

THE NEOTROPICAL GENUS *OPEATOCERATA* MELANDER
(DIPTERA, EMPIDIDAE)

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The Neotropical empidid genus Opeatocerata Melander, hitherto known from only a single female from Mexico, is redefined in the light of new material, including males. Three new species are described and illustrated, a key provided and the presence of the genus now additionally established in Costa Rica, Panama, Bolivia, Ecuador, Trinidad and Brazil.

Key words: *Opeatocerata* – Diptera – Empididae – Neotropical

Melander (1928, for dating see Arnaud, 1966) erected the genus *Opeatocerata* to receive *Empis rubida* Wheeler & Melander (1901) described from Mexico, also noting that Schild had found a specimen in Costa Rica. Bezzi (1909b) recorded what he believed to be the species from Bolivia.

I have examined Bezzi's and Schild's specimens but they are not conspecific with *rubida*. These specimens and other recently discovered material, some representing new species, are discussed and keyed below.

The following generic diagnosis incorporates Melander's original description (he only knew the female), is updated nomenclatorially and includes additional characters given in italics.

Opeatocerata Melander

Small (circa 3-4 mm) polished yellow species, suggestive of *Leptopeza*.

Antennae inserted below middle of head, segments small, slightly pubescent, the third segment short ovate with a two-segmented apical arista, three times as long as the third antennal segment of which the basal part is two-thirds the length of the third antennal segment and appears like a prong-like extension of that segment. Melander comments 'the peculiar antennae can well remove this form from the complex genus *Empis*'. Proboscis inflexed, slender, slightly longer than the head height. *Upper eye facets larger than lower.*

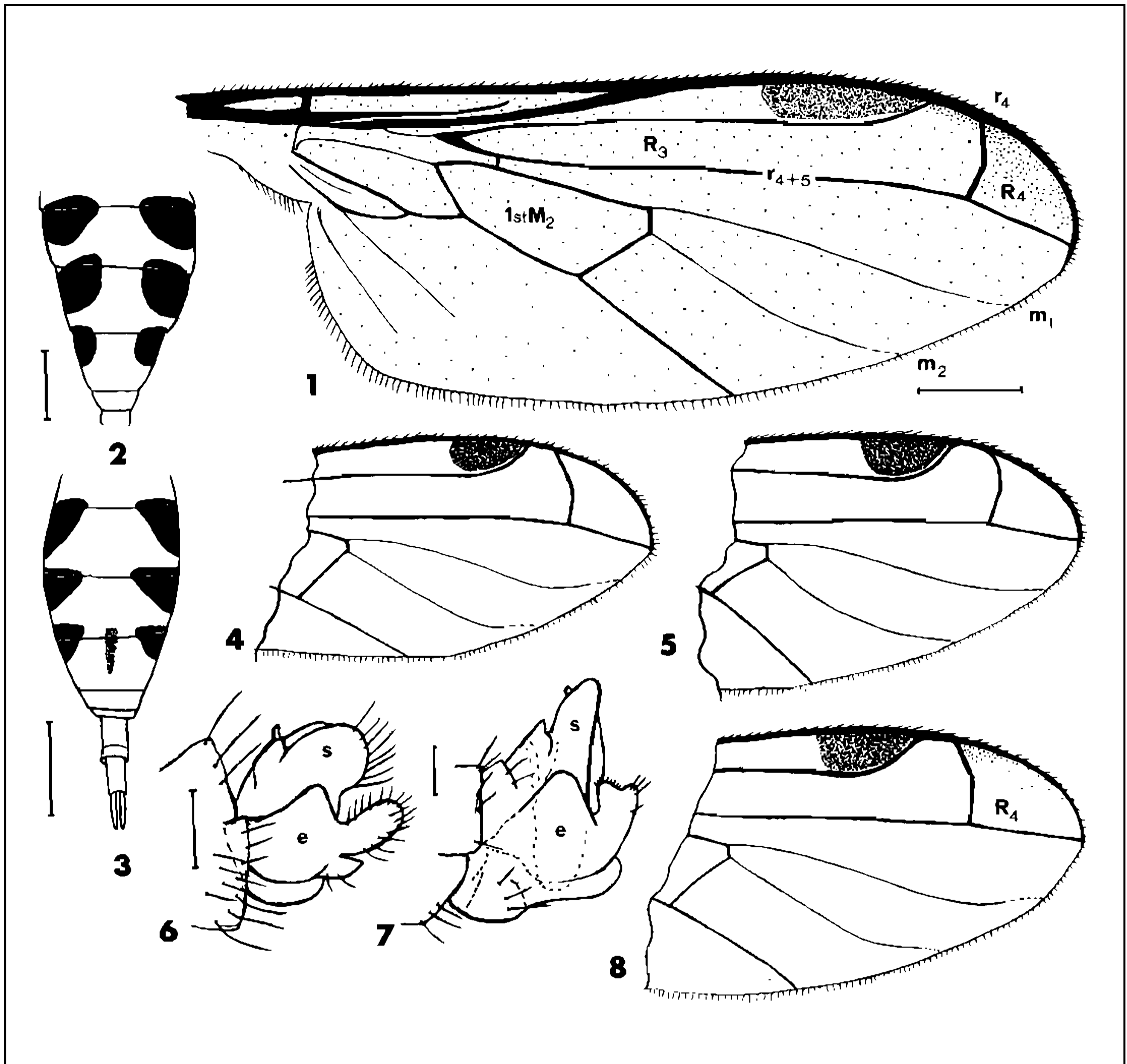
Thorax strongly convex, bristles very delicate and yellow, no pubescence. Dorso-central bristles uniserial, acrostichal bristles absent and no humeral, posthumeral, notopleural or presutural setae; two supra-alar, a postalar and two parallel scutellar bristles present; propleura bare, but a row of long delicate metapleural hairs present. Prothoracic spiracle concolorous; metathoracic spiracle brown.

