

Update of the geographical distribution and new records of the fauna of Culicidae (Diptera) of northwestern Argentina

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Actualización de la distribución geográfica y nuevos registros de la fauna de Culicidae (Diptera) del Noroeste Argentino

RESUMEN. Se amplía el conocimiento sobre la distribución geográfica de *Aedes patersoni* Shanon y Del Ponte, *Ae. scapularis* (Rondani), *Culex dolosus* (Lynch Arribáizaga), *Mansonia indubitans* Dyar y Shannon, *Psorophora cingulata* (Fabricius), *Toxorhynchites haemorrhoidalis separatus* (Lynch Arribáizaga), *Tx. purpureus* (Theobald), *Tx. theobaldi* s. l. Dyar & Knab y *Uranotaenia lowii* Theobald en el Noroeste de Argentina. Asimismo, brindan las primeras localidades conocidas para *Ma. indubitans* en la provincia de Salta y para *Ae. serratus* (Theobald), *Ma. titillans* (Walker) y *Ps. ciliata* (Fabricius) en la provincia de Jujuy. Se discute sobre la presencia de *Ae. fulvithorax* (Lutz) en la provincia de Salta, de *Ps. pallescens* Edwards en la provincia de Jujuy, de *Ur. pulcherrima* Lynch Arribáizaga en Santiago del Estero y de *Anopheles pictipennis* (Philippi) en Argentina. Esta contribución actualiza la lista de mosquitos para las provincias del noroeste argentino, incrementando su número en Jujuy, La Rioja, Salta, Santiago del Estero y Tucumán a 68, 26, 102, 29 y 70 especies, respectivamente. Adicionalmente, se aporta información sobre el hábitat en el que se recolectaron y la importancia sanitaria de las especies mencionadas, así como una lista completa de las especies presentes en las provincias del noroeste argentino.

PALABRAS CLAVE. Distribución. Diversidad de mosquitos. Región Chaqueña. Región del Monte. Región de las Yungas.

ABSTRACT. The knowledge about the geographical distribution of *Aedes patersoni* Shannon and Del Ponte, *Ae. scapularis* (Rondani), *Culex dolosus* (Lynch Arribáizaga), *Mansonia indubitans* Dyar and Shannon, *Psorophora cingulata* (Fabricius), *Toxorhynchites haemorrhoidalis separatus* (Lynch Arribáizaga), *Tx. purpureus* (Theobald), *Tx. theobaldi* s. l. Dyar & Knab and *Uranotaenia lowii* Theobald in the Northwest of Argentina is extended. Likewise, they provided the first known localities for *Ma. indubitans* in the province of Salta and for *Ae. serratus* (Theobald), *Ma. titillans* (Walker) and *Ps. ciliata* (Fabricius) in the province of Jujuy. The presence of *Ae. fulvithorax* (Lutz), *Ps. pallescens* Edwards in Jujuy, *Ur. pulcherrima* Lynch Arribáizaga in Santiago del Estero and *Anopheles pictipennis* (Philippi) in Argentina, is discussed. This contribution updates the list of mosquitoes for the northwestern provinces of Argentina, increasing their numbers of species in Jujuy, La Rioja, Salta, Santiago del Estero and Tucumán to 68, 26, 102, 29 and 70 species, respectively. Additionally, information on the habitat of immature stages and the sanitary importance of the species mentioned is provided, as well as a complete list of the species present in the northwestern provinces of Argentina.

KEYWORDS. Distribution. Mosquito richness. Chaco region. Monte region. Yungas region.

The Northwest of Argentina (NWA) is a vast region composed by Catamarca, Jujuy, Salta, Santiago del Estero and Tucumán provinces, covering an area of 559,864 km² (Instituto Geográfico Militar, 2021). Its mountainous relief to the west and plains to the east, plus the marked altitudinal gradient, between other factors, allow the existence of six phytogeographic regions: Chaco, High Andean, Monte, Prepuna, Puna and Yungas (Cabrera, 1976), which provides a variety of environments that present a great biodiversity. The NWA has been the scene of epidemics of mosquito-borne diseases, with several studies related to its diversity focused in the area during the first half of the 20th century (Linares et al., 2011). Subsequent re-emerging diseases such as dengue and the outbreaks and spread of Saint Louis encephalitis during the last two decades (Almirón, 2010; Contigiani, 2010) have motivated the continuity and expansion of mosquito studies in the NWA.

