

The Neotropical genera *Macrostomus* Wiedemann and *Porphyrochroa* Melander (Diptera, Empididae, Empidinae)

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ABSTRACT. *Macrostomus ferrugineus* (Fabricius, 1805), the type-species of *Macrostomus* Wiedemann, 1817 and *Porphyrochroa palliata* (Coquillett, 1902), the type-species of *Porphyrochroa* Melander, 1927 are redescribed and figured from the types. Both Neotropical genera are considered sister-groups and their synapomorphies are presented. The species belonging to both genera, and those Neotropical species remaining in the heterogeneous group *Rhamphomyia* Meigen, 1822 are listed. A key to genera is provided, 25 species are transferred to *Porphyrochroa*: *P. abdominalis* (Bezzi, 1905) **comb. nov.**, *P. argyrina* (Bezzi, 1909) **comb. nov.**, *P. barueri* (Smith, 1962) **comb. nov.**, *P. carrerai* (Smith, 1962) **comb. nov.**, *P. catarinae* (Smith, 1962) **comb. nov.**, *P. cyanogaster* (Wheeler & Melander, 1901) **comb. nov.**, *P. digitata* (Smith, 1962) **comb. nov.**, *P. distinctipennis* (Smith, 1962) **comb. nov.**, *P. divisa* (Smith, 1962) **comb. nov.**, *P. dolichocera* (Bezzi, 1905) **comb. nov.**, *P. fasciventris* (Curran, 1931), *P. furcifer* (Wheeler & Melander, 1901) **comb. nov.**, *P. galactodes* (Bezzi, 1909) **comb. nov.**, *P. juri* (Smith, 1962) **comb. nov.**, *P. micrargyra* (Bezzi, 1909) **comb. nov.**, *P. monstrosa* (Bezzi, 1909) **comb. nov.**, *P. mundurucu* (Smith, 1962) **comb. nov.**, *P. mura* (Smith, 1962) **comb. nov.**, *P. orthoneura* (Bezzi, 1905) **comb. nov.**, *P. palliata* (Coquillett, 1902), *P. penicillata* (Bezzi, 1909) **comb. nov.**, *P. perpulchra* (Bezzi, 1909) **comb. nov.**, *P. pulchriiventris* (Bezzi, 1905) **comb. nov.**, *P. rotundipennis* (Bezzi, 1905) **comb. nov.**, *P. seticauda* (Smith, 1963) **comb. nov.**, *P. variseta* (Smith, 1962) **comb. nov.** and *P. wiedemanni* (Smith, 1962) **comb. nov.** A lectotype is designated for *P. palliata* (Coquillett, 1902). **KEY WORDS.** Empidinae, lectotype, neotropical, new combinations, taxonomy.

RESUMO. *Macrostomus ferrugineus* (Fabricius, 1805), espécie-tipo de *Macrostomus* Wiedemann, 1817 e *Porphyrochroa palliata* (Coquillett, 1902), espécie-tipo de *Porphyrochroa* Melander, 1927 são redescritas e ilustradas a partir dos tipos. Os dois gêneros são neotropicais, considerados grupo-irmãos e suas sinapomorfias são apresentadas. São listadas as espécies pertencentes a ambos os gêneros e as espécies neotropicais que permanecem no gênero heterogêneo *Rhamphomyia* Meigen, 1822. Uma chave é fornecida para separação dos gêneros próximos e 25 espécies são transferidas ao gênero *Porphyrochroa*: *P. abdominalis* (Bezzi, 1905) **comb. nov.**, *P. argyrina* (Bezzi, 1909) **comb. nov.**, *P. barueri* (Smith, 1962) **comb. nov.**, *P. carrerai* (Smith, 1962) **comb. nov.**, *P. catarinae* (Smith, 1962) **comb. nov.**, *P. cyanogaster* (Wheeler & Melander, 1901) **comb. nov.**, *P. digitata* (Smith, 1962) **comb. nov.**, *P. distinctipennis* (Smith, 1962) **comb. nov.**, *P. divisa* (Smith, 1962) **comb. nov.**, *P. dolichocera* (Bezzi, 1905) **comb. nov.**, *P. fasciventris* (Curran, 1931), *P. furcifer* (Wheeler & Melander, 1901) **comb. nov.**, *P. galactodes* (Bezzi, 1909) **comb. nov.**, *P. juri* (Smith, 1962) **comb. nov.**, *P. micrargyra* (Bezzi, 1909) **comb. nov.**, *P. monstrosa* (Bezzi, 1909) **comb. nov.**, *P. mundurucu* (Smith, 1962) **comb. nov.**, *P. mura* (Smith, 1962) **comb. nov.**, *P. orthoneura* (Bezzi, 1905) **comb. nov.**, *P. palliata* (Coquillett, 1902), *P. penicillata* (Bezzi, 1909) **comb. nov.**, *P. perpulchra* (Bezzi, 1909) **comb. nov.**, *P. pulchriiventris* (Bezzi, 1905) **comb. nov.**, *P. rotundipennis* (Bezzi, 1905) **comb. nov.**, *P. seticauda* (Smith, 1963) **comb. nov.**, *P. variseta* (Smith, 1962) **comb. nov.**, and *P. wiedemanni* (Smith, 1962) **comb. nov.** A lectotype is designated for *P. palliata* (Coquillett, 1902). **PALAVRAS CHAVE.** Empidinae, lectótipo, neotropical, combinações novas, taxonomia.

