



New Records of Biting Midges of the Genus *Culicoides* (Diptera: Ceratopogonidae) from the Yungas, Paranaense Rainforest and Chaco Ecoregions of Argentina

Authors: Aybar, Cecilia A. Veggiani, Juri, María J. Dantur, Stein, Marina, Oria, Griselda, Ramírez, Patricia, et al.

Source: Florida Entomologist, 95(3) : 798-799

Published By: Florida Entomological Society

URL: <https://doi.org/10.1653/024.095.0338>

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

NEW RECORDS OF BITING MIDGES OF THE GENUS *CULICOIDES* (DIPTERA: CERATOPOGONIDAE) FROM THE YUNGAS, PARANAENSE RAINFOREST AND CHACO ECOREGIONS OF ARGENTINA

CECILIA A. VEGGIANI AYBAR^{1,*}, MARÍA J. DANTUR JURI^{1,2}, MARINA STEIN³, GRISELDA ORIA³, PATRICIA RAMÍREZ³, MERCEDES S. LIZARRALDE DE GROSSO¹ AND GUSTAVO R. SPINELLI⁴

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

²IAMRA, Universidad Nacional de Chilecito, 9 de Julio N° 22, CP F5360CKB, Chilecito, La Rioja, Argentina

³Área Entomología, Instituto de Medicina Regional, Universidad Nacional del Nordeste, Avenida Las Heras 727, CP 3500, Resistencia, Chaco, Argentina

⁴División de Entomología, Museo de La Plata, Paseo del Bosque s/n°, CP 1900, La Plata, Buenos Aires, Argentina

Corresponding author; E-mail: ceciliaveggiani@gmail.com

The genus *Culicoides* includes 1,322 extant species distributed worldwide, with at least 266 species recorded from the Neotropical Region (Borkent 2012; Borkent & Spinelli 2007). In Argentina, 51 species have been recorded 21 of which were from the northeastern region (Spinelli et al. 2005) and 10 species for the northwestern region of this country (Spinelli & Wirth 1993; Veggiani Aybar et al. 2010).

The public health importance of *Culicoides* species includes painful discomfort and lesions caused by their bites, but also their role as vectors of diseases. Some species transmit filarial nematodes, whereas others vector several economically important viral diseases such as Oropouche, blue-tongue, equine encephalitis, epizootic hemorrhagic disease, African horse sickness, Akabane and bovine ephemeral fever (Mellor et al. 2000; Ronderos et al. 2003).

We provide new records of several species *Culicoides* from the northwestern and northeastern regions of Argentina, in Salta, Tucumán and Misiones provinces.

Specimens were collected during the early stages of 2 research projects on bioecological aspects of *Anopheles* from Aguas Blancas, El Oculito and San Ramón de la Nueva Orán (Salta), Yánima (Tucumán), Pampa del Indio (Chaco) and Puerto Iguazú (Misiones). All specimens were collected with CDC light traps baited with carbon dioxide and operated from early dusk until the following morning (16:00 to 08:00 h).

Specimens were preserved in 70% ethanol, subsequently dissected and slide-mounted in Canada balsam using the techniques described by Wirth & Marston (1968), and identified by comparing them with slide-mounted specimens, photographs of female wings in the Neotropical Wing Atlas (Wirth et al. 1988) as well as descriptions and illustrations in other publications (i. e., Wirth & Blanton 1959; Spinelli et al. 2005).

Voucher specimens were deposited in the entomological collections at Instituto-Fundación Miguel Lillo (IMLA) and Instituto de Medicina Regional (Universidad Nacional del Nordeste) and Museo de La Plata (MLPA).

The following species are reported for the first time for Salta, Tucumán and Misiones provinces:

Culicoides (Culicoides) insignis Lutz: SALTA: Aguas Blancas (S 22° 43' W 64° 22'), III-2003, X-2004, 3 females; San Ramón de la Nueva Orán (S 23° 08' W 64° 20'), III-2004, VIII-2004, IX-2004, 15 females, 4 males, Yungas Ecoregion.

Culicoides (C.) guttatus Coquillett: SALTA: San Ramón de la Nueva Orán (S 23° 08' W 64° 20'), X-2004, 5 females, 1 male. TUCUMÁN: Yánima (S 27° 39' W 65° 40'), XI-2010, 10 females, Yungas Ecoregion.

