



# Updated list of the mosquitoes of Colombia (Diptera: Culicidae)

Paula Rozo-Lopez<sup>‡</sup>, Ximo Mengual<sup>§</sup>

<sup>‡</sup> Bonn University, Bonn, Germany

<sup>§</sup> Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany

Corresponding author: Paula Rozo-Lopez ([paula.rozo.lopez@gmail.com](mailto:paula.rozo.lopez@gmail.com))

Academic editor: Daniel Whitmore

Received: 21 Jan 2015 | Accepted: 02 Mar 2015 | Published: 09 Mar 2015

Citation: Rozo-Lopez P, Mengual X (2015) Updated list of the mosquitoes of Colombia (Diptera: Culicidae).

Biodiversity Data Journal 3: e4567. doi: [10.3897/BDJ.3.e4567](https://doi.org/10.3897/BDJ.3.e4567)

## Abstract

## Background

A revised list of the mosquitoes (Diptera: Culicidae) known to occur in Colombia is presented. A total of 324 species from 28 genera of Culicidae are included. The species names are organized in alphabetical order according to the current generic and subgeneric classification, along with their authorship. The list is compiled in order to support mosquito research in Colombia.

## New information

Our systematic review and literature survey found, by 16 February 2015, 13 records of culicid species previously overlooked by mosquito catalogs for Colombia: *Anopheles costai* da Fonseca & da Silva Ramos, 1939, *An. fluminensis* Root, 1927, *An. malefactor* Dyar & Knab, 1907, *An. shannoni* Davis, 1931, *An. vargasi* Galbadón, Cova García & Lopez, 1941, *Culex mesodenticulatus* Galindo & Mendez, 1961, *Haemagogus capricornii* Lutz, 1904, *Isostomyia espini* (Martini, 1914), *Johnbelkinia leucopus* (Dyar & Knab, 1906), *Mansonia indubitans* Dyar & Shannon, 1925, *Psorophora saeva* Dyar & Knab, 1906, *Sabethes glaucodaemon* (Dyar & Shannon, 1925), and *Wyeomyia intonca* Dyar & Knab,

1909. Moreover, *Wyeomyia (Dendromyia) luteoventralis* Theobald, 1901 is recorded for Colombia for the first time. This work provides important insights into mosquito diversity in Colombia, using the current nomenclature and phylogenetic rankings.

## Keywords

Nematocera, Neotropical Region, species account, new records.

## Introduction

Currently, 3,543 species of Culicidae are formally recognized and distributed over a diverse range of habitats around the world (Harbach 2015). Colombia, one of the world's megadiverse countries, has a highly diverse mosquito fauna and a high prevalence of mosquito-borne diseases (Morrone 2006, Foley et al. 2008, Hudson 2010, Montoya-Lerma et al. 2011). The tremendous variety of ecosystems in Colombia provides environmental conditions that favor the immigration, adaptation, development and persistence of a great diversity of mosquito species (Molina et al. 2000, Olano et al. 2001, Foley et al. 2007, Barreto et al. 2008, Brochero and Quiñones 2008).

Six mosquito catalogs list species that occur in Colombia: Barreto-Reyes (1955) reported 164 species; Knight and Stone (1977) reported 250 species; Carrejo and González (1992) listed 260 recognized species; Walter Reed Medical Army (1998) reported also 260 species; and lastly, 289 species were reported in the Walter Reed Biosystematics Unit mosquito catalog (Gaffigan et al. 2014). Recent changes in mosquito taxonomy, ranking of groups, and species names (Gaffigan et al. 2013, Harbach 2015) made it crucial to compile an updated list that follows the currently accepted classification, as well as includes new and overlooked species records for the country.

## Materials and methods

The species list was compiled from information available in previously published mosquito catalogs for Colombia (Barreto-Reyes 1955, Knight and Stone 1977, Carrejo and González 1992, Walter Reed Medical Army 1998, Gaffigan et al. 2014) and other publications containing species reports not included in these catalogs (Kumm et al. 1946, Osorno-Mesa 1947, Lane 1953, Arnell 1976, Wilkerson 1990, Pecor et al. 1992, Harbach 1995, Barreto et al. 1996, Lounibos et al. 1998, Vélez et al. 1998, Molina et al. 2000, Ferro et al. 2003, Liria and Navarro 2003, Porter and Wolff 2004, González and Carrejo 2007, Ferro et al. 2008, Harbach and Howard 2009, Mendenhall et al. 2011, Barajas et al. 2013). The first record for Colombia of *Wyeomyia (Dendromyia) luteoventralis* Theobald, 1901 is based on a female collected with CDC traps in September 2013 in a tropical dry forest in La Pintada (Antioquia) [N 05.63646, W 075.59002, 710m above sea level]. The specimen was

identified using Lane (1953), Motta and Lourenço-de-Oliveira (1995), Judd (1998), Motta and Lourenço-de-Oliveira (2000) as references.

The species presented in this list are arranged alphabetically by genus and subgenus. Species names are followed by their authorship and year of description, and the catalog or other source that first reported the species in Colombia. Our list follows the most recent mosquito classification compiled by Gaffigan et al. (2013) and Harbach (2015). Also, we follow the provisional '*sensu auctorum*' placement of '*Ochlerotatus (Protomacleaya)*', product of the polyphyletic assemblage of species reflected in the Aedini phylogeny reconstructed by Reinert et al. (2009). Junior synonyms, subspecies, biologically separate sibling species that lack formal names, and nomina dubia reported by Barreto-Reyes (1955) and Knight and Stone 1977 (*Anopheles allopha* Peryassú, 1921, *Culex aikenii* Aiken & Rowland, 1906, *Culex virgultus* Theobald, 1901, *Trichoprosopon hyperleucum* (Martini, 1931)) are not included.

## List of mosquito species known to occur in Colombia

### ***Aedeomyia (Aedeomyia) squamipennis* (Lynch Arribáizaga, 1878)**

Notes: Barreto-Reyes 1955

### ***Anopheles (Anopheles) apicimacula* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

### ***Anopheles (Anopheles) calderoni* Wilkerson, 1991**

Notes: Carrejo and González 1992

### ***Anopheles (Anopheles) costai* da Fonseca & da Silva Ramos, 1939**

Notes: González and Carrejo 2007. Species previously overlooked by other mosquito catalogs for Colombia.

### ***Anopheles (Anopheles) eiseni* Coquillett, 1902**

Notes: Barreto-Reyes 1955

### ***Anopheles (Anopheles) fluminensis* Root, 1927**

Notes: González and Carrejo 2007. Species previously overlooked by other mosquito catalogs for Colombia.

***Anopheles (Anopheles) forattinii* Wilkerson & Sallum, 1999**

Notes: González and Carrejo 2007

***Anopheles (Anopheles) malefactor* Dyar & Knab, 1907**

Notes: Wilkerson 1990. Species previously overlooked by other mosquito catalogs for Colombia.

