

Systematics, Morphology and Biogeography

## Two new species of *Trichomyia* Haliday 1839 (Diptera, Psychodidae, Trichomyiinae) from the Pantanal of Mato Grosso, Brazil



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### ABSTRACT

Two new species in the Trichomyiinae (Psychodidae), *Trichomyia pantanensis* sp. nov. and *Trichomyia lamasi* sp. nov., are described and illustrated. New records are given for the two additional species *Trichomyia spinicauda* Araújo & Bravo, 2016 and *Trichomyia hispida* Araújo & Bravo, 2016. These four species comprise the first records of the genus in the Pantanal region.

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### Introduction

*Trichomyia* Haliday in Curtis, 1839 is the only extant genus in the Trichomyiinae. This subfamily comprises 191 species distributed throughout the world except Antarctica (Duckhouse, 1973a,b; Duckhouse and Lewis, 2007; Curler and Moulton, 2010; Omelkova and Ježek, 2012; Kvifte, 2012; Araújo and Bravo, 2016). Many species of Neotropical *Trichomyia* were recently described and now 122 species are recognized to this region. In Brazil, 82 species have been recorded, from the Amazon, Cerrado (semi-arid savanna) and Atlantic Rain Forest (Araújo and Bravo, 2016).

The Pantanal is a seasonally flooded savanna plain of approximately 140,000 km<sup>2</sup> with vegetation similar to that of the Cerrado (Diegues, 1994). A large part of the Pantanal is in the state of Mato Grosso and is an important ecosystem with a rich biodiversity (Almeida, 2004). While many *Trichomyia* species are known in Brazil, members of the genus were not previously found in the Pantanal. Here, we present the first records of *Trichomyia* in the Pantanal of Mato Grosso, with the description of two new species and range extensions of an additional two species.

### Material and methods

All specimens used in this study are deposited either in the Coleção Entomológica do Museu de Zoologia da Universidade

Estadual de Feira de Santana, Bahia, Brazil (MZFS) or the Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil (MZSP). The specimens from Pantanal were collected during the Project SIS-BIOTA – Diptera, with CDC light trap. The specimens were treated with 10% KOH, dehydrated and mounted in Canada balsam. The general morphological terminology follows Cumming and Wood (2009); the antenna terminology of *Trichomyia* follows Ibáñez-Bernal (2004); wing terminology and the terminology for the male terminalia follows Wagner and Ibáñez-Bernal (2009) and Araújo and Bravo (2016).

### Taxonomy

*Trichomyia lamasi* sp. nov.

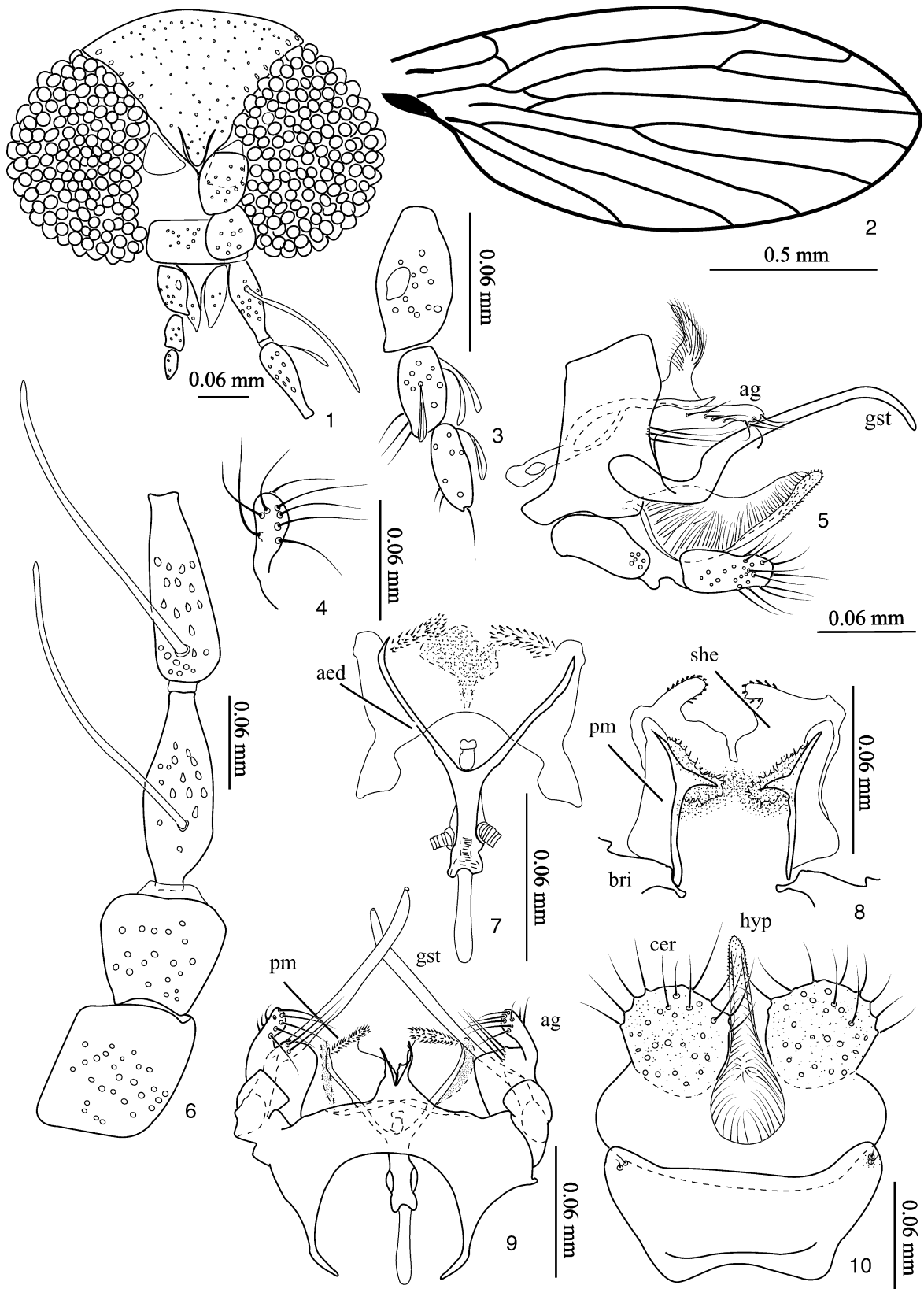
**Diagnosis.** Apex of gonocoxites rounded and with bristles. One pair of parameres fused basally and involved by a membranous parameral sheath. Hypoproct pyriform with setulae.

