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A new species of *Bruchomyia* (Diptera: Psychodidae) from caverns in the state of Minas Gerais, Brazil

Freddy Bravo[1,3] & Ricardo Andrade Barata[2]

[1] *Universidade Estadual de Feira de Santana, Departamento de Ciências Biológicas. Avenida Transnordestina, 44036-900 Feira de Santana, BA, Brazil.*
[2] *Departamento de Ciências Biológicas, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Campus JK. Rodovia MGT 367, km 583, 5000, Alto da Jacuba, 39100-000 Diamantina, MG, Brazil.*
[3] *Corresponding author. E-mail: fbravo@uefs.br*

ABSTRACT. Nine Neotropical species of *Bruchomyia* Alexander, 1920 have been previously described, all from South America. A new species of this rare genus, collected in caverns of the state of Minas Gerais, southeastern Brazil, is described and named *Bruchomyia mineira* sp. nov. The new species is morphologically similar to *B. argentina* Alexander, 1920, but they can be differentiated from each other by characters of the eyes, M_2 vein and base of gonostylus.

KEY WORDS. Bruchomyiinae; moth flies; Neotropical region; Psychodidae; taxonomy.

Bruchomyia Alexander, 1920 is a Neotropical genus of Bruchomyiinae (Psychodidae) known only from South America. Nine species have been described; one, *Bruchomyia peruviana* Alexander, 1929 is known only from females, despite the fact that the taxonomy of the genus is based on characteristics of the male, and no characters useful for distinguishing among females of *Bruchomyia* have been identified (Quate *et al*. 2000).

According to Quate *et al*. (2000), specimens of *Bruchomyia* are rarely collected. Eight species were described between 1920-1950: *B. argentina* Alexander, 1920 (the type species of the genus); *B. peruviana*; *B. shannoni* Alexander, 1929; *B. brasiliensis* Alexander, 1940; *B. plaumanni* Alexander, 1944; *B. almeidai* Barretto & d'Andreatta, 1946; *B. fusca* Barretto, 1950; and *B. unicolor* Barretto, 1950 (Alexander 1920, 1929, 1940, 1944, Barretto & d'Andreatta 1946, Barretto 1950). The ninth known species, *B. andina* Quate, Pérez & Ogusuku, 2000, was described fifty years after *B. unicolor*. A recent synopsis of the genus was given by Quate *et al*. (2000). In this paper we describe a new species of *Bruchomyia* collected from caverns in the state of Minas Gerais, southeastern Brazil.

MATERIAL AND METHODS

Specimens of *Bruchomyia* were collected with modified CDC light traps in caverns and preserved in 70% ethanol, cleared with hot 10% sodium hydroxide and mounted in Canada balsam. The caverns are located in the municipality of Diamantina, state of Minas Gerais. The terminology for the morphological descriptions follows mainly Merz & Haenni (2000). Specimens (including the types) are deposited in Coleção Entomológica Prof. Johann Becker do Museu de Zoologia da Universidade Estadual de Feira de Santana, Brazil (MZFS) and Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZSP).

TAXONOMY

Bruchomyia Alexander

Bruchomyia Alexander, 1920: 403. Type species: *B. argentina* Alexander (original designation). Additional references: Alexander, 1929: 2; Barretto, 1950: 66-67; Fairchild, 1952: 274; Quate *et al*., 2000: 1045; Williams, 2003: 8 (species list).