***Anopheles (Anopheles) mattogrossensis* Lutz & Neiva, 1911**

Notes: Barreto-Reyes 1955

***Anopheles (Anopheles) mediopunctatus* (Lutz, 1903)**

Notes: Barreto-Reyes 1955

***Anopheles (Anopheles) neomaculipalpus* Curry, 1931**

Notes: Barreto-Reyes 1955

***Anopheles (Anopheles) peryassui* Dyar & Knab, 1908**

Notes: Barreto-Reyes 1955

***Anopheles (Anopheles) pseudomaculipes* (Peryassú, 1908)**

Notes: Knight and Stone 1977

***Anopheles (Anopheles) pseudopunctipennis* Theobald, 1901**

Notes: Barreto-Reyes 1955

***Anopheles (Anopheles) punctimacula* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Anopheles (Anopheles) shannoni* Davis, 1931**

Notes: González and Carrejo 2007. Species previously overlooked by other mosquito catalogs for Colombia.

***Anopheles (Anopheles) vestitipennis* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Anopheles (Kerteszia) bambusicolus* Komp, 1937**

Notes: Barreto-Reyes 1955

***Anopheles (Kerteszia) bellator* Dyar & Knab, 1906**

Notes: Knight and Stone 1977

***Anopheles (Kerteszia) boliviensis* (Theobald, 1905)**

Notes: Barreto-Reyes 1955

***Anopheles (Kerteszia) cruzii* Dyar & Knab, 1908**

Notes: Knight and Stone 1977

***Anopheles (Kerteszia) homunculus* Komp, 1937**

Notes: Barreto-Reyes 1955

***Anopheles (Kerteszia) lepidotus* Zavortink, 1973**

Notes: Knight and Stone 1977

***Anopheles (Kerteszia) neivai* Howard, Dyar & Knab, 1913**

Notes: Barreto-Reyes 1955

***Anopheles (Kerteszia) pholidotus* Zavortink, 1973**

Notes: González and Carrejo 2007

***Anopheles (Lophopodomyia) gilesi* (Peryassú, 1908)**

Notes: Barreto-Reyes 1955

***Anopheles (Lophopodomyia) oiketorakras* Osorno-Mesa, 1947**

Notes: Osorno-Mesa 1947, Barreto-Reyes 1955

***Anopheles (Lophopodomyia) squamifemur* Antunes, 1937**

Notes: Barreto-Reyes 1955

***Anopheles (Lophopodomyia) vargasi* Gabaldón, Cova García & Lopez, 1941**

Notes: Osorno-Mesa 1947. Species previously overlooked by other mosquito catalogs for Colombia.

***Anopheles (Nyssorhynchus) albimanus* Wiedemann, 1820**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) albitarsis* Lynch Arribálzaga, 1878**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) aquasalis* Curry, 1932**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) argyritarsis* Robineau-Desvoidy, 1827**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) benarrochi* Gabaldón, Cova García & Lopez, 1941**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) braziliensis* Chagas, 1907**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) darlingi* Root, 1926**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) dunhami* Causey, 1945**

Notes: Lounibos et al. 1998

***Anopheles (Nyssorhynchus) evansae* Brèthes, 1926**

Notes: Knight and Stone 1977

***Anopheles (Nyssorhynchus) marajoara* Galvão & Damasceno, 1942**

Notes: Knight and Stone 1977

***Anopheles (Nyssorhynchus) nuneztovari* Gabaldón, 1940**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) oswaldoi* Peryassú, 1922**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) parvus* Chagas, 1907**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) rangeli* Gabaldón, Cova García & Lopez, 1940**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) strodei* Root, 1926**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) triannulatus* Neiva & Pinto, 1922**

Notes: Barreto-Reyes 1955

***Anopheles (Nyssorhynchus) trinkae* Faran, 1979**

Notes: Carrejo and González 1992

***Anopheles (Stethomyia) kompi* Edwards, 1930**

Notes: Barreto-Reyes 1955

***Anopheles (Stethomyia) nimbus* (Theobald, 1902)**

Notes: Barreto-Reyes 1955

***Anopheles (Stethomyia) thomasi* Shannon, 1933**

Notes: Knight and Stone 1977

***Chagasia ablusa* Harbach, 2009**

Notes: Harbach and Howard 2009

***Chagasia bathana* Dyar, 1928**

Notes: Knight and Stone 1977

***Chagasia bonneae* Root, 1927**

Notes: Barreto-Reyes 1955

***Chagasia fajardi* (Lutz, 1904)**

Notes: Barreto-Reyes 1955

***Coquillettidia (Rhynchotaenia) albicosta* (Peryassú, 1908)**

Notes: Barreto-Reyes 1955

***Coquillettidia (Rhynchotaenia) arribalzagae* (Theobald, 1903)**

Notes: Barreto-Reyes 1955

***Coquillettidia (Rhynchotaenia) fasciolata* (Lynch Arribálzaga, 1891)**

Notes: Carrejo and González 1992

***Coquillettidia (Rhynchotaenia) hermanoi* (Lane & Coutinho, 1940)**

Notes: Knight and Stone 1977

***Coquillettidia (Rhynchotaenia) juxtamansonia* (Chagas, 1907)**

Notes: Barreto-Reyes 1955

***Coquillettidia (Rhynchotaenia) lynchi* (Shannon, 1931)**

Notes: Barreto-Reyes 1955

***Coquillettidia (Rhynchotaenia) nigricans* (Coquillett, 1904)**

Notes: Barreto-Reyes 1955



***Coquillettidia (Rhynchotaenia) venezuelensis* (Theobald, 1912)**

Notes: Barreto-Reyes 1955

***Culex flochi* Duret, 1969**

Notes: Knight and Stone 1977. The subgeneric affiliation of this species is uncertain.

***Culex ocellatus* Theobald, 1903**

Notes: Knight and Stone 1977. The subgeneric affiliation of this species is uncertain.

