

A new species of *Dasydorylas* Skevington, 2001 (Diptera: Pipunculidae) from the Colombian Andes, and an updated key to males of the Neotropical species

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Abstract

Dasydorylas Skevington, 2001 has a cosmopolitan distribution. A new species of *Dasydorylas* is described from Colombian Andes, namely *Dasydorylas spinifera* sp. n. (type locality: Páramo Santa Inés, Antioquia). Illustrations of the new species, dichotomous key to males of all Neotropical species and distribution map of the Colombian species is presented.

Keywords

Big-headed fly, biodiversity, Paramo, taxonomy, Tomosvaryellini

Introduction

Dasydorylas Skevington, 2001 is a cosmopolitan pipunculid genus, with 35 valid species are known from all biogeographical regions (Motamedinia et al. 2020). Additionally, Ramos-Pastrana et al. (2024) listed three species from Colombia for a

total of 38 species. In the Neotropical Region, there are currently nine species of *Dasydorylas*, from Argentina, Brazil (Rafael 1995), Colombia (Ramos-Pastrana et al. 2024), Costa Rica, Nicaragua, Mexico (Rafael & Ale-Rocha 2004) and Peru (Rafael 1995; Ramos-Pastrana et al. 2024). The taxonomic history of genus was recently summarized by Ramos-Pastrana et al. (2024). Currently, Motamedinia et al. (2022), recovered *Dasydorylas* as related to *Dorylomorpha* + at least one undescribed genus within Tomosvaryellini.

The objective of this paper is to describe and illustrate the new species of *Dasydorylas* from the Colombian Andes, provide an updated identification key to the males of all Neotropical species and distribution map of all Colombian species.

Materials and methods

This study is based on pinned specimens deposited in Colección Entomológica Universidad de Antioquia (CEUA), Medellín, Antioquia, Colombia.

The total length of a specimen was measured in lateral view by summing the distances from the frons (antenna excluded) to the scutellum apex and from the scutellum apex to the abdomen apex. To study the internal characteristics of the male genitalia, the abdomen was cut off at the third tergite, placed into lactic acid (85%), and heated at 150° C on a Thermo Scientific Cimatec plate for approximately 1 hour. Genitalia were dissected and photographed in dehydrated glycerin using an excavated slide. After study, the pieces were stored in microvials containing glycerin. The wings were mounted on microslides in Canada balsam. The holotype specimens were deposited in their original collections. The microvial and microslide were pinned along with the respective specimen.

The morphological terminology follows Cumming & Wood (2017). The measurements (in millimeters) that refer to the head, antenna, and wing were made as proposed by Kehlmaier (2005), Marques et al. (2019) and Ramos-Pastrana et al. (2024): F, length of frons; EM, length of eye contiguity; V, length of vertex; LW/MWW, ratio between length and maximum width of the wing; LTC/LFC, ratio between length of third costal section by length of fourth costal section of the wing; LPP/WPP, ratio between length and maximum width of the postpedicel.

Photographs were taken with a Leica digital camera DFC450 coupled to a stereomicroscope Leica M205A and connected to a computer with Leica Application Suite software, with automatic mounting module (synchronization software) (<http://www.syncroscopy.com/syncroscopy/>). The distribution map showing the species' geographic records was plotted using the Simple Mapper software (Short-house 2010).

In the list of examined material, label data are given as presented on the labels. The square brackets ([]) are used to indicate complementary data that are not present in the specimen labels. Data for specimens with identical data were simplified with '*idem*' and only the data differing from the previous labels were written.

Results

Taxonomy

Clase Insecta Linnaeus, 1758

Order Diptera Linnaeus, 1758

Family Pipunculidae Walker, 1834

Subfamily Pipunculinae Walker, 1834

Tribe Tomosvaryellini Hardy, 1943

Genus *Dasydorylas* Skevington, 2001

***Dasydorylas* Skevington, 2001**

Dasydorylas Skevington 2001: 435. Type species *Pipunculus eucalypti* Perkins, 1905 (original designation); Rafael & Ale-Rocha 2004: figs 33–37; Földvári 2013: 23; Motamedinia et al. 2017; 2020; Ramos-Pastrana et al. 2024.

