

New records of mosquito species (Diptera: Culicidae) from Catamarca and Santa Fe provinces, Argentina

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Nuevos registros de especies de mosquitos (Diptera: Culicidae) en las provincias de Catamarca y Santa Fe, Argentina.

RESUMEN. Se extiende la distribución geográfica de *Culex acharistus*, *C. bidens*, *C. chidesteri*, *C. dolosus*, *C. interfor*, *C. maxi*, *C. saltanensis* y *Ochlerotatus scapularis*, incrementando el número de especies de mosquitos citadas de las provincias de Catamarca, de 14 a 20, y de Santa Fe, de 57 a 59.

PALABRAS CLAVE. *Culex*. *Ochlerotatus*. Distribución. Diversidad.

ABSTRACT. The geographical distribution of *Culex acharistus*, *C. bidens*, *C. chidesteri*, *C. dolosus*, *C. interfor*, *C. maxi*, *C. saltanensis* and *Ochlerotatus scapularis* is extended, increasing the number of mosquito species in the provinces of Catamarca, from 14 to 20, and Santa Fe, from 57 to 59.

KEY WORDS. *Culex*. *Ochlerotatus*. Distribution. Diversity.

The knowledge about mosquito species distribution in a country is of great importance in order to determine areas of potential risk of pathogen transmission. The last contribution that summarizes the composition and distribution of mosquito fauna in Argentina belongs to Campos & Maciá (1998). Since then, other publications followed with reports of new records for the country or expanding the distribution of some species, such as Visintin *et al.* (2009, 2010), Campos (2011), Diez *et al.* (2011), Rossi & Vezzani (2011), Dantur Juri *et al.* (2012), Grech *et al.* (2012) and Stein *et al.* (2012). The present contribution updates the mosquito fauna list of Argentina increasing the number of species in Catamarca and Santa Fe provinces from 14 to 20 and 57 to 59 respectively.

Specimens were collected as a part of two entomological surveillance projects carried out in Catamarca and Santa Fe provinces. Immature stages, fourth-instar larvae and pupae, were collected with a 300 ml dipper in Catamarca Province, while adults were collected in Santa Fe Province with Centers for Disease Control and Prevention light traps baited with CO₂. Larvae were individually reared to obtain larval and pupal exuviae associated with the respective adult. Species identification, particularly of representatives of the genus *Culex* L., was based on male genitalia dissections as well as keys (Darsie, 1985; Forattini, 2002), re-descriptions (Almirón & Harbach, 1996; Laurito *et al.*, 2008, 2009) and subsequent taxonomic works for some species (Harbach *et al.*, 1986).

The abbreviations of life stages and other terms used are as follows: larval exuviae (Le), pupal exuviae (Pe), male genitalia (MG), female (F), male (M), the person who determined the species (det.) and the collector (coll.). Information on collection locality (using a Garmin GPS, 60CSx) and date, phytogeographical region (taken from Cabrera 1976), climate and breeding sites is summarized as follows: Site 1: Catamarca Province: Ambato department, La Puerta locality, 28° 11' 1.7" S - 65° 48' 40.7" W, 1099 m.a.s.l., December 2012, semiarid Chaco phytogeographical province, arid climate of the hills and plains, immature stages were collected in a permanent natural pool originated by rainfalls or overflowing, between rocks; Site 2: Catamarca Province: Capayán department, S.F. del Valle de Catamarca city, 28° 24' 42.9" S - 65° 43' 9.8" W, 560 m.a.s.l., December 2012, arid Chaco phytogeographical region, arid climate of the hills and plains, immature stages were collected in a temporary flooded depression, near the road; Site 3: Santa Fe Province: Capital department, Santa Fe city, 31° 35' 56" S - 60° 40' 59" W, 15 m.a.s.l., November 2009, Pampean phytogeographical province, temperate climate, residential neighborhood; Site 4: Santa Fe Province: Capital department, Santa Fe city, 31° 38' 10" S - 60° 40' 21" W, 20 m.a.s.l., April 2010, Pampean phytogeographical province, temperate climate, Universidad Nacional del Litoral ecological reserve. Besides, the number of examined and deposited individuals, stage and sex of the collected specimens, collectors and current distribution are included for each species. Collected material is mounted as follows: adults in cardboard triangles with steel pin support and immature stages and genitalia structures in Canada balsam as microscopic preparations. These voucher specimens are deposited in the entomological collection of the Centro de Investigaciones Entomológicas de Córdoba, Universidad Nacional de Córdoba, Argentina.

