New Records of *Culicoides* Species (Diptera: Ceratopogonidae) for Bolivia

Author(s) :Cecilia A. Veggiani Aybar, María. J. Dantur Juri, Mercedes S. Lizarralde De Grosso, and Gustavo R. Spinelli

Source: Journal of the American Mosquito Control Association, 27(3):306-307. 2011.
Published By: The American Mosquito Control Association
DOI:
URL: http://www.bioone.org/doi/full/10.2987/10-6059.1

Journal of the American Mosquito Control Association, 27(3):306–307, 2011

SCIENTIFIC NOTE

NEW RECORDS OF *CULICOIDES* SPECIES (DIPTERA: CERATOPOGONIDAE) FOR BOLIVIA

CECILIA A. VEGGIANI AYBAR,[1] MARÍA J. DANTUR JURI,[1]
MERCEDES S. LIZARRALDE DE GROSSO[1] AND GUSTAVO R. SPINELLI[2]

ABSTRACT. *Culicoides debilipalpis*, *C. insignis*, *C. lahillei*, and *C. venezuelensis* are reported for the first time for Bolivia. The geographical distribution of *C. paraensis* extends to the Tarija Department.

KEY WORDS New records, *Culicoides*, Bolivia

Species in the genus *Culicoides* Latreille (Diptera: Ceratopogonidae) are small biting flies, commonly known as ''jejenes'' or ''polvorines'' in Argentina. Females are characterized by blood-sucking habits, feeding on vertebrate hosts, and can be significant vectors of pathogens (Spinelli and Wirth 1993, Ronderos et al. 2003). The importance of *Culicoides* in public health lies in the discomfort caused by their bites, which can cause immediate or delayed reactions such as allergic dermatitis, papules and pustules resulting from overinfection by scratching, to eczema, dequamation, and scars with alterations in skin pigmentation (Sherlock and Guitton 1965, Kettle 1995, Ronderos et al. 2003). *Culicoides* are also involved in the transmission of diseases of medical and veterinary importance such as filariasis, Oropouche virus, Bluetongue virus, Equine encephalosis virus, Epizootic hemorrhagic disease virus, African horse sickness virus, Akabane virus, and Eovine ephemeral fever virus (Linley et al. 1983, Spinelli and Wirth 1993, Mellor et al. 2000, Ronderos et al. 2003).

According to Borkent (2009), about 1,300 species of *Culicoides* have been described worldwide, with 266 recorded for the Neotropics (Borkent and Spinelli 2007) and 17 species described for Bolivia (Spinelli and Wirth 1984, 1993; Spinelli et al. 2009).

During a research project on the bioecological and parasitological aspects of *Anopheles* mosquitoes between the Argentinean and Bolivian border, several specimens of *Culicoides* were collected using Centers for Disease Control and Prevention light traps baited with carbon dioxide. In Bolivia, the traps were placed in the Pozo del Bermejo locality, Tarija Department (22°35′24″S, 64°26′30″W; 415 m) in December 2009. The locality belongs to the Yungas ecoregion and has a subtropical climate. Insects collected were preserved in 70% ethanol and mounted in phenol-balsam following Wirth and Marston (1968). Identification of the specimens was carried out using the keys by Wirth and Blanton (1959) and Spinelli et al. (2005). Voucher specimens were deposited in the collection of the Instituto-Fundación Miguel Lillo, Argentina.

The species identified were *Culicoides debilipalpis* Lutz (2 females and 1 male), *C. insignis* Lutz (103 females and 7 males), *C. lahillei* Lutz (3 females), and *C. venezuelensis* Ortiz and Mirsa (5 females).

Culicoides paraensis Goeldi, previously reported for Cochabamba and La Paz departments (Wirth and Felippe-Bauer 1989), was also found in this study in Tarija Department.

Of all the species recorded, *C. debilipalpis*, *C. lahillei*, and *C. paraensis* have been incriminated as vectors of filariasis caused by *Mansonella ozzardi* (Manson) in Argentina and Bolivia (Azogue and Paz 1993, Shelley and Coscaron 2001). Reports of *C. insignis* as the vector of Bluetongue virus in northeastern Argentina have been cited in the literature (Gorch et al. 2002, Ronderos et al. 2003).

The presence of these species is important not only because this contribution updates the *Culicoides* fauna in Bolivia and extends its geographical range, but also because of the importance it has for public and veterinary health.

We gratefully acknowledge Mario Zaidenberg, Federico Vianconi, Nery Vianconi, and Enrique Laci, Technicians of the National Coordination of Vectors Control, Argentinean Ministry of Health, for their invaluable support and collaboration during the collection of the specimens. This study was supported by National Agency of Scientific and Technological Promotion, National Council of Scientific and Technical Research (CONICET), and Research Council of The National University of Tucumán.

