ACTA ENTOMOLOGICA MUSEI NATIONALIS PRAGAE
Published 30.vi.2011 Volume 51(1), pp. 183–210 ISSN 0374-1036

Three new species of non-biting moth flies (Diptera: Psychodidae: Psychodinae) from Bolivia, with notes on higher taxa of the subfamily

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Abstract. A study of Psychodinae, tribes Paramormiini, Psychodini and Pericomini, from Bolivia is completed, and three new species are described: *Eurygarka freyrei* sp. nov., *Tinearia boliviensis* sp. nov. and *Alepia santacruz* sp. nov. Differential diagnoses are included and important diagnostic characters illustrated. All known species of the genera *Eurygarka* Quate, 1959, *Tinearia* Schellenberg, 1803 and *Alepia* Enderlein, 1937 are listed. Comments on the classification of all three genera are given, and the conception of Neotropical Setomimini is discussed. The species *Eurygarka aliciae* (Ibáñez-Bernal & Cáceres, 2005) comb. nov., from Peru, is transferred from *Philosepedon* Eaton, 1904; seven species are transferred from *Psychoda* Latreille, 1796 to *Tinearia* – *Tinearia alia* (Quate, 1962) comb. nov. (Philippines, Borneo and New Guinea), *T. capitipenis* (Ibáñez-Bernal, 1992) comb. nov. (Mexico), *T. efflatouni* (Tonnoir, 1922) comb. nov. (Egypt), *T. formosiensis* (Tokunaga, 1957) comb. nov. (Taiwan, Borneo), *T. platilobata* (Tokunaga, 1957) comb. nov. (Taiwan, Philippines, Borneo, Jamaica, Trinidad), *T. subquadrilobata* (Tokunaga, 1957) comb. nov. (Taiwan), and *T. vagabunda* (Quate, 1962) comb. nov. (Sri Lanka, Borneo). A new subtribal synonymy is proposed: Threticina Vaillant, 1991 syn. nov. = Trichopsychodina Ježek, 1985.

Key words. Psychodidae, Psychodinae, Paramormiini, Psychodini, Pericomini, Setomimini, Trichopsychodina, taxonomy, new species, new synonymy, new combinations, list of species, Bolivia, Neotropical Region

Introduction

Non-biting moth flies of the subfamily Psychodinae are represented only by five previously recorded species in Bolivia (Duckhouse 1973, Quate & Brown 2004): *Alepia albicollare* (Enderlein, 1937), *A. scripta* Enderlein, 1937, *Chirolepia maculipennis* Enderlein, 1937, *Lepidiella lanuginosa*[1] Enderlein, 1937 and *Tonnoira cavernicola* Quate & Brown, 2004. In the current paper, we describe three new species from Bolivia, two of which were collected in the Subandean region and the other on a small cordillera emerging from the eastern lowlands: *Eurygarka freyrei* sp. nov., *Tinearia boliviensis* sp. nov. and *Alepia santacruz* sp. nov.

Materials and methods

The material was collected with CDC miniature light traps (Fig. 81), baited with carbonic gas, and placed 1.5 m above the ground in the forest. Subandean stations are: Cieneguillas (16°35′S 67°26′W; Figs. 79B, 85–86) and Circuata (16°38′S 67°15′W; Figs. 79A, 80 and 84), belonging to the Yungas (subtropical montane valleys) of La Paz, are situated in a semi-disturbed Yungas montane forest and a patch of seasonally dry forest, respectively. Distance between the two localities is 22 km. The last locality, Organo (18°20′S 59°46′W; Figs. 79C, 81, 82–83), is situated on the Serrania de Santiago in a typical Chiquitano dry forest.

The captured moth flies were preserved in 70% ethanol in the field, and mounted on slides (Canada balsam) in Prague. The voucher specimens are deposited in the following collections:

CBF Coleccion Boliviana de Fauna, La Paz, Bolivia;
MNKM Museo Noël Kempff Mercado, Santa Cruz, Bolivia;
NMPC National Museum, Praha, Czech Republic.

Slides were numbered in the NMPC with two separate series of numbers: Inv. No. = Inventory Slide Number of the family Psychodidae and Cat. No. = Catalogue Number of Slide. The latter series is used for type material included in the NMPC Diptera collection. The microphotographs were prepared by the trinocular eclipse microscope Nikon TS-100F with a photo port and digital camera. The morphological characters were illustrated by the first author, the map and habitat photographs were prepared by F. Le Pont.

Wing indices are based on distances between the following points: A = tip of R_5, B = radial fork, C = medial fork, D = tip of Cu; the distances are indicated by both extreme points. Maximum wing length (approximately) equal to the distance from a line connecting the bases of basal costal node to neala and the wing apex. Fore, middle and hind leg ratios indicated by P_1, P_2 and P_3, respectively.

We examined the following comparative material during our study: *Philosepedon aliciae* Ibáñez-Bernal & Cáceres, 2005: ♂ (holotype), 'Perú: Reg. Chaelín, Bolognesi, Hayllacayán, Huaga Machay, 22-II-1989, A. Cáceres, col. Con aspirador manual en cueva, IB07-251' (Coll. Instituto de Ecología, A. C., Xalapa, Veracruz, México).

[1] *Lepidiella* Enderlein, 1937 (formerly a synonym of *Syntomoza* Enderlein, 1937) was used as the replacement generic name for *Syntomoza* Enderlein, 1937 because of a homonymy with *Syntomoza* Enderlein, 1921 (Hemiptera: Psyllidae) – for details see Collantes & Hodkinson (2003).

Taxonomy

Status of Trichopsychodina Ježek, 1985 and Threticina Vaillant, 1991

The genesis of the above mentioned classification is as follows: The tribe Telmatoscopini Vaillant, 1971 was synonymized by Ježek (1984b) with the tribe Paramormiini Enderlein, 1937 (subtr. Paramormiina of Enderlein 1937), and later, the same action was proposed by Duckhouse (1987). Moreover, we synonymize here the subtribe Threticina Vaillant, 1991 (**syn. nov.**) erected by Vaillant (1991: 207) with Trichopsychodina Ježek, 1985 with almost the same included genera (see Table 1).

Table 1. Different conceptions of subtribes within the tribe Paramormiini.

***Threticus* group** (Vaillant 1973)	**subtribe Trichopsychodina** (Ježek 1985)	**subtribe Threticina** (Vaillant 1991)
	Trichopsychoda Tonnoir, 1922: type species *Psychoda hirtella* Tonnoir, 1919	***Trichopsychoda*** Tonnoir, 1922: type species *Psychoda hirtella* Tonnoir, 1919
Philosepedon Eaton, 1904: type species *Psychoda humeralis* Meigen, 1818	***Philosepedon*** Eaton, 1904: type species *Psychoda humeralis* Meigen, 1818	***Philosepedon*** Eaton, 1904: type species *Psychoda humeralis* Meigen, 1818
Threticus Eaton, 1904: type species *Pericoma lucifuga* Walker, 1856	***Threticus*** Eaton, 1904: type species *Pericoma lucifuga* Walker, 1856	***Threticus*** Eaton, 1904: type species *Pericoma lucifuga* Walker, 1856
	Feuerborniella Vaillant, 1971: type species *Psychoda obscura* Tonnoir, 1919	***Feuerborniella*** Vaillant, 1971: type species *Psychoda obscura* Tonnoir, 1919
Nielseniella Vaillant, 1972: type species *Trichopsychoda maderensis* Satchell, 1955		***Nielseniella*** Vaillant, 1972: type species *Trichopsychoda maderensis* Satchell, 1955
Quatiella Botosaneanu & Vaillant, 1970: type species *Psychoda interdicta* Dyar, 1928		***Quatiella*** Botosaneanu & Vaillant, 1970: type species *Psychoda interdicta* Dyar, 1928
Neoquatiella Vaillant, 1973: type species *Telmatoscopus jeannae* Quate, 1955		
Neothreticus Vaillant, 1973: type species *Telmatoscopus sobrinus* Quate, 1955		
Perithreticus Vaillant, 1973: type species *Psychoda bishoppi* del Rosario, 1936		

Eurygarka Quate, 1959

Eurygarka Quate, 1959: 450 (as genus). Type species: *Psychoda helicis* Dyar, 1929.

Eurygarka: Quate (1960: 9); Quate & Vockeroth (1981: 299); Curler & Moulton (2008: 29).

Philosepedon (*Eurygarka*): Duckhouse (1973: 11). As subgenus of *Philosepedon* Eaton, 1904, type species *Psychoda humeralis* Meigen, 1818.

Philosepedon auct. (nec *Philosepedon* Eaton, 1904), *partim*: Wagner & Hribar (2004: 510), Ibáñez-Bernal & Cáceres (2005: 158).

Only important references are selected above.

Differential diagnosis. The genus *Eurygarka* Quate, 1959 can be keyed by flagellomeres with pair of broad three-branched leaf-like ascoids, with multiple longitudinal vein-like lines (Fig. 4), remainders of 10th segment inside of epandrium distinctly developed, conspicuously hairy (Figs. 17, 23).

These characters contrast with the genus *Philosepedon* Eaton, 1904 with pair of narrow needle-shaped ascoids composed from three arms, remainders of 10th segment inside of epandrium almost missing.

Discussion. Genus *Eurygarka* Quate, 1959 belongs safely to the subtribe Trichopsychodina Ježek, 1985 of Paramormiini Enderlein, 1937, which is supported by the triangular pteropleurite (Fig. 19) in contrast to the trapezoidal pteropleurite of Psychodini Enderlein, 1937 (see Ježek & van Harten 2005: Figs. 13, 23, 46, 63, 79).

The genus-group name *Eurygarka* was used at first by Quate (1959) and then by Quate & Vockeroth (1981) for a single species *Psychoda helicis* Dyar, 1929 (type species) reared originally from a dead terrestrial snail in Cuba, and known also from Maryland (del Rosario 1936), Florida and Alabama (Quate 1955). Duckhouse (1973) downgraded *Eurygarka* and included it in the genus *Philosepedon* Eaton, 1904 as a subgenus. However, Wagner & Hribar (2004) reported the species as *Philosepedon helicis* from Florida Keys Islands and Ibáñez-Bernal & Cáceres (2005) used the genus-group name *Philosepedon* for a new species from Peru with characteristic foliated ascoids formed as in *E. helicis*. Recently, Curler & Moulton (2008) discussed in detail the systematic position of *Eurygarka* species group and described two new Nearctic species of the genus *Eurygarka* from the United States. The concept of *Eurygarka* according to Curler & Moulton (2008) corresponds with a restricted conception of the genus *Philosepedon* Eaton, 1904 of Ježek (1985, 1999b) and Ježek & van Harten (2007) in contrast to *Philosepedon* sensu lato of Quate (1962) and Duckhouse (1973). With a respect to the papers of Wagner & Hribar (2004), Ibáñez-Bernal & Cáceres (2005) and Curler & Moulton (2008), altogether five species belong to the genus *Eurygarka* Quate, 1959.