Culicoides (C.) venezuelensis Ortiz & Mirsa: SALTA: Aguas Blancas (S 22° 43' W 64° 22'), X-2004, 1 female; El Oculito (S 23° 06' W 64° 30'), XII-2003, 1 female; San Ramón de la Nueva Orán (S 23° 08' W 64° 20'), I-2003, VIII-2003, 3 females, 1 male; Yungas Ecoregion.

Culicoides (C.) austroparaensis Spinelli: MISIONES: Puerto Iguazú (S 25° 40' W 54° 33'), II-2010, 1 female, Paranaense Rainforest Ecoregion.

Culicoides (C.) biestroi Spinelli and Ronderos: MISIONES: Puerto Iguazú (S 25° 37' W 54° 35'), XII-2009, I-2010, 5 females; Paranaense Rainforest Ecoregion.

Culicoides (C.) fernandoi Tavares & Souza: MISIONES: Puerto Iguazú (S 25° 40' W 54° 33'), II-2010, 2 females, Paranaense Rainforest Ecoregion.

Culicoides (C.) foxi Ortiz: MISIONES: Puerto Iguazú (S 25° 40' W 54° 33'), XII-2009, II-2010, 17 females, 3 males, Paranaense Rainforest Ecoregion.

The following species are recorded for the first time from other localities in Chaco and Misiones provinces, thus extending their geographical distribution.

Culicoides (C.) lahillei Iches: CHACO: Pampa del Indio (S 26° 08' W 59° 58'), X-2009, I-2010, III-2010, 5 females, Chaco Ecoregion.

Culicoides (C.) brasilianum Forattini: MISIONES: Puerto Iguazú (S 25° 40' W 54° 33'), II-2010, 1 female, Paranaense Rainforest Ecoregion.

Culicoides (C.) dureti Ronderos & Spinelli: MISIONES: Puerto Iguazú (S 25° 40' S W 54° 33'), II-2010, 1 female, Paranaense Rainforest Ecoregion.

Culicoides (Hoffmania) pseudoheliconiae Felipe-Bauer: MISIONES: Puerto Iguazú (S 25° 40' W 54° 33'), II-2010, 2 females, Paranaense Rainforest Ecoregion.

Of the recorded species, *C. insignis*, *C. lahillei* and *C. venezuelensis* are the only species recognized as important vectors of human and veterinary diseases. Reports of *C. insignis* as a vector of the bluetongue in northeastern Argentina have been cited in the literature (Gorch et al. 2002; Ronderos et al. 2003). Perruolo (2009) reported that *C. venezuelensis* was also attracted to cattle; and, therefore, it may be considered a potential vector of diseases transmitted to these ruminants. *Culicoides insignis* and *C. venezuelensis* were previously recorded in the Salto Grande area between Argentina and Uruguay (Spinelli & Ronderos 1991), in the Yacyretá area between Argentina and Paraguay (Ronderos et al. 2003), and recently in Tucumán province in northwestern Argentina (Veggiani Aybar et al. 2010). Finally, *C. lahillei* is considered the primary vector of filariasis caused by *Mansonella ozzardi* (Shelley & Coscaron 2001). This disease is endemic to the Yungas or Subtropical Mountainous Rainforest (Biglieri & Araoz 1915; Mühlens et al. 1925; Romaña & Wygodzinsky 1950; Taranto & Castelli 1988; Shelley & Coscaron 2001).

SUMMARY

Culicoides insignis and *C. venezuelensis* are documented for the first time from Salta province, *C. guttatus* from Salta and Tucumán provinces, and *C. austroparaensis*, *C. biestroi*, *C. fernandoi*, and *C. foxi* from Misiones province. The geographical distributions of *C. lahillei*, *C. brasilianum*, *C. dureti* and *C. pseudoheliconiae* are extended to Chaco and Misiones provinces.

ACKNOWLEDGMENTS

We thank the Chief and Technicians of Coordinación Nacional de Control de Vectores, Ministerio de Salud de la Nación, for their invaluable collaboration during field work.

REFERENCES CITED

BIGLIERI, R., AND ARAOZ, J. M. 1915. Casos de Microfilaria observados por primera vez en Tucumán. Dpto Nac. Hig., Direc. Reg. Defensa Antipalúdica. 2: 1-22.

