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## A NEW SPECIES OF *LEPTOMETOPA* BECKER, 1903 (DIPTERA, MILICHIIDAE) AND AN IDENTIFICATION KEY FOR THE NEOTROPICAL SPECIES OF THE GENUS

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### ABSTRACT

*The Milichiidae family includes species of small acalypterae flies distributed into 19 genera, over all biogeographic regions. The genus Leptometopa Becker, 1903, positioned among the Madizinae, is distributed worldwide. The genus is composed of 19 species, of which three are recorded for the Neotropical region: L. halteralis (Coquillett, 1900), L. latipes (Meigen, 1830) and L. niveipennis (Strobl, 1898). Studying material collected in a cave of Amazonas State, Brazil, the authors found a new species of Leptometopa which is described and illustrated herein. The new species L. veracildae n. sp. represents the first record of the genus in South America. An identification key for all Neotropical species is also presented.*

KEYWORDS: Madizinae, Microtomentum, Cave, Amazon, South America.

### INTRODUCTION

The Milichiidae (Diptera, Schizophora) are composed of almost 250 species of small acalypterae flies described in 19 genera distributed over all biogeographic regions. The family is divided into three subfamilies: Madizinae, Milichiinae, and Phyllomyzinae (Brake 2000). Melander (1913) presented a key for the genera, but with several genera not belonging to the Milichiidae. Hennig (1937) wrote one of the most important taxonomic studies on the Milichiidae, with descriptions of all Palearctic species. Hennig also presented identification keys to the species and a discussion about phylogeny and geographical distribution of the family. Griffiths (1972) presented a detailed study of male terminalia of Milichiidae.

Brake (2000) discussed the morphology and character transformation, and presented a phylogenetic hypothesis for the family.

*Leptometopa* Becker, 1903 is a discrete genus of flies with nineteen species placed among the subfamily Madizinae. The genus can be easily separated from other genera by the ventral prolongation of the lunule, which almost reaches the epistoma, a subtriangular dorsal extension of the lower facial margin, and a sometimes enlarged hind tibia. Adults are found in many kinds of habitats such as in caves and nests of birds, on faeces, flowers, and fungus. Some are kleptoparasites of spiders and predatory insects (Brake 2000). Currently three species are recorded from the Neotropical Region: *L. halteralis* (Coquillett, 1900), *L. latipes* (Meigen, 1830) and *L. niveipennis* (Strobl, 1898).

## MATERIAL AND METHODS

All studied material belongs to the collection of Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, AM, Brazil. Paratypes were also deposited at Departamento de Zoologia da Universidade Federal do Paraná (DZUP), Curitiba, PR, Brazil; Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo, SP, Brazil and Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ), Rio de Janeiro, RJ, Brazil.

For terminalia analysis the abdomen was removed and placed in a 10% solution of KOH for 60-80 minutes without heating. The abdomen was then washed in distilled water, dehydrated in an increasing ethanol series (30%, 50%, 70% and 95%) and cleared in lactophenol. After studying the terminalia were stored in glycerol in a plastic vial fixed to the insect pin.

The analysis and illustrations were made using stereomicroscope Zeiss Stemi SV 6 and microscope Zeiss Axioskope 40, both equipped with a camera lucida.

The terminology follows Brake (2000).

## RESULTS

## Description

*Leptometopa veracildae* n. sp.

**Diagnosis:** *Leptometopa veracildae* n. sp. is separated from congeneric species by the triangular lunule, without ventral projection; postfrons and mesonotum with silvery microtomentose stripes; hind tibia of male not enlarged and abdomen polished black without silvery microtomentum.

**Body:** 2.3-2.5 mm. Wing: 3.1-3.3 mm.

**Head:** (Figs. 1A-B) vertex convex. Ocellar triangle dark brown. Postfrons brown, rectangular, longer than wide, with five silvery microtomentose stripes: 1 central, 2 lateral and 2 next to eye margin. Lunule yellowish brown, triangular, bare, without ventral projection. Prefrons concave and polished, upper half silvery light brown, lower half dark brown. Para-

