

A review of the Mesoamerican flower flies of the genus *Meromacrus* (Diptera: Syrphidae) including the description of a new species

[Eine Übersicht der mittelamerikanischen Schwebfliegen der Gattung *Meromacrus*
(Diptera: Syrphidae) nebst der Beschreibung einer neuen Art]

by

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Abstract	The Mesoamerican species of the genus <i>Meromacrus</i> are revised. A key to the nine species, along with synonymies, descriptions, distributions, and figures for all species are given. <i>Meromacrus melansoni</i> BLATCH spec. nov., is described and one new synonym is proposed (<i>Meromacrus panamensis</i> CURRAN, 1930 = <i>Milesia laconica</i> WALKER, 1852).
Key words	Flower flies, Syrphidae, <i>Meromacrus</i> , new species, Neotropis, key
Zusammenfassung	Die mittelamerikanischen Arten der Gattung <i>Meromacrus</i> werden revidiert. Ein Bestimmungsschlüssel zu den 9 Arten nebst der Synonymien, eine Auflistung der wichtigsten Merkmale und Abbildungen zu jeder Spezies sowie Angaben zu ihrer Verbreitung werden gegeben. <i>Meromacrus melansoni</i> BLATCH spec. nov., wird beschrieben und eine neue Synonymie wird vorgeschlagen (<i>Meromacrus panamensis</i> CURRAN, 1930 = <i>Milesia laconica</i> WALKER, 1852).
Stichwörter	Schwebfliegen, Syrphidae, <i>Meromacrus</i> , neue Art, Neotropis, Bestimmungsschlüssel

Introduction

Meromacrus flower flies are common pollinators as adults and filter-feeders as maggots in rot-holes in trees. As such they contribute to diverse fauna and are indicators of rich habitats. As part of the effort to document the biodiversity of Costa Rica, we here describe a new species of *Meromacrus* and provide additional details on the eight other Mesoamerican species.

The genus *Meromacrus* is endemic to the New World, the included species ranging from the southern United States to northern Argentina. The genus is absent from Chile and both the north and south temperate areas. All together some 39 species are known, eight from the West Indies (THOMPSON 1981: 156–163) and six from the United States (THOMPSON 2002). The genus was redescribed by THOMPSON (1972); the species revised by SACK (1920), HINE (1924), CURRAN (1936) and HULL (1942); the Argentine species by LAGRANDE (1990) and the *Meromacrus pratorum* complex was treated by THOMPSON (1981: 157). A key to the Neotropical flower fly genera was provided by THOMPSON (1999).

Materials and methods

Redescriptions, complete synonymies, illustrations, and distributions are given for all species. Terminology follows THOMPSON (1999b). The abbreviations found in the synonymies follow THOMPSON (2002). Synonymies also include the informal nomenclatural designations (code) that THOMPSON has previously used for the species. In the distribution section, the use of the asterisk means verified records to be found below in the material examined section, and, if the records have not been verified, the author responsible for the record is given in parens. In the material examined section, the use of ellipses follows standard English prac-

tice and merely indicates that the missing information is the same as that in the preceding record. The acronyms used for collections follow the standard of the BioSystematic Database of World Diptera (THOMPSON 1999a), and their equivalents are given in the acknowledgements.

Mesoamerica is here considered to include all the countries south of the United States and north of Colombia, but excluding the West Indies. While this paper only treats those species found in Mesoamerica, those species are treated fully, that is, we provide complete details on their distribution. Color images of these flies along with the rest of the information in this paper may be found on the Diptera WWW site (<http://www.sel.barc.usda.gov/Diptera/>) and on the *Diptera Data Dissemination Disk*.

Genus *Meromacrus* RONDANI, 1848

Plagiocera MACQUART, 1842: 119 (preocc. KLUG 1834). Type-species, *Milesia cruciger* WIEDEMANN (original designation) = *acutus* FABRICIUS.

Meromacrus RONDANI, 1848: 70. Type-species, *ghilianii* RONDANI (monotypy).

Pteroptila LOEW, 1866: 165. Type-species, *decorus* LOEW (subsequent designation of COQUILLET 1910: 598).

Promilesta LYNCH ARRIBALZAGA, 1892: 241). Type-species, *nectarinoides* LYNCH ARRIBALZAGA (monotypy).

Metameromacrus HULL, 1942: 1. No type-species designated. *Nomen nudum*.

Thalamopales HULL, 1949: 401. Type-species, *Helophilus scitus* WALKER (original designation).

Adult. Head: Higher than long; face broadly pollinose and pilose laterally, bare and shiny medially, concave ventrad to antenna, with or without low median tubercle on ventral 1/3, straight ventrad to tubercle, not greatly produced ventrad to eye; gena narrow, longer than high; facial grooves short, extending to level of tubercle; paraface indistinct; frontal prominence low, on dorsal 1/3 of head; frontal triangle long, more than twice as long as eye contiguity, as long as or longer than vertical triangle; vertical triangle long, about twice as long as broad at occiput; front short to long, from 1/3 shorter than to slightly longer than face, slightly longer than broad at antenna; ocellar triangle small, equilateral; eye bare, holoptic in male; antenna short, about half as long as face; basoflagellomere oval to elongate, but never greatly elongate; arista bare, about 1/3 longer than antenna.

Thorax: About as long as broad, with very short pile, with distinct maculae of tomentose pile; katapisternum with narrowly separated dorsal and ventral pile patches; anepimeron bare posteriorly; katepimeron bare; metasternum pilose; metathoracic pleuron bare except frequently with a few pili dorsad to metacoxal articulation; plumula long, multibranched; metafemur swollen; metatibia slightly arcuate, with ventromedial carina on basal 1/3. Wing: microtrichose, rarely alula partially bare; anterior margin always partially dark; cell R_1 petiolate; vein R_{4+5} sinuate; cell R_{4+5} petiolate, with petiole as long as or longer than stigmal crossvein; stigmal crossvein strong; vein A_1+CuA_2 short, recurved.

Abdomen: Oval to suboval, rarely elongate.

Remarks: *Meromacrus* is easily distinguished from all other flower flies as being the only cristaline (closed cell R_1 , sinuate vein R_{4+5}) group with bare eyes and tomentose maculae. While these tomentose maculae are reduced in some species, such as *niger*, confusion is unlikely as all other New World cristaline flies have pilose eyes. The probable sister-group and only genus likely to be confused with *Meromacrus* is *Meromacroides* CURRAN, known from Central Africa, but *Meromacrus* is readily distinguished from *Meromacroides* by the presence of the tomentose pile, bare eyes, holoptic in males, less swollen metafemur, and metatibia with reduced ventral carina.

The first general paper on Neotropical rar-tailed maggots, the larvae of cristalinae flower flies (tribe Eristalini), has recently been published (PÉREZ-BAÑÓN et al. 2003). Full descrip-

tion and biology of the genus *Meromacrus* are given (p. 462) and the following species are described: *acutus* (FABRICIUS, 1805; p. 462), *currani* HULL (p. 463), *draco* HULL (p. 463), *laconicus* (WALKER, p. 464), *loewii* (WILLISTON, p. 465), and *obscurus* HINE (p. 467).

Key to Mesoamerican *Meromacrus* species

1. Abdominal tip (♂ 4th tergum; ♀ 4th & 5th terga) entirely golden tomentose (Fig. 1) *M. melansoni* BLATCH spec. nov.
 - Abdominal tip extensively black pilose, at most with sparse yellow pile 2
2. Mesonotum without anterior submedial tomentose macula and transverse macula on transverse suture (Fig. 2); abdomen without yellow tomentose maculae beyond 1st tergum *M. anna* CURRAN
 - Mesonotum with anterior submedial tomentose macula and transverse macula (Figs 2–3); abdomen with yellow tomentose maculae on at least 3rd tergum (Figs 5–6) 3
3. Facial vitta reddish brown to orange, rarely tubercle black; basoflagellomere pale reddish brown; wing with anterobasal margin orange, darker apically; basicosta orange to golden pilose 8
 - Facial vitta almost completely black, rarely reddish laterally; basoflagellomere darker, brown to black; wing hyaline or dark anterobasally; basicosta usually dark 4
4. Mesonotum with medial yellow tomentose vitta, running to anterior edge of scutellum (Fig. 4). Pro- and mesothoracic legs dark brown *M. obscurus* HINE
 - Mesonotum without complete medial yellow vitta (Figs 2, 3) 5
5. Pro- and mesothoracic legs black; costal cell dark brown to black, unicolorous with cell R_{2+3} ; profemur black pilose posteriorly on at least apical 2/3 *M. loewi* WILLISTON
 - Pro- and mesothoracic legs extensively orange, at most femora and apical half of tibia dark; costal cell hyaline to pale brown, distinctly paler than color of cell R_{2+3} 6
6. Femora bicolorous, orange and black; antenna black; tomentose fasciae on abdomen continuous or only narrowly separated, transverse. Male surstylus with narrow, recurved apex (Figs 14–15) *M. zonatus* (LOEW)
 - Femora unicolorous, reddish brown to orange, rarely dark brown; basoflagellomere paler, brownish orange to brown; tomentose fasciae always broadly separated 7
7. Male surstyle broad apically, not recurved (Fig. 10); abdominal tomentose maculae narrow, transverse (Fig. 6) *M. laconicus* (WALKER)
 - Male surstyle narrow, recurved apically (Fig. 8); abdominal tomentose maculae broad, oval (Fig. 5) *M. currani* HULL
8. Abdomen dark brown to black, with pale maculae; female frons brown on dorsal 2/3 *M. draco* HULL
 - Abdomen brownish orange to orange, with pale maculae; female frons entirely orange *M. canusium* (WALKER)

Meromacrus anna CURRAN, 1936

[Figs 2 (male abdomen), 7 (male genitalia)]

Meromacrus anna CURRAN, 1936: 4. Panama, Canal Zone, Fort Randolph. HT ♂ AMNH. HULL 1942: 2 (key reference); FLUKE 1957: 147 (cat. cit.); DOESBURG 1963: 26 (note); THOMPSON et al. 1976: 111 (cat. cit.); ARNAUD & OWEN 1981: 108 (note on type and status). *Meromacrus* CR-1.

Adult. Head: black except face brown to yellow laterally; face white pollinose laterally and ventrad to antenna, yellow pilose laterally, shiny and bare medially; gena shiny anteriorly, white pollinose and pilose posteriorly; frontal triangle shiny medially, white pollinose laterally, white pilose except



Fig. 1: Habitus of *Meromacrus melansoni* BLATCH spec. nov., male, dorsal view.

for some black pile medially; frons shiny on apicoventral 1/3, narrowly yellow pollinose and pilose laterally, grayish brown pollinose and black pilose on dorsomedial 2/3; vertical triangle white pollinose and pilose anterior ocellar triangle; ocellar triangle grayish-black pollinose, black pilose; occiput white pollinose, yellow pilose, with black pile on dorsal 1/4; antenna brownish orange to black, black pilose; basoflagellomere oval, only slightly longer than wide; arista orange.

Thorax (Fig. 2): Black except scutellum beige; postpronotum long yellow pilose, with short black pile intermixed; scutum short black pilose except for yellow tomentose maculae; with narrow transverse yellow submedial tomentose vitta running from mesad to postpronotum to notopleuron; with very indistinct yellow medial transverse fasciata tomentose macula along suture but broadly separated on medial 1/3 and laterally from notopleuron; with posterior margin narrowly yellow tomentose from along posterior margin of postalar callus and narrowly anterior to scutellum; scutellum short black pilose; anepisternum white pilose, sparsely grayish-white pollinose; katepisternum white pilose, sparsely grayish-white pollinose; anepimeron long yellow pilose; spiracular fringes brownish orange; plumula brown; calypter black, with ventral fringe white; halter yellow. **Wing:** Completely microtrichose; tegula yellow pilose; basicosta and base of costa black, black pilose; hyaline posteri-



2	3	4
5	6	

Figs 2–6: Color patterns of thorax and abdomen of different *Meromacrus* spp. – 2: *Meromacrus anna* CURRAN, thorax, dorsal view; – 3: *M. currani* HULL, thorax, dorsal view; – 4: *M. obscurus* HINE, thorax, dorsal view; – 5: *M. currani* HULL, abdomen, dorsal view; – 6: *M. laconicus* (WALKER), abdomen, dorsal view.

only, anterior 1/3 brown except costa cell pale brown; with loop of vein R_{4+5} hyaline. **Legs:** Black except femoral apices lighter, more brownish; coxa grayish white pollinose, white pilose; trochanters brownish black, shiny, yellow pilose; pro and mesofemora yellow pilose except black pilose dorsoapically; metafemur black pilose except yellow pilose on basal 1/4; protibia black pilose; meso & metatibiae yellow pilose except black pilose dorsoapically; tarsi black pilose.