Eudorylas Rafael 1991: 156, figs 12–16, 37; 159, figs 21–28, 39 (partim).

Dorilas (*Eudorylas*) Hardy 1954: 21 figs 7a–b, 32 figs 14a–c (partim);

Dorilas Hardy 1943: 84, plate 6, figs 36a–b (partim).

Pipunculus Banks 1915: 169 (partim); Curran 1928: 43 (partim); Hardy 1943: 83 (partim); Aczél 1948: 28 (partim); 1952: 247 (partim); Arnau & Owen 1981 (Curran types) (partim).

***Dasydorylas spinifera* sp. n.**

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Figs 1–2

Material. Holotype ♂, COLOMBIA, Antioquia, Belmira, Páramo de Santa Inés, El Morro, Bosque, Red entomológica, 6°38'34.7"N, 75°40'03.4"W, 3005–3080 m[eters], 4.dic[XII]-14.dic[XII].2016, Proyecto moscas de las flores, A.L. Montoya, J. Torres-Toro, J.P. Carmona leg (1 m#, CEUA-101588) (photographed).

Paratypes 1♂ *idem* 3185–3200 m[eters], Páramo, 6°38'45.2"N, 75°40'13.6"W, 25.mar[III]-5.abr[IV].2017, A.L. Montoya, C. Rodriguez, J.P. Carmona leg (CEUA-101617); 1♂ *idem* Páramo, Trampa Malaise Dosel, 21-30.jun[VI].2017 (CEUA-101604). Holotype with right wing mounted on microslide in Canada balsam, left antenna and terminalia placed in a microvial with glycerin.

Diagnosis. Postpedicel with aristiform apex. Tergite 1–5 brown to dark brown, brown to dark brown pruinose, with distal margin blue pruinose dorsolaterally, interrupted medially. Both surstyli thickened basally and medially, thin apically, with inner margins slightly straight and outer margins curved or slightly curved and

apices acute inward-directed; both surstyli with apex rounded in lateral view. Phallic guide with apex hook-shaped, upper and lower margins curved, upward directed apically, with a tuft of small setae in apical region ventrally. Phallus trifid, thin, with ejaculatory ducts distinctly separated, one ejaculatory duct with two rows of spines.

Description. Male. (holotype). Body length 3.3 mm.

Head: (Figs 1A–B). Eyes contiguous for 17 facets. F, EM, V (mm) = 0.3, 0.4, 0.1. Frontal triangle dark brown, brown pruinose, with callus shiny dark brown. Occiput dark brown, gray pruinose ventrally, brown pruinose laterally and dorsally. Antenna (Fig. 1C) scape pedicel and postpedicel dark brown, scape with one seta dorsally, pedicel with four setae dorsally and two ventrally; postpedicel with aristiform apex. LPP/WPP = 7.

Thorax: (Figs 1A–B, D). Postpronotal lobe brown, gray-brown pruinose, with nine long setae along upper margin. Scutum dark brown, brown pruinose, with two brown pruinose spots anterolaterally; dorsocentral setae conspicuous. Notopleuron brown, brown pruinose. Scutellum dark brown, brown pruinose. Mesopleuron and mediotergite concolorous with notopleuron.

Wing: (Fig. 1E). Length 4.8 mm. LW/MWW = 3.2; LTC/LFC = 0.6. Membrane brown infuscated; vein M1 slightly curved upward. Halter stem and knob completely dark brown.

Legs: (Fig. 1A–B). Coxae, trochanters, femora and tibiae completely dark brown, brown pruinose, except femoro-tibial articulations brown; tarsomeres 1–4 brown, 5 dark brown; pulvilli yellowish brown.

Abdomen: (Figs 1A–B, F). Ground color velvety brown to dark brown, with conspicuous scattered setae; tergite 1–5 brown to dark brown, brown to dark brown pruinose, with distal margin blue pruinose dorsolaterally, interrupted medially; tergite 1 with five black and long setae laterally; tergites and sternites 6 and 7 as in Fig. 1G. Syntergosternite 8 dark brown, brown pruinose, slightly longer than tergite 5, with a membranous area apically (Fig. 1H).

