

# Epipsocetae (Psocoptera) from the Reserva Ducke, Amazonas

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## Abstract

31 species of Epipsocetae are recorded from the Reserva Ducke, near Manaus (Brazil), of which 27 are described as new, and illustrated. The new taxa represent the genera *Ptiloneura* (1), *Triplocania* (8), *Euplocania* (2), *Isthmopsocus* (1), *Neurostigma* (4), *Dicropso-*  
*cus* (1), *Epipsocus* (10), and their affinities are discussed.

## INTRODUCTION

This paper is a taxonomic treatment of part of a large collection of Psocoptera made in the Reserva Ducke, near Manaus (Amazonas) during 1977-78 by Drs. J. Arias and N. D. Penny, and deals with the Epipsocetae.

The psocopteran group Epipsocetae is well-represented in Brazil and other parts of tropical South America. Thirty eight species, representing four families, have been described from Brazil, and none of these have yet been recorded from other parts of the continent. They were described by Banks (1920), Roesler (1940), New (1972, 1974), Eertmoed (1973) and Badonnel (1974); most are known only from one sex and from few specimens.

The collection forming the subject this paper comprises 31 species of Epipsocetae, of which 27 are described as new: the remaining four are already recorded from Brazil. The occurrence of this number of species at one site, and of 21 species at a small Mato Grosso site (New, 1972) — the only other Brazilian site so far sampled for psocids over a period — together with the fact that only three species occurred in both collections, indicates that the Brazilian fauna of Epipsocetae must be very large, and that considerable radiation has occurred. Large areas of the country have not been surveyed for psocids and, as single-

tons only are known for many species, it seems that many of them may be rare. This collection adds considerably to our knowledge of several genera, and provides the first South American record of a genus hitherto known only from Melanesia. Many of the species are described below from single specimens, sometimes incomplete, but in all cases genitalia are present. The distinctive nature of male genitalia, in particular, renders the likelihood of confusion between species small and the two sexes of Epipsocetae are commonly associable on venational features or details of body and wing coloration.

Most specimens were taken in Malaise traps or light traps, and are males: in general this sex is more commonly attracted to light and many Ptiloneuridae (in particular) are known only from singletons captured by this method.

For the sake of brevity, only the collecting method and date is given for the specimens. All are from the Reserva Ducke (03°08'S, 60°02'W), 26 km along the Manaus - Itacoatiara Highway (Am-010) to the N.E. of Manaus, Amazonas, Brazil. The vegetation of the area is primary rain forest. Types of the new species will be deposited in the collections of INPA (Manaus) and, where possible, paratypes in the British Museum (Natural History), London. Measurements, other than for body length (B), are from slide-mounted specimens. All are in mm, and the following abbreviations are used: FW (forewing length); HW (hindwing length);  $f_1$ ,  $f_2$  (first and second flagellar segment lengths); F, T,  $t_1$ - $t_3$  (lengths of hind femur, tibia and tarsal segments 1-3), ct (number of ctenidia on hind tarsal segments 1-3).

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***Ptiloneura (Loneura) amazonica* sp. n.**

(Figs. 12-14, 97)

**FEMALE.** Unknown.

**MALE.** Coloration. Pale brown; head darker. Eyes black. Ocelli on black tubercle. Vertex between eyes and ocelli dark brown; frons, except median anterior region, dark brown; genae dark brown; postclypeus with traces of 5 or 6 broad striae each side of midline; anteclypeus and labrum dark brown; maxillary palpi dark brown; antennae paler. Thorax with slight dark brown markings on dorsum and pleura. Legs: femora with 2 dark brown bands, tibiae darkened near apex, tarsi wholly dark brown. Forewing (Fig. 12) marked with brown: apices of veins darkened; base and apex of pterostigma dark brown; a series of dark arcs near margin between all veins from  $R_4+5$  — Cula; nodulus and adjacent area of cell Culb darkened. Hindwing pale, except for slight darkening at apices of veins.

Abdomen irregularly darkened on all tergites.

**Morphology.** Lacinial apex as in Fig. 97. Forewing venation (Fig. 12); M 5-branched. Hindwing with M 3-branched. Hypandrium (Fig. 13) heavily sclerotised, with 2 elongate pointed lateral processes. Phallosome (Fig. 14) complex, frame closed anteriorly, and with complex heavily-sclerotised radular rods. Epiproct bluntly rounded, with group of about 8 lateral setae and small apical spiculate area. Paraproct with field of about 24 trichobothria.

**Dimensions.** B 3.10, FW 3.28, HW 2.25,  $f_1$  0.555,  $f_2$  0.450,  $f_1/f_2$  1.233, F 0.870, T 1.470,  $t_1$  0.645,  $t_2$  0.060,  $t_3$  0.120,  $t_1/t_2$  10.750,  $t_2/t_3$  0.500, ct 22.1.2.

Holotype ♂, Malaise trap 14.iii.1978; paratypes (all Malaise trap) 1 ♂ 16.v.1978, 2 ♂ 8.viii.1978, 1 ♂ 11.viii.1978, 1 ♂ 25.viii.1978, 1 ♂ 13.ix.1978.

**COMMENTS**

This species is clearly referable to *Ptiloneura* Enderlein (1900), and the forewing markings are rather similar to those of *P.*

(*Loneura*) *splendida* Mockford (1957) known from Guatemala and Mexico, male genitalia of which were figured in part by Eertmoed (1973). Eertmoed (unpublished data supplement to his paper) gives the following hypandrial characters for *splendida*: (a) distal margin distinctly bilobed, lobes heavily sclerotised, (b) heavily sclerotised, (c) lateral lobes cylindrical. The two taxa are thus closely related and differ mainly in the different forewing markings in cell Culb and in details of the phallosome: the radular sclerites of *splendida* are more discrete than in *amazonica*, and the anterior of the frame is relatively broad.

***Triplocania lunulata* sp. n.**

(Figs. 1-4, 94)

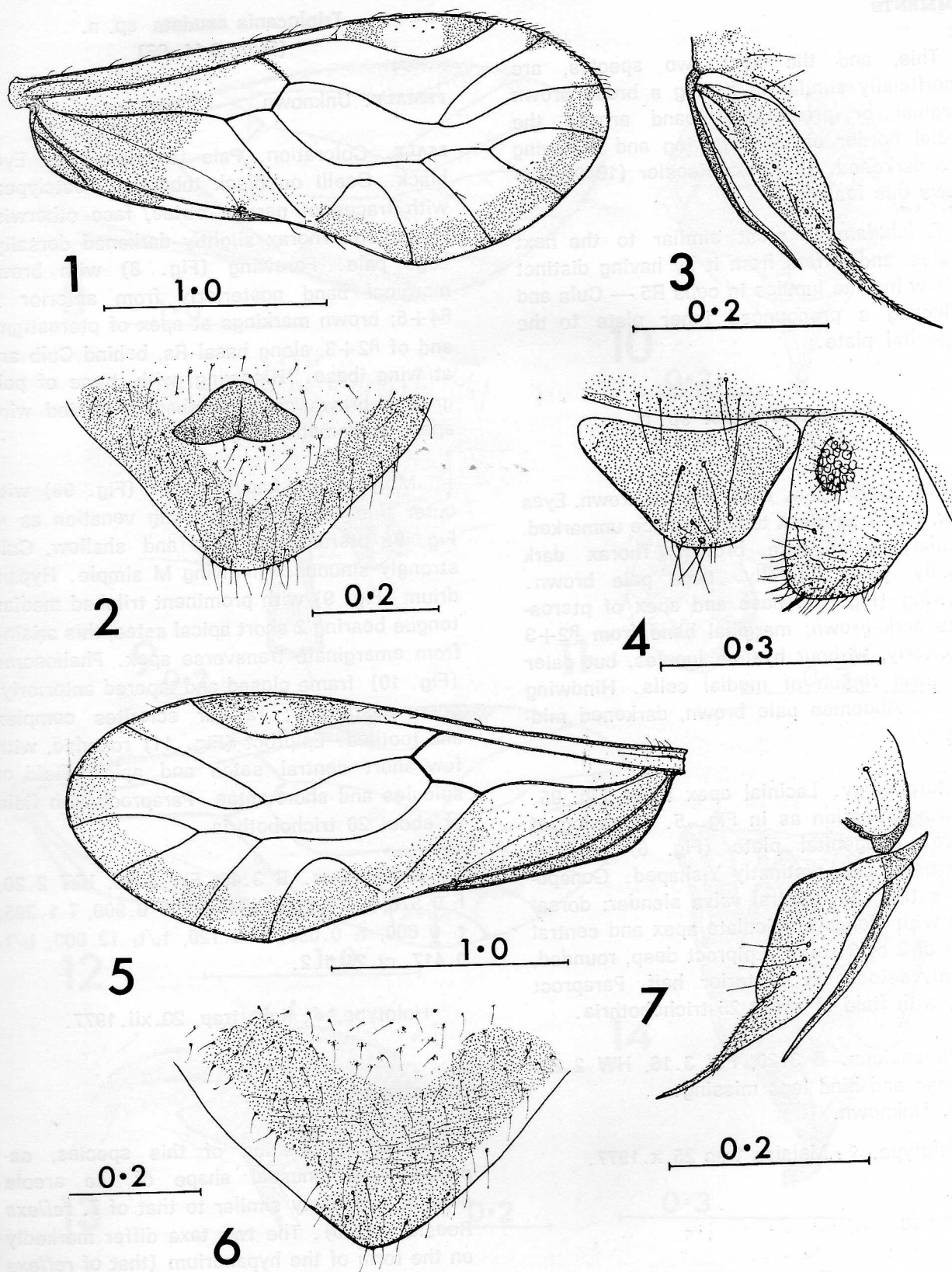
**FEMALE.** Coloration. Very dark brown, almost black. Eyes black. Head glossy, unmarked, maxillary palpi and antennae dark. Thorax dark brown. Legs pale brown. Forewing (Fig. 1) basally brown; base and apex of pterostigma brown; a brown marginal band from  $R_4+5$  — Culb, with marginal hyaline lunules in all cells. Hindwing with basal half very pale greyish brown, otherwise unmarked, except for apices of veins slightly darkened. Abdomen dark brown, slightly paler ventrally.

**Morphology.** Lacinial apex as in Fig. 94. Forewing venation (Fig. 1): areola postica strongly domed. Hindwing M simple. Subgenital plate (Fig. 2) bluntly rounded; a thickened inner plate. Gonapophyses (Fig. 3): ventral valve slender, spiculate near apex; dorsal valve spiculate, with central group of 3-5 setae. Epiproct (Fig. 4) rounded, with 3 or 4 long central setae and more numerous apical setae. Paraproct (Fig. 4) with field of about 18 trichobothria.

**Dimensions.** B 2.85, FW 2.68, HW 1.96, antennae missing, F 0.705, T 1.110,  $t_1$  0.465,  $t_2$  0.045,  $t_3$  0.090,  $t_1/t_2$  10.333,  $t_2/t_3$  0.500, ct 19.1.2.

**MALE.** Unknown.

Holotype, ♀, Malaise trap, 14.iii.1978; paratype ♀, same data.



Figs. 1-7 — Figs. 1-4, *Triplocania lunulata* sp. n.: Fig. 1 — Forewing; Fig. 2 — Subgenital plate; Fig. 3 — Gonapophyses; Fig. 4 — Female epiproct and paraproct. Figs. 5-7, *Triplocania ariasi* sp. n.: Fig. 5 — Forewing; Fig. 6 — Subgenital plate; Fig. 7 — gonapophyses (Scales in mm).



This, and the next two species, are superficially similar in having a broad brown marginal or premarginal band around the medial border of the forewing and the wing base darkened. *T. reflexa* Roesler (1940) also shows this feature.

*T. lunulata* is most similar to the next species, and differs from it by having distinct shallow hyaline lunules in cells R5 — Cula and by having a pronounced inner plate to the subgenital plate.

***Triplocania ariasi* sp. n.**  
(Figs. 5-7, 95)

**FEMALE.** Coloration. Dark greyish brown. Eyes black. Ocelli on black tubercle. Face unmarked. Maxillary palpi pale brown. Thorax dark dorsally, paler laterally. Legs pale brown. Forewing (Fig. 5): base and apex of pterostigma dark brown; marginal band from R2+3 posteriorly, without hyaline lunules, but paler in central region of medial cells. Hindwing hyaline. Abdomen pale brown, darkened mid-dorsally.

**Morphology.** Lacinial apex as in Fig. 95. Forewing venation as in Fig. 5. Hindwing M simple. Subgenital plate (Fig. 6) tapered, sclerotised area distinctly Y-shaped. Gonapophyses (Fig. 7): ventral valve slender; dorsal valve with elongate spiculate apex and central group of 2 or 3 setae. Epiproct deep, rounded, strongly setose on posterior half. Paraproct deep, with field of about 25 trichobothria.

**Dimensions.** B 3.20, FW 3.16, HW 2.20, antennae and hind legs missing.

**MALE.** Unknown.

Holotype, ♀, Malaise trap 25.x.1977.

COMMENTS

This species is very similar to *T. lunulata*, from which it differs mainly by lacking marginal hyaline lunules in the forewing band, and in the form of the subgenital plate.

***Triplocania caudata* sp. n.**  
(Figs. 8-11, 96)

**FEMALE.** Unknown.

**MALE.** Coloration. Pale to mid-brown. Eyes black. Ocelli on black tubercle. Postclypeus with traces of narrow striae, face otherwise unmarked. Thorax slightly darkened dorsally. Legs pale. Forewing (Fig. 8) with brown marginal band posteriorly from anterior to R4+5; brown markings at apex of pterostigma and of R2+3, along basal Rs, behind Culb and at wing base. Hindwing with trace of pale greyish brown marginal shading behind wing apex. Abdomen pale.