Abdomen: Black; sterna sparsely white pilose on 1st and 2nd sterna, longer yellow pilose on apical sterna; terga short black pilose except narrowly yellowish-white pilose along lateral margins and yellow tomentose fasciate apicomedia macula on 1st tergum; male genitalia (fig. 7) large, about as 2/3 as long as 4th tergum; surstyle elongate, extending over 4th sternum, with apex broad and blunt. Male ventral pile is much longer and denser than in female; with long pile on metasternum, coxae, trochanters, posterobasal 1/4 of femora and apical sterna.

Length (4 specimens measured): 11.5 mm, wing 9.2 mm.

Variation: Two male Costa Rican specimens have the pile on metasternum, meso- and metalegs entirely black, not partially yellow.

Distribution. Costa Rica*, Panama*, Guyana (FLUKE, DOESBURG), Brazil (FLUKE), Peru (FLUKE).

Material examined (6 ♂ 7 ♀). COSTA RICA. *Guanacaste:* P. N. Guanacaste, Estación Pitilla, 9 km S Santa Cecilia. 700 m, LN 330200 380200, 18 Apr–19 May 1993, P. RIOS (1 ♂ INBIOCRI001396563 USNM); ... 31 Mar–29 Apr 1992, K. TAYLOR (1 ♀ INBIOCRI000376046 INBIO). *Puntarenas:* Parque Nacional Corcovado, Estación Sirena, 0–100 m, Jan 1990, G. FONSECA, LS 270500 508300 (1 ♂ INBIOCRI000185557 USNM); *Heredia:* A. C. Cordillera Volcánica Central, Horq. Sarapiquí, 50 m, LN 262100 542350, July–August 1992, R. VARGAS, #3039 (1 ♂ 1 ♀ in còpula (INBIOCRI00197327 USNM)); La Selva Biological Station, 3 km south Puerto Viejo, 10 26'N 84 01'W, 19 April 1980, H. A. HESPEHEIDE (1 ♂ INBIO003027696 INBIO). *Alajuela:* R.N.V.S. Caño Negro, 20 m, LN 450100 319100, 14 Jul–2 Ago 1993, K. FLORES, # 2285 (1 ♀ INBIOCRI001953172 INBIO). *Limón:* P. N. Tortuguero, Cerro Tortuguero, 0–120m, LN 285000 588000, Jul 1992, R. DELGADO (1 ♀ INBIOCRI000756020 INBIO); Talamanca, Amubri, 70 m, LS 385000 578100, 2–31 Jan 1996, G. GALLARDO, #7509 (1 ♂ INBIOCRI002393898 INBIO); Pococí, Sector Cocorí, 30 Km N Cariari, 100 m, LN 286000 567500, Mar 1995, E. ROJAS, Malaise Trap, #4524 (1 ♀ INBIOCRI002345932 INBIO). PANAMA. *Canal Zone:* Fort Randolph (Holotype), Fort Sherman, 5 Feb 1929, C. H. CURRAN (1 PT ♀ USNM ENT 00029998 AMNH); Frijoles, 8–15 Nov 1923 (1 PT ♀ USNM ENT 00029999 AMNH); Barro Colorado Island, Chiva Chiva Trail, 18 Nov 1923 (1 ♀ USNM ENT 00029967 USNM); Pacora, “2-10” [= 10 Feb.?] 1945, Nesi Trap Sheet, H. H. STAGE, SEL lot# 454519 (1 ♂ USNM ENT 00029966 USNM); Barro Colorado Island, 8 Jan 1929, C. H. CURRAN (1 PT ♂ USNM ENT 00029997 AMNH).

Remarks: *Meromacrus anna* is readily distinguished from all other Mesoamerican species by its overall dark appearance.

Meromacrus canusium (WALKER, 1849)

Milesia canusium WALKER 1849: 566. “Cape of Good Hope.” HT ♀ BMNH. KERTÉSZ 1910: 329 (cat. cit.).

Meromacrus canusium: HULL 1942: 9 (description, mesonotum*, correction of type locality to the neotropics); FLUKE 1957: 148 (cat. cit.); THOMPSON et al. 1976: 111 [(cat. cit.; Mexico (Nayarit)].

Adult. Head: Pale brownish orange except black vertex and occiput; face yellow pollinose and yellow pilose laterally, shiny medially; gena shiny anteriorly, white pollinose and pilose posteriorly; frons shiny on apicoventral 1/3, broadly yellow pollinose laterally, narrowly gray pollinose on medial 2/3 dorsally, orange pilose; ocellar triangle grayish-black pollinose, black pilose; occiput yellow pollinose, yellow pilose; antenna brownish orange, black pilose; basoflagellomere oval, about as long as wide; arista orange.

Thorax: Black except postpronotum and scutellum brownish orange; postpronotum yellow pilose; scutum short yellow pilose except for yellow tomentose maculae and short black pilose on posterior lateral half; with large oval yellow submedial tomentose macula mesad to postpronotum; with yellow medial transverse fasciata tomentose macula along suture but broadly separated on medial 1/3; with posterior margin yellow tomentose from along posterior margin of postalar callus and narrowly anterior to scutellum; scutellum short black pilose except for some long yellow pile basally and apically; anepisternum yellow tomentose along posterior margin; katepisternum with round yellow tomentose macula on dorsal 1/3, sparsely grayish-white pollinose, yellow pilose; anepimeron long yellow pilose except for a few black pili dorsally; spiracular fringes pale, white to orange; plumula yellow; calypter with dorsal lobe orange, with ventral lobe white basally, brown apically, with brownish yellow fringe; halter orange. **Wing:** Completely microtrichose; tegula orange pilose; basicosta and base of costa orange, orange pilose; hyaline posteriorly, pale orange on antero basal 1/3, pale brown on anteroapical 1/3, with loop of vein R_{4+5} hyaline. **Legs:** Coxa black, grayish white pollinose, white pilose; trochanters brown, shiny, yellow pilose; pro and mesofemora orange, short orange pilose; metafemur black except narrowly orange on base and apicoventral 1/4, yellow pilose except black pilose ventrally; tibiae and tarsi orange, orange pilose.

Abdomen: Sterna brown, sparsely gray pollinose, white pilose on 1st thru 3rd sterna, black pilose on apical sterna; 1st tergum orange on lateral 1/3, black medially, gray pollinose and white pilose laterally, black pollinose on medial 1/3 except for large submedial yellow tomentose fasciate macula on

apical half, with maculae separated on medial 1/3; 2nd tergum orange except narrowly black along basal margin on medial 2/3 and black narrow medial vitta on basal 2/3, short yellow pilose except long yellow pilose basolaterally, white pilose along lateral margin, black pilose along apical margin; 3rd and 4th terga orange except brownish apicolaterally and with short narrow black medial vitta on basal half, short black pilose on apicomedial 1/3, yellow pilose basolaterally, with small yellow tomentose fasciate macula on basal 1/3, with maculae separated on medial 1/5; 5th tergum brownish black, black pilose except yellow basolaterally.

Length (3 specimens measured): 13.0 mm, wing 11.1 mm.

Distribution: Mexico*.

Material examined (1 ♂, 2 ♀). MEXICO. Holotype; *Nayarit*, Tepic, 28 July 1953, D. ROKERFELLER Mexican Expedition, C. & P. VAURIE (1 ♀ USNM ENT 00030044 AMNH); *Oaxaca*, Tehuantepec, 8 Sept 1964, D. H. JANZEN (1 ♀ USNM ENT 00030058 USNM); *Tamaulipas*, El Centinela, 14 May 1973, R. LAVIGNE (1 ♂ USNM ENT 00030057 USNM).

Remarks: *Meromacrus canusium* is very similar to *draco*, differing only in the color of the abdomen and female frons. The status of *canusium* is uncertain. The name is the senior synonym if one species is recognized for all those geographic forms with a pale facial vitta. These forms range from southwestern USA to Costa Rica (*croceatus* HULL, 1960 in southern California, *gloriosus* HULL, 1941 from Arizona to Texas, *draco* from Texas to Costa Rica, and *canusium* from Mexico), differing only in color pattern as outlined above. Unfortunately, we have not seen many *Meromacrus* specimens from Mexico, especially the north central and western areas, and are uncertain as to the variation in the characters that we have used to distinguish these forms.

Meromacrus currani HULL, 1942

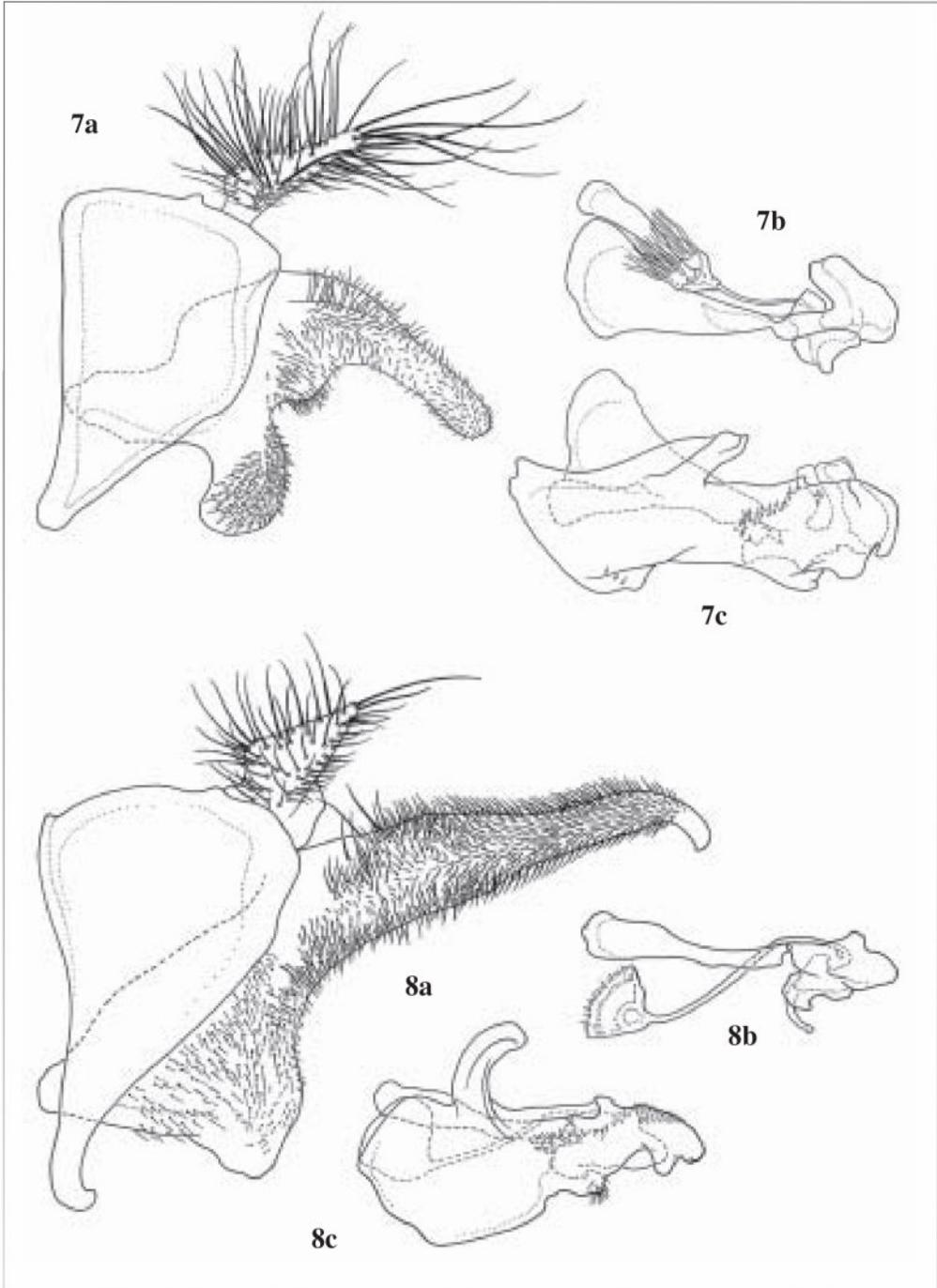
[Figs 3, 5 (abdomen), 8 (male genitalia)]

Meromacrus currani HULL, 1942: 5 (antenna*). Belize. HT ♀ AMNH. FLUKE 1957: 149 (cat. cit.); SEDMAN 1975: 206 (citation); THOMPSON et al. 1976: 112 (cat. cit.). THOMPSON 2002 (cat. cit., key reference).

Adult. Head. Black; face white pollinose and white pilose laterally, shiny medially; gena shiny anteriorly, white pollinose and pilose posteriorly; frontal triangle shiny except narrowly white pollinose laterally, yellow pilose except black pilose medially; frons shiny on apicoventral 1/3, yellow pollinose and pilose on lateral 1/3, gray pollinose and brown pilose on medial 2/3 dorsally; vertical triangle grayish-black pollinose, black pilose; occiput white pollinose, white pilose ventrally, yellow pilose on dorsal 1/3 with some black pile intermixed on dorsal 1/4; antenna black, black pilose; basoflagellomere oval, about 1/3 longer than wide; arista orange.

