

## Description of *Culicoides lisicarruni* (Diptera: Ceratopogonidae), a new species from Cundinamarca, Colombia

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*A new species of Culicoides of the subgenus Diphomyia Vargas from high altitudes of the Andes in Colombia is described and photographed. The species is compared with its similar congener Culicoides marinkellei Wirth & Lee. Data on the collecting site and notes on the species daily activity are also provided.*

Key words: *Culicoides* - new species - taxonomy - daily activity - Páramo

Biting midges of the genus *Culicoides* Latreille are notorious blood-sucking pest of men and animals throughout the world (Wirth et al. 1988). Borkent and Spinelli (2007) recorded 266 from the Neotropical Region and nine species were subsequently described. Seventy of these species are miserable pests of humans and domestic animals and seven of them serve as vectors of a variety of diseases, summarized by Borkent and Spinelli (2007).

Spinelli et al. (2009) reviewed the genus for Colombia, listing 114 species that are known to occur and 66 suspected of being in the country. The purpose of this paper is to describe a new species of the subgenus *Diphomyia* Vargas recently collected at the high altitudes of the Chingaza National Natural Park.

### MATERIALS AND METHODS

Specimens were slide mounted in Canada balsam and photographed using a camera Kodak Easy Share C613.

Terms for structures follow those used in the Manual of Nearctic Diptera (McAlpine et al. 1981). Terms for wing veins follow the system in the Manual of Nearctic Diptera, with modifications proposed by Szadziwski (1996). Names of veins are in upper case and those cells in lower case. Pale areas in cell r<sub>3</sub> posterior to or immediately distal to second radial cell are called poststigmatic pale spots. Four abbreviated terms are used in the text: antennal ratio (AR) is the combined length of the five distal flagellomeres divided by the combined length of the eight proximal ones; palpal ratio (PR) is the length of the third palpal segment divided by its greatest width; proboscis/head ratio (P/H ratio) is the length of the proboscis measured from the distal end of the labrum-epipharynx to the anterior margin of the tormae, divided by the distance measured from the anterior margin of the tormae to the median hair socket between the eyes;

costal ratio (CR) is obtained by dividing the length of the costa by wing length, measuring both from the level of the basal arculus of the wing.

### RESULTS

*Culicoides lisicarruni* Moncada, Carrasquilla, Spinelli sp. nov. (Figs 1-4)

**Diagnosis** - The only species of the subgenus *Diphomyia* with sensilla coeloconica on flagellomeres 1, 9-13 and with two pale spots in cell cua<sub>1</sub>, the smaller abutting vein CuA<sub>1</sub>, while the largest is very narrowly separated from wing margin.

**Female - Head (Fig. 1):** dark brown. Eyes bare, interocular distance equal to diameter of two ommatidia. Flagellum brown, flagellomeres joints pale, flagellomeres 1-12 bottle-shaped, flagellomere 13 subcylindrical; AR 0.64-0.83 (0.72, n = 13). Sensilla coeloconica on flagellomeres 1, 9-13 (n = 10). On flagellomeres 1, 9 and 11 the following number of sensilla is found: flagellomere 1: two sensilla, flagellomeres 9 and 11, one sensillum, flagellomeres 10, 12, 13 variable, as follows: flagellomere 10 and 12: 1-2 sensilla, flagellomere 13: 2-4 sensilla (Fig. 2A). Palpus (Fig. 3) dark brown; third segment subcylindrical, slightly swollen distally with small, round, deep, apical sensory pit; PR 2.5-3.6 (3.09, n = 12); P/H 0.91-1.44 (1.01, n = 10). Mandible with 13-17 teeth (n = 9).

**Thorax:** scutum, scutellum dark brown. Legs dark brown, fore and midfemora with subapical pale rings, tibiae with subbasal pale rings; hind tibial comb with four spines, first, second spines from spur longest, subequal (Fig. 2B). Wing (Fig. 5) with contrasting pattern; length 1.40-1.70 (1.61, n = 11) mm; width 0.65-0.96 (0.72, n = 11) mm; CR 0.56; second radial cell in dark spot; one rounded pale spot lying just distal to r-m crossvein; r-m crossvein dark; two small, rounded poststigmatic pale spots in r<sub>3</sub> lying slightly obliquely, posterior one not attaining M<sub>1</sub>; one distal, transverse pale spot in r<sub>3</sub> not abutting wing margin nor M<sub>1</sub>; m<sub>2</sub> with four small pale spots, basal one lying adjacent to midportion of CuA stem, other behind pale spot situated posterior to medial fork, other in front to cubital fork, distal one very narrowly separated from wing margin; cua<sub>1</sub> with two pale spots, smaller abutting

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Fig. 1: *Culicoides lisicarruni* sp. n. head, dorsal view. Bar = 0,1 mm.