**Morphology.** Lacinial apex (Fig. 96) with outer tine enlarged. Forewing venation as in Fig. 8: pterostigma long and shallow, Cula strongly sinuous. Hindwing M simple. Hypandrium (Fig. 9) with prominent trilobed median tongue bearing 2 short apical setae, this arising from emarginate transverse apex. Phallosome (Fig. 10) frame closed and tapered anteriorly; open posteriorly; radular sclerites complex and toothed. Epiproct (Fig. 11) rounded, with few short central setae and apical field of spicules and short setae. Paraproct with field of about 20 trichobothria.

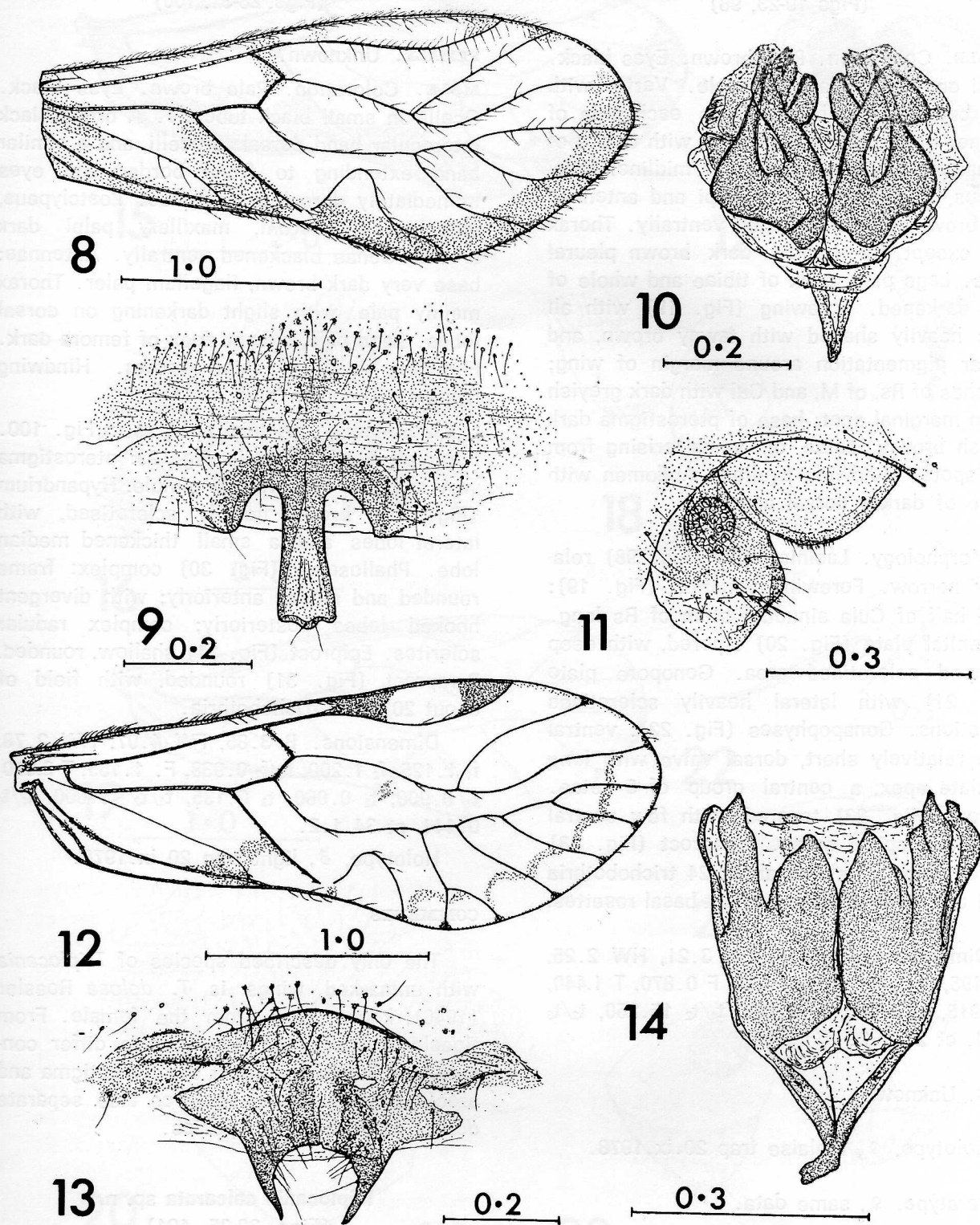
**Dimensions.** B 3.40, FW 3.26, HW 2.20, f<sub>1</sub> 0.570, f<sub>2</sub> 0.450, f<sub>1</sub>/f<sub>2</sub> 1.267, F 0.900, T 1.395, t<sub>1</sub> 0.600, t<sub>2</sub> 0.050, t<sub>3</sub> 0.120, t<sub>1</sub>/t<sub>2</sub> 12.000, t<sub>2</sub>/t<sub>3</sub> 0.417, ct 21.1.2.

Holotype, ♂, light trap, 20.xii.1977.

COMMENTS

Forewing venation of this species, especially the unusual shape of the areola postica, is closely similar to that of *T. reflexa* Roesler (1940). The two taxa differ markedly on the form of the hypandrium (that of *reflexa* lacking the median tongue prominent in *caudata*) and on details of the phallosome, as well as in differences in pigmentation of the basal half of the forewing.





Figs. 8-14 — Figs. 8-11. *Triplocania caudata* sp. n.: Fig. 8 — Forewing; Fig. 9 — Hypandrium; Fig. 10 — Phallosome; Fig. 11 — Male epiproct and paraproct. Figs. 12-14, *Ptiloneura (Loneura) amazonica* sp. n.: Fig. 12 — Forewing; Fig. 13 — Hypandrium; Fig. 14 — Phallosome. (Scales in mm).

***Triplocania umbrata* sp. n.**  
(Figs 19-23, 98)

**FEMALE.** Coloration. Pale brown. Eyes black. Ocelli on small black tubercle. Vertex with pale, but distinct, brown lines each side of midline; frons pale; postclypeus with traces of 5-7 narrow striae each side of midline; anteclypeus, labrum, maxillary palpi and antennae pale brown; genae darkened ventrally. Thorax pale, except for narrow dark brown pleural stripe. Legs pale, apex of tibiae and whole of tarsi darkened. Forewing (Fig. 19) with all veins heavily shaded with tawny brown, and similar pigmentation around margin of wing; branches of Rs, of M, and Cul with dark greyish brown marginal spot; base of pterostigma dark greyish brown; setae on veins arising from dark spots. Hindwing hyaline. Abdomen with traces of darker dorsal annuli.

Morphology. Lacinial apex (Fig. 98) relatively narrow. Forewing venation (Fig. 19): basal half of Cula sinuous; stem of Rs long. Subgenital plate (Fig. 20) tapered, with deep U-shaped sclerotised area. Gonopore plate (Fig. 21) with lateral heavily sclerotised projections. Gonapophyses (Fig. 22): ventral valve relatively short, dorsal valve with long spiculate apex, a central group of 5 setae. Epiproct (Fig. 23) tapered, with few central setae, and apical setae. Paraproct (Fig. 23) tapered, with a field of about 24 trichobothria and 1 or 2 central setae without basal rosettes.

Dimensions. B 3.50, FW 3.21, HW 2.25,  $f_1$  0.495,  $f_2$  0.360,  $f_1/f_2$  1.375, F 0.870, T 1.440,  $t_1$  0.915,  $t_2$  0.060,  $t_3$  0.105,  $t_1/t_2$  15.250,  $t_2/t_3$  0.571, ct 23.1.2.

**MALE.** Unknown.

Holotype, ♀, Malaise trap 20.ix.1978.

Paratype, ♀, same data.

The unusual forewing markings of *T. umbrata* immediately differentiate it from all other described Ptiloneuridae. The thickened gonopore plate with lateral processes is also anomalous.

***Triplocania immaculata* sp. n.**  
(Figs. 28-31, 100)

**FEMALE.** Unknown.

**MALE.** Coloration. Pale brown. Eyes black. Ocelli on small black tubercle. A broad black interocular band dorsal to ocelli, and a similar band extending to frons border and eyes immediately dorsal to antennae. Postclypeus, anteclypeus, labrum, maxillary palpi dark brown. Genae blackened ventrally. Antennae: base very dark brown, flagellum paler. Thorax mainly pale, with slight darkening on dorsal lobes. Legs pale, except apex of femora dark. Forewing hyaline, veins brown. Hindwing hyaline. Abdomen pale.

Morphology. Lacinial apex as in Fig. 100. Forewing venation as in Fig. 28: pterostigma very shallow. Hindwing M simple. Hypandrium (Fig. 29) broad, heavily sclerotised, with lateral lobes and a small thickened median lobe. Phallosome (Fig. 30) complex: frame rounded and closed anteriorly; with divergent hooked lobes posteriorly; complex radular sclerites. Epiproct (Fig. 31) shallow, rounded. Paraproct (Fig. 31) rounded, with field of about 20 small trichobothria.

Dimensions. B 3.85, FW 4.07, HW 2.78,  $f_1$  1.125,  $f_2$  1.200,  $f_1/f_2$  0.938, F. 1.155, T 2.070,  $t_1$  0.900,  $t_2$  0.060,  $t_3$  0.135,  $t_1/t_2$  15.000,  $t_2/t_3$  0.444, ct 34.1.2.

Holotype, ♂, light trap 20.ix.1978.

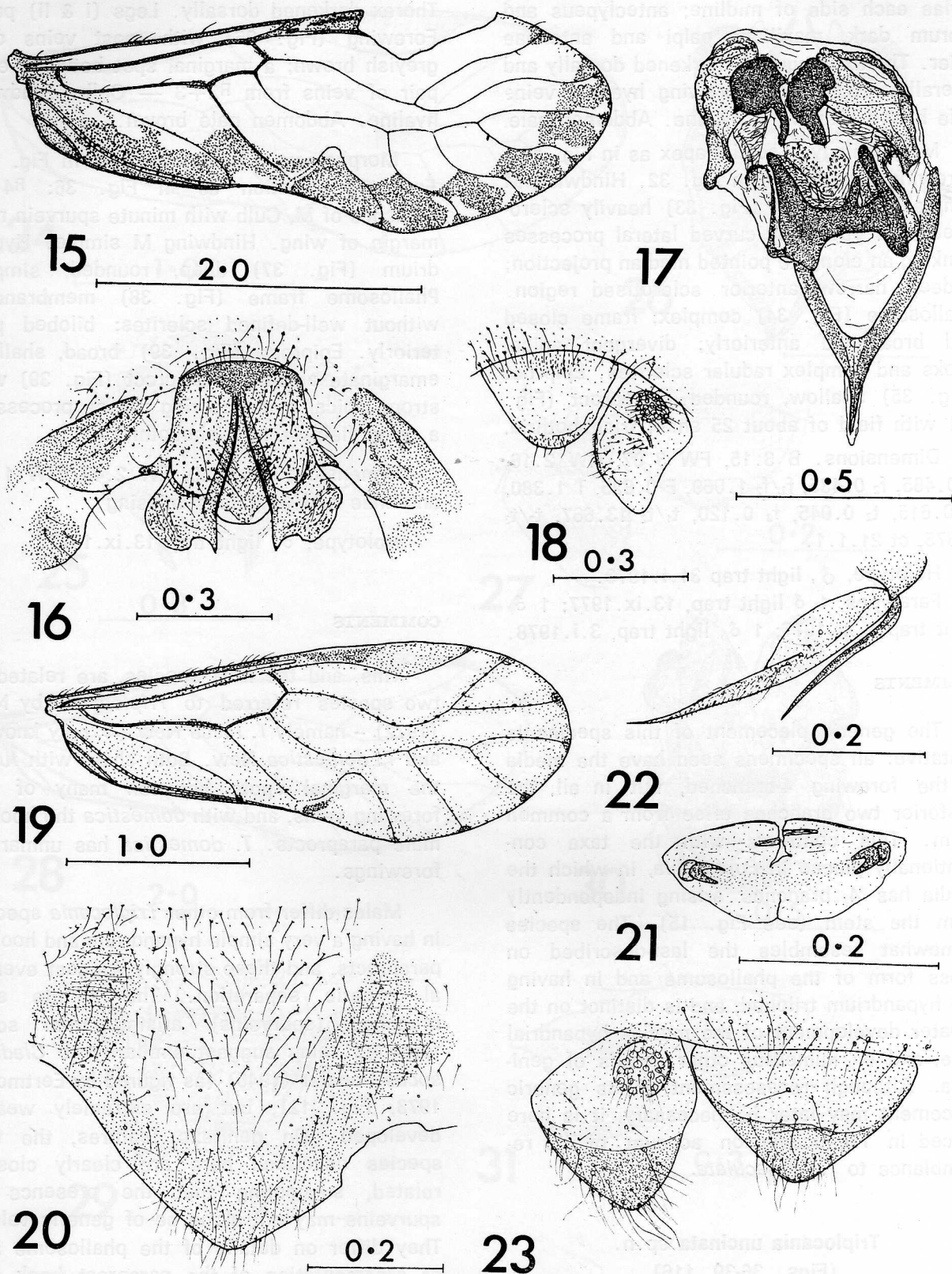
**COMMENTS**

The only described species of *Triplocania* with unmarked wings is *T. dolosa* Roesler (1940), known only from the female. From Roesler's figure, the two species differ considerably in the shapes of the pterostigma and areola postica. These features also separate *dolosa* from the next species.