***Culex (Aedinus) accelerans* Root, 1927**

Notes: Ferro et al. 2003

***Culex (Aedinus) amazonensis* (Lutz, 1905)**

Notes: Barreto-Reyes 1955

***Culex (Anoediopora) bamborum* Rozeboom & Komp, 1948**

Notes: Barreto-Reyes 1955

***Culex (Anoediopora) browni* Komp, 1936**

Notes: Knight and Stone 1977

***Culex (Anoediopora) conservator* Dyar & Knab, 1906**

Notes: Knight and Stone 1977

***Culex (Anoediopora) corrigani* Dyar & Knab, 1907**

Notes: Knight and Stone 1977

***Culex (Anoediopora) restrictor* Dyar & Knab, 1906**

Notes: Mendenhall et al. 2011

***Culex (Belkinomyia) eldridgei* Adames & Galindo, 1973**

Notes: Knight and Stone 1977

***Culex (Carrollia) antunesi* Lane & Whitman, 1943**

Notes: Knight and Stone 1977

***Culex (Carrollia) bihaicola* Dyar & Núñez Tovar, 1928**

Notes: Barreto-Reyes 1955

***Culex (Carrollia) bonnei* Dyar, 1921*****Culex (Carrollia) infoliatu*s Bonne-Wepster & Bonne, 1920**

Notes: Barreto-Reyes 1955

***Culex (Carrollia) kompi* Valencia, 1973**

Notes: Knight and Stone 1977

***Culex (Carrollia) metempsytu*s Dyar, 1921**

Notes: Barreto-Reyes 1955

***Culex (Carrollia) secundus* Bonne-Wepster & Bonne, 1920**

Notes: Barreto-Reyes 1955

***Culex (Carrollia) urichi* (Coquillett, 1906)**

Notes: Barreto-Reyes 1955

***Culex (Carrollia) wilsoni* Lane & Whitman, 1943**

Notes: Knight and Stone 1977

***Culex (Culex) abnormalis* Lane, 1936**

Notes: Knight and Stone 1977

***Culex (Culex) acharistus* Root, 1927**

Notes: Carrejo and González 1992

***Culex (Culex) alani* Forattini, 1965**

Notes: Knight and Stone 1977

***Culex (Culex) archegus* Dyar, 1929**

Notes: Knight and Stone 1977

***Culex (Culex) bickleyi* Forattini, 1965**

Notes: Knight and Stone 1977

***Culex (Culex) bonnae* Dyar & Knab, 1906**

Notes: Knight and Stone 1977

***Culex (Culex) brevispinosus* Bonne-Wepster & Bonne, 1920**

Notes: Barreto-Reyes 1955

***Culex (Culex) camposi* Dyar, 1925**

Notes: Knight and Stone 1977

***Culex (Culex) chidesteri* Dyar, 1921**

Notes: Barreto-Reyes 1955

***Culex (Culex) chitae* Duret, 1967**

Notes: Knight and Stone 1977

***Culex (Culex) coronator* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Culex (Culex) declarator* Dyar & Knab, 1906**

Notes: Carrejo and González 1992

***Culex (Culex) erythrothorax* Dyar, 1907**

Notes: Gaffigan et al. 2014

***Culex (Culex) inflictus* Theobald, 1901**

Notes: Barreto-Reyes 1955

***Culex (Culex) levicastilloi* Lane, 1945**

Notes: Gaffigan et al. 2014

***Culex (Culex) maracayensis* Evans, 1923**

Notes: Barreto-Reyes 1955

***Culex (Culex) mollis* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Culex (Culex) nigripalpus* Theobald, 1901**

Notes: Barreto-Reyes 1955

***Culex (Culex) ousqua* Dyar, 1918**

Notes: Knight and Stone 1977

***Culex (Culex) quinquefasciatus* Say, 1823**

Notes: Barreto-Reyes 1955

***Culex (Culex) saltanensis* Dyar, 1928**

Notes: Gaffigan et al. 2014

***Culex (Culex) spinosus* Lutz, 1905**

Notes: Knight and Stone 1977

***Culex (Culex) stigmatosoma* Dyar, 1907**

Notes: Barreto-Reyes 1955

***Culex (Culex) thriambus* Dyar, 1921**

Notes: Knight and Stone 1977

***Culex (Culex) usquatissimus* Dyar, 1922**

Notes: Knight and Stone 1977

***Culex (Culex) usquatus* Dyar, 1918**

Notes: Knight and Stone 1977

***Culex (Melanoconion) adamesi* Sirivanakarn & Galindo, 1980**

Notes: Knight and Stone 1977

***Culex (Melanoconion) albinensis* Bonne-Wepster & Bonne, 1920**

Notes: Knight and Stone 1977

***Culex (Melanoconion) alogistus* Dyar, 1918**

Notes: Knight and Stone 1977

***Culex (Melanoconion) bastagarius* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) batesi* Rozeboom & Komp, 1948**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) caudelli* (Dyar & Knab, 1906)**

Notes: Knight and Stone 1977

***Culex (Melanoconion) comatus* Senevet & Abonnenc, 1939**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) commevynensis* Bonne-Wepster & Bonne, 1920**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) comminator* Dyar, 1920**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) conspirator* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) coppenamensis* Bonne-Wepster & Bonne, 1920**

Notes: Carrejo and González 1992

***Culex (Melanoconion) creole* Anduze, 1949**

Notes: Carrejo and González 1992

***Culex (Melanoconion) crybda* Dyar, 1924**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) distinguendus* Dyar, 1928**

Notes: Knight and Stone 1977

***Culex (Melanoconion) dunni* Dyar, 1918**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) eastor* Dyar, 1920**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) educator* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) egcymon* Dyar, 1923**

Notes: Pecor et al. 1992

***Culex (Melanoconion) elevator* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) epanastasis* Dyar, 1922**

Notes: Knight and Stone 1977

***Culex (Melanoconion) erraticus* (Dyar & Knab, 1906)**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) ferreri* Duret, 1968**

Notes: Knight and Stone 1977

***Culex (Melanoconion) garcesi* Duret, 1968**

Notes: Knight and Stone 1977

***Culex (Melanoconion) inadmirabilis* Dyar, 1928**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) inhibitor* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) iolambdis* Dyar, 1918**

Notes: Lane 1953

***Culex (Melanoconion) johnsoni* Galindo & Mendez, 1961**

Notes: Pecor et al. 1992

***Culex (Melanoconion) kummi* Komp & Rozeboom, 1951**

Notes: Knight and Stone 1977

***Culex (Melanoconion) lucifugus* Komp, 1936**

Notes: Knight and Stone 1977

***Culex (Melanoconion) mesodenticulatus* Galindo & Mendez, 1961**

Notes: Barreto et al. 1996. Species previously overlooked by other mosquito catalogs for Colombia.

***Culex (Melanoconion) ocosa* Dyar & Knab, 1919**

Notes: Knight and Stone 1977

***Culex (Melanoconion) panocossa* Dyar, 1923**

Notes: Gaffigan et al. 2014

***Culex (Melanoconion) pedroi* Sirivanakarn & Belkin, 1980**

Notes: Ferro et al. 2003

***Culex (Melanoconion) phlogistus* Dyar, 1920**

Notes: Knight and Stone 1977

***Culex (Melanoconion) pilosus* (Dyar & Knab, 1906)**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) quasihybridus* Galindo & Blanton, 1954**

Notes: Knight and Stone 1977

***Culex (Melanoconion) rooti* Rozeboom, 1935**

Notes: Knight and Stone 1977

***Culex (Melanoconion) serratimarge* Root, 1927**

Notes: Knight and Stone 1977

***Culex (Melanoconion) spissipes* (Theobald, 1903)**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) sursumptor* Dyar, 1924**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) taeniopus* Dyar & Knab, 1907**

