



Veliidae (Insecta: Heteroptera: Gerromorpha) from Colombia: Description of a new species and of the male of *Euvelia meta* Molano, Moreira & Morales, 2016

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urn:lsid:zoobank.org:act:546EE489-D7AD-4AC6-A96C-C6978356A77C

ARTICLE INFO

Article history:

Received 04 September 2019

Accepted 30 January 2020

Available online 23 March 2020

Associate Editor: Daniela Takiya

Keywords:

Faunistics

Hemiptera

South America

taxonomy

water striders

ABSTRACT

Stridulivelia (Aenictovelia) chocoana sp. nov. (Heteroptera: Veliidae: Veliinae) is described based on specimens from the Colombian department of Chocó. The new species is diagnosed by pronotal humeral angles, body length, male hind trochanter and paramere shape. Furthermore, we describe and illustrate the previously unknown male of *Euvelia meta* Molano, Moreira & Morales, 2016 (Heteroptera: Veliidae: Microveliinae) and its range is extended to Amazonas and Vichada departments.

Introduction

Most insects of the family Veliidae (Insecta: Heteroptera: Gerromorpha) spend nearly the entire active period of their lives on the water surface, inhabiting a wide variety of freshwater bodies, permanent or temporary, natural or artificial. Veliidae is globally distributed, except for Antarctica, and is currently the largest family of Gerromorpha, with six subfamilies, 61 genera, and more than 960 species (Moreira, 2015).

The genus *Stridulivelia* Hungerford, 1929 (Veliidae: Veliinae) is composed of 15 species, which are characterized by having the sides of the thorax with several glabrous, depressed structures, and at least the first two visible abdominal segments with transverse lateral sulci (Floriano et al., 2017). It is divided into two subgenera: *Stridulivelia* s.str. Hungerford, 1929 and *S. (Aenictovelia)* Polhemus, 1979. In the latter, species lack stridulatory structures on the hind femur and abdominal laterotergites, and have the middle tarsi with blade-like claws and downcurving arolia. Five species are currently held in this subgenus, four from Mesoamerica (*S. (A.) secerna* Polhemus, 1979; *S. (A.) epeixis*

(Drake and Menke, 1962); *S. (A.) pueblana* (Drake, 1951); *S. (A.) speciosa* Polhemus and Polhemus, 1985); and one widely distributed in Meso- and northern South America (*S. (A.) cinctipes* (Champion, 1898)) (Polhemus and Spangler, 1995; Floriano et al., 2017).

In this paper, we describe *Stridulivelia (Aenictovelia) chocoana* sp. nov. based on specimens from the Colombian department of Chocó, and the previously unknown male of *Euvelia meta* Molano, Moreira & Morales, 2016 (Veliidae: Microveliinae).

Material and Methods

This study was based on specimens deposited in the *Laboratorio de Entomología*, Museo de Historia Natural "Luis Gonzalo Andrade", Universidad Pedagógica y Tecnológica de Colombia, Tunja, Colombia (UPTC) and *Colección de Macroinvertebrados Acuáticos*, Instituto Amazónico de Investigaciones Científicas, Leticia, Colombia (COMAC). Descriptions and photographs were made using specimens preserved in alcohol. All measurements are given in mm.

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Results

Stridulivelia (Aenictovelia) choacoana sp. nov.

Diagnosis. Recognized by the following combination of characters: Pronotal humeral angles smooth (Fig. 1); micropterous wing silvery (Figs. 1a and c), body length 3.25–3.50 mm; male hind trochanter with a long, acute spike near apex (Figs. 1a and b), parameres with projection on the anterior margin weak (Fig. 2a), dorsal vesical sclerite thin, projecting at apex (Fig. 2g), and lateral sclerites short and curved (Fig. 2g). Female terminalia without projections (Figs. 1c and d).

