

Two new species of *Lepidiella* (Diptera: Psychodidae: Psychodinae) from the Atlantic Rainforest of southeastern Brazil

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ABSTRACT. Currently, the Neotropical genus *Lepidiella* Enderlein, 1937 comprises ten species, only one of them recorded from Brazil. In this paper, two new species of this genus are described from the Atlantic Rainforest of the state of Espírito Santo, Brazil. *Lepidiella robusta* sp. nov. can be distinguished from all known species by the relative size of the first flagellomere, twice as long the second. *Lepidiella flabellata* sp. nov. can be distinguished from all known species by the absence of cornicula, cercus with 17 tenacula and pair of inner parameres apically bifurcated. A diagnosis of *Lepidiella* (species with flagellomeres 1-11 barrel-shaped, bearing simple, unbranched ascoids; flagellomeres 12-14 smaller, without ascoids; wing with acute apex and R₄ ending at tip; Rs not pectinated) and an identification key to males of the genus are provided.

KEY WORDS. Atlantic Rainforest; moth fly; Neotropical region; new taxa; taxonomy.

The Neotropical *Lepidiella* Enderlein, 1937 consists of ten species, only one of them known from Brazil, state of São Paulo (BRAVO 2005). In this study, we describe two new species of *Lepidiella* from the Atlantic Rainforest of southeastern Brazil, and provide an identification key to the species of the genus.

MATERIAL AND METHODS

The specimens were collected with CDC light traps, cleared with 10% KOH and mounted in Berlese's medium according to the methodology described by BARRETTO & COUTINHO (1940). General morphological terminology follows that of McALPINE (1981). Terminology specific to the Psychodidae follows DUCKHOUSE (1990). The specimens were deposited in the Coleção Entomológica Prof. Johann Becker do Museu de Zoologia da Universidade Estadual de Feira de Santana, Brazil (MZUEFS).

TAXONOMY

Lepidiella Enderlein, 1937

Lepidiella Enderlein, 1937: 89. Type-species: *Lepidiella lanuginosa* Enderlein, 1937: 89-90, by monotypy and original designation.

Syntomoza Enderlein, 1937: 88-89. Type-species: *Syntomoza niveitarsis* Enderlein, 1937: 89, by monotypy and original designation.

Kupara Rapp, 1945: 310. Type-species: *Kupara albipeda* Rapp, 1945: 311, by monotypy and original designation.

Diagnosis. Males: head with or without a pair of large, multilobed cornicula; vertex height on midline 2.0 or 3.0 times the width of eye bridge; antenna with 14 flagellomeres; flagellomeres 1-11 barrel-shaped, bearing simple, unbranched ascoids; flagellomeres 12-14 smaller, without ascoids; some species with first flagellomere 2.0 times as long as second; eye bridge of four facet rows, separated, connected by a "V" or "Y" inverted suture; wing with acute apex and R₄ ending at tip; Rs not pectinated; gonocoxal apodemes fused, forming a bridge, narrow, plate-like, not extended anteriorly; cercus elongated with multiple tenacula; aedeagus symmetrical; parameres paired; epandrium with two foramina. Female similar to male except by: head with no cornicula; subgenital plate with small apical lobes.

Remarks. Two characters can be considered as putative synapomorphies of *Lepidiella*, the wing with pointed apex and the R₄ ending at tip. This genus was included in the Pericomini Enderlein by QUATE (1996), one of the five tribes recognized by DUCKHOUSE (1985, 1987) in the Psychodinae. The Pericomini form a major part of the psychodid fauna of the Holarctic region (DUCKHOUSE 1987), but are poorly represented in the Neotropical region. Only two genera of this tribe are known from the Neotropics, the endemic *Lepidiella* and *Pericoma* Walker, 1856, a genus that is well represented in the Holarctic region and has four species described from the Neotropical region (WAGNER 1993, QUATE 1996). QUATE (1963) suggested affinities between *Lepidiella* and *Pericoma* and DUCKHOUSE (1974) between *Lepidiella* and *Panimerus* Eaton, 1913, but neither of

the two proposals were tested because there are no phylogenetic analyses of Psychodinae or Pericomini.