Terminalia: (Figs 1G–M). Epandrium and surstyli brown (Fig. 1H). Surstyli (Figs 1H–J) subsymmetrical, slightly shorter than epandrium. Both surstyli thickened basally and medially, thin apically, with inner margins slightly straight and outer margins curved or slightly curved and apices acute inward-directed, right surstylus slightly thicker than left in dorsal view; left surstylus with upper and lower margins sinuous, right surstylus with upper margin straight and lower margins sinuous in lateral view; both surstyli with apex rounded in lateral view (Figs 1I–J). Gonopods asymmetrical, right gonopod slightly thicker than left (Fig. 1K). Phallic guide stout, with apex hook-shaped, upper and lower margins curved, upward directed apically, with a tuft of small setae in apical region ventrally (Fig. 1L). Ejaculatory apodeme parasol-shaped (Fig. 1M). Phallus trifid, thin, with ejaculatory ducts distinctly separated, one ejaculatory duct with two rows of spines (Figs 1L).

Female. Unknown.

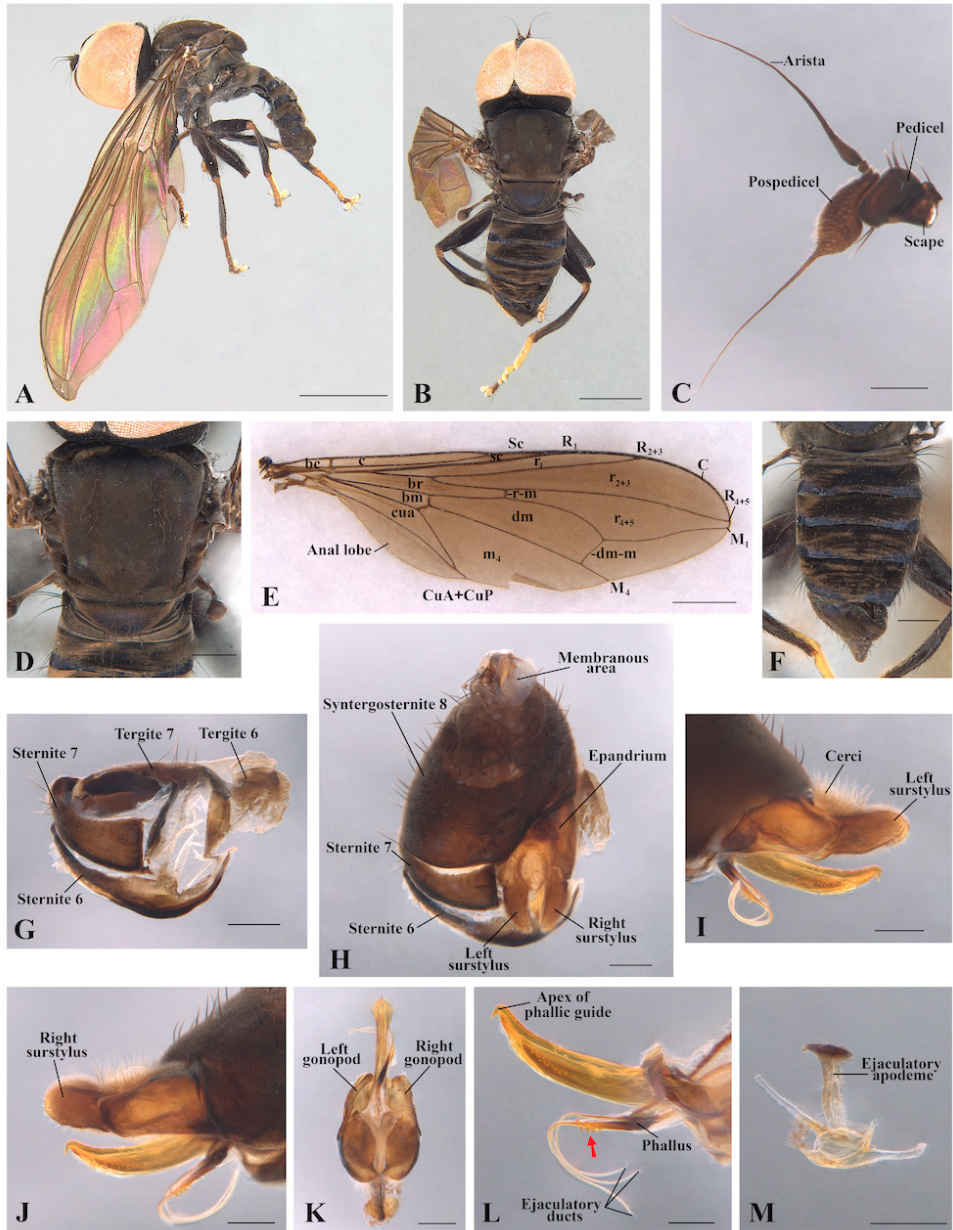


Figure 1. *Dasydorylas spinifera* sp. n. (CEUA-101588). Male. **A** – Habitus, left lateral view; **B** – Habitus, dorsal view, scale bar 0.5 mm; **C** – Antenna, scale bar 0.1 mm; **D** – Thorax, dorsal view, scale bar 0.2 mm; **E** – Wing, scale bar 1 mm; **F** – Abdomen, dorsal view, scale bar 0.2 mm; **G** – Tergites and sternites 6 and 7, ventral view, scale bar 0.2 mm; **H** – Terminalia, dorsal view, scale bar 0.1 mm; **I** – Left surstylus, lateral view, scale bar 0.1 mm; **J** – Right surstylus, lateral view, scale bar 0.1 mm; **K** – Hypandrium and gonopods, ventral view, scale bar 0.1 mm; **L** – Phallic guide and phallus, left lateral view, the red arrow indicates spines in the ejaculatory duct, scale bar 0.1 mm; **M** – Ejaculatory apodeme, scale bar 0.1 mm.