**Description.** Male. Head ellipsoidal (Fig. 1). Antenna incomplete in the studied specimens; scape the same length as subspherical pedicel; flagellomeres pyriform and eccentric (Fig. 6); ascoids 1.75 times flagellomere length. Palpus formula 1.0:0.5:0.7; 1st segment with sensilla in depressed pit on inner side (Fig. 3). Wing. R<sub>4+5</sub> complete at base; r-m present and m-cu absent (Fig. 2).

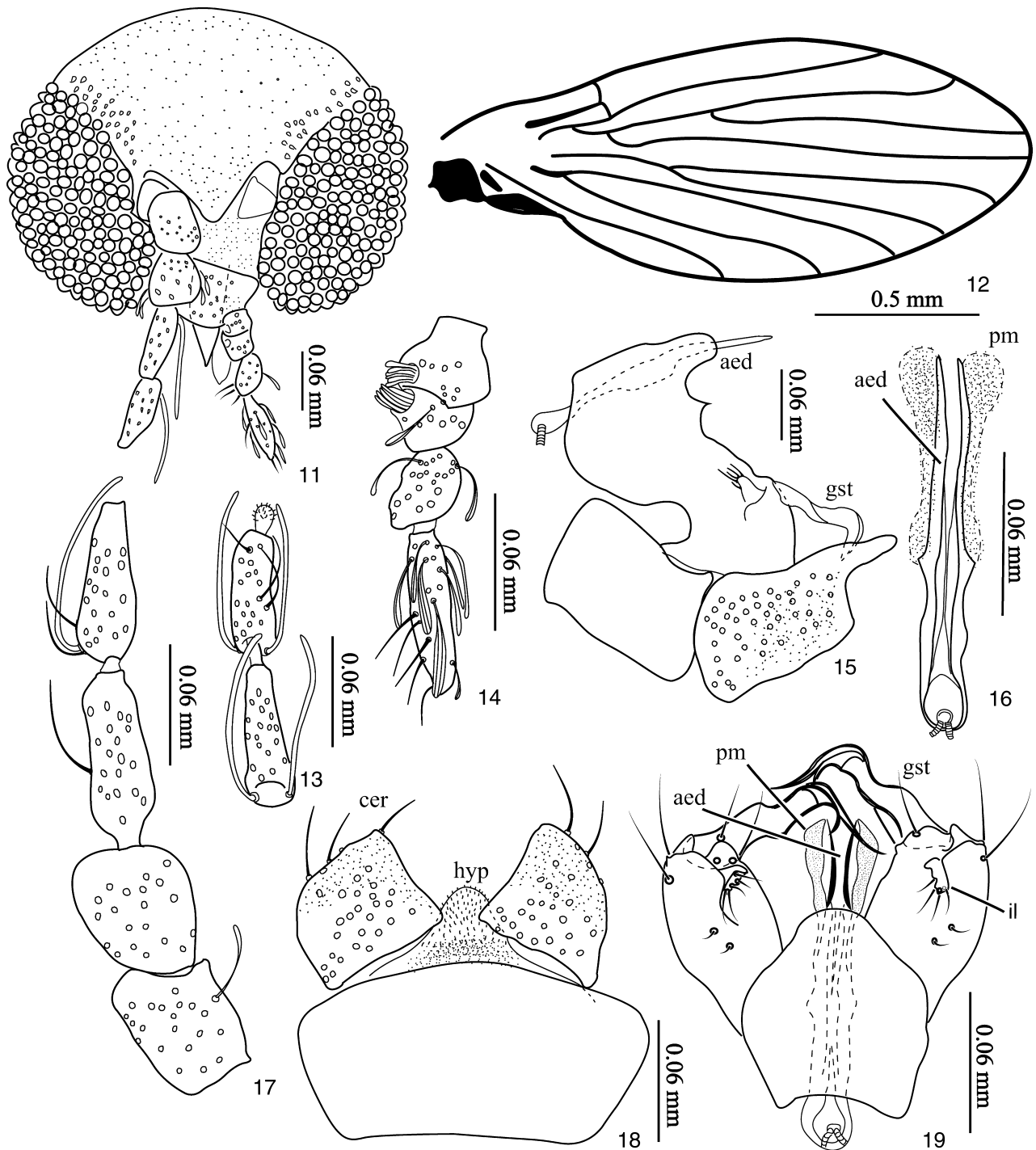
**Male terminalia:** Hypandrium fused with gonocoxites, with medial posterior expansion, bifurcate (Fig. 9), each pair of arm of gonocoxite with rounded apex and elongated bristles along the internal margin (Figs. 4, 5, 9). Gonostylus elongated and straight in dorsal view. One pair of parameres present, with apical setae,

