

## Review of the Tabanidae (Diptera) of Eastern Melanesia and Samoa (Excluding New Caledonia), with Description of Three New Species<sup>1</sup>

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**ABSTRACT:** Three species of Tabanidae, one *Cydistomyia* from the Solomon Islands and two species of *Tabanus* from Fiji, are described. New distribution records for two *Cydistomyia*, one *Japenoides*, and three *Tabanus* species are presented for the Solomon Islands. *Cydistomyia solomensis* is reported from the Santa Cruz Islands for the first time. A list of Tabanidae from eastern Melanesia and Samoa (excluding New Caledonia) is given, as well as a key to genera and species.

A RECENT EXAMINATION OF undetermined Tabanidae from the Bernice P. Bishop Museum collection revealed three undescribed species from eastern Melanesia, as well as several new distribution records. One species of *Cydistomyia* Taylor from the Solomon Islands and two species of *Tabanus* Linnaeus from Fiji are described. New distribution records for two *Cydistomyia*, one *Japenoides* Oldroyd, and three *Tabanus* species are reported from the Solomon Islands. *Cydistomyia solomensis* (Ricardo) is reported from the Santa Cruz Islands, the first species of the genus *Cydistomyia* known from those islands. The Tabanidae of Melanesia and adjacent areas have been treated by Mackerras and Rageau (1958) and Mackerras (1962, 1971, 1972), but a comprehensive list of species and keys for identification have not heretofore been published. Presented here is a summary review of Tabanidae known from the Solomon Archipelago, Vanuatu (New Hebrides Archipelago, including the Santa Cruz Islands), the Fiji Archipelago, and the Samoan Archipelago. Oldroyd (1949) and Mackerras (1964, 1971) reviewed the Tabanidae of Papua New Guinea, Irian Jaya, and the Bismarck Archipelago. Holotypes are deposited in the Bernice P. Bishop Museum, Honolulu, Hawaii (BPBM). The Tabanidae of New Caledonia will be treated in a separate paper.

*Cydistomyia* (*Cydistomyia*) *choiseulensis*  
Burger, new species

### Figure 1

A blackish-brown species with inornate mesonotum and abdomen, black legs, and a faintly yellowish-brown tinted wing with a light brown costal cell, and R<sub>4</sub> vein without an appendix.

**DESCRIPTION:** Holotype ♀ 12 mm long. Frons narrow, parallel-sided, brown tomentose, index (height/width at base) 7. Frontal callus black, linear, extending entire length of frons, only slightly narrowed above near vertex. Subcallus, parafacials, and frontoclypeus brown tomentose, beard black, rather sparse. Scape and pedicel of antenna black, basal flagellomere reddish-brown, elongate, dorsal angle low, about twice as long as tall, apical flagellomeres black. Maxillary palpi slender, blackish, black setose. Eyes (relaxed) blackish, without pattern. Mesonotum including notopleural lobes and scutellum gray-black, posterolateral margins of mesonotum brown. Pleuron dark gray, white pilose. Legs black. Wings with pale yellowish-brown tint, costal cell light brown, vein R<sub>4</sub> without appendix. Abdomen shining black, black pilose, except pale hairs present laterally on tergites 1 and 2. Sternum concolorous with dorsum except sternite 1 brown laterally.

<sup>1</sup> Manuscript accepted 28 December 1990.

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**MATERIAL EXAMINED:** Holotype ♀, Solomon Is.: Choiseul I., Kolombangara R., 80 m, 20.III.64, malaise trap. BPBM 14,749.