Notes: Barreto-Reyes 1955

***Culex (Melanoconion) tecmarsis* Dyar, 1918**

Notes: Pecor et al. 1992



***Culex (Melanoconion) theobaldi* (Lutz, 1904)**

Notes: Knight and Stone 1977

***Culex (Melanoconion) vomerifer* Komp, 1932**

Notes: Knight and Stone 1977

***Culex (Melanoconion) zeteki* Dyar, 1918**

Notes: Knight and Stone 1977

***Culex (Microculex) carioca* Lane & Whitman, 1951**

Notes: Knight and Stone 1977

***Culex (Microculex) chryselatus* Dyar & Knab, 1919**

Notes: Barreto-Reyes 1955

***Culex (Microculex) daumastocampa* Dyar & Knab, 1908**

Notes: Knight and Stone 1977

***Culex (Microculex) elongatus* Rozeboom & Komp, 1950**

Notes: Barreto-Reyes 1955

***Culex (Microculex) gaudeator* Dyar and Knab, 1907**

Notes: Gaffigan et al. 2014

***Culex (Microculex) imitator* Theobald, 1903**

Notes: Barreto-Reyes 1955

***Culex (Microculex) inimitabilis* Dyar & Knab, 1906**

Notes: Gaffigan et al. 2014

***Culex (Microculex) jenningsi* Dyar & Knab, 1907**

Notes: Knight and Stone 1977

***Culex (Microculex) kukenan* Anduze, 1942**

Notes: Knight and Stone 1977

***Culex (Microculex) pleuristriatus* Theobald, 1903**

Notes: Carrejo and González 1992

***Culex (Microculex) stonei* Lane & Whitman, 1943**

Notes: Gaffigan et al. 2014

***Culex (Phenacomyia) airozai* Lane, 1945**

Notes: Gaffigan et al. 2014

***Culex (Phenacomyia) corniger* Theobald, 1903**

Notes: Barreto-Reyes 1955

***Culex (Phenacomyia) lactator* Dyar & Knab, 1906**

Notes: Gaffigan et al. 2014

***Culex (Tinolestes) latisquama* (Coquillett, 1906)**

Notes: Carrejo and González 1992

***Deinocerites atlanticus* Adames, 1971**

Notes: Knight and Stone 1977

***Deinocerites barreto* Adames, 1971**

Notes: Knight and Stone 1977

***Deinocerites cancer* Theobald, 1901**

Notes: Carrejo and González 1992

***Deinocerites colombianus* Adames, 1971**

Notes: Knight and Stone 1977

***Deinocerites curiche* Adames, 1971**

Notes: Knight and Stone 1977

***Deinocerites dyari* Belkin & Hogue, 1959**

Notes: Knight and Stone 1977

***Deinocerites melanophylum* Dyar & Knab, 1907**

Notes: Knight and Stone 1977

***Deinocerites pseudus* Dyar & Knab, 1909**

Notes: Knight and Stone 1977

***Galindomyia leei* Stone & Barreto, 1969**

Notes: Knight and Stone 1977

***Geogecraigius (Horsfallius) fluviatilis* (Lutz, 1904)**

Notes: Carrejo and González 1992

***Haemagogus (Conopostegus) clarki* (Galindo, Carpenter & Trapido, 1953)**

Notes: Knight and Stone 1977

***Haemagogus (Conopostegus) leucocelaenus* (Dyar & Shannon, 1924)**

Notes: Barreto-Reyes 1955

***Haemagogus (Haemagogus) anastasionis* Dyar, 1921**

Notes: Barreto-Reyes 1955

***Haemagogus (Haemagogus) andinus* Osorno-Mesa, 1944**

Notes: Barreto-Reyes 1955

***Haemagogus (Haemagogus) boshelli* Osorno-Mesa, 1944**

Notes: Barreto-Reyes 1955

***Haemagogus (Haemagogus) capricornii* Lutz, 1904**

Notes: Kumm et al. 1946. Species previously overlooked by other mosquito catalogs for Colombia.

***Haemagogus (Haemagogus) celeste* Dyar & Nuñez Tovar, 1927**

Notes: Knight and Stone 1977

***Haemagogus (Haemagogus) chalcospilans* Dyar, 1921**

Notes: Barreto-Reyes 1955

***Haemagogus (Haemagogus) equinus* Theobald, 1903**

Notes: Barreto-Reyes 1955

***Haemagogus (Haemagogus) janthinomys* Dyar, 1921**

Notes: Knight and Stone 1977

***Haemagogus (Haemagogus) lucifer* (Howard, Dyar & Knab, 1913)**

Notes: Barreto-Reyes 1955

***Haemagogus (Haemagogus) spegazzinii* Brèthes, 1912**

Notes: Barreto-Reyes 1955

***Haemagogus (Haemagogus) splendens* Williston, 1896**

Notes: Barreto-Reyes 1955

***Howardina arborealis* (Bonne-Wepster & Bonne, 1920)**

Notes: Barreto-Reyes 1955

***Howardina eleanorae* (Berlin, 1969)**

Notes: Knight and Stone 1977

***Howardina fulvithorax* (Lutz, 1904)**

Notes: Gaffigan et al. 2014

***Howardina leei* (Berlin, 1969)**

Notes: Knight and Stone 1977

***Howardina marinkellei* (Berlin, 1969)**

Notes: Knight and Stone 1977

***Howardina osornoi* (Berlin, 1969)**

Notes: Knight and Stone 1977

***Howardina pseudodominicii* (Komp, 1936)**

Notes: Knight and Stone 1977

***Howardina quadrivittata* (Coquillett, 1902)**

Notes: Barreto-Reyes 1955

***Howardina septemstriata* (Dyar & Knab, 1907)**

Notes: Barreto-Reyes 1955

***Howardina sexlineata* (Theobald, 1901)*****Howardina whitmorei* (Dunn, 1918)**

Notes: Barreto-Reyes 1955

***Isostomyia espini* (Martini, 1914)**

Notes: Molina et al. 2000. Species previously overlooked by other mosquito catalogs for Colombia.

***Johnbelkinia leucopus* (Dyar & Knab, 1906)**

Notes: Molina et al. 2000. Species previously overlooked by other mosquito catalogs for Colombia.

***Johnbelkinia longipes* (Fabricius, 1805)**

Notes: Barreto-Reyes 1955

***Johnbelkinia ulopus* (Dyar & Knab, 1906)**

Notes: Knight and Stone 1977

***Limatus asulleptus* (Theobald, 1903)**

Notes: Barreto-Reyes 1955

***Limatus durhami* Theobald, 1901**

Notes: Barreto-Reyes 1955

***Lutzia (Lutzia) allostigma* Howard, Dyar & Knab, 1915**

Notes: Barreto-Reyes 1955

***Lutzia (Lutzia) bigoti* Bellardi, 1862**

Notes: Barreto-Reyes 1955

***Mansonia (Mansonia) humeralis* Dyar & Knab, 1916**

Notes: Barreto-Reyes 1955

***Mansonia (Mansonia) indubitans* Dyar & Shannon, 1925**

Notes: Ferro et al. 2008. Species previously overlooked by other mosquito catalogs for Colombia.