Included species in *Lepidiella*: *L. albipeda* (Rapp, 1945), known from Panama and Nicaragua; *L. amaliae* (Collantes & Martinez-Ortega, 1997), Nicaragua; *L. cervi* (Satchell, 1955), Saint Lucia in the eastern Caribbean Sea; *L. lanuginosa* Enderlein, 1937, Bolivia; *L. matagalpensis* (Colantes & Martinez-Ortega, 1998), Nicaragua; *L. monteverdica* (Quate, 1996), Costa Rica; *L. niveitarsis* (Enderlein, 1937), Peru; *L. pickeringi* (Quate, 1999), Panama; *L. spinosa* Bravo, 2005, state of São Paulo, Brazil; *L. zumbadoi* (Quate, 1996), Costa Rica; *L. flabellata* Bravo & Santos **sp. nov.** and *L. robusta* Bravo & Santos **sp. nov.**, both from state of Espírito Santo, Brazil.

Key to males of *Lepidiella* Enderlein

1. Head without cornicula 2
- 1'. Head with multilobed cornicula 3
2. Cercus with nine tenacula; pair of inner parameres not bifurcated *L. spinosa*
- 2'. Cercus with 17 tenacula; pair of inner parameres apically bifurcated *L. flabellata* **sp. nov.**
3. Scape with apical lobe in the internal area 4
- 3'. Scape subcylindrical 8
4. First flagellomere long, two times the length of second *L. robusta* **sp. nov.**
- 4'. First flagellomere with the same length or slightly longer than the second one 5
5. Aedeagal apodeme broad in dorsal view, with the same width as the gonocoxite 6
- 5'. Aedeagal apodeme narrow in dorsal view, narrower than the gonocoxite 7
6. Cornicula with three small lobes; aedeagus bifid with curved shafts, apices not ending in dorsal spiraliform tip; paramere spirally twisted *L. albipeda*
- 6'. Cornicula with five large lobes; aedeagus Y-shaped, apices ending in dorsal spiraliform tip; paramere not spirally twisted *L. pickeringi*
7. Scape two times the length of pedicel; cercus with 15 tenacula; aedeagus with two parallel shafts *L. cervi*
- 7'. Scape 3.5 times the length of pedicel; cercus with eight tenacula; aedeagus with two convergent shafts *L. monteverdica*
8. Eyes separated by 1 facet row *L. niveitarsis*
- 8'. Eyes separated by more than 2 facet rows 9
9. Radial fork at the same level of medial fork; first flagellomere twice the length of the second one *L. lanuginosa*
- 9'. Radial fork apical to medial fork; first flagellomere 1.3 times the length of the second one 10
10. Posterior margin of C (costa) more convex than anterior one *L. matagalpensis*
- 10'. Posterior margin of C straight, not convex .. *L. zumbadoi*

Lepidiella flabellata **sp. nov.**

Figs 1-6

Type material. BRAZIL, *Espírito Santo*: municipality of Barra de São Francisco (18°45'S 40°53'W), 20.IX.2009, Santos, C.B. *leg.*, holotype male (MZUEFS). One paratype male, Espírito Santo, Pancas municipality, Córrego Ubá, 19°04'S 40°48'W, 20.IX.2009, Santos, C.B. *leg.* (MZUEFS).

Diagnosis. Cornicula absent; scape subcylindrical; first flagellomere 1.1 times as long as second, spindle-shaped; veins R_{2+3} and R_5 incomplete; presence of 17 tenacula; two pairs of parameres, external ones wider than internal ones, the latter with apex bifurcated.