List of the Word species of the genus *Eurygarka*

aliciae (Ibáñez-Bernal & Cáceres, 2005) **comb. nov.** (*Philosepedon*) – Peru
cyphostylus Curler, 2008 in Curler & Moulton (2008) – USA
***freyrei* sp. nov.** – Bolivia
helicis (Dyar, 1929) – Cuba, USA
nelderi Curler, 2008 in Curler & Moulton (2008) – USA

Eurygarka freyrei sp. nov.

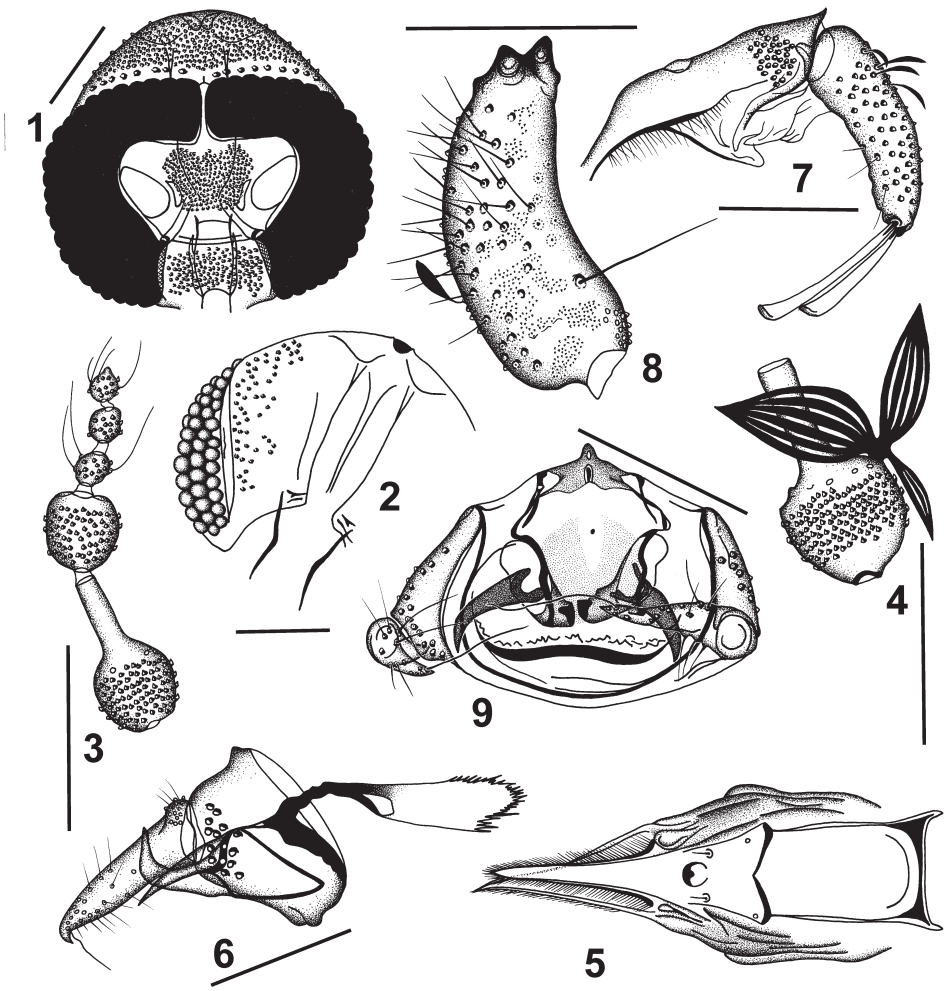
(Figs. 1–25)

Type locality. Bolivia, Cieneguillas, 1200 m a.s.l., 16°35′S 67°26′W (Figs. 79B, 85, 86).

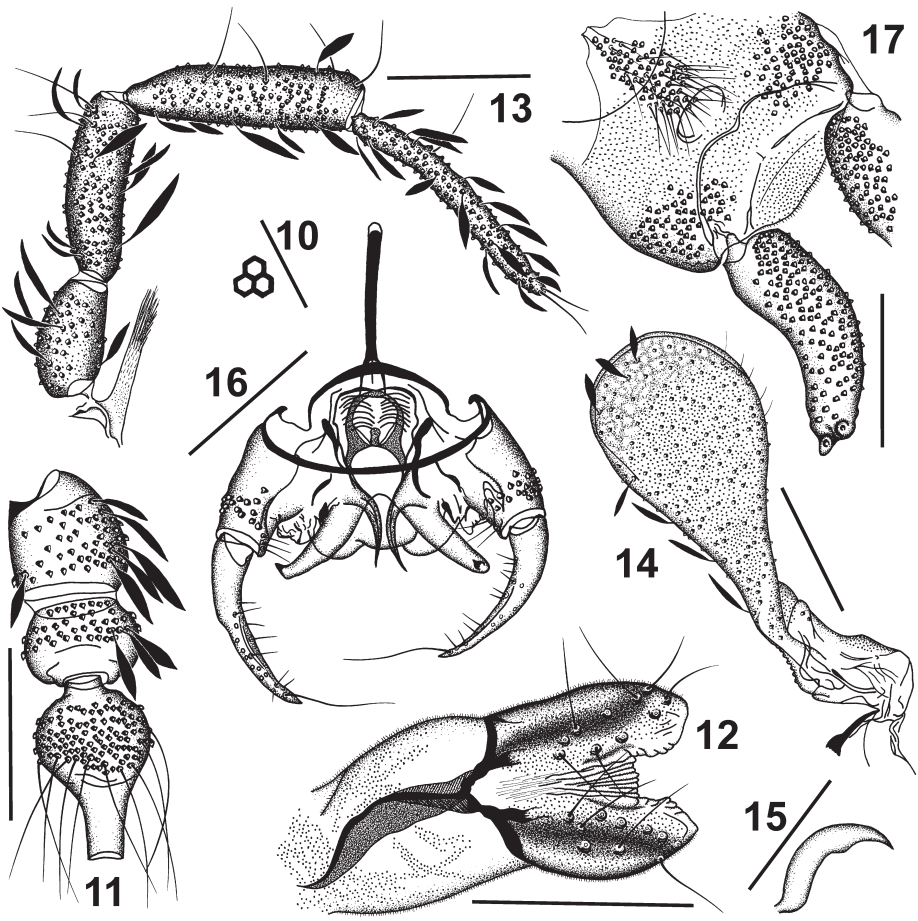
Type material. Holotype: ♂, **BOLIVIA:** 'Subandean Region, Cieneguillas near La Plazuela, department of La Paz, Inquisivi province, 1200 m a.s.l., 16°35′S 67°26′W, iii.–iv. 2008, F. Le Pont leg.' (NMPC, slide Cat. No. 34504, Inv. No. 18868). Paratype: 1 ♂, same data as holotype (CBF).

Description. ***Male.*** Eyes not touching (Fig. 1), eye-bridge of four facet rows (Fig. 18), frons conspicuously very narrow, without insertions of hairs, interocular suture V-shaped with a short terminal straight line in upper part. The field of insertions of hairs on vertex not divided (Fig. 1).

Frontoclypeus with large trilobed central patch of insertions of hairs, medial lobe small and short, triangular, lateral ones rounded, conspicuous, basis of central patch near tentorial pits narrowed, cut, with almost rectangular borders. Diameter of facets three to four times as wide as minimum distance between eyes, facets are irregularly hexagonal (Figs. 10, 18), in back fold of head only inconspicuously globular (Fig. 2). Ratios of distance of tangential points of apices of eyes to minimum width of frons approximately 41 : 1, to facet diameter 11 : 1. Antenna with 16 antennomeres. Scape shortly cylindrical, pedicel almost globular;



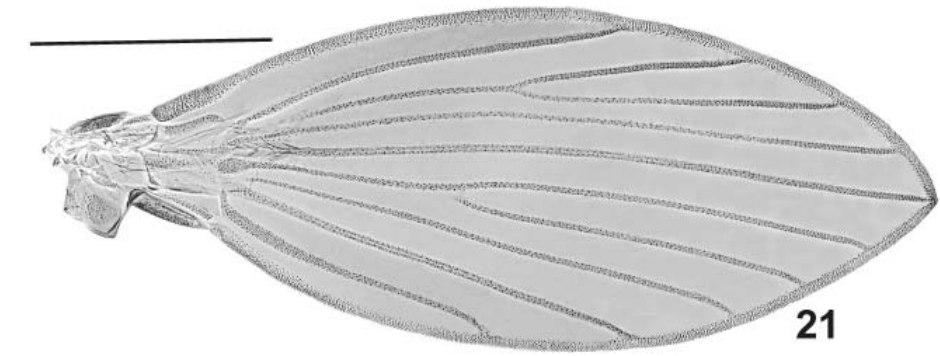
Figs. 1–9. *Eurygarka freyrei* sp. nov., ♂. 1 – head; 2 – back of the head (caudal view of fold of eye); 3 – apical antennomeres; 4 – antennal ascoid (sensory filament); 5 – cibarium, labrum and epipharynx; 6 – lateral view of gonocoxite, gonostyle and aedeagal complex; 7 – lateral view of epandrium and surstylus; 8 – surstylus (inner side, retinaculi omitted); 9 – caudal view of gonocoxite, gonostyle and aedeagal complex. Scale bars: 0.1 mm.

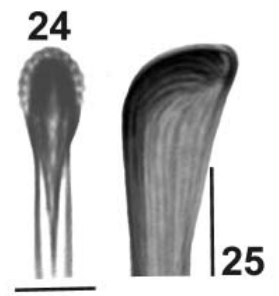


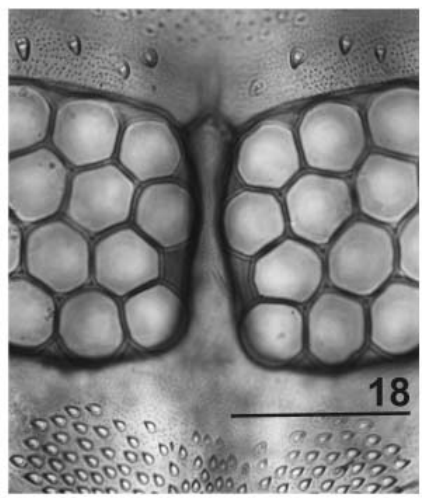
Figs. 10–17. *Eurygarka freyrei* sp. nov., ♂. 10 – facets; 11 – basal antennomeres; 12 – terminal lobes of labium; 13 – maxilla and palpus maxillaris; 14 – haltere; 15 – claw of P_1; 16 – dorsal view of aedeagal complex and gonopods; 17 – dorsal view of epandrium and surstyli (retinaculi omitted). Scale bars: 0.1 mm, except 0.03 in Fig. 15.

