

**A new species of *Feuerborniella* (Diptera: Psychodidae)
from the paramo of Colombia**

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Abstract. *Feuerborniella paramuna* Cordeiro, sp. nov., is a new species we describe herein from the paramo of Colombia. This genus is recorded for the first time from Colombia. Diagnostic characters for *Feuerborniella* Vaillant, 1971 along with its place in the tribe Psychodini are discussed, and a key to males of the Neotropical species of *Feuerborniella* is provided.

Key words. Diptera, Psychodidae, Psychodinae, Psychodini, taxonomy, Colombia, Neotropical Region

Introduction

The genus *Feuerborniella* Vaillant, 1971 was proposed without a formal description by VAILLANT (1971). In that paper, the characteristics of *Feuerborniella* were found only in the keys to larvae and adults, and *Feuerborniella obscura* (Tonnoir, 1919) was mentioned in the illustrations legends. Three years later, VAILLANT (1974) defined the genus with a list of species, including *Psychoda obscura* Tonnoir, 1919, *P. spathipennis* Duckhouse, 1968, *P. plaumanni* Duckhouse, 1968, and *Trichopsychoda malayensis* Satchell, 1955. JEŽEK (1985) designated lectotype and paralectotypes for *F. obscura* from Tonnoir's material deposited at the Royal Belgian Institute of Natural Science, Bruxelles. Finally, IBÁÑEZ-BERNAL (2004) described *Feuerborniella veracruzana* and provided a revision of the genus and supra-generic classification of *Feuerborniella*, with robust diagnostic characters in comparison with the other Psychodini *sensu* DUCKHOUSE (1985).

In this paper we describe a new species of *Feuerborniella* and present a short discussion about the placement of this genus in the tribe Psychodini *sensu* DUCKHOUSE (1985).

Material and methods

We follow terminology of CUMMING & WOOD (2009), with some specific terms for the Psychodidae following QUATE & BROWN (2004) and thoracic chaetotaxy following GALATI (2003).

The specimens studied are deposited in the following collections:

CEUA Colección Entomológica, Instituto de Biología, Universidad de Antioquia, Antioquia, Colombia;
 DZUP Coleção Entomológica Padre Jesus Santiago Moure, Curitiba, Brazil.

Taxonomy

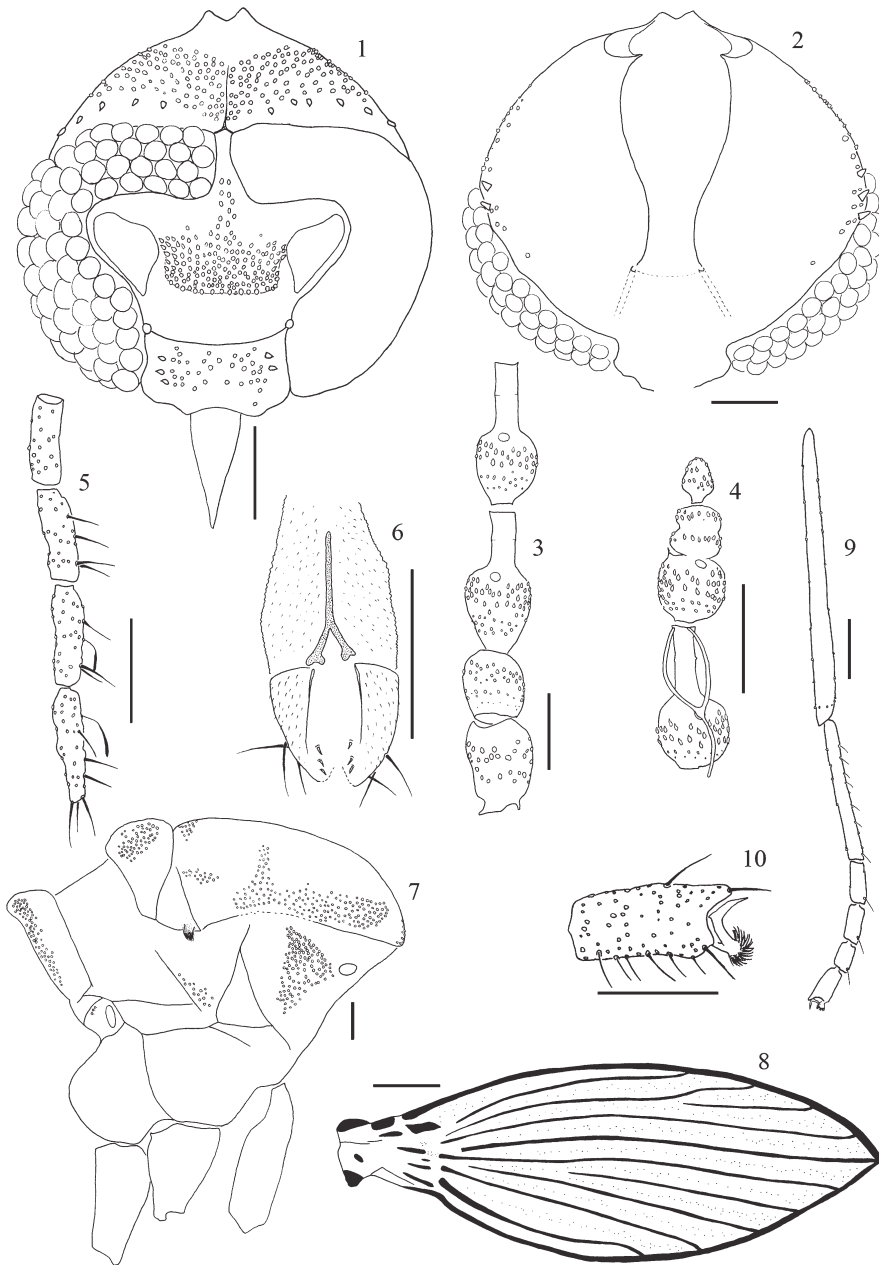
Feuerborniella paramuna Cordeiro, sp. nov.