CuA<sub>1</sub>, posterior one very narrowly separated from wing margin; anal cell with two distal pale spots, basal indistinct pale area. Macrotrichia spread on distal 2/3, extending also to base of anal cell. Halter pale brown.

**Abdomen:** dark brown. Two ovoid, unequal spermathecae with sclerotized necks, measuring 63 by 42  $\mu$ m, 59 by 38  $\mu$ m (n = 11); rudimentary third spermathecae and sclerotized ring present (Fig. 2C).

**Male** - Unknown.

**Type locality** - Colombia, Cundinamarca, Chingaza National Natural Park, Monterredondo Station, edge of Babilonia River, 3200 masl.

**Type data and depository** - Holotype female, Colombia, Chingaza National Natural Park, Monterredondo Station, edge of Babilonia River, 3200 m, 26-II-2009, I. Lotta-R. Gutiérrez, human protected bait, Instituto de Ciencias Naturales (ICN). Paratypes five females, as follows: same data as type, four females (ICN); same data except 27-II-2009, I. Lotta-S. Mantilla, CDC CO<sub>2</sub> trap, 1 female (Museo de La Plata).

**Distribution** - The species is known only from the type-locality.

**Binomics** - Chingaza Natural National Park is a very extensive area. The maximum temperature at the high altitude area, the Páramo, ranges between 10°C-12°C,

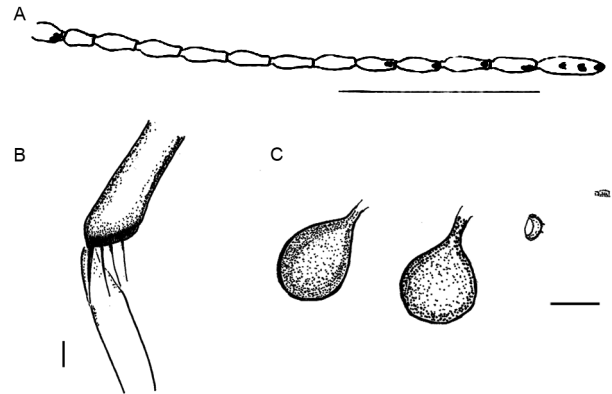


Fig. 2: *Culicoides lisicarruni* sp. n., lateral view. A: antenna. Bar=0.25 mm; B: hind tibial comb. Bar = 0.01 mm; C: spermathecae and sclerotized ring. Bar = 0.025 mm.

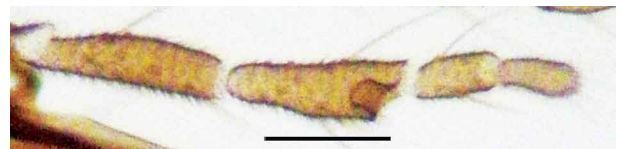


Fig. 3: *Culicoides lisicarruni* sp. n. palpus, dorsal view. Bar = 0.01 mm.



Fig. 4: *Culicoides lisicarruni* sp. n. wing, dorsal view. Bar = 0.25 mm.

while the minimum between -2°C-0°C. The dry season extends from November-March and the rainy one from April-October. *C. lisicarruni* shows two peaks of activity, one in the daybreak from 06:00-08:00 am and the other during the dusk from 05:00-06:00 pm. Some specimens were observed on a stone as a resting place near the stream where the specimens were collected. Species density was higher during the rainy season.

**Etymology** - The specific epithet was constructed on the basis of the initials of the first names of the people involved in the specimens collection.

**Taxonomic discussion** - Considering the new species herein described, the subgenus *Diphaomyia* Vargas includes 22 species, 11 Neotropical, nine nearctic and two from India (Borkent 2010). Two of the Nearctic species, *Culicoides edeni* Wirth & Blanton and *Culicoides haematopotus* Malloch reach the Neotropics arising to

14 the number of species inhabiting this biogeographic region, nine of which share the small rounded pale spot lying just distal to r-m crossvein. Of these, *Culicoides marinkellei* Wirth & Lee, a species also inhabiting the Colombian Páramo, exhibits a wing pattern almost identical to *C. lisicarruni*, except for the cell  $cua_1$  with only one rounded distal pale spot, lacking the small pale spot lying near the cubital fork.

The presence of two pale spots in cell  $cua_1$  readily distinguishes *C. lisicarruni* from the remaining species of the subgenus. The distribution of the sensilla coeloconica on flagellomeres 1, 9-13 is only shared by *Culicoides freitasi* Wirth & Blanton, but the wing of the later species shows, among other differences, the r-m crossvein entirely covered by a conspicuous rounded pale spot and the cell  $m_2$  with a pale spot contiguous to the proximal pale spot in cell  $m_1$ .

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