***Triplocania calcarata* sp. n.**  
(Figs. 32-35, 101)

**FEMALE.** Unknown.

**MALE.** Coloration. Dark brown. Eyes black. Ocelli on dark tubercle. Frons mainly very dark; postclypeus with about 6 narrow dark



Figs. 15-23 — Figs. 15-18, *Euplocania picta* sp. n.: Fig. 15 — Forewing; Fig. 16 — Hypandrium; Fig. 17 — Phallosome; Fig. 18 — Male epiproct and paraproct. Figs. 19-23, *Triplocania umbrata* sp. n.: Fig. 19 — Forewing; Fig. 20 — Subgenital plate; Fig. 21 — Gonopore plate; Fig. 22 — Gonapophyses; Fig. 23 — Female epiproct and paraproct. (Scales in mm).



striae each side of midline; anteclypeus and labrum dark, maxillary palpi and antennae paler. Thorax irregularly darkened dorsally and laterally. Legs pale. Forewing hyaline, veins pale brown. Hindwing hyaline. Abdomen pale.

Morphology. Lacinial apex as in Fig. 101. Forewing venation as in Fig. 32. Hindwing M simple. Hypandrium (Fig. 33) heavily sclerotised; two outwardly curved lateral processes flanking an elongate pointed median projection; a deep narrow anterior sclerotised region. Phallosome (Fig. 34) complex; frame closed and broadened anteriorly; divergent apical hooks and complex radular sclerites. Epiproct (Fig. 35) shallow, rounded. Paraproct (Fig. 35) with field of about 25 small trichobothria.

Dimensions. B 3.15, FW 3.07, HW 2.16,  $f_1$  0.465,  $f_2$  0.435,  $f_1/f_2$  1.069, F 0.825, T 1.380,  $t_1$  0.615,  $t_2$  0.045,  $t_3$  0.120,  $t_1/t_2$  13.667,  $t_2/t_3$  0.375, ct 21.1.1.

Holotype, ♂, light trap 31.i.1970.

Paratypes, 1 ♂ light trap, 13.ix.1977; 1 ♂ light trap 1.xi.1977; 1 ♂, light trap, 3.i.1978.

#### COMMENTS

The generic placement of this species is tentative: all specimens seen have the media of the forewing 4-branched, but in all, the posterior two branches arise from a common stem. This contrasts with the taxa conventionally placed in *Euplocania*, in which the media has 4 branches arising independently from the stem (see Fig. 15). The species somewhat resembles the last-described on gross form of the phallosome and in having the hypandrium trilobed, and is distinct on the greater development of the median hypandrial lobe, and on numerous other details of genitalia. Although reassessment of its generic placement may later be necessary, it is here placed in *Triplocania* on account of its resemblance to *T. immaculata*.

#### ***Triplocania uncinata* sp.n.**

(Figs. 36-39, 116)

FEMALE. Unknown.

MALE. Coloration. Head very dark brown, unmarked. Eyes black. Ocelli on black tubercle.

Thorax darkened dorsally. Legs (I & II) pale. Forewing (Fig. 36) with most veins dark greyish brown; a marginal spot between each pair of veins from R<sub>2</sub>+3 — Culb. Hindwing hyaline. Abdomen pale brown.

Morphology. Lacinial apex as in Fig. 116. Forewing venation as in Fig. 36: R<sub>4</sub>+5, branches of M, Culb with minute spurvein near margin of wing. Hindwing M simple. Hypandrium (Fig. 37) deep, rounded, simple. Phallosome frame (Fig. 38) membranous, without well-defined sclerites; bilobed posteriorly. Epiproct (Fig. 39) broad, shallow, emarginate apically. Paraproct (Fig. 39) with strong apical spine bearing rugose processes; a small field of 14 trichobothria.

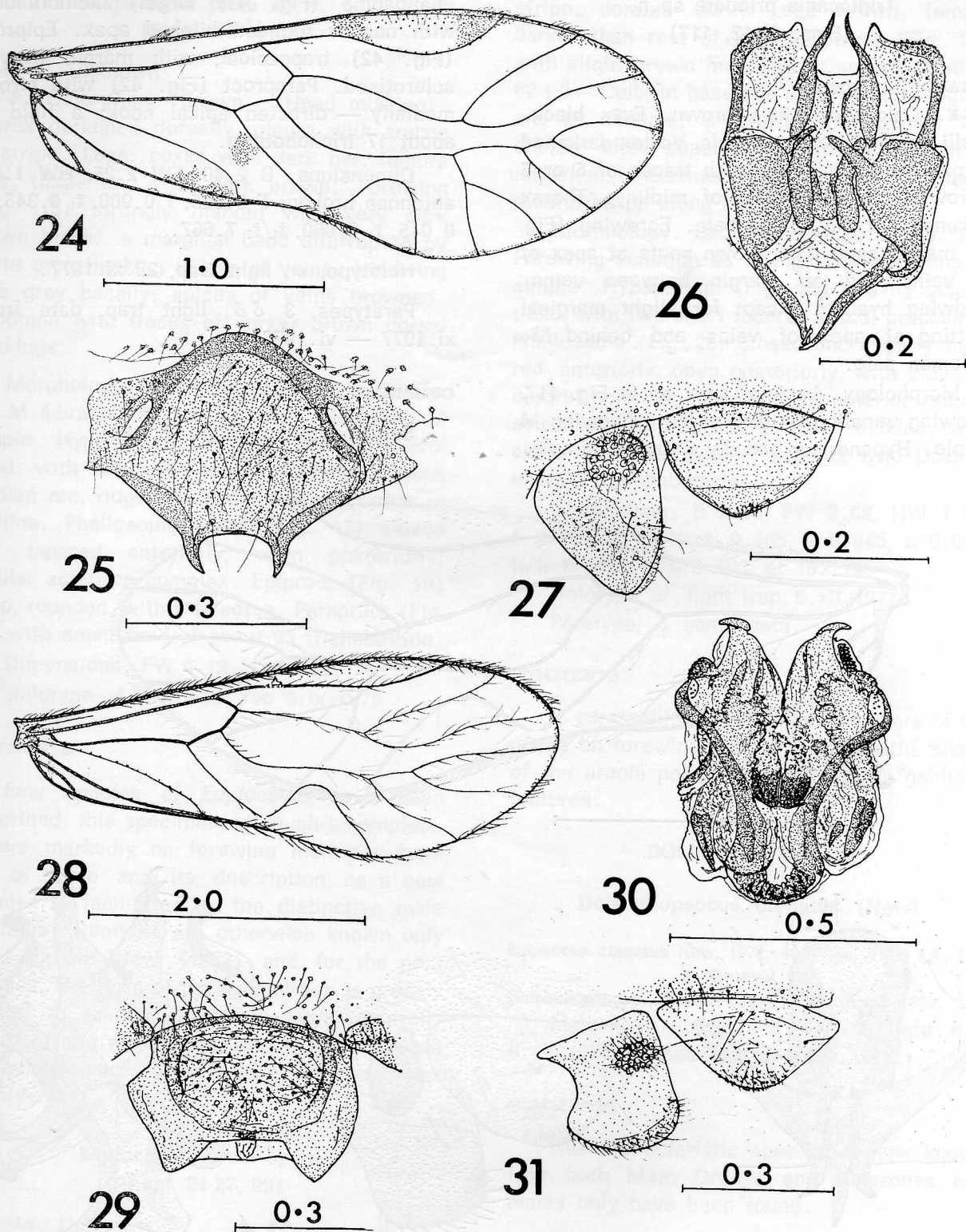
Dimensions. B 2.60, FW 2.49, HW 1.87, antennae and hind legs missing.

Holotype, ♂, light trap 13.ix.1977.

#### COMMENTS

This, and the next species, are related to two species referred to *Triplocania* by New (1972) — namely *T. fusca* New (♀ only known) and *T. domestica* New. Both share with *fusca* the marginal spots between many of the forewing veins, and with *domestica* the hooked male paraprocts. *T. domestica* has unmarked forewings.

Males differ from other *Triplocania* species in having a very simple hypandrium and hooked paraprocts, and these strongly suggest eventual generic separation. The minute side branches (spurveins) arising from some forewing veins suggest similarity to *Cladiopocus* Roesler (1940) (as figured by Eertmoed, 1973, Fig. 12), but are extremely weakly developed. On genitalic features, the two species described here are clearly closely related, suggesting that the presence of spurveins may not alone be of generic value. They differ on details of the phallosome and of ornamentation of the paraproct hook and on epiproct shape. *T. uncinata* may prove to be the male of *fusca*, but differences in areola postica shape and forewing pigmentation render this association currently unwise.



Figs. 24-31 — Figs. 24-27, *Eupiocania cerata* sp. n.: Fig. 24 — Forewing; Fig. 25 — Hypandrium; Fig. 26 — Phallosome; Fig. 27 — Male epiproct and paraproct. Figs. 28-31, *Triplocania immaculata* sp. n.: Fig. 28 — Forewing; Fig. 29 — Hypandrium; Fig. 30 — Phallosome; Fig. 31 — Male epiproct and paraproct. (Scales in mm).



***Triplocania prionota* sp.n.**

(Figs. 40-42, 117)

**FEMALE.** Unknown.

**MALE.** Coloration. Pale brown. Eyes black. Ocelli on dark brown tubercle. Vertex darkened in midline; postclypeus with traces of 5 or 6 narrow striae each side of midline. Thorax darkened dorsally. Legs pale. Forewing (Fig. 40) mainly pale; dark brown spots at apex of all veins and on margin between veins. Hindwing hyaline, except for slight marginal spotting at apex of veins and behind M. Abdomen pale.

Morphology. Lacinial apex as in Fig. 117. Forewing venation as in Fig. 40. Hindwing M simple. Hypandrium broadly rounded, simple.

Phallosome (Fig. 41) largely membranous, with narrow rounded bilobed apex. Epiproct (Fig. 42) trapezoidal, with margin heavily sclerotised. Paraproct (Fig. 42) with strong medially — directed apical hook; a field of about 17 trichobothria.

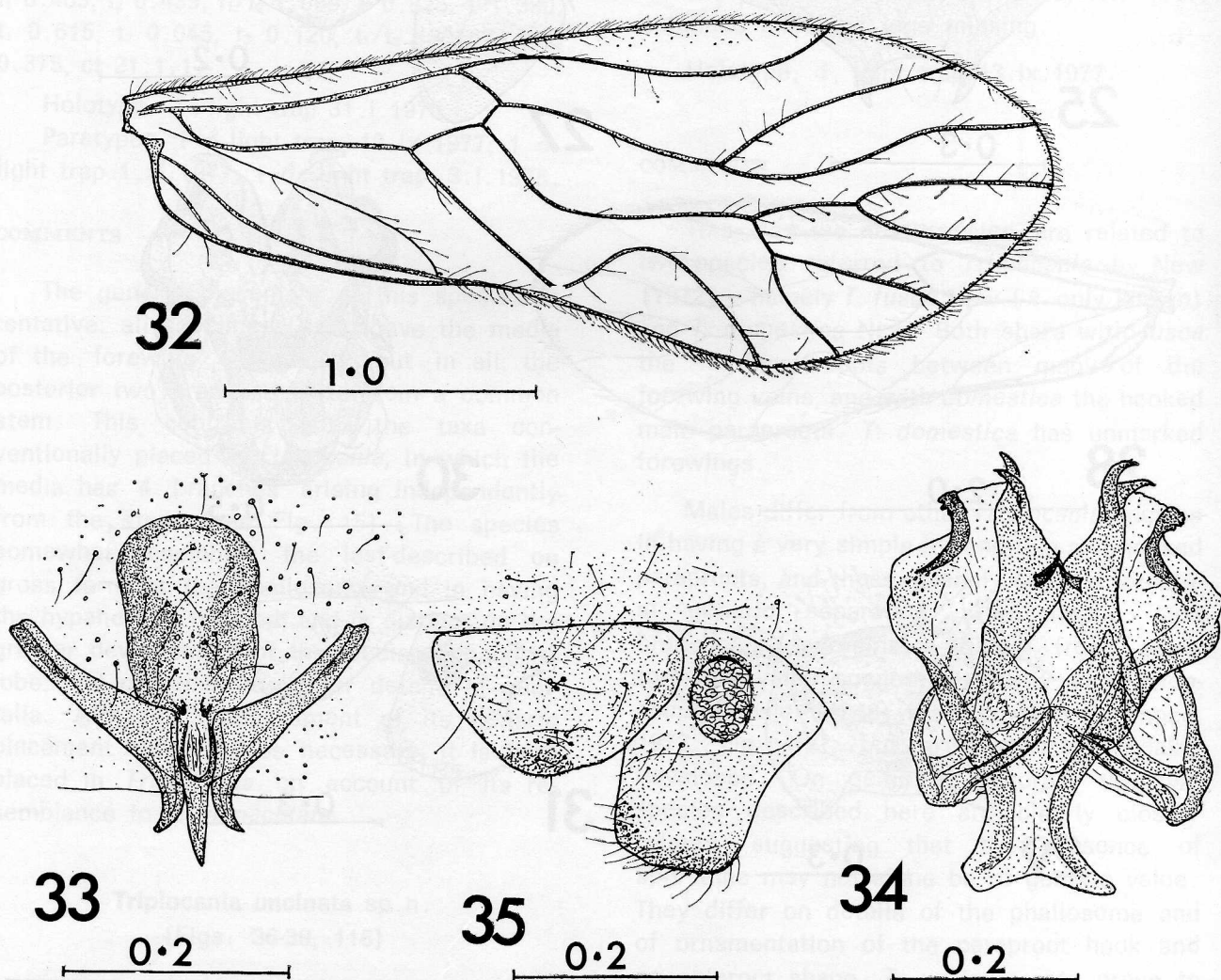
Dimensions. B 2.40, FW 2.25, HW 1.68, antennae broken; F 0.525, T 0.900,  $t_1$  0.345,  $t_2$  0.045,  $t_3$  0.060,  $t_1/t_2$  7.667.

Holotype, ♂, light trap, 29.xi.1977.

Paratypes, 3 ♂♂, light trap, date from xi.1977 — vi.1978.

**COMMENTS**

See under *T. uncinata* (p. 186).