Description. Holotype male. Length from thorax to posterior end of abdomen, 2.08 mm. Head (Fig. 1). Subcircular, interocular suture V-shaped. Cornicula absent. Eye bridge of four facet rows, separated by a diameter of 2.0 facet diameters. Antenna incomplete (damaged) in the holotype and all paratypes. Scape 1.2 times as long as pedicel; subcylindrical, internal margin of scape not inflated and without long, apical bristles. First flagellomere 1.1 times as long as second; flagellomeres 1-13 spindle-shaped with digitiform ascoids. Palpus with four segments; relative length of palpomeres 1.0:1.6:1.8:2.0. Wing (Fig. 2). Length 1.68 mm; maximum width 0.56 mm. R_{2+3} not reaching R_5 ; R_4 ending at tip; R_5 not reaching R_4 ; CuA incomplete at apex. Male terminalia. Cerci, gonocoxites and gonostyles with pilosity (Figs 3 and 5). Epandrium wider than long, with two foramina (Fig. 4). Tergite 10 digitiform, ending before apex of sternite 10, with micropilosity (Fig. 4). Sternite 10 with rounded apex and apical micropilosity (Fig. 4). Cercus digitiform with 17 tenacula (Fig. 11). Hypandrium lost in preparation. Gonocoxite cylindrical with internal area inflated, 0.5 times as long as gonostylus; gonostylus broad at base and tapering apically (Fig. 3). Aedeagus symmetrical, bifid, V-shaped (Fig. 6). Two pairs of parameres, external ones wider than internal ones, the latter with apex bifurcated (Fig. 6). Aedeagal apodeme 1.5 times as long as external paramere, narrow (Fig. 6).