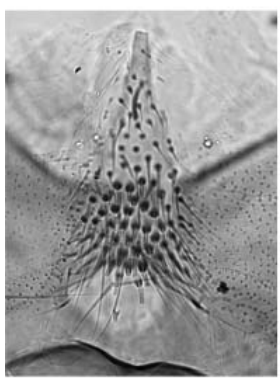
flagellomeres 1–10 amphora-shaped (Fig. 11). Antennomere 13 globular, without a neck, last three antennomeres minute, globular, separated, terminal antennomere drop-shaped (Fig. 3). Sensory filaments (ascoids) of flagellomeres paired, trifoliate and secondarily multiply divided (Fig. 4). Length ratios of maxillary palpomeres 1.0 : 1.6 : 2.0 : 2.2, palpomere 4 conspicuously thin, cylindrical, not annulate (Fig. 13). Terminal lobes of labium bulbous (Fig. 12), with many sensory setae. Cibarium, labrum and epipharynx as in Fig. 5.

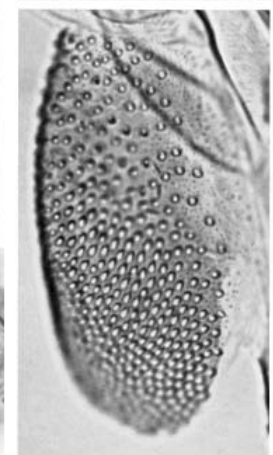
Thoracic sclerites and spiraculum as in Figs. 19 and 20. Wings lancet-shaped (Fig. 21), only slightly clouded, 1.8 mm long (holotype and paratype), wing membrane bare, radial











Figs. 18–25. *Eurygarka freyrei* sp. nov., ♂. 18 – frontoclypeus and facets; 19 – lateral view of thoracic sclerites; 20 – thoracal spiracle; 21 – wing; 22 – basal costal wing node in detail; 23 – patch of ventral epandrial brush spines; 24 – apical part of retinaculum in dorsal view; 25 – same in lateral view. Scale bars: 0.05 mm, except 0.01 in Figs. 24–25, 0.1 mm and 0.5 mm in Figs. 19 and 21.

fork complete, medial one incomplete (almost imperceptible connection of M_1 to M_2); the following veins or their parts strengthened: Sc, R_1, R_{2+3}, almost whole R_2, R_3 distad, R_5, M_{1+2} basally (small oval strengthened patch), M_4 and Cu conspicuously in basal half. Basal costal wing node distinct (detail in Fig. 22), Sc uninterrupted, slightly bent. M_3 basally without connection to M_4 and to Cu. R_5 extending distally and reaching wing margin at wing apex. Veins r-r, r-m and m-m not developed. Medial wing angle 145° (BCD). Wing indices AB : AC : AD = 3.9 : 4.2 : 4.1; BC : CD : BD = 1.0 : 1.4 : 2.3. Wing 2.5 times as long as wide. Haltere 2.7 times as long as wide (Fig. 14).

Length ratios of femora, tibiae and first tarsomeres: P_1 = 2.0 : 2.1 : 1.0; P_2 = 2.2 : 3.0 : 1.3; P_3 = 2.1 : 3.5 : 1.3. Fore claws as in Fig. 15. Basal apodeme of male genitalia straight and narrow in dorsal view (Fig. 16), conspicuously expanded and bent in lateral view (proximal end frazzeled – Fig. 6).

Aedeagal complex with two pairs of hooked protuberances of characteristic shape (Figs. 6, 9, 16). Gonocoxites short and broad in lateral view (Fig. 6), gonostyles elongate, approximately 1.5 times as long as gonocoxites, gradually tapering to apex, bent, with a long single seta subapically (Figs. 6, 9, 16). Epandrium with two irregularly formed fields of anterior insertions of hairs on both sides and central oval opening (aperture). Caudal epandrial notch shallow. Sclerotized remainders of 10th segment inside of epandrium developed and safely indicated, approximately triangular and elongate (Figs. 7, 17, 23), conspicuously hairy. Hypandrium narrow, bare (Fig. 16). Epiproct wrinkle-shaped, hardly visible, hypoproct inconspicuous, fold-shaped, more sclerotized, both parts narrow and hairy (Fig. 17). Surstyli cylindrical (Figs. 7, 8, 17), rather short, bent, with two small protuberances caudally and two retinaculi subapically (Figs. 7, 24, 25).

Female. Unknown.

Differential diagnosis. *Eurygarka freyrei* sp. nov**.** has a field of insertions of hairs on vertex compact (not divided by a medial line) and medial lobe of insertions of frontoclypeal hairs very short (Figs. 1, 18), length ratios of maxillary palpomeres 1.0 : 1.6 : 2.0 : 2.2 (Fig. 13), aedeagal complex with two pairs of conspicuously hooked protuberances of characteristic shape (Figs. 6, 9, 16), caudal epandrial notch shallow and aperture oval (Fig. 17).

Eurygarka aliciae (Ibáñez-Bernal & Cáceres, 2005), comb. nov., differs by divided field of insertions of hairs on vertex, medial lobe of insertions of frontoclypeal hairs prolonged, length ratios of maxillary palpomeres 1.0 : 1.3 : 1.8 : 2.3, two paired protuberances of aedeagal complex straight terminally, caudal epandrial notch V-shaped and aperture almost square.

Etymology. *Eurygarka freyrei* sp. nov**.** is named in honour of R. Jaimes Freyre, the famous Bolivian poet from the early 20th century.

Biology and collecting circumstances. Cieneguillas (Fig. 85) is an old Inca settlement, and an important focus of mucocutaneous leishmaniasis. *Lutzomyia longipalpis* (Lutz & Neiva, 1912), the primary vector of visceral leishmaniasis in South America, is present here in both domestic and sylvan habitats; *L. longipalpus* prefer dry forest habitats. At the bottom of Rio La Paz valley, vegetation belongs to the interandean seasonally dry tropical forest type (Fig. 86).

Distribution. Bolivia: Subandean region.

Tinearia Schellenberg, 1803

Tinearia Schellenberg, 1803: pl. 40. Type species: *Psychoda alternata* Say, 1825, designation by Coquillet (1910: 615).

Ulomyia (*partim*) (*Tinearia* as synonym of genus *Ulomyia* Haliday, 1838 in Curtis (1838), not *Ulomyia* Walker, 1856): Enderlein (1937: 84) (invalid designation of *Trichoptera fuliginosa* Meigen, 1804 as type species of *Tinearia*); Sarà (1952: 2).

Psychoda (*partim*) (*Tinearia* as synonym of genus *Psychoda* Latreille, 1796): Rapp (1945: 28); Withers (1988: 69); Ibáñez-Bernal (1992: 97); Duckhouse & Lewis (2007: unpaginated); Ibáñez-Bernal (2008: 97).

Tinearia: Ježek (1977: 232) (reinstated as separate genus); Ježek (1983: 258); Ježek (1984a: 141); Sasakawa (1986: 2, 3); Wagner (1984: 4); Wagner (1988: 12); Wagner (1990: 45); Wagner & Báez (1993: 2); Wagner (1994: 91); Wagner & Joost (1994: 85); Ježek & van Harten (1996: 70); Wagner (1997a: 209, 213, 220, 222); Wagner (1997b: 138, 140, 143–144); Ježek (2000: 27); Wagner (2000: 244); Wagner (2001: 89); Bernotienė (2002: 6); Wagner (2003: 119); Wagner & Hribar (2004: 510); Ježek & van Harten (2005: 217); Wagner (2007: unpaginated); Wagner & Andersen (2007: 295); Ježek & van Harten (2009: 706).

Psychoda (*Tinearia*) (as subgenus of *Psychoda* Latreille, 1796): Bravo et al. (2006: 3).

Only important references including synonymies are presented above.

Differential diagnosis. Antennomere 13 without a fold (Figs. 40, 41), sensory filaments with small branches (Fig. 50), shorter than flagellar nodes, terminal lobe of labium with five digitiform projections (Fig. 42), dark patches of hairs near apices of wing veins developed (Figs. 38, 39). Thus it differs from *Ypsydocha* Ježek, 1984, which has antennomere 13 with conspicuous circular distal fold, sensory filaments with large branches, longer than flagellar nodes, terminal lobe of labium with three digitiform projections, and apices of wing veins without dark patches of hairs.

Discussion. The taxonomy of the tribe Psychodini is not fixed so far due to rather incompatible views of different psychodid specialists. Ježek (1984a) and Ježek & van Harten (1996) proposed a new classification for the species commonly ascribed to *Psychoda* Latreille, 1796 (pteropleurite trapezoidal = Psychodini in their sense) and the reinstatement of the genus *Tinearia* Schellenberg, 1803 (Ježek 1977) was the first historical step in this reclassification. Fairchild (1951) examined Schellenberg's (1803) original publication (plates and the names appearing on them); the plate XL bears the supposed generic name *Tinearia*, but no specific name. No mention of the name *Tinearia* appears in the text by anonymous authors. Coquillet's (1910) designation of *Psychoda alternata* Say, 1825 as the type species thus validates *Tinearia*. The generic classification of Ježek (1984) was partially incorporated into the Catalog of the Diptera of the Australasian and Oceanian Regions (Duckhouse & Lewis 2007) in contrast to the paper on a supraspecific classification of the genus *Psychoda* (Bravo et al. 2006), where *Tinearia* is considered only one of 12 subgenera of the genus *Psychoda* sensu lato.

Currently there are 16 species of the genus *Tinearia* Schellenberg, 1803 distributed throughout the World including *Tinearia boliviensis* sp. nov. described in this paper. In addition, Ipe et al. (1986) described three problematic species from India – *Psychoda kishorei* Ipe, Ipe & Kishore, 1986, *Psychoda panajiensis* Ipe, Ipe & Kishore, 1986, and *Psychoda sanctijohani* Ipe, Ipe & Kishore, 1986 – all of which are most likely synonyms of *Tinearia alternata* (Say, 1825), see the opinion of Ježek & van Harten (2009).