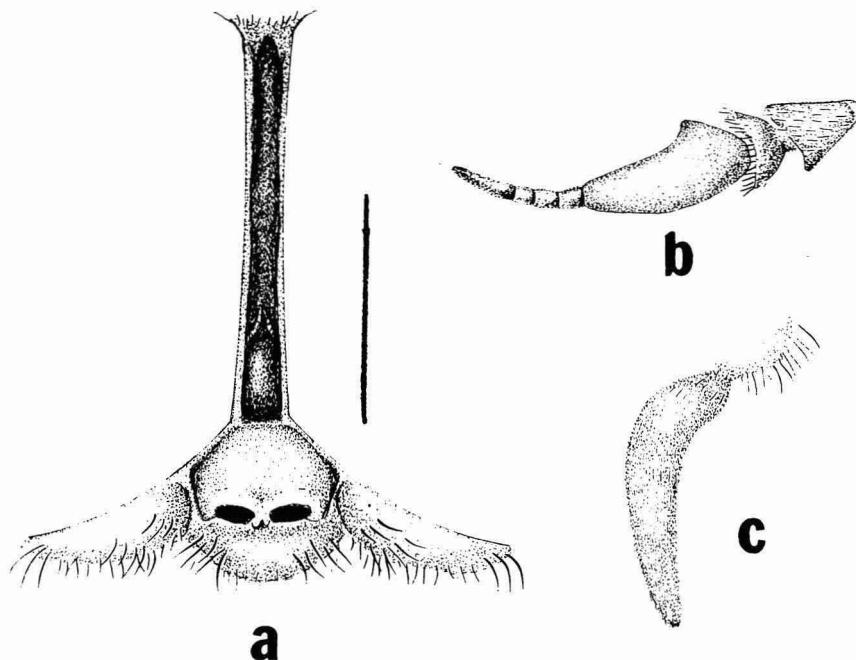


FIGURE 1. *Cydistomyia (C.) choiseulensis* (holotype, BPBM): a, frons; b, antenna; c, maxillary palpus. Scale = 1 mm.

**REMARKS:** This species is closest to *Cydistomyia solomensis* (Ricardo), but is easily distinguished by the much darker body, legs, face, and black inornate abdomen.

**ETYMOLOGY:** Named for Choiseul Island, where this species was collected.

*Tabanus lamiensis* Burger, new species

Figure 2

A small, black species with patterned eyes, a black polished frons, strongly compressed basal antennal flagellomere and elongated scape, and distinctly patterned and spotted wings with a long appendix on  $R_4$ .

**DESCRIPTION:** Holotype ♀ 9.2 mm long. Frons narrow, index 8, distinctly widened above, about twice as broad at vertex as at base, entirely polished black. Basal callus completely filling base of frons, indistinctly differentiated from surrounding area of frons, dorsal extension gradually tapered above. Subcallus gray tomentose. Upper parafacials and frontoclypeus black and black pilose, forming a broad black band passing beneath antennae, lower parafacials and frontocly-

peus gray tomentose and white pilose. Beard white. Scape of antenna enlarged and elongate, slightly longer than broad, dark shining brown, black setose. Flagellum strongly compressed, basal flagellomere only slightly longer than tall, apical flagellomeres together about half the length of basal flagellomere, strongly tapered apically. Maxillary palpi black, black setose. Eyes (relaxed) with central area dark green and a single purple transverse band. Mesonotum and scutellum gray-black (somewhat discolored). Pleuron dark gray tomentose above, blackish below, white pilose. Legs dark brown, fore tibia moderately incrassate. Anterior half of wing dark brown, with an isolated brown spot on vein  $R_4$  subapically, crossveins strongly spotted,  $R_4$  with a long appendix. Abdomen black, with only traces of silvery hairs medianly on tergite 3. Sternum concolorous, with a few pale hairs on posterior margin of sternite 2.