Figs. 32-35, *Triplocania calcarata* sp. n.: Fig. 32 — Forewing; Fig. 33 — Hypandrium; Fig. 34 — Phallosome; Fig. 35 — Male epiproct and paraproct. (Scales in mm).



**Euplocania picta** sp.n.

(Figs. 15-18)

**FEMALE.** Unknown.

**MALE.** Coloration. Brown. (Head missing). Thorax darkened dorsally, pleura with traces of stripe. Legs: coxae with dark bar, femora pale, tibiae and tarsi dark brown. Forewing (Fig. 15) strongly marked with very dark brown black: a marginal band interrupted by white arcs flanking apices of veins. Hindwing pale grey basally; apices of veins browned. Abdomen with traces of darker brown dorsal markings.

Morphology. Forewing venation as in Fig. 15: M 4-branched, Cula sinuous. Hindwing M simple. Hypandrium (Fig. 16) heavily sclerotised; with bifurcate lobes flanking a short median arc, ridged longitudinally each side of midline. Phallosome frame (Fig. 17) closed and tapered anteriorly, open posteriorly; radular sclerites complex. Epiproct (Fig. 18) deep, rounded, with few setae. Paraproct (Fig. 18) with small field of about 25 trichobothria.

Dimensions. FW 4.12, HW 2.92.

Holotype, ♂, Malaise trap 6.ix.1978.

**COMMENTS**

Few species of *Euplocania* have been described: this specimen, although incomplete, differs markedly on forewing markings from any of these and its description as a new species is facilitated by the distinctive male genitalia. Genitalia are otherwise known only for *E. greeni* New (1972) and for the next species. The form of the hypandrium is grossly similar to that of *greeni* in being centrally bifurcate and with strong lateral sclerites, but the phallosomes of the two species differ considerably.

**Euplocania cerata** sp.n.

(Figs. 24-27, 99)

**FEMALE.** Unknown.

**MALE.** Coloration. Dark brown. Eyes black. Ocelli on black tubercle. Anterior of vertex, lateral regions of frons very dark; postclypeus with traces of 3 or 4 striae each side of midline; anteclypeus and labrum dark brown; palpi dark. Thorax with irregular dark pleural

stripe, dorsum dark. Legs brown, femora darker than rest of leg. Forewing (Fig. 24) with slight brown markings at apices of veins R<sub>2</sub>+3 -- Culb, at base and apex of pterostigma, and at nodulus; a brown spot behind Cu<sub>1</sub> shortly after separation from M. Hindwing unmarked. Abdomen pale, except for dark pleural stripe along anterior half.

Morphology. Lacinal apex as in Fig. 99. Forewing venation as in Fig. 24. Hindwing M simple. Hypandrium (Fig. 25) heavily sclerotised, with two short tapered apical processes. Phallosome (Fig. 26) closed and slightly tapered anteriorly, open posteriorly, with elongate central sclerites and complex anterior radular sclerites. Epiproct (Fig. 27) rounded, with apical spiculate field. Paraproct with field of about 21 trichobothria.

Dimensions. B 2.90, FW 2.68, HW 1.96, F 0.705, T 1.110, t<sub>1</sub> 0.465, t<sub>2</sub> 0.045, t<sub>3</sub> 0.090, t<sub>1</sub>/t<sub>2</sub> 10.333, t<sub>2</sub>/t<sub>3</sub> 0.500, ct 19.1.2.

Holotype, ♂, light trap, 6.xii.1977.

Paratype, ♂ same data.

**COMMENTS**

*E. cerata* differs from other members of the genus on forewing markings and on the shape of the areola postica, as well as on genitalic features.

**DOLABELLOPSOCIDAE**

**Dolabellopsocus ctenatus** (New)

**Epipsocus ctenatus** New, 1972: 480, figs. 87-90 (♂, Mato Grosso).

**Dolabellopsocus ctenatus** (New). Eertmoed, 1973: 397.

Material examined. 3 ♂♂; 2, light trap 6.xii.1977, 1, Malaise trap 14.ii.1978.

**COMMENTS**

This characteristic species is now known from both Mato Grosso and Amazonas, and males only have been found.

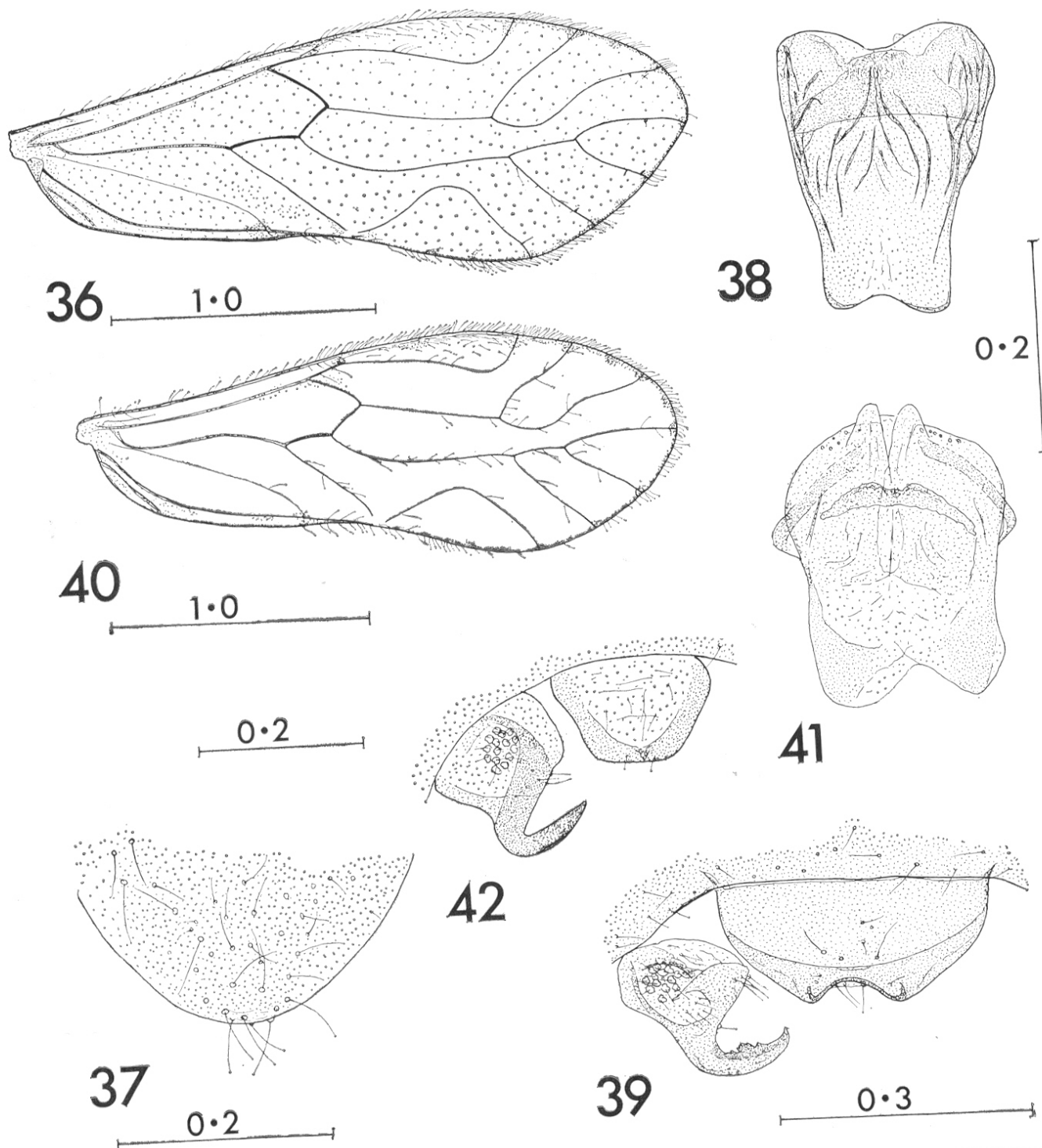
**Isthmopsocus luridus** sp.n.

(Figs. 43-47)

**BOTH SEXES.** Coloration. Pale brown. Eyes black. Ocelli on dark tubercle. Body unmarked. Wings very pale tawny.

Morphology. Female. Lacinial apex with four narrow tines, inner tine small and considerably basal to outer three. Forewing venation as in Fig. 43. Subgenital plate bluntly

rounded. Gonapophyses (Fig. 47) with apical process heavily sclerotised; a central field of 3-6 setae. Clunium unornamented. Epiproct with field of about 25 trichobothria.



Figs. 36-42 — Figs. 36-39, *Triplocania uncinata* sp. n.: Fig. 36 — Forewing; Fig. 37 — Hypandrium; Fig. 38 — Phallosome; Fig. 39 — Male epiproct and paraproct. Figs. 40-42, *Triplocania prionota* sp. n.: Fig. 40 — Forewing; Fig. 41 — Phallosome; Fig. 42 — Male epiproct and paraproct. (Scales in mm).

MALE. Lacinia and wing venation as female. Hypandrium transverse. Phallosome frame (Figs. 44, 45) elongate, with apical hooks and complex radular sclerites; a long denticulate anterior radular process. Clunium (Fig. 46) slightly ornamented in central region. Epiproct (Fig. 46) rounded. Paraproct (Fig. 46) with field of about 25 trichobothria.

Dimensions. ♀, B 2.60, FW 2.49, HW 1.87,  $f_1$  0.405,  $f_2$  0.070,  $f_1/f_2$  1.500, F 0.645, T 1.050,  $t_1$  0.390,  $t_2$  0.135,  $t_1/t_2$  2.889, ct 19.4.

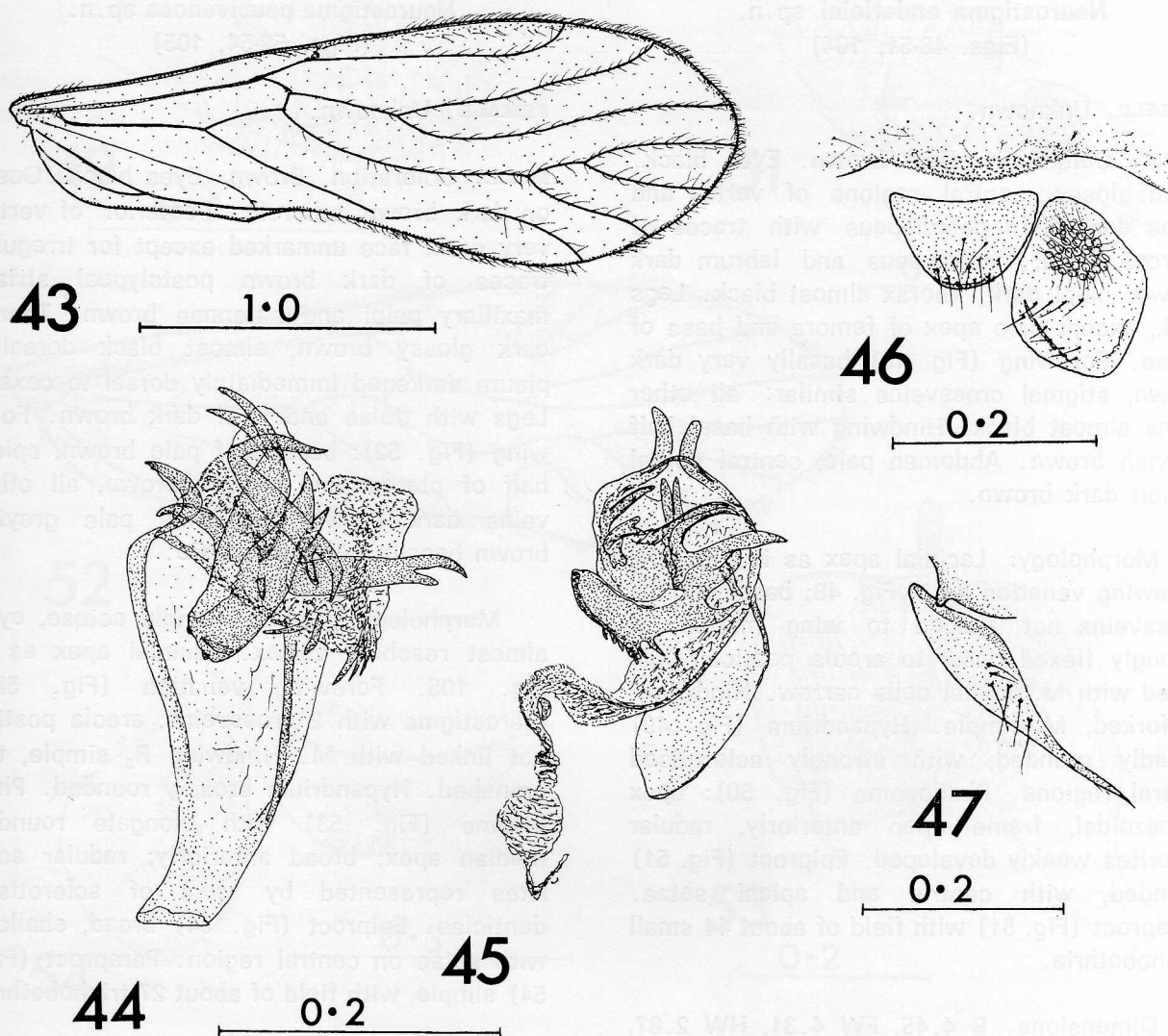
♂, B 2.50, FW 2.30 HW 1.78,  $f_2$  0.760, F 0.660, T 0.990,  $t_1$  0.375,  $t_2$  0.135,  $t_1/t_2$  2.778, ct 21.4.

Holotype, ♂, Emergence trap, 11.x.1977.

Paratypes, 10 ♂♂, 10 ♀♀, Emergence traps, various dates from x.1977-vi.1978.

