; base of first median cell non-petiolate, with vein separating first cubital and median cells transversely placed. Hind wing with 6 hamuli; jugal lobe less than one half as long as vannal lobe.

**ABDOMEN:** Relatively long and cylindrical in shape; gonostylus cylindrical and slightly shorter than width of flagellum.

**DIAGNOSTIC CHARACTERS:** Especially differentiated from other species of *Tetragona* by the slightly inflated hind tibia, with a consequently short and shallow corbicula, which is restricted to the apical one-fourth of the tibia, and by the presence on the inner surface of the hind basitarsus of a basal sericeous and bristleless area of suboval shape.

**AFFINITIES:** In spite of the slightly inflated hind tibia, and the very short corbicula, this interesting bee seems to be related to *Trigona buchwaldi* to which it is structurally and in general appearance very similar.

**TYPE LOCALITY:** Rio Damitas, 14.5 Kms. North of Quepos, at the base of the mountains of Dota (altitude 250 m), Province of San José, Costa Rica, 16-VIII-1962.

---

<sup>2</sup>Recently MOURE (5) has called it comb. However, this term has been applied to the brush-like hairs, located anteriorly at the apex of the tibia, which Moure calls penicillus. Moure's terminology is recommendable, although it may cause some confusion in the literature.

TYPE MATERIAL: Holotype and five paratypes in the Snow Entomological Museum of the University of Kansas, five paratypes in the collection of Padre J.S. Moure, University of Paraná, Curitiba, Brazil, and five paratypes in the author's collection.

## DISCUSSION

MOURE (2, 3) included in *Tetragonisca* the species *Trigona jaty* Smith, *T. pfeifferi* Friese, *T. buchwaldi*, and *T. weyrauchi* Schwarz. The latter was originally described by SCHWARZ (6) as a variety of *T. buchwaldi*, but is here regarded as a good species because of its maculated head and thorax, erect hairs on the scape, and 5 hamuli on the hind wings instead of 6 as in *buchwaldi*. *Tetragonisca* was originally separated from the subgenus *Tetragona* mainly by the presence on the inner surface of the hind basitarsus of a bristleless sericeous area of suboval shape, just below the neck of the basitarsus, and on the minor aperture of the submarginal angle which is slightly acute or a right angle, as opposed to slightly obtuse. According to MOURE (3), based on the presence of the sericeous area, those four species are more closely related to *Trigona s. str.* than they are to *Tetragona*, in spite of the fact that most Indo-Malayan *Tetragona* also have the sericeous area. Neither is the submarginal angle a reliable character, since most Indo-Malayan *Tetragona* have a right angle, a character also shared by *T. silvestrii* Friese and *T. portoi* Friese, actually both American *Tetragona* (see below). In fact his *Tetragonisca* more nearly resembles *Tetragona* in the characteristics of the labrum, mandibles, epistomal suture and abdomen.

The group *Frieseomelitta* was originally separated from *Tetragona* to include the *Tetragona*-like bees which have the brood cells clustered instead of in combs, namely: *Trigona nigra* Cresson, *T. portoi* Friese, *T. silvestrii* Friese, and *T. varia* (Lepeletier). Moure (personal communication) also includes in the group the following: *T. flavicornis* (Fabricius), *T. doederleini* Friese, *T. lehmanni* Friese, *T. meadewaldoi* Cockerell, *T. pura* Cockerell, *T. francoi* Moure, *T. freiremaiai* Moure, *T. parastigma* Cockerell, *T. paranigra* Schwarz, *T. longipes* Smith, *T. dispar* Moure and *T. paupera* Provancher. This separation has apparently found some justification because these four species could be distinguished by the rather peculiar, inflated appearance of their hind tibiae, with a consequently short and shallow corbicula, restricted to the apical fourth of the tibia. However, this character is also found in *Trigona staudingeri* Gribodo, usually placed in a separate genus (*Dactylurina*) but actually a very specialized species of *Tetragona* which makes double vertical combs suggesting those of *Apis*.

For the reasons indicated above, *Tetragonisca* and *Frieseomelitta* seem not sufficiently marked to be recognized in the classification. This view is supported by the discovery of the new species described here, which shares the *Tetragonisca* character of having a bristleless sericeous area on the inner surface of the hind basitarsus. On the other hand, it shares also the *Frieseomelitta* character of having an inflated hind tibia, with a short and shallow corbicula. It would be interesting to know whether this new species has the brood cells clustered or not.