Thorax (Fig. 3): Black except scutellum beige; postpronotum yellow pilose apicolaterally, black pilose elsewhere; scutum short black pilose except for yellow tomentose maculae; with large oval yellow submedial tomentose macula mesad to postpronotum; with yellow medial transverse fasciate tomentose macula along suture but broadly separated on medial 1/3; with posterior margin yellow tomentose from along posterior margin of postalar callus and narrowly anterior to scutellum; scutellum short black pilose; anepisternum yellow tomentose along posterior margin; katepisternum silvery white pollinose, white pilose, with round yellow tomentose macula on dorsal 1/3; anepimeron shiny, long yellow pilose; spiracular fringes white; plumula white; calypter white basally, brown apically, with yellow fringe; halter orange. **Wing:** Completely microtrichose; tegula mostly yellow pilose; basicosta and base of costa orange, orange pilose; hyaline posteriorly, brownish orange on anteroapical 1/3, brown on anteroapical 1/3, with loop of vein R_{4+5} hyaline. **Legs:** Coxa black, grayish white pollinose, white pilose except black pilose medially; trochanters brown, shiny, black and brown pilose; pro and mesofemora orange, short orange pilose except black pilose ventrally and dorsobasally on profemur; metafemur orange except black on basal 1/3 except base orange, yellow pilose except black pilose ventrally half; tibiae and tarsi orange, orange pilose except black pile intermixed on apical tarsomeres.

Abdomen (Fig. 5): black except for large brownish orange macula on 2nd tergum; sterna sparsely gray pollinose, white pilose on 1st thru 3rd sterna, black pilose on apical sterna except intermixed on 4th; 1st tergum gray pollinose and white pilose laterally, black pollinose on medial 1/3 except for large submedial yellow tomentose fasciate macula, with maculae separated on medial 1/3; 2nd ter-



Figs 7–8: Male genitalia of *Meromacrus anna* (7a–c) and *M. currani* (8a–c). – a: 9th tergum and associated structures, lateral view; – b: 9th sternum and associated structures, lateral view; – c: Aedeagus and associated structures, lateral view.

gum with large basolateral brownish orange macula, with macula occupying lateral margin on basal 4/5 and extending to medial 1/5, thus black area reduced to H-shape, short black pilose except long yellow pilose basolaterally and white pilose along lateral margin; 3rd tergum short black pilose except yellow pilose along lateral margin and yellow tomentose oval macula on basal 1/3, with maculae separated on medial 1/3; 4th tergum black pilose except for yellow oval macula on basal 1/3; male genitalia (fig. 8) large, about as long as 4th tergum; surstyle elongate, extending over 4th sternum, with apex narrow and recurved; 5th tergum black pilose except white pilose laterally.

Length (4 specimens measured): 14.7 mm, wing 10.1 mm.

Distribution: Mexico*, Belize*, Costa Rica*, Panama*, Brazil*.

Material examined (2♂♂ 5♀♀): BELIZE. Holotype. MEXICO. *Oaxaca*: Tuxtepec, 12 May 1933, M. FRAIRE (1♀ USNM ENT 00030047 USNM). COSTA RICA. *Guanacaste*: Estación Pitilla, 9 km S Santa Cecilia, 700 m, LN 329950 380450, Dec 1994, C. MORAGA, Lot #4366 (1♂ INBIOCRI002135514 USNM); Santa Rosa National Park, 300 m, 15–31 Aug 1982, D. H. JANZEN & W. HALLWACHS (1♀ AMNH). *Heredia*: P. N. Braulio Carrillo, Est. Magsasay, 200 m, LN 194500-531000, May 1991, A. FERNÁNDEZ (1♂ INBIOCRI001204119 INBIO). PANAMA. *Canal Zone*: Close's Cano Saddle, 4 May 1923, R. C. SHANNON (1♀ USNM ENT 00030053 USNM). BRAZIL. *São Paulo*: Santos, Praia do Itaguare, 18 Feb 1944, RABELLO (1♀ USNM ENT 00030045 USNM); *Pura*: Obidos, Nov 1953, F. M. OLIVEIRA (1♂ USNM ENT 00030045 USNM).

Remarks. *Meromacrus currani* is very similar to *zonatus*, differing only in leg color and the shape of the abdominal tomentose maculae.

Biology. *Meromacrus currani* was reared from a tree hole, at about 60 cm from the ground, in the buttresses of *Carapa guianensis* (Meliaceae) in a swamp forest in the Refugio de Fauna Silvestre Gandoca-Manzanillo, less than 30 m in elevation, AC La Amistad-Caribe, Limón, Costa Rica. The tree hole was about 40 cm deep and contained water and mud-like substrate. *Meromacrus obscurus* was also found in the same tree hole. The material was reared by Braulio HERNÁNDEZ (voucher # BHB-39.1–39.2).

Meromacrus draco HULL, 1942

[Fig. 9 (male genitalia)]

Meromacrus draco HULL, 1942: 6. Guatemala, Quirigua. HT ♂ AMNH. FLUKE 1957: 149 (cat. cit.); THOMPSON et al. 1976: 112 (cat. cit.); THOMPSON 1981: 157 (revisionary notes); RAMÍREZ GARCÍA 1997: 373 [Mexico (Veracruz)]; THOMPSON 2002 (cat. cit., key reference).

Pteroptila crucigera (in part). WILLISTON 1887: 180 (erroneously cites *Mallota milesiformis* MACQUART as from Yucatan); 1892: 67 (descriptive notes, distribution).

Meromacrus crucigera: SACK 1920: 267 (mesonotum* descr., key ref.); HINE 1924: 21 (key, descriptive notes, Mexico, Belize).

Meromacrus acutus (in part): HINE 1914: 342 (Guatemala).

Adult. Head: Pale brownish orange except black vertex and occiput; face white pollinose and yellow pilose laterally, shiny medially; gena shiny anteriorly, white pollinose and pilose posteriorly; frontal triangle shiny medially, white pollinose laterally, white pilose except for some black pile medially; frons shiny on ventral 1/3, yellow pollinose and pilose on lateral 1/3 dorsally, gray pollinose and black pilose on medial 2/3 dorsally; vertical triangle white pollinose and pilose anterior ocellar triangle; ocellar triangle grayish-black pollinose, black pilose; occiput white pollinose, yellow pilose; antenna brownish orange, black pilose; basoflagellomere oval, about 1/3 longer than wide; arista orange.

Thorax: Black except scutellum beige; postpronotum short black pilose, with a row of longer yellow pile anteriorly; scutum short black pilose except for yellow tomentose maculae; with large oval yellow submedial tomentose macula mesad to postpronotum; with yellow medial transverse fasciata tomentose macula along suture but broadly separated on medial 1/3; with posterior margin yellow tomentose from along posterior margin of postalar callus and narrowly anterior to scutellum; scutellum short black pilose; anepisternum yellow tomentose along posterior margin; katepisternum with round yellow tomentose macula on dorsal 1/3; anepimeron long black pilose; spiracular fringes pale, white to orange; plumula brownish yellow; calypter with dorsal lobe orange, with ventral lobe white basally, brown apically, with brownish yellow fringe; halter orange. **Wing:** Completely microtri-

chose; tegula black pilose anteriorly, white pilose posteriorly; basicosta and base of costa orange, orange pilose; hyaline posteriorly, orange on antero basal 1/3, brown on anteroapical 1/3, with loop of vein R_{4+5} hyaline. **Legs:** Coxa black, grayish white pollinose, white pilose except black pilose medially; trochanters brownish black, shiny, black pilose; pro and mesofemora orange, short orange pilose except black pilose ventrally; metafemur black except narrowly orange on base and apicoventral 1/4, black pilose except yellow pilose dorsally on basoanterior half; tibiae and tarsi orange, orange pilose except black pile intermixed on apical tarsomeres.

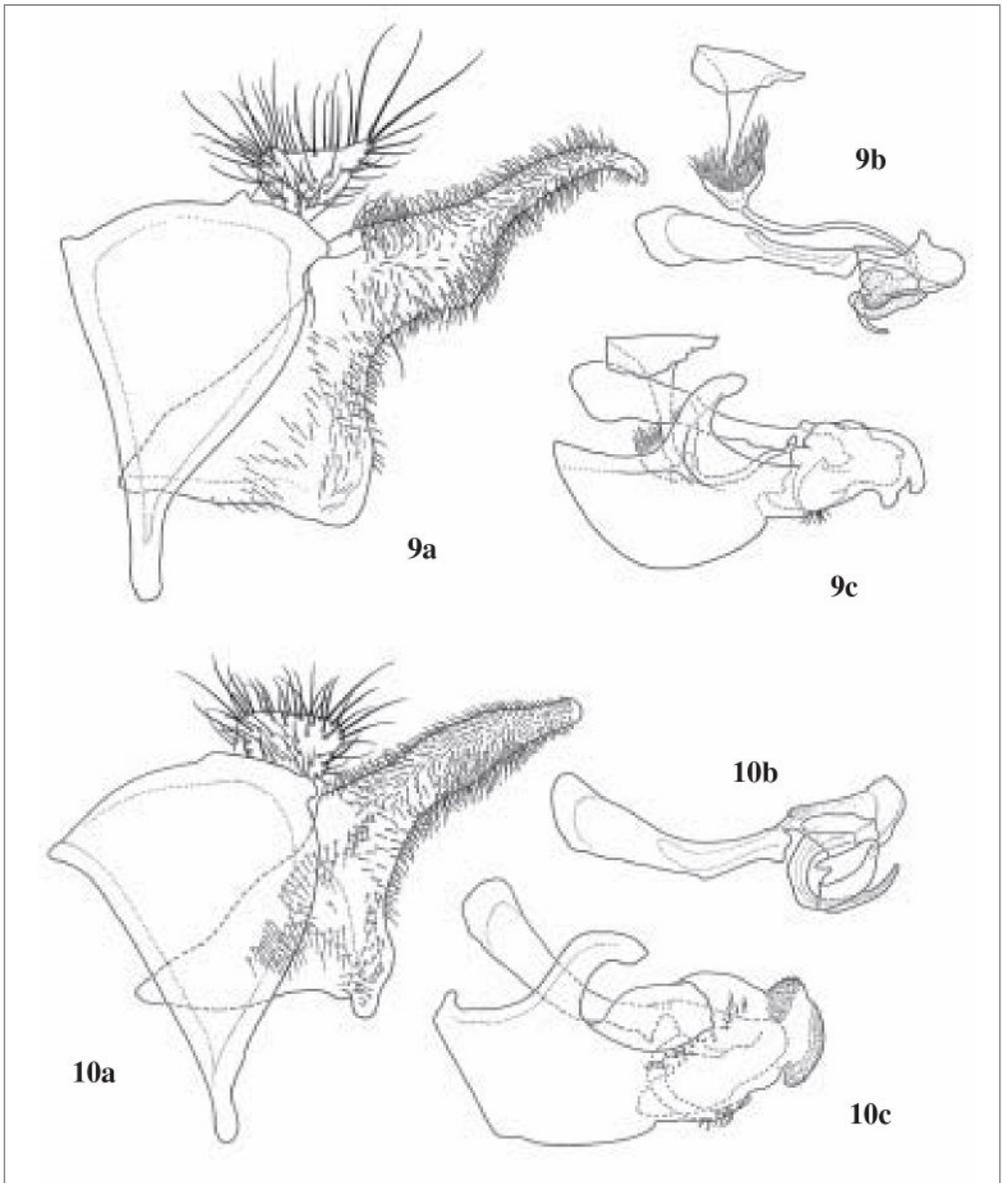
Abdomen: Dark brownish black except for large brownish orange macula on 2nd tergum; sterna sparsely gray pollinose, white pilose on 1st and 2nd sternum, black pilose on apical sternum; 1st tergum gray pollinose and white pilose laterally, black pollinose on medial 1/3 except for large submedial yellow tomentose fasciate macula on apical half, with maculae separated on medial 1/3; 2nd tergum with large basolateral brownish orange macula, with macula occupying lateral margin on basal 4/5 and extending to medial 1/5, thus black area reduced to H-shape, short black pilose except long yellow pilose basolaterally and white pilose along lateral margin; 3rd tergum short black pilose except yellow pilose along lateral margin and small yellow tomentose fasciate macula on basal 1/3, with maculae separated on medial 1/3; 4th tergum black pilose except for narrow indistinct yellow fasciate macula on basal 1/6 or less; male genitalia (fig. 9) large, about as long as 4th tergum; surstyle elongate, extending over 4th sternum, with apex narrow and recurved; 5th tergum black, black pilose except white pilose basolaterally.

Length (4 specimens measured): 14.4 mm, wing 11.0 mm.