***Mansonia (Mansonia) pseudotitillans* (Theobald, 1901)**

Notes: Barreto-Reyes 1955

***Mansonia (Mansonia) titillans* (Walker, 1848)**

Notes: Barreto-Reyes 1955

***Mansonia (Mansonia) wilsoni* (Barreto & Coutinho, 1944)**

Notes: Knight and Stone 1977

***Ochlerotatus argyrorhox* (Bonne-Wepster & Bonne, 1920)**

**Notes:** Knight and Stone 1977. Species belonging to subgenus '*Protomacleaya*' sensu auctorum.

***Ochlerotatus berlini* (Schick, 1970)**

**Notes:** Knight and Stone 1977. Species belonging to subgenus '*Protomacleaya*' sensu auctorum.

***Ochlerotatus braziliensis* (Gordon & Evans, 1922)**

**Notes:** Knight and Stone 1977. Species belonging to subgenus '*Protomacleaya*' sensu auctorum.

***Ochlerotatus buenaventura* (Schick, 1970)**

**Notes:** Knight and Stone 1977. Species belonging to subgenus '*Protomacleaya*' sensu auctorum.

***Ochlerotatus euiris* (Dyar, 1922)**

**Notes:** Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

***Ochlerotatus insolitus* (Coquillett, 1906)**

**Notes:** Knight and Stone 1977. Species belonging to subgenus '*Protomacleaya*' sensu auctorum.

***Ochlerotatus milleri* (Dyar, 1922)**

**Notes:** Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

***Ochlerotatus scutellalbum* (Boshell-Manrique, 1939)**

**Notes:** Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

***Ochlerotatus terreus* (Walker, 1856)**

**Notes:** Barreto-Reyes 1955. Species belonging to subgenus '*Protomacleaya*' sensu auctorum.

***Ochlerotatus upatensis* (Anduze & Hecht, 1943)**

Notes: Carrejo and González 1992. The subgeneric affiliation of this species is uncertain.

***Ochlerotatus zavortinki* (Schick, 1970)**

Notes: Knight and Stone 1977. Species belonging to subgenus '*Protomacleaya*' *sensu auctorum*.

***Ochlerotatus (Chrysoconops) fulvus* (Wiedemann, 1828)**

Notes: Barreto-Reyes 1955

***Ochlerotatus (Culicelsa) taeniorhynchus* (Wiedemann, 1821)**

Notes: Barreto-Reyes 1955

***Ochlerotatus (Ochlerotatus) angustivittatus* (Dyar & Knab, 1907)**

Notes: Barreto-Reyes 1955

***Ochlerotatus (Ochlerotatus) bogotanus* (Arnell, 1976)**

Notes: Arnell 1976

***Ochlerotatus (Ochlerotatus) comitatus* (Arnell, 1976)**

Notes: Knight and Stone 1977

***Ochlerotatus (Ochlerotatus) condolenscens* (Dyar & Knab, 1907)**

Notes: Knight and Stone 1977

***Ochlerotatus (Ochlerotatus) crinifer* (Theobald, 1903)**

Notes: Barreto-Reyes 1955

***Ochlerotatus (Ochlerotatus) deficiens* (Arnell, 1976)**

Notes: Knight and Stone 1977



***Ochlerotatus (Ochlerotatus) euplocamus* (Dyar & Knab, 1906)**

Notes: Knight and Stone 1977

***Ochlerotatus (Ochlerotatus) pectinatus* (Arnell, 1976)**

Notes: Knight and Stone 1977

***Ochlerotatus (Ochlerotatus) scapularis* (Rondani, 1848)**

Notes: Barreto-Reyes 1955

***Ochlerotatus (Protoculex) aenigmaticus* (Cerqueira & Costa, 1946)**

Notes: Gaffigan et al. 2014

***Ochlerotatus (Protoculex) hastatus* (Dyar, 1922)**

Notes: Barreto-Reyes 1955

***Ochlerotatus (Protoculex) nubilus* (Theobald, 1903)**

Notes: Carrejo and González 1992

***Ochlerotatus (Protoculex) serratus* (Theobald, 1901)**

Notes: Barreto-Reyes 1955

***Onirion personatum* (Lutz, 1904)**

Notes: Knight and Stone 1977

***Orthopodomyia albicosta* (Lutz, 1904)**

Notes: Barreto-Reyes 1955

***Orthopodomyia fascipes* (Coquillett, 1906)**

Notes: Barreto-Reyes 1955

***Orthopodomyia phyllozoa* (Dyar & Knab, 1907)**

Notes: Barreto-Reyes 1955

***Psorophora (Grabhamia) cingulata* (Fabricius, 1805)**

Notes: Barreto-Reyes 1955

***Psorophora (Grabhamia) confinnis* (Lynch Arribáizaga, 1891)**

Notes: Barreto-Reyes 1955

***Psorophora (Janthinosoma) albigenu* (Peryassú, 1908)**

Notes: Knight and Stone 1977

***Psorophora (Janthinosoma) albipes* (Theobald, 1907)**

Notes: Barajas et al. 2013

***Psorophora (Janthinosoma) cyanescens* (Coquillett, 1902)**

Notes: Barreto-Reyes 1955

***Psorophora (Janthinosoma) ferox* (von Humboldt, 1819)**

Notes: Barreto-Reyes 1955

***Psorophora (Janthinosoma) lutzi* (Theobald, 1901)**

Notes: Barreto-Reyes 1955

***Psorophora (Janthinosoma) pilosa* Duret, 1971**

Notes: Knight and Stone 1977

***Psorophora (Janthinosoma) pseudoalbipes* Duret, 1971**

Notes: Knight and Stone 1977

***Psorophora (Janthinosoma) varipes* (Coquillett, 1904)**

Notes: Barreto-Reyes 1955

***Psorophora (Psorophora) ciliata* (Fabricius, 1794)**

Notes: Barreto-Reyes 1955

***Psorophora (Psorophora) cilipes* (Fabricius, 1805)**

Notes: Barreto-Reyes 1955

***Psorophora (Psorophora) lineata* (von Humboldt, 1819)**

Notes: Barreto-Reyes 1955

***Psorophora (Psorophora) saeva* Dyar & Knab, 1906**

Notes: Liria and Navarro 2003. Species previously overlooked by other mosquito catalogs for Colombia.

***Runchomyia (Ctenogoeldia) magna* (Theobald, 1905)**

Notes: Knight and Stone 1977

***Sabethes (Peytonulus) identicus* Dyar & Knab, 1907**

Notes: Gaffigan et al. 2014

***Sabethes (Peytonulus) ignotus* Harbach, 1995**

Notes: Harbach 1995

***Sabethes (Peytonulus) undosus* (Coquillett, 1906)**

Notes: Carrejo and González 1992

***Sabethes (Peytonulus) xenismus* Harbach, 1995**

Notes: Harbach 1995

***Sabethes (Sabethes) albiprivus* Theobald, 1903**

Notes: Barreto-Reyes 1955

***Sabethes (Sabethes) belisarioi* Neiva, 1908**

Notes: Barreto-Reyes 1955

***Sabethes (Sabethes) cyaneus* (Fabricius, 1805)**

Notes: Barreto-Reyes 1955

***Sabethes (Sabethes) quasicyaneus* Peryassú, 1922**

Notes: Knight and Stone 1977

***Sabethes (Sabethes) tarsopus* Dyar & Knab, 1908**

Notes: Barreto-Reyes 1955

***Sabethes (Sabethinus) intermedius* (Lutz, 1904)**

Notes: Barreto-Reyes 1955

***Sabethes (Sabethoides) chloropterus* (von Humboldt, 1819)**

Notes: Barreto-Reyes 1955

***Sabethes (Sabethoides) glaucodaemon* (Dyar and Shannon, 1925)**

Notes: Molina et al. 2000. Species previously overlooked by other mosquito catalogs for Colombia.