Description. Micropterous male (Figs. 1a and b). Head brown; two circular pruinose patches near anterior margins of eyes; longitudinal midline impressed; a pair of oblique indentations posteriorly; frons set with fine golden setae. Antenna brown, article I stoutest, curved laterally; II and III slender, cylindrical; IV subfusiform; all articles covered with fine golden setae intermixed with longer black bristle-like setae. Pronotum brown, anterior lobe with two patches of silvery setae; humeral angles rounded; anterior and posterior lobes separated by a row of coarse pits; anterior lobe set with fine golden setae; posterior lobe subcarinate medially, surface on either side set with several pits; surface between pits covered with short golden setae and longer brown setae; pronotal margins smooth; pleural region set

with coarse, irregular pits, fringed by short silvery setae on acetabula; set with long brown setae on metapleura. Micropterous wing silvery (Fig. 1a). Ventral surface brown, labium light brown, glabrous, with dark stripe medially, apex black; meso- and metasterna set with long, fine golden setae. Legs yellowish brown, coxae and trochanters light brown, tips of trochanters and femora infuscated, hind femur thick, with brown medially and apically; all leg segments covered with short, fine black setae, intermixed with longer black setae; fore and middle femora and tibiae with evenly spaced, short golden setae ventrally; hind trochanter with a long, acute spike near apex; posterior surface of hind femur with a longitudinal row of about 17 small pegs before middle, followed by one large peg slightly beyond middle, and about 3 pegs of decreasing size towards apex, plus 17 scattered black pegs parallel to the previous row; hind tibia with a longitudinal row of about 65 black pegs. Abdomen brown, surface thickly covered with fine golden setae; posterior projection of last laterotergite short. Abdominal segments II–VI with transverse lateral sulci. Parameres symmetrical, triangular knife-shaped, with the thin point directed caudally, acuminate apically (Fig. 2a). Dorsal vesical sclerite thin, projecting at apex (Fig. 2g), lateral sclerites short and curved (Fig. 2g).

Micropterous female (Figs. 1c and d). All features except the terminalia very similar to the micropterous male. Abdominal segments II–V with transverse lateral sulci; laterotergites reflexed over mediotergites IV–VII,