## SUMMARY

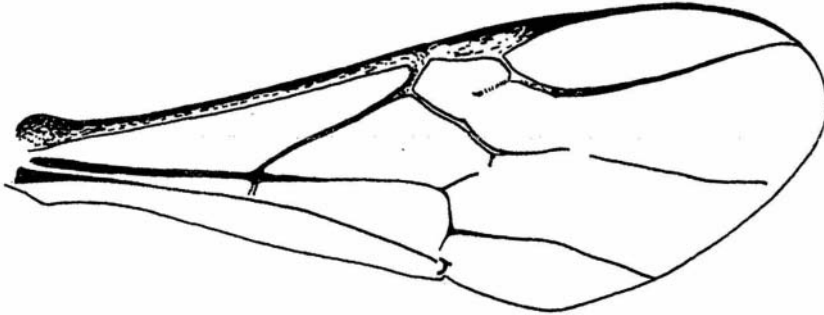
A new species of stingless bee, *Trigona (Tetragona) costaricensis*, occupying an intermediate position between *Tetragonisca* and *Frieseomelitta*, is described from the jungles of the Pacific lowland of Costa Rica.

## RESUMEN

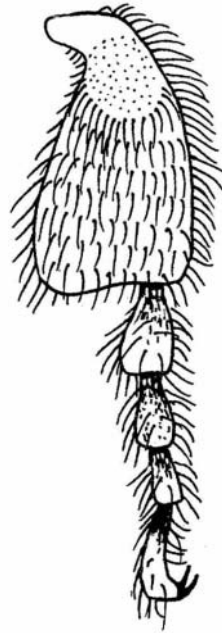
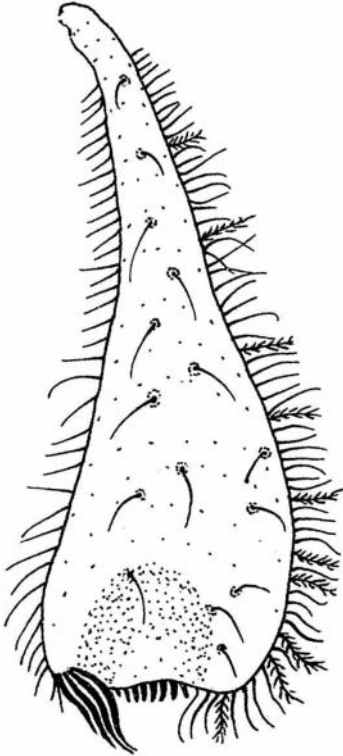
En este trabajo se describe una nueva especie de Melipónido, *Trigona (Tetragona) costaricensis*, la cual es intermedia entre *Tetragonisca* and *Frieseomelitta*, por lo que se sugiere la eliminación taxonómica de estos dos grupos.

## LITERATURE CITED

1. IHERING, H.  
1912. Zur Biologie der brasilianischen Meliponiden. *Zeitschr. Wiss. Insektenbiol.*, 17: 1-5, 43-46.
2. MOURE, J. S.  
1946. Contribuição para o conhecimento dos Meliponinae (Hym. Apoidea). *Rev. Ent.*, Rio de Janeiro, 17: 437-443.
3. MOURE, J. S.  
1951. Notas sobre Meliponinae (Hymenop.-Apoidea). *Dusenya, Curitiba*, 2: 25-70.
4. MOURE, J. S.  
1960. Notes on the types of the Neotropical bees described by Fabricius (Hymenoptera: Apoidea). *Studia Entomologica*, 3: 97-160.
5. MOURE, J. S.  
1961. A preliminary supra-specific classification of the Old World Meliponinae bees (Hym., Apoidea). *Studia Entomologica*, 4: 181-242.
6. SCHWARZ, H. F.  
1943. New *Trigona* bees from Peru. *Amer. Mus. Novitates*, no 1243: 1-10.
7. WILLE, A.  
1963. A technique for collecting stingless bees under jungle conditions. *Insectes Sociaux*, in press.



**1**



Figs. 1-3: *Trigona (Tetragona) costaricensis*, n. sp.

**2**

Fig. 1: Right fore wing, hairs omitted.

**3**

Fig. 2: Outer surface of left hind tibia.

Fig. 3: Inner surface of left hind basitarsus.