- BORKENT, A. 2012. World species of Biting Midges (Diptera: Ceratopogonidae) <http://inhs.illinois.edu/research/FLYTREE/CeratopogonidaeCatalog.pdf> (accessed online Feb 2012).
- BORKENT, A., AND SPINELLI, G. R. 2007. Neotropical Ceratopogonidae (Diptera: Insecta), pp. 1-198 In J. Adis, J. R. Arias, G. Rueda-Delgado and K. M. Wnatz, [eds.], Aquatic biodiversity in Latin America. Pensoft, Sofia, Moscow.
- GORCH, C., VAGNOTI, A., DUFFY, S., MIQUET, J., PACHECO, I., BOLONDI, A., DRAGHI, C. I., CETRA, B., SONI, C., RONDEROS, M., RUSSO, S., RAMIREZ, V., AND LAGER, L. 2002. Bluetongue: isolation and characterization of the virus and identification of vectors in Northeastern Argentina. Rev. Argent. Microbiol. 34: 150-6
- MELLOR, P. S., BOORMAN, J., AND BAYLIS, M. 2000. *Culicoides* biting midges: their role as arbovirus vectors. Annu. Rev. Entomol. 45: 307-340.
- MÜHLENS, P., DIOS, R. L., PETROCCHI, S., AND ZUCCARINI, J. A. 1925. Las Filariosis Argentinas. La microfilaria humana. Rev. Inst. Bact. Dpto. Nac. Hig. 4: 324-336.
- PERRUOLO, G. J. 2009. Clave de las especies de *Culicoides* (Diptera: Ceratopogonidae) asociadas con la ganadería en la región Neotropical. Rev. Cient. 19: 124-133.
- REMONDEGUL, C., ZAFOROV, G., RIPIO, C., ARCE DE HAMITY, M., NEDER DE ROMAN, L., AND ESQUIVEL, O. 1988. *Mansonella ozzardi*: Estudio Clínico Epidemiológico de un foco endémico en la provincia de Jujuy. Act. Infectología 4: 3-13.
- ROMAÑA, C., AND WYGODZINSKY, P. 1950. Acerca de la Transmisión de *Mansonella ozzardi* (Manson). An. Inst. Med. Reg. 3: 29-34.
- RONDEROS, M. M., SPINELLI, G. R., LAGER, I., AND DÍAZ, F. 2003. La importancia sanitaria de los jejenes del género *Culicoides* (Diptera: Nematocera) en la Argentina. Entomol. Vect. 10: 601-612.
- SHELLEY, A. J., AND 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.
- SPINELLI, G. R., AND RONDEROS, M. M. 1991. Los polvorines del género *Culicoides* en áreas de influencia de la represa de Salto Grande (Diptera: Ceratopogonidae). Neotrópica 37: 83-94.
- SPINELLI, G. R., RONDEROS, M. M., AND DIAZ, F. 2005. The bloodsucking biting midges of Argentina (Diptera: Ceratopogonidae). Mem. Inst. Oswaldo Cruz 100: 137-150.
- TARANTO, N. J., AND CASTELLI, E. 1988. Detección de un foco de microfilariasis en el noroeste argentino. Rev. Argent. Microbiol. 20: 49-51.
- VEGGIANI AYBAR, C. A., DANTUR JURI, M. J., LIZARRALDE DE GROSSO, M. S., AND SPINELLI, G. R. 2010. Species diversity and seasonal abundance of *Culicoides* biting midges in northwestern Argentina. Med. Vet. Entomol. 24: 95-98.
- WIRTH, W. W., AND BLANTON, F. S. 1959. Biting midges of the genus *Culicoides* from Panamá (Diptera: Ceratopogonidae). Proc. US. Natl. Mus. 109: 237-482.
- WIRTH, W. W., AND MARSTON, N. 1968. A method for mounting small insects on microscope slides in Canada balsam. Ann. Entomol. Soc. Am. 61: 783-784.
- WIRTH, W. W., DYCE, A. L., AND SPINELLI, G. R. 1988. An Atlas of wing photographs, with a summary of the numerical characters of the Neotropical species of *Culicoides* (Diptera: Ceratopogonidae). Contrib. Amer. Entomol. Inst. 25: 1-72.