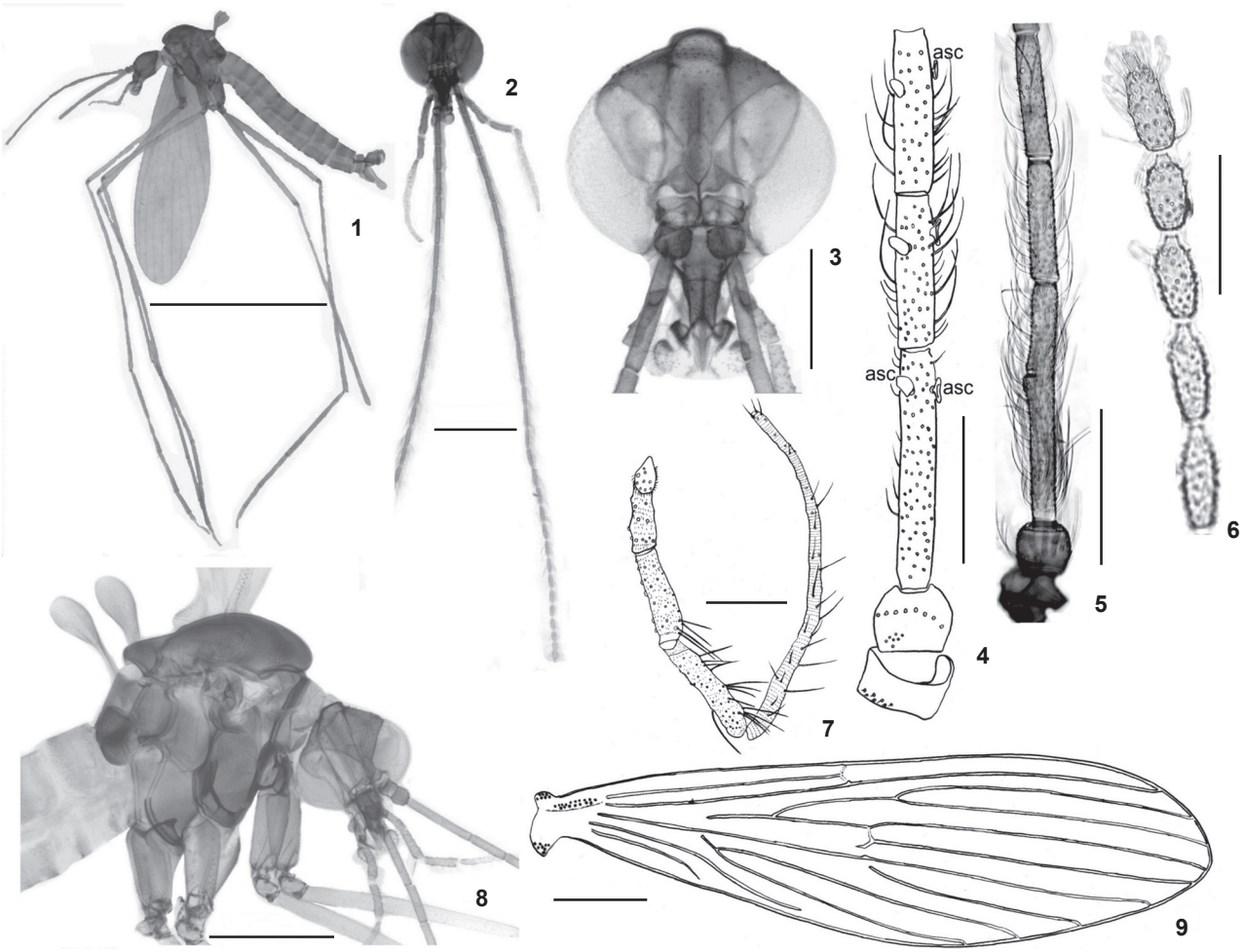
Diagnosis: *Bruchomyia* is characterized by the presence of 26-30 flagellomeres, long CuA_2, and gonocoxite with a tubercle on the medial surface bearing a dense cluster of heavy setae (Quate *et al*. 2000).

Bruchomyia mineira sp. nov.