Most Neotropical species of Empidinae with a simple R₄₊₅ vein and setae on the laterotergite have been treated in the genus *Rhamphomyia* Meigen, 1822 or in the genus *Macrostomus* Wiedemann, 1817 based on the key characters presented by

SMITH (1962) on page 223 and discussed on page 241. The nominal genus *Porphyrochroa* Melander, 1927 did not receive attention until SMITH (1967) synonymized it under *Macrostomus* for sharing the following key characters: antennae with elongated

flagellum, dm cell ending more truncate and R_{4+5} (radial) and M_1 (cubital) veins more or less sinuous. The present study, based substantially on male terminalia characters, indicates that both groups should be considered valid genera that share a sister-group relationship. The precise sister-group of both *Macrostomus* and *Porphyrochroa* however, cannot be defined as yet.

The species of *Macrostomus* are currently being revised (Rafael, unpublished data). The genus has a peculiar geographical distribution, occurring almost entirely in the Amazon Basin with only two peripheral records, one from the northern part of the Atlantic forest in Brazil (an undescribed species), and a second record west of the high Andes, comprising *M. fulvithorax* (Curran, 1931) from Panama and an undescribed species from west Colombia. Presently *Macrostomus* contains 13 described species and about 40 species to be described. Its monophyly is well established as substantiated below under "Results".

The recently revalidated genus *Porphyrochroa* (RAFAEL 2001, RAFAEL & ALE-ROCHA 2002) occurs throughout the Neotropical region (except Chile) north through Middle America to the southern United States (i.e. Texas). Based on the present study, the genus contains 32 described species and probably more than 100 will eventually be described. The monophyly of *Porphyrochroa* is also well established (see below under "Results").

The distributional data suggest that both are sister-groups that share the following synapomorphies: 1) phallus shortened, somewhat straight, more or less the length of the hypandrium, somewhat membranous; because it is protected by the hypandrium it is rather membranous (the phallus is long in the ground plan of *Rhamphomyia*, and because it is not protected by the hypandrium, it is well sclerotized); 2) hypandrium usually elongated with a dorsal sulcus in which the phallus fits (the hypandrium is short and the phallus free in the ground plan of *Rhamphomyia*); 3) epandrial-hypandrial articulation positioned anteroventrally on hypandrium so that the hypandrium is almost concealed by the epandrium (in other groups of *Rhamphomyia* examined, the articulation of the epandrium-hypandrium is rather dorsal so that most of the hypandrium is visible); 4) acrostichals reduced or absent (in this lineage there is at most a row of median acrostichal setae before the transverse suture present in only the ground plan of *Porphyrochroa*; most species in this genus have only a tiny pair of acrostichal setae placed near the pronotum, and some species have no acrostichal setae, similar to species of *Macrostomus*; this character also occurs in the Palaearctic genus *Lundstroemiella* Frey, 1922 which is very similar in habitus to *Macrostomus*, but has totally different male terminalia; the acrostichal setae are paired uniseriated to multiseriated in other Empidinae); 5) male eyes narrowly dichoptic, separated by at least one third to one half of the anterior ocellus width, with facets subequal in size or with the ventral facets slightly larger than the dorsal ones (holoptics eyes with larger facets dorsally are part of the ground plan of *Rhamphomyia*).

Species that cannot be placed in either *Macrostomus* or

Porphyrochroa are tentatively included in *Rhamphomyia*, a large heterogeneous group that is not very diverse in the Neotropical region. On the basis of this study the genus is now restricted to 15 described Neotropical species that require a detailed phylogenetic analysis with included species from other zoogeographical regions. Nine of the Neotropical species of *Rhamphomyia* are from Chile and Argentina, one is from southern Brazil, four are from Bolivia and Peru, and one is from Mexico.

In addition, the small unrelated genus *Clinorhampha* Collin, 1933, known presently in the Neotropical region from three described species restricted to Chile and Argentina (SMITH 1967), also has a simple R_{4+5} vein and setae on the laterotergite. Although it is superficially similar to *Macrostomus*, *Porphyrochroa* and *Rhamphomyia* on the basis of these two features, *Clinorhampha* has more horizontally oriented mouthparts and male terminalia bearing postgonites, and therefore appears closely related to the empidine genus *Sphicosa* Philippi, 1865.

MATERIAL AND METHODS

This study is based on the examination of type and non-type specimens housed in the following institutions: (BMNH) The Natural History Museum, London, England; (CAS) California Academy of Sciences, San Francisco, USA; (CNC) Canadian National Collection of Insects, Ottawa, Canada; (UFAM) Universidade Federal do Amazonas, Manaus, Brazil; (INPA) Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil; (MPEG) Museu Paraense Emílio Goeldi, Belém, Brazil; (MZSP) Museu de Zoologia de São Paulo, São Paulo, Brazil; (USNM) United States National Museum of Natural History, Washington, USA; (ZMC) Zoologisk Museum, Copenhagen, Denmark.

Entire specimens or dissected pieces were macerated in hot 85% lactic acid according to CUMMING (1992). The material was examined on excavated slides. Illustrations were made using a camera lucida tube attached to a WILD M8 stereomicroscope and a Nikon Optiphot or Leica DM LS compound microscope. The detached parts were placed in a microvial with glycerin and pinned along with the specimen.

Morphological terminology primarily follows McALPINE (1981). Homologies of the male terminalia follow CUMMING *et al.* (1995) as modified by SINCLAIR (2000). Colours for homologous structures follow CUMMING *et al.* (1995). The position of the leg setae follows SINCLAIR (1994). The geographical records were taken from labels of examined material and from information provided by biographic data.

RESULTS

Examination of the Neotropical species previously classified in *Macrostomus* indicates that they belong to two distinct monophyletic lineages, namely *Macrostomus sensu stricto*, an Amazonian genus with a few peripheral records, and *Porphyrochroa*, a genus primarily distributed in the Neotropical region, except Chile.

***Macrostomus* Wiedemann, 1817**

Macrostomus Wiedemann, 1817: 59; type-species: *Hybos ferrugineus* Fabricius, by monotypy. Smith, 1967: 29 (catalogue).