Distribution. USA (Arizona*, Texas*), Mexico (Yucatan*), Belize*, Guatemala*, Honduras*, Costa Rica*.

Material examined (19♂♂ 21♀♀): Holotype. USA. *Texas*, Brownsville, Esper Ranch, June, Brooklyn Museum Catalog # 1440 (1♂ USNM ENT 00030052 USNM); *Arizona*, Santa Catalina Mts, Sabino Basin, 24 Aug (1♂ USNM ENT 00031062 OSU). MEXICO. *Tamaulipas*, 1 mile west Gomez Farias, 5 July 1986, J. C. SCHAFFNER (1♂ USNM ENT 00030987 TAMU); *Veracruz*, San Rafael, "7.4," C. H. T. TOWNSEND (1♂ USNM ENT 00031059 USNM); ... "7.9," C. H. T. TOWNSEND (1♀ USNM ENT 00031059 OSU); *Yucatan*, G. F. GAUMER (1♀ USNM ENT 00030114 UKansas). BELIZE. Bengueviejo, W. A. STANTON, (allotype ♀, paratype ♂, USNM ENT 00030063-64 USNM, ♂ USNM ENT 00031061 OSU). GUATEMALA. Quirigua (Holotype, AMNH); Cayuga, Wm SCHAUS (paratype ♂ USNM ENT 00030065). EL SALVADOR. San Salvador, 26 Dec 1953 (1♀ USNM ENT 00030069 USNM). HONDURAS. Within 50 miles of La Lima, 1958-59, J. G. MATHYSSE (1♀ USNM ENT 00030080 CU); San Pedro, 21-8 Feb 1905 (1♀ USNM ENT 00031063 OSU). COSTA RICA. *Guanacaste*: Estación Exper. Enrique Jiménez Nuñez, 20 km SW Cañas, 5-17 Nov 1991, A. S. MENKE (3♂♂ 1♀ USNM ENT 00030060-62, 00037895 USNM); Santa Rosa National Park, 300 m, Oct 1982, D. H. JANZEN & W. HALLWACHS (1♀ AMNH); Sector Santa Rosa, 300 m., LN 313000 359800, Nov 1998, J. SULLIVAN & A. A. PEREZ #56055 (1♂ INB0003068489 INBIO); P. N. Santa Rosa, Estación Murciélagos, 8 km SO [SW] de Cuajiniquil, 100 m, LN 320300 347200, 3-8 May 1993, F. A. QUESADA (1♂ INBIOCRI001194791 INBIO); ... 17 Jul-2 Aug 1993, F. QUESADA, #2233 (2♀♀ INBIOCRI001649680-1 USNM); ... 10-28 Oct 1993, C. Cano, #2403 (2♂♂ INBIOCRI001672670-1 INBIO, 1♂ INBIOCRI001672672 USNM); ... 31 Oct-18 Nov 1994, F. A. QUESADA, #3328 (1♂ INBIOCRI002127143 USNM); ... 3-20 Oct 1994, C. CANO, #3306 (1♂ INBIOCRI002080312 INBIO); ... 5-18 Nov 1994, C. CANO, #3329 (1♀ INBIOCRI002127791 INBIO); P.N. Guanacaste, Est. Los Almendros, 300 m, LN 334800 369800, 3-25 Oct 1993, E. LÓPEZ, #2468 (1♂ INBIOCRI001671784 INBIO); ... 8-12 Dec 1993, E. LÓPEZ, #2507 (1♀ INBIOCRI001989300 INBIO); Tierras Morenas, 650 m, LN 283950 424500, 8-10 Feb 1994, Z. FUENTES, #2616 (1♀ INBIOCRI001972629 INBIO); ... P.N. Guanacaste, Finca Jenny, 30 Km N Liberia, 240 m, LN 316300 364000, 7-29 Jul 1994, E. ARAYO, #3181 (1♀ INBIOCRI002038190 INBIO); ... Oct 1988, GNP Biod. Survey, #79 (3♂♂ INBIOCRI000007101 -2, -05, 2♀♀ INBIOCRI000007098, -7103 INBIO). *Alajuela*: Higuito, San Mateo, P. SCHILD (paratype ♀ USNM ENT 00030066). *Cartago*: La Suiza, 10 km SE Turrialba, 11 Sep 1924, P. SCHILD (1♀ USNM ENT 00030067 USNM). *Puntarenas*: Monteverde, 1300 m, 18-24 Aug 1987, G. M. WOOD (1♀ USNM ENT 00030059 CNC). *Limón*: Albergue CASACODE, Sendero Cerillos, 10-30 m, LS 391000 612000, 22-27 Feb 1999, Y. CARDENAS, #52428 (1♂ INB0003054776 INBIO); A.C.L.A.C., Talamanca, San Miguel, Albergue CASACODE, LS 391000 612000, 24-25 Feb 1999, A. PICADO, #52455 (1♂ 1♀ INB0003024833-4 INBIO). PANAMA. Changuinola, 29 Jun 1965, J. O. HARRISON (1♀ USNM ENT 00030068).

Remarks. *Meromacrus draco* may only be a southern geographic variant of *canusium* and perhaps all the forms with a pale facial vitta (*canusium* (Mexico), *croceatus* HULL (California), *draco*, & *gloriosus* HULL (Arizona to west Texas)) may form only a single geographically variable species. However, as we have examined specimens from Arizona and Texas that agree with the Central American spec-



Figs 9–10: Male genitalia of *Meromacrus draco* (9a–c) and *M. laconicus* (10a–c). – a: 9th tergum and associated structures, lateral view; – b: 9th sternum and associated structures, lateral view; – c: Aedeagus and associated structures, lateral view.

imens of *draco*, we have accepted *draco* as a species distinct from *canusium*. *Meromacrus draco* is much darker than the other species of this complex as noted in the key above.

Biology. *Meromacrus draco* was reared from a larva found in a mud hole on the ground and containing a banana stalk. The larva was inside the stalk. The material was reared by José Daniel GUTIÉRREZ (voucher# JDG-40.B.12).

***Meromacrus laconicus* (WALKER, 1852)**

[Figs. 6 (abdomen), 10 (male genitalia)]

Milesia laconica WALKER, 1852: 277. Brazil. ST ♂ BMNH. WILLISTON 1886: 324 (citation); KERTÉSZ 1910: 330 (cat. cit.); FLUKE 1957: 154 (species incertis sedis).

Meromacrus laconicus: THOMPSON et al. 1976: 112 (cat. cit.).

Meromacrus panamensis CURRAN 1930: 11. Panama, Canal Zone, Barto Colorado Island. HT ♂ AMNH. ARNAUD & OWEN 1981: 109 (note on type and status); THOMPSON 1981: 163 (key reference, taxonomic status); MAIER 1987: 369 [1st record USA, Texas; flower (*Xylosma flexuosa*)(Flacourtiaceae)]. **Syn. nov.**

Eristalis pratorum (in part or whole): WIEDEMANN 1830: 166 (descr.).

Pteroptila pratorum (in part or whole): WILLISTON 1886: 320 (cat. cit.).

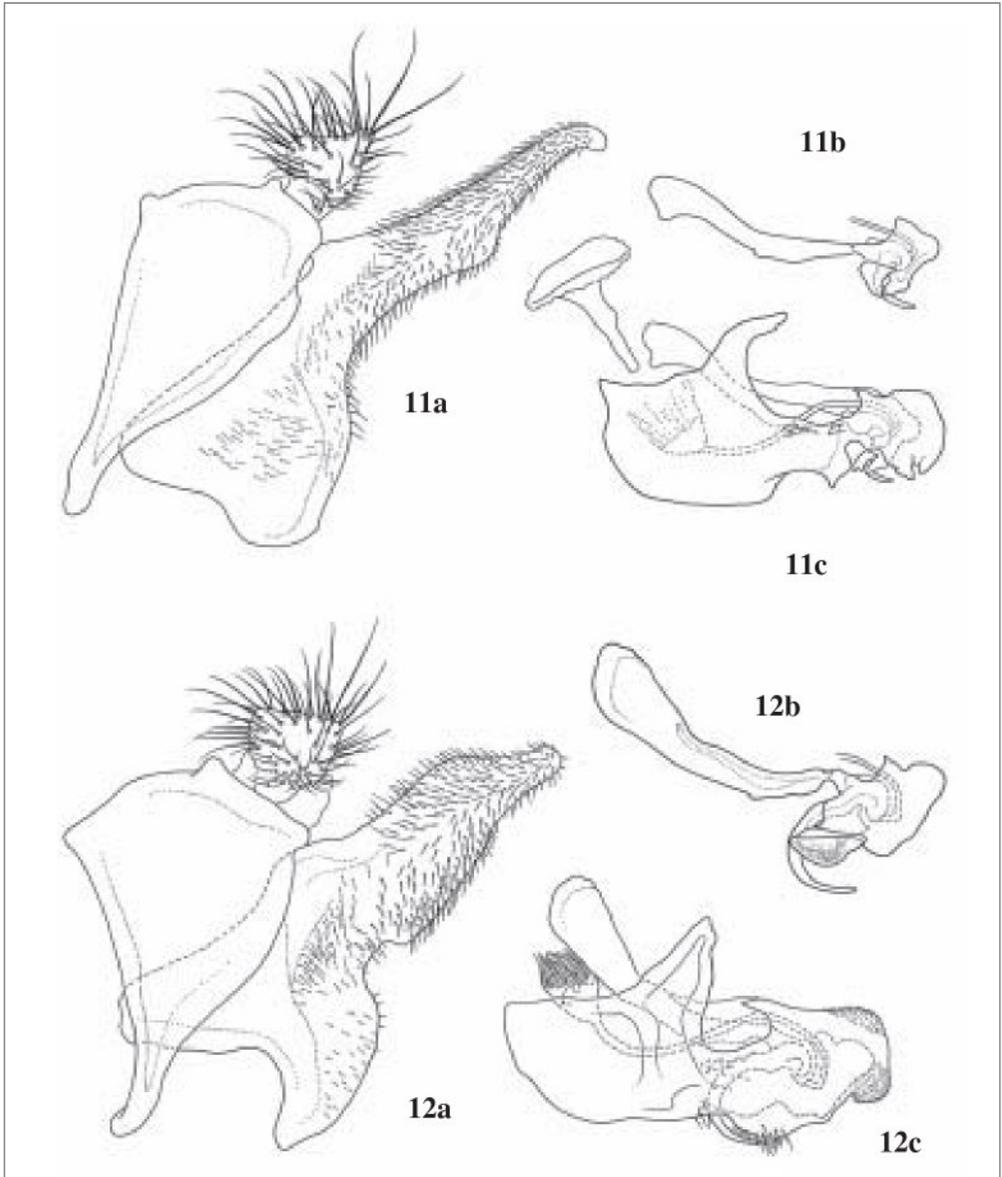
Meromacrus pratorum (in part or whole): SACK 1920: 268 (mesonotum*, descr., key ref.), SACK 1921: 144 (Larva*, descr. larva, Paraguay); HINE 1924: 22 (key, descriptive notes); CURRAN 1934: 416 (Guyana), CURRAN 1936: 2 (taxonomic notes, Panama to Brazil); HULL 1942: 3 (key reference); FLUKE 1957: 151 (cat. cit.); DOESBURG 1963: 27, DOESBURG 1966: 102 (Suriname); THOMPSON et al. 1976: 113 (cat. cit.); LAGRANGE 1990: 496 (MG*, Argentina); THOMPSON 2002 (cat. cit., key reference).

Adult. Head: Black except oral margin broadly orange; face white pollinose and yellow pilose laterally, shiny medially; gena brown and shiny anteriorly, white pollinose and pilose posteriorly; frontal triangle shiny except narrowly white pollinose laterally, yellow pilose except black pilose medially; frons shiny on apicoventral 1/3, yellow pollinose and pilose on lateral 1/3, brown pollinose and brown and black pilose on medial 2/3 dorsally; vertical triangle grayish-black pollinose, black pilose; occiput white pollinose, yellow tomentose pilose, with long yellow pile posteriorly on dorsal half; antenna brownish orange, black pilose; basoflagellomere oval, about 1/3 longer than wide; arista orange.