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**Figs. 1–10.** *Trichomyia lamasi* sp. nov. 1. Head; 2. Left wing; 3. Palpus; 4. Arm of gonocoxite; 5. Male terminalia, lateral; 6. Scape, pedicel and basal flagellomeres; 7. Aedeagus and parameres, dorsal; 8. Parameres, ventral view; 9. Male terminalia, dorsal; 10. Cerci, epandrium and hypoproct (abbreviations: aed = aedeagus, ag = arm of gonocoxite, bri = gonocoxal bridge, cer = cercus, gst = gonostylus, hyp = hypoproct, pm = paramere, she = parameral sheath).



**Figs. 11–19.** *Trichomyia pantanensis* sp. nov. 11. Head; 12. Left wing; 13. Last flagellomeres, 14. Palpus; 15. Male terminalia, lateral; 16. Parameres and aedeagus; 17. Scape, pedicel and basal flagellomeres; 18. Cerci, epandrium and hypoproct; 19. Male terminalia, dorsal (abbreviations: aed = aedeagus, cer = cercus, gst = gonostylus, hyp = hypoproct, il = internal lobe, pm = paramere).

enclosed in a membranous parameral sheath (Figs. 7, 8). Aedeagus bifid. Ejaculatory apodeme 0.75 times the length of parameres (Fig. 9). Epandrium trapezoidal and pilose, with some alveoli concentrated at the apicolateral margins. Cercus rounded and pilose. Hypoproct pyriform with setulae and apical micropilosity (Fig. 10).

Material examined. Brazil, Mato Grosso, Poconé, 15–17.VII.2012, holotype male, A.M. Silva-Neto leg. (MZFS); 2 paratypes: 1 male, Mato Grosso, Chapada dos Guimarães, 5.X.1997, without name of collector. (MZSP); 1 male, Mato Grosso, Chapada dos Guimarães, 17.XI.1998, without name of collector (MZSP).

**Etymology.** The species is named in honor of Dr. Carlos José Einicker Lamas, curator of Diptera in the Museu de Zoologia da Universidade de São Paulo, and general coordinator of the SISBIOTA Diptera project under which specimens were collected.

**Distribution.** Known from Poconé in the Brazilian state of Mato Grosso.

**Remarks.** *Trichomyia lamasi* sp. nov. does not have any diagnostic characteristics of the currently named subgenus of *Trichomyia*. The species does resemble those identified in the “truncata group”

described in Araújo and Bravo (2016). The shape of the arm of gonocoxite of *T. lamasi* is similar to those in *T. truncata* Araújo & Bravo, 2016, *T. manacapurensis* Araújo & Bravo, 2016 and *T. cinthiae* Araújo & Bravo, 2016. However, the gonostylus is more elongate and thinner in *T. lamasi*. On the other hand, the shape of paramere is similar as *T. nortensis* Araújo & Bravo, 2016 (=projections of aedeagal complex, according Araújo and Bravo, 2016), a species not included in the “truncata group”. The setulae of the hypoproct, which is one of the diagnostic characters of *T. lamasi*, is also found in *T. manacapurensis*, *T. truncata* and *T. nortensis*.