Rhamphomyia; Bezzi, 1905: 428 (*partim*). Bezzi, 1909: 320 (*partim*).

Axelempis Curran, 1931: 9; type-species: *A. fulvithorax* Curran, by original designation.

Macrostomus; Smith, 1961: 53. Smith, 1962: 240 (*partim*). Smith, 1967: 29 (*partim*).

The monophyly of *Macrostomus* is supported by the following hypothesized synapomorphies: 1) male cerci divided into anterior and posterior lobes, each lobe with modified setae and internal process that has a clasping function (Figs 4, 16, 17) (in Empidinae the cerci are well sclerotized, elongated, not subdivided, placed dorsally on the epandrium); 2) epandrium higher than long, subtriangular with dorsal sinus where posterior lobes of the cerci fit (Figs 4, 16) (in *Porphyrochroa* and other *Rhamphomyia* species examined the epandrium is somewhat rounded with its dorsal surface rather convex to straight (Figs 14, 18); 3) ejaculatory apodeme broadly fused to phallus (Figs 6, 16) (unique to this lineage); 4) phallus base distinctly C-shaped (Figs 6, 16); 5) acrostichal setae absent (this modification also exhibits homoplasy in some species of *Porphyrochroa*); 6) cell dm elongated and anal lobe narrow (Fig. 3) (this unusual modification is also found in some species of *Porphyrochroa*, but cell dm is not as elongate and the anal lobe is not as narrow as that observed in *Macrostomus*); 7) frons without setae (the presence of setae on the frons is considered a plesiomorphic character in Empidinae).

***Macrostomus ferrugineus* (Fabricius, 1805)**

Figs 1-10, 16-17

Hybos ferrugineus Fabricius, 1805: 146.

Macrostomus ferrugineus; Wiedemann, 1817: 59. Collin, 1933: 210, fig. 45 (terminalia figure). Smith, 1961: 55, figs 5-6 (lectotype designation, redescription). Smith, 1967: 30 (catalogue).

Rhamphomyia ferruginea; Bezzi, 1909: 321 (key).

Diagnosis. Predominantly yellow; postcranium black, upper third shining black without pruinescence; intra-alar and supra-alar presutural setae absent; male tergite 8 with thin distal projection; female without pinnate scales on legs.

Redescription. Male (based on Brazilian Amazonian specimens conspecific with the examined lectotype designated by SMITH 1961). Head (Fig. 1) longer than higher. Eyes dichoptic, bare; inferior facets slightly larger than superior ones. Frons shining black, very narrow, approximately one third of the anterior ocellus width. Face as long as frons, gray pruinose, slightly more separated than frons. Ocellar tubercle slightly protuberant, with pair of subparallel and proclinate setae. Postcranium shining black on upper part, gray pruinose on

lateral, ventral and posterior areas. Pair of parallel vertical setae longer than postocular row of setae, the latter uniseriated, upcurved and stronger dorsally, downcurved and weaker ventrally; 3-5 occipital setae on upper part, behind vertical setae. Gena with 3-4 and postgena with 1-2 slender setae. Antenna (Fig. 1) with scape and pedicel yellow to brown, the latter usually lighter, yellow; flagellum velvety black, pubescent. Palpus (Fig. 2) yellow with 1-2 setae ventrally and 1 longer distally. Proboscis yellow, longer than head height.

Thorax shining yellow, sparsely yellow pruinose, with black setae. Thoracic setae: 4 reclined dorsocentrals, the posterior pair stronger; 1 strong postpronotal, 1 tiny; 1 strong postalar, 1 tiny; 1 strong notopleural, 2 weaks; 2 scutellar pairs, the outer weaker and sometimes absent; 3-4 weak antepronotals; 1-2 tiny prosternals and 3-4 strong katatergitals. Legs shining yellow with apex of mid and hind femur, apex of hind tibia and distal tarsomeres brown to black. Stronger setae are 2-4 anteroventral on distal third and 1 anterior, 1 dorsal on subapical portion of hind femur; apical row on all tibiae; hind tibia with 4 longer dorsal setae equally spaced, sometimes the first or the first two setae absent; first hind tarsomere with 2 slender dorsal setae; all tarsomeres with ventral setae and apical row slightly stronger.