List of the Word species of the genus *Tinearia*

acanthostyla (Tokunaga, 1957) (*Psychoda*) – Oriental and Palaearctic Regions
alia (Quate, 1962) (*Psychoda*) **comb. nov.** – Philippines, Borneo, New Guinea
alternata (Say, 1825) (*Psychoda*) – cosmopolitan
alternicula (Quate, 1955) (*Psychoda*) – USA
***boliviensis* sp. nov. –** Bolivia
capitipenis (Ibáñez-Bernal, 1992) (*Psychoda*) **comb. nov.** – Mexico
efflatouni (Tonnoir, 1922) (*Psychoda*) **comb. nov.** – Egypt
esfahanica Ježek, 1990 – Iran
formosiensis (Tokunaga, 1957) (*Psychoda*) **comb. nov.** – Taiwan, Borneo
lativentris (Berdén, 1952) (*Psychoda*) – Holarctic
= *quadesiana* Vaillant, 1963: 211 (*Psychoda*) (syn. by WAGNER (1990: 46))
limicola (Vaillant, 1973) (*Psychoda*) – USA
platilobata (Tokunaga, 1957) (*Psychoda*) **comb. nov.** – Taiwan, Philippines, Borneo, Jamaica, Trinidad
pseudalternata (Williams, 1943) (*Psychoda*) – Australia
pseudoalternicula (Salamanna, 1975) (*Psychoda*) – Italy, Lebanon, Cape Verde Islands
= *lebanica* Vaillant & Moubayed, 1987: 125 (*Psychoda*) (syn. by JEŽEK & VAN HARTEN (1996: 72))
= *pseudalternicula* (*Tinearia*): WAGNER (1990: 46, lapsus calami)
subquadrilobata (Tokunaga, 1957) (*Psychoda*) **comb. nov.** – Taiwan
vagabunda (Quate, 1962) (*Psychoda*) **comb. nov. –** Sri Lanka, Borneo

Tinearia boliviensis sp. nov.

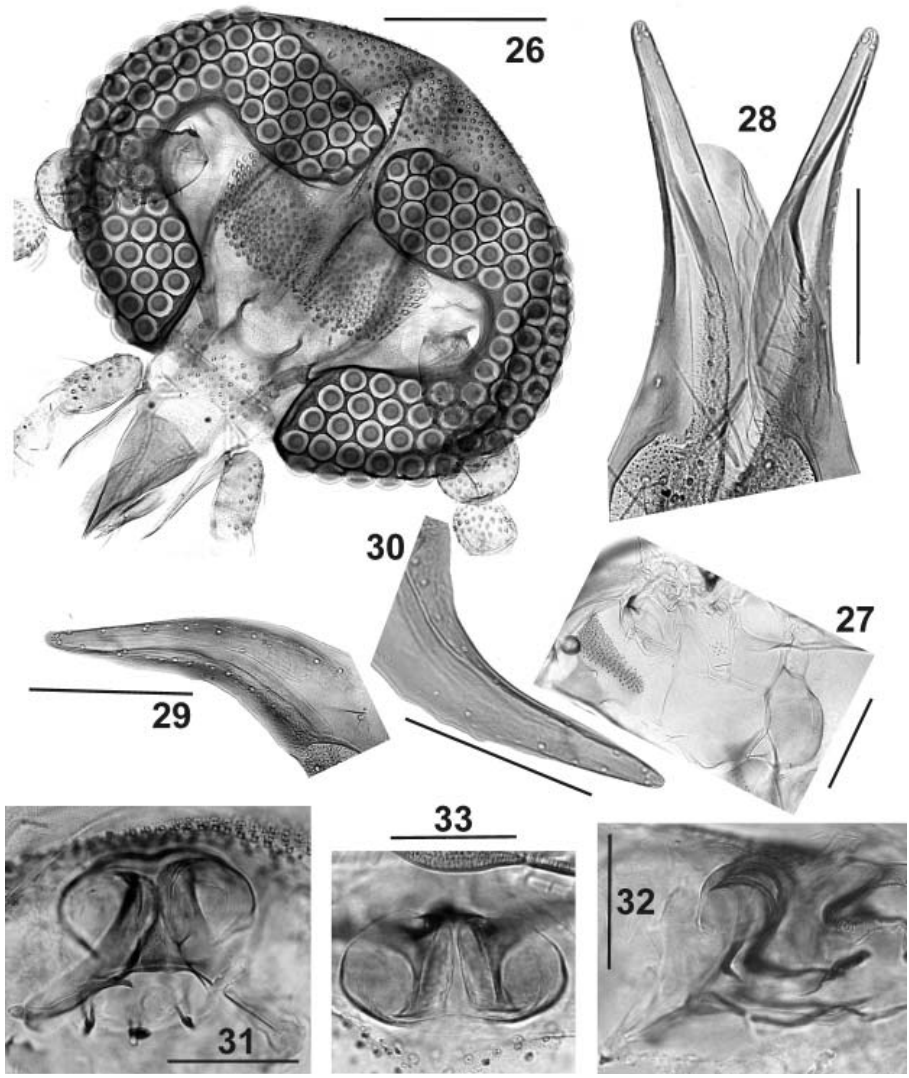
(Figs. 26–58)

Type locality. Bolivia, Circuata, 1600 m a.s.l., 16°38′S 67°15′W (Figs. 79A, 80, 84).
Type material. HOLOTYPE: ♂, **BOLIVIA**: 'Subandean Region, Circuata, department of La Paz, Sud Yungas province, 1600 m a.s.l., 16°38′S 67°15′W, iii.-iv. 2008, F. Le Pont leg.' (NMPC, slide Cat. No. 34505, Inv. No. 18869). PARATYPES: 4 ♂♂ 5 ♀♀, same data as holotype (3 ♂♂ 4 ♀♀ in NMPC: ♂♂: Cat. No. 34506–34508, Inv. No. 18870–18872, ♀♀: Cat. No. 34509–34512, Inv. No. 18873–18876, allotype = first numbers (34509 and 18873); 1 ♂ 1 ♀ in CBF).

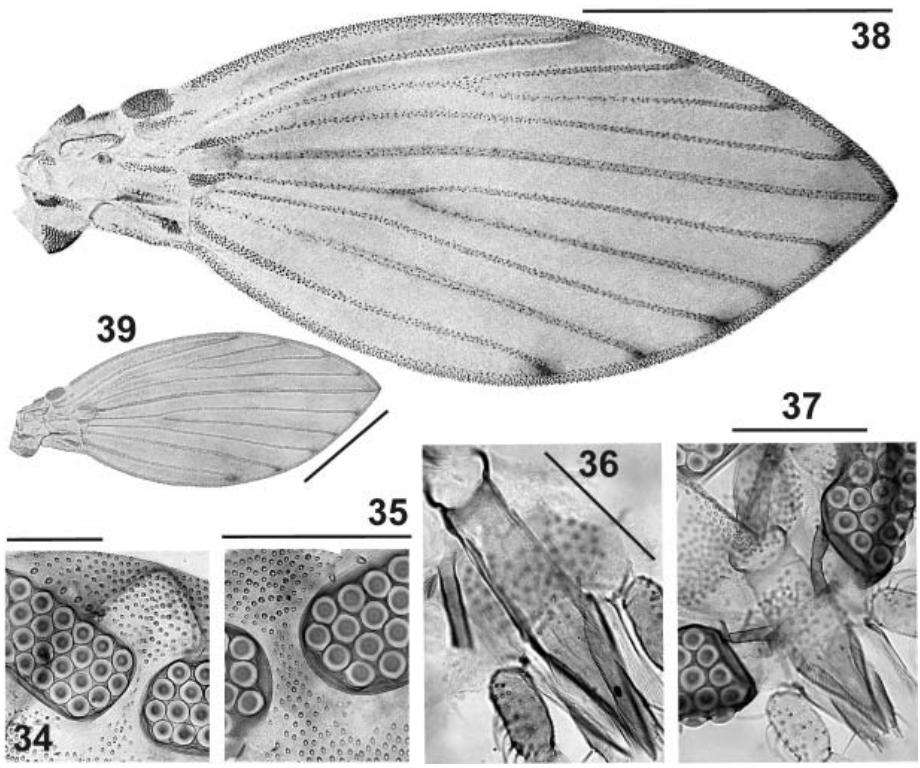
Description. ***Male.*** Eyes separated (Fig. 34), C-shaped. Minimum distance between upper part of eyes hardly as wide as diameter of facet. Eye bridge formed by four rows of facets. Frontoclypeus with large central three-lobed patch of insertions of hairs, lateral lobes touching inner margin of eyes, medial stripe longest, narrowly connected with vertex pits. Antenna with 15 antennomeres. Scape shortly cylindrical, 1.3 times as long as pedicel, with broader proximal part in contrast to basal one. Flagellomeres pitcher-shaped, almost symmetrical. Last three flagellomeres fused (Fig. 41), decreasing in size, without necks, terminal flagellomere minute, ovoid. Sensory filaments (ascoids) paired, with three branches. Length ratio of maxillary palpomeres 1.1 : 1.1 : 1.0 : 1.3, palpomere 4 not annulate. Terminal lobe of labium with five digital protuberances. Maximum length of cibarium equal to 1.1 times length of epipharynx (Fig. 37).

Thoracic sclerites as in Fig. 51, anepisternum with 17 hairs. Wing (Fig. 38) widely lancet-shaped, 1.5 mm (holotype) and 1.2–1.5 mm (paratypes) long, inconspicuously clouded, dark patches and tufts of hairs at tips of most veins conspicuous, excluding Sc and R_5. Following

veins or their parts strengthened: Sc, whole R_1, R_2 and R_3 distally, R_4 basally, R_5, M_{1+2} basally, M_4, and Cu basally. Basal costal nodes well visible, Sc uninterrupted. M_3 and Cu hardly with connection to M_4; R_5 extends in apex of wing. Medial wing angle 120° (BCD). Wing indices: AB : AC : AD = 3.9 : 4.1 : 3.3; BC : CD : BD = 1.0 : 2.0 : 2.6; maximum length of wing equal to 2.4 times its maximum width. Maximum length of haltere (Fig. 44) equal to 2.7 times its maximum width.