***Sallumia hortator* (Dyar & Knab, 1907)**

Notes: Knight and Stone 1977

***Shannoniana fluviatilis* (Theobald, 1903)**

Notes: Barreto-Reyes 1955

***Stegomyia albopicta* (Skuse, 1895)**

Notes: Vélez et al. 1998. The subgeneric affiliation of this species is uncertain.

***Stegomyia (Stegomyia) aegypti* (Linnaeus, 1762)**

Notes: Knight and Stone 1977

***Toxorhynchites (Lynchiella) bambusicola* (Lutz & Neiva, 1913)**

Notes: Barreto-Reyes 1955

***Toxorhynchites (Lynchiella) guadeloupensis* (Dyar & Knab, 1906)**

Notes: Knight and Stone 1977

***Toxorhynchites (Lynchiella) haemorrhoidalis* (Fabricius, 1787)**

Notes: Knight and Stone 1977

***Toxorhynchites (Lynchiella) hypoptes* (Knab, 1907)**

Notes: Knight and Stone 1977

***Toxorhynchites (Lynchiella) moctezuma* (Dyar & Knab, 1906)**

Notes: Gaffigan et al. 2014

***Toxorhynchites (Lynchiella) theobaldi* (Dyar & Knab, 1906)**

Notes: Barreto-Reyes 1955

***Trichoprosopon andinum* Levi-Castillo, 1953**

Notes: Carrejo and González 1992

***Trichoprosopon compressum* Lutz, 1905**

Notes: Barreto-Reyes 1955

***Trichoprosopon digitatum* (Rondani, 1848)**

Notes: Barreto-Reyes 1955

***Trichoprosopon evansae* Antunes, 1942**

Notes: Barreto-Reyes 1955

***Trichoprosopon lanei* (Antunes, 1937)**

Notes: Barreto-Reyes 1955

***Trichoprosopon pallidiventer* (Lutz, 1905)**

Notes: Barreto-Reyes 1955

***Uranotaenia (Uranotaenia) apicalis* Theobald, 1903**

Notes: Carrejo and González 1992

***Uranotaenia (Uranotaenia) calosomata* Dyar & Knab, 1907**

Notes: Barreto-Reyes 1955

***Uranotaenia (Uranotaenia) coatzacoalcos* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Uranotaenia (Uranotaenia) geometrica* Theobald, 1901**

Notes: Barreto-Reyes 1955

***Uranotaenia (Uranotaenia) hystera* Dyar & Knab, 1913**

Notes: Barreto-Reyes 1955

***Uranotaenia (Uranotaenia) leucoptera* (Theobald, 1907)**

Notes: Carrejo and González 1992

***Uranotaenia (Uranotaenia) lowii* Theobald, 1901**

Notes: Barreto-Reyes 1955

***Uranotaenia (Uranotaenia) pulcherrima* Lynch Arribálzaga, 1891**

Notes: Barreto-Reyes 1955

***Uranotaenia (Uranotaenia) riverai* Duret, 1970**

Notes: Knight and Stone 1977

***Wyeomyia chalcocephala* Dyar & Knab, 1906**

Notes: Knight and Stone 1977. The subgeneric affiliation of this species is uncertain.

***Wyeomyia clasoleuca* Dyar & Knab, 1908**

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

***Wyeomyia melanocephala* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

***Wyeomyia moerbista* (Dyar & Knab, 1919)**

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

***Wyeomyia serratoria* (Dyar & Nunez Tovar, 1927)**

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

***Wyeomyia (Antunesmyia) colombiana* Lane, 1945**

Notes: Barreto-Reyes 1955

***Wyeomyia (Antunesmyia) flavifacies* Edwards, 1922**

Notes: Barreto-Reyes 1955

***Wyeomyia (Cruzmyia) kummi* Lane & Cerqueira, 1942**

Notes: Knight and Stone 1977

***Wyeomyia (Cruzmyia) mattinglyi* Lane, 1953**

Notes: Knight and Stone 1977

***Wyeomyia (Decamyia) ulocoma* (Theobald, 1903)**

Notes: Carrejo and González 1992

***Wyeomyia (Decamyia) pseudopecten* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Wyeomyia (Dendromyia) complosa* (Dyar, 1928)**

Notes: Barreto-Reyes 1955

***Wyeomyia (Dendromyia) jocosa* (Dyar & Knab, 1908)**

Notes: Knight and Stone 1977

***Wyeomyia (Dendromyia) luteoventralis* Theobald, 1901**

Notes: Species newly recorded for Colombia (see Material & methods for detailed locality information).

***Wyeomyia (Dendromyia) ypsipola* Dyar, 1922**

Notes: Barreto-Reyes 1955

***Wyeomyia (Dodecamyia) aphobema* Dyar, 1918**

Notes: Barreto-Reyes 1955

***Wyeomyia (Exallomyia) tarsata* Lane & Cerqueira, 1942**

Notes: Knight and Stone 1977

***Wyeomyia (Hystatomyia) chocoensis* Porter & Wolff, 2004**

Notes: Porter and Wolff 2004

***Wyeomyia (Hystatomyia) intonca* Dyar & Knab, 1910**

Notes: Porter and Wolff 2004. Species previously overlooked by other mosquito catalogs for Colombia.