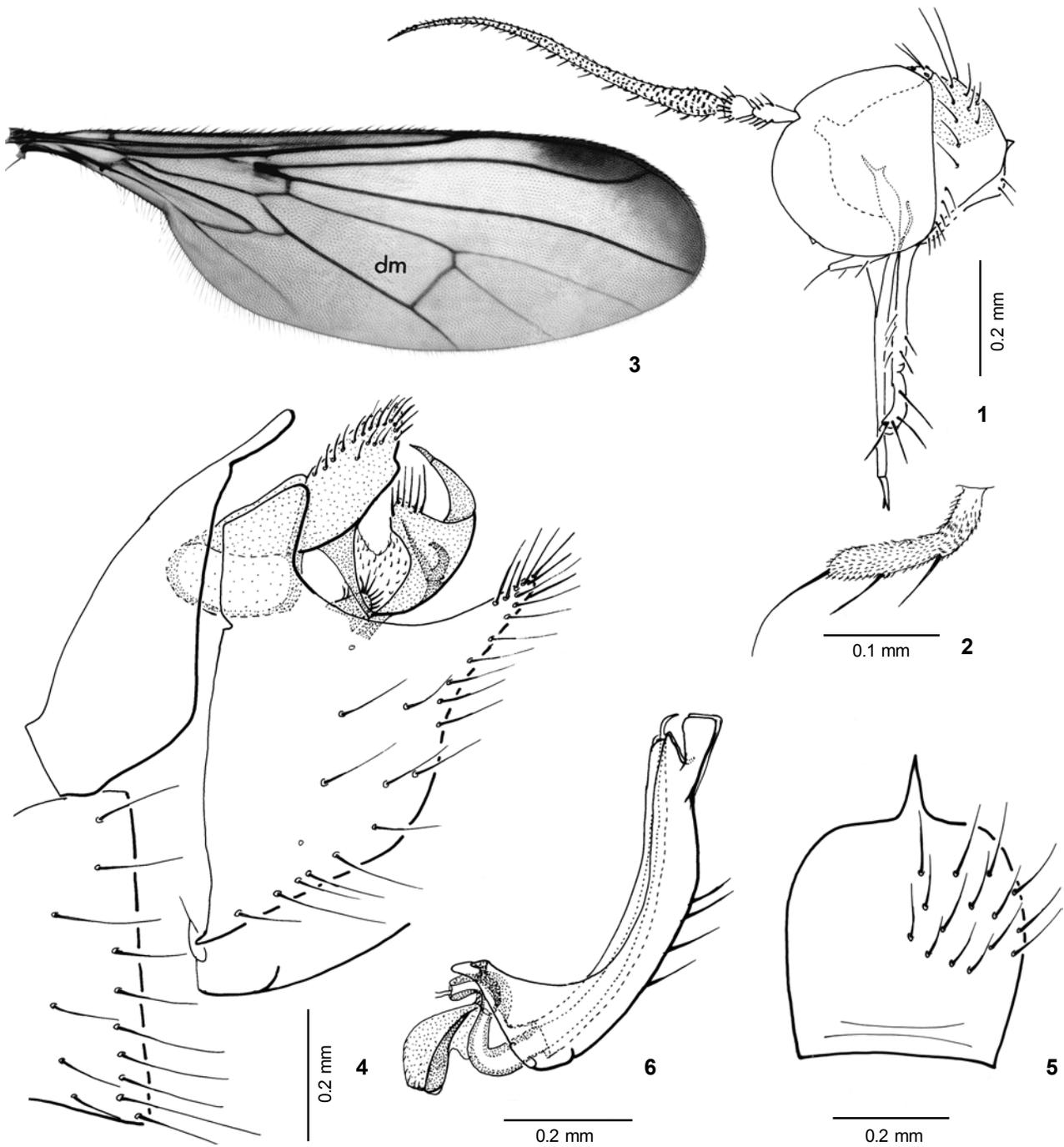
Wing (Fig. 3) very lightly infuscated, nearly hyaline, except for brown costal cell and apical patch. Pterostigma darker. Veins M_1 , M_2 and apex of A_1 evanescent; cell dm long. Halter light yellow to light brown.

Preabdomen entirely yellow to light brown with dark dorsal patches on tergites. Tergites with uniform short setae, except tergite 2 with 2-3 longer setae posterolaterally. Sternites with few setae along midline and laterally (as in figure 7 of female); the anterior tergites wider than long, becoming longer than wide posteriorly. Sternite 8 U-shaped, higher than anterior sternites (Fig. 4).

Postabdomen (Figs 4, 5, 6) light brown to black, darker than preabdomen. Tergite 8 (Fig. 5) with a thin distal projection. Cercus divided in two lobes connected to each other by long ventral projection (Figs 16, 17); anterior lobe (of the cercus) bristled dorsally and with a median and large internal "bridge"; posterior lobe with longer anterodorsal setae, an acuminate distal projection and a smaller bifid internal protuberance. Cercal plate small, placed below cerci. Hypandrium and phallus (Figs 6, 16) almost same length.

Female. Similar to male in all respects except frons wider, approximately the anterior ocellus width; face about half as wide as frons near the antennal insertion and slightly wider at apex; wing wider with cell r_1 brown infuscated. Sternites as in figure 7. Postabdomen (Figs 8, 9) darker than preabdomen. Genital fork (Fig. 10) small, genital chamber lightly sclerotized. Sternite 8 (Figs 7, 8) slightly serrated distally, with setae placed at apex and longitudinally along midline.

Size. Lectotype male: body 3.1 mm; wing 3.3 mm. Variation: body 3.0-3.2 mm; wing: 3.2-3.4 mm.