Knowledge of mosquito geographic distribution, both within a country and continental, is of great importance to identify areas of potential risk in the transmission of pathogens and to implement management programs. Thus, several studies that integrated the existing information have been carried out by Mitchell & Darsie (1985), Campos & Maciá (1998) and Rossi (2015). Later Linares et al. (2016), Veggiani Aybar & Rossi (2017), Stein et al. (2018) and Dantur Juri et al. (2020), updated the list of species for different provinces of Argentina, including those of the NWA. Stein et al. (2018) cited the presence of 246 mosquito species in Argentina, of which 125 are present in the NWA.

Mitchell & Darsie (1985) carried out an exhaustive bibliographic review from which they provided the first list that grouped all the mosquito species known in Argentina at that moment. Despite the depth of their work, the bibliography has been found with citations of species that were not included, those that were maintained until the present, and were not corrected by subsequent reviewers such as Rossi (2015). In addition, for several species,

there are no data on the distribution beyond mentioning the presence in a given province.

Based on these reasons, and on the mosquito surveys carried out in NWA provinces in recent years, the aim of this work is to update the knowledge of the mosquito fauna present in the NWA, to provide precise locations for those species which information is lacking, and to save wrong information in order to improve the mosquito distribution database.

As part of field studies on mosquito diversity and ecological and entomological surveillance of arboviruses, carried out between 2000 and 2019 in the NWA, samples were collected from 20 sites in the provinces of Jujuy (11), Salta (4), Tucumán (3) and La Rioja (2). Specimens deposited in the collection of the División Entomología, Museo de La Plata, Argentina (MLP), and bibliographic information omitted since its publication, from a site in Santiago del Estero, were also added (site 21) (Fig. 1).

Adult specimens were collected from Shannon light traps or CDC light trap baited with CO₂, while immature stages (larva-pupa) were collected from ground-level puddles, ponds, and pools with a 300 ml dipper, and from phytotelmata with a siphon or pipette.

Larvae and pupae were reared in the laboratory to obtain the corresponding adults. The female and male adults were pin-mounted and the immature stages and male genitalia were mounted in Canada balsam on microscope slides. Species were identified based on original descriptions, redescriptions and diagnostic keys by Consoli & de Oliveira (1994); Darsie (1985); Forattini (2002); Lane (1953) and principally specific literature that is indicated in each case.

The following information is provided for each species: Material examined (M.E.): PROVINCE, Department: Locality: site number (geographic coordinates; meters above sea level (m a. s. l.)); Phytogeographic region of the sampling site); date of collection: number of specimens examined, stage and sex of each specimen. Additional

data about method of capture, habitat and / or micro-habitat. Collector (coll.) and taxonomist (det.). Collection number. The abbreviations used are the following: male (M), male genitalia (MG), female (F), fourth instar larvae (L), larval exuvia (LE). Information on its current distribution in Argentina and medical importance are also provided.

Specimens are deposited in the entomological collections of the Instituto de Biología de la Altura, Universidad Nacional de Jujuy (INBIAL), Instituto Fundación Miguel Lillo, Universidad Nacional de Tucumán (IFML), Instituto de Biología de la Conservación y Paleobiología, Universidad Nacional de La Rioja (IBICOPA) and División Entomología, Museo de La Plata (MLP).

We follow the taxonomic proposal of Wilkerson et al. (2015) and Harbach (2013) for the species of the Aedini tribe.

The updated distribution of species in Jujuy, La Rioja and Santiago del Estero provinces is based on Dyar (1921), Linares et al. (2016) and Dantur Juri et al. (2020), and for Tucumán province on Veggiani Aybar & Rossi (2017) and Dantur Juri et al. (2020).

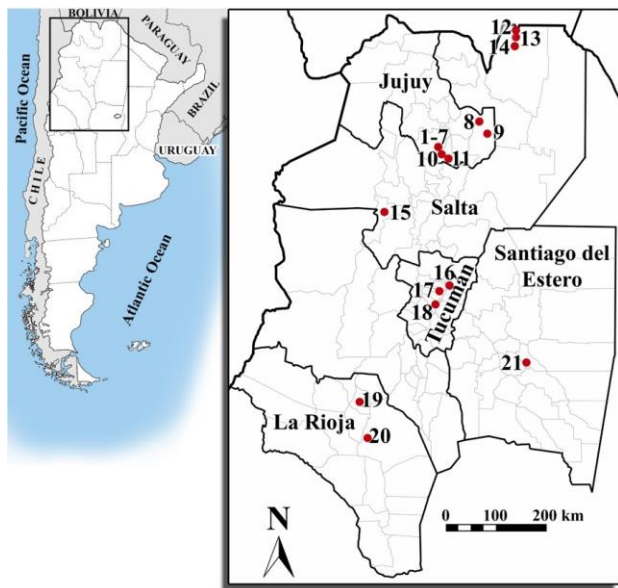


Fig. 1. Sampling sites in northwestern provinces of Argentina. Jujuy province: 1-7: San Salvador de Jujuy; 8: Caimancito. 9: Palma Sola; 10: Los Ávalos; 11: Perico. Salta Province: 12: Caraparí; 13: Aguaray; 14: Tartagal; 15: Laguna de Brealito. Tucumán province: 16: El Timbó; 17: Horco Molle; 18: El Guayal. La Rioja province: 19: Anillaco; 20: La Rioja. Santiago del Estero province: 21: Chuña Palma.