Thorax: Black except scutellum grayish white; postpronotum yellow pilose apicolaterally, black pilose elsewhere; scutum short black pilose except for yellow tomentose maculae; with large oval yellow submedial tomentose macula mesad to postpronotum; with yellow medial transverse fasciata tomentose macula along suture but broadly separated on medial 1/3; with posterior margin yellow tomentose from along posterior margin of postalar callus and narrowly anterior to scutellum; scutellum short black pilose; anepisternum sparsely gray pollinose, yellow tomentose along posterior margin; katepisternum silvery white pollinose, white pilose, with round yellow tomentose macula on dorsal 1/3; anepimeron sparsely gray pollinose, long yellow pilose; metasternum sparsely gray pollinose, long yellow pilose anteriorly, short black pilose posteriorly; spiracular fringes white; plumula white; calypter white basally, brown apically, with grayish-white fringe; halter orange. **Wing:** Completely microtrichose; tegula black pilose anteriorly, yellow pilose posteriorly; basicosta brown, brown pilose; base of costa brown, black pilose; hyaline posteriorly, pale brownish on anteroapical 1/3 (costal cells), brown on anteroapical 1/3, with loop of vein R_{4+5} hyaline. **Legs:** Coxa black, grayish-white pollinose, white pilose except few black pili medially; trochanters brown, shiny, black and brown pilose; pro and mesofemora unicolorous brownish orange, short orange pilose except black pilose ventrally and dorsoapically on profemur; metafemur usually unicolorous brownish orange, rarely dark brown to blackish on basal 2/3 except base paler, yellow pilose except black pilose ventrally and dorsoapical 1/4; tibiae and tarsi orange, orange pilose except black pile intermixed on apical tarsomeres.

Abdomen (Fig. 6): black except for large pale brown macula on 2nd tergum; sterna sparsely gray pollinose, white pilose on 1st thru 3rd sterna, black pilose on apical sterna except intermixed on 4th; 1st tergum gray pollinose and white pilose laterally, black pollinose on medial 1/3 except for large submedial yellow tomentose fasciate macula, with maculae separated on medial 1/3; 2nd tergum with large basolateral pale brownish macula, with macula occupying lateral margin on basal 4/5 and extending to medial 1/5, thus black area reduced to H-shape, short black pilose except long yellow pilose basolaterally and white pilose along lateral margin and medially; 3rd tergum short black pilose except yellow pilose along lateral margin and yellow tomentose fasciate macula on basal 1/3, with maculae separated on medial 1/3; 4th tergum black pilose except for yellow fasciate macula on basal 1/3; male genitalia (fig. 10) large, about as long as 4th tergum; surstyle elongate, extending over 4th sternum, with apex blunt; 5th tergum black pilose except white pilose laterally.

Length (4 specimens measured): 12.9 mm; wing, 10.0 mm.



Figs 11–12: Male genitalia of *Meromacrus loewi* (11a–c) and *M. melansonii* (12a–c). – a: 9th tergum and associated structures, lateral view; – b: 9th sternum and associated structures, lateral view; – c: Aedeagus and associated structures, lateral view.

Distribution: USA [Texas (Maier)], Costa Rica*, Panama*, Guyana*, Ecuador*, Venezuela*, Brazil*, Paraguay*, Argentina (Lagrange).

Material examined (35 ♂ 50 ♀): COSTA RICA. *Guanacaste*: Estación Experimental Enrique Jiménez Nuñez, 20 km SW Cañas, 5–17 Nov 1991, A. S. MENKE (1 ♂ USNM ENT 00030056 USNM); P. N. Santa Rosa, Estación Santa Rosa, 300 m, LN 313500-358300, 10 Aug 1996, M. A. ZUMBADO, # 54731 (1 ♀ INBIO003027697 INBIO); ... Jan 1990, GNP Biodiversity Survey (1 ♀ INBIOCRI000123504 INBIO); ... May 1996, JANZEN & HALLWACHS, #7585 (1 ♀ INBIOCRI002400357 INBIO); ... Sector Santa Rosa, Bosque Homedo, 300 m, LN 313000 359800, Dec 1998,

J. SULLIVAN & A. A. PEREZ, #56060 (1 ♀ INB0003070417 (INBIO), ... Mar 1999, J. SULLIVAN & A. A. PEREZ, #56067 (1 ♀ INB0003071906 INBIO); ... Area Admin, 300 M, LN313000 359800, Jun 1999, J. SULLIVAN & A. A. PEREZ, #56024 (1 ♀ INB0003065662 INBIO); Parque Nacional Guanacaste, Finca Jenny, 30 Km N Liberia, 240 m, LN 316300 364000, 7–29 Jul 1994, E. ARAYA, #3181 (2 ♂ INBIOCRI002038189, -191, 1 ♀ INBIOCRI002038205 INBIO); ... Sept 1988, GNP Biod. Survey #4659 (2 ♂ INBIOCRI0001048013, -017 INBIO), ... Oct 1988, GNP Biod. Survey, #79 (3 ♂ INBIOCRI000007096, -7106, -7108, 6 ♀ INBIOCRI000007097, -099, -100, -104, -107, -109 INBIO); ... Estación Murciélago, 8 Km SW Cuajiniquil, 80–100 m, LN 320300 347200, 10–28 Oct 1993, C. CANO, #2403 (1 ♂ INBIOCRI001672669, 1 ♀ INBIOCRI001672668 INBIO); ... Finca Loáciga, 6 Km S Santa Cecilia, 500 m, LN 332400 380400, 11–30 Jan 1993, P. RÍOS, #1789 (1 ♂ INBIOCRI001690771, 1 ♀ INBIOCRI001690875 INBIO); ... 6–28 Jan 1992, C. MORAGA (1 ♀ INBIOCRI000638280 INBIO); ... 12–30 Jan 1993, C. MORAGA, #1790 (1 ♀ INBIOCRI001641538 INBIO); ... Feb 1993, P. RÍOS (3 ♀ INBIOCRI001204448-9, -464 INBIO); ... Estación Pitilla, 9 Km S Santa Cecilia, 700 m, LN 330200 380200, 19–23 Jun 1993, C. MORAGA, #2897 (1 ♂ INBIOCRI001869962 INBIO); ... 18 Apr–9 May 1993, C. MORAGA (1 ♂ INBIOCRI001308059 INBIO); ... Sector El Hacha, 300 m, LN 329200 368000, Nov–Dec 1991, E. LÓPEZ (1 ♂ INBIOCRI000565853 INBIO); ... Sector Cacao, Cerro Pedregal, 1100 m, LN 323200 375000, 14 Feb 1995, Luis P. BUSTOS, #6090 (1 ♀ INBIOCRI002307815 INBIO); ... Estación Los Almendros, 300 m, LN 334850 369500, 1–22 Apr 1995, E. LÓPEZ, #4789 (1 ♂ INBIOCRI002143823, 1 ♀ INBIOCRI002143824 INBIO); ... 1–22 Jul 1992, E. LÓPEZ (1 ♀ INBIOCRI000723223 INBIO); ... 3–25 Oct 1993, E. LÓPEZ, #2468 (1 ♂ INBIOCRI001671789 INBIO); ... Est. Maritza, lado W Vol. Orosi, 600 m, LN 326900 373000, 1 Jun–30 Jul 1992, Tp. Malaise (1 ♀ INBIOCRI000920121 INBIO); ... 27 Feb–10 Mar 1992, A. GUTIÉRREZ (1 ♂ INBIOCRI000882463 INBIO); ... June 1988, JANZEN & HALLWACHS, #3475 (1 ♂ INBIOCRI001053088 INBIO); ... Est. Murciélago, 8 Km SW Cuajiniquil, 80–100 m, LN 320300 347200, 17 Jul–2 Aug 1993, F. A. QUESADA, #2233 (1 ♀ INBIOCRI001649679 INBIO); ... 11–29 Aug 1993, C. CANO, #2323 (1 ♀ INBIOCRI001945999 INBIO); ... 31 Oct–18 Nov 1994, F. A. QUESADA, #3328 (1 ♀ INBIOCRI002127142 INBIO); ... 6–23 Jun 1994, C. CANO, #3030 (1 ♀ INBIOCRI001899894 INBIO); ... F. A. QUESADA, #3020 (3 ♀ INBIOCRI001907556-8 INBIO); ... 5–17 Jul 1994, C. CANO, #3129 (1 ♀ INBIOCRI001923976 INBIO); ... 10–29 Oct 1993, F. A. QUESADA, #2394 (2 ♀ INBIOCRI001852424, -28 INBIO); ... 3–8 May 1993, F. A. QUESADA (2 ♀ INBIOCRI001194792-3 INBIO); ... 11–29 Aug 1993, F. QUESADA, #2324 (2 ♀ INBIOCRI001139852, -56 INBIO); ... Feb 1989, GNP Biodiversity Survey, #3521 (1 ♀ INBIOCRI001048012 INBIO); P.N. Rincon de la Vieja, Est. Las Pailas, 800 m, LN 306300 388600, 10–21 Nov 1993, M. A. ZUMBADO, D. GARCÍA y G. RODRÍGUEZ, #2559 (1 ♀ INBIOCRI001827965 INBIO); ..., 15 Set–12 Nov 1992, J. SIHEZAR, L. RODRÍGUEZ (1 ♀ INBIOCRI000843827 INBIO); ... 28 Sept–12 Oct 1992, C. CANO (1 ♀ INBIOCRI000833146 INBIO); La Cruz, Finca YAFSA, 320 m, LN 335500 372000, 19–24 Jan 1992, C. CANO, #1826 (1 ♀ INBIOCRI001705127 INBIO); P.N. Palo Verde, Estación Palo Verde, 10 m, LN 259000 388400, Sept 1993, U. CHAVARRÍA, #2779 (???? INBIOCRI001739507 INBIO); Tilarán, Tierras Morenas, 700 m, LN 283950 424500, Dic 1992, G. RODRÍGUEZ (1 ♀ INBIOCRI001288401 INBIO); Santa Cruz, Sendero La Vainilla, 400 m, LN 240190 360210, 11 May 1999, Y. CARDENAS, #54072 (1 ♀ INB0003050513; Santa Rosa National Park, 300 m, 9–14 June 1978, D. H. JANZEN (1 ♀ AMNH); ... D. H. JANZEN & W. HALLWACHS, 13–15 July 1980, 15–31 July 1982, 15–31 Aug 1982, Nov 1982 (4 ♀ AMNH). *Heredia*: Parque Nacional Braulio Carrillo, Estación Magsasay, 200 m, LN 264600-531000, Mar 1991, M. A. ZUMBADO (1 ♀ INBIOCRI000351489 INBIO). *Puntarenas*: Reserva Biológica Carara, Estación Quebrada Bonita, 50 m, LN 194500 469850, May 1992, J. C. SABORÍO (1 ♂ INBIOCRI000804194 INBIO); ... Rey Curré, R. Térraba, Vuelta Campana, 500 m LS 325700 544300, 10–31 Aug 1992, S. ROJAS (1 ♀ INBIOCRI000761890 INBIO); ... Coto Brus, Las Mellizas, Finca Cafrosa, 1 Km W. del tajo, 1500 m, LS 319350 596470, 12 Sept 1997, A. PICADO, #47708 (1 ♂ INBIOCRI002570816 INBIO). *Limón*: Talamanca, Amubri, 70 m, LS 385000 578100, Dec 1995, G. GALLARDO, #6827 (1 ♂ INBIOCRI002366063). PANAMA. *Canal Zone*: Barro Colorado (Holotype of *panamensis*, AMNH). VENEZEULA. Suapure, Caura River, 2 Nov 1899, E. A. KLAGES (1 ♂ USNM ENT 00030119 CU). GUYANA. Georgetown, H. W. B. MOORE (1 ♂ USNM ENT 00031064 OSU); Bartica Dist. (1 ♀ USNM ENT 00031066 OSU). ECUADOR. Isla Puna, Puerto Grande, F. CAMPS R., SANTIAGO A. & NAVARRO (1 ♂ USNM ENT 00030023 AMNH). BRAZIL. [no further data] (syntype of *laconicus*, 1 ♂ BMNH); *Santa Catarina*: [no further data] (3 ♀ USNM ENT 00030026, 28–29 AMNH; 1 ♂ USNM ENT 00031067 OSU); Nova Teutonia, F. PLAUMANN, 16 Nov 1939 (1 ♂ USNM ENT 00030027 AMNH), ... 17 Oct 1937 (1 ♂ USNM ENT 00030025 AMNH). *Rio Grande do Sul* [no further data] (1 ♀ USNM ENT 00030024 AMNH). PARAGUAY. Sapucay, “2.9.1901” (1 ♀ USNM ENT 00031065 OSU).

Remarks: *Meromacrus laconicus* is similar in appearance to *currani*, but is quite different from this species as well as *zonatus*, *loewi* and other members of the *pratorum* complex (THOMPSON 1981) in the shape of the male genitalia, especially the blunt apex of the surstyle.

This common, widespread Neotropical species of *Meromacrus* was long known as *pratorum* until THOMPSON (1981) showed that *pratorum* was restricted to Puerto Rico and the Virgin Islands. He used *panamensis* CURRAN for *pratorum* of authors. The study of WALKER types, however, revealed that *Milesia laconica* is an even older name for this species.