Abdomen yellow, *usually with some shiny black markings: male genitalia yellow as illustrated (Figs 6 and 7).* Female abdomen with nine segments, the eighth lengthened and laterally compressed; cerci long and narrow. Male genitalia resembling *Empis* in general structure.

Legs mostly yellow, long, slender, hairy, hind tibiae and basitarsi with long delicate extensor (*posterodorsal*) setae.

Wings more or less cuneiform in outline; costa ending at apex; first vein (r_1) ending near basal two fifths of wing; auxiliary vein (sc) straight, evanescent apically; stigma strong; third vein ($r_4 + 5$) ending at wing-tip, its anterior branch (r_4) erect and *bent posteriorly from about middle*; submarginal cells (R_3, R_4) wide, basal cells (R, M) much shorter than the discal cell (1st M_2); discal or fourth (m) vein with its branches (m_1 and m_2) *somewhat evanescent apically but under the microscope can be seen to be more or less distinct to tip of wing*; anal crossvein (lower branch of cu) abruptly reflexed in line with the outward continuation of the cubitus, only the base of the anal vein (a_1) indicated, axillary incision weak, shallow; calypters with a few long hairs.

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Opeatocerata. Fig. 1: *O. rubida* (Wheeler & Melander) ♀ wing. Fig. 2: *O. cooperi* sp. n. ♀ abdomen (dorsal). Fig. 3: *O. stubbsi* sp. n. ♀ abdomen (dorsal). Fig. 4: *O. stubbsi* sp. n. ♂ wing (distal half). Fig. 5: *O. lopesi* sp. n. ♂ wing (distal half). Fig. 6: *O. stubbsi* sp. n. ♂ genitalia (lateral), e = epandrium, s = surstylus. Fig. 7: *O. lopesi* sp. n. ♂ genitalia (lateral). Fig. 8: *O. cooperi* sp. n. ♀ wing (distal half). Scale lines: Figs 6, 7 = 0.1 mm; Fig. 1 (applies to all wings), 2, 3 = 0.5 mm.