**MATERIAL EXAMINED:** Holotype ♀, Lami, Viti-Levu, Fiji, I-1955, N. L. H. Krauss. BPBM 14,750.

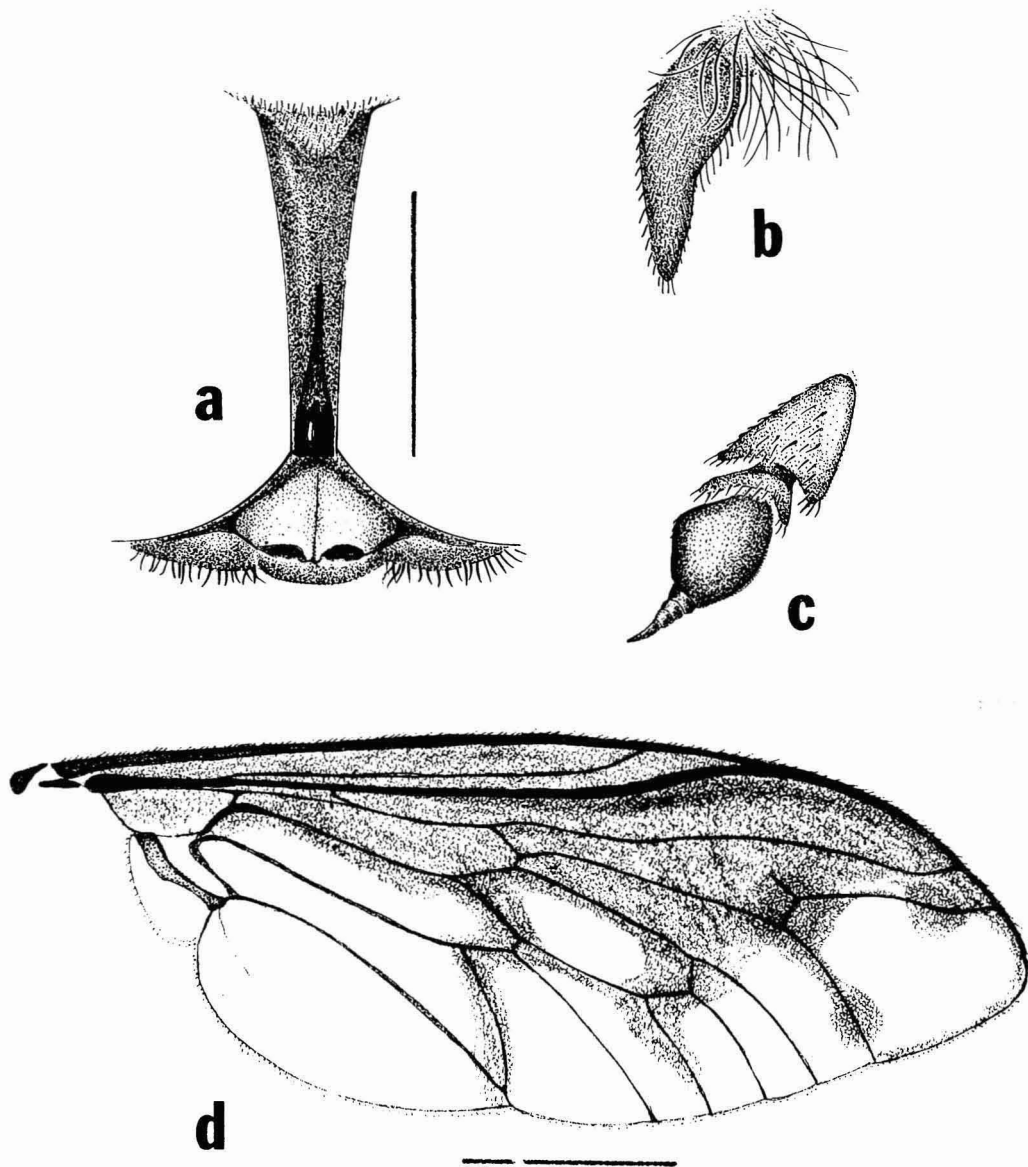


FIGURE 2. *Tabanus lamiensis* (holotype, BPBM): a, frons; b, antenna; c, maxillary palpus; d, wing. Scale = 1 mm.

**ETYMOLOGY:** Named for Lami, the locality on Viti Levu Island, Fiji, where this species was collected.

**REMARKS:** This peculiar and distinctive species represents the second species of *Tabanus* known from Fiji. It seems to be related to certain species in the *exagens* group

of *Tabanus* described from New Guinea (Mackerras 1964), New Ireland (Mackerras 1962), and Guadalcanal (Mackerras 1972). It shares the eye pattern; short, dark antennae; the dark subantennal band; short, stout palpi; dark abdomen; and wing pattern with *Tabanus sepikensis* Oldroyd, *T. selene* Schuurmans Stekhoven, and *T. lenticulatus* Oldroyd

from New Guinea. It shares the polished black frons, the callus filling the bottom of the frons, the single purple eye band, and black acuminate maxillary palpi with *T. gilingilensis* Mackerras from New Ireland. Fiji, however, is about 3000 km distant from areas where possible relatives of *T. lamiensis* have been collected and resemblance may be superficial. No other species of *Tabanus* described from the Pacific Islands have the unique combination of features seen in *T. lamiensis*.