Biology. All reared specimens have been associated with tree holes. Two specimens were reared from a tree hole containing decaying wet organic matter in a Guanacaste Tree [*Enterolobium cyclocarpum* (Fabaceae)] in a pasture in Guanacaste. Another specimen was reared from a puparium found beside a tree hole in *Erythrina poeppigiana* (Fabaceae) in INBioparque, Santo Domingo. Three more specimens were reared from a tree hole containing humid organic matter, but without any standing water on top of it. The tree was in a dry forest in Santa Rosa National Park, and the tree hole was located about 30 cm from the ground and included the trunk heart/center and contained lots of decaying wood in a very advanced state (mud-like). All this material was reared by Duvalier BRICEÑO and Annia PICADO (Voucher # DBC-139.1-139.2, DBC-171.1, DBC-171.2.1 – 2, APC-26). Finally, there is a long series of reared specimens from Bahia, Brazil, in the USNM which are labeled simply “Ex Tree Hole.”

Meromacrus loewi WILLISTON, 1892

[Fig. 11 (male genitalia)]

Pteroptila zonatus var. *loewi* WILLISTON, 1892: 67. Panama, Volcan de Chiriqui. HT ♀ BMNH.

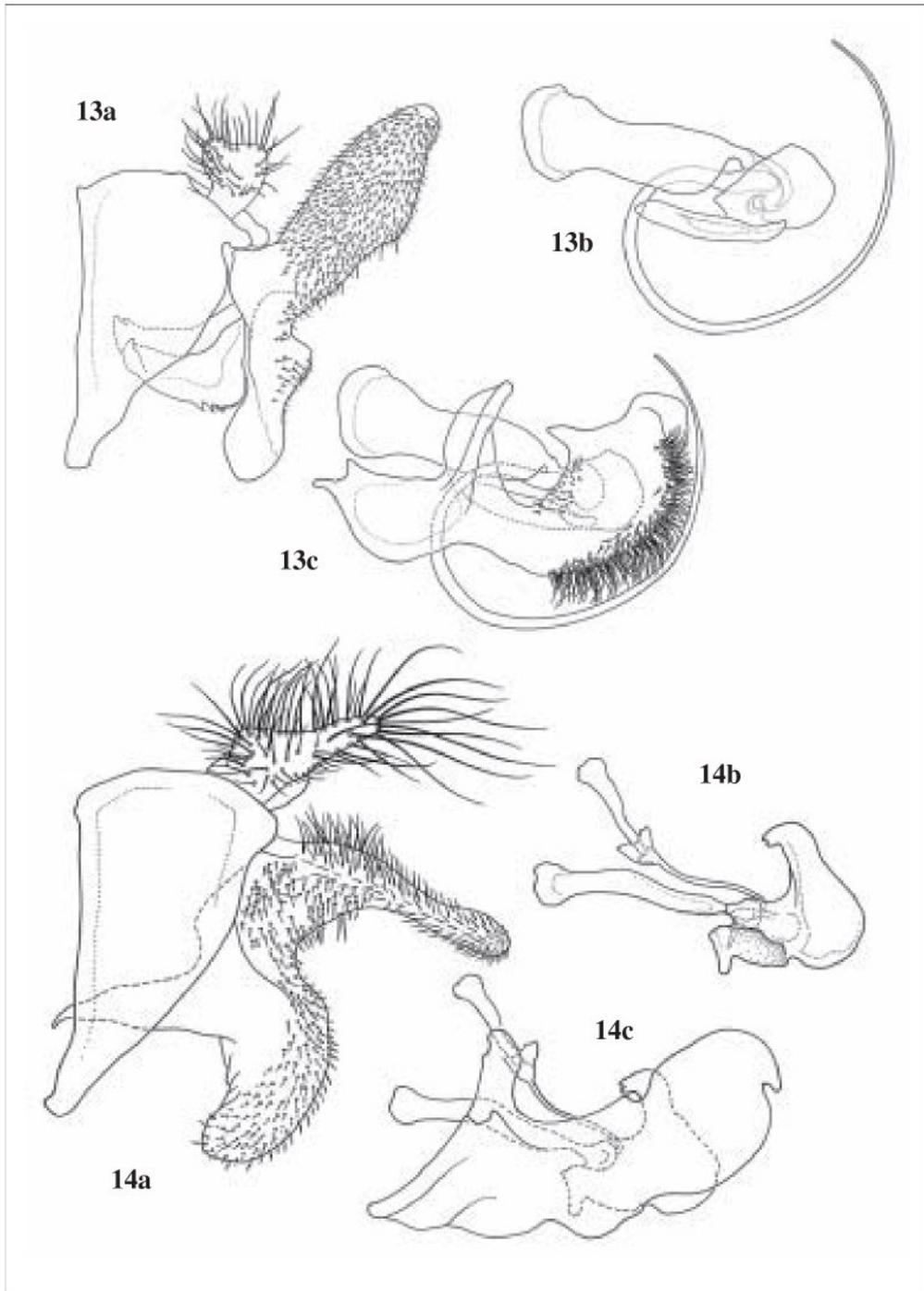
Meromacrus loewi: SACK 1920: 267 (descr. note); THOMPSON et al. 1976: 113 (cat. cit.).

Meromacrus CR-3

Adult. Head: black; face white pollinose and white pilose laterally, shiny medially; gena shiny anteriorly, white pollinose and pilose posteriorly; frontal triangle shiny, very narrowly white pollinose laterally, black pilose; frons shiny on ventral 1/3 except laterally, narrowly grayish-white pollinose laterally except black pollinose on dorsal 1/4, black pollinose on medial 2/3 dorsally, black pilose; vertical triangle white pollinose and black pilose anterior to ocellar triangle; ocellar triangle black pollinose, black pilose; occiput white pollinose, white tomentose pilose except black pilose on dorsal 1/4; antenna black, black pilose; basoflagellomere oval, about 1/4 longer than as wide; arista orange except narrowly brownish basally.

Thorax: Black except scutellum pale gray apically; scutum short black pilose except for white or yellow tomentose maculae; with large oval white submedial tomentose macula mesad to postpronotum; with white medial transverse fasciata tomentose macula along suture but broadly separated on medial 1/3; notopleuron yellow tomentose pilose on posterior portion so transverse fascia changes from yellow to white; with posterior margin yellow tomentose from along posterior margin of postalar callus and narrowly white tomentose anterior to scutellum; scutellum brownish black on basal 2/3, grayish white apically, short black pilose except longer marginal pile; anepisternum yellow tomentose along posterior margin, narrowly black pilose anterior to tomentose pile; katepisternum with round white pollinose macula on dorsal 1/3, yellow tomentose pilose on macula, sparsely grayish white pollinose and pilose elsewhere except black pilose ventrally; anepimeron long white pilose except black pilose on dorsal half; spiracular fringes white; plumula white; calypter white basally, black apically, with black margin and fringe; halter orange. **Wing:** Completely microtrichose; tegula black pilose anteriorly, white pilose posteriorly; basicosta yellow, white pilose; base of costa black, black pilose; hyaline posteriorly, black anteriorly, with loop of vein R_{4+5} hyaline. **Legs:** Black; coxa grayish pollinose, black pilose; trochanters shiny, black pilose; profemur black pilose except brown-orange pilose on anteroventral edge and a few intermixed yellow pile on posterobasal 1/4; mesofemur black pilose except yellow pilose on dorsobasal 2/3; metafemur black pilose except yellow pilose on dorsobasal 3/4; protibia yellow pilose anteriorly, black pilose posteriorly; meso and metatibiae yellow pilose except black pilose on apical 1/3 or less; tarsi black pilose.

Abdomen: Black except for brownish orange macula on 2nd tergum and yellow incisures; sterna sparsely gray pollinose, yellow to white pilose except with black pile intermixed on 4th sternum in males and 4th & 5th sterna of females all black pilose; 1st tergum gray pollinose and white pilose laterally, grayish-white pollinose on medial 2/3, yellow medial tomentose fasciata macula on medial 2/3, with fascia continuous; 2nd tergum with basolateral brownish orange macula, with macula separated from lateral margin, broad laterally (about half tergal length) and narrowed medially (about 1/5 tergal length), extending to medial 1/5, not continuous, thus black area reduced to H-shape, short black pilose apically, long yellow pilose basolaterally and along lateral margin; 3rd tergum short black pilose except yellow pilose along lateral margin and narrow yellow tomentose fasciata macula on basal 1/3, with maculae continuous; 4th tergum black pilose except for narrow yellow tomentose



Figs 13–14: Male genitalia of *Meromacrus obscurus* (13a–c) and *M. pachypus* (Fabricius) (14a–c). – a: 9th tergum and associated structures, lateral view; – b: 9th sternum and associated structures, lateral view; – c: Aedeagus and associated structures, lateral view.

fasciate macula on basal 1/3; male genitalia (fig. 11) large, about as long as 4th tergum; surstyle elongate, extending over 4th sternum, with apex narrow and recurved; 5th tergum black pollinose and pilose except gray pollinose and yellow tomentose pilose on basal 1/4.

Length (4 specimens measured): 14.8 mm, wing 11.5 mm.

Distribution. Costa Rica*, Panama*.

Material examined (16♂♂ 4♀♀): COSTA RICA. *Cartago*: Madre Selva, Finca Los Lagos, 2000–2600 m, LN 550050 184450, 1–30 Mar 1994, M. M. CHAVARRÍA, Malaise Trap, #2872 (1♂ INBIOCRI002079746 INBIO); Parque Nacional Tapantí, Quebrada Segundo, 1250 m, LN 194000 560000, Apr 1992, R. VARGAS (1♂ INBIOCRI000459373 INBIO). *Guanacaste*: Parque Nacional Guanacaste, Estación Cacao, lado SW Volcan Cacao, 1000–1400 m, LN 323300 375700, Apr 1991, C. CHAVES (1♀ INBIOCRI000700699 INBIO). *Puntarenas*: Monteverde, 1842 m, 17–20 Sept 1989, M. POLAK & D. M. WOOD (1♂ USNM ENT 00030048 Wood); ... Cerro Chomogo, 1800 m, 1–6 Sept 1995, D. M. WOOD (1♀ USNM ENT 00030049 USNM); Monteverde de Guanacaste, Powell's Place, Apr 1976, G. V.N. & A. H. POWELL (1♀ USNM ENT 00030050 UCR); Reserva Biológica Monteverde, Estación La Casona, 1520 m, Oct 1992, LN 253250 449700, N. OBANDO (1♂ INBIOCRI000817882 USNM, 6♂♂ INBIOCRI000817881, -83, -85, -88 INBIO); Coto Brus, Finca Santa Marta, 2.1 Km NE Mellizas, 1620 m, LS 316900 599700, 10 Feb 1996, E. NAVARRO, #7485 (1♂ INBIOCRI002374789 INBIO); Sendero a Cerro Echandi, primer campamento borde de Tacotal, 900 m, LS 326500 591700, 12–14 Apr 1998, M. MORAGA (1♂ INB0003088053 INBIO). *San José*: San Gerardo de Dota, 26 Feb 1992, F. C. THOMPSON (1♂ USNM ENT 00030051 USNM); ... 2000–2500 m, LN 387400 482700, 22–26 Feb 1992, Curso Tachinidae y Syrphidae (2♂♂ INBIOCRI00040672, -884 USNM, 5♂♂ -6620, -6812, -6876, -6889. -6905 INBIO); ... along Río Savegre, 2200 m, 9° 33'N 83° 48'W, 18–21 Aug 1995, A. L. NORRBOOM (1♀ USNM ENT 00037896 USNM); Bebedero Alto Granilla, Escasu, 1600 m, LN 210000 518600, 28 Dec 1998, M. A. ZUMBADO, #52378 (1♀ INB0003062125 INBIO). PANAMA. Holotype.

Remarks: *Meromacrus loewi* is similar in appearance and closely related to *zonatus*, but is readily distinguished by having the costal cell very dark and the anterior legs black.

Biology: *Meromacrus loewi* was reared from a tree hole beside a road. The hole was at ground level and contained an abundance of water and a mud-like substrate where the larvae were found. Additional live larvae are still being reared at this time (December 2000). The material was reared by Milady ALFARO (voucher# MAV-142.4).

Meromacrus melansonii BLATCH, spec. nov.

[Figs. 1 (habitus), 12 (male genitalia)]

Meromacrus 74-52., *Meromacrus* CR-2.

Adult. Head: black; face broadly shiny medially, grayish pollinose broadly on ventrolateral half, narrowly along eye margin and ventrad to antenna; gena shiny anteriorly, white pollinose and pilose posteriorly; lunule brownish; frontal triangle shiny apicomediaally, sparsely to strongly tan pollinose elsewhere, yellow pilose; frons shiny on ventral 1/4, grayish-white pollinose on medial 1/4, brown pollinose on dorsal half, yellow pilose; vertical triangle grayish pollinose and yellow pilose; occiput grayish-yellow pollinose, yellow tomentose pilose on dorsal 1/3; male eyes narrowly dichoptic, eyes separated by width of anterior ocellus and for distance equal to length of anterior ocellus; antenna black, yellow pilose; basoflagellomere elongate, about twice as long as wide; arista orange.