[1] Instituto Superior de Entomología ''Dr. Abraham Willink'', Facultad de Ciencias Naturales e Instituto Miguel Lillo, Universidad Nacional de Tucumán, Miguel Lillo 205, 4000 Tucumán, Argentina.

[2] Departamento Científico de Entomología, Museo de La Plata, Paseo del Bosque S/n, 1900 La Plata, Argentina.

REFERENCES CITED

Azogue E, Paz Z. 1993. Primer caso de microfilariasis de ocurrencia fatal en Santa Cruz, Bolivia. *Bol Cient CENETROP* 15:21–24.

Borkent A. 2009. *World species of biting midges (Diptera: Ceratopogonidae)* [Internet]. Salmon Arm, Canada: in association with the Royal British Columbia Museum, American Museum of Natural History, and Instituto Nacional de Biodiversidad [accessed November 27, 2009]. Available from: www.inhs.illinois.edu/research/FLYTREE/CeratopognidaeCatalog.pdf.

Borkent A, Spinelli GR. 2007. Neotropical Ceratopogonidae (Diptera: Insecta). In: Adis J, Arias JR, Rueda-Delgado G, Wnatzen KM, eds. *Aquatic biodiversity in Latin America.* Volume 4. Sofia, Bulgaria: Pensoft. p 1–198.

Gorch C, Vagnozzi A, Duffy S, Miquet J, Pacheco J, Bolondi A, Draghi G, Cetra B, Somi C, Ronderos M, Russo S, Ramirez V, Lager I. 2002. Lengua Azul: aislamiento y caracterización del virus e identificación de vectores en Noreste Argentino. *Rev Arg Microbiol* 34:150–156.

Kettle DS. 1995. Ceratopogonidae (biting midges). In: Kettle DS, ed. *Medical and veterinary entomology*. Cambridge, United Kingdom: CAB International. p 152–176.

Linley JR, Hoch AL, Pinheiro FP. 1983. Biting midges and human health. *J Med Entomol* 20:347–364.

Mellor PS, Boorman J, Baylis M. 2000. *Culicoides* biting midges: their role as arbovirus vectors. *Annu Rev Entomol* 45:307–340.

Ronderos MM, Spinelli GR, Lager I, Díaz F. 2003. La importancia sanitaria de los jejenes del género *Culicoides* (Diptera: Nematocera) en la Argentina. *Entomol Vector* 10:601–612.

Shelley AJ, Coscaron S. 2001. Simuliid blackflies (Diptera: Simuliidae) and ceratopogonid midges (Diptera: Ceratopogonidae) as vectors of *Mansonella ozzardi* (Nematoda: Onchocercidae) in northern Argentina. *Mem Inst Oswaldo Cruz* 96:451–458.

Sherlock IA, Guitton N. 1965. Dermatozoonosis by *Culicoides*' bite (Diptera: Ceratopogonidae) in Salvador, state of Bahia, Brazil. IV. A clinical study. *Mem Inst Oswaldo Cruz* 63:27–37.

Spinelli GR, Ronderos MM, Díaz F, Marino PI. 2005. The bloodsucking biting midges of Argentina (Diptera: Ceratopogonidae). *Mem Inst Oswaldo Cruz* 100:137–150.

Spinelli GR, Santamaría E, Cabrera OL, Ronderos MM, Suárez MF. 2009. Five new species of *Culicoides* Latreille described from Colombia, yielding a new species list and country records (Diptera: Ceratopogonidae). *Mem Inst Oswaldo Cruz* 104: 81–92.

Spinelli GR, Wirth WW. 1984. Ocho especies nuevas del género *Culicoides* Latreille de la region Neotropical. Primera descripción del macho de *C.* flinti Wirth y de la hembra de C. lenti Tavares y Luna Diaz (Diptera: Ceratopogonidae). *Rev Soc Entomol Argent* 43:171–185.

Spinelli GR, Wirth WW. 1993. Los Ceratopogonidae de la Argentina (Insecta: Diptera). In: Castellano Z, Coscarón S, eds. *Fauna de agua dulce de la República Argentina.* Volume 38. Buenos Aires, Argentina: Estudio Sigma S.R.L. p 1–124.

Wirth WW, Blanton FS. 1959. Biting midges of the genus *Culicoides* from Panamá (Diptera: Ceratopogonidae). *Proc U S Natl Mus* 109:237–482.

Wirth WW, Felippe-Bauer ML. 1989. The neotropical biting midges related to *Culicoides paraensis* (Diptera: Ceratopogonidae). *Mem Inst Oswaldo Cruz* 84:551–565.

Wirth WW, Marston N. 1968. A method for mounting small insects on microscope slides in Canada balsam. *Ann Entomol Soc Am* 61:783–784.