#### COMMENTS

On forewing venation, most specimens of this species are clearly referable to *Isthmopsocus* Eertmoed. In several, however, vein  $A_2$  terminates free in the membrane rather than joining  $A_1$ ; genitalia of these specimens are identical with 'typical' specimens, and it now appears that variation in this wing character may transcend the conventional boundary between *Isthmopsocus* and *Dolabellopsocus*.



Figs. 43-47, *Isthmopsocus luridus* sp. n.: Fig. 43 — Forewing; Figs. 44, 45 — Phallosome; Fig. 46 — Male clunium, epiproct and paraproct; Fig. 47 — Gonapophyses. (Scales in mm).



The phallosome form is most similar to that of *I. hylonomus* Eertmoed in having a bifurcate apex, but details of radular sclerites differ considerably. *I. hylonomus* is known only from Panama.

This was by far the most common species of Epipsocetae captured during the survey: the paratype series represents only a small proportion of numbers seen. Several hundred specimens were captured in emergence traps, in Malaise traps and in light traps.

#### EPIPSOCIDAE

##### ***Neurostigma enderleini* sp.n.**

(Figs. 48-51, 104)

**FEMALE.** Unknown.

**MALE.** Coloration. Dark brown. Eyes black. Head glossy, central regions of vertex and frons darkened; postclypeus with traces of narrow striae; anteclypeus and labrum dark brown; palpi dark. Thorax almost black. Legs dark, except pale apex of femora and base of tibiae. Forewing (Fig. 48) basally very dark brown, stigmal crossveins similar: all other veins almost black. Hindwing with basal half greyish brown. Abdomen pale, central dorsal region dark brown.

**Morphology:** Lacinial apex as in Fig. 104. Forewing venation as in Fig. 48; basal stigmal crossveins not shaded to wing margin; M strongly flexed basal to areola postica; Cula fused with M, medial cells narrow. Hindwing:  $R_s$  forked, M simple. Hypandrium (Fig. 49) broadly rounded, with strongly sclerotised lateral regions. Phallosome (Fig. 50): apex trapezoidal, frame open anteriorly, radular sclerites weakly developed. Epiproct (Fig. 51) rounded, with central and apical setae. Paraproct (Fig. 51) with field of about 44 small trichobothria.

**Dimensions.** B 4.45, FW 4.31, HW 2.87,  $f_1$  1.02, remainder of antennae, whole of hind leg missing.

Holotype, ♂, Malaise trap 29.viii.1978.

#### COMMENTS

This species is most similar to *N. chaetocephalum* Enderlein (1900, Peru), the type of which has not been seen. It resembles *chaetocephalum* in (a) the shape of the pterostigma, and (b) the pronounced flexure of M before linking with Cula, and apparently differs from it in (a) smaller size (FW 4.3 cf '6¼' of Enderlein), (b) the basal forewing pigmentation being more pronounced and (c) the basal pterostigmal crossveins not being pigmented to the wing margin. Genitalia of *chaetocephalum* are unknown.

##### ***Neurostigma paucivenosa* sp.n.**

(Figs. 52-54, 105)

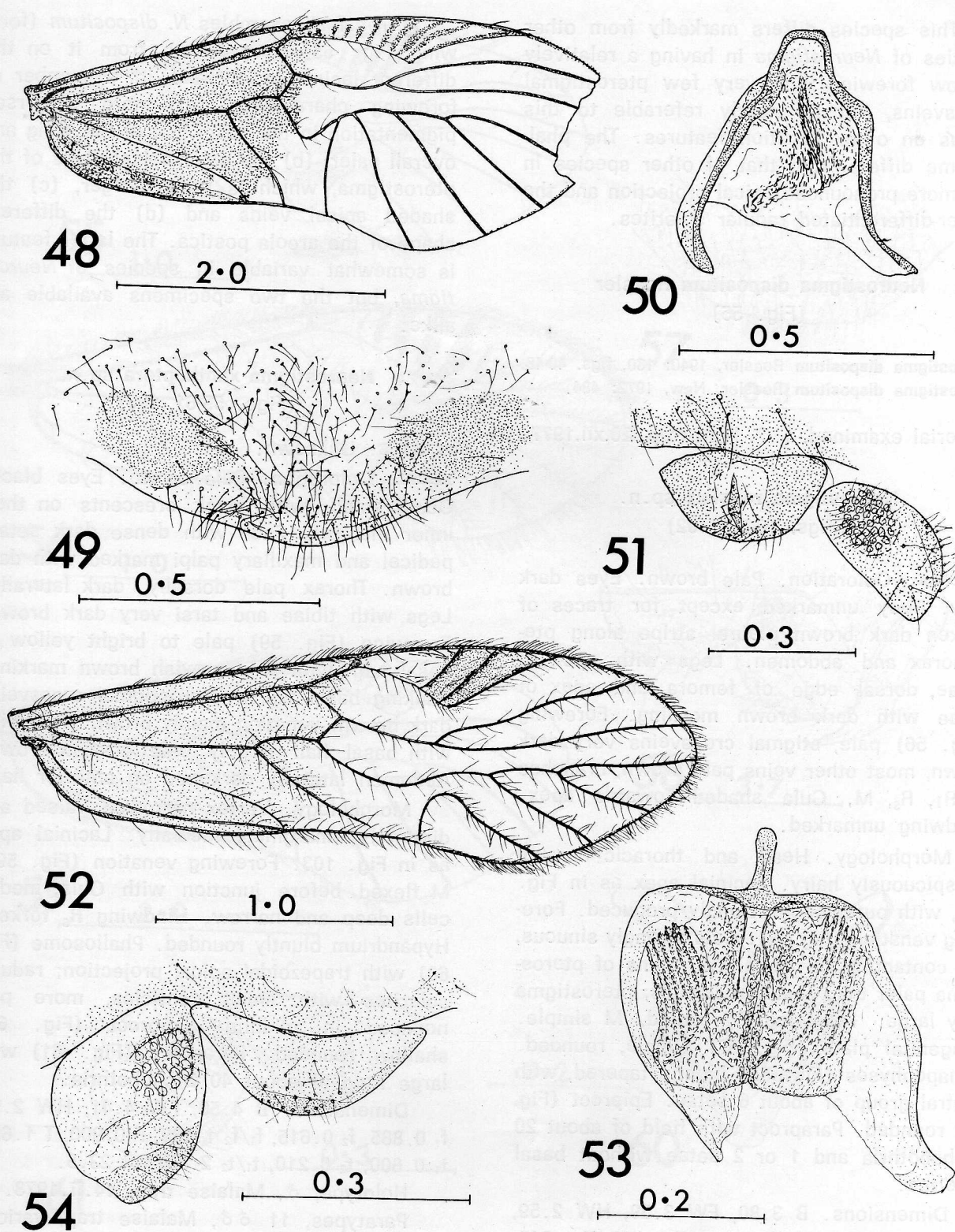
**FEMALE.** Unknown.

**MALE.** Coloration. Brown. Eyes black. Ocelli on dark brown tubercle. Posterior of vertex very dark; face unmarked except for irregular traces of dark brown postclypeal striae; maxillary palpi and antennae brown. Thorax dark glossy brown, almost black dorsally; pleura darkened immediately dorsal to coxae. Legs with tibiae and tarsi dark brown. Forewing (Fig. 52): basal half pale brown, apical half of pterostigma pinkish brown, all other veins dark brown. Hindwing pale greyish brown basally. Abdomen pale.

**Morphology.** Vertex strongly setose, eyes almost reaching vertex. Lacinial apex as in Fig. 105. Forewing venation (Fig. 52): pterostigma with 2 crossveins, areola postica not linked with M. Hindwing  $R_s$  simple, unbranched. Hypandrium broadly rounded. Phallosome (Fig. 53) with elongate rounded median apex; broad anteriorly; radular sclerites represented by rows of sclerotised denticles. Epiproct (Fig. 54) broad, shallow, with setae on central region. Paraproct (Fig. 54) simple, with field of about 27 trichobothria.

**Dimensions.** B 3.00, FW 3.02, HW 2.20,  $f_1$  0.585,  $f_2$  0.360,  $f_1/f_2$  1.625, hindleg missing.

Holotype, ♂, light trap, 13.xii.1977.



Figs. 48-54, Figs. 48-51, *Neurostigma enderleini* sp. n.: Fig. 48 — Forewing; Fig. 49 — Hypandrium; Fig. 50 — Phallosome; Fig. 51 — Male epiproct and paraproct (reflexed). Figs. 52-54, *Neurostigma paucivenosa* sp. n.: Fig. 52 — Forewing; Fig. 53 — Phallosome; Fig. 54 — Male epiproct and paraproct. (Scales in mm).



## COMMENTS

This species differs markedly from other species of *Neurostigma* in having a relatively narrow forewing with very few pterostigmal crossveins, but is clearly referable to this genus on other venation features. The phallosome differs from that of other species in the more pronounced apical projection and the better-differentiated radular sclerites.

### *Neurostigma dispositum* Roesler (Fig. 55)

*Neurostigma dispositum* Roesler, 1940: 130, figs. 40-48.  
*Neurostigma dispositum* Roesler. New, 1972: 484.

Material examined. 1 ♂, light trap, 20.xii.1977.

### *Neurostigma roesleri* sp.n. (Figs. 56-58, 102)

**FEMALE.** Coloration. Pale brown. Eyes dark grey. Body unmarked except for traces of broken dark brown pleural stripe along pterothorax and abdomen. Legs with apex of coxae, dorsal edge of femora and apex of tibiae with dark brown mottling. Forewing (Fig. 56) pale, stigmal crossveins very dark brown, most other veins pale brown, branches of  $R_1$ ,  $R_s$ , M, Cula shaded towards apex. Hindwing unmarked.

**Morphology.** Head and thoracic dorsum conspicuously hairy. Lacinial apex as in Fig. 102, with outer edge strongly produced. Forewing venation (Fig. 56): Cula strongly sinuous, not contacting M; apical two veins of pterostigma paler than basal crossveins; pterostigma very large. Hindwing  $R_s$  forked, M simple. Subgenital plate (Fig. 57) simple, rounded. Gonapophyses (Fig. 58) bluntly tapered, with central group of about 6 setae. Epiproct (Fig. 58) rounded. Paraproct with field of about 20 trichobothria and 1 or 2 setae without basal rosettes.

**Dimensions.** B 3.80, FW 3.59, HW 2.59,  $f_1$  0.405,  $f_2$  0.300,  $f_1/f_2$  1.350, F 0.765, T 1.245,  $t_1$  0.465,  $t_2$  0.180,  $t_1/t_2$  2.583, ct 19.2.

**MALE.** Unknown.

Holotype, ♀, light trap, 20.xii.1977.

Paratype, ♀, light trap, 7.ii.1978.

## COMMENTS

*N. roesleri* resembles *N. dispositum* (forewing, Fig. 55), but differs from it on the different lacinial form and in a number of forewing characters: (a) more dispersed pigmentation in the basal half of the wing and overall paler, (b) the paler apical veins of the pterostigma, which is rather larger, (c) the shaded apical veins and (d) the different shape of the areola postica. The latter feature is somewhat variable in species of *Neurostigma*, but the two specimens available are alike.

### *Neurostigma xanthoptera* sp.n. (Figs. 59-61, 103)

**FEMALE.** Unknown.

**MALE.** Coloration. Pale brown. Eyes black. Ocelli small, with black crescents on their inner margins. Face with dense dark setae; pedicel and maxillary palpi marked with dark brown. Thorax pale dorsally, dark laterally. Legs with tibiae and tarsi very dark brown. Forewing (Fig. 59) pale to bright yellow in basal half, with pale greyish brown markings flanking basal veins; pterostigmal crossveins dark brown; venation mainly brown. Hindwing with basal half largely pale greyish brown. Abdomen laterally darkened on anterior half.

**Morphology.** Vertex narrowed, raised and distinctly emarginate medially. Lacinial apex as in Fig. 103. Forewing venation (Fig. 59): M flexed before junction with Cula; medial cells deep and narrow. Hindwing  $R_s$  forked. Hypandrium bluntly rounded. Phallosome (Fig. 60) with trapezoidal apical projection; radular sclerites with small denticles, more pronounced in midline. Epiproct (Fig. 61) shallow, rounded. Paraproct (Fig. 61) with large field of about 40 trichobothria.

**Dimensions.** B 4.50, FW 4.41, HW 2.91,  $f_1$  0.885,  $f_2$  0.615,  $f_1/f_2$  1.439, F 0.900, T 1.695,  $t_1$  0.600,  $t_2$  0.210,  $t_1/t_2$  2.857, ct 23.5.

Holotype, ♂, Malaise trap, 14.ii.1978.

Paratypes, 11 ♂♂, Malaise trap, various dates from ii.1978 - viii.1978.

This large species resembles *chaetocephalum* in some venation features, but differs from it on wing colour. The excavated vertex appears to be unusual in this genus.



**Dicropsocus brasiliensis** sp.n.

(Figs. 62-64, 106)

FEMALE. Unknown.

MALE. Coloration. Dark greyish brown. Eyes black. Face largely unmarked; postclypeus with traces of 3 or 4 broad striae each side of midline; maxillary palpi pale brown. Thorax very dark dorsally, paler laterally. Legs with coxae and femora pale, tibiae and tarsi dark brown. Forewing (Fig. 62) marked with dark brown; setae on basal veins sited on dark spots; apex of pterostigma dark; much of margin from  $R_5$  — Culb dark, with small hyaline lunules in most cells. Hindwing with brown shading at vein apices. Abdomen mainly dark brown, paler ventrally.

Morphology. Lacinial apex as in Fig. 106, narrow. Forewing (Fig. 62) with extensive secondary venation:  $R_s$  4-branched, M 4-or 5-branched. Hindwing  $R_s$  forked, M simple. Hypandrium transverse, lightly sclerotised. Phallosome frame (Fig. 63) simple, open anteriorly and with short blunt median projection. Epiproct (Fig. 64) rounded, shallow, with short setae on central region and central marginal setae. Paraproct with field of about 32 trichobothria.