Figs 1-13

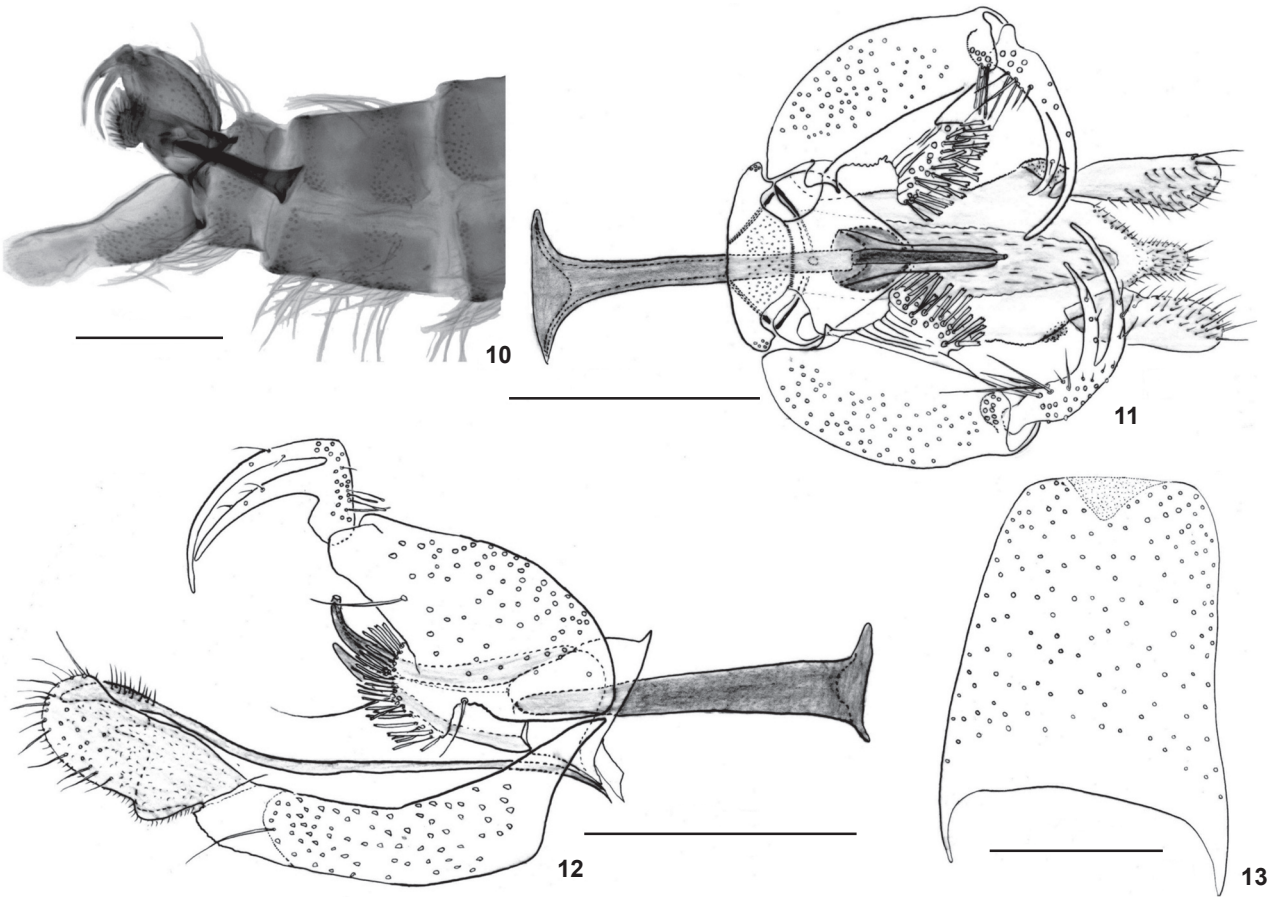
Diagnosis. Eyes separated by 3.5 facet diameters; antenna with 30 flagellomeres; flagellomeres 2+3 combined 1.2-1.5 x length of flagellomere 1; vein Sc ending before level of radial fork; base of Rs with spur; M_2 incomplete; hypandrium sclerotized, hat-shaped, sculptured above; cluster of long setae absent at base of gonostylus; aedeagal apodeme longer than gonocoxite.

Description. Male. Abdomen cylindrical, legs twice the length of abdomen (Fig. 1). Antenna 5.0 x length of head (Fig. 2) and approximately the same length of wing. Head longer than wide (Fig. 3). Length from thorax to the posterior end of terminalia: 4.1-4.7 mm (n = 7). Wing length: 3.2-4.2 mm (n =



Figures 1-9. *Bruchomyia mineira* **sp. nov.**, male: (1) habitus; (2) head, left antenna with 30 flagellomeres and maxilary palpi; (3) head; (4) antenna: scape, pedicel and flagellomeres 1-3 (asc = ascoid); (5) antenna showing first flagellomere with incision; (6) apical flagellomeres; (7) palpus; (8) thorax and head, lateral; (9) wing. Scale bars: 1 = 2.50 mm, 2, 8, 9 = 0.50 mm, 3-7 = 0.12 mm.

7). Eyes separated by 3.5 facet diameters; frontal area with 18-20 setae alveoli. Frontal area with 17 setae alveoli. Antenna with 30 flagellomeres (observed in two paratypes, Fig. 2); basal flagellomeres cylindrical (Figs 4 and 5); length of flagellomeres 2+3 combined 1.2-1.5 x length of flagellomere 1 (Fig. 4); first flagellomere of three paratypes with medial incision (Fig. 5); flagellomeres decreasing in length toward the apex (Fig. 6); last flagellomere with apiculus (Fig. 6); ascoids mushroom-shaped (Fig. 4, asc). Palpus formula (1+2:3:4:5) = 1.0:1.0:1.1:3.7; sensilla absent on second and third palpomeres; last palpomere striated (Figs 2, 7). Fore, mid and hind coxae longer than wide (Fig. 8). Wing (Fig. 9) with Sc ending before level of radial fork, reaching C, apex faint; crossvein sc-r faint; radial fork a little distal to medial fork; base of R_5 with spur; crossvein r-m faint; M_2 incomplete, not reaching M_1. Halteres club-shaped, as long as fore coxa (Fig. 8). Segment VIII twisted 90° about the long axis of the abdomen (Fig. 10). Male terminalia: hypandrium sclerotized, hat-shaped (internal margin expanded medially), sculptured superiorly (Fig. 11); gonocoxite with two lobes, medial lobe larger than distal, both with cluster of spines (Fig. 11); medial lobe of gonocoxite separated from distal lobe by distance at least equal to width of medial lobe (Fig. 11); gonostylus smaller than gonocoxite, with apex bifurcate in form of pincers; bifurcations of gonostylus longer than base (Figs 11 and 12); aedeagus tubular with single external opening (Fig. 11); parameres fused medially forming a conic parameral sheath (Fig. 11); aedeagal apodeme longer than the length of gonocoxite, trumpet-like (Figs 10 and 12). Epandrium rectangular (Fig. 13). Cerci smaller than gonocoxite (Figs 10 and 12). Tergite 10 lobe-like (Fig. 11).