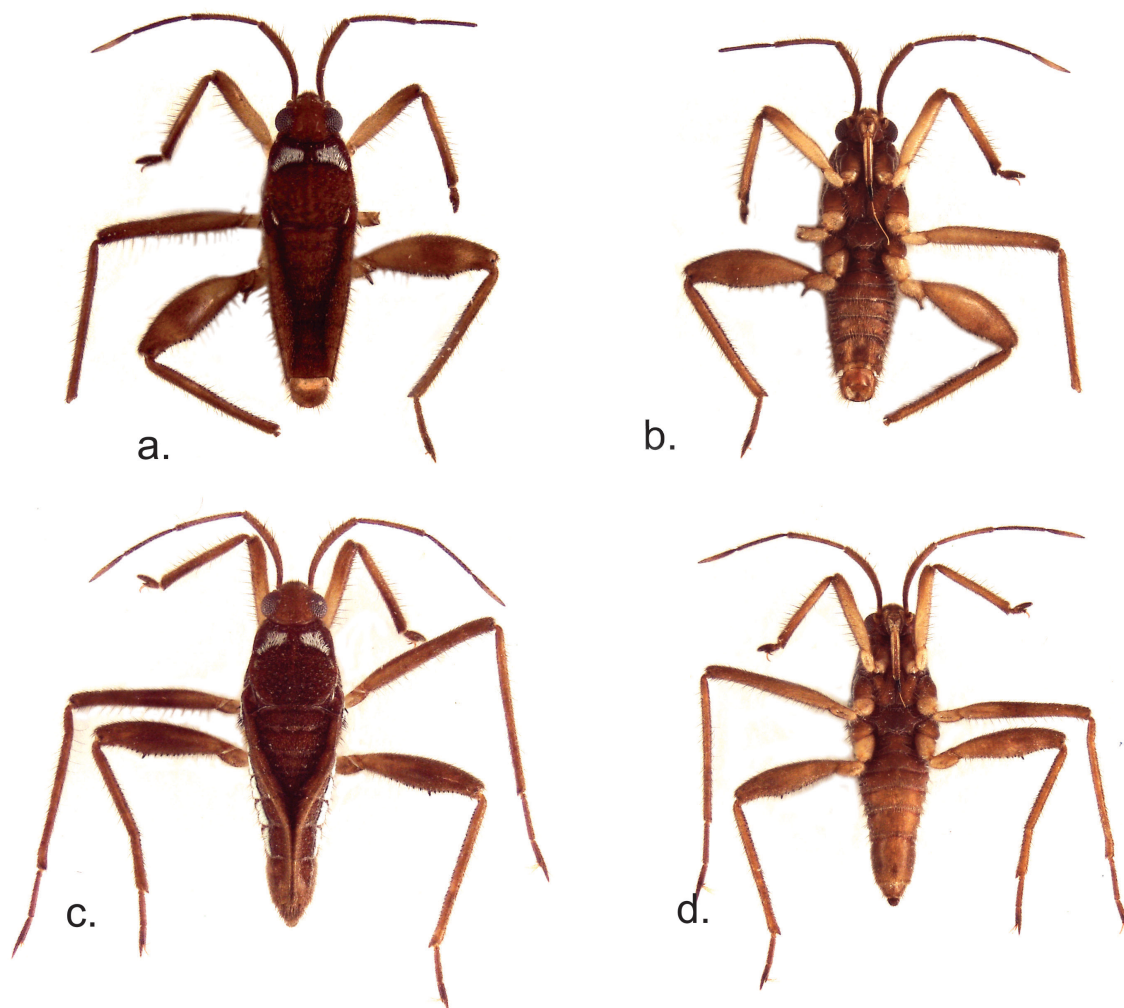


Figure 1 *Stridulivelia (Aenictovelia) choacoana* sp. nov., male holotype, a) dorsal view, b) ventral view, female paratype c) dorsal view, d) ventral view.