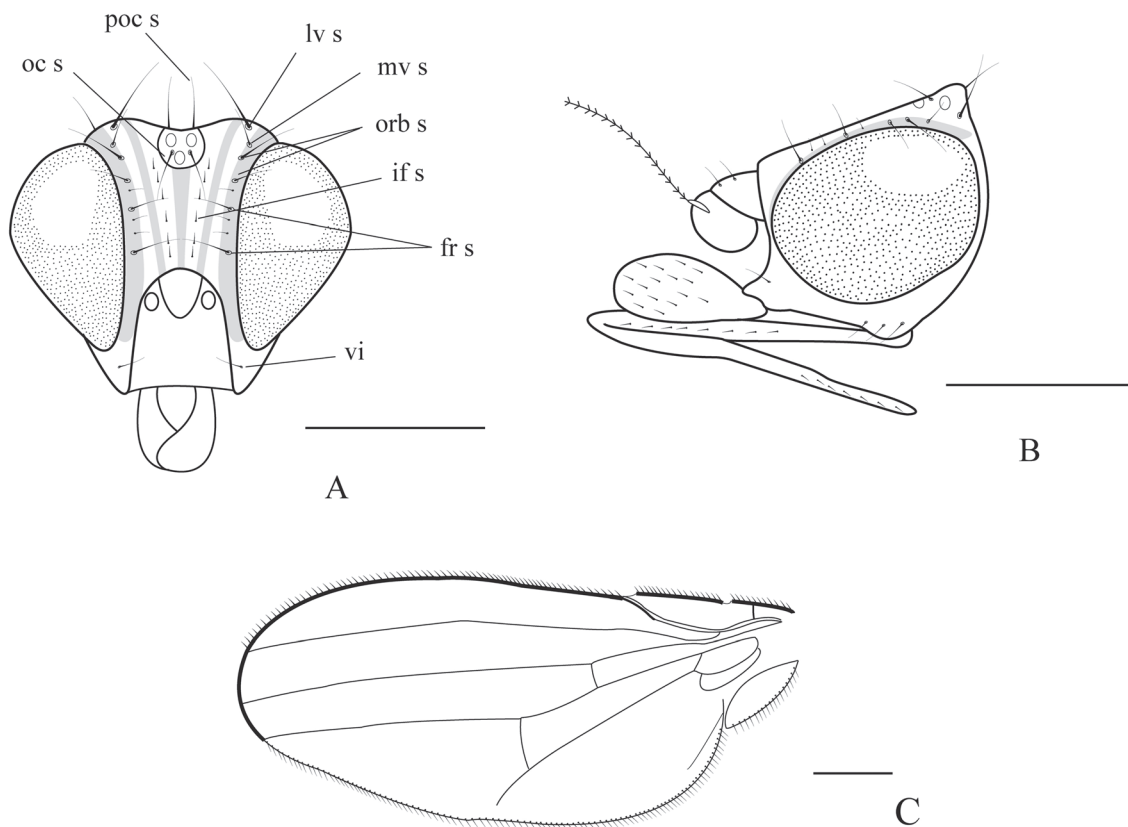


FIGURE 1: A-C. *Leptometopa veracildae* sp. n. A, head, frontal view; B, head, lateral view; C, wing. Abbreviations: fr s – frontal seta; if s – interfrontal setula; lv s – lateral vertical seta; mv s – medial vertical seta; oc s – ocellar seta; orb s – orbital seta; poc s – postocellar seta; vi – vibrissa. Scales 0.5 mm.

facial light brown, short. Gena narrow, 1/6 as high as eye, polished dark brown. Eyes circular in lateral view. Antenna: dorsally dark brown; ventrally yellowish brown; first flagellomere rounded; arista pubescent. Palpus polished dark brown, spatula-like, 3/4 as long as head height. Proboscis polished brown, 2.5 times longer than head height. Occiput concave, dark brown silvery microtomentose. Chaetotaxy: 2 laterocline orbital setae, 2 mediocline frontal setae, ocellar seta lateroprocline; postocellar seta reclinate; medial vertical seta medio-recline; lateral vertical seta mediocline; 2 rows of interfrontal setulae reclinate.