Figures 10-13. *Bruchomyia mineira* **sp. nov.**: (10) tergites VII, VIII and male terminalia, lateral; (11) male terminalia, dorsal; (12) male terminalia, lateral; (13) epandrium. Scale bars: 10 = 0.50 mm, 11, 12 = 0.25 mm, 13 = 0.12 mm.

Female. Unknown.

Material examined. Holotype male, BRAZIL, *Minas Gerais*: Diamantina, cavern of Salitre (18°16'47"S, 43°32'10"W), 18.V.2010, Barata, R.A. *leg*. (MZFS).

Paratypes: 7 males, same locality, date and collector as holotype; 1 male, same locality and collector as holotype, 30.VI.2011; Minas Gerais, Diamantina, cavern Monte Cristo (18°17'49"S; 43°33'30"W), Barata, R.A. *leg*.: 5 males, 26.V.2011; 1 male, 30.V.2011; 4 males, 30.VI.2011; 4 males, 13.VII.2011. Paratypes are deposited in MZFS and MZSP.

Etymology. The specific epithet, *mineira*, refers to the state where the material of the new species was collected.

Type locality. The two caverns are located at the municipality of Diamantina, state of Minas Gerais: cavern Monte Cristo and cavern of Salitre. They are situated 10 km apart from the city of Diamantina. These caverns were formed in quartzite rocks of the Espinhaço mountain range and are predominantly horizontal with many fallen boulders, have two entrances, sandy soils, and perennial water sources.

Comments. The new species keys out as *B. argentina* in the key to males of *Bruchomyia* provided by Quate *et al.* (2000). The following couplets lead to *B. argentina*: 1) gonocoxite with two clusters of spines, distal cluster smaller than medial (step 1); 2) vein Sc ending before level of radial fork (step 2); 3) base of Rs with spur (step 5); 4) flagellomeres 2+3 combined 1.3-1.5 x length of flagellomere 1 (step 6). However, the morphological differences outlined below have allowed us to separate *B. mineira* from *B. argentina*.

The new species is morphologically similar to *B. argentina* but can be differentiated by the following set of characters: 1) eyes separated by two facet diameters in *B. argentina* and 3.5 facet diameters in the new species; 2) M_2 complete in *B. argentina* (Alexander 1920: Fig. 2), incomplete in the new species (Fig. 9); 3) base of gonostylus with cluster of setae alveoli on the dorsal surface in *B. argentina* (Quate *et al.* 2000: Fig. 9), absent in the new species. According to Alexander (1920), the R_5 vein of *B. argentina* has a spur at the base; however, Quate *et al.* (2000) did not find this spur on the three paratypes examined (the holo-

type was lost) and, therefore, assumed that the spur is lacking from the base of the R_s of this species. The presence of a spur in the new species could be another difference between it and *B. argentina*. The new species differs from *B. peruviana*, a species known only from females (Alexander 1929), by the number of flagellomeres: 30 in *B. mineira* and 27 in *B. peruviana*.

As noted by Fairchild (1952), the current distribution of *Bruchomyia* in the Neotropics is restricted to South America, with records from three countries: Argentina with one species (*B. argentina*); Peru, with three Andean species collected above 2,100 m a.s.l. (*B. andina*, *B. shanonni* and *B. peruviana*); and Brazil, with six species (*B. almeidai* from the state of São Paulo, *B. brasiliensis* from the states of Ceará and Mato Grosso, *B. fusca* from the states of São Paulo and Rio de Janeiro, *B. mineira* sp. nov. from Minas Gerais, *B. plaumanni* from the state of Santa Catarina, *B. unicolor* from São Paulo). Certainly, the richness of *Bruchomyia* is underestimated and the distribution of the included species may be broader than currently known.

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