***Wyeomyia (Miamiya) codiocampa* Dyar & Knab, 1906**

Notes: Carrejo and González 1992

***Wyeomyia (Miamiya) hosautos* Dyar & Knab, 1907**

Notes: Barreto-Reyes 1955

***Wyeomyia (Miamiya) oblita* (Lutz, 1904)**

Notes: Barajas et al. 2013

***Wyeomyia (Triamyia) aporonoma* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Wyeomyia (Wyeomyia) arthro stigma* (Lutz, 1905)**

Notes: Carrejo and González 1992



***Wyeomyia (Wyeomyia) celaenocephala* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Wyeomyia (Wyeomyia) melanopus* Dyar, 1919**

Notes: Carrejo and González 1992

***Wyeomyia (Wyeomyia) pertinans* (Williston, 1896)**

Notes: Carrejo and González 1992

***Wyeomyia (Wyeomyia) scotinomus* (Dyar & Knab, 1907)**

Notes: Barreto-Reyes 1955

***Wyeomyia (Wyeomyia) simmsi* (Dyar & Knab, 1908)**

Notes: Carrejo and González 1992

## Discussion

This paper comprises the most complete and up-to-date list of mosquito species known to occur in Colombia, with a total of 324 species and 28 genera listed according to the latest nomenclature and classification. Our systematic review and literature survey found, by 16 February 2015, 13 records of culicid species overlooked by previous mosquito catalogs for Colombia. These are: *Anopheles costai*, *An. fluminensis* and *An. shannoni* (cited by González and Carrejo 2007), *An. malefactor* (cited by Wilkerson 1990), *An. vargasi* (cited by Osorno-Mesa 1947), *Culex mesodenticulatus* (cited by Barreto et al. 1996), *Haemagogus capricornii* (cited by Kumm et al. 1946), *Isostomyia espini*, *Johnbelkinia leucopus* and *Sabethes glaucodaemon* (cited by Molina et al. 2000), *Mansonia indubitans* (cited by Ferro et al. 2008), *Psorophora saeva* (cited by Liria and Navarro 2003 and *Wyeomyia intonca* (cited by Porter and Wolff 2004).

In addition, we record *Wyeomyia (Dendromyia) luteoventralis* for the first time from Colombia. This species was originally described by Theobald (1901) from three females caught on human bait in Paraná state (Brazil). *Wyeomyia luteoventralis* is the type species of the subgenus *Dendromyia* Theobald, 1903 (Motta and Lourenço-de-Oliveira 1995). This species had been previously collected in Brazil, French Guiana, British Guiana, and Venezuela (Gaffigan et al. 2014); however, it has rarely been reported in biological, ecological and taxonomic studies in South America (Motta and Lourenço-de-Oliveira 1995).

Although this report represents the most comprehensive list of mosquito species for Colombia, the 324 species included in this updated listing are unlikely to be a complete

inventory of the Colombian mosquito fauna. Biodiversity data suggest that around 1,000 mosquito species will eventually be described from southern U.S.A. to Colombia, Ecuador, and Peru (Belkin et al. 1965, Foley et al. 2008). Colombia, with its diversity of landscapes, is highly species-rich and is a potential hotspot of mosquito endemism (Foley et al. 2008). Furthermore, ongoing and rapid development in Colombia is expected in the next decade with a loss of habitat associated with the growth of urban centers, which will undoubtedly have an impact on species diversity (Montoya-Lerma et al. 2011). Moreover, the finding of new species to the Colombian fauna such as *Wyeomyia luteoventralis* indicates that future sampling may reveal further species records which could help improve the taxonomy and provide a more accurate estimate of Colombia's mosquito diversity. This work provides important insights into the mosquito diversity of Colombia. We expect it to serve as a useful platform for future work on the mosquitoes of Colombia as well as provide a context for non-vector species.

## Acknowledgements

Many thanks to James Pecor (Walter Reed Biosystematics Unit, Smithsonian Institution, USA) for helping us with the identification of the *Wyeomyia* specimen and for sharing useful taxonomic literature. Also, many thanks to the anonymous reviewers for their constructive comments that helped us to improve the manuscript.

## References

- Arnell JH (1976) Mosquito studies (Diptera, Culicidae) XXXIII. A revision of the *Scapularis* group of *Aedes* (Ochlerotatus). Contributions of the American Entomological Institute 13 (3): 1-144.
- Barajas J, Suaza JD, Torres C, Leon-Rua G, Uribe-Soto S, Porter C (2013) Mosquitos (Diptera: Culicidae) asociados a guadua en los municipios de Anserma, Hispania y Jardín, Colombia. Revista Colombiana de Entomología 39 (1): 132-140.
- Barreto M, Burbano ME, Barreto P (2008) Gynandromorphs in mosquitoes (Diptera: Culicidae) from Valle del Cauca, Colombia. Neotropical Entomology 37 (3): 296-300. DOI: [10.1590/S1519-566X2008000300008](https://doi.org/10.1590/S1519-566X2008000300008)
- Barreto M, Burbano ME, Suárez M, Barreto P (1996) *Psorophora ciliata* y otros mosquitos (Diptera: Culicidae) en Yolombó. Colombia Médica 27 (2): 62-65.
- Barreto-Reyes P (1955) Lista de mosquitos de Colombia (Diptera: Culicidae). Anales de la Sociedad de Biología de Bogotá 7 (2): 46-94.
- Belkin JN, Schick RX, Galindo P, Aitken TH (1965) Mosquito studies (Diptera, Culicidae). A project for a systematic study of the mosquitoes of Middle America. Contributions of the American Entomological Institute 1: 1-78.
- Brochero H, Quiñones ML (2008) Retos de la entomología médica para la vigilancia en salud pública en Colombia: Reflexión para el caso de malaria. Biomédica 28: 18-24. DOI: [10.7705/biomedica.v28i1.105](https://doi.org/10.7705/biomedica.v28i1.105)
- Carrejo N, González R (1992) *Introducción al Conocimiento de los Diptera*. Universidad del Valle Ed., Cali, 197 pp.

