




First record of *Ramphocorixa rotundocephala* Hungerford, 1927 (Hemiptera, Corixidae) for Colombia

Mabel Giovana Pimiento-Ortega^{1*}, Isabella González-Gamboa¹, Yimy Herrera-Martínez¹

¹ Manejo Integrado de Ecosistemas y Biodiversidad XIUÁ, School of Biology, Universidad Pedagógica y Tecnológica de Colombia, Tunja, Boyacá, Colombia • MGPO: mabel.pimiento@uptc.edu.co  <https://orcid.org/0000-0001-6654-1537> • IGG: isabella.gonzalez@uptc.edu.co  <https://orcid.org/0000-0002-7361-0761> • YHM: yimyherrera@gmail.com  <https://orcid.org/0000-0001-8797-3021>

* Corresponding author

Abstract

In the course of research conducted on *Procambarus clarkii* (Girard, 1852) in Colombia, *Ramphocorixa rotundocephala* Hungerford, 1927 was collected in Güitoque Lake, outside the town of Gachantivá, Boyacá. The species was identified from the adult males found there. This species of aquatic insect occurs mostly in Central and North America, but there are also two records from Venezuela in South America. This is the first record of this species and its genus for Colombia. This finding increases this species' known distribution on the continent and the diversity of hemipterans in northern South America.

Keywords

Boyacá, Güitoque, lake, South America

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Introduction

Hemiptera of the family Corixidae, commonly known as water boatmen, are aquatic insects of between 2.6 and 16 mm in length, which mainly inhabit lentic and oligotrophic freshwater ecosystems. Some species can tolerate pollution, as well as relatively shallow, saline habitats (Aristizábal 2017). They are the only omnivorous aquatic family of the infraorder Nepomorpha, and their presence may depend on the composition and abundance of macrophytes (Millspaugh 1949; Scudder 1976; Stonedahl and Lattin 1986).

Corixidae is the most abundant aquatic family of the suborder Heteroptera. Globally, it contains around 607 species distributed among 35 genera, of which only 13 species have been recorded in the Neotropics (Stonedahl

and Lattin 1986; Roble and Hoffman 2000; Barbosa and Rodrigues 2015; Polhemus and Polhemus 2008; Mazzucconi et al. 2008; Topkara 2013; Aristizábal 2017). Until now, six genera and 13 species of Corixidae were known in Colombia, including *Centrocorisa kollari* (Fieber, 1851); *Trichocorixa reticulata* (Guérin-Méneville, 1857); *T. orinocoensis* Sailer, 1948; *Heterocorixa hesperia* (White, 1879); *Tenagobia socialis* (White, 1879); *T. aconita* Nieser, 1977; *Neosigara columbiana* Lundblad, 1928; *N. murilloi* Hungerford, 1948; *N. aristera* Nieser & Padilla-Gil, 1992; *N. sterea* Nieser & Padilla-Gil, 1992; *N. akanthinomeros* Padilla-Gil & Nieser, 1994; *N. paramo* Tinerella & Polhemus, 2006, and *Orocorixa makrocheira* Nieser & Padilla-Gil, 1992. The

genus *Ramphocorixa* Abbott, 1912 currently includes two described species, and these have been reported mostly in Central and North America. *Ramphocorixa rotundocephala* has additionally also been recorded in South America, in 1936 on Margarita Island and in 1937 on the Paraguaná Peninsula (Nieser 1969). In the present study, the genus *Ramphocorixa* is recorded for the first time in Colombia, from a lake located in the department of Boyacá.