Differential diagnosis. *Dasydorylas spinifera* sp. n. is similar to *D. colombiensis* Ramos-Pastrana, Marques & Rafael, 2024, however, they are easily distinguishable by having tergite 1–5 with distal margin blue pruinose dorsolaterally (Figs 1A–B, F) [*versus* tergite 1–5 with distal margin gray pruinose dorsolaterally, figures 1–2, 6, in Ramos-Pastrana et al. (2024)]; both surstyli with apex rounded in lateral view (Figs 1I–J) [*versus* left surstylus with apex sinuous in lateral view, figure 9 in Ramos-Pastrana et al. (2024), right surstylus with apex truncated in lateral view, figure 10 in Ramos-Pastrana et al. (2024)]; phallic guide with upper and lower margins curved and a tuft of small setae in apical region ventrally (Fig. 1L) [*versus* phallic guide with upper margin sinuous and a tuft of small setae centrally, figure 12 in Ramos-Pastrana et al. (2024)]; phallus with ejaculatory ducts distinctly separated, one ejaculatory duct with two rows of spines (Figs 1L) [*versus* phallus with ejaculatory ducts distinctly separated only in distal quarter, all ejaculatory ducts without rows of spines, figure 12 in Ramos-Pastrana et al. (2024)].

Habitat. The specimen was collected in the Paramo Santa Inés, is characterized by having a unique floristic composition dominated by Colombian Oak (*Quercus humboldtii* Bonpl.), and isolated fragments of native vegetation at different successional stages, with the presence of *Chusquea* sp. (Poaceae), bryophytes, and abundant epiphytes such as bromeliads and orchids (Montoya et al. 2021).

Distribution. Colombia (Antioquia, Belmira) (Fig. 2).

Ethymology. From the Latin *spina* = spine. Refers to the spines in the ejaculatory ducts.