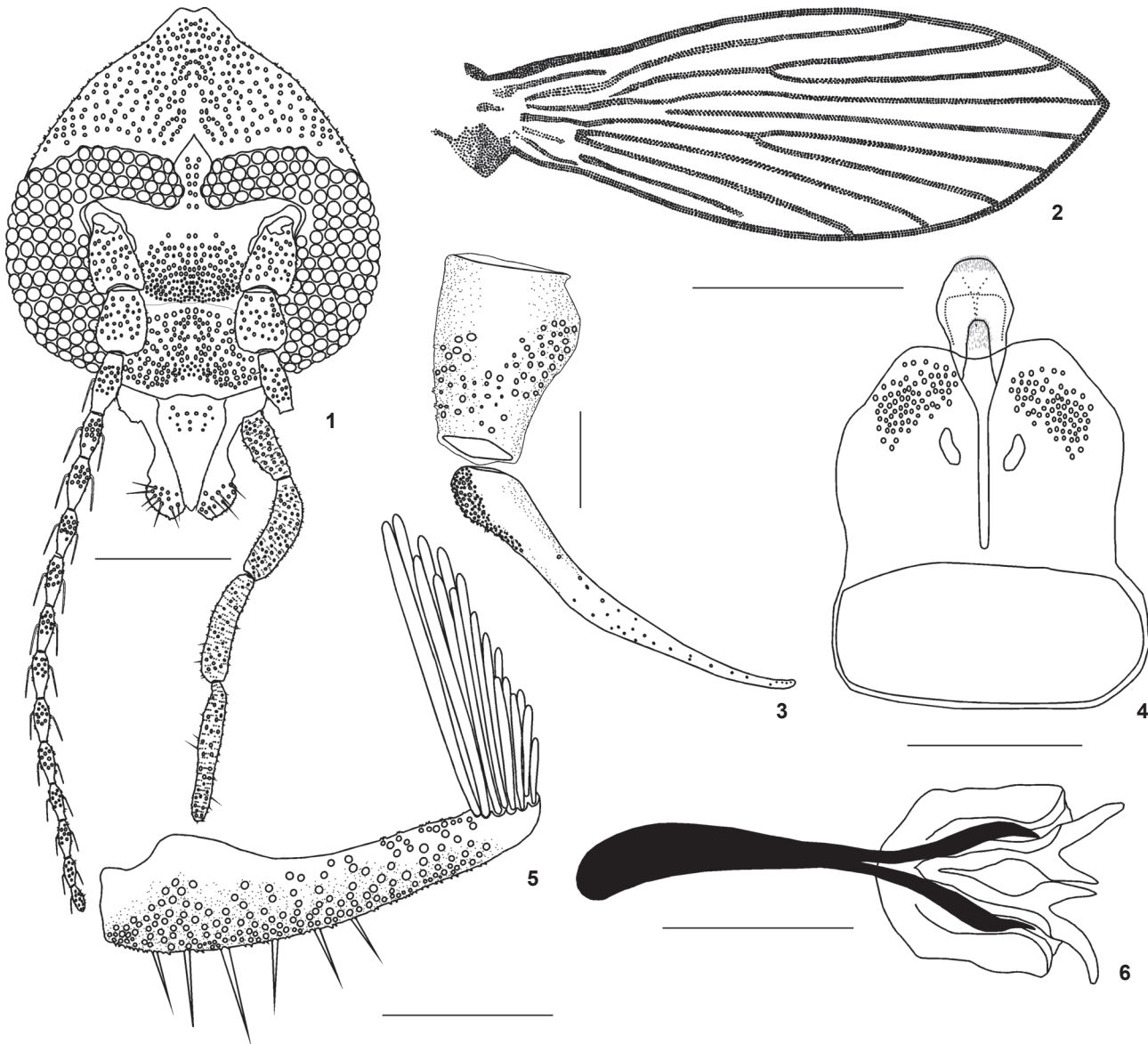
Lepidiella robusta **sp. nov.**

Figs 7-12

Type material. BRAZIL, *Espírito Santo*: municipality of Barra de São Francisco (Córrego Vargem Alegre, 18°47'S, 40°51'W), 01.X.2008, Santos, C.B. *leg.*, holotype male (MZUEFS). One paratype male, Espírito Santo, municipality of Brejetuba (Barra Córrego Santa Rita), 02.X.2010, Santos, C.B. *leg.* (MZUEFS).

Diagnosis. Cornicula present, 4-lobed; internal margin of scape inflated with group of long and apical bristles; first flagellomere 3.0 times as long as second one, cylindrical; veins R_{2+3} , R_5 , and M_2 incomplete; hypandrium strip-like, narrow; presence of 10 tenacula.

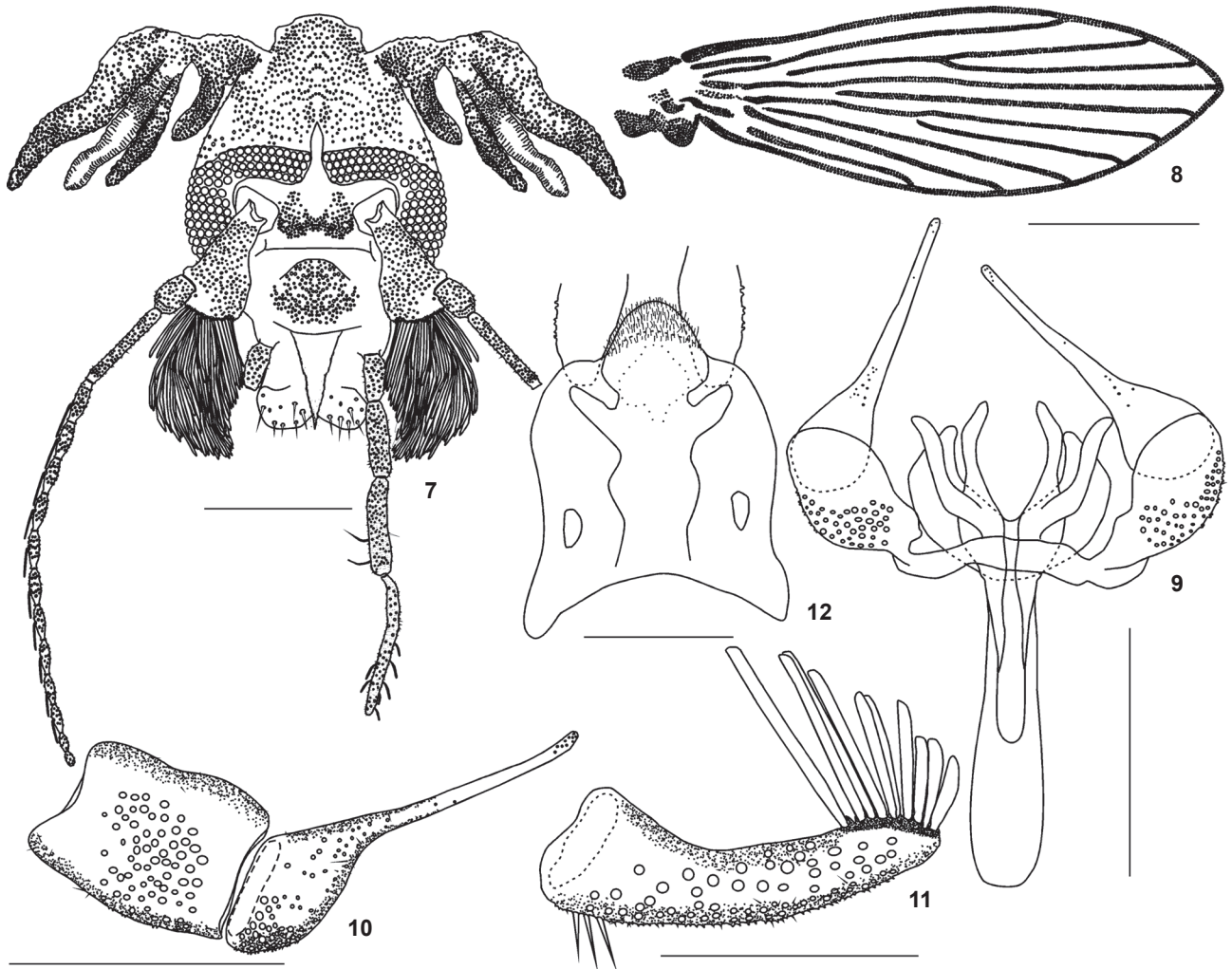
Description. Holotype male. Length from thorax to posterior end of abdomen, 2.66 mm. Head (Fig. 7). Subcircular,