***Aedes (Ochlerotatus) patersoni* Shannon & Del Ponte**

M.E.: TUCUMÁN, Famaillá: El Guayal: site 18 (26°56'30.96" S, 65°28'12.11" W, 618m a. s. l.; Yungas): 2002-XI-8, 1 M., 1 MG. The specimens were collected with Shannon light trap in a peri-urban area of the slightly

demounted forest region of the Yungas. Córdoba Lanús coll. and Molina det. IFML.GAM.0001.

Current distribution in Argentina: Formosa, Jujuy, Salta and Tucumán provinces.

Medical importance: Unknown.

***Aedes (Ochlerotatus) scapularis* (Rondani)**

M.E.: LA RIOJA, Capital: La Rioja: site 20 (29°25'53.47" S, 66°52'8.93" W, 535m a. s. l.; Monte): 2014-I-19, 1F; 2014-I-22, 1F; 2014-II-27, 1F; 2014-III-04, 3F. Specimens were captured with CDC light trap baited with CO₂ in the campus of the National University of La Rioja, an urban area. Visintin coll. and det. IBICOPA-AMV.001.27

Current distribution in Argentina: Buenos Aires, Catamarca, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Rioja, Mendoza, Misiones, Río Negro, Salta, Santa Fe, Santiago del Estero and Tucumán provinces.

Medical importance: Arnell (1976) mentions the isolation of 15 viruses from this species, including Yellow Fever and Venezuelan Equine Encephalitis (VEE). It is also involved in the transmission of *Dirofilaria immitis* (Leidy) and *Wuchereria bancrofti* (Cobbold) (Walter Reed Biosystematic Unit, 2021).

***Aedes (Ochlerotatus) serratus* (Theobald)**

M.E.: JUJUY, Ledesma: Caimancito: site 8 (23°42'7.02" S, 64°35'14.44" W, 393m a. s. l.; Yungas): 2001-II-13: 1 F. The species is previously recorded in Jujuy without other data. It was collected with a CDC light trap baited with CO₂ in a peri-urban area belonging to the Yungas premontane forest. Augier coll. and Molina det. IFML.GAM. 00028.

Current distribution in Argentina: Buenos Aires, Chaco, Corrientes, Entre Ríos, Formosa, Jujuy, Mendoza, Misiones, Río Negro, Salta, Santa Fe, Santiago del Estero and Tucumán provinces.

Medical importance: Specimens naturally infected by the Yellow Fever virus were found in Brazil by Souza et al. (2010).

***Culex (Culex) dolosus* (Lynch Arribáizaga)**

M.E.: LA RIOJA, Castro Barros: Anillaco, near the town: site 19 (28°48'51.38" S, 66°56'51.41" W; 1412m m a. s. l.; Prepuna): 2004-IV-30, 3 M, 6 F, 4 LE, 5 L. Larvae were collected in a pond wholly exposed to the sun. Marti coll. and Rossi det. MLPDipC 2624-2637.

Current distribution in Argentina: Buenos Aires, Catamarca, Chubut, Córdoba, Corrientes, Entre Ríos, Jujuy, La Pampa, La Rioja, Misiones, Neuquén, Río Negro, Salta, Santa Fe and Tucumán provinces.

Medical importance: Unknown.

***Mansonia (Rynchotaenia) indubitans* Dyar y Shannon**

M.E.: JUJUY, Ledesma: Caimancito: site 8 (23°42'7.02" S; 64°35'14.44" W; 393m a. s. l.; Yungas): 2001-II-13, 1F. Female was captured with a CDC light trap baited with CO₂ in a peri-urban area belonging to the Yungas premontane forest. Augier coll. and Molina det. IFML.GAM.0002.

SALTA, General José de San Martín: Caraparí, near the Itiyuro dam: site 12 (22°06'04.5"S, 63°44'04.9"W, 567m a. s. l.; Yungas): 2018-X-18, 1F. The species is previously recorded in Salta without other data. Moreno, Kuruc, Siches and Rosin coll. and Siches and Rossi det. MLPDipC 4908.