(Figs 1–15)

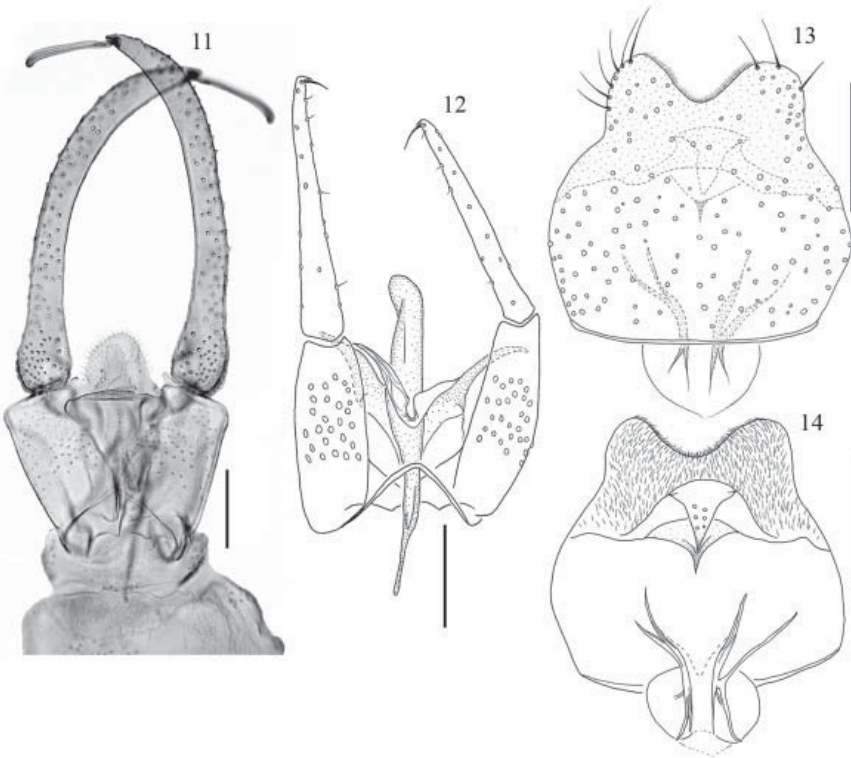
Type material. HOLOTYPE: ♂, 'COLOMBIA, ANTIOQUIA, Sonson, / Páramos, Cerro de Las Cruces, / 3000m, Malaise trap, / 23.xii.2009-07.i.2010, / Laura Rios leg.' (CEUA). PARATYPES: 1 ♀ 2 ♂♂, same data as holotype, 23.i.2010; 1 ♀, same data as holotype except: '05°42'08,9"N 75°15'14,1"W, / 01-15.viii.1010' (2 spec. in CEUA, 2 spec. in DZUP).