*Thorax:* mesonotum dark brown, convex, at least fourteen silvery microtomentose stripes present. Scutellum and pleura polished dark brown. Chaetotaxy: 1 acrostical prescutellar seta; 0+2 dorsocentral setae; 1 postpronotal seta; anepisternum bare; 1 katapisternal

seta; anepimeron bare; 2 scutellar setae, apical parallel. Legs polished dark brown, tarsomeres yellow. Chaetotaxy: mid tibia with 1 apical ventral seta. Wing (Fig. 1C) hyaline; costal vein with setulae reaching  $R_{2+3}$ ;  $R_{4+5}$  and  $M_1$  parallel; longitudinal veins yellow with basal region brown; r-m at anterior half of discal cell; dm-cu at anterior half of cell  $r_{4+5}$ ;  $CuA_2+A_1$  short, ending before wing margin. Halter: base light brown; knob polished dark brown.

*Abdomen:* polished brown, without microtomentum. Male preabdomen: lateral margin of tergites strongly bent under the abdomen; Sternite 5 (S5) (Fig. 2A) cuneiform longer than broad and larger than S4. Male pregenital: segments S7 and S8 fused to form a dorsal narrow synsternite S7/S8 (Fig. 2B). Male genitalia: (Figs. 2C-D) epandrium saddle-shaped with setae and setulae; surstylus spoon-shaped, fused