Current distribution in Argentina: Buenos Aires, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, Misiones, Salta and Santa Fe provinces.

Medical importance: *Mansonia indubitans* is moderately susceptible to being infected with VEE virus (Pisano et al., 2010). This species was recorded in great abundance both indoors and outdoors during studies on human case of VEE (Ferro et al., 2008), and is therefore considered by the authors to be a species that may be important in the transmission of this virus.

***Mansonia (Mansonia) titillans* (Walker)**

M.E.: JUJUY, Dr. Manuel Belgrano: San Salvador de Jujuy: the species is previously recorded in Jujuy without other data. Site 4 (24°10'56.7" S, 65°16'26.10" W, 1303m a. s. l.; Yungas): 2012-II-8, 1F; 2012-XI-22, 1F; 2012-XII-13, 1F; 2013-III-20, 1F. Site 6: (24°13'28.26" S, 65°16'28.8" W, 1260m a. s. l.; Chaco): 2012-XII, 1F. All specimens were collected with a CDC light trap baited with CO₂. Linares coll. and det. 51001-05-INBIAL-Culicidae.

Current distribution in Argentina: Buenos Aires, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, Misiones, Salta, Santa Fe, Santiago del Estero and Tucumán provinces.

Medical importance: The virus causing VEE has been recovered from wild-caught *Ma. titillans* in Trinidad and it is believed that the species may have been an important vector of this virus during an epidemic in Trinidad in 1942-1943 (Gillard, 1944). In addition, this species is known to be a vector of filaria (Carpenter & LaCasse, 1955).

***Psorophora (Grabhamia) cingulata* (Fabricius)**

M.E.: JUJUY, El Carmen: Perico: site 11 (24°22'50.55" S, 65°8'12.91" W; 972m a. s. l.; Chaco): 2014-V-13, 1L. Larva was collected in a clear pool of rainwater, with flooded grass and located at tree shadows in a peri-urban environment. It was found with *Culex* species and *Ps. cyanescens* (Coquillett). Linares coll. and Linares and Stein det. 52001-INBIAL-Culicidae.

Current distribution in Argentina: Buenos Aires, Chaco, Jujuy, La Pampa, La Rioja, Misiones, Santa Fe and Tucumán provinces.

Medical importance: Pisano et al. (2010) found females of *Ps. cingulata* naturally infected with VEEV complex. Turell et al. (2000) indicate that *Ps. cingulata*, although is capable of becoming infected, cannot transmit the virus.

***Psorophora (Psorophora) ciliata* (Fabricius)**

M.E.: JUJUY, Dr. Manuel Belgrano: San Salvador de Jujuy: site 7 (24°10'11.57" S, 65°19'40.81" W 1297m a. s. l.; Yungas): 2017-III-08, 1F. Collected manually in the backyard of a house after a big storm. Ortuño coll. and Linares det. 59001-INBIAL-Culicidae. **Santa Bárbara:** Palma Sola: site 9 (23°58'35.11" S, 64°18'19.10" W, 688m a. s. l.; Yungas): 2011-IV, 1F. Without collection data. No collector data. Linares det. 59002-INBIAL-Culicidae.

Current distribution in Argentina: Buenos Aires, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Pampa, La Rioja, Misiones, Salta, Santa Fe, Santiago del Estero y Tucumán.

Medical importance: Unknown.

***Toxorhynchites (Ankylorhynchus) purpureus* (Theobald)**

M.E. TUCUMÁN, Yerba Buena: Horco Molle: site 17 (26°46'37.46" S, 65°19'54.12" W; 748m a. s. l.; Yungas): 1961-X-03, 1M. No collector data. Rossi det. MLPDipC 2328.

Current distribution in Argentina: Corrientes, Misiones and Tucumán provinces.

Medical importance: None.

***Toxorhynchites (Lynchiella) haemorrhoidalis separatus* (Lynch Arribálzaga)**

ME: SALTA, General José de San Martín: Aguaray: site 13 (22°14'29.18" S; 63°44'0.10" W; 580m a. s. l.; Yungas): 2000-IV, 1L. Tartagal: site 14 (22°30'58.88" S, 63°48'18.83" W; 498m a. s. l.; Yungas): 2000-IV, 1L. Both collected from bromeliads, at ground level. Zaidenberg coll. and Rossi det. MLPDipC 2153 and MLPDipC 2152, respectively.

Current distribution in Argentina: Chaco, Corrientes, Formosa, Misiones, Salta, Santa Fe and Tucumán provinces.