Diagnosis. Wing membrane pilose in midline between veins; parameres ectally curved at apex, large, almost reaching apex of aedeagus; epiproct digitiformly projected; hypoproct large, rounded.

Description. Head semicircular in frontal view: vertex, frons and clypeus pilose (Fig. 1); vertex higher than width of eye bridge; occipital foramen in upper position; frons hair patch extending to midline of eye bridge; eye bridge with 4 facet rows, separated by less than one facet diameter; vertex hair patch extending as short row to posterior margin of eyes, not going beyond midline of eye (Fig. 2); 7 supra-ocular setae, 2–3 larger occipital alveoli; interocular suture in inverted Y shape, superior arm of suture around 4× the length of the inferiors; clypeus wider than long with 2–3 larger lateral alveoli; frontoclypeal suture present; antenna with cylindrical scape, somewhat longer than subspherical pedicel (Fig. 3), and 14 flagellomeres, 12–14 reduced, 11–13 fused and without necks, 14 slightly smaller, separated, conically shaped (Fig. 4); ascoids Y-shaped; palpal formula 1.0 : 1.1 : 1.1 : 1.3 (Fig. 5); labellum compact, slightly fleshy, with 3 spines on inner margin and 3 lateral setae (Fig. 6). Thorax (Fig. 7): pre-sutural setae (pss) join supralar setae (sps); anepisternum and anepimeron pilose; pteropleurite (ptp) large, about 2× longer in antero-posterior axis, anterior suture weak; anepisternal suture (anst) complete; long transverse suture on upper margin of katespisternum (kts). Wing (Fig. 8): wing membrane pilose in midline between veins, forming poorly defined line of small alveoli between veins, except on cells c and cua₂; second costal node absent; Sc vein short, not extending beyond line of base of veins Rs, M and CuA₁; R₁ ending beyond level of CuA₂; radial fork apical to medial fork, both incomplete; M₁₊₂ not conspicuously expanded at base; costal cell darkened. Legs: first metatarsomere long, almost 4× the length of the second (Fig. 9), distitarsi with apical projection (Fig. 10); claws strongly angular (90°) in lateral view. Male terminalia: cercus somewhat curved and long, about 2× epandrium length, slightly inflated at base, with one apical tenaculum and two subapical small papilla (Fig. 11); epandrium wider than long, with one small foramen; epiproct with pilose posterior digitiform projection; hypoproct pilose, large, rounded, very much exposed



Figs 1–10. *Feuerborniella paramuna* Cordeiro, sp. nov. (1, 5, 9, 10 – females; 2–4, 6–8 – males): 1 – head, anterior view; 2 – head, posterior view; 3 – antenna: scape, pedicel and basal flagellomeres; 4 – antenna, flagellomeres 10–14; 5 – palpus; 6 – labellum; 7 – thorax, lateral view; 8 – wing; 9 – tibia and tarsi; 10 – distitarsus. Scale bars = 0.2 mm (8), 0.1 mm (9), other figures 0.05 mm.



Figs 11–14. *Feuerborniella paramuna* Cordeiro, sp. nov. 11, 12 – male terminalia; 11 – ventral view; 12 – dorsal view; 13, 14 – female subgenital plate and genital chamber: 13 – dorsal view; 14 – ventral view. Scale bars = 0.05 mm.

distally; hypandrium short and thin, separating the slender gonocoxites (Fig. 12); gonostylus slightly longer than gonocoxites, with a subapical robust setae and few small setae sparsely distributed, not grouped at base; gonocoxal bridge not expanded; aedeagus slender, with one dorsal shaft strongly curved, narrower and less sclerotized; aedeagal apodeme simple, more or less equal in length with aedeagus; a pair of subconical parameres tapering at curved apex, lateral to aedeagus. Female terminalia: subgenital plate bilobed, sparsely pilose (Fig. 13), apical lobes projecting in a pilose and sclerotized internal plate (Fig. 14); basal band of subgenital plate straight and slender; genital chamber simple, linked by a light membrane to a structure internal to the subgenital plate; cercus long, slender and straight, around 1.3 times width of female genitalia at base.

Measurements. Males, wing length 1.54–1.67 mm, wing width 0.57–0.6 mm; females, wing length 1.82–1.85 mm, wing width 0.64–0.65 mm.

Etymology. The epithet *paramuna* (feminine adjective) refers to the discovery of this species in the paramo.