*Tabanus yoshimotoi* Burger, new species

Figure 3

A relatively large grayish and black species with a gray, inornate mesonotum, black abdomen with some brownish tones laterally and narrow yellow-haired posterior bands, very narrow frons, reddish-brown antennae, black

legs, wings with strongly spotted crossveins, and long appendix on vein  $R_4$ .

**DESCRIPTION:** Holotype ♀ 18.4 mm long. Frons very narrow, index 11.4, slightly widened above near vertex, gray tomentose. Basal callus a narrow black line well separated from subcallus, eye margins, dorsal extension a narrow black line, separated from basal callus. Subcallus yellowish-gray tomentose with some brownish tones. Parafacials brown, black pilose above, concolorous with subcallus, gray tomentose below. Frontoclypeus gray tomentose. Beard white. Antennae reddish-brown, scape strongly inflated dorsally, basal flagellomere with a short blunt dorsal tooth. Maxillary palpi dark gray, apical palpomere bearing long white hairs basally, otherwise short black setose. Eyes (relaxed) dark green, without pattern. Me-

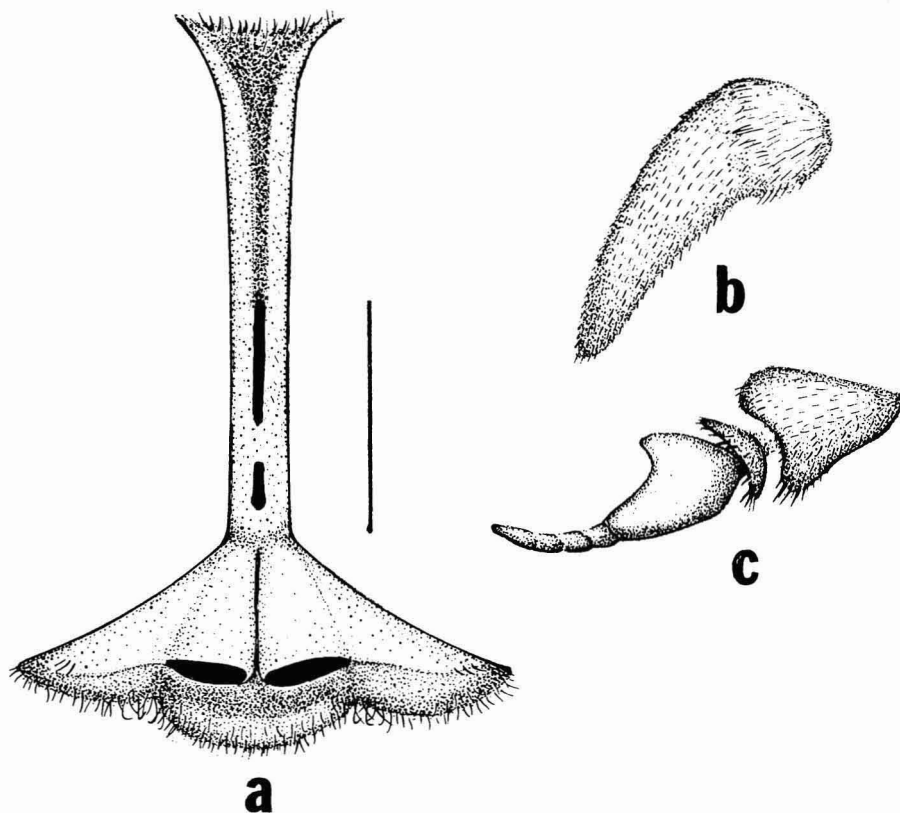


FIGURE 3. *Tabanus yoshimotoi* (holotype, BPBM): a, frons; b, antenna; c, maxillary palpus. Scale = 1 mm.