Culex Linneus

Culex (Culex) acharistus Root. Site 1; Laurito, Lorenzo & Visintin coll. 1 Pe, 1 M, 1 MG; Laurito det. Current distribution in Argentina: Buenos Aires, Catamarca (new record), Chubut, Córdoba, Corrientes, Jujuy, Neuquén, Río Negro and Tucumán provinces.

Culex (Culex) bidens Dyar. Site 1; Laurito, Lorenzo & Visintin coll. 1 Pe, 1 M, 1 MG; Almirón & Laurito det. Current distribution in Argentina: Buenos Aires, Catamarca (new record), Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Rioja, Misiones, Salta, Santa Fe and Tucumán provinces.

Culex (Culex) chidesteri Dyar. Sites 3 and 4; Berrón & Diez coll.; 5 M, 5 MG; Laurito det. Current distribution in Argentina: Buenos Aires, Catamarca, Chaco, Córdoba, Corrientes, Entre Ríos, Misiones, Salta, San Juan, Santa Fe (new record) and Tucumán provinces.

Culex (Culex) dolosus (Lynch Arribáizaga). Site 3; Berrón & Diez coll.; 2 M, 2 MG; Laurito det. Current distribution in Argentina: Buenos Aires, Córdoba, Corrientes, Entre Ríos, La Pampa, La Rioja, Mendoza, Misiones, Neuquén, Río Negro, Santa Fe (new record) and Tucumán provinces.

Culex (Culex) interfor Dyar. Site 1; Laurito, Lorenzo & Visintin coll.; 2 Le, 5 Pe, 5 M, 5 MG; Almirón & Laurito det. Current distribution in Argentina: Buenos Aires, Catamarca (new record), Chaco, Córdoba, Corrientes, Entre Ríos, La Pampa, La Rioja, San Luis, Santa Fe and Tucumán provinces

Culex (Culex) maxi Dyar. Site 1; Laurito, Lorenzo & Visintin coll.; 4 Pe, 4 M, 4 MG; Laurito det. Current distribution in Argentina: Buenos Aires, Catamarca (new record), Chaco, Córdoba, Corrientes, Entre Ríos, Jujuy, La Pampa, La Rioja, Misiones, Salta, Santa Fe, Santiago del Estero and Tucumán provinces.

Culex (Culex) saltanensis Dyar. Sites 1 and 2; Laurito, Lorenzo & Visintin coll.; 4 Le, 5 Pe, 2 F, 5 M, 5 MG; Laurito det. Current distribution in Argentina: Catamarca (new record), Chaco, Córdoba, Corrientes, Formosa, La Pampa, La Rioja, Misiones, Salta, San Juan, Santa Fe, Santiago del Estero and Tucumán provinces.

Ochlerotatus Lynch Arribáizaga

Ochlerotatus (Ochlerotatus) scapularis (Rondani). Site 2; Laurito, Lorenzo & Visintin coll. 2 F, 2 M; Laurito & Visintin det. Current distribution in Argentina: Buenos Aires, Catamarca (new record), Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, Mendoza, Misiones, Río Negro, Salta, Santa Fe, Santiago del Estero Tierra del Fuego and Tucumán provinces.

AKNOWLEDGEMENTS

ML and WRA are members of the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).