Methods

Güitoque Lake is located outside the town of Gachantivá, Boyacá, in the Cordillera Oriental of Colombia, at an altitude of 2350 m a.s.l. It has a total area of 0.24 ha and a maximum depth of 1.6 m. This lake is characterized as being small, with sparse riparian vegetation of both trees and shrubs (Fig. 1). It contains emergent macrophytes. *Ramphocorixa rotundocephala* specimens were collected in November 2019. For this, a 250 µm hand net was used, following the methodology established by Alba-Tercedor et al. (2005), which consists of making several passes with a hand net in the littoral zone, within a defined time interval. The collected material was deposited into plastic bags and fixed with 96% alcohol. In the laboratory, the Corixidae were isolated, using a stereomicroscope (ZEISS stemi 305), and placed



Figure 1. Güitoque Lake, Boyacá, Colombia.

in vials with 70% alcohol. The obtained specimens were compared with descriptions in the taxonomic keys by Hungerford (1948), Nieser (1969), and Fernández and Domínguez (2009). A male was dissected, and its genital structure was treated with 90% acetic acid and placed in glycerin, according to the methodology of Fonseca et al. (2017). Afterwards, the specimens were deposited in the entomological collection of the Luis Gonzalo Andrade Museum of the Universidad Pedagógica y Tecnológica de Colombia (UPTC).