sonotum and scutellum dark gray, without pattern, bearing mixed black and silvery hairs, ventral half of notopleural lobe blackish and densely black pilose. Pleuron light gray tomentose, white pilose. Legs black, black pilose except brown at extreme base of mid- and hind tibia. Wing subhyaline, costal cell light brown, crossveins distinctly brown spotted, anterior longitudinal veins with faint brownish tinges along their length, vein  $R_4$  with long appendix. Abdomen blackish with distinct, narrow yellow-haired posterior bands on tergites 2–5, not expanded into median triangles, tergites 6–7 entirely dark, tergites 2–3 with brownish suffusion laterally and posteriorly. Sternum blackish, sternites 2–4 brown on posterior third, and a few pale hairs medianly on posterior margin.

**MATERIAL EXAMINED:** Holotype ♀, Fiji: Viti-Levu, Nadarivatu, 850 m, 8–13.III.1963, C. M. Yoshimoto, malaise trap. BPBM 14,751. Paratypes, 2 ♀♀, same data. Holotype and one paratype deposited in the Bernice P. Bishop Museum, Honolulu, Hawaii; one paratype in the University of New Hampshire collection.

**ETYMOLOGY:** This species is named for the collector, C. M. Yoshimoto.

**REMARKS:** The two paratype females are essentially identical to the holotype in size and appearance. This species represents the third species of *Tabanus* known from Fiji. It is easily distinguished from *Tabanus fijianus* Ricardo, the only previously known species of *Tabanus* from Fiji, and *T. lamiensis* by its large size, inornate thorax, black legs, and pale abdominal bands not expanded into large triangles medianly.

The following list represents the species of Tabanidae known to occur in eastern Melanesia and Samoa, excluding New Caledonia, and their synonyms. Islands listed in **boldface** represent new distribution records.

#### SOLOMON ARCHIPELAGO

##### Genus *Chasmia* Enderlein

**orthellioides** Mackerras, 1971: Choiseul, Fauro, Kolombangara

##### Genus *Cydistomyia* Taylor

**chaineyi** Daniels, 1989: Bougainville, Choiseul, Florida, Gizo, Kolombangara, Munda, Santa Isabel, Vella Lavella  
**choiseulensis**, n. sp.: Choiseul  
**lorentzi** (Ricardo, 1913): Bougainville nana Mackerras & Rageau, 1958 [preocc. Wiedemann, 1821] = **chaineyi** Daniels, 1989  
**nannoides** Mackerras, 1971: Bougainville, Florida, Santa Isabel  
**nigrina** Mackerras, 1971: Bougainville, Choiseul, Kolombangara, Santa Isabel  
**rozeboomi** Philip, 1960 = **solomensis** (Ricardo, 1915)  
**sol** (Schuurmans Stekhoven, 1926): Bougainville  
**solomensis** (Ricardo, 1915): Bougainville, Choiseul, Florida, Gizo, Guadalcanal, Malaita, New Georgia, Russell, San Cristobal, Santa Isabel, Vella Lavella  
**teloides** Mackerras, 1971: Fera, Santa Isabel

##### Genus *Dasybasis* Macquart

**anomala** Mackerras & Rageau, 1958: Bougainville  
**melliccallosa** Mackerras & Rageau, 1958: Bougainville, Santa Isabel

##### Genus *Japenoides* Oldroyd

**ratcliffei** (Mackerras & Rageau, 1958): Choiseul, Florida, **Gizo**, Guadalcanal, Kolombangara, Malaita, Santa Isabel, **Vella Lavella**

##### Genus *Tabanus* Linnaeus

**bipunctatus** Schuurmans Stekhoven, 1926 [preocc. v.d. Wulp, 1885] = **rubiventris** Macquart, 1838  
**bipustulatus** Szilady, 1926 = **rubiventris** Macquart, 1838  
**ceylonicus** Schiner, 1868: **Gizo**, Guadalcanal, Kolombangara, Malaita, New Georgia, San Cristobal, Santa Isabel, Vella Lavella  
**choiseulensis** Mackerras, 1972: Choiseul, **Santa Isabel**  
**gressitti** Mackerras, 1972: Bougainville, Choiseul, **Fauro**, Florida, Gizo, Kolombangara, Malaita, San Cristobal, Santa Isabel, Vella Lavella  
**kershawi** Ricardo, 1917 = **ceylonicus** Schiner, 1868