LITERATURE CITED

- ALMIRÓN, W. R. & R. E. HARBACH. 1996. Taxonomy and biology of *Culex (Culex) maxi* Dyar (Diptera: Culicidae) in South America. *Memórias do Instituto Oswaldo Cruz* 91 (5): 579-588.
- CABRERA, A. L. 1976. Regiones fitogeográficas argentinas. *Enciclopedia Argentina de Agricultura y Jardinería* 2: 1-85.
- CAMPOS, R. E. 2011. Expanding the distribution of two species of mosquitoes (Diptera: Culicidae) in Argentina and notes on their bionomics. *Revista de la Sociedad Entomológica Argentina* 70 (3-4): 379-381.
- CAMPOS, R. E. & A. MACIÁ. 1998. Culicidae. In: Morrone J. J. & S. Coscarón (eds.), *Biodiversidad de Artrópodos Argentinos. Una Aproximación Biotaxonómica*, Ediciones Sur, La Plata, pp. 291-303.
- DANTUR JURI, M. J., M. STEIN, G. C. ROSSI, J. C. NAVARRO, M. ZAIDENBERG & M. A. MUREB SALLUM. 2012. New records of mosquitoes from Northwestern Argentina. *Journal of the American Mosquito Control Association* 28 (2): 111-113.
- DARSIE, R. F. Jr. 1985. The mosquitoes of Argentina: Part I. Keys for identification of adult females and fourth stage larvae in English and Spanish (Diptera: Culicidae). *Mosquito Systematics* 17: 153-253.
- DIEZ, F., V. J. BRESER, E. M. QUIRÁN & G. C. ROSSI. 2011. Nuevos registros de mosquitos (Diptera: Culicidae) en la provincia de La Pampa, Argentina. *Revista de la Sociedad Entomológica Argentina* 70 (3-4): 347-349.
- FORATTINI, P. O. 2002. *Culicidología Médica*. Editora da Universidade de São Paulo, São Paulo.
- GRECH, M., A. M. VISINTIN, M. LAURITO, E. L. ESTALLO, P. R. LORENZO, I. ROCCIA, M. KORIN, F. GOYA, F. F. LUDUENA-ALMEIDA & W. R. ALMIRÓN. 2012. New records of mosquito species (Diptera: Culicidae) from Neuquén and La Rioja provinces, Argentina. *Revista de Saúde Pública* 46 (2): 387-389.
- HARBACH, R. E., W. L. JAKOB & E. L. PEYTON. 1986. Recognition of *Culex bidens* Dyar and *Culex interfor* Dyar (Diptera: Culicidae) as separate species. *Mosquito Systematics* 18 (2): 139-144.
- LAURITO, M., A. M. VISINTIN & W. R. ALMIRÓN. 2008. *Culex (Culex) saltanensis* Dyar (Diptera: Culicidae) morphological redescription of immature and adult stages. *Journal of the American Mosquito Control Association* 24 (2): 203-210.
- LAURITO, M., W. R. ALMIRÓN & G. C. ROSSI. 2009. Morphological redescription of immature and adult stages of *Culex (Culex) acharistus* Root (Diptera: Culicidae). *Zootaxa* 2263: 21-30.
- ROSSI, G. C. & D. VEZZANI. 2011. An update of mosquitoes of Argentine Patagonia with new distribution records. *Journal of the American Mosquito Control Association* 27 (2): 93-98.
- STEIN, M., C. B. HOYOS, G. I. ORIA, D. BANGHER, D. WEINBERG & W. R. ALMIRÓN. 2012. New records of mosquito species in the provinces of Chaco and Formosa, Argentina. *Journal of the American Mosquito Control Association* 28 (4): 307-308.
- VISINTIN, A. M., M. LAURITO, L. A. DÍAZ, G. MUSICANT, C. CANO, R. RAMIREZ & W. R. ALMIRÓN. 2009. New records for mosquito species (Diptera: Culicidae) for Central and Cuyo regions in Argentina. *Journal of the American Mosquito Control Association* 25 (2): 208-209.
- VISINTIN, A. M., M. LAURITO, M. STEIN, P. RAMIREZ, G. MOLINA, P. R. LORENZO & W. R. ALMIRÓN. 2010. Two new mosquito species and six new provincial records in Argentina. *Journal of the American Mosquito Control Association* 26 (1): 91-94.