#### *Trichomyia pantanensis* sp. nov.

Diagnosis. Palpus four-segmented. Gonocoxite with pilose internal lobe. Gonostylus bifurcated and aedeagus bifid.

Description. Male. Head subcircular (Fig. 11). Antenna with subcylindrical scape shorter than subspherical pedicel; flagellomeres pyriform and eccentric (Fig. 17); 13th flagellomere subcylindrical with terminal apiculus separated by suture (Fig. 13); ascoids 1.35 times flagellomere length. Palpus four-segmented, with first two segments partially fused; palpus formula 1.0:0.5:0.8:1.5, first and second segment with sensilla in depressed pits on the inner side (Fig. 14). Wing. Apex of Sc sclerotized; R<sub>4+5</sub> complete at base; r-m and m-cu absent (Fig. 12). Male terminalia: Hypandrium fused with gonocoxites (Fig. 19). Gonocoxite projects ventrally with a pilose internal lobe (Figs. 15, 19). Gonostylus bifurcated apically, slightly sclerotized, articulated to the apex of the gonocoxite, bare, curved and with pointed apices. Aedeagus bifid. One pair of membranous parameres (Fig. 19). Epanthrium wider than long in dorsal view and bare (Fig. 18). Cercus pilose, abruptly constricted before apex in lateral view (Fig. 15). Hypoproct with apical micropilosity (Fig. 18).

Material examined. Brazil, Mato Grosso, Poconé, 15–17.VII.2012, holotype male, A.M. Silva-Neto leg. (MZFS); 7 paratype males, same locality, date and collector as holotype (MZSP); 21 paratype males, Mato Grosso, Barão de Melgaço, 7.IV.1998, without name of collector (MZFS); 1 paratype male, Mato Grosso, Barão de Melgaço, Pantanal, 10.IV.1998, INPA R.Q., R.N./P.E. legs., without name of collector.

Etymology. The epithet *pantanensis* refers to the region (the Pantanal) in which the new species commonly occurs.

Distribution. Known from Poconé in the Brazilian state, Mato Grosso.

**Remarks.** *Trichomyia pantanensis* is placed in the subgenus *Opisthotrichomyia* Bravo, 2001 because it has the palpus four-segmented with the first two partially fused, the gonocoxite projected ventrally with an internal lobe having elongated bristles and gonostylus articulate apically to the gonocoxite. However, its aedeagus is shorter than that of *T. brevitarsa* (Rapp, 1945) and longer than that of *T. riococensis* Alexander, Freitas & Quate, 2001. The gonostylus is bifurcated as in *T. festiva* Bravo, 2001 and *T. riococensis*, but the gonostylus of *T. festiva* has truncate apex. *T. fluminensis* Bravo, 2001 and *T. nocturna* Bravo, 2001 have not gonostylus bifurcated and the internal lobe is shorter than that of *T. pantanensis*.

#### *Trichomyia hispida* Araújo & Bravo, 2016: 49–50, Figs. 28A–H

**Remarks.** Males of *T. hispida* can be recognized by the few bristles on the posterior arm of the gonocoxites, two pairs of parameres with the first dorsal pair being subtriangular with pointed apex, and the second pair with sharp apex and longer than the dorsal paramere, jointed apically by a ventral parameral sheath. Epanthrium subrectangular and cercus bottle-shaped in lateral view with two apical bristles.

Material examined. Brazil, Bahia, Coração de Maria, 28.I.2004, holotype male, F. Bravo leg. (MZFS)

Other material examined. Brazil, Mato Grosso, Chapada dos Guimarães, Vale da Benção, 1 male, 15–17.I.2013, leg. Silva-Neto, A.M. (MZFS)

Distribution. Known from the type locality in Brazil, state of Bahia (Coração de Maria) and state of Mato Grosso (Chapada dos Guimarães – new record).

#### *Trichomyia spinicauda* Araújo & Bravo, 2016: 68–69, fig. 42A–F

**Remarks.** Male *T. spinicauda* can be recognized by the medial posterior expansion of hypandrium/gonocoxites, rounded apically; the arm of the gonocoxites with rod-like bristles apically and thick bristles basally; two pairs of parameres and bifid aedeagus.

Material examined. Brazil, Bahia, Coração de Maria, holotype male, 14.VIII.2002, F. Bravo leg. (MZFS)

Other material examined. Brazil, Mato Grosso, Poconé, 1 male, 15–17.VII.2012, Silva-Neto, A.M. col. A.M. Silva-Neto leg. (MZFS).

Distribution. Known from the type locality in Brazil, state of Bahia (Coração de Maria) and state of Mato Grosso (Poconé – new record).

#### Conflicts of interest

The authors declare no conflicts of interest.

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