Key to males of the Neotropical species of *Dasydorylas* [adapted from Ramos-Pastrana et al. (2024)]

- 1 Postpedicel with acuminate apex [figure 29 in Ramos-Pastrana et al. (2024)]; vein M1 straight or almost straight [figure 31 in Ramos-Pastrana et al. (2024)] 2
- Postpedicel with aristiform apex [figures 3, 16, 42 in Ramos-Pastrana et al. (2024)]; vein M1 slightly to clearly upward curved [figures 5, 18, 44 in Ramos-Pastrana et al. (2024)] 7
- 2 Phallus bifid [figure 36 in Rafael (2004)] *D. vulcanus* Rafael, 2004
- Phallus trifid [figures 12, 25, 51 in Ramos-Pastrana et al. (2024)] 3
- 3 Both surstyli with bases slightly thicker than apices [figure 25 in Rafael (1991)]; third costal section slightly equal to length of fourth [figure 39 in Rafael (1991)] *D. regalis* (Rafael, 1991)
- Both surstyli with bases clearly thicker than apices [figure 34 Ramos-Pastrana et al. (2024)]; third costal section slightly longer than the length of fourth [figure 31 in Ramos-Pastrana et al. (2024)] 4
- 4 Left surstylus left-directed and right surstylus clearly down-directed, when seen in frontal view [figure 35c in Hardy (1943)] *D. cinctus* (Banks, 1915)

- Both surstyli slightly sideways-directed [figure 100 in Rafael (1995)] or clearly sideways-directed [figure 34 in Ramos-Pastrana et al. (2024)] 5
- 5 Phallic guide with a tuft of small setae dorsally [figure 101 in Rafael (1995)]; junction of ventral and frontal margin forming an angle of about 110 degrees [figure 101 in Rafael (1995)]; phallus trifid, with ejaculatory ducts not distinctly separated [figure 101 in Rafael (1995)] *D. nigripedes* (Hardy, 1954)
- Phallic guide without tuft of setae dorsally [figure 38 in Ramos-Pastrana et al. (2024)]; junction of ventral and frontal margin of phallic guide curved, not forming an angle [figure 38 in Ramos-Pastrana et al. (2024)]; phallus trifid, with ejaculatory ducts distinctly separated only in distal seventh [figure 38 in Ramos-Pastrana et al. (2024)] 6
- 6 Both surstyli thickened basally and medially, thin apically, with outer margins sinuous not forming an angle [figure 54 in Rafael (1995)]; phallic guide with dorsal margin curved upward in distal half [figure 54 in Rafael (1995)] *D. eremita* (Hardy, 1954)
- Both surstyli with basal half thickened, and distal half thin, with outer margin forming an angle [figure 34 in Ramos-Pastrana et al. (2024)]; phallic guide straight, slightly curved upward only in distal third [figure 38 in Ramos-Pastrana et al. (2024)] *D. nigellus* (Rafael, 1991)
- 7 Both surstyli more thickened medially than basally and apically, with inner margins sinuous [figure 47 in Ramos-Pastrana et al. (2024)]; phallic guide with upper margin straight and a tuft of small setae basally [figure 51 in Ramos-Pastrana et al. (2024)] *D. santainesensis* Ramos-Pastrana, Marques & Rafael, 2024
- Both surstyli thickened basally and medially, thin apically, with inner margins straight and outer margins curved [figures 8, 21 in Ramos-Pastrana et al. (2024)]; phallic guide with upper margin sinuous and a tuft of small setae centrally [figure 12 in Ramos-Pastrana et al. (2024)] or with stout and rigid lobe dorsally [figure 25 in Ramos-Pastrana et al. (2024)] 8
- 8 Left surstylus with rounded apex, right surstylus with truncated apex (Fig. 21); phallic guide with a stout and rigid lobe dorsally (Fig. 25); phallus trifid with ejaculatory ducts distinctly separated only in distal ninth *D. gibber* Ramos-Pastrana, Marques & Rafael, 2024
- Both surstyli with acute apex [Fig. 1H, figure 8 in Ramos-Pastrana et al. (2024)]; phallic guide with upper margins sinuous and a tuft of small setae centrally [figure 12 in Ramos-Pastrana et al. (2024)] or phallic guide with upper margin curved and a tuft of small setae in apical region ventrally (Fig. 1L) 9
- 9 Left surstylus with apex sinuous in lateral view [figure 9 in Ramos-Pastrana et al. (2024)], right surstylus with apex truncated in lateral view [figure 10 in Ramos-Pastrana et al. (2024)]; phallic guide with upper margin sinuous and a tuft of small setae centrally [figure 12 in Ramos-Pastrana et al.