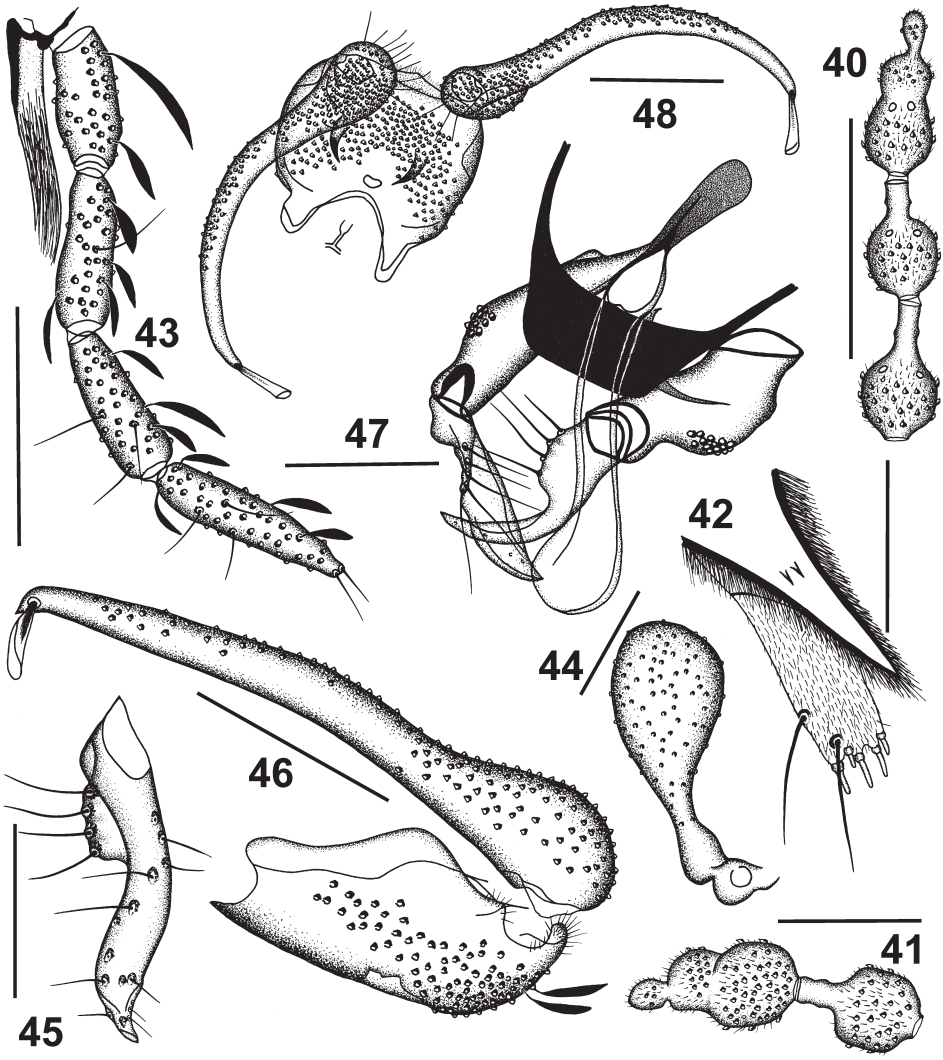
Figs. 26–33. *Tinearia boliviensis* sp. nov., ♀. 26 – head; 27 – lateral view of thoracic sclerites; 28 – ovipositor ventrally (from a slide); 29 – lateral view of cercus; 30 – same, inner side; 31 – genital chamber anteriorly; 32 – same, laterally; 33 – same, ventrally. Scale bars: 0.05 mm, except 0.1 in Figs. 26 and 29–30, 0.2 in Fig. 27.



Figs. 34–39. *Tinearia boliviensis* sp. nov., ♂ and ♀. 34–35 – frontoclypeus and facets (34 – ♂; 35 – ♀); 36–37 – cibarium and epipharynx (36 – ♀; 37 – ♂); 38–39 – wing (38 – ♂; 39 – ♀). Scale bars: 0.1 mm, except 0.5 in Figs. 38–39.

Ratios of lengths of femora, tibiae and first tarsomeres: P_1 = 2.4 : 2.3 : 1.0; P_2 = 2.5 : 2.9 : 1.1; P_3 = 2.8 : 3.2 : 1.2.

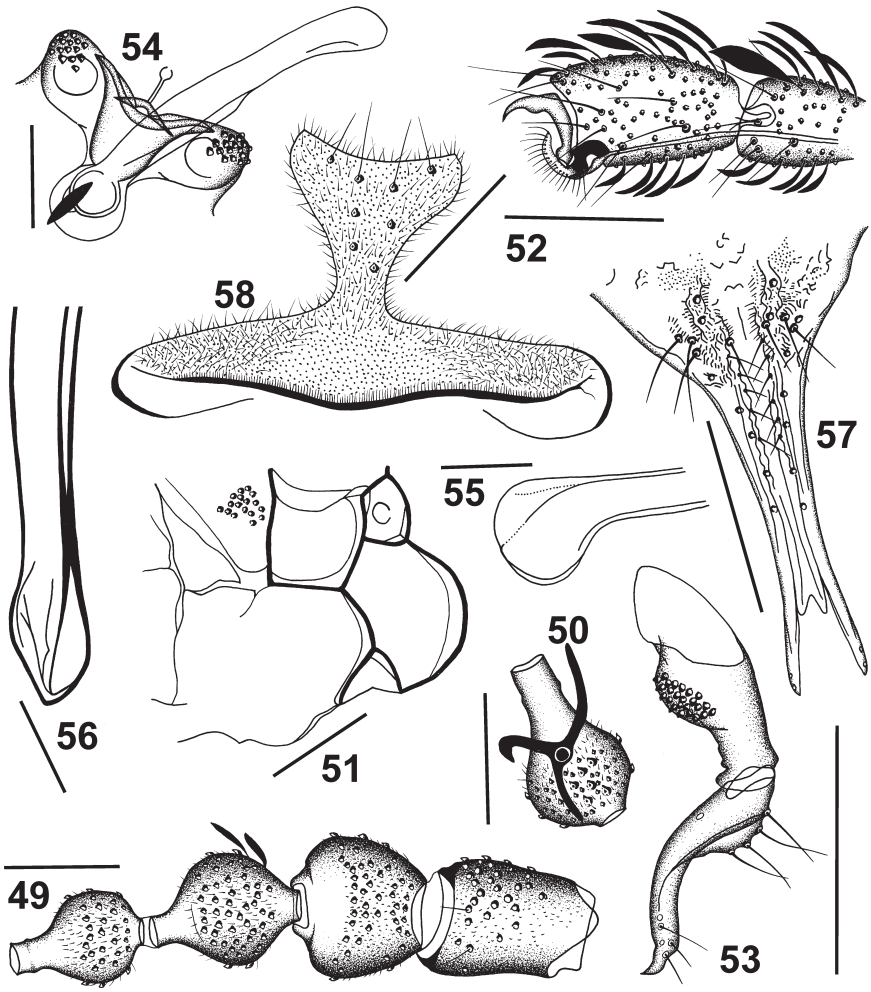
Basal apodeme of male genitalia (Figs. 47, 54) narrow and thin from strictly dorsal view, expanded proximally from lateral view; distal part of basal apodeme forked in two caudal arms. Copulatory organ long, narrow, widened and rounded distally (Figs. 47, 54–56). Gonocoxite (Figs. 47, 53, 54) cylindrical, prolonged, with conspicuous protuberance laterally. Gonostylus (Figs. 45, 47, 53) as long as gonocoxite, slightly S-shaped or conspicuously bent from different views, with extremely protruding comb of four stiff setae basally and acuminate apex with several small and soft setae. Epandrium (Figs. 46, 48) with two large patches of hairs connected caudally, inside with two conspicuous spine-shaped protuberances, sclerotized remainders of tergite and sternite 10 missing. Central aperture developed. Hypandrium (Fig. 47) strengthened in middle part, approximately oblong-shaped, with slightly divergent sides. Epiproct and hypoproct small, hairy (Fig. 48). Surstylus (Figs. 46, 48) long, almost twice as long as epandrium, C-shaped from dorsal view, hardly straight from lateral one, subapically with one retinaculum.



Figs. 40–48. *Tinearia boliviensis* sp. nov., ♂ and ♀. 40 – apical antennomeres (♀); 41 – same (♂); 42 – terminal lobe of labium and epipharynx (♀); 43 – maxilla and palpus maxillaris (♀); 44 – haltere (♂); 45 – lateral view of gonostyle; 46 – lateral view of epandrium and surstylus; 47 – dorsal view of aedeagal complex and gonopods (a little deflected); 48 – dorsal view of epandrium and surstyli. Scale bars: 0.1 mm, except 0.05 in Figs. 41–42 and 45.

Female. Frons a little broader than in male and medial stripe of insertions of hairs broadly connected with vertex pits (Figs. 26, 35). Antennae on Figs. 40 and 49; sensory filament on Fig. 50. Length ratio of maxillary palpomeres 1.0 : 1.2 : 1.1 : 1.4 (Fig. 43). Terminal lobe of labium as in Fig. 42. Cibarium (Figs. 26, 36) of the same size as in male. Thoracic sclerites as in Fig. 27, anepisternum with 11 hairs. Wing (Fig. 39) similar to male, 1.5–1.9 mm (paratypes,

including allotype 1.9 mm) long, dark patches and tufts of hairs conspicuous only at tips of M_3, M_4 and Cu, slightly at tips of R_2 and R_3. Medial wing angle 104° (BCD). Wing indices: AB : AC : AD = 3.5 : 3.8 : 2.9; BC : CD : BD = 1.0 : 1.8 : 2.3. Ratios of lengths of femora, tibiae and first tarsomeres: P_1 = 2.7 : 2.5 : 1.0; P_2 = 2.7 : 3.1 : 1.2; P_3 = 3.2 : 3.9 : 1.3. Fore claws as in Fig. 52. Subgenital plate of characteristic shape (Fig. 58), formed by extremely wide basis, connected with V-shaped lobe by very narrow slip bridge (caudal cleft of lobe is



Figs. 49–58. *Tinearia boliviensis* sp. nov., ♂ and ♀. 49 – basal antennomeres (♀); 50 – ascoidal filament (♀); 51 – lateral view of thoracic sclerites (♂); 52 – last tarsomeres and claw of P_1 (♀); 53 – lateral view of gonopod; 54 – caudal view of aedeagal complex and gonocoxites; 55 – lateral view of terminal part of aedeagus; 56 – same, diagonal view; 57 – ventral view of ovipositor (from chloralphenol); 58 – female subgenital plate. Scale bars: 0.05 mm, except 0.1 in Figs. 51, 53–54 and 57.

shallow and inconspicuous). Plate with numerous closely-spaced hairs and several long setae distally. Genital chamber as in Figs. 31–33, cerci rather long and bent (Figs. 28–30, 57).

Differential diagnosis. The hypandrium of *Tinearia boliviensis* sp. nov. (male) is conspicuously expanded (Fig. 47), rectangular, epandrium inside with two big spine-shaped apodemes (Fig. 48), insertions of epandrial hairs regularly spaced (two-spoted configuration missing, dorsal view), epandrial aperture developed (Figs. 46, 48), gonostyli basally with conspicuous spined tubercle (comb) – Figs. 45, 47 and 53. Subgenital plate (female) with extremely wide basis (Fig. 58), very narrow in the middle, connected with a constriction of V-shaped lobe (caudal cleft of the lobe is very shallow and practically inconspicuous).

Tinearia capitipenis (Ibáñez-Bernal, 1992), comb. nov., differs by a narrow hypandrium, epandrium inside without spine apodemes and at the surface with two-spoted configuration of hairs, epandrial aperture missing, gonostyli basally with a small spined tubercle. Female subgenital plate of quite different shape, with a middle-distal cleft about 0.25 as deep as the greatest length and two basilateral lobes (Ibáñez-Bernal, pers. comm. and his new additional unpublished figures).

Etymology. The new species name (adjective) is based on the country of origin.

Biology and collecting circumstances. Circuata has a presence of many small forsaken mines in the forest underneath (Fig. 84); valley embanked with very humid steep banks (Fig. 80). Leishmaniasis is sporadic.

Distribution. Bolivia: Subandean region.

Alepia Enderlein, 1937

Alepia Enderlein, 1937: 90, 94–95. Type species: *Alepia scripta* Enderlein, 1937, original designation.