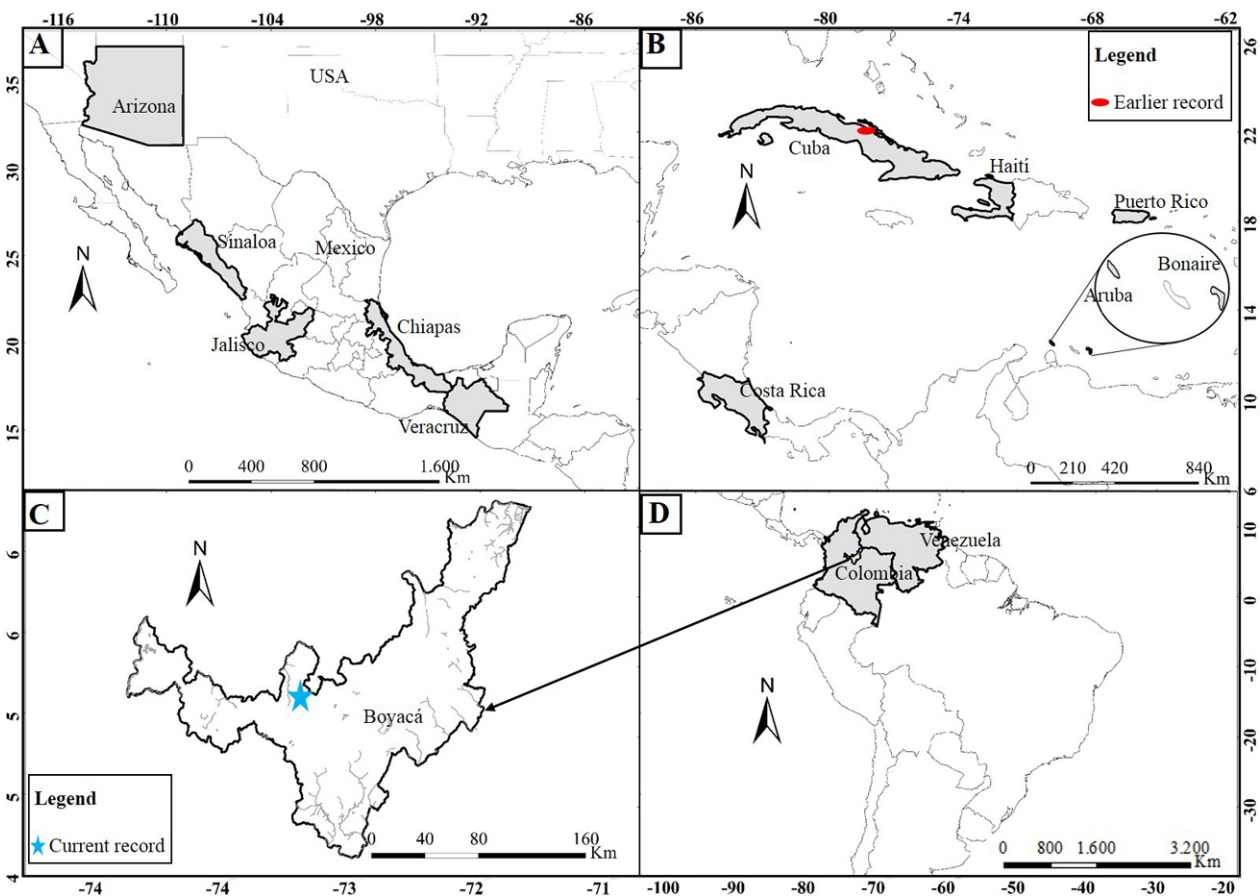


Figure 2. Map showing the previous record of *Ramphocorixa rotundocephala* in Cuba and the new record in Colombia. Blue star = new record in Boyacá (C), Colombia. Red circle = earlier record (B). On the map the countries with previous records are named. Gray-shaded areas = countries and states in USA and Mexico where *R. rotundocephala* has been reported.

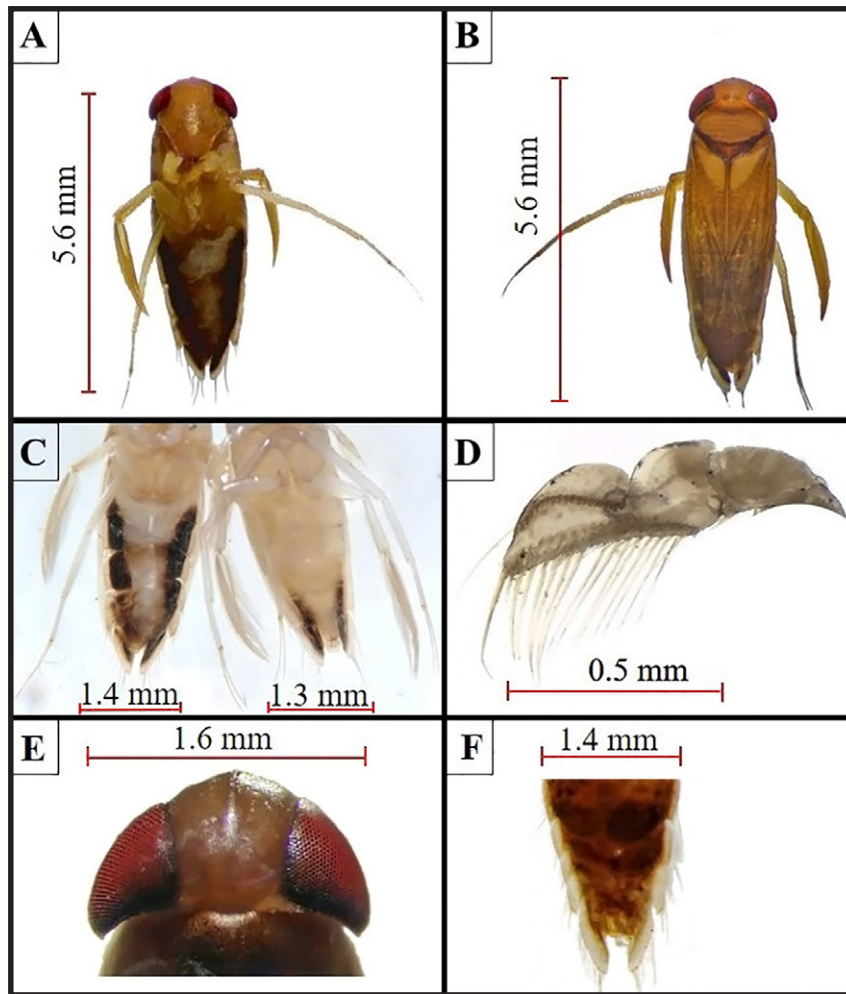


Figure 3. *Ramphocorixa rotundocephala*. **A.** Male ventral view. **B.** Male dorsal view. **C.** Male and female with a color difference in the sternites. **D.** Male front pala. **E.** Male head. **F.** Male abdomen.