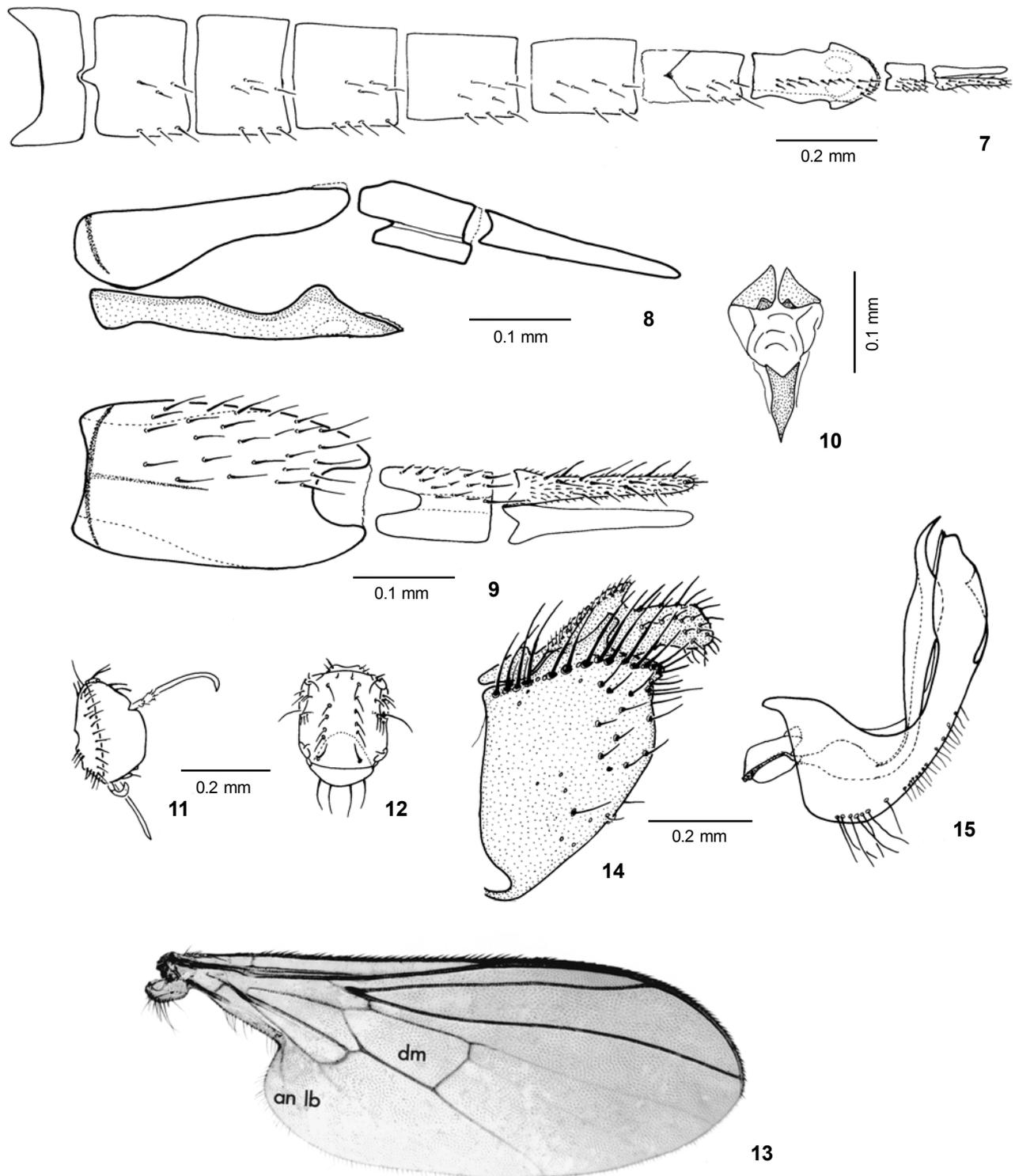


Figures 1-6. *Macrostomus ferrugineus*, male: (1) head, lateral view; (2) palpus, lateral view; (3) wing; (4) terminalia, apex of hypandrium excluded, lateral view; (5) tergite 8, dorsal view; (6) hypandrium and phallus, lateral view.

Distribution. Guyana, Brazil (Roraima, Amapá, Amazonas, Pará).

Type material examined. [America Meridionalis, Smidt],

Type, Lectotype *Hybos ferrugineus* F[abricius], ♂, det. 1960, K.G.V. Smith [Lectotype male, ZMC]. One additional label says: "this is the specimen for which Wiedemann erected his genus



Figures 7-15. (7-10) *Macrostomus ferrugineus*, female: (7) abdominal sternites; (8) distal abdominal segments, lateral view; (9) idem, dorsal view; (10) genital fork, dorsal view. (11-15) *Porphyrochroa palliata*, male: (11) head lateral view; (12) thorax setae, dorsal view; (13) wing; (14) epandrium and cercus, lateral view; (15) hypandrium and phallus, lateral view. (an lb) anal lobe, (dm) discal medial cell.

Macrostomus 1817, Zool. Mag. 1:59, K.G.V.Smith."

Other specimens. BRASIL, Roraima, Serra Pacaraima, BR-174, 042704N-610756W, 800 m, 01-07.IX.1995, J.A.Rafael *et al.*, arm. Malaise (2 males INPA); Amapá, Serra do Navio, X.1957, J. Lane (1 male MZSP); Pará, Belém, Mocambo, 09.XII.1977 (2 male MPEG); Alter do Chão, 15-18.II.1992, J.A.Rafael, varredura (2 males 4 females INPA, 3 males 2 females CNC); Rio Trombetas, Cruz Alta, 25-28.VII.1992, João Vidal, arm. Malaise (2 males 1 female INPA, 1 male CNC); Amazonas, Manaus, F. Esteio, R. 1501, km 41, ZF3, 05-20.IV.1995, L.E.F.R.Silva, arm. Malaise (2 males CNC); 15-29.V.1995, arm. Suspensa, 2 m (1 male INPA); Reserva Ducke, arm. cola, 17-30.VIII.1991, Jailson Vidal (1 female INPA); 16-23.X.1996, F.L.Oliveira, arm. Malaise (1 female INPA); Reserva Campina, arm. cola, 08-19.VI.1992, J. Vidal (1 female INPA); Parque Nacional do Jau, Rio Carabinani, 16.IV.1994, Ruth & Ricardo, Malaise (1 female INPA); Igarapé Miratucu, Ig. do Gerlei, 015700S-614900W, 23-28.VII.1995, J.A. Rafael & J. Vidal, arm. Malaise (1 female INPA).

Lectotype condition. Antennae and left midleg missing; right mid tibia and mid tarsi missing; left wing mounted on microslide with balsam; abdomen in microvial with glycerin.

Note. The type locality cited by FABRICIUS (1805) is "America Meridionalis" and the collector is "Smidt". This species is typically South American and PAPAVERO (1971: 21) indicates that: "Smidt visited besides several West Indian islands, certain places on the South American mainland, such as Essequibo and Demerara in the present British Guiana; therefore, all of the South American species cited as having been collected by Smidt can with certainty be considered as coming from the vicinity of the named localities".

Porphyrochroa Melander, 1928

Porphyrochroa Melander, 1928: 137; type-species: *Sciodromia palliata* Coquillett by original designation. Smith, 1967: 29 (catalogue: as synonym of *Macrostomus*). Rafael, 2001: 130. Rafael & Ale-Rocha, 2002: 241.