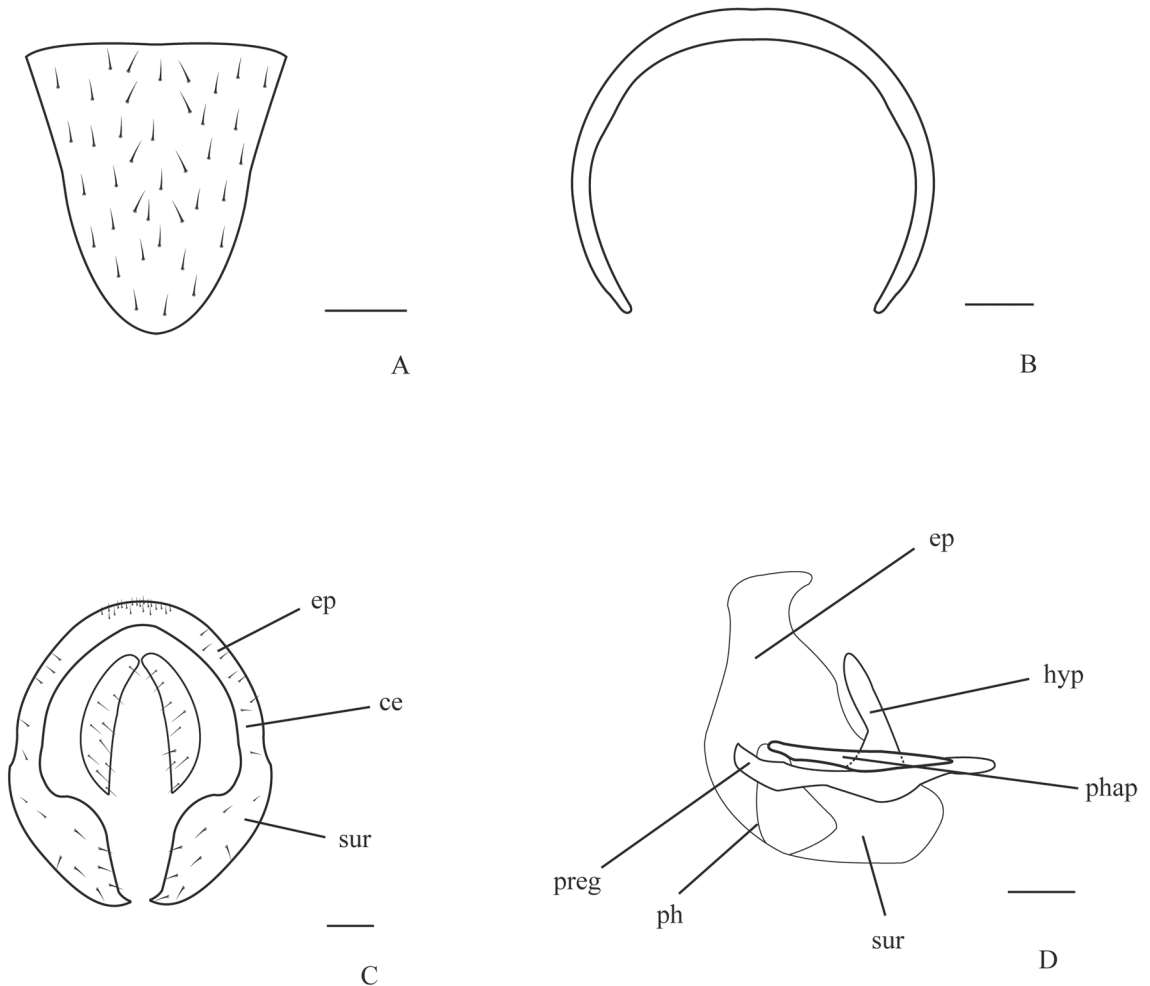


FIGURE 2: A-D. *Leptometopa veracilldae* sp. n. A, male sternite 5, ventral view; B, synsternite 7/8, posterior view; C, male genitalia, posterior view; D, male genitalia, lateral view. Abbreviations: ce – cerci; ep – epandrium; hyp – hypandrium; ph – phallus; phap – phallapodeme; preg – pregonite; sur – surstylus. Scales 0,05 mm.

with epandrium, hypandrium U-shaped; pregonites large and thin fused with lateral base of hypandrium; phallopodeme rod-shaped; phallus short, cylindrical and bare; cerci well developed. Female ovipositor: (Figs. 3A-B) tergite 6 (T6) not modified; S6 anterior margin concave; T7 and S7 divided in two narrow strips; ring of barbed spines present at base of segment 8, incomplete at medial dorsal region, with many anteriorly-directed barbed spines; T8 and S8 divided in two narrow strips; supranal plate yellow, cuneiform; cerci yellow, well developed.

*Distribution*: Brazil (Amazonas).

*Type material*: Holotype male: BRAZIL. Amazonas. Presidente Figueiredo, Gruta do Refúgio Maruaga, Km 06 AM-240, 02°03'02,49S, 59°57'48,85W. Alves, V. R. col, 09/II/2006, (INPA). Paratypes: Brazil. Amazonas. Presidente Figueiredo, Gruta do Refúgio Maruaga, Km 06 AM-240, 02°03'02,49S, 59°57'48,85W. Alves, V. R. col, 09/II/2006, 12 males, 17 females (INPA); 01/IV/2006, 20 males, 20

females, 1? (INPA); 6 males, 6 females (MZUSP); 2 male, 2 female (MNRJ); 2 male, 2 female (DZUP); 06/V/2006, 4 males, 26 females (INPA).

*Etymology*: named in honor to the collector of specimens MSc. Veracilda Ribeiro Alves (INPA, Brazil).

#### Key for Neotropical species of *Leptometopa* Becker

1. Anterior margin of postfrons yellow, halter yellow .....2  
Postfrons entirely dark, halter black .....3
2. Anepisternum bare, anepimeron with 1 setula, male hind tibia enlarged..... *L. latipes*  
Anepisternum setulose, anepimeron bare, male hind tibia not enlarged..... *L. niveipennis*
3. Epistomal triangle white; mesonotum shiny black; anepimeron with 1 setula..... *L. halteralis*  
Epistomal triangle dark brown; mesonotum shiny brown with silvery microtomentose stripes; anepimeron bare ..... *L. veracildae* n. sp.