Results

Ramphocorixa rotundocephala Hungerford, 1927

New records. COLOMBIA – Boyacá, Gachantiva, Güitotoque Lake; 05°42.21'N, 073°32.70'W (Fig. 2); 2350 m a.s.l.; 18.XI.2019; Mabel Pimiento, Sandra Fernández & Camila Romero leg.; UPTC-In-00227; 1 ♂ adult, 5.6 mm; 1 ♀ adult, 5.7 mm.

Identification. *Ramphocorixa rotundocephala* is distinguished by both sexes having a rounded head. It has a smaller, less prominent keel than that of *Ramphocorixa acuminata* (Uhler, 1897). It has a head width of less than 2 mm (1.6 mm) (Fig. 3a). Frontal foveae are broad and concave in males. Pronotum short, with four crossed, dark bands (Fig. 3b). Head, legs, and thorax white to yellow. Palar claw serrated. Hemelytra with longitudinal reticulations. Strigil present in the male. Female with abdominal symmetry, while the male presents dextral asymmetry. Abdominal bands dark brown to black, present in males from the first segment and in females only on the last two sternites (Fig. 3c). Male front pala very similar to *R. acuminata* but with a deep dorsal cleft and no curvature of the pegs at the base (Fig. 3d). Male genital capsule as seen in Figure 4.

Habitat. The specimens were found in the littoral zone of the lake, near macrophytes (*Eleocharis filiculmis* Kunth and *Juncus microcephalus* Kunth), and in riparian, shrubby vegetation.

Discussion

This is the first record of *Ramphocorixa rotundocephala* for Colombia, increasing to seven the number of genera and to 14 the number of species of the Corixidae family reported from the country. It also constitutes the third record of this species from South America, thus expanding the known distribution of this species further to the south on the American continent. The discovery of these

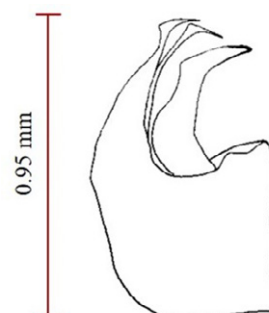


Figure 4. *Ramphocorixa rotundocephala* male genital capsule.

aquatic hemipterans in isolated lentic ecosystems, without permanent connections to other aquatic ecosystems, as is the case of Güitoque Lake, opens the door to new studies on the mechanisms of their dispersion.

The scarcity of records of *R. rotundocephala* from various South American aquatic ecosystems indicates that the distribution of this species could potentially be much more widespread, or its distribution could be influenced by unknown factors. The majority of the records are from islands off the continent, most recently in Cuba in 2002 (Riviaux et al. 2010). The first record of *R. rotundocephala* on Margarita Island, Venezuela, and its occurrence on Aruba, Bonaire, and Puerto Rico, were part of the collection for the Zoological Museum, University of Copenhagen, compiled by Nieser (1969). From North America, there are records from the 1940s from Mexico (Chiapas, Veracruz, Sinaloa, and Jalisco) and the USA (Arizona) (Hungerford 1948).

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Authors' Contributions

MPO wrote the paper, checked the organisms, identified the species and analyzed the data together with IGG and YHM. MPO took the photographs and made the drawings of the document. MPO and IGG gathered and organized the field data for this study. YHM checked the document.