Type species *Empis rubida* Wheeler & Melander (1901: 368) by original designation.

Pyrrempis Melander, *Hystrichonotus* Collin and *Apalocnemis* Philippi).

Collin (1933) compared his genus *Empidadelpha* to *Opeatocerata* in having a short subcostal vein, basal cell shorter than discal cell and anal angle undeveloped. However, the aristiform style of the third antennal segment, the erect cubital fork (r_4) evanescent, third and fourth veins (m_1 and m_2), strongly convex thorax (with reduced bristles) and the laterally compressed ovipositor serve to distinguish *Opeatocerata* from *Empidadelpha* and other genera with which Collin compared it (viz.

Bezzi (1909a) considers and rejects *E. rubida* when delimiting the Palearctic subgenus *Xanthempis*. Collin (1961) points out that while the subgenus *Xanthempis* is undoubtedly a natural group, like many such in the large genus *Empis*, it merges imperceptibly into neighbouring groups making it difficult to define. Bezzi's attempts to overcome this difficulty by giving subgeneric names to any intermediate species or groups of species (e. g. *Argyrandrus* for *E. dispar* Scholtz) are clearly not favoured

by Collin. However, Collin's comment that it is advisable to 'place all these more or less yellow, slender-legged Empids, without acrostichal bristles, in one subgenus, the typical species of which is *stercorea* L.' is obviously not intended to include *rubida*, which he does not mention, and which can readily be differentiated from *Xanthempis* by the characters already emphasized above.

An affinity of *Opeatocerata* with *Lamprem-
pis* Wheeler & Melander was suggested by Bezzi (1909b) and Melander (1928) says 'The genus is a likely ancestor of *Lamprem-
pis*'. Species of *Lamprem-
pis* have the antennae set high upon the head with the third antennal segment longer than the style, anal angle of wing developed with a deep axillary incision, the first vein ends beyond the middle of the wing and the species are usually metallic green-blue or black (Bezzi, 1909b; Smith, 1962, 1967, 1975).

Opeatocerata is Neotropical and can now be recorded from Mexico, Costa Rica, Panama, Trinidad, Ecuador, Bolivia and Brazil (Fig. 9, map). The species now known may be separated by the following key. The new species included are described below.