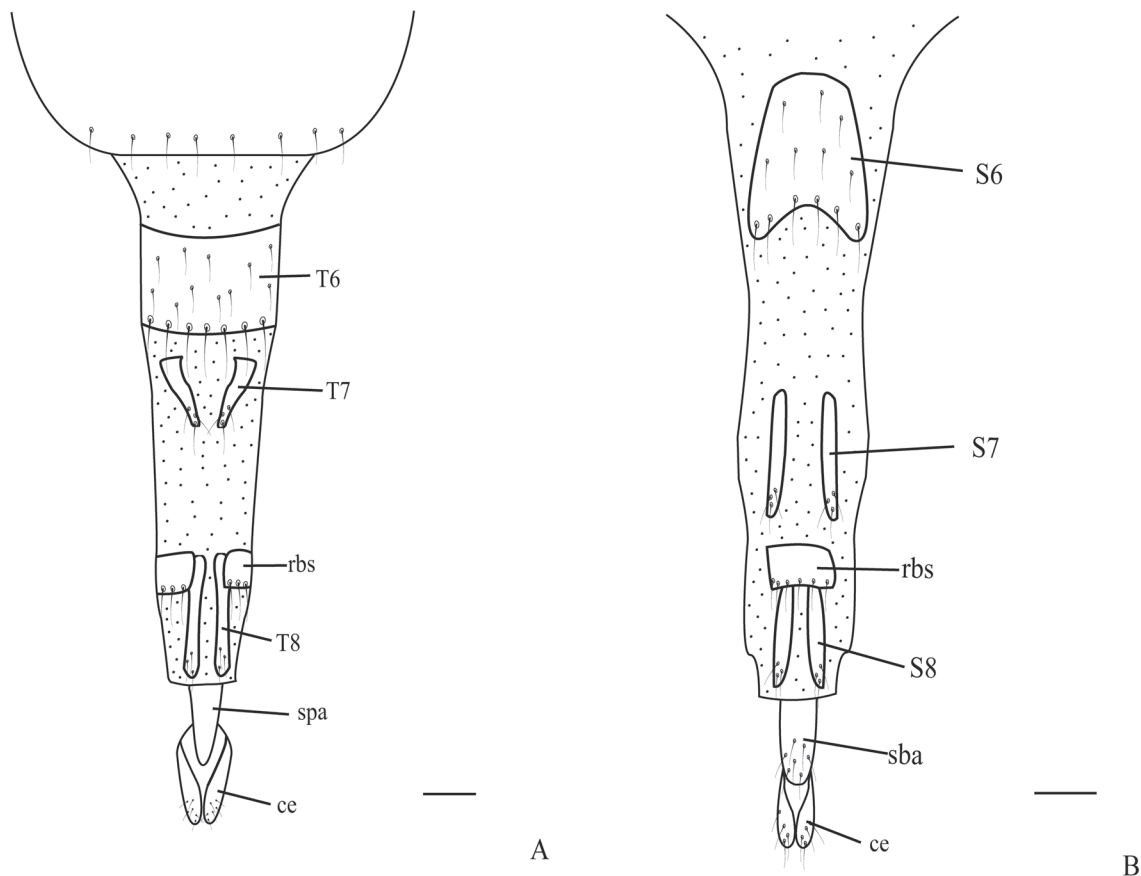


FIGURE 3: A-B. *Leptometopa veracildae* sp. n. A, female ovipositor, dorsal view. B, female ovipositor, ventral view. Abbreviations: ce – cerci; rbs – ring of barbed spines; S – sternite; sba – subanal plate; spa – supranal plate; T – tergite. Scales 0,1 mm.

## DISCUSSION

Many of the Milichiidae genera have a world wide distribution, and some of the scavenger species have been widely disseminated in commerce (Sabrosky, 1987). The 19 species of *Leptometopa* are distributed over all biogeographic regions. This is the first record of the genus from South America.

*Leptometopa veracildae* n. sp. exhibits a silvery microtomentose postfrons and mesonotum. As proposed by Brake (2000) the presence of silvery microtomentum could be an adaptation for swarming behavior, so that males swarming in the sunlight can be seen from a long distance.

If this behavior is valid to *L. veracildae* n. sp. their adults should leave the caves to swarm as they were collected about 300 meters from the entrance in an aphotic zone.

## RESUMO

*A família Milichiidae inclui espécies de pequenas moscas acaliptradas descritas em 19 gêneros, distribuídas em todas as regiões biogeográficas. O gênero Leptometopa Becker, 1903, posicionado entre os Madizinae, é atualmente composto de 19 espécies com distribuição mundial, das quais três são registradas para a região Neotropical: L. halteralis (Coquillett, 1900), L. latipes (Meigen, 1830) e L. niveipennis (Strobl, 1898). Analisando material coletado em uma caverna do estado do Amazonas, Brasil, os autores identificaram uma nova espécie de Leptometopa que é aqui descrita e ilustrada. A nova espécie Leptometopa veracildae sp. nov. representa o primeiro registro do gênero na América do Sul. Também é apresentada uma chave de identificação das espécies neotropicais.*

**PALAVRAS-CHAVE:** Madizinae, Polinosidade, Caverna, Amazônia, América do Sul.

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