**lenticuloides** Mackerras, 1972: Guadalcanal  
**leverii** Mackerras & Rageau, 1958: Florida,  
 Santa Isabel  
**rubiventris** Macquart, 1838: Bougainville,  
**Fauro**, Florida, Gizo, Guadalcanal, Russell,  
 Santa Isabel, Vella Lavella

VANUATU (NEW HEBRIDES ARCHIPELAGO)  
 INCL. SANTA CRUZ IS.

Genus *Cydistomyia* Taylor  
**solomensis** (Ricardo, 1915): **Santa Cruz Is.**

Genus *Dasybasis* Macquart  
**mellicallousa** Mackerras & Rageau, 1958:  
 Vanikoro [Santa Cruz Is.]

Genus *Japenoides* Oldroyd  
**veitichi** (Bezzi, 1928): Tanna [Vanuatu (New  
 Hebrides)]

Genus *Tabanus* Linnaeus  
**expulsus** Walker, 1854: Erromanga, Tanna  
 [Vanuatu (New Hebrides)]  
**leverii** Mackerras & Rageau, 1958: Utupua,  
 Vanikoro [Santa Cruz Is.]  
**rubiventris** Macquart, 1838: Vanikoro [Santa  
 Cruz Is.]

# FIJI ARCHIPELAGO

Genus *Cydistomyia* Taylor  
**bezzii** Mackerras & Rageau, 1958: Ovalau,  
 Rabi, Venua Levu, Viti Levu  
**limbatella** (Bezzi, 1928): Kandava, Viti Levu  
**pacifica** (Ricardo, 1917): Taveuni, Viti Levu

Genus *Japenoides* Oldroyd  
**veitichi** (Bezzi, 1928): Viti Levu

Genus *Tabanus* Linnaeus  
**fijianus** Ricardo, 1914: Ovalau, Taveuni, Viti  
 Levu  
**lamiensis**, n. sp.: Viti Levu  
**yoshimotoi**, n. sp.: Viti Levu

# SAMOA

Genus *Tabanus* Linnaeus  
**samoensis** Ferguson, 1927: Upolo [W. Sa-  
 moa], Tatuila [Amer. Samoa]

The following key treats all the Tabanidae  
 known to occur in eastern Melanesia and  
 Samoa. It does not include Tabanidae from  
 New Caledonia, which will be treated in a  
 separate paper.

# KEY TO EASTERN MELANESIAN AND SAMOAN TABANIDAE

1. Basicosta densely covered with strong setulae similar to those on the costa ..... *Tabanus*.....5  
 Basicosta bare or nearly so (occasionally a few irregularly scattered setulae may be  
 present) ..... 2
2. Scape of antenna and sometimes subcallus strongly swollen and polished; eyes (relaxed)  
 green with a dark transverse stripe; ocellar tubercle present; vein R<sub>4</sub> with long appendix  
 ..... *Japenoides*.....16  
 Eyes (relaxed) unpatterned; without the above combination of characters ..... 3
3. Antennal scape relatively long and slender; proboscis slender, labella small; thorax  
 and abdomen metallic blue-green, resembling muscoid flies ..... *Chasmia orthellioides* Mackerras  
 [Solomon Is.]  
 Antennal scape not especially elongate; proboscis stouter, labella large; not resembling  
 blue-green metallic muscoid flies ..... 4
4. Frons of females relatively broad, index 3.5 or less; eyes usually distinctly pilose; males  
 with upper enlarged eye facets distinctly pilose ..... *Dasybasis*.....17  
 Frons of females narrower, index 4 or greater; eyes of both sexes bare ..... *Cydistomyia*.....18
5. Subcallus shining black; slender 10–12 mm black species with contrasting yellow  
 antennae and white tibiae ..... *T. ceylonicus* Schiner  
 [Solomon Is.]  
 Subcallus tomentose; tibiae not contrastingly white ..... 6