Rhamphomyia; Bezzi, 1905: 428 (*partim*). Bezzi, 1909: 320 (*partim*).

Macrostomus; Smith, 1961: 53. Smith, 1962: 240 (*partim*). Smith, 1967: 29 (*partim*).

The nominal genus *Porphyrochroa* has generally been overlooked since it was described by MELANDER (1928). SMITH (1967) considered it a junior synonym of *Macrostomus*. *Porphyrochroa* was eventually revalidated by RAFAEL (2001) to receive one of the species, *P. fasciventris* (Curran), that CURRAN (1931) originally described in the genus *Axelempis*. The present study of the type-species and other included species reveals that the *Porphyrochroa* is related to *Macrostomus* and belongs to a distinct monophyletic lineage.

The monophyly of *Porphyrochroa* is based on the following hypothesized synapomorphies: 1) male tergite 8 with few setae confined posterolaterally (in *Macrostomus* and other Neo-

tropical species of *Rhamphomyia* examined the setae on tergite 8 are spread over the tergite); 2) male tergite 7 with posteroventral protuberance (Fig. 18) (this character is sclerotized to membranous and particularly visible from dorsal view); 3) abdomen metallic blue or blue-green in colour (this faint metallic luster is characteristic of species of *Porphyrochroa*).

The precise sister-group of the *Macrostomus* + *Porphyrochroa* lineage is not yet defined, but presumably belongs to one of the New World taxa currently classified in *Rhamphomyia* Meigen, a diverse polyphyletic group when considered on a world wide basis.

Porphyrochroa palliata (Coquillett, 1902)

Figs II-15, 18-19

Sciodromia palliata Coquillett, 1902: 140.

Microphorus palliatus; Coquillett, 1903: 264. Bezzi, 1905: 460 (catalogue).

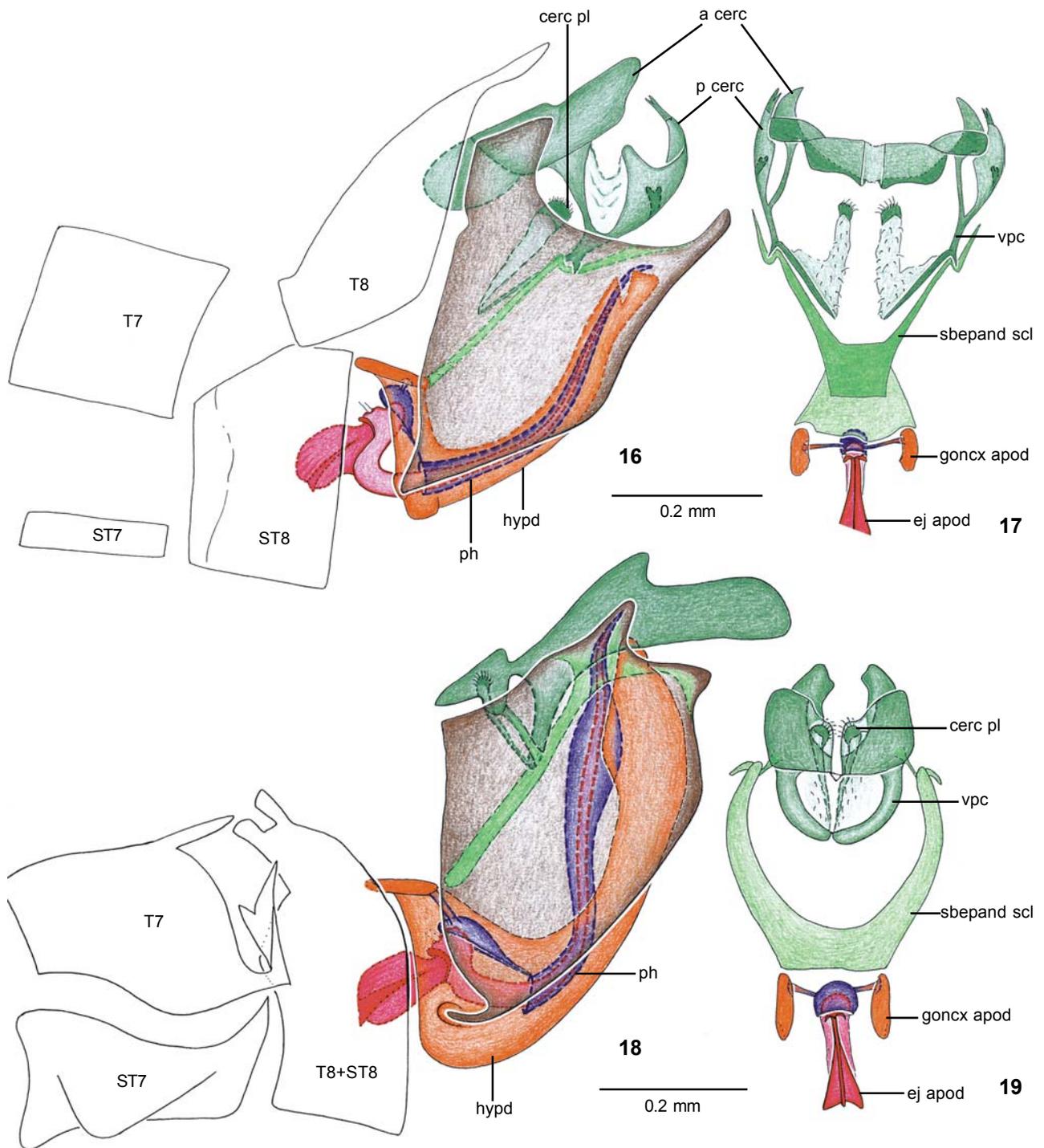
Porphyrochroa palliata; Melander, 1928: 137, pl. 2, fig. 12.