Medical importance: None.

***Toxorhynchites (Lynchiella) theobaldi* s. l. Dyar & Knab, 1906**

M.E.: JUJUY, Dr. Manuel Belgrano: San Salvador de Jujuy: site 1 (24°10'45.85" S, 65°16'8.14" W; 1302m a. s. l.; Yungas): 2017-II-16, 1L; 2017-III-17, 2L; site 2 (24°11'0.46" S, 65°16'27.56" W; 1279m a. s. l.; Yungas): 2017-II-16, 1L; site 3 (24°11'0.46" S, 65°16'27.56" W; 1280m a. s. l.; Yungas): 2017-II-16, 1L; site 5 (24°9'56.27" S, 65°18'58.18" W; 1322m a. s. l.; Yungas): 2017-II-16, 3L. **San Antonio:** Los Ávalos: site 10 (24°20'49.05" S,

65°14'50.39" W; 1167m a. s. l.; Chaco): 20-II-2017, 2L; 7-IV-2017, 2L.

Larvae of this species were collected from *Aechmea distichantha* Lem. (sites 1, 2 and 10); *Tillandsia australis* Mez. (site 5) and a tree hole (site 3) in urban (sites 1, 2, 3 and 5) and suburban environments (site 10). They were found with larvae of *Cx. imitator* Theobald and *Tx. guadeloupensis* (Dyar & Knab) in suburban environments, while in urban environments they were found with *Ae. aegypti* (L.). Apumaita coll. and Apumaita, Linares and Stein det. 80001-011-INBIAL-Culicidae.

Current distribution in Argentina: Buenos Aires, Chaco, Corrientes, Formosa, Jujuy, Misiones and Salta provinces.

Medical importance: None.

***Uranotaenia (Uranotaenia) lowii* Theobald**

M.E.: SALTA, Molinos, Laguna de Brealito: site 15 (25°17'53.49" S, 66°21'58.03" W; 2559m a. s. l.; Prepuna): 1961-VI, 1 F. No collector data. Rossi det. MLPDipC 1230.

TUCUMÁN, Burruyacu: El Timbó: site 16 (26°36'48.57" S, 65°7'46.20" W; 843m a. s. l.; Yungas): 2002-IV-27, 25

F. Adults were collected with Shannon light trap in a partially deforested area. Claps, Augier, Dantur Juri and Molina coll. and Molina det. IFML.GAM.0003-00027.

Current distribution in Argentina: Buenos Aires, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, Misiones, Salta, Santa Fe, Santiago del Estero and Tucumán provinces.

Medical importance: Unknown.

Table I shows the complete and updated list of mosquito species present in the NWA provinces.

Table I. Mosquito species present in northwestern Argentina.

Species	Catamarca	Jujuy	La Rioja	Salta	Santiago del Estero	Tucumán
<i>Aedeomyia (Aedeomyia) squamipennis</i> (Lynch Arribáizaga)		•		•		•
<i>Aedes (Howardina) aurivittatus</i> Cerqueira				•		
<i>Aedes (Howardina) martinezi</i> Berlin				•		
<i>Aedes (Howardina) pseudodominicii</i> Komp				•		
<i>Aedes (Howardina) vanemdeni</i> Martini				•		
<i>Aedes (Ochlerotatus) albifasciatus</i> (Macquart)	•	•	•	•	•	•
<i>Aedes (Ochlerotatus) crinifer</i> (Theobald)				•		•
<i>Aedes (Ochlerotatus) fulvus</i> (Wiedeman)				•		
<i>Aedes (Ochlerotatus) hastatus</i> Dyar		•		•		•
<i>Aedes (Ochlerotatus) meprai</i> Martinez & Prosen	•	•		•		•
<i>Aedes (Ochlerotatus) milleri</i> Dyar	•	•		•		•
<i>Aedes (Ochlerotatus) oligopistus</i> Dyar				•		•
<i>Aedes (Ochlerotatus) patersoni</i> Shannon & Del Ponte		•		•		•
<i>Aedes (Ochlerotatus) raymondi</i> Del Ponte, Castro & García		•				
<i>Aedes (Ochlerotatus) scapularis</i> (Rondoni)	•	•	•	•	•	•
<i>Aedes (Ochlerotatus) serratus</i> (Theobald)		•		•	•	•
<i>Aedes (Ochlerotatus) stigmaticus</i> Edwards				•		
<i>Aedes (Protomacleaya) casali</i> Schick		•		•		•
<i>Aedes (Protomacleaya) terreus</i> (Walker)		•		•		•
<i>Aedes (Stegomyia) aegypti</i> (Linnaeus)	•	•	•	•	•	•
<i>Anopheles (Anopheles) annulipalpis</i> Lynch Arribáizaga				•		
<i>Anopheles (Anopheles) apicimacula</i> Dyar & Knab				•		
<i>Anopheles (Anopheles) evandroi</i> Da Costa Lima				•		
<i>Anopheles (Anopheles) fluminensis</i> Root		•		•		•
<i>Anopheles (Anopheles) mediopunctatus</i> (Theobald)				•		•
<i>Anopheles (Anopheles) neomaculipalpus</i> Curry				•		
<i>Anopheles (Anopheles) pseudopunctipennis</i> Theobald	•	•	•	•	•	•
<i>Anopheles (Anopheles) punctimacula</i> Dyar & Knab				•		•
<i>Anopheles (Nyssorhynchus) albicansis</i> Lynch Arribáizaga	•	•	•	•	•	•
<i>Anopheles (Nyssorhynchus) argyritarsis</i> Robineau-Desvoidy	•	•	•	•	•	•