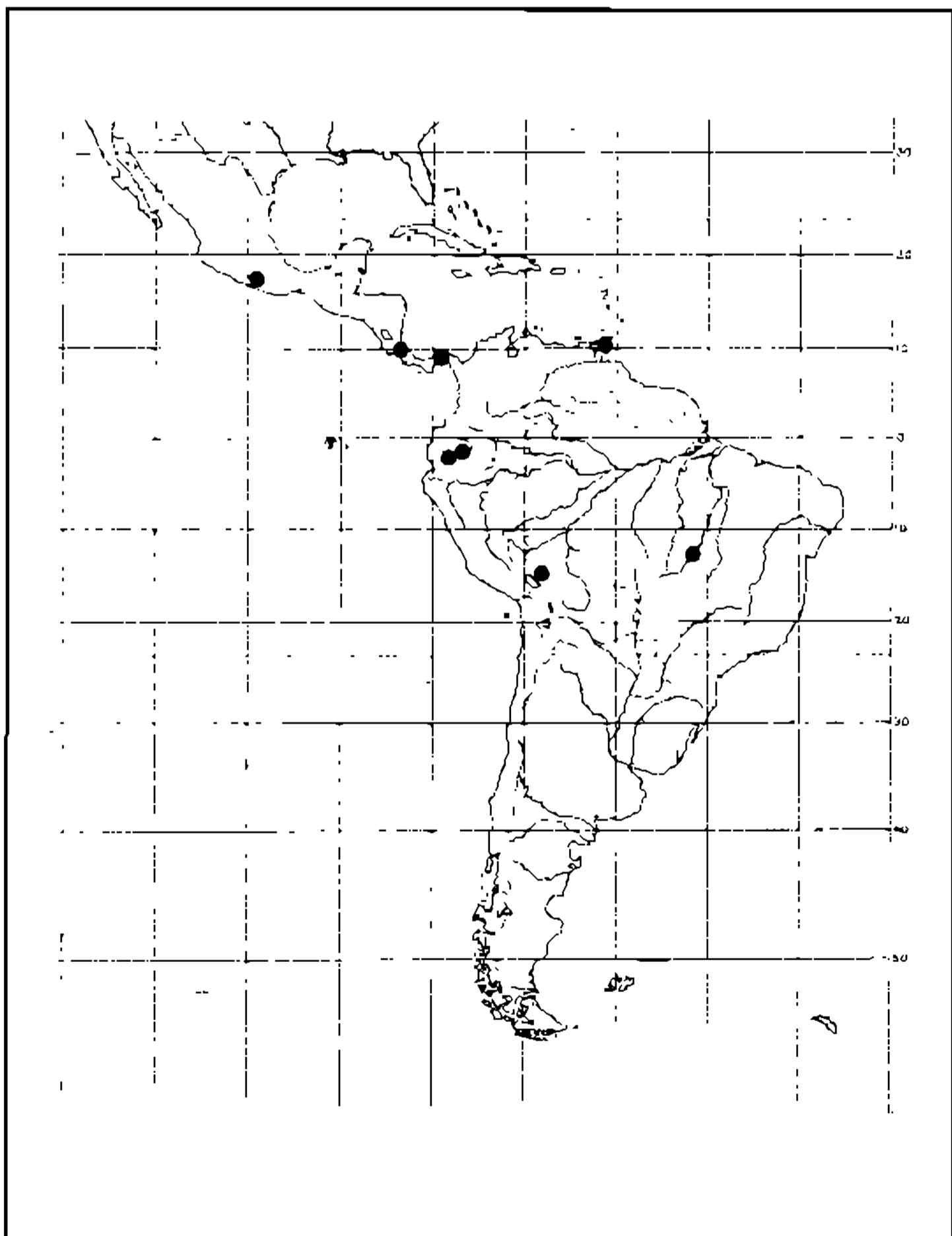


Fig. 9: Distribution of the Neotropical genus *Opeatocerata*.

1. Wing stigma paler and shallower, 3-4 times as long as deep (Fig. 1); two upper veins (m_1 and m_2) from discal cell gently curved forward distally. 2
- Wing stigma darker and deeper, not more than 2.5 times as long as deep; two upper veins from discal cell more strongly curved forward distally (Figs 4, 5, 8). 4
2. Larger (4 mm long), more robust, reddish-yellow species; abdomen brownish-yellow without black markings; legs dark-haired with bristles less outstanding (Mexico). *rubida* (Wh. & Mel.)
- Smaller (3 mm) slender paler yellow species; abdomen with black markings; legs shorter, mostly pale-haired with longer slender more obvious yellow bristles 3
3. Abdominal markings reduced to small lateral spots (Panama) sp.
- Abdomen black on broad median band, yellow basally, apically and on dorsal narrow median stripe (Costa Rica) sp.
4. Abdomen completely pale yellow (Brazil) *lopesi* sp. n.
- Abdomen with black markings. 5
5. Hind femur completely yellow; black abdominal spots more triangular (Fig. 3) (Trinidad) *stubbsi* sp. n.
- Hind femur blackish at tip; black abdominal spots more quadrate (Fig. 2) (Ecuador) *cooperi* sp. n.

Opeatocerata rubida (Wheeler & Melander)

Empis rubida Wheeler & Melander 1901:368.
Empis rubida Melander 1902:302, Pl. IX, fig. 121 (wing).
Opeatocerata rubida Melander 1928:135.

Redescription of the type female.