Alepia: Quate (1963: 192); Duckhouse (1968: 31); Duckhouse (1973: 6); Duckhouse (1974a: 145); Duckhouse (1974b: 55); Duckhouse (1987: 231, 262–263, 266); Wagner (1993: 114); Quate (1996: 4); Quate (1999: 418); Bravo et al. (2004: 589); Wagner & Hribar (2004: 506); Wagner & Svenson (2006: 99); Bravo (2008: 52); Wagner et al. (2008: 210).

Only most important references are selected above.

Differential diagnosis. The genus *Alepia* Enderlein, 1937 has developed necked parts of last flagellomeres (Figs. 62, 67), wings generally with infuscated patterns (mostly) in central wing area (Fig. 77), strengthened parts of veins are not arranged in clearly defined transversal stripes, radial fork mostly basad of medial one, aedeagal complex (Figs. 65, 73, 74) not compact (it is differentiated to phallomeres), and overlaid basally by a large tunica (hypandrium) articulated proximally with distal protuberances of conspicuous basal apodeme, gonostyli often bifurcated and grotesquely formed (Figs. 64, 70, 71, 73), surstyli short, ovoid, pointed caudally (Figs. 66, 72), with one retinaculum subapically and numerous accessory tenacula basally (Figs. 66, 72, 78).

It differs from the genus *Tonnoiriella* Vaillant, 1971 by apical minute flagellomeres with reduced necked parts, strengthened parts of veins are arranged in three wide conspicuous transversal stripes and membrane is not patchy infuscated in central area of wing, radial fork at the same level of medial one, or beyond, aedeagal complex compact (not differentiated to phallomeres), hypandrium narrow, a little widened in the middle or not, continuously fused with epandrium, gonostyli simple, rather long, gradually tapering to the top, surstyli prolonged and bent with two or more retinaculi subapically, tenacula not developed.

Discussion. The tribal assignment of *Alepia* remains unclear and debatable. Quate & Brown (2004) published a revision of the Neotropical tribe Setomimini Vaillant, 1982 (Vaillant 1982a,b) including 15 genera characterized by internal expanded anterior gonocoxal apodemes. However, the monophyly of the tribe Setomimini *sensu* Quate & Brown (2004) remains uncertain. Some genera of Setomimini resemble Mormiini Enderlein, 1937 by wing basally with prolonged R_{2+3}, with connection of R_4 (see Ježek & van Harten (2005: Fig. 87)): *Balbagathis* Quate, 1996, *Platyplastinx* Enderlein, 1937, *Arisemus* Satchell, 1955, *Australopericoma* Vaillant, 1975, *Micrommatos* Quate & Brown, 2004, *Caenobrunettia* Wagner, 1981 and *Valerianna* Quate & Brown, 2004 in contrast to the rest of included genera (8 taxa). The wing venation is generally a corner-stone of Hennig's (1968, 1972) cladistic analysis in Diptera and tribe Setomimini *sensu* Quate & Brown (2004) is probably a polyphyletic group. The provisional comparison of the genera *Alepia* (a member of Setomimini *sensu* Quate & Brown (2004), Wagner & Hribar (2004) and Wagner et al. (2008)) and *Tonnoiriella* Vaillant, 1971 here in our paper (for differential diagnosis see above) will be probably not in a discrepancy with the opinion of Ježek (1999a) to introduce *Tonnoiriella* as a pericomoid genus. Enderlein (1937) included the *Alepia* species-group in the subtribe Clytocerina Enderlein, 1937 (i.e. a pericomoid taxon) of the tribe Psychodini Enderlein, 1937 with quite different wing venation in comparison with the genus *Setomima* Enderlein, 1937 put by him in the subtribe Mormiina of the tribe Mormiini. Vaillant (1971) classified *Tonnoiriella* at first as Pericomini Enderlein, 1935 (see a note of Sabrosky (1999: 238)) and later (Vaillant 1982a,b) placed *Tonnoiriella* with *Setomima* in the tribe Setomimini. Duckhouse (1987) mentioned that the primitive genus *Setomima* is not necessarily close to *Alepia* genealogically, but linked only morphologically, and treated *Tonnoiriella*, *Setomima* and Vaillant's Setomimini as a part of Maruinini Enderlein, 1937. Quate (1999) followed Duckhouse (1987) and included *Alepia* in the tribe Maruinini (placed by Enderlein in the subfamily Phlebotominae). Wagner published the species group of Palaearctic *Tonnoiriella* as unplaced species of Pericomini (Wagner 1990), than of Setomimini (Wagner 1997a), and later as 'not yet assigned to the tribe Maruinini' (Wagner & Andersen 2007). Probably more new tribes will be established in future for members of Setomimini *sensu* Quate & Brown (2004) and other authors, especially on the basis of modern phylogenetic methods, including DNA characters.

Alepia Enderlein, 1937 is one of the most diverse genera of Neotropical Psychodinae, but it is so well characterized morphologically that there are no generic synonyms proposed. There are 52 known species (see below) including here described *Alepia santacruz* sp. nov. from Bolivia.

List of the Word species of the genus *Alepia*

absona Quate & Brown, 2004 – Venezuela
albicollare (Enderlein, 1937) (*Chirolepia*) **–** Bolivia, Paraguay
alcobregma Quate, 1999 – Panama
alfaroana (Dyar, 1926) (*Psychoda*) – Costa Rica
amputonis Quate & Brown, 2004 – Brazil, Surinam
ancilis Quate & Brown, 2004 – Peru

apachis Quate, 1999 – Panama
arenivaga Bravo, 2008 – Brazil
azulita Quate & Brown, 2004 – Venezuela
biapicalis Bravo, Lago & Castro, 2004 – Brazil
bisubulata Duckhouse, 1968 – Brazil, French Guiana, Surinam, Trinidad
busckana (Dyar, 1926) (*Psychoda*) – Lesser Antilles: Martinique
caceresi Quate & Brown, 2004 – Peru
clara Bravo, Lago & Castro, 2004 – Brazil
condylaria Quate & Brown, 2004 – Venezuela
copelata Quate, 1999 – Panama
digitula Quate & Brown, 2004 – Surinam
diocula Quate & Brown, 2004 – French Guiana
distincta Bravo, Lago & Castro, 2004 – Brazil
eburna (Rapp, 1945) (*Psychoda*) – Panama Canal Zone: Barro Colorado Island
falcata Quate & Brown, 2004 – Surinam
ferruginea Quate & Brown, 2004 – Peru
fervida Bravo, 2008 – Brazil
fissura Quate, 1999 – Costa Rica, Panama
fruticosa Quate & Brown, 2004 – Brazil, French Guiana, Surinam
fumea Bravo, Lago & Castro, 2004 – Brazil
hirtiventris (Tonnoir, 1920) (*Psychoda*) – Brazil
= *hertiventris*: Enderlein (1937: 86, lapsus calami)
imitata Quate & Brown, 2004 – Brazil
incompleta (Knab, 1914) (*Psychoda*) – Panama
labyrinthica Quate & Brown, 2004 – Brazil
lanceolata Quate & Brown, 2004 – Venezuela
litotes Quate & Brown, 2004 – Brazil
lobata Bravo, Lago & Castro, 2004 – Brazil
longinoi Quate & Brown, 2004 – Costa Rica
maculipennis Bravo, Lago & Castro, 2004 – Brazil
Note. Quate (1963) included erroneously the species *Chirolepia maculipennis* Enderlein, 1937 in *Alepia*. However, Quate & Brown (2004) correctly excluded *Chirolepia maculipennis* from *Alepia* on the basis of ending of R_5 beyond wing apex. Therefore, the name *Alepia maculipennis* Bravo, Lago & Castro, 2004 is not threatened by secondary homonymy.
martinicana Wagner, 1993 – Lesser Antilles: Martinique
montana Bravo, 2008 – Brazil
obscura Bravo, Lago & Castro, 2004 – Brazil
pinna Bravo, Lago & Castro, 2004 – Brazil
piscicauda Quate & Brown, 2004 – French Guiana, Surinam
recurva Bravo, Lago & Castro, 2004 – Brazil
relativa Quate, 1996 – Costa Rica
santacruz **sp. nov. –** Bolivia
scolomeris Quate & Brown, 2004 – Venezuela
scripta Enderlein, 1937 – Bolivia

symmetrica Wagner & Hribar, 2004 – Florida Keys (USA)
tricolor (Knab, 1914) (*Psychoda*) – Panama
truncata Bravo, Lago & Castro, 2004 – Brazil
unicinota Quate & Brown, 2004 – Surinam
vaga Wagner & Svensson, 2006 – Sweden (probably imported from Neotropics)
valentia Quate, 1996 – Costa Rica, Panama
= *bulbula* Quate, 1999: 425 (syn. by Quate & Brown (2004: 39))
= *sectilis* Quate, 1999: 426 (syn. by Quate & Brown (2004: 39))
zavortinki Wagner, Richardson & Richardson, 2008 – Puerto Rico

Alepia santacruz sp. nov.

(Figs. 59–78)

Type locality. Bolivia, Organo, 700 m a.s.l., 18°20′S 59°46′W (Figs. 79C, 81–83).
Type material. Holotype: ♂, **Bolivia**: 'Organo, 700 m a.s.l., 18°20′S, 59°46′W, Eastern Santa Cruz Department, summit of Serrania de Santiago on the road between Santiago de Chiquitos y Tucavaca lowlands, Chiquitos province. iii.-iv. 2008, F. LePont leg.' (NMPC: slide Cat. No. 34513, Inv. No. 18877). Paratypes: 1 ♂, same data as holotype (MNKM).