Dimensions. B 2.85, FW 2.73, HW 1.96, antennae missing, F 0.705, T 1.215, hind tarsus missing.

Holotype, ♂, light trap 25.iv.1978.

COMMENTS

Forewing characters of this unusual species correspond closely to those of species of *Dicropsocus* Smithers and Thornton (1977), a genus hitherto known only from Melanesia. However, the lacinia differs markedly: that of *Dicropsocus* s.str. has an elongate outer projection rather than several small teeth as in the present species. Males are known only of *D. montanus* Smithers and Thornton (New Guinea). The central lobe of the phallosome is extended and truncate, as in *brasiliensis*, but the radula of *montanus* appears to be more strongly developed. None of the described species of *Dicropsocus* has a pterostigmal crossvein.

The form of the lacinia is thus the major feature in which this species differs from Melanesian *Dicropsocus* species. Although this feature is generally accepted as of generic value in Epipsocidae, to raise a new genus on this feature alone, and from a single specimen, is premature: *brasiliensis* is thus tentatively referred to *Dicropsocus*, although it may be transferred to a new genus when more material becomes available for study. No similar Neotropical Epipsocidae are known.

**Epipsocus capitulatus** sp. n.

(Figs. 65, 66, 107)

FEMALE. Unknown.

MALE. Coloration. Pale brown. Eyes black. Ocelli on dark brown tubercle. Face unmarked. Thorax with dorsum darkened and a pronounced dark brown pleural stripe, continued along anterior half of abdomen. Legs pale brown. Forewing (Fig. 65) extensively marked with pale greyish brown; setae on all veins sited on dark spots; small hyaline marginal lunules in medial cells. Hindwing hyaline, slight darkening at apex of veins.

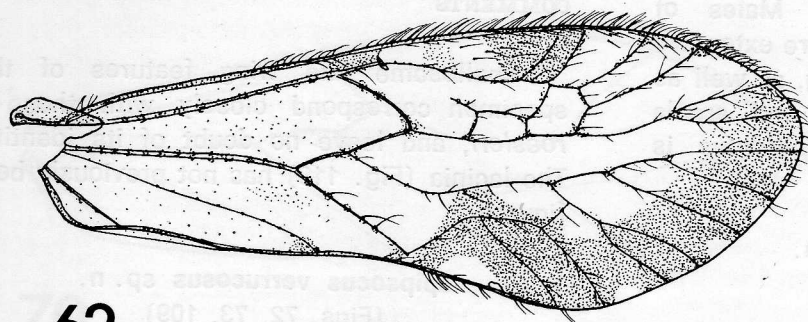
Morphology. Lacinial apex as in Fig. 107. Forewing venation as in Fig. 65. Hindwing  $R_s$  forked near apex. Hypandrium transverse. Phallosome frame (Fig. 66) open anteriorly, simple, with expanded median posterior projection; radular sclerites scarcely developed. Epiproct small, trapezoidal. Paraproct with field of about 38 small trichobothria.

Dimensions. B 2.70, FW 2.59, HW 2.16, antennae missing, F 0.795, T 1.320,  $t_1$  0.630,  $t_2$  0.150,  $t_1/t_2$  4.200, ct 31.4.

Holotype, ♂, light trap, 6.xii.1977.

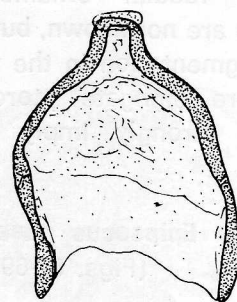
COMMENTS

This, and the next species, both appear to be related to *E. roncadorensis* New and *E. sinuatus* New on forewing pattern. *E. capitulatus* is very similar to *roncadorensis* on the form of the phallosome and is differentiated on the longer shallower pterostigma and areola postica. The phallosome also separates it from *phaeus* sp.n., in which the phallosome has a smaller apex and slightly more pro-



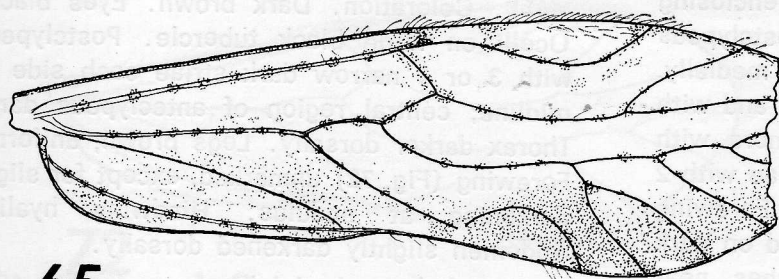
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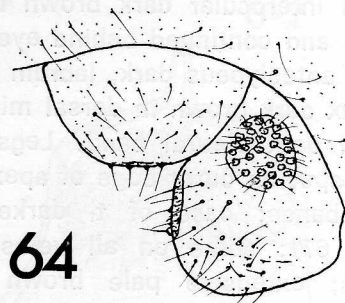
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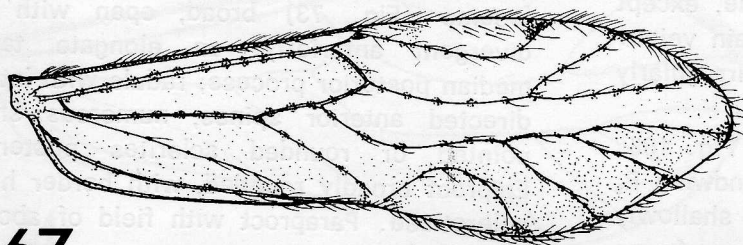
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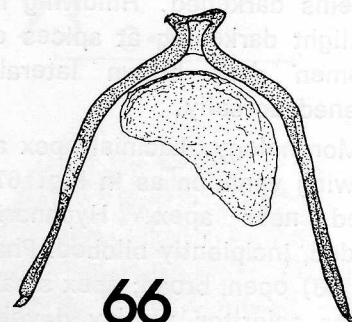
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0.2



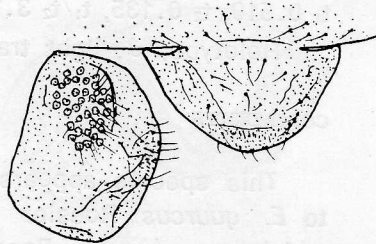
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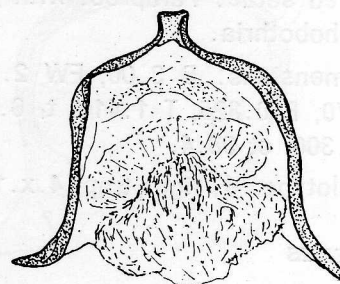
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69

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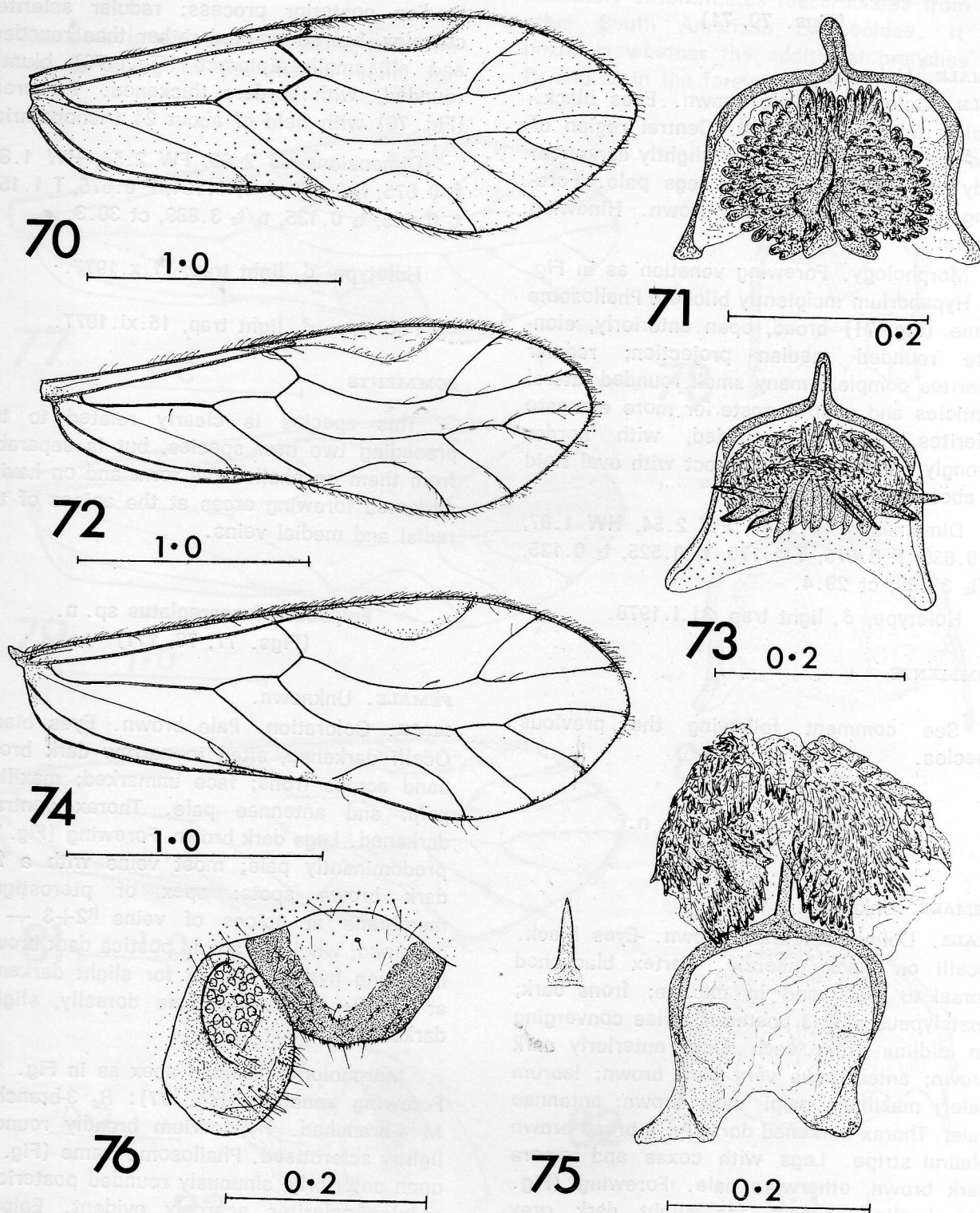


68

0.3

Figs. 62-69, Figs. 62-64, *Dicropsocus brasiliensis* sp. n.: Fig. 62 — Forewing; Fig. 63 — Phallosome; Fig. 64 — Male epiproct and paraproct. Figs. 65, 66 *Epipsocus capitulatus* sp. n.: Fig. 65 — Forewing; Fig. 66 — Phallosome. Figs. 67-69, *Epipsocus phaeus* sp. n.: Fig. 67 — Forewing; Fig. 68 — Phallosome; Fig. 69 — Male epiproct and paraproct. (Scales in mm).





Figs. 70-76, Figs. 70, 71, **Epipsocus acanthus** sp. n.: Fig. 70 — Forewing; Fig. 71 — Phallosome; Figs. 72, 73, **Epipsocus verrucosus** sp. n.: Fig. 72 — Forewing; Fig. 73 — Phallosome; Figs. 74-76, **Epipsocus argutus** sp. n.: Fig. 74 — Forewing; Fig. 75 — Phallosome, with insert of apex; Fig. 76 — Male epiproct and paraproct. (Scales in mm).



**Epipsocus acanthus** sp. n.

(Figs. 70, 71)

**FEMALE.** Unknown.

**MALE.** Coloration. Pale brown. Eyes black. Ocellar tubercle darkened. Central region of face and of thoracic dorsum slightly darkened; body otherwise unmarked. Legs pale. Forewing (Fig. 70) very pale brown. Hindwing hyaline.

**Morphology.** Forewing venation as in Fig. 70. Hypandrium incipiently bilobed. Phallosome frame (Fig. 71) broad, open anteriorly, elongate rounded median projection; radular sclerites complex: many small rounded lateral denticles and central posterior more elongate sclerites. Epiproct rounded, with border strongly sclerotised. Paraproct with oval field of about 26 trichobothria.

**Dimensions.** B 2.60, FW 2.54, HW 1.87,  $f_1$  0.630, F 0.675, T 1.170,  $t_1$  0.525,  $t_2$  0.135,  $t_1/t_2$  3.889, ct 29.4.

Holotype, ♂, light trap, 31.i.1978.

**COMMENTS**

See comment following the previous species.

**Epipsocus argutus** sp. n.

(Figs. 74-76, 110)

**FEMALE.** Unknown.

**MALE.** Coloration. Dark brown. Eyes black. Ocelli on black tubercle. Vertex blackened dorsal to eyes and in midline; frons dark; postclypeus with 3 posterior striae converging on midline from each side, anteriorly dark brown; anteclypeus very dark brown; labrum paler; maxillary palpi dark brown; antennae paler. Thorax darkened dorsally; a broad brown pleural stripe. Legs with coxae and femora dark brown, otherwise pale. Forewing (Fig. 74) hyaline, except for slight dark grey markings at apices of veins. Hindwing hyaline. Abdomen with irregular dorsal dark brown markings.

**Morphology.** Lacinial apex as in Fig. 110. Forewing venation as in Fig. 74. Hypandrium rounded, heavily sclerotised. Phallosome (Fig.

75) broad, open anteriorly; a long pointed median posterior process; radular sclerites complex, but all pointed rather than rounded, and all small. Epiproct (Fig. 76) bluntly rounded, with borders thickened. Paraproct (Fig. 76) with field of about 24 trichobothria.

**Dimensions.** B 2.65, FW 2.54, HW 1.87,  $f_1$  0.675,  $f_2$  0.570,  $f_1/f_2$  1.184, F 0.675, T 1.155,  $t_1$  0.525,  $t_2$  0.135,  $t_1/t_2$  3.889, ct 30.3.