References

- Alba-Tercedor J, Pardo I, Prat N, Pujante A (2005) Protocolos de Muestreo y Análisis para Invertebrados Bentónicos. In: Ministerio de Medio Ambiente, Confederación Hidrográfica del Ebro y URS (Eds.) Metodología para el establecimiento del Estado Ecológico según la Directiva Marco del Agua. Ministerio de Medio Ambiente, Madrid, Spain, 131–175.
- Aristizábal-García H (2017) Hemípteros acuáticos y semiacuáticos del Neotrópico. Colección Jorge Álvarez Lleras No. 31. Academia Colombiana de Ciencias Exactas, Físicas y Naturales, eQual Consultoría y Servicios Ambientales, Conservación Internacional Colombia, Asociación Colombiana de Zoología, Bogotá, Colombia, 984 pp.
- Barbosa JF, Rodrigues HD (2015) The true water bugs (Nepomorpha). In: Panizzi AR, Grazia J (Eds.) True bugs (Heteroptera) of the Neotropics. Springer, Dordrecht, The Netherlands, 159–199. https://doi.org/10.1007/978-94-017-9861-7_7
- Fernández HR, Domínguez E (2009) Guía para la determinación de los artrópodos bentónicos sudamericanos. Universidad Nacional de Tucumán, San Miguel de Tucumán, Argentina, 219 pp.
- Fonseca SPM, Rendón FM, Castaño IM (2017) Cinco nuevas especies de *Tachygerris* (Hemiptera: Gerridae: Gerrinae) y nuevos registros para Colombia. *Caldasia* 39 (2): 204–220. <https://doi.org/10.15446/caldasia.v39n2.60603>
- Hungerford HB (1948) The Corixidae of the Western Hemisphere (Hemiptera). The University of Kansas Science Bulletin 32: 5–827.
- Hungerford HB, Watson FE (1927) A new *Ramphocorixa* from Haiti (Hemiptera-Corixidae). *American Museum Novitates* 278: 1–2.
- Mazzucconi SA, Ruf ML, Bachmann AO (2008) Gerromorpha y Nepomorpha (Insecta: Heteroptera) del Parque Provincial Salto Encantado del Valle del Cuñá Pirú, Provincia de Misiones, Argentina. *International Journal of Biodiversity* 9 (1): 57–66.
- Millsbaugh DD (1949) Revisions and additions to our list of Iowa Corixidae. *Proceedings of the Iowa Academy of Science* 56 (1): 371–375.
- Nieser N (1969) The Heteroptera of the Netherlands Antilles—VII Corixidae. *Studies on the Fauna of Curaçao and Other Caribbean Islands* 28 (1): 135–164.
- Polhemus JT, Polhemus DA (2008) Global diversity of true bugs (Heteroptera; Insecta) in freshwater. *Hydrobiologia* 595: 379–391. <https://doi.org/10.1007/s10750-007-9033-1>
- Riviaux SM, Moreira FFF, Lopez CN (2010) Checklist, distribution, and habitat of the semiaquatic and aquatic bugs from Cuba (Hemiptera: Heteroptera: Dipsocoromorpha, Leptopodomorpha, Gerromorpha and Nepomorpha). *Zootaxa* 2562 (1): 1–23. <https://doi.org/10.11646/zootaxa.2562.1.1>
- Roble SM, Hoffman RL (2000) Three true bugs new to the Virginia fauna, including the first record of the family Schizopteridae (Heteroptera). *Banisteria* 16: 41–45.
- Scudder GG (1976) Water-boatmen of saline waters (Hemiptera: Corixidae). In: Cheng L (Eds.) *Marine insects*. North-Holland Publishing Company, Amsterdam, The Netherlands, 263–289.
- Stonedahl GM, Lattin JD (1986) The Corixidae of Oregon and Washington (Hemiptera: Heteroptera). *Technical Bulletin* (Oregon State University, Agricultural Experimental Station): 150: 1–85.
- Topkara ET (2013) Contribution to the knowledge on distribution of water boatmen (Heteroptera: Corixidae) in Turkey. *Su Ürünleri Dergisi* 30 (1): 15–19. <https://doi.org/10.12714/egejfas.2013.30.1.03>