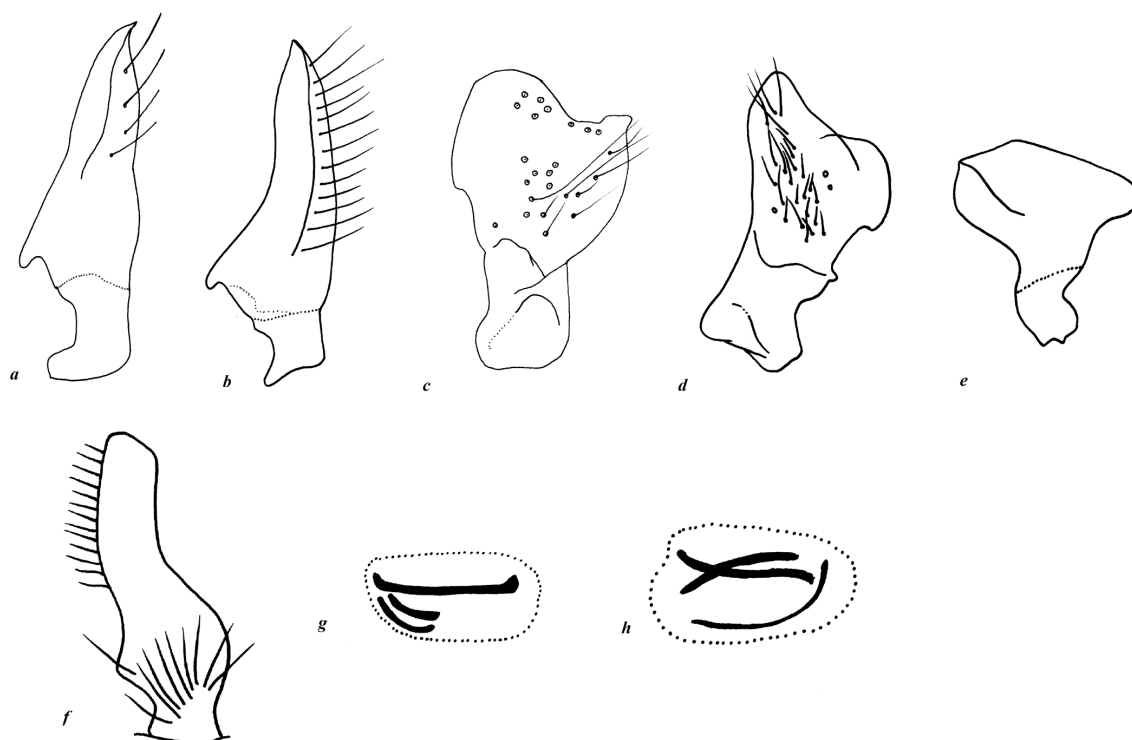


Figure 2 Parameres of male: a) *S. (Aenictovelía) chochoana* sp. nov., b) *S. (Aenictovelía) cinctipes*, c) *S. (Aenictovelía) expeixis*, d) *S. (Aenictovelía) pueblana*, e) *S. (Aenictovelía) secerna*, f) *S. (Aenictovelía) speciosa*. Vesical sclerites: g) *S. (Aenictovelía) chochoana* sp. nov., h) *S. (Aenictovelía) cinctipes*.

convergent over IV–V and parallel over VI–VII. Hind trochanter without large spike; posterior surface of hind femur with a longitudinal row of about 6 small pegs before middle, followed by one large peg slightly beyond middle, and about 8 pegs of decreasing size towards apex, plus 10 scattered black pegs parallel to the previous row; posterior tibia with a longitudinal row of about 35 black pegs.

Measurements (male holotype / female paratype). Body length 3.25 / 3.55; head length 0.52 / 0.52; head width 0.33 / 0.33; antennomere I 0.89 / 0.92; antennomere II 0.66 / 0.72; antennomere III 0.62 / 0.62; antennomere IV 0.49 / 0.49; eye width 0.16 / 0.16; pronotum length on midline 0.82 / 0.82; pronotum width 0.92 / 0.92; FORELEG, femoral length: 0.95 / 1.05; tibial length 1.02 / 1.08; tarsomere I 0.04 / 0.04; tarsomere II 0.24 / 0.30; tarsomere III, lost / lost; MIDLLEG: femoral length: 1.48 / 1.58; tibial length 1.68 / 1.74; tarsomere I lost / 0.03; tarsomere II lost / 0.30; tarsomere III lost / 0.46; HINDLEG, femoral length: 1.41 / 1.48; tibial length 1.78 / 1.68; tarsomere I 0.09 / 0.06; tarsomere II 0.29 / 0.39; tarsomere III 0.33 / 0.46.

Etymology. This species is named after Chocó Department, Pacific Region of Colombia, where the type series was collected.

Material examined. Holotype. (1 ♂) (UPTC): COLOMBIA, Chocó, Bahía Solano, Corregimiento El Valle, quebrada, 98 m, 6° 6.540' N / 77° 25.572' W; 4.XI.2016; S. P. Mondragón and F. Molano Col.

Paratypes. (3 ♀) (UPTC): COLOMBIA, Chocó, Bahía Solano, Corregimiento El Valle, quebrada, 98 m, 6° 6.540' N / 77° 25.572' W; 4.XI.2016; S. P. Mondragón and F. Molano Col.