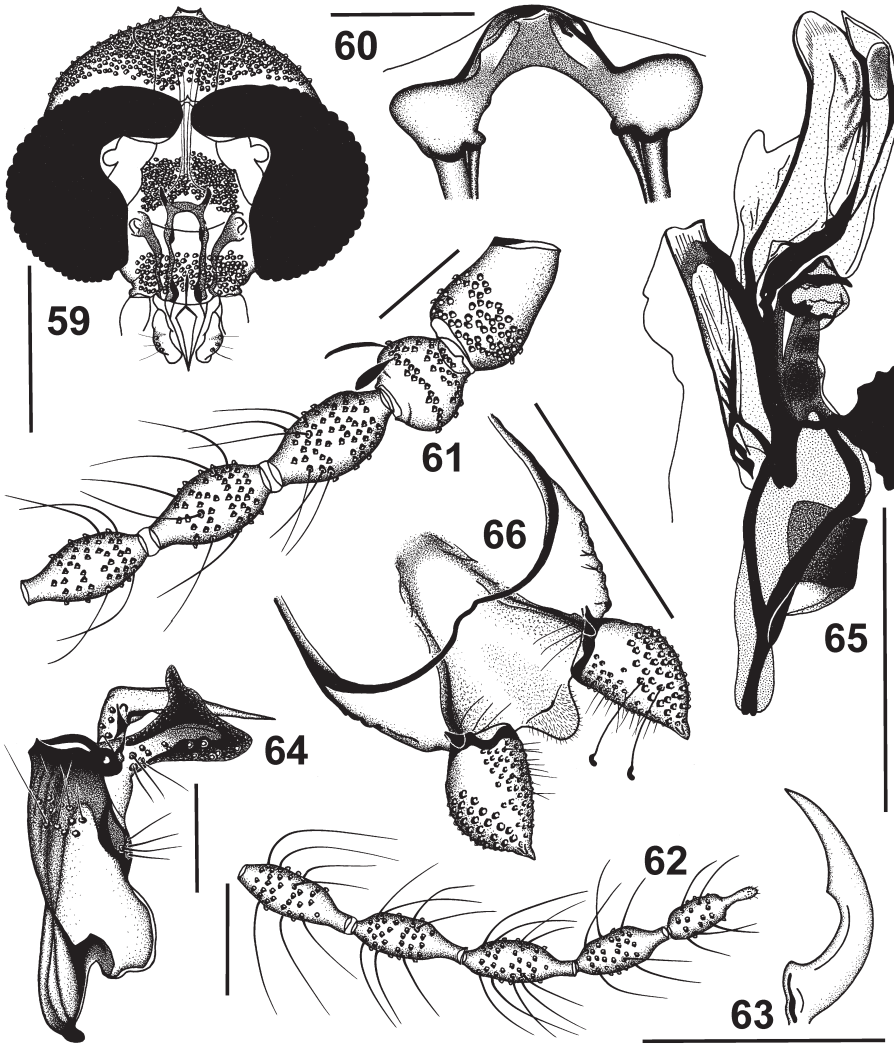
Description. ***Male.*** Eyes separated (Fig. 59), frontal sutural plate complicated, three-dimensional (Fig. 75), frons bare, frontoclypeus with insertions of hairs arranged in two irregularly oval areas, of which stems touched below frons and divergent near tentorial pits. The minimum distance between eyes corresponds hardly to one facet diameter. Index of distance of the apices of eyes to minimum width of frons mostly 10.4, to facet diameter a little lesser (10.1). Eye bridge formed by three rows of facets (Fig. 75). Vertex hairy, inner structures of vertex in detail as in Fig. 60. Number of antennomeres 16. Scape short, somewhat widened distad (Fig. 61). Pedicel almost globular. Flagellomeres spindle-shaped, the last flagellomere with a long finger-like protuberance in axis (Fig. 62). Ascoids simple, paired, needle-shaped (Figs. 67, 68). Length ratio of maxillary palpomeres 1.0 : 2.0 : 2.0 : 2.5, palpomere 4 not annulate (Fig. 69). Terminal lobes of labium and cibarium as in Fig. 59.

Thoracic sclerites as in Fig. 76. Wings narrow, wing membrane maculated, spots on veins as a part of dots on wing membrane are very dark and conspicuous (Fig. 77), 2.9–3.0 mm long (holotype and paratype). Completely strengthened veins: Sc, R_1, R_5, M_4 and Cu. Basal costal nodes well visible, Sc uninterrupted. M_3, M_4 and Cu not touched at basis of wing. R_5 extends in the apex of the wing. Radial and medial forks complete, cross veins missing. The ending of Cu is distad of radial fork and medial fork distad of the wing margin reaching of Cu. Medial wing angle 216° (BCD). Wing indices: AB : AC : AD = 4.7 : 4.2 : 4.5; BC : CD : BD = 1.0 : 1.1 : 2.0; maximum wing length equal to 2.6 times its maximum width. Haltere clubbed, with maximum length equal to 3.3 times its maximum width.

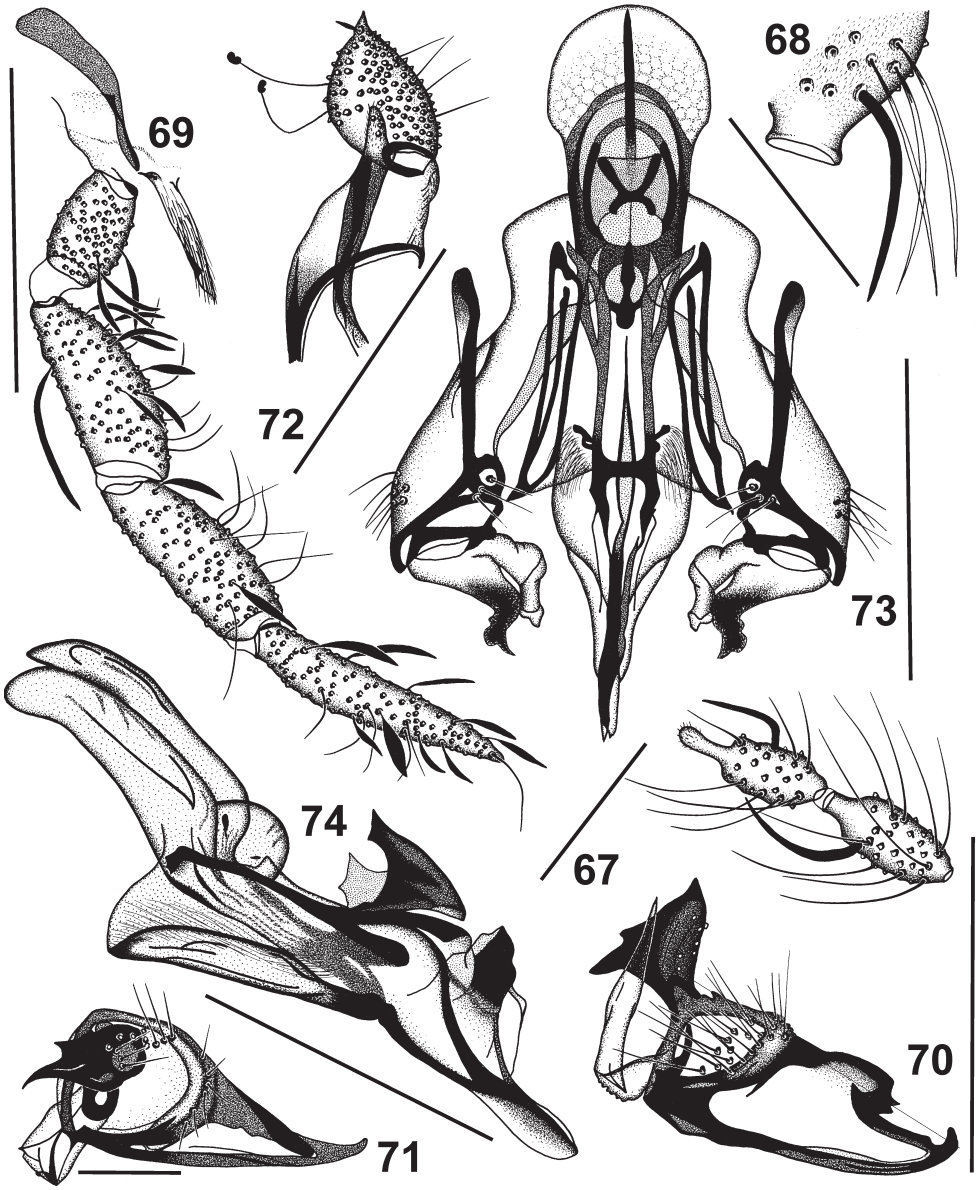
Ratios of lengths of femora, tibiae and first tarsomeres: P_1 = 2.3 : 2.5 : 1.0; P_2 = 2.4 : 3.1 : 1.3; P_3 = 2.5 : 3.6 : 1.4; fore claws twice pointed and bent distad (see Fig. 63).

Complicated and bizarre aedeagal complex on Figs. 65, 73 and 74. Basal apodeme of male genitalia broad and extremely rounded proximally in dorsal view, narrow laterally, phallobasis with three quite different phallomeres in the following shape: Two dorsal narrow phallomeres of the same length, subapically a little bent (one phallomere is rounded at the end

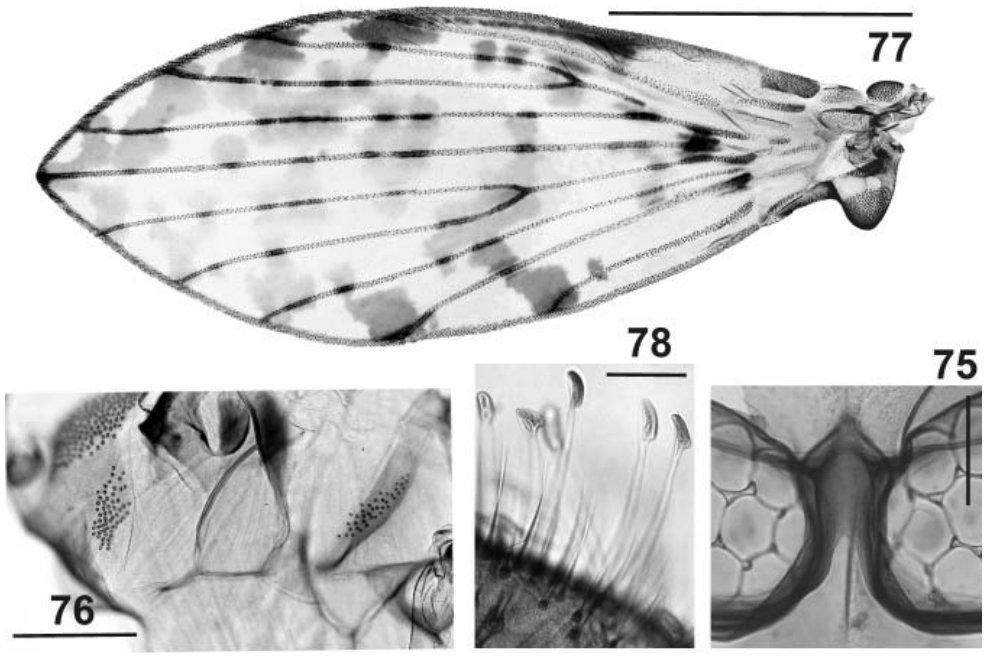
and the second one is rather dully pointed). The third phallomere is reduced, very short and irregularly rounded. Aedeagal complex not compact, well-sclerotised, overlaid basally by a large hyaline tunica (hypandrium) with long hairs in two small isolated areas distad. Tunica (as long as gonocoxites), with a pair of outer elongate, pointed and a little divergent arms,



Figs. 59–66. *Alepia santacruz* sp. nov., ♂. 59 – head; 60 – the same, inner structures of vertex in detail; 61 – basal antennomeres; 62 – apical antennomeres; 63 – claw of P_1; 64 – lateral view of gonocoxite and gonostyle; 65 – lateral view of aedeagal complex; 66 – dorsal view of epandrium and surstyli. Scale bars: 0.1 mm, except 0.3 in Figs. 59 and 65–66, 0.05 in Fig. 63.