- (2024)]; phallus with ejaculatory ducts distinctly separated only in distal quarter, all ejaculatory ducts without rows of spines.....
.....*D. colombiensis* Ramos-Pastrana, Marques & Rafael, 2024
- Both surstyli with apex rounded in lateral view (Figs 1I–J); phallic guide with upper and lower margins curved and a tuft of small setae in apical region ventrally (Fig. 1L); phallus with ejaculatory ducts distinctly separated, one ejaculatory duct with two rows of spines (Fig. 1L).....
.....*D. spinifera* sp. n.

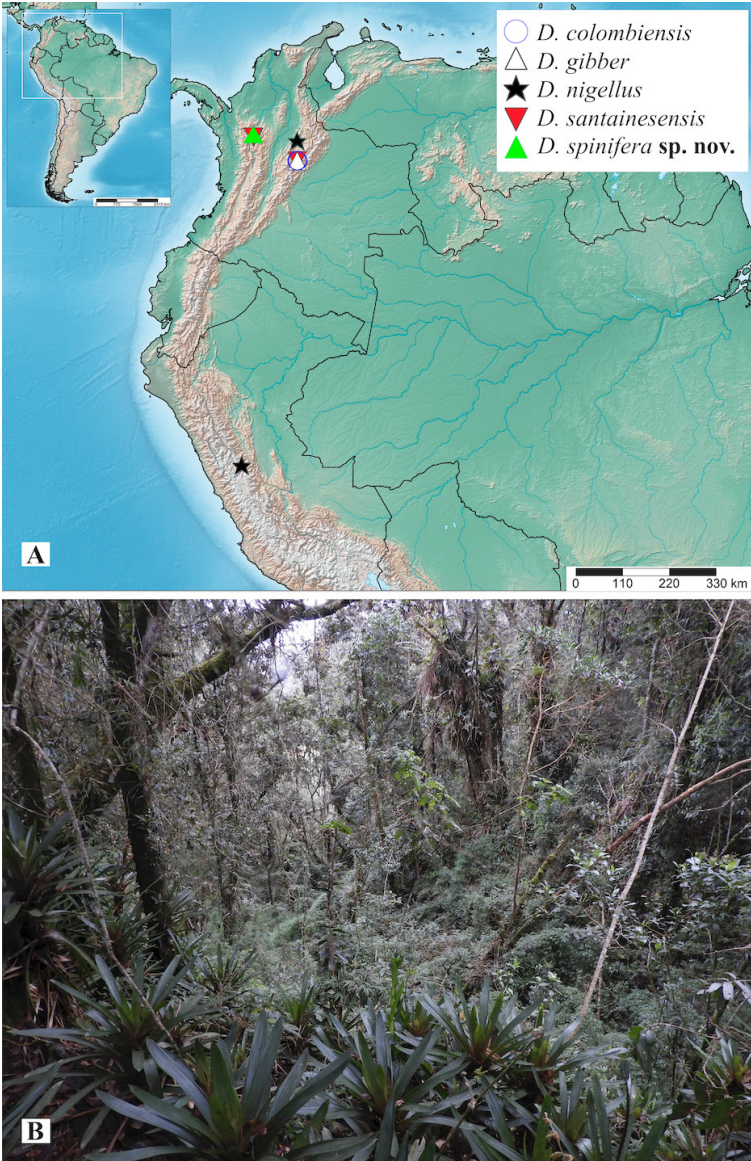


Figure 2. A – Geographical records of *Dasydorylas* species in Colombia; B – Habitat of *Dasydorylas spinifera* sp. n.

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