Macrostomus palliatus; Smith, 1967: 31 (catalogue).

Diagnosis. Shining black with metallic blue or blue-green reflection on abdomen; male frons as large as anterior ocellus, with two setae subequal to ocellar setae; male face narrower than frons, nearly two times as long as its length; thorax distinctly gray pruinose on posterior disc of scutum and on scutellum; last pair of dorsocentral setae proclinate, contrasting with five reclinate anterior pairs; legs entirely yellow; wing hyaline with inconspicuous pterostigma.

Redescription. Male (based on male syntypes deposited at BMNH and USNM). Head (Fig. 11) higher than longer. Eyes dichoptic, bare; inferior facets larger than superior ones. Frons shining black, as large as anterior ocellus width, with two black setae subequal to ocellar setae. Face black, nearly two times longer than length of frons and about one third its width. Ocellar tubercle slightly protuberant with pair of subparallel and proclinate setae. Postcranium shining black, sparsely gray pruinose. Pair of parallel vertical setae longer than postocular row, the later uniseriated, proclinate, longer ventrally; 1-2 occipital setae on upper part, behind vertical setae. Gena with 5 and postgena with 3 slender setae. Antenna with scape dark brown to black, pedicel dark yellow, flagellum velvety black, short pubescent. Palpus brown with one distal seta visible. Proboscis yellow, shorter than head height.

Thorax shining black with postpronotum and postalar callus rather yellow; gray pruinose on posterior disc of scutum, on scutellum and more sparsely on mesopleuron, metapleuron and prosternum; in certain light gray pruinose more distinctly visible on ventral part of mesopleuron. Thoracic setae (Fig. 12): pair of tiny inconspicuous acrostichals placed near antepronotum; 6 dorsocentrals with last pair longer, proclinate, contrasting with five weaker reclinate anterior pairs; 1 strong postpronotal, 1 tiny; 1 weak postalar, 1 tiny; 1 weak supra-alar presutural, 3 weak supra-alar postsuturals; 1-2 strong, 2-3 weak



Figures 16-19. (16-17) Male terminalia of *Macrostomus ferrugineus*: (16) lateral view; (17) anterodorsal view. (18-19) Male terminalia of *Porphyrochroa palliata*: (18) lateral view; (19) anterodorsal view (epandrium, hypandrium and phallus excluded in figures 17 and 19). (a cerc) Anterior cercus, (cerc pl) cercal plate, (ej apod) ejaculatory apodeme, (goncx apod) gonocoxal apodeme, (hypd) hypandrium, (p cerc) posterior cercus, (ph) phallus, (sbepand scl) subepandrial sclerite, (ST) sternite, (T) tergite, (vpc) ventral projection of cercus.

notopleurals; 1-2 weak anteprenotals; 3-5 tiny prosternals and 2 scutellar pairs, slightly convergent. Legs entirely yellow with tarsi light brown and setae yellow to light brown. Mid femur with row of anteroventral and posteroventral setae slightly longer; hind femur with setae slender and stronger than fore and mid tibia, with stronger anteroventral seta placed near the middle. All tibiae with anteroventral and posteroventral distal setae slightly stronger; fore tibia with posterior row longer; mid tibia with posterior row slightly longer; hind tibia with anterodorsal and posterodorsal row of slender and notably longer setae. All tarsi with longer setae dorsally; all first tarsomeres with 1-2 short strong setae ventrally at base.

Wing (Fig. 13) hyaline with inconspicuous pterostigma. Cell dm short; veins M_1 , M_2 , CuA_1 and A_1 evanescent. Halter yellow, with knob slightly darker.

Preabdomen shining black with metallic blue-green reflection. All tergites with light setae longer laterally. Sternites concolorous with tergites, more sparsely haired, wider than longer. Segment 7 modified as in figure 18.

Postabdomen concolorous with preabdomen. Tergite 8 fused to sternite 8 (Fig. 18). Cercus large, not divided, with rather short ventral projection (Figs 18-19, vpc). Cercal plate small, placed medially to cerci. Hypandrium and phallus almost same length (Figs 15, 18).

Size: body 2.1 mm; wing 2.3 mm.

Female. Unknown.

Type material examined. Lectotype male (here designated to avoid any future confusion over the identity of this type series): MEXICO, Tabasco, Frontera, 2.19 [February 19], Townsend coll., type no. 6315 USNM [red label], *Sciodromia palliata* Coq., *Microphorus palliata* Coq (USNM) [left antenna missing]. Paralectotype male same data as lectotype, Syntype [rounded label with blue margin] (USNM) [headless, legless, abdomen in microvial with glycerin]. Paralectotype male same data as lectotype (BMNH) with a label: *Macrostomus* = *Porphyrochroa*, syn. n., det. K.G.V. Smith, 1965 [left antenna missing, right wing mounted on microslide with balsam, terminalia in microvial with glycerin].

Remarks. COQUILLET (1902) described the species *Sciodromia palliata*, the type species of *Porphyrochroa*, from a series of four specimens, two of which are deposited in the USNM and two in the BMNH. We did not examine the second specimen from the BMNH, which apparently is in very poor condition missing its abdomen and four of its legs.