- Ferro C, Olano VA, Ahumada M, Weaver S (2008) Mosquitos (Diptera: Culicidae) en el caserío de Chingalé, Santander, donde se registró un caso humano de encefalitis equina Venezolana. *Biomédica* 28 (2): 234-244. DOI: [10.7705/biomedica.v28i2.94](https://doi.org/10.7705/biomedica.v28i2.94)
- Ferro C, Boshell J, Moncayo AC, González M, Ahumada ML, Kang W (2003) Natural enzootic vectors of Venezuelan equine encephalitis virus, Magdalena Valley, Colombia. *Emerging Infectious Diseases* 9: 49-54. DOI: [10.3201/eid0901.020136](https://doi.org/10.3201/eid0901.020136)
- Foley DH, Rueda LM, Wilkerson RC (2007) Insight into global mosquito biogeography from country species records. *Journal of Medical Entomology* 44 (4): 554-567. DOI: [10.1093/jmedent/44.4.554](https://doi.org/10.1093/jmedent/44.4.554)
- Foley DH, Weitzman AL, Miller SE, Faran ME, Rueda LM, Wilkerson RC (2008) The value of georeferenced collection records for predicting patterns of mosquito species richness and endemism in the Neotropics. *Ecological Entomology* 33: 12-23.
- Gaffigan TV, Wilkerson RC, Pecor JE, Stoffer JA, Anderson T (2013) New Mosquito Classification. Systematic Catalog of Culicidae. Walter Reed Biosystematics Unit. [http://www.wrbu.org/mq\\_NewClass201309.html](http://www.wrbu.org/mq_NewClass201309.html). Accession date: 2015 2 16.
- Gaffigan TV, Wilkerson RC, Pecor JE, Stoffer JA, Anderson T (2014) Systematic Catalog of Culicidae. <http://mosquitocatalog.org/>. Accession date: 2015 2 24.
- González R, Carrejo N (2007) *Introducción al estudio taxonómico de Anopheles de Colombia: Claves y notas de distribución*. Universidad del Valle Ed., Cali, 237 pp.
- Harbach RE (1995) Two new species of the subgenus *Peytonulus* of *Sabethes* (Diptera: Culicidae) from Colombia. *Memórias do Instituto Oswaldo Cruz* 90: 583-587. DOI: [10.1590/S0074-02761995000500007](https://doi.org/10.1590/S0074-02761995000500007)
- Harbach RE (2015) Mosquito Taxonomic Inventory. Valid Species List. <http://mosquito-taxonomic-inventory.info/valid-species-list>. Accession date: 2015 2 12.
- Harbach RE, Howard T (2009) Review of the genus *Chagasia* (Diptera: Culicidae: Anophelinae). *Zootaxa* 2210: 1-25.
- Hudson RX (2010) *Colombia: A country study*. Federal Research Division, Library of Congress (U.S), Washington D.C., 87 pp.
- Judd DD (1998) Review of a bromeliad-ovipositing lineage in *Wyeomyia* and the resurrection of *Hystatomyia* (Diptera: Culicidae). *Annals of the Entomological Society of America* 91: 572-589. DOI: [10.1093/aesa/91.5.572](https://doi.org/10.1093/aesa/91.5.572)
- Knight KL, Stone A (1977) A Catalog of the Mosquitoes of the World (Diptera: Culicidae). *Entomological Society of America* 6 (2): 1-611.
- Kumm HW, Osorno-Mesa E, Boshell-Manrique J (1946) Studies on mosquitoes of the genus *Haemagogus* in Colombia (Diptera: Culicidae). *American Journal of Hygiene* 43 (1): 13-28.
- Lane J (1953) *Neotropical Culicidae*. 1 & 2. University of São Paulo Ed., 1112 pp.
- Liria J, Navarro JC (2003) *Psorophora* (*Psorophora*) *lineata* (Humboldt, 1819) y *Psorophora* (*Pso.*) *saeva* Dyar & Knab, 1906 (Diptera: Culicidae). Correcciones en su identificación. *Entomotropica* 18 (2): 113-119.
- Lounibos LP, Wilkerson RC, Conn JE, Hribar LJ, Fritz GN, Danoff-Burg JA (1998) Morphological, molecular and chromosomal discrimination of cryptic *Anopheles* (*Nyssorhynchus*) (Diptera: Culicidae) from South America. *Journal of Medical Entomology* 35: 830-838. DOI: [10.1093/jmedent/35.5.830](https://doi.org/10.1093/jmedent/35.5.830)
- Mendenhall IH, Giraldo-Calderón GI, Ocampo CD, Wesson DM, Pecor JE (2011) First Record of *Culex* (*Anoediopora*) *restrictor* from Colombia. *Journal of the American Mosquito Control Association* 27 (2): 148-148. DOI: [10.2987/10-6102.1](https://doi.org/10.2987/10-6102.1)

- Molina JA, Hildebrand P, Olano VA, Muñoz P, Barreto M, Guhl F (2000) Fauna de insectos hematófagos del sur del parque natural nacional Chiribiquete, Caquetá, Colombia. *Biomédica* 20: 314-326. DOI: [10.7705/biomedica.v20i4.1075](https://doi.org/10.7705/biomedica.v20i4.1075)
- Montoya-Lerma J, Solarte YA, Giraldo-Calderón GI, Quiñones ML, Ruiz-López F, Wilkerson RC, González R (2011) Malaria vector species in Colombia: A review. *Memórias do Instituto Oswaldo Cruz* 106: 223-238. DOI: [10.1590/S0074-02762011000900028](https://doi.org/10.1590/S0074-02762011000900028)
- Morrone JJ (2006) Biogeographic areas and transition zones of Latin America and the Caribbean islands based on panbiogeographic and cladistic analyses of the entomofauna. *Annual Review of Entomology* 51: 467-494. DOI: [10.1146/annurev.ento.50.071803.130447](https://doi.org/10.1146/annurev.ento.50.071803.130447)
- Motta MA, Lourenço-de-Oliveira R (1995) *Wyeomyia luteoventralis* Theobald, the Type Species of the Subgenus *Dendromyia* Theobald (Diptera: Culicidae). *Memórias do Instituto Oswaldo Cruz* 90 (3): 375-385. DOI: [10.1590/S0074-02761995000300012](https://doi.org/10.1590/S0074-02761995000300012)
- Motta MA, Lourenço-de-Oliveira R (2000) The subgenus *Dendromyia* Theobald: A review with redescrptions of four species (Diptera: Culicidae). *Memórias do Instituto Oswaldo Cruz* 95 (5): 649-683. DOI: [10.1590/S0074-02762000000500011](https://doi.org/10.1590/S0074-02762000000500011)
- Olano VA, Brochero HL, Sáenz R, Quiñones ML, Molina JA (2001) Mapas preliminares de la distribución de especies de *Anopheles* vectores de malaria en Colombia. *Biomédica* 21: 402-408.
- Osorno-Mesa E (1947) Una nueva especie de *Anopheles* de Bogota, Colombia. *Caldasia* 4 (20): 431-446.
- Pecor JE, Mallampalli VL, Harbach RE, Peyton EL (1992) Catalog and illustrated review of the subgenus *Melanoconion* of *Culex* (Diptera: Culicidae). *Contributions of the American Entomological Institute* 27 (2): v + 1-228.
- Porter CH, Wolff MI (2004) A new species of *Wyeomyia* (Hystatomyia) (Diptera: Culicidae) from Colombia and a redescription of *Wy.* (Hystatomyia) *intonca* Dyar & Knab. *Zootaxa* 477: 1-31.
- Reinert JF, Harbach RE, Kitching AJ (2009) Phylogeny and classification of tribe Aedini (Diptera: Culicidae). *Zoological Journal of the Linnean Society* 157 (4): 700-794. DOI: [10.1111/j.1096-3642.2009.00570.x](https://doi.org/10.1111/j.1096-3642.2009.00570.x)
- Vélez I, Quiñones ML, Suarez M, Olano V, Murcia LM, Correa E, Arévalo C, Pérez L, Brocher H, Morales A (1998) Presencia de *Aedes albopictus* en Leticia, Amazonas, Colombia. *Biomédica* 18: 182-198. DOI: [10.7705/biomedica.v18i3.990](https://doi.org/10.7705/biomedica.v18i3.990)
- Walter Reed Medical Army (1998) Disease Vector Ecology Profile: Colombia. Analysis, Defense Pest Management Information, Washington D.C., 88 pp. URL: <http://www.afpmb.org/sites/default/files/pubs/dveps/COLOMBIA.PDF>
- Wilkerson RC (1990) Redescrptions of *Anopheles punctimacula* and *An. malefactor* (Diptera: Culicidae). *Journal of Medical Entomology* 27 (2): 225-247. DOI: [10.1093/jmedent/27.2.225](https://doi.org/10.1093/jmedent/27.2.225)