Discussion. This new species from Colombia fits the diagnostic characteristics for *Feuerborniella* following IBÁÑEZ-BERNAL (2004), specifically: eyes approximate, ocular bridge with

four rows of facets, 14 flagellomeres, Y-shaped ascoids, apical three flagellomeres reduced in size, labellum small with small spines, but without blunt teeth, R_5 ending at wing apex, male cercus longer than epandrium, bearing only one simple tenaculum, gonocoxites separated from each other, and female genitalia with long, gradually tapered cercus and without genital digit on subgenital plate. *Feuerborniella paramuna* sp. nov. has also additional characters of this genus, following VAILLANT (1974): interocular suture V-shaped; flagellomeres 11–14 without neck; subcosta short; aedeagus with almost complete bilateral symmetry and two lateral curved parameres.

The vestiture of the wing membrane is very conspicuous for identifying this species, but is also found in *Feuerborniella malayensis*. These two species are also similar in having a large, subconical pair of parameres curved at apex. But they are easily distinguished as different species by the shape of gonostylus and gonocoxites, broad and short in *F. malayensis* and long and slender in *F. paramuna*. Illustrations by TONNOIR (1922) do not allow identification of female genitalia differences between the two species. The general appearance of female genitalia in *Feuerborniella* is very uniform.

In the description of the labellum of *Feuerborniella veracruzana*, IBÁÑEZ-BERNAL (2004) states: “labellum bulbous with three or four long antepical setae and two to four short spiniform setae in the internal margin near the apex, but without blunt teeth.” The reduced size of the labellum is apparently an important diagnostic character for *Feuerborniella*. Additionally, not only the size, but the structure of the labellum is remarkable in this genus. In the four species with good description and illustration (*F. spathipennis*, *F. plaumanni*, *F. veracruzana* and *F. paramuna* sp. nov.), the labellum is a short uniform structure, as in *Psychoda sensu lato*. In most other psychodids, two small and separate sclerotized plates (labella I and II in GALATI 2003) can be distinguished on each side of the labellum.

The placement of *Feuerborniella* in the tribe Psychodini is not a consensus among the authors dealing with Psychodinae. JEŽEK (1983) and VAILLANT (1990) placed *Feuerborniella* in the tribes Paramormiini and Mormiini, respectively. The characters used by JEŽEK (1983) to differentiate Psychodini from Paramormiini and Mormiini are inconsistent with our observation of *Feuerborniella* which has a pteropleurite entirely bordered by a suture dorsally and with no anterior additional sclerite, as seen in Psychodini (= *Psychoda sensu lato*) (JEŽEK 1984, 1985). Moreover, the arrangement of the thoracic (presutural and supraalar) setae of *Feuerborniella* is also the same as in *Psychoda*. VAILLANT (1990) used characters mainly of labellum, head and male terminalia to justify his hypothesis on the tribal classification, but we believe that the characters used by him may be plesiomorphic, as highlighted by DUCKHOUSE (1985), when discussing the first proposal of VAILLANT (1971). Following this idea, the characters of antenna and wing that group Psychodini *sensu* Duckhouse may be true homologies, and not a result of different origins as proposed by VAILLANT (1990). We also believe that the characteristics of thorax discussed above, along with the shortened labellum, suggest that *Psychoda* and *Feuerborniella* are closely related, and that placement of *Feuerborniella* in the tribe Psychodini (DUCKHOUSE 1985, IBÁÑEZ-BERNAL 2004) should be accepted.

The presence of one (or two as in *F. malayensis*) subapical setae on the gonostylus of males is also a constant feature of *Feuerborniella* species, although this can be found in several other species of Psychodini.

Preliminary key to males of the Neotropical species of *Feuerborniella*

- 1 Wing membrane pilose in midline between veins, radial fork incomplete; apex of parameres strongly divergent. *F. paramuna* sp. nov.
- Wing membrane bare, except on veins, radial fork complete; apex of parameres slightly divergent. 2
- 2 Apex of aedeagus rounded, of same width as its median portion.
..... *F. spathipennis* (Duckhouse, 1968)
- Aedeagus with subapical constriction. 3
- 3 Distance from apex of parameres to the subapical constriction of aedeagus equal to the distance from the subapical constriction to the apex of aedeagus.
..... *F. veracruzana* Ibáñez-Bernal, 2004
- Distance from apex of parameres to the subapical constriction of aedeagus around 2× the distance from the subapical constriction to the apex of aedeagus.
..... *F. plaumanni* (Duckhouse, 1968)

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