Comments. *Stridulivelia (Aenictovelía) chochoana* sp. nov. can be easily distinguished from other species of the subgenus by the smaller body length of 3.25–3.50 mm, whereas other species have body lengths of 4.45–5.20 mm (Drake and Menke, 1962; Polhemus, 1979; Polhemus and Polhemus, 1985). The new species resembles *S. (A.) cinctipes*, but differs in the shape of the parameres and vesical sclerites of the male. In

S. (A.) cinctipes, the projection on the anterior margin of the paramere is stronger, the apex is not directed caudally (Fig. 2b), and the lateral vesical sclerites are as long as the dorsal sclerite (Fig. 2h). Meanwhile, in *S. (A.) chochoana* sp. nov., the projection on the anterior margin of the paramere is weaker, the apex is directed caudally (Fig. 2a), and the lateral vesical sclerites are much shorter than the dorsal sclerite (Fig. 2g). The parameres of other species of the subgenus (Figs. 2c, d, e, f) are completely different from those of *S. (A.) chochoana* sp. nov. and *S. (A.) cinctipes*.

Euvelia meta Molano, Moreira & Morales, 2016

Diagnosis. This species can be recognized by the body length (1.20 – 1.50 mm) and patches of silvery setae on male abdominal mediotergites II and V–VII, and on laterotergites I and IV–VI (Fig. 3a). Fore femur yellow, brownish at apex; row of long brown setae on distal half of posterior surface (Fig. 3b). Paramere curved, long and narrow (Fig. 3d); dorsal vesical sclerite Y-shaped, elongated, broader and bifurcated at apex (Fig. 3c).

Description. Apterous male (Fig. 3). Body robust, densely covered with setae on dorsum, these longer on abdominal medio- and laterotergites. General color grayish black. Head velvety; dark brown, with basal transverse stripe dark orange brown reaching mesal margins of eyes; impressed longitudinal midline shining; a pair of oblique indentations posteriorly. Antenniferous tubercles swollen, shining brown. Antennomeres I–III yellow to yellowish brown; IV darker brown. Antenna covered by sparse short brownish setae; three long, thicker black setae on antennomeres II–III; antennomeres I–III subcylindrical; I–II slightly thicker than III; IV fusiform, with acute apex, at middle thicker than I–III. Buccula shining brown to dark brown. Article I of