Species	Catamarca	Jujuy	La Rioja	Salta	Santiago del Estero	Tucumán
<i>Anopheles (Nyssorhynchus) darlingi</i> Root				•	•	
<i>Anopheles (Nyssorhynchus) evansae</i> (Brèthes)	•	•		•	•	•
<i>Anopheles (Nyssorhynchus) galvaei</i> Causey, Deane & Deane		•		•		•
<i>Anopheles (Nyssorhynchus) nuneztovari</i> Gabaldon				•		
<i>Anopheles (Nyssorhynchus) oswaldoi</i> (Peryassú)				•		•
<i>Anopheles (Nyssorhynchus) rangeli</i> Gabaldon				•		•
<i>Anopheles (Nyssorhynchus) rondoni</i> (Neiva & Pinto)		•		•	•	•
<i>Anopheles (Nyssorhynchus) strodei</i> Root		•		•		•
<i>Anopheles (Nyssorhynchus) triannulatus</i> (Neiva & Pinto)		•		•	•	•
<i>Coquillettidia (Rhynchoaenia) albicosta</i> (Peryassú)		•				
<i>Coquillettidia (Rhynchoaenia) fasciolata</i> (Lynch Arribáizaga)		•				•
<i>Coquillettidia (Rhynchoaenia) hermanoi</i> (Lane & Coutinho)						•
<i>Coquillettidia (Rhynchoaenia) juxtamansonia</i> (Chagas)						•
<i>Coquillettidia (Rhynchoaenia) nigricans</i> (Coquillett)		•		•		
<i>Coquillettidia (Rhynchoaenia) shannoni</i> (Lane & Antunes)				•		
<i>Coquillettidia (Rhynchoaenia) venezuelensis</i> (Theobald)		•				•
<i>Culex (Allimanta) tramazayguesi</i> Duret			•			
<i>Culex (Anoedioporpa) chaguanco</i> Casal, García & Fernández				•		
<i>Culex (Culex) acharistus</i> Root	•	•	•			•
<i>Culex (Culex) apicinus</i> Philippi	•	•	•	•		•
<i>Culex (Culex) bidens</i> Dyar	•	•		•	•	•
<i>Culex (Culex) brethesi</i> Dyar		•		•	•	•
<i>Culex (Culex) chidesteri</i> Dyar		•		•		•
<i>Culex (Culex) coronator</i> Dyar	•	•	•	•		•
<i>Culex (Culex) cuyanus</i> Duret			•			
<i>Culex (Culex) dolosus</i> (Lynch Arribáizaga)	•	•	•	•		•
<i>Culex (Culex) eduardoi</i> Casal & García				•		•
<i>Culex (Culex) fernandesi</i> Casal, García & Cavalieri		•		•		•
<i>Culex (Culex) interfor</i> Dyar	•		•	•		•
<i>Culex (Culex) lahillei</i> Bachman & Casal						•
<i>Culex (Culex) levicastilloi</i> Lane				•		
<i>Culex (Culex) maxi</i> Dyar	•	•	•	•	•	•
<i>Culex (Culex) mollis</i> Dyar & Knab						•
<i>Culex (Culex) pipiens pipiens</i> Linnaeus			•			
<i>Culex (Culex) quinquefasciatus</i> Say	•	•	•	•	•	•
<i>Culex (Culex) riojanus</i> Duret			•			
<i>Culex (Culex) saltanensis</i> Dyar	•	•	•	•	•	•
<i>Culex (Culex) tatoi</i> Casal & García				•		•
<i>Culex (Culex) usquatissimus</i> Dyar		•				
<i>Culex (Culex) usquatus</i> Dyar		•		•		
<i>Culex (Melanoconion) aliciae</i> Duret				•		•
<i>Culex (Melanoconion) elevator</i> Dyar & Knab						•
<i>Culex (Melanoconion) delpontei</i> Duret		•		•		
<i>Culex (Melanoconion) martinezi</i> Casal & García				•		
<i>Culex (Melanoconion) oedipus</i> Root		•				
<i>Culex (Melanoconion) pedroi</i> Sirivanakarn & Belkin		•		•		•
<i>Culex (Microculex) imitator</i> Theobald		•		•		•