Figures 1-6. *Lepidiella flabellata* sp. nov., holotype male: (1) head; (2) wing; (3-6) male terminalia: (3) gonocoxite and gonostylus; (4) epandrium and sternite X; (5) cercus; (6) aedeagal apodeme and aedeagus. Scale bars: 1, 4, 6 = 0.10 mm, 2 = 0.50 mm, 3, 5 = 0.05 mm.

interocular suture V-shaped. Cornicula membranous, branched and densely clothed with scales. Eye bridge of four facet rows, separated by a diameter of 1.5 facet diameters. Antenna incomplete (damaged). Scape 3.0 times as long as pedicel; internal margin of scape inflated with group of long bristles, duster-like. First flagellomere 3.0 times as long as second one, cylindrical; flagellomeres 2-13 spindle-shaped with digitiform ascoids. Palpus with four segments; relative length of palpomeres 1.0:1.7:2.2:3.0. Wing (Fig. 8). Length 1.78 mm; maximum width 0.54 mm. R_{2+3} not reaching R_s ; R_4 ending at

tip; R_5 not reaching R_4 ; M_1 not reaching M_2 . Male terminalia. Cerci, gonocoxites and gonostyles with pilosity (Figs 10-12). Epandrium longer than wide, with two lateral foramina (Fig. 12). Cerci digitiform with 10 tenacula (Fig. 11). Hypandrium narrow, stripe-like (Fig. 9). Gonocoxite cylindrical, 0.5 times as long as gonostylus; gonostylus broad at base and tapering apically (Figs 9 and 10). Aedeagus symmetrical, bifid, V-shaped. Two pairs of parameres, external ones wider than internal ones (Fig. 9). Aedeagal apodeme with the same length of gonostylus, narrow (Fig. 9).



Figures 7-12. *Lepidiella robusta* sp. nov., holotype male: (7) head; (8) wing; (9-12) male terminalia: (9) dorsal view; (10) gonocoxite and gonostylus; (11) cercus; (12) epandrium and sternite X. Scale bars: 7 = 0.20 mm, 8 = 0.50 mm, 9-12 = 0.10 mm.

DISCUSSION

Lepidiella robusta sp. nov. can be distinguished from all known species of the genus by the relative size of the first flagellomere, twice as long as the second. *Lepidiella flabellata* sp. nov. can be distinguished from congeners by a unique combination of characters: absence of cornicula, cercus with 17 tenacula and a pair of inner parameres apically bifurcated. *Lepidiella amaliae* is known only from two females from Nicaragua, so that it is necessary to consider other characters for comparing it with the new species herein described. *Lepidiella amaliae* can be differentiated by having the wing is wider than the wings of the two new species (width/length of the wing): *L. amaliae* (1.0:2.2); *L. flabellata* sp. nov. (1.0:2.6); *L. robusta* sp. nov. (1.0:2.8).

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