Figs. 67–74. *Alepia santacruz* sp. nov., ♂. 67 – some ascoids (sensory filaments) of apical two antennomeres; 68 – sensory area of a middle antennomere in detail; 69 – maxilla and palpus maxillaris; 70 – dorsolateral view of gonocoxite and gonostyle; 71 – caudal view of gonocoxite and gonostyle; 72 – lateral view of epandrium and surstylus; 73 – dorsal view of aedeagal complex and gonopods; 74 – dorsolateral view of aedeagal complex. Scale bars: 0.1 mm, except 0.3 in Figs. 69–70 and 72–74.

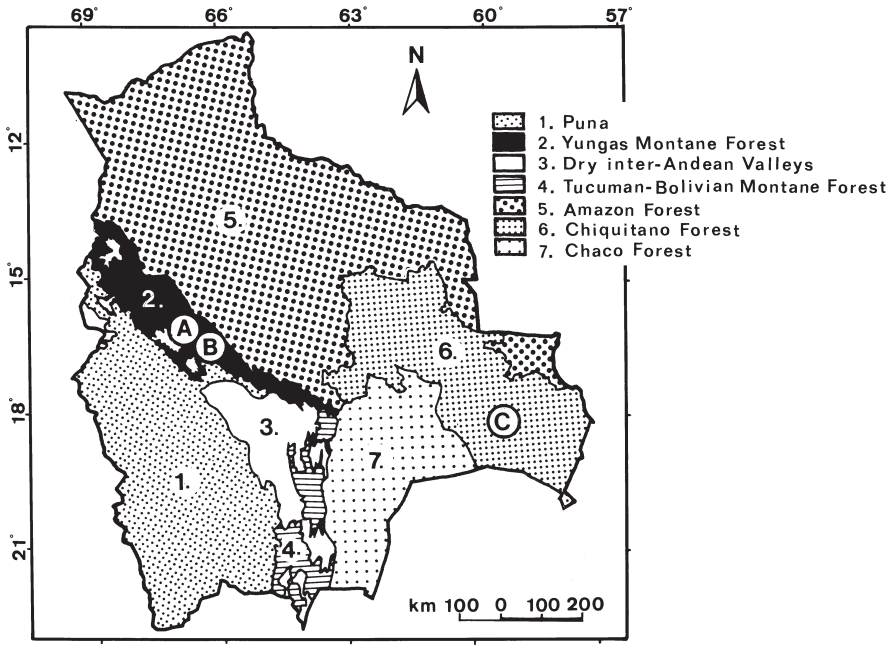


Figs. 75–78. *Alepia santacruz* sp. nov., ♂. 75 – frontal suture and facets; 76 – lateral view of thoracic sclerites; 77 – wing; 78 – some tenacula of surstylus in detail. Scale bars: 0.05 mm, except 0.2 in Fig. 76 and 1 mm in Fig. 77.

supported by sclerotized ribs, articulated proximally with distal protuberances of conspicuous basal apodeme. Gonocoxites rather short (Figs. 64, 70, 71, 73), a little expanded laterally and hairy, gonostyles shorter, bipartite distally, with a small sclerotized tridentate protuberance and with an elongate, pointed and bent arm. Epandrium bare, without operculum (Figs. 66, 72); sclerotized remainders of 10th tergite and sternite inside of epandrium reduced to only two sclerotized converging ribs jointed with surstyli. Hypandrium hyaline and inconspicuous, hardly visible, very narrow, practically missing, lateral margin of 9th sternite grows together or connected with proximal border of epandrium (tergite 11) and proximal protuberance of gonocoxite. Epiproct wrinkle-shaped, wide, hardly visible, hypoproct shortly tongue-shaped, both parts hairy. Surstyli (Figs. 66, 72) almost ovoid, pointed caudally, with numerous tenacula (Fig. 78) and hairs, subapically with one retinaculum.

Female. Unknown.

Differential diagnosis. *Alepia santacruz* sp. nov. has infuscation in central area of wing conspicuously disjunctive, arranged in many small patches (Fig. 77); length ratio of maxillary palpomeres 1.0 : 2.0 : 2.0 : 2.5 (Fig. 69); long tapered process of bifurcated gonostyle angled at approximately one-fourth distance from base to pointed tip, short blunt process conspicuously expanded distally, with short three-toothed cut end (Figs. 64, 70, 71, 73); tunica of aedeagal



Figs. 79. Landscape types of Bolivia with position of sampled localities (A – Circuata: Yungas, humid, montane forest; B – Cieneguillas: remnants of interandean dry tropical forest, nearby Yungas humid forest; C – Organo: Chiquitano semi-deciduous dry forest).

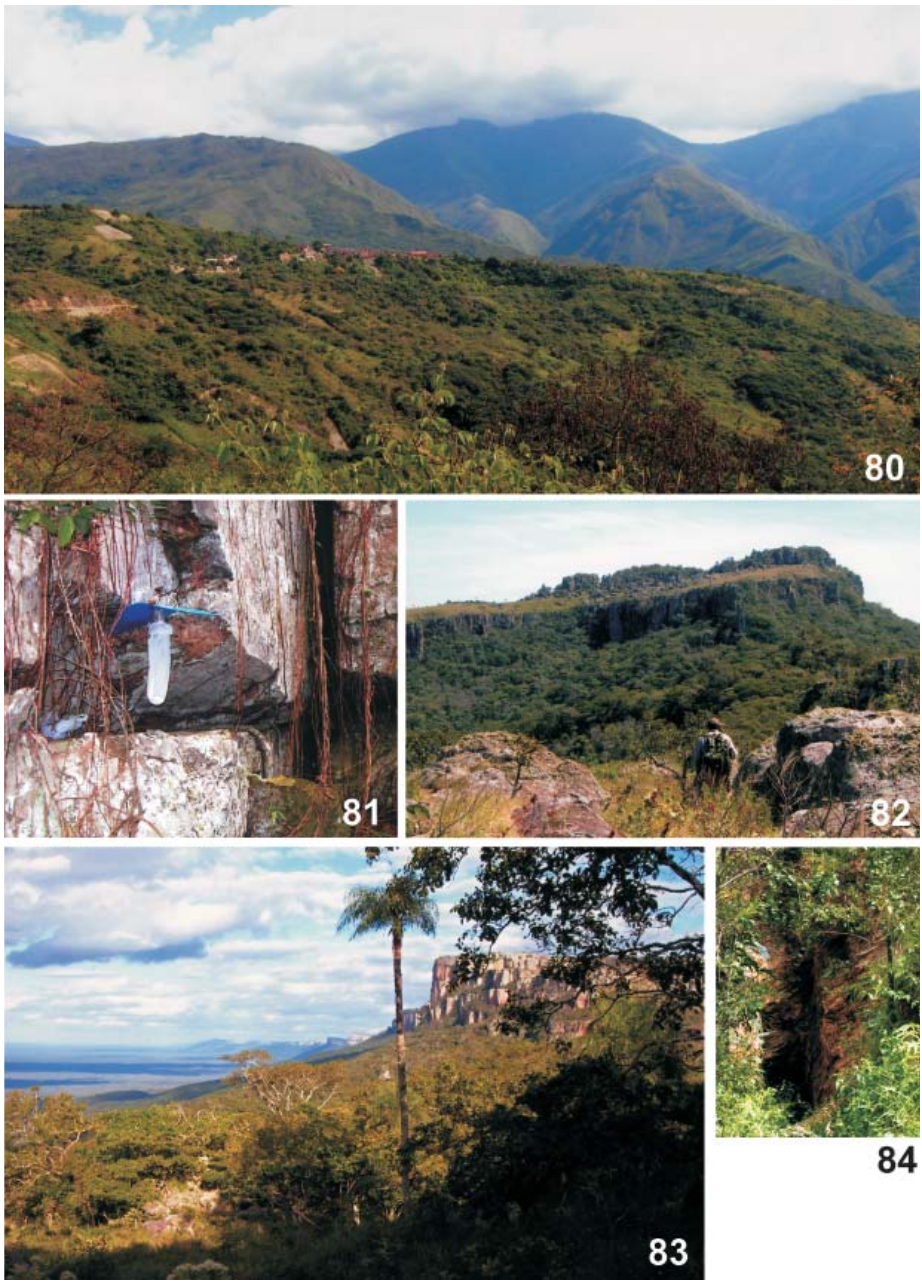
complex truncated by slightly concave horizontal cut, almost bare, covered with hairs only in two small isolated areas distad (Figs. 73, 74); ending of aedeagal complex narrow, tapering in dorsal view to two tips (Fig. 73).

Alepia tricolor (Knab, 1914) differs from the new species by not interrupted infuscation in central area of wing; indices of length of maxillary palpomeres 1.0 : 1.8 : 1.6 : 2.1; long tapered process of bifurcated gonostyle angled at one-third distance from base to pointed tip, short blunt process narrow with two rounded digital protuberances on the opposite side of the obliquely cut top; tunica of aedeagal complex truncated by an almost straight horizontal cut, covered distally with one large area of hairs; ending of aedeagal complex compact, almost rectangular (dorsal view).

Biology and collecting circumstances. The type locality is situated in a pass, crossing the top of the Serrania de Santiago, on the road Santiago – Santo Corazon (Fig. 83). The landscape at the type locality is characterized by a mosaic of cliffs and big rocks in a typical Chiquitano dry forest. Burning occurs there annually (Fig. 82). Phlebotomine sandflies could abound, but leishmaniasis is not known.

Etymology. The new species name, a noun in apposition, is related to Santa Cruz de la Sierra, capital of the Santa Cruz department.

Distribution. Bolivia: Serrania de Santiago.



Figs. 80–84: Bolivian localities. 80, 84 – Circuata (80 – type locality of *Tinearia boliviensis* sp. nov., 84 – habitat, a small forsaken mine in the forest). 81–83 – Organo (81 – CDC miniature light trap baited with gas carbonic; 82 – habitat, a typical Chiquitano dry forest; 83 – type locality of *Alepia santacruz* sp. nov.).

Figs. 85–86. Bolivian localities. 85 – Cieneguillas, type locality of *Eurygarka freyrei* sp. nov.; 86 – same, a detail of the habitat.

Acknowledgements

Very special thanks to Sergio Ibáñez-Bernal (Department of Biodiversity and Animal Ecology, Xalapa, Veracruz, Mexico) for friendly cooperation, loaning the type material of *Eurygarka* and verification of our differential diagnosis and figures for the new species of *Tinearia.* We are also obliged to Freddy Bravo (University of Feira de Santana, Brazil) and Rüdiger Wagner (University of Kassel, Germany) for sending copies of important literature. Martin Fikáček (National Museum, Praha, Czech Republic) helped us arrange photos and illustrations, and Petr Kment (NMPC), Freddy Bravo, Rüdiger Wagner and Gregory R. Curler (University of Tennessee, Knoxville, USA) provided constructive comments on the manuscript. This study was supported by the Ministry of Culture of the Czech Republic (grant No. MK00002327201).

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