Head – black, frons and face shining, remainder greyish dusted. A pair of strong divergent ocellar bristles. Antennae reddish yellow, arista brownish. Proboscis yellow, as long as head is deep. *Thorax* – reddish yellow, pleura somewhat paler, scutellum brownish yellow. Bristles yellow. *Abdomen* – brownish yellow. *Legs* – yellow with hind femora and tibiae blackish apically; tip of all basitarsi and rest of remaining tarsal segments blackish; rather densely dark haired; hind femur with a posteroventral series of fine bristles; hind tibia with a series of slender posterodorsal bristles distinct among the long hairs but none more

than 1.5 times as long as tibia is deep at middle and with bristly hairs below, becoming longer basally. *Wings* (Fig. 1) — cinereous-hyaline, cell R_4 brownish-tinged; with yellowish veins, but costa darkened where r_1 joins it and above stigma and beyond; stigma elongate, brown; anterior branch (r_4) of third vein nearly rectangular and bent rather sharply beyond middle. *Haltere* — yellow. *Length* — body 4 mm. wing 4.25 mm.

Male unknown.

Holotype ♀ MEXICO, Chilpancingo Guerrero 4,600 ft, June (*H. H. Smith*). B[iologica] C[entrali] A[mericana]. Dipt. 1. *Empis rubida* Wh. & Mel. In the British Museum (Natural History), London. One wing of the type is detached and is included on the pin in a plastic capsule; one front leg is missing; one antenna is mounted on a plastic slip attached to the pin.

In the United States National Museum are two females labelled '*rubida*' but which are clearly not conspecific. Both are paler, smaller, more slender species with longer, narrower, hyaline wings. One, from Costa Rica, La Suza de Turritalba (*P. Schild* ex coll A. L. Melander) (Melander, 1928:135), may be immature but appears to have a darkened abdomen; the other, from Panama, Taboga Isle, June 12[19]11 (*A. Busek*, ex Melander coll) has a spotted abdomen.

In the British Museum (Natural History) a further Panamanian specimen (male) collected in alcohol during tree fogging by E. Broadhead has a spotted abdomen resembling the female from Taboga Isle.

Bezzi (1909b:348) also recorded *O. rubida* from Bolivia (Mapiri, 2.1.03 (*S. Carlos*) 800-1200 m) but I have examined the two females (one without wings) in the Staatliches Museum für Tierkunde, Dresden and they are *not* conspecific with *rubida*. These specimens have no abdominal markings, are more orangy yellow in colour, with the wing tinged brownish and are closer to *O. lopesi* sp. n. described below.

In the absence of better material, or males, I am reluctant to describe any of these specimens further but those from Panama are included in the key.

Opeatocerata lopesi sp. n.

MALE — *Head* — black, greyish dusted, eyes contiguous from antennae to ocelli. Face narrow. Antenna with first two segments pale yellow, third segment and arista brownish. Proboscis yellow, a little shorter than head height. *Thorax* — (including scutellum) yellow. *Abdomen* — completely yellow. Genitalia (Fig. 7) yellow with lobe on posterior margin of epandrium (e) bifid at tip, surstylus (s) elongate. *Legs* — yellow. Hind legs with tip of femora and tibiae and whole of last two segments of all tarsi blackish. Longest anterodorsal bristles on hind tibiae about 2.5 times as long as tibia is deep at middle; slender antero- and posteroventral bristles also present; some long slender bristles above hind basitarsus. *Wings* (Fig. 5) — hyaline with short dark stigma nearly 2.5 times as long as deep; upper branch (r_4) of third vein smoothly but strongly bent towards stigma; two upper branches (m_1 , m_2) of discal vein gently curved forward. *Length* — body 3 mm, wing 3.4 mm.

FEMALE — Similar to male but smaller and eyes separated, the frons black, dulled by light grey dusting. *Length* — body 2 mm, wing 3 mm.

Holotype ♂ BRAZIL, Mato Grosso, Base camp 12°50'S, 51°45'W, 10-27.iii.1968 (*B. E. Freeman*) dry forest. Deposited in the British Museum (Natural History), London. Paratypes ♂ ♀ same data, but ♀ 'Gallery Forest'. Deposited in the British Museum (Natural History).