Holotype, ♂, light trap, 11.x.1977.

Paratype, ♂, light trap, 15.xi.1977.

**COMMENTS**

This species is clearly related to the preceding two new species, but is separable from them on phallosome form and on having darkened forewing areas at the apices of the radial and medial veins.

**Epipsocus fuscareolatus** sp. n.

(Figs. 77, 78, 111)

**FEMALE.** Unknown.

**MALE.** Coloration. Pale brown. Eyes black. Ocelli darkened, sited in narrow dark brown band across frons; face unmarked; maxillary palpi and antennae pale. Thorax ventrally darkened. Legs dark brown. Forewing (Fig. 77) predominantly pale; most veins with a few dark brown spots; apex of pterostigma, membrane at apices of veins  $R_{2+3} - M_4$  darkened; whole of areola postica dark brown. Hindwing hyaline, except for slight darkening at nodulus. Abdomen pale dorsally, slightly darkened laterally.

**Morphology.** Lacinial apex as in Fig. 111. Forewing venation (Fig. 77):  $R_s$  3-branched, M 4-branched. Hypandrium broadly rounded, lightly sclerotised. Phallosome frame (Fig. 78) open anteriorly, sinuously rounded posteriorly; radular sclerites scarcely evident. Epiproct shallow, rounded. Paraproct with field of about 23 trichobothria.

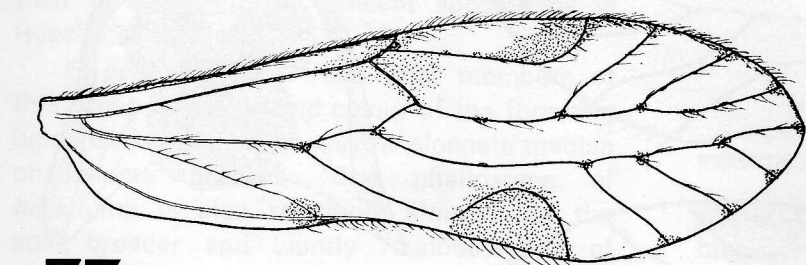
**Dimensions.** B 2.45, FW 2.30, HW 1.77,  $f_1$  0.450,  $f_2$  0.345,  $f_1/f_2$  1.304, hind leg missing.

Holotype, ♂, light trap, 18.x.1977.

# COMMENTS

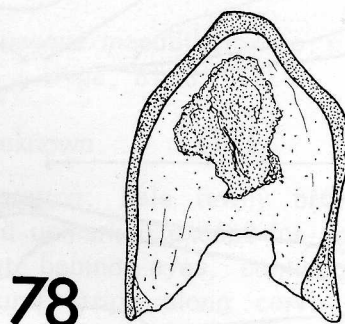
The dark brown areola postica, with no similar darkening of the medial cells, im-

mediately differentiates *fuscareolatus* from all other South American Epipsocidae. It is unknown whether the additional branches to  $R_s$  and M in the forewing are aberrant.



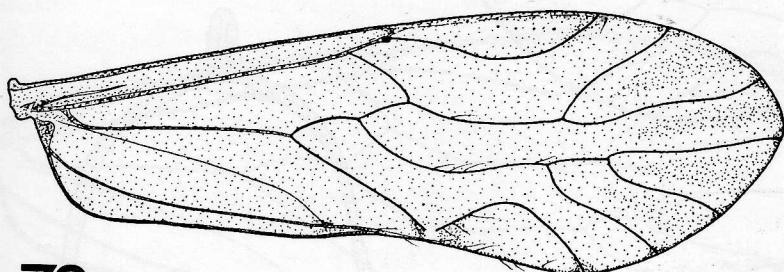
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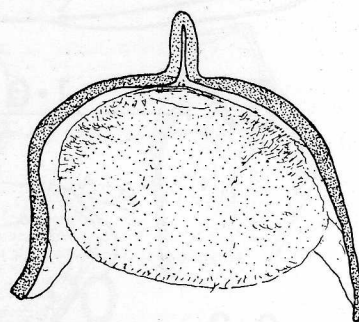
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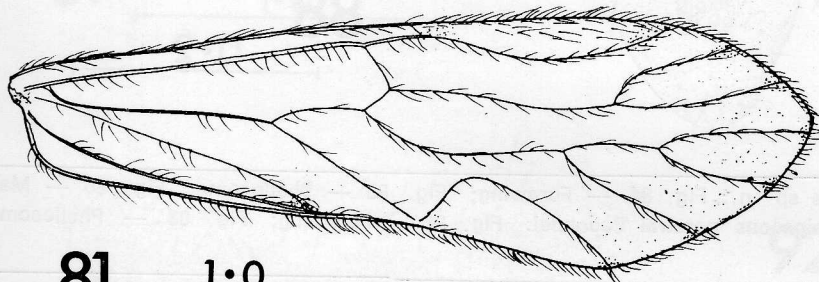
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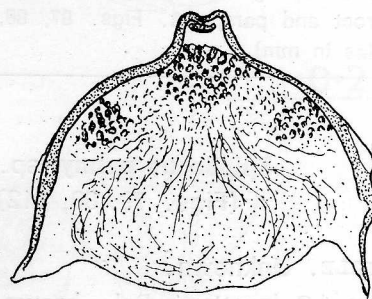
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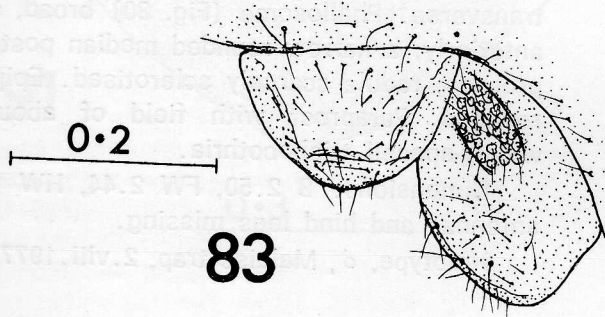
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82

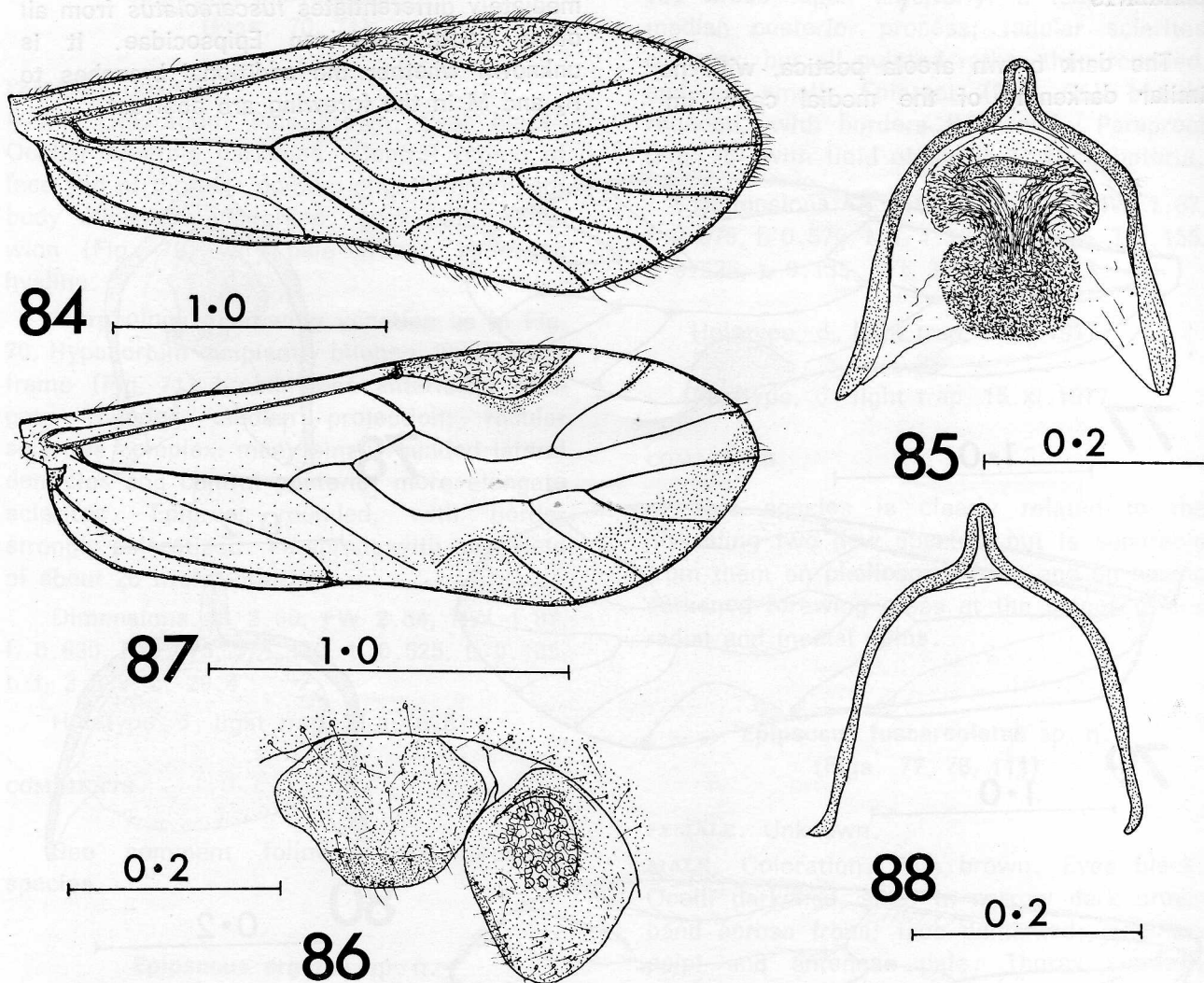
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83

0.2

Figs. 77-83, Figs. 77, 78, *Epipsocus fuscareolatus* sp. n.: Fig. 77 — Forewing; Fig. 78 — Phallosome. Fig. 79, 80, *Epipsocus pennyi* sp. n.: Fig. 79, Forewing; Fig. 80 — Phallosome. Figs. 81-83. *Epipsocus maculithorax* sp. n.: Fig. 81 — Forewing; Fig. 82 — Phallosome; Fig. 83 — Male epiproct and paraproct. (Scales in mm).



Figs. 84-88, Figs. 84-86, *Epipsocus atratus* sp. n.: Fig. 84 — Forewing; Fig. 85 — Phallosome; Fig. 86 — Male epiproct and paraproct. Figs. 87, 88, *Epipsocus pereirai* Padonnel: Fig. 87 — Forewing; Fig. 88 — Phallosome. (Scales in mm).

***Epipsocus pennyi* sp. n.**  
(Figs. 79, 80, 112)

**FEMALE.** Unknown.

**MALE.** Coloration. Pale brown, head overall darker. Eyes black. Ocelli on black tubercle; postclypeus and anteclypeus darkened. Thorax pale, slightly darkened dorsally. Legs pale brown. Forewing (Fig. 79) pale greyish brown, with darker central areas in radial and medial cell; apices of most veins darkened. Hindwing very pale greyish brown. Abdomen unmarked.

Morphology. Lacinial apex as in Fig. 112. Forewing venation as in Fig. 79. Hypandrium

transverse. Phallosome (Fig. 80) broad, open anteriorly; a narrow rounded median posterior process; radula scarcely sclerotised. Epiproct rounded. Paraproct with field of about 26 widely-spaced trichobothria.

Dimensions. B 2.50, FW 2.44, HW 1.82, antennae and hind legs missing.

Holotype, ♂, Malaise trap, 2.viii.1977.

**COMMENTS**

This, and the next species, resemble *E. nepos* Enderlein (1900, Peru), *E. plaumanni* Roesler (1940, Brazil) and *E. latistigma*



Roesler (1940, Brazil) in having relatively discrete dark patches in the radial and medial forewing cells. Genitalia of *nepos* are unknown but (from Enderlein's figures), the areola postica is considerably longer and shallower than in either of the present species or in Roesler's species.