Species	Catamarca	Jujuy	La Rioja	Salta	Santiago del Estero	Tucumán
<i>Haemagogus (Conopostegus) leucoceleus</i> (Dyar & Shannon)		•		•		•
<i>Haemagogus (Haemagogus) capricornii</i> Lutz				•		•
<i>Haemagogus (Haemagogus) janthinomys</i> Dyar	•	•	•	•		•
<i>Haemagogus (Haemagogus) spegazzinii</i> Brèthes	•	•		•	•	
<i>Limatus durhamii</i> Theobald		•		•		
<i>Lutzia (Lutzia) bigoti</i> Bellardi		•		•		
<i>Mansonia (Mansonia) flaveola</i> (Coquillett)		•				
<i>Mansonia (Mansonia) humeralis</i> Dyar & Knab		•		•		
<i>Mansonia (Mansonia) indubitans</i> Dyar & Shannon		•		•		
<i>Mansonia (Mansonia) pseudotitillans</i> (Theobald)				•		
<i>Mansonia (Mansonia) titillans</i> (Walker)		•		•	•	•
<i>Psorophora (Grabhamia) cingulata</i> (Fabricius)		•	•			•
<i>Psorophora (Grabhamia) confinnis</i> (Lynch Arribáizaga)		•		•	•	•
<i>Psorophora (Grabhamia) dimidiata</i> Cerqueira			•	•		
<i>Psorophora (Grabhamia) paulli</i> Paterson & Shannon		•		•	•	
<i>Psorophora (Grabhamia) varinervis</i> Edwards				•	•	•
<i>Psorophora (Janthinosoma) albigena</i> (Peryassú)		•		•	•	
<i>Psorophora (Janthinosoma) albipes</i> (Theobald)		•		•		•
<i>Psorophora (Janthinosoma) cyanescens</i> (Coquillett)	•	•	•	•	•	•
<i>Psorophora (Janthinosoma) discrucians</i> (Walker)			•	•		•
<i>Psorophora (Janthinosoma) ferox</i> (von Humboldt)	•	•		•	•	•
<i>Psorophora (Janthinosoma) lutzii</i> (Theobald)				•		
<i>Psorophora (Psorophora) ciliata</i> (Fabricius)		•	•	•	•	•
<i>Psorophora (Psorophora) cilipes</i> (Fabricius)			•			
<i>Psorophora (Psorophora) pallescens</i> Edwards			•	•	•	
<i>Psorophora (Psorophora) saeva</i> Dyar & Knab				•		
<i>Sabethes (Davismyia) petrocchiai</i> (Shannon & Del Ponte)		•		•		•
<i>Sabethes (Peytonulus) identicus</i> Dyar & Knab				•		
<i>Sabethes (Sabethes) albiprivus</i> Theobald		•		•		
<i>Sabethes (Sabethes) purpureus</i> (Theobald)				•		
<i>Sabethes (Sabethoides) chloropterus</i> (von Humboldt)				•		
<i>Toxorhynchites (Ankylorhynchus) purpureus</i> (Theobald)						•
<i>Toxorhynchites (Lynchiella) guadeloupensis/tucumanus</i> Dyar & Knab	•	•		•		•
<i>Toxorhynchites (Lynchiella) haemorrhoidalis separatus</i> (Lynch Arribáizaga)				•		
<i>Toxorhynchites (Lynchiella) theobaldi</i> s.l. (Dyar & Knab)		•		•		
<i>Uranotaenia (Uranotaenia) ditaenionota</i> Prado				•		
<i>Uranotaenia (Uranotaenia) geometrica</i> Theobald				•		
<i>Uranotaenia (Uranotaenia) leucoptera</i> Lutz				•		
<i>Uranotaenia (Uranotaenia) lowii</i> Theobald		•		•	•	•
<i>Uranotaenia (Uranotaenia) nataliae</i> Lynch Arribáizaga		•		•		
<i>Uranotaenia (Uranotaenia) pulcherrima</i> Lynch Arribáizaga				•	•	•
<i>Wyeomyia (Menolepis) leucostigma</i> Lutz		•			•	•
<i>Wyeomyia (Miamiya) oblita</i> (Lutz)				•		•
<i>Wyeomyia (Nunezia) lateralis</i> Petrocchi		•		•		•
<i>Wyeomyia (Wyeomyia) arthrostigma</i> Dyar				•		
<i>Wyeomyia melanocephala</i> Dyar & Knab		•		•		
TOTAL	23	68	26	102	29	70