Bezzi's Bolivian specimens (see above) resemble this species but the wings are distinctly brownish tinged.

Named in honour of Professor Hugo de Souza Lopez on attaining his 80th birthday and in recognition of his outstanding work on South American Diptera, especially in the families Sarcophagidae and Stylogastridae.

Opeatocerata stubbsi sp. n.

MALE — *Head* — black, greyish dusted. Eyes contiguous from antennae to ocelli. Face narrow. A pair of slender divergent ocellar bristles. Antennae yellow, arista darkened. Proboscis yellow, as long as head is deep. *Thorax* — orange yellow, scutellum a little paler yellow. *Abdomen* — yellow with triangular black spots (Fig. 3). Genitalia (Fig. 6) yellow, epandrium

(e) with a triangular projection on upper margin and a rounded lobe posteriorly, surstylus (s) rounded. *Legs* – yellow with only tip of hind tibiae apically and last two tarsal segments of all legs black. Longest anterodorsals on hind tibiae about 5 times as long as tibia is deep about middle, some of the anteroventral bristles also longer than usual, especially a long curved bristle at the distal third. Mid tibiae also with anterodorsal bristles much longer than usual in the genus. Hind femora also with some, more obvious, anterodorsal and anteroventral bristles distally. *Wings* – hyaline with short dark stigma about 2.5 times as long as deep with upper branch of third vein rather sharply curved at middle; the two upper branches of the discal vein strongly curved forward distally (Fig. 4). *Length* – body 3 mm, wing 3 mm.

FEMALE – Resembles the male (including size) but frons broad and shining black and with different terminalia.

Holotype ♂, TRINIDAD, St. George, Aripo Valley, 500' [ft.], 29.i.1976 (*A. E. Stubbs*). Deposited in the British Museum (Natural History), London. Paratypes: ♀, TRINIDAD, St. Andrew, Plum, 300' [ft.], 28.i.1976 (*A. E. Stubbs*); ♀, TRINIDAD, St. George, Areno Reserve, 2.ii.1976 (*A. E. Stubbs*). Deposited in the British Museum (Natural History).

Named for the collector of this species, Alan Stubbs, in recognition of his work in coordinating study of the order among Dipterists in Britain.

Opeatocerata cooperi sp. n.

FEMALE – *Head* – black, occiput greyish dusted but frons mostly shining. Antennae orange yellow, arista darkened. Proboscis yellow, a little longer than head is deep. *Thorax* – orange yellow, scutellum a little paler yellow. *Abdomen* – yellow with paired semicircular black spots (Fig. 2). *Legs* – yellow with tip of hind femora and tibiae, and last two tarsal segments of all legs blackish. Longest anterodorsal bristles on hind tibiae about 3.5 times as long as tibia is deep about middle; a slender anteroventral and shorter posteroventral bristles also present. Hind basitarsi also with long bristles above. Middle legs also with similar though somewhat shorter bristles in the same positions, and hind femora distally with some, more obvious, anterodorsal and posteroventral

bristles. *Wings* (Fig. 8) – hyaline, cell R₄ a little brownish-tinged along costal margin with short dark stigma about 2.5 times as long as deep with upper branch of third vein sharply bent beyond middle; the two upper branches of the discal vein strongly curved forward distally. *Length* – body 3 mm, wing 3.5 mm.

MALE – unknown.

Holotype ♀, ECUADOR, Marona-Santiago, Cord. de Cutucu, 6 km east of Macas, 1,100 m, 8.v.1981 (*M. Cooper*). Deposited in the British Museum (Natural History), London. Paratypes: ♀, ECUADOR, same locality data as Holotype, 15.vi.1981 (*M. Cooper*); ♀, ECUADOR, Napo Mayuna 5 km W of Tena, 550 m, 25.viii.1979 (*M. Cooper*). Deposited in the British Museum (Natural History).

Named for Martin Cooper, in recognition of his careful collection of Neotropical Empididae for the author.

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