Thorax: Black except pale brown postpronotum and scutellum apically; scutum generally short black pilose, short yellow pilose medially on anterior half, with narrow sparse yellow tomentose maculae; with small triangular yellow submedial tomentose macula mesad to postpronotum; with notopleuron yellow tomentose pilose; with narrow yellow medial transverse fasciata tomentose macula along suture but broadly separated on medial half; with posterior yellow tomentose fascia from along posterior margin of postalar callus and separated from posterior margin to forming margins of a triangle anterior to scutellum; scutum black pollinose except distinct medial and submedial brownish gray vittae which merge posterior to suture but are separated from scutellum, when viewed from posterior with gray pollinose submedial vitta between brownish gray medial and submedial vittae, with postalar callus and area anterior to it brownish gray pollinose, with triangular area anterior to scutellum dark brownish pollinose; scutellum brownish black on basal 3/4, pale brown apically, short black pilose; anepisternum sparsely gray pollinose, yellow pilose; katapisternum grayish white pollinose, yellow pilose; anepimeron

sparsely gray pollinose, long yellow pilose; prothoracic spiracular fringe brown; metathoracic spiracular fringe white; plumula white; calypter orange; halter yellow. **Wing:** Completely microtrichose; tegula yellow pilose; basicosta and base of costa orange, orange pilose; hyaline posteriorly, orange on anterobasal 2/3, brown on anteroapical 1/3, with loop of vein R_{4+5} brown. **Legs:** Coxa black, grayish white pollinose, white pilose; trochanters black, shiny, black and yellow pilose; pro- and mesofemora black, short yellow pilose except black pilose ventrally and dorsally on apical half of profemur; metafemur black except orange on apical half, yellow pilose except black pilose ventrally; pro and mesotibiae brown, yellow pilose; metatibia orange except slightly darker brownish on apical 1/3, yellow pilose; protarsus black, black pilose; meso and metatarsi brown, yellow pilose.

Abdomen: black; sterna gray pollinose, white pilose; 1st tergum gray pollinose and white pilose laterally, black pollinose on medial 2/3, yellow pilose, without any tomentose pile; 2nd tergum black pollinose, short black pilose except yellow pilose along lateral margin; 3rd tergum black pollinose except gray pollinose beneath yellow fascia, short black pilose except yellow pilose along lateral margin and narrow yellow tomentose fascia on basal 1/4, with fascia continuous; 4th and 5th terga yellow pollinose, yellow tomentose pilose; male genitalia (fig. 12) small, about half as long as 4th tergum; surstyle short, extending over 4th sternum, with apex blunt.

Length (4 specimens measured). 11.5 mm; wing, 9.7 mm.

Distribution. Mexico*, El Salvador*, Costa Rica*.

Types. Holotype: COSTA RICA, Heredia, Santo Domingo, Instituto Nacional de Biodiversidad, 1100 m, LN 217300 526200, 23 July 1997, ♂, M. A. ZUMBADO, collected at flowers of *Sapium glandulosum* (Euphorbiaceae), lot# 46897, INBIOCRI002567243, deposited in Instituto Nacional de Biodiversidad, Santo Domingo. **Paratypes** (16♂♂ 12♀♀): MEXICO. [unknown state], Tequesquahuac, Cerro Tlaloc, 15 May 1980, R. Ma. MURILLO (2♂♂ USNM ENT 00029975-6 USNM); *Oaxaca*: 19 miles E La Ventana, 4 May 1969, J. E. GILLASPY (1♀ USNM ENT 00029968 USNM). EL SALVADOR. Santa Tecla, 5 Feb 1954 (1♀ USNM ENT 00029969 USNM); ..., 27 Jan 1954 (1♀ USNM ENT 00029970 USNM); ..., 18 Dec 1953, MSA LAZAR (1♀ USNM ENT 00029971 USNM); ..., 4 July 1955 (1♀ USNM ENT 00029972 USNM); ..., 6 Feb 1954 (1♂ USNM ENT 00029973 USNM); all collected in association with mango flowers; San Salvador, 14 Feb 1978, D. R. BARGER (1♀ returned to collector); Quezaltepeque, 19 June 1963, D. Q. CAVAGNARO & M. E. IRWIN (14♂♂ 2♀♀ USNM ENT 00030734-47 USNM, CAS); ... 4 August, D. Q. CAVAGNARO & M. E. IRWIN (1♀ USNM ENT 00030733 CAS); ... 6 miles west of, 12 Aug 1963, D. Q. CAVAGNARO & M. E. IRWIN (1♂ USNM ENT 00030748 CAS). COSTA RICA. *Guanacaste*: Finca Montezuma, 3 km SE Río Naranjo, 600 m, 5 & 16 Nov 1991, A. S. MENKE (1♀ USNM ENT 00037898 USNM); Estación Cacao, Lado SO (=SW) Volcán Cacao, 1000–1400 m, LN 323300 375700, Nov–Dec 1990, A. GUADAMUZ (1♂ INBIOCRI000297953 USNM); P.N. Guanacaste, Est. Los Almendros, 300 m, LN 369500 334850, 08–30 May 1994, E. LÓPEZ, #2990 (2♀♀ INBIOCRI001895547-8 INBIO); Parque Nacional Barra Honda, 3Km NW de Nacaome, 100 m, LN 239000 386000, 13–30 Nov 1992, M. REYES (1♂ INBIOCRI000903003);... Parque Nacional Rincon de la Vieja, Estación Las Pailas, 800m, LN 306300 388600, 22 Nov–11 Dic 1992, D. GARCIA (1♂ INBIOCRI0000828259); ... Parque Nacional Guanacaste, Finca Pasmompa, 5 Km SW Sta. Cecilia, 400 m, LN 333500 380600, Mar 1989, GNP Biodiversity Survey (1♀ INBIOCRI000099447);...Parque Nacional Guanacaste, Estación, Cacao, Lado SW Volcan Cacao, 1000–1400 m, LN 323300 375700, Set–Dic 1989, B. GUADAMUZ y Familia (1♀ INBIOCRI000256596);...Parque Nacional Guanacaste, Finca Jenny, 30 Km N. Liberia, LN 316200 364400, Oct 1988, GNP Biodiversity Survey (1♂ INBIOCRI000007248). *Heredia*: same data as holotype (2♂♂ INBIOCRI002567241,4 USNM, 1♂ 1♀ -242, 245 INBIO). *Puntarenas*: Monteverde, 1300 m, 18–24 Aug 1987, G. & M. WOOD (4♂♂ USNM ENT 00022484-487 USNM, CNC); Camino a Tablas, 200 m east de los Portones a Cotoncito, 1550 m, LS 319750 595700, 10 Oct 1998, E. NAVARRO, #51734 (1♀ INBO003019224 INBIO); Coto Brus, Las Mellizas, Finca Cafrosa, Embalse, 0.8 km NW de Tigra, 1280 m, LS 317800 596200, 13–21 May 1996, E. NAVARRO, #7494 (1♂ INBIOCRI002375033 INBIO); Coto Brus, Las Mellizas, Finca Cafrosa, 1300 m, LS 316100 596100, Oct 1990, M. RAMIREZ & G. MORA (1♀ INBIOCRI000673056). *San José*: Curridabat Granadilla, 31 March 1985, L. F. JIRÓN (1♀ 1♂ USNM ENT 00029977 & ...74 USNM); ... I. HEDSTROM (2♂♂ USNM ENT 00029975-6 USNM), all collected in association with mango flowers; Santa Ana, Cerro Minas, 1100 m, LN 211500 515400, 2 Jun 1994, M. A. ZUMBADO, #45279 (1♀ INBIOCRI00248453 INBIO); Santa Ana, Prot Cerros de Escazu, Bebedero, Alto Tapezco, 1760 m., LN209000 518900, 14 Jan 1999, M. A. ZUMBADO, #52373 (1♂ INB0003034640 INBIO). *Alajuela*: San Ramón, C. La Lana, 1200 m, LN 221750 481050, 17 Jan 1997, M. A. ZUMBADO, F. C. THOMPSON #45327 (1♂ INBIOCRI002499633 INBIO)

Biology: A number of these flies were collected pollinating mango (*Mangifera indica* L., Anacardiaceae). The species has been identified as a major pollinator of mango (JIRÓN & HEDSTROM 1985). Arnold MENKE, a hymenopterist, noted that the adult is a mimic of *Pachodynerus*, a wasp (Vespidae).

Derivation of specific epithet. I (SAB) am pleased to name this distinctive new species after Mr. James MELANSON, a development counselor for Canada, who has done so much to promote long-term support for Costa Rica's Biodiversity Inventory program and its Instituto Nacional de Biodiversidad.

Remarks: This species was originally noted as a new species by Willis WIRTH in 1955 when it was submitted for identification.

Meromacrus melansoni is distinct from all other *Meromacrus* species except *nectarinoides* LYNCH ARRIBALZAGA. These are the only two species with the apical tip of the abdomen extensively yellow tomentose. Both species belong to a mimic complex, which includes such species as *Hoplitimyia mutabilis* (LINNAEUS, 1758) (Stratiomyidae) and mimics species of *Pachodynerus*. *Meromacrus melansoni* differs from *nectarinoides* in having the entire tip of the abdomen yellow tomentose, where as it is fasciate in *nectarinoides*.

Meromacrus obscurus HINE, 1924

[Figs 3 (thorax), 13 (male genitalia)]

Meromacrus obscurus HINE 1924: 21. Guatemala, Los Amates. HT ♂ OSU. HULL 1942: 2 (as *obscura*, key reference); FLUKE 1957: 150 (cat. cit.); THOMPSON et al. 1976: 112 (cat. cit.). *Meromacrus* CR-4

Adult. Head: Black; face shiny medially, white pollinose and yellow pilose laterally; gena sparsely white pollinose anteriorly, more densely white pollinose and pilose posteriorly; lunule brownish; frontal triangle shiny apicomediaally, white pollinose laterally, brownish pollinose medially, white pilose except for some black pili medially; frons shiny apicomediaally, white pollinose laterally, grayish brown pollinose ventromediaally, brown pollinose on dorsal half, yellow pilose laterally, brown pilose medially; vertical triangle white pollinose and pilose anterior to ocellar triangle; ocellar triangle grayish-black pollinose, black pilose; occiput white pollinose, white pilose ventrally becoming yellow dorsally, with a few black pili on dorsal 1/4. Antenna: scape black, yellow pilose; pedicel brownish; basoflagellomere brownish except orange on basoventral 1/3, oval, about 1/3 longer than wide; arista orange.

Thorax (Fig. 3): Black except pale brown postpronotum and scutellum apically; postpronotum pale gray pollinose, black pilose except yellow pilose along anterior margin; scutum generally short black pilose, with narrow sparse yellow tomentose maculae; with narrow yellow submedial tomentose vitta mesad to postpronotum and extending posterior to connect with transverse fasciate macula; with notopleuron yellow tomentose pilose; with narrow yellow medial transverse fasciate tomentose macula along suture but broadly separated on medial half and connected to submedial vitta; with posterior yellow tomentose fascia from along posterior margin of postalar callus and posterior margin to form a triangular macula anterior to scutellum; scutum grayish-brown pollinose except black pollinose within area bounded by submedial and transverse yellow tomentose maculae; scutellum brown, short black pilose except brown pilose along apical margin and basomedially; anepisternum sparsely gray pollinose, yellow pilose except black pilose on dorsal 1/4 except adjacent to notopleuron; katepisternum white pollinose, white pilose; anepimeron sparsely gray pollinose, long black pilose with some yellow pile basally and posteriorly; metasternum silvery-white pollinose, white pilose; prothoracic spiracular fringe brown; metathoracic spiracular fringe white; plumula white; calypter orange, with ventral fringe white; halter yellow. **Wing:** Completely microtrichose; tegula yellow pilose; basicoستا and base of costa orange, orange pilose; hyaline posteriorly, orange on anterobasal 2/3, brown on anteroapical 1/3, with loop of vein R_{4+5} hyaline. **Legs:** Coxae black, silvery-white pollinose, white pilose; trochanters brown, shiny, black and yellow pilose; pro and mesofemora black, short yellow pilose except black pilose ventrally and dorsally on apical half of profemur; metafemur black except orange on base and apical 1/3, yellow pilose except black pilose ventrally; protibia brownish black, yellow pilose; mesotibia brown except basal 1/3 more orange, yellow pilose; metatibia orange basally, darker brownish on apical 2/3, yellow pilose; tarsi black, black pilose.