***Aedes (Howardina) fulvithorax* (Lutz)**

Rossi (2015) excludes this species because the material collected by Carcavallo et al. (1995) in the province of Salta has not been found and there are no data that give details of them. On the other hand, the material deposited in the MLP from Misiones (D'Oria et al., 2010) is so damaged that its correct identification is impossible. Therefore, and according to Martínez & Prosen (1955) and Berlin (1959) who indicate that this species is not present in Argentina, these records should be considered suspect at best. For these reasons *Ae. fulvithorax* is excluded from the list of species present in Argentina from the present study.

***Anopheles (Nyssorhynchus) pictipennis* (Philippi)**

Martini (1931) mentioned the presence of a specimen from San José, northern Argentina, X.25 (October 1925). This species is considered of doubtful occurrence in Argentina by Duret (1950), who could not locate where San José is found, and since the species is only cited for a small area of Chile. Besides, for Bejarano (1959 (1960)), San José is in the province of Salta, and for García & Ronderos (1962), San José is in the province of Formosa. The latter authors stated about the presence of *An. pictipennis* "according to the itinerary trip of the Deutsche Chaco Expedition, we suppose that the appointment corresponds to the so-called place in the province of Formosa. Regarding the correct identification of these specimens, we cannot comment since we have not observed the specimens. However, we are inclined to think that it is not the species mentioned by Martini, since its origin has not been verified later, and even the research carried out to date coincides in restricting it to the trans-Andean zone". To these explanations we must add the dozens of publications on mosquitoes and *Anopheles* in particular that deal with the fauna of the NWA without the mentioned species appearing. Currently, the distribution of *An. pictipennis* is restricted to Chile; Rueda et al. (2008) expand the distribution, and Gonzalez & Mureb Sallum (2009) designate the Neotype and again expand its distribution, although always in Chile. Belkin et al. (1968) state that the two males with which Philippi worked with do not exist and Linthicum (1988) has the same opinion as González & Mureb Sallum (2009). These reasons justify dismissing the species as present in Argentina.

***Psorophora (Psorophora) pallescens* Edwards**

Visintin et al. (2010) unintentionally included this species for the province of Jujuy, which was also cited by Rossi (2015), but *Ps. pallescens* was never found in this province.

Toxorhynchites purpureus is the first record in the NWA, it is also the first record in the Yungas, previously distributed in Argentina only in Misiones's forest and Corrientes province (Duret, 1951; Rossi et al., 2002).

Likewise, *Ae. patersoni*, *Ae. serratus*, *Ma. indubitans*, *Ma. titillans*, *Ps. ciliata*, *Tx. haemorroidalis*, *Tx. theobaldi*, *Ur. lowii* extend their distribution to Yungas. *Psorophora cingulata*, *Ma. titillans* and *Ur. pulcherrima* to Chaco, while *Cx. dolosus* and *Ur. lowii* to Prepuna.

Uranotaenia pulcherrima was cited by Dyar (1921) for the province of Santiago del Estero, Sarmiento: Chuña Palma: site 21 (28°15'25.20" S, 63°30'15,12" W; 126m a. s. l.; Chaco): 1909-III-12. E. R. Wagner coll. and Dyar det., MNHN, Paris. However, this data is not found in the list provided by Mitchell and Darsie (1985), although other provinces are included. No publications have been found between 1921 and 1985 that indicate the need to remove it from Santiago del Estero. Therefore we consider that the omission was involuntary and that the presence of *Ur. pulcherrima* in Santiago del Estero should be taken as valid.

Current distribution in Argentina: Buenos Aires, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Misiones, Salta, Santa Fe, Santiago del Estero and Tucumán provinces.

Medical importance: Unknown.

This work updates the species distribution list for the NWA provinces. Thus, so far, the total number of species present in Catamarca, Jujuy, La Rioja, Salta, Santiago del Estero and Tucumán is 23, 68, 26, 102, 29 and 70, respectively. The total number of species for the NWA region is 123. With the exclusion of *Ae. fulvithorax* and *An. pictipennis*, the total number of mosquito species present in Argentina is 247.

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