*E. pennyi* differs from other members of this group in the ground colour of the forewing being darker and in the narrow elongate median phallosome process. The phallosome of *latistigma* is also relatively simple, but the apex broader and bluntly rounded. That of *plumanni* is considerably more complex (Roesler 1940, fig. 56). *E. pennyi* and *macu-*

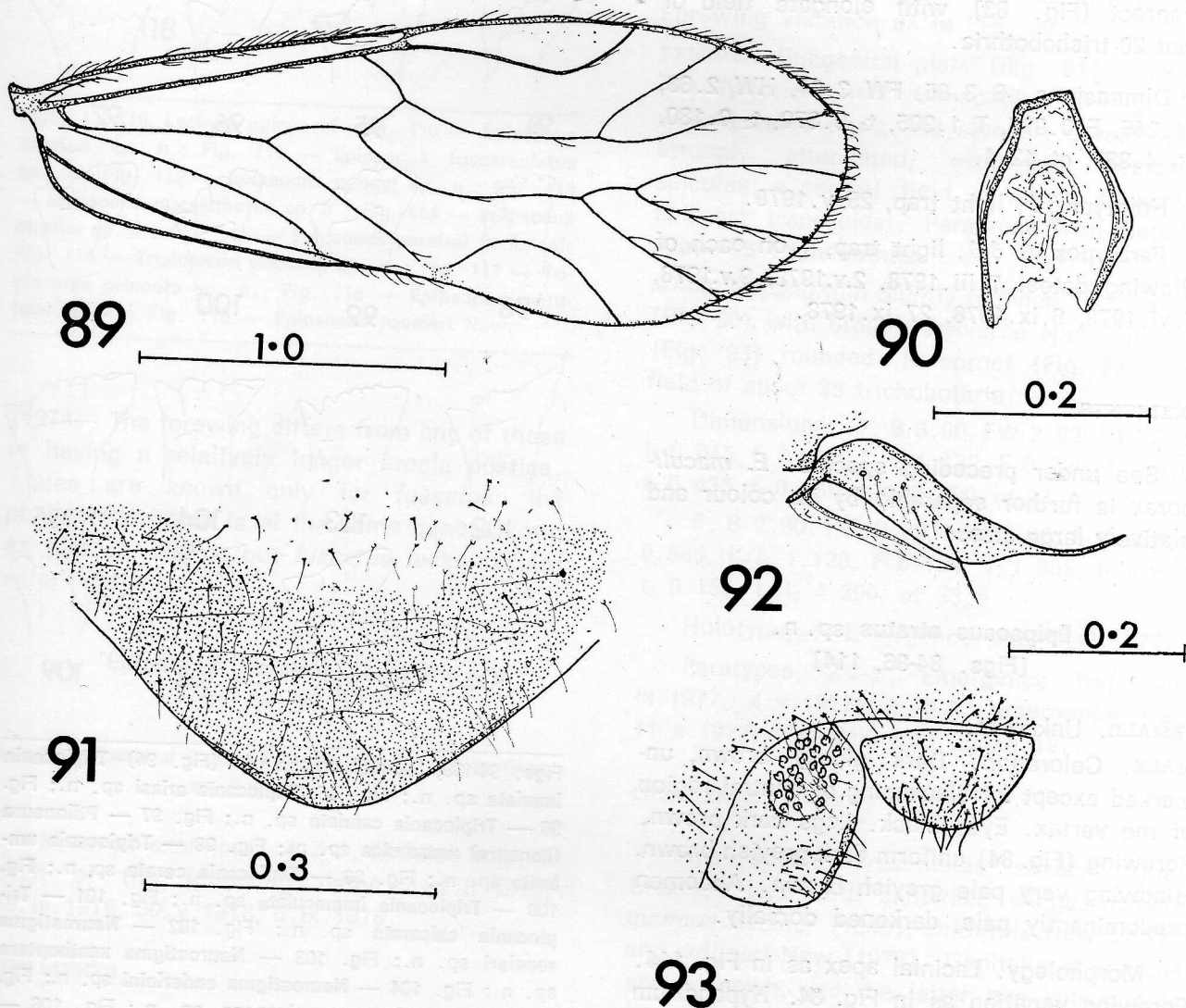
*lithorax* sp.n. are readily separable on phallosome and forewing features: the three discrete groups of radular denticles found in *maculithorax* also separate it from all other known species.

***Epipsocus maculithorax* sp. n.**

(Figs. 81-83, 113)

FEMALE. Unknown.

MALE. Coloration. Pale tawny brown. Eyes black. Head unmarked except for small dark brown spot behind eyes, contiguous with narrow pleural stripe along cervix and pro-



Figs. 89-93, *Epipsocus meruleus* sp. n.: Fig. 89 — Forewing; Fig. 90 — Phallosome; Fig. 91 — Subgenital plate; Fig. 92 — Gonapophyses; Fig. 93 — Male epiproct and paraproct. (Scales in mm).

thorax. Thorax also with small black spot at base of each wing, and a larger spot above hind coxa. Legs: apex of tibiae, whole of tarsi darkened. Forewing (Fig. 81) yellowish brown, with dark brown markings at apex of veins  $R_{2+3} - Cu_2$ ; slight darker patches in radial and medial cells. Hindwing hyaline, except for slight darkening at apices of  $R_s$  and M.

**Morphology.** Lacinial apex (Fig. 113) strongly produced on outer side. Forewing venation (Fig. 81). Hypandrium transverse. Phallosome (Fig. 82) broad, open anteriorly; median posterior projection short, emarginate at apex; radula with three patches of dark denticles. Epiproct (Fig. 83) deep, rounded. Paraproct (Fig. 83) with elongate field of about 20 trichobothria.

**Dimensions.** B 3.85, FW 3.64, HW 2.68,  $f_1$  1.245, F 0.975, T 1.905,  $t_1$  0.870,  $t_2$  0.180,  $t_1/t_2$  4.833, ct 42.4.

**Holotype**, ♂, light trap, 25.v.1978.

**Paratypes**, 6 ♂♂, light trap, 1 on each of following dates: 7.iii.1978, 2.v.1978, 9.v.1978, 27.vi.1978, 6.ix.1978, 27.ix.1978.

#### COMMENTS

See under preceding species. *E. maculithorax* is further separable by its colour and relatively large size.

#### *Epipsocus atratus* sp. n. (Figs. 84-86, 114)

**FEMALE.** Unknown.

**MALE.** Coloration. Dark glossy brown, unmarked except for blackening of central region of the vertex. Eyes black. Legs dark brown. Forewing (Fig. 84) uniform dark greyish brown. Hindwing very pale greyish brown. Abdomen predominantly pale, darkened dorsally.

**Morphology.** Lacinial apex as in Fig. 114. Forewing venation as in Fig. 84. Hypandrium transverse, incipiently bilobed. Phallosome frame (Fig. 85) open anteriorly; a rounded median posterior process; lightly sclerotised 'mushroom-shaped' radular patches. Epiproct

(Fig. 86) deep, rounded. Paraproct (Fig. 86) with large field of about 32 trichobothria.

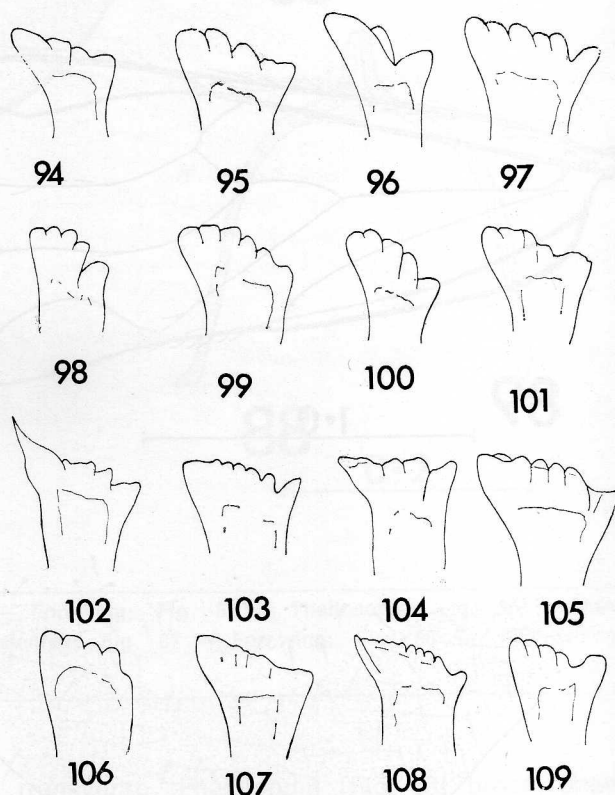
**Dimensions.** B 2.80, FW 2.73, HW 2.15,  $f_1$  0.465,  $f_2$  0.345,  $f_1/f_2$  1.348, F 0.705, T 1.215,  $t_1$  0.510,  $t_2$  0.180,  $t_1/t_2$  2.833, ct 20.5.

**Holotype**, ♂, Malaise trap, 29.xi.1977.

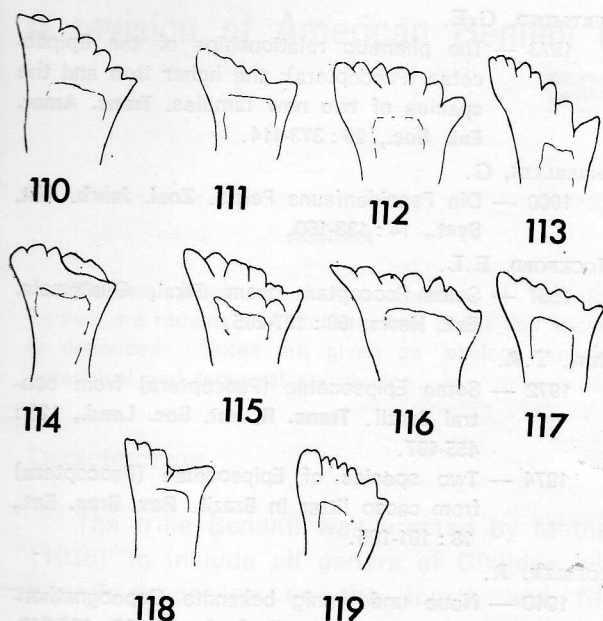
**Paratype**, ♂, Malaise trap, 9.viii.1977.

#### COMMENTS

The darkwinged species is superficially similar to *E. niger* New (1972), *E. fuscatus* New (1972) and to *Mesepipsocus newi* Badonnel



Figs. 94-109, Lacinial apices of: (Fig. 94) *Triplocania lunulata* sp. n.; Fig. 95, *Triplocania ariasi* sp. n.; Fig. 96 — *Triplocania caudata* sp. n.; Fig. 97 — *Ptiloneura (Loneura) amazonica* sp. n.; Fig. 98 — *Triplocania umbrata* sp. n.; Fig. 99 — *Euplocania cerata* sp. n.; Fig. 100 — *Triplocania immaculata* sp. n.; Fig. 101 — *Triplocania calcarata* sp. n.; Fig. 102 — *Neurostigma roesleri* sp. n.; Fig. 103 — *Neurostigma xanthoptera* sp. n.; Fig. 104 — *Neurostigma enderleini* sp. n.; Fig. 105 — *Neurostigma paucivenosa* sp. n.; Fig. 106 — *Dicropsocus brasiliensis* sp. n.; Fig. 107 — *Epipsocus capitulatus* sp. n.; Fig. 108 — *Epipsocus phaeus* sp. n.; Fig. 109 — *Epipsocus verrucosus* sp. n.



Figs. 110-119, Lacinial apices of: Fig. 110 — *Epipsocus argutus* ♂ n.; Fig. 111 — *Epipsocus fuscareolatus* sp. n.; Fig. 112 — *Epipsocus pennyi* sp. n.; Fig. 113 — *Epipsocus maculithorax* sp. n.; Fig. 114 — *Epipsocus atratus* sp. n.; Fig. 115 — *Epipsocus pereirai* Badonnel; Fig. 116 — *Triplocania uncinata* sp. n.; Fig. 117 — *Triplocania prionota* sp. n.; Fig. 118 — *Epipsocus meruleus* sp. n.; Fig. 119 — *Epipsocus roesleri* New.

(1974). The forewing differs from any of these in having a relatively longer areola postica. Males are known only for *fuscatus*: the phallosome frame is of the same general form as that of *atratus*, but *fuscatus* lacks radular sclerifications.

***Epipsocus pereirai* Badonnel**  
(Figs. 87, 88, 115)

*Epipsocus pereirai* Badonnel, 1974: 192 (♂, Mato Grosso, figs. 1-3)

Material examined. 4 ♂♂, Malaise trap, 1 each of the following dates: 21.ii.1978, 18.iv.1978, 30.v.1978, 6.ix.1978.

**COMMENTS**

These specimens are referred to *pereirai* on correspondence of forewing markings and of phallosome form, although the forewing

pigmentation is more pronounced basally, and the lacinial apex (Fig. 115) differs somewhat. The illustrations given here facilitate comparison with Badonnel's specimen from Utiariti.

***Epipsocus meruleus* sp. n.**  
(Figs. 89-93, 118)

**FEMALE, MALE.** Coloration. Dark brown. Eyes black. Ocelli on black tubercle. Face unmarked; maxillary palpi and antennae paler. Thorax undarkened dorsally; a narrow dark pleural stripe. Legs, wings (except for slight browning around apical margin) and abdomen unmarked.

**Morphology.** Lacinial apex as in Fig. 118. Forewing venation as in Fig. 89.

**FEMALE.** Subgenital plate (Fig. 91) rounded, heavily sclerotised. Gonapophyses (Fig. 92): ventral valve short and slender; dorsal valve strongly attenuated, with few preapical spicules; a central field of about 10 setae. Epiproct trapezoidal. Paraproct with field of about 26 trichobothria.

**MALE.** Hypandrium bluntly rounded. Phallosome (Fig. 90) with broad transverse apex. Epiproct (Fig. 93) rounded. Paraproct (Fig. 93) with field of about 28 trichobothria.

**Dimensions.** ♀. B 3.00, FW 2.92, HW 2.16,  $f_1$  0.645,  $f_2$  0.570,  $f_1/f_2$  1.132, F 0.720, T 0.870,  $t_1$  0.435,  $t_2$  0.150,  $t_1/t_2$  2.900, ct 23.4.

♂, B 2.90, FW 2.83, HW 2.06,  $f_1$  0.660,  $f_2$  0.585,  $f_1/f_2$  1.128, F 0.795, T 1.305,  $t_1$  0.645,  $t_2$  0.150,  $t_1/t_2$  4.300, ct 33.5.

Holotype, ♂, Emergence trap, 8.xi.1977.

Paratypes, 2 ♀♀, Emergence trap, 20.ix.1977, 4.x.1977; 2 ♂♂, emergence trap, 11.x.1977; 1 ♂, light trap, 20.xii.1977.

**COMMENTS**

This species resembles several other Brazilian taxa with unmarked wings, namely *quercus* Roesler (1940), *uniformis* New (1972) and *willineri* New (1972). Genitalia of *quercus* are unknown, and the latter two known only from females. Both have a ventral valve to the gonapophyses, as in the present species, but differ on the form of subgenital plate sclerotisation and of the gonapophyses.



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## Resumo

Trinta e uma (31) espécies de Epipsocetae são citadas da Reserva Ducke, localizada perto de Manaus (Brasil). das quais vinte e sete (27) são descritas como novas e ilustradas. Os novos taxa representam os gêneros *Ptiloneura* (1), *Triplocania* (8), *Euplocania* (2), *Isthmopsocus* (1), *Neurostigma* (4), *Dicropsocus* (1), *Epipsocus* (10), sendo as suas afinidades discutidas.

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