6. Rather shining black species, with predominantly black shining frons obscuring the callus; eyes with a transverse brown or purple band ..... 7  
 Not shining black species; frons predominantly tomentose; callus variably developed ..... 8
7. Small species, 9–10 mm; antenna dark brown to black, basal flagellomere strongly compressed, dorsal excision absent; frons narrow (index 8); eyes (relaxed) with a purple transverse band on a dark green ground ..... *T. lamiensis*, n. sp. [Fiji]  
 Larger species, 14–15 mm; antenna yellowish, contrasting sharply with dark body, basal flagellomere more elongate, with well-developed dorsal excision; frons of medium width (index 5); eyes (relaxed) with a brown transverse band ..... *T. gilingilensis* Mackerras [Solomon Is.]
8. Thicket blackish or brown-black species; vein  $R_4$  with a long appendix ..... 9  
 More slender, lighter colored species; vein  $R_4$  usually without appendix ..... 10
9. Medium-sized species, 14–15 mm; frons moderately broad (index 5); callus well developed; basal flagellomere of antenna yellowish-brown; beard black; pleural and abdominal hairs entirely black, abdomen without pattern; eyes (relaxed) with a purple, green-bordered band ..... *T. choiseulensis* Mackerras [Solomon Is.]  
 Large species, 18.4 mm; frons very narrow (index 11.4); callus a narrow linear line widely separated from eye margins; basal flagellomere of antenna dark reddish-brown; beard white; pleura white pilose; abdominal terga 2–5 with distinct narrow pale yellow-haired bands; eyes (relaxed) dark green, without pattern ..... *T. yoshimotoi*, n. sp. [Fiji]
10. Dark grayish species with compressed black antennal flagellomere and short, stout palpi; wings strongly suffused with brown; abdominal terga with narrow pale apical bands and low median triangles ..... *T. lenticuloides* Mackerras [Solomon Is.]  
 Not with the above combination of characters ..... 11
11. Bright brown species with relatively broad frons (index 4.5–5.0); mesonotum with longitudinal stripes; crossveins of wing strongly brown spotted; abdomen with conspicuous pattern of orange apical bands that widen into triangles medianly; eyes (relaxed) with 2 brown transverse bands ..... 12  
 Not such a species; frons narrower; patterns on mesonotum and abdomen, when present, indistinct ..... 13
12. Pale longitudinal stripes on mesonotum broad, strongly developed; median triangles on abdominal tergites 2–5 large and conspicuous, extending 1/2 to 3/4 length of each tergite; basal flagellomere of antenna with a strong dorsal tooth ..... *T. fijianus* Ricardo [Fiji]  
 Pale longitudinal stripes on mesonotum narrow and indistinct; median triangles on abdominal tergites 2–5 small or absent, at most extending 1/3 length of tergite 2, barely discernible on posterior tergites; basal flagellomere of antenna with a weak dorsal tooth ..... *T. expulsus* Walker [Vanuatu (New Hebrides)]
13. Dark to blackish-brown species; frons narrow (index 8); antenna long, subequal to anteroposterior width of head; pleuron pale, strongly contrasting with mesonotum; legs black; wings brownish ..... *T. samoensis* Ferguson [Samoa]  
 Not with the above combination of characters ..... 14