CLASSIFICATION

Key to Neotropical genera of Empidinae with setae on the laterotergite and R_{4+5} vein simple

1. Cell dm truncate apically (Figs 3, 13); basal flagellomere elongate (Figs 1, 11); acrostichal setae absent or reduced (Fig. 12), not present on scutum in postsutural area; male terminalia with phallus short and somewhat membranous,

usually concealed within elongate hypandrium (Figs 6, 15, 16, 18) 2

- 1'. Cell dm more pointed apically; basal flagellomere shorter; acrostichal setae usually present as complete biserial or multiserial rows; male terminalia with phallus long and well sclerotized, visible beyond hypandrium 3
2. Abdomen without metallic luster; cell dm elongate; anal lobe of wing weakly developed (Fig. 3); male tergite 7 without posteroventral protuberance (Fig. 16) *Macrostomus* Wiedemann, 1817
- 2'. Abdomen with faint metallic blue or blue-green luster; cell dm usually short; anal lobe of wing usually well developed (Fig. 13); male tergite 7 with posteroventral protuberance (Fig. 18) *Porphyrochroa* Melander, 1927
3. Proboscis vertical or nearly so; male terminalia without postgonites *Rhamphomyia* Meigen, 1822
- 3'. Proboscis nearly horizontal; male terminalia with postgonites (Patagonian) *Clinorhampha* Collin, 1933

Systematic placement of Neotropical species of *Macrostomus*, *Porphyrochroa* and *Rhamphomyia*

Examined species that remain in the genus *Macrostomus* are *M. apicalis* (Bezzi, 1909), *M. arcucinctus* (Bezzi, 1909), *M. argyrotarsis* (Bezzi, 1909), *M. cervicauda* Smith, 1963, *M. cysticerus* Smith, 1963, *M. dolichopterus* (Bezzi, 1905), *M. ferrugineus* (Fabricius, 1805), *M. fulvithorax* (Curran, 1931), *M. grallatrix* (Bezzi, 1909), *M. limbipennis* (Bezzi, 1909), *M. macerrimus* (Bezzi, 1909), *M. nigriventris* (Macquart, 1846) and *M. pictipennis* (Bezzi, 1909).

The following species, previously placed in *Macrostomus*, were examined and are hereby transferred to the genus *Porphyrochroa*: *P. barueri* (Smith, 1962) **comb. nov.**, *P. digitata* (Smith, 1962) **comb. nov.**, *P. distinctipennis* (Smith, 1962) **comb. nov.**, *P. divisa* (Smith, 1962) **comb. nov.**, *P. fasciventris* (Curran, 1931), *P. juri* (Smith, 1962) **comb. nov.**, *P. munduruco* (Smith, 1962) **comb. nov.**, *P. mura* (Smith, 1962) **comb. nov.**, *P. palliata* (Coquillett, 1902), *P. perpulchra* (Bezzi, 1909) **comb. nov.**, *P. seticauda* (Smith, 1963) **comb. nov.**, *P. variseta* (Smith, 1962) **comb. nov.** and *P. wiedemanni* (Smith, 1962) **comb. nov.**

The following species, previously classified in the genus *Rhamphomyia*, were examined and are hereby transferred to the genus *Porphyrochroa*: *P. argyrina* (Bezzi, 1909) **comb. nov.**, *P. carrerai* (Smith, 1962) **comb. nov.**, *P. catarinae* (Smith, 1962) **comb. nov.**, *P. cyanogaster* (Wheeler & Melander, 1901) **comb. nov.**, *P. furcifer* (Wheeler & Melander, 1901) **comb. nov.**, *P. galactodes* (Bezzi, 1909) **comb. nov.**, *P. micrargyra* (Bezzi, 1909) **comb. nov.**, *P. monstrosa* (Bezzi, 1909) **comb. nov.** and *P. penicillata* (Bezzi, 1909) **comb. nov.**

Five species, which were originally described in the genus *Rhamphomyia* by BEZZI (1905) and later transferred to the genus *Macrostomus* by SMITH (1967), were not examined. The types deposited in the Hungarian Natural History Museum,

were destroyed in 1956 (SMITH 1961: 53, 54). Nevertheless, the following five species are also being included in *Porphyrochroa* based on the original descriptions: *P. abdominalis* (Bezzi, 1905) **comb. nov.**, *P. dolichocera* (Bezzi, 1905) **comb. nov.**, *P. orthoneura* (Bezzi, 1905) **comb. nov.**, *P. pulchriventris* (Bezzi, 1905) **comb. nov.** and *P. rotundipennis* (Bezzi, 1905) **comb. nov.**

In addition, RAFAEL & ALE-ROCHA (2002) described the following species of *Porphyrochroa* from the Dominican Republic: *P. argentata* Rafael & Ale-Rocha, *P. dominicanensis* Rafael & Ale-Rocha, *P. genalis* Rafael & Ale-Rocha, *P. latifrons* Rafael & Ale-Rocha, and *P. pectinata* Rafael & Ale-Rocha.

The remaining 15 described Neotropical species, which do not belong in either *Macrostomus* or in *Porphyrochroa*, are left in *Rhamphomyia*, a heterogeneous genus that requires a world wide revision. The following species of *Rhamphomyia* were described from Chile and Argentina by BEZZI (1909), BRÈTHES (1924) and COLLIN (1933): *R. caeca* Collin, 1933, *R. candidula* Collin, 1933, *R. carenifera* Bezzi, 1909, *R. eminens* Collin, 1933, *R. galbanata* Collin, 1933, *R. intersecta* Collin, 1933, *R. mollis* Collin, 1933, *R. porteri* Brèthes, 1924 and *R. seposita* Collin, 1933. In addition, *Rhamphomyia verae* Smith, 1962 was described from southern Brazil by SMITH (1962), *R. tympanica* Bezzi, 1909 was described from Bolivia by BEZZI (1909) (this species has a very different terminalia and probably belongs to a different genus), and *R. tolteca* Wheeler & Melander, 1901 was described from Mexico by WHEELER & MELANDER (1901). In addition, three species described in the genus *Rhamphomyia* from Bolivia and Peru by BEZZI (1905), are known only from types that were destroyed in the Hungarian Natural History Museum. Based on the original descriptions these species, namely *R. boliviana* Bezzi, 1905, *R. leucophenga* Bezzi, 1905 and *R. villosipes* Bezzi, 1905 are tentatively included in *Rhamphomyia*.

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