Abdomen: Brownish black except narrow lateral margin of 2nd tergum yellowish brown; sterna gray pollinose, white pilose; 1st tergum gray pollinose and short white pilose laterally, black pollinose on medial 2/3, yellow tomentose pilose; 2nd tergum short black pilose except yellow pilose along

lateral margin and with large submedial macula of short yellow pile, with these maculae narrowly separated medially and from apical margin; 3rd tergum generally short black pilose, yellow pilose along lateral margin, with narrow yellow tomentose fascia on basal 1/5, with fascia continuous, short yellow pilose on medial 1/4; 4th tergum generally short black pilose, yellow pilose along lateral margin, with or without narrow yellow tomentose fascia on basal 1/8, with scattered short yellow pile medially; 5th tergum intermixed short black and yellow pilose; male genitalia (fig. 13) small, about half as long as 4th tergum; surstyle short, extending over 4th sternum, with apex blunt.

Length (3 specimens measured): 11.8 mm, wing 8.7 mm.

Distribution. Guatemala*, Costa Rica*.

Material examined (2 ♂ 2 ♀): GUATEMALA. Los Amates (Holotype, OSU); COSTA RICA. *Guanacaste*: Estación Exper. Enrique Jiménez Nuñez, 20 km SW Canas, 5-17 Nov 1991, A. S. MENKE (2 ♀ ♀ USNM ENT 00030055, 00037897 USNM); Liberia, P. N. Santa Rosa, Sector Santa Rosa, Bosque Humedo, 300 m, LN 313000 359800, Dec 1998, J. SULLIVAN & A. A. PEREZ, #56060 (1 ♀ INB0003070418 INBIO); ... Mar 1999, J. SULLIVAN & A. A. PEREZ, #56067 (2 ♀ ♀ INB0003071907, -1847 INBIO); La Cruz, Santa Elena, Estación Santa Rosa, 300 m, LN 313000_359800, 12 al 15 Nov 1999, D. BRICEÑO, Lot# 62972 (1 ♂ INB0003321959 USNM). *Alajuela*: Higuito, San Mateo, Pablo SCHILD (1 ♂ USNM ENT 00030054 USNM).

Remarks: *Meromacrus obscurus* is readily distinguished from all other Mesoamerican *Meromacrus* by its unique thoracic scutal pattern (fig. 4).

Biology: *Meromacrus obscurus* was reared from a tree hole in *Carapa guianensis* (Meliaceae) from which *currani* also was reared (see above for more details). Collectors were Braulio HERNÁNDEZ and Duvalier BRICEÑO (voucher # BHB-39.1–39.8; DBC-148.1–148.4).

Meromacrus zonatus (LOEW, 1866)

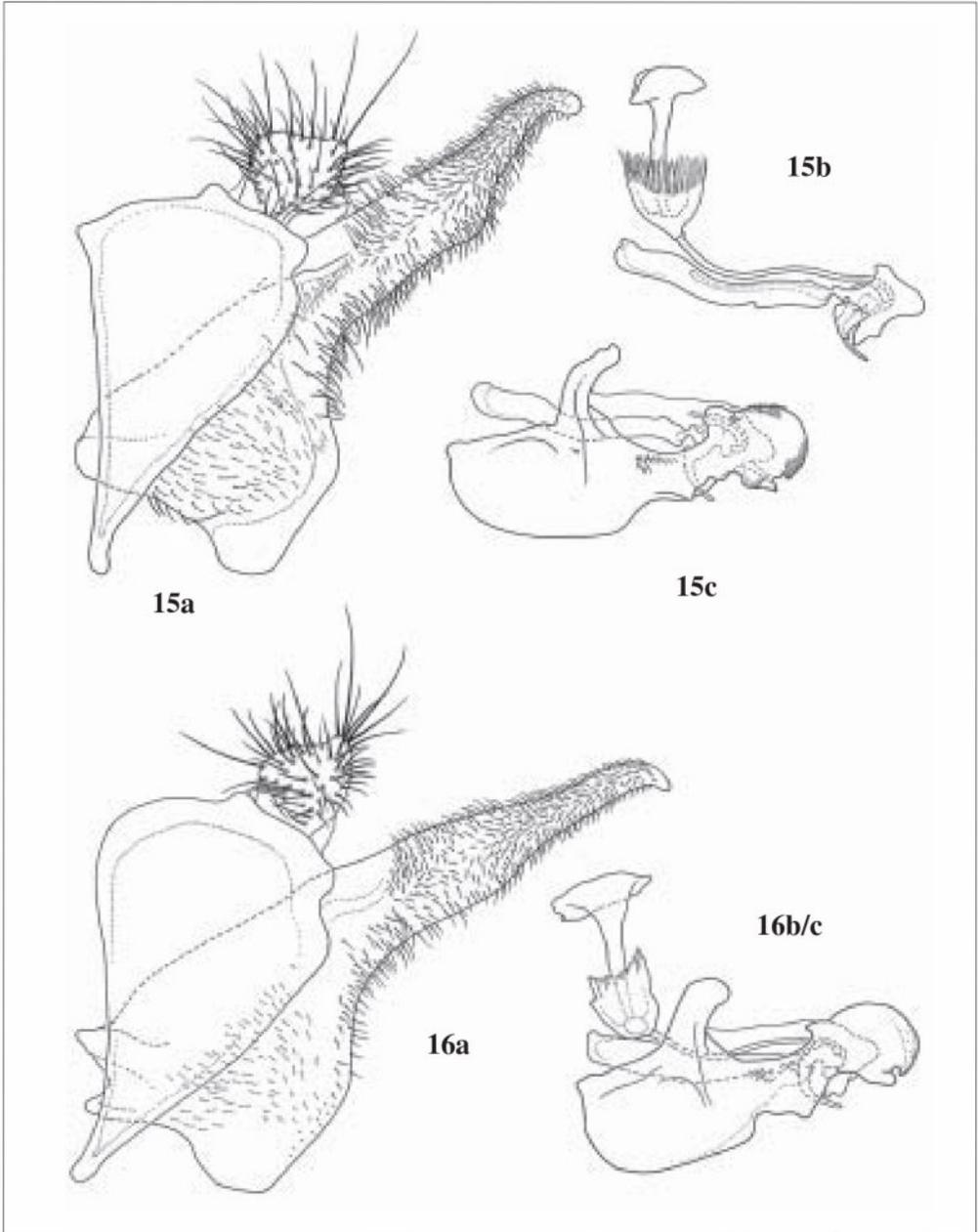
[Figs. 14 (male genitalia), 15-16 (male genitalia)]

Pteroptila zonata LOEW, 1866: 165. Mexico. T ♂ MCZ. LOEW 1872: 39 (description); WILLISTON 1887: 182 (English translation of original description); WILLISTON 1892: 67 (Mexico); GIGLIO-TOS 1893: 334 (description).

Meromacrus zonatus: ALDRICH 1905: 391 (cat. cit.); KERTÉSZ 1910: 248 (cat. cit.); SACK 1920: 266 (description); HINE 1924: 23 (key, descriptive notes, Mexico); CURRAN 1936: 2 (key reference); HULL 1942: 3 (key reference); FLUKE 1957: 152 (cat. cit.); THOMPSON et al. 1976: 113 (cat. cit.).

Adult. Head: black; face white pollinose and white pilose laterally, shiny medially; gena shiny anteriorly, white pollinose and pilose posteriorly; frontal triangle shiny apicomediaally, narrowly white pollinose laterally, white pilose except for some black pile medially; frons shiny on ventral 1/3, grayish-white pollinose and pilose on lateral 1/3 dorsally, gray pollinose and black pilose on medial 2/3 dorsally; vertical triangle white pollinose and pilose anterior ocellar triangle; ocellar triangle grayish-black pollinose, black pilose; occiput white pollinose, white tomentose pilose, with a few black pili intermixed on dorsal 1/4; antenna black, black pilose; basoflagellomere oval, about as long as wide; arista orange.

Thorax: Black except scutellum pale apically; scutum short black pilose except for white tomentose maculae; with large oval white submedial tomentose macula mesad to postpronotum; with white medial transverse fasciata tomentose macula along suture but broadly separated on medial 1/3; with posterior margin white tomentose from along posterior margin of postalar callus and narrowly anterior to scutellum; scutellum brownish black on basal 2/3, grayish white apically, short black pilose; anepisternum white tomentose along posterior margin; katapisternum with round white tomentose macula on dorsal 1/3, sparsely grayish white pollinose and pilose elsewhere; anepimeron long white pilose, with some black pile dorsally; spiracular fringes pale, white to orange; plumula white; calypter with dorsal lobe white, with ventral lobe white basally, brown apically, with brownish yellow fringe; halter yellow. **Wing:** Completely microtrichose; tegula black pilose anteriorly, white pilose posteriorly; basicosta yellow, yellow pilose; base of costa orange, orange pilose; hyaline posteriorly, hyaline on anterobasal 1/3 (costal cell), brown on anteroapical 1/3, with loop of vein R_{4+5} hyaline. **Legs:** Coxae black, grayish white pollinose, white pilose; trochanters brown, shiny, black pilose; profemur orange except at least black ventrally and dorsally on apical 3/2 and dorsoposteriorly on apical 1/4 except apex entirely orange, short yellow pilose except black pilose ventrally and dorsopos-



Figs 15–16: Male genitalia of *Meromacrus zonatus* (Mexican population) (**15a–c**) and *M. zonatus* (Costa Rican population) (**16a–c**). – **a:** 9th tergum and associated structures, lateral view; – **b:** 9th sternum and associated structures, lateral view; – **c:** Aedeagus and associated structures, lateral view.

steriorly on apical half; mesofemur orange except at least black ventrally, orange pilose except black pilose ventrally; metafemur black except narrowly orange on base and apicoventral 1/3 and apex, orange pilose except black pilose ventrally half; protibia orange except apical 1/3 or less brownish, orange pilose; meso- and metatibiae orange, orange pilose; protarsus orange except mesial 3 tarsom-

eres brownish, orange and black pilose; meso and metatarsi orange, orange pilose except black pile anteriorly on apical tarsomeres.

Abdomen: dark brownish black except for large brownish orange macula on 2nd tergum and yellow incisures; sterna sparsely gray pollinose, white pilose; 1st tergum yellow laterally, gray pollinose and white pilose laterally, black pollinose on basomedial 1/3, white medial tomentose fascia macula on apical half, with fascia continuous or only narrowly separated medially; 2nd tergum with large basolateral brownish orange macula, with macula separated from lateral margin, broad laterally (about 4/5 tergal length) and narrowed medially (about 1/5 tergal length), extending to medial 1/5, not continuous, thus black area reduced to H-shape, short black pilose apically, long yellow pilose basolaterally and white pilose on basal 1/3 and along lateral margin; 3rd tergum short black pilose except yellow pilose along lateral margin and narrow yellow tomentose fasciate macula on basal 1/3, with maculae continuous or very narrowly separated medially; 4th and 5th terga black pilose except for narrow yellow tomentose fasciate macula on basal 1/5 and yellow pilose laterally; male genitalia (Figs 15–16) large, about as long as 4th tergum; surstyle elongate, extending over 4th sternum, with apex narrow and recurved.

Length (4 specimens. measured). 14.5 mm; wing, 10.7 mm.

Variation: Our Costa Rican specimens are much more golden yellow in their tomentose pile. There are also slight differences in the male genitalia, surstyles longer (Figs 15–16). However, without seeing more material from the intermediate areas, we accept this variation as geographic.

Distribution. Mexico*, Costa Rica*.

Material examined (6 ♂ 3 ♀). MEXICO. Syntypes of *zonatus*. *Distrito Federal:* Mexico City, Juan MULLER (1 ♀ USNM ENT 00030040 USNM); *Morelos:* Cuernavaca, 5500 ft, 19 April 1959, H. E. EVANS (1 ♂ USNM ENT 00030120 CU); *Puebla or Tlaxcala:* [label reads “Tlaxcala, K-66 (Puebla)” = kilometer 66 on Tlaxcala-Puebla highway?], 17 Dec 1956, emerged 16 Jan 1957, “WES.” (1 ♂ USNM ENT 00030041 USNM). COSTA RICA. *Cartago:* La Suiza, 9 May, P. SCHILD (1 ♀ USNM ENT 00030042 USNM); *Puntarenas:* San Luis Monteverde, Buen Amigo, LN 250850 449250, April 1995, Z. FUENTES, Lot # 4801 (1 ♂ INBIOCRI002202645 USNM); Estación Biológica Las Alturas, Sendero a Cerro Echandi, Orilla del Sendero, 1580 m, LS 322900 591050, 16 Mar 1998, A. PICADO, #49953 (1 ♂ INBIOCRI002416370 INBIO). *Guanacaste:* Volcán Cacao, Est. Cacao, Lado SO (=SW), 1000–1400 m, LN 323300 375700, April 1991, A. GUADAMUZ & D. GARCÍA (1 ♂ INBIOCRI000656095 USNM); Sector Cacao, sendero a Cima, 1400–1500 m, LN 323800 377000, 13 April 1997, M. A. ZUMBADO, lot# 46269 (1 ♂ INBIOCRI002539474 INBIO).

Remarks. *Meromacrus zonatus* is very similar and closely related to *currani* and *loewi*, but differs in femoral and wing coloration.

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