14. Relatively large dark to reddish-brown species, 16–18 mm; beard with mixed dark and white hairs; maxillary palpi relatively slender; fore femora dark brown to black; wings predominantly hyaline; abdominal terga with variably developed grayish-white median triangles and apical fringes ..... *T. rubiventris* Macquart  
[Solomon Is.; Vanuatu (New Hebrides)]  
Beard creamy to white; maxillary palpi stouter; femora brown to yellowish; wings usually suffused with brown anteriorly ..... 15
15. Larger (13–16 mm) more tomentose species with relatively large black callus; basal flagellomere of antenna with strong dorsal tooth; wings lightly suffused with brown; eyes (relaxed) with a transverse brown band ..... *T. gressitti* Mackerras  
[Solomon Is.]  
Smaller (12–14 mm) more shining species; callus narrower, light brown basally; basal flagellomere of antenna with obtuse dorsal angle; eyes (relaxed) without pattern; wings with darker brown suffusion anteriorly ..... *T. leveri* Mackerras & Rageau  
[Solomon Is.; Santa Cruz Is.; Vanuatu (New Hebrides)]
16. Both subcallus and antennal scape strongly swollen and polished brown; basal flagellomere reddish-brown basally, brownish apically; beard pale yellowish to white; maxillary palpi very slender ..... *J. veitchi* (Bezzi)  
[Vanuatu (New Hebrides); Fiji]  
Subcallus tomentose, not swollen; antennal scape polished black, strongly contrasting with orange pedicel and basal flagellomere; apical flagellomeres black; beard dark brown to black; maxillary palpi stouter basally ..... *J. ratcliffei* (Mackerras & Rageau)  
[Solomon Is.]
17. Brownish species with pilose eyes; flagellum long and slender, yellowish orange; wings irregularly darkened with brown anteriorly ..... *D. anomala* Mackerras & Rageau  
[Solomon Is.]  
Grayish species with pilose eyes; flagellum short, dark brown; wings hyaline .....  
..... *D. melliccallosa* Mackerras & Rageau  
[Solomon Is.]
18. Yellowish species with orange or yellowish-brown coloration; antennae, palpi, and legs yellow or yellow-brown ..... 19  
Darker buff gray, brown, or black species ..... 20
19. Frons relatively narrow (index 7); callus brown ..... *C. bezzii* Mackerras & Rageau  
[Fiji]  
Frons broader (index 5.3–5.7); callus yellow ..... *C. sol* (Schuermans Stekhoven)  
[Solomon Is.]
20. Small, grayish-buff species (8–9 mm); hairs on anterior 5 abdominal tergites of female nearly entirely creamy yellow ..... *C. chainei* Daniels  
[Solomon Is.]  
Darker brown to black species; hairs on anterior abdominal tergites not predominantly creamy yellow ..... 21
21. Larger (11–13 mm) yellowish-brown to reddish, brown, or black species; hairs on abdominal tergites of female mostly black or brownish ..... 22  
Smaller (8–10 mm), slender brown or black species; abdominal tergites with variable pattern of pale tomentum and hairs ..... 25
22. Frons broad (index 4.5) ..... *C. lorentzi* (Ricardo)  
[Solomon Is.]  
Frons narrow (index 7–9) ..... 23
23. Beard creamy yellow; legs black; abdomen grayish-black ..... *C. limbatella* (Bezzi)  
[Fiji]  
Beard black or with mixed black and pale hairs; legs and abdomen light to dark brown ..... 24



24. Body relatively slender; callus broad basally, with a slender dorsal extension; basal antennal flagellomere relatively short, only slightly longer than high ..... *C. pacifica* (Ricardo) [Fiji]  
 Body stouter; callus rather narrow and nearly linear, dorsal extension broad; basal antennal flagellomere more slender and elongate, more than twice as long as high ... *C. solomensis* (Ricardo) [Solomon Is.]
25. Frons relatively narrow (index 7); beard black; antennae black, unusually long, apical flagellomeres twice as long as basal flagellomere; maxillary palpi short and plump; proboscis unusually short, scarcely longer than palpi; vein  $R_4$  without appendix .... *C. teloides* Mackerras [Solomon Is.]  
 Frons broader (index 5.0–5.7); beard creamy or white; antennae not entirely black and not unusually long; maxillary palpi relatively elongate and slender; proboscis not unusually short; vein  $R_4$  with appendix ..... 26
26. Subcallus shining black; maxillary palpi dark brown to black; legs deep brown to black; abdominal tergites black, with narrow white apical bands ..... *C. nigrina* Mackerras [Solomon Is.]  
 Subcallus brown, tomentose; maxillary palpi creamy yellow; legs light brown; abdominal tergites brown with narrow yellowish apical bands ..... *C. nannoides* Mackerras [Solomon Is.]

#### ACKNOWLEDGMENTS

I wish to thank Tess Feltes, Portsmouth, New Hampshire, for preparing the illustrations of the new species, and D. S. Chandler and R. M. Reeves, Department of Entomology, University of New Hampshire, for reviewing the manuscript.

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