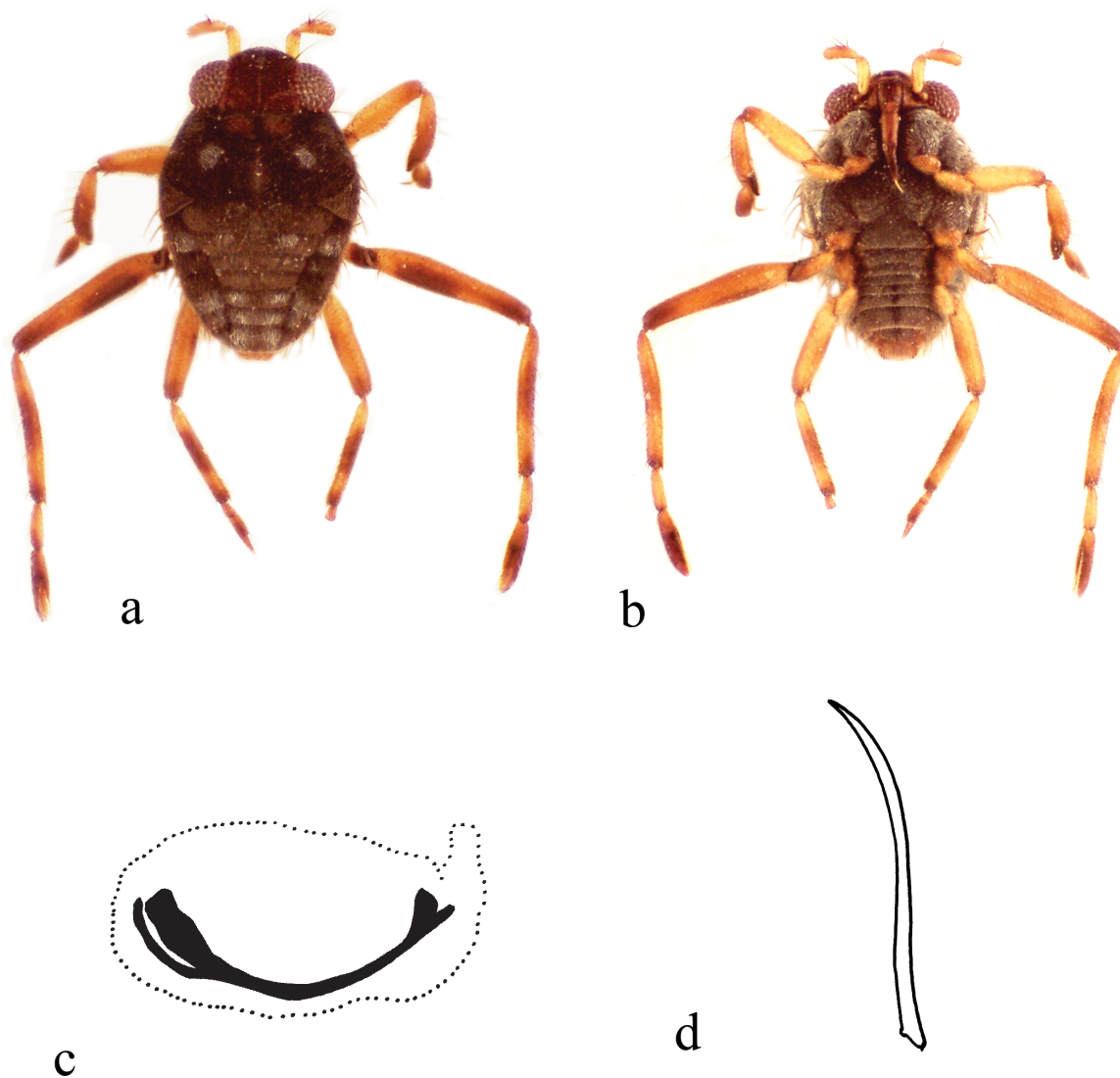


Figure 3 *Euvelia meta*, male. a) Dorsal view, b) Ventral view, c) Vesical sclerites, d) Paramere.

labium shining black with lateral brown marks; II–III shining brown; IV shining dark brown to black.

Sides of thorax and abdomen with several long, curved, black setae (Fig. 3a). Thorax punctate dorsally, laterally, and ventrally. Pronotum grayish black, covering remainder of thorax centrally; anterior lobe with two dark orange rounded spots behind head; posterior lobe lighter on longitudinal midline, with a pair of sublateral patches of silvery setae (Fig. 3a). Legs unarmed, without distinct tufts of setae. Fore coxa dark brown; mid coxa brown, darker towards apex; hind coxa brown. Fore trochanter yellow with brown proximal tip; middle and hind trochanters yellowish brown at base, brown at apex. Fore femur yellow, brownish at apex; row of long brown setae on distal half of posterior surface (Fig. 3b). Middle and hind femora yellow with a brown mark before middle and brown apex. Fore tibia yellow on proximal 2/3, lighter ventrally; distal 1/3 yellowish brown; wider towards apex; several long black setae on anterior surface; black grasping comb measuring 1/3 of tibial length, surpassing

its apex; ventral surface with a weak concavity measuring 1/2 of tibial length. Middle and hind tibia annulate, yellow with brown to dark brown rings proximally, centrally, and distally. Fore tarsus oval, approximately twice as long as wide; proximal half yellowish, apex brownish; claws falcate, measuring 1/3 of tarsal length. Middle tarsus yellowish brown up to base of article II, then brown to dark brown; deeply cleft, with four leaf-like structures inserted on proximal 1/3. Hind tarsus brown; claws falcate, subequal in length to tarsomere I.

Abdomen grayish, with patches of silvery setae laterally on mediotergites II and V–VII, and on laterotergites I and IV–VI (Fig. 3a); mediotergites slightly longer than II–VI; II–VI subequal in length; VII longer than VI; exposed portion of VIII short. Laterotergites slightly raised. Sterna V–VII with longitudinal black stripe at midline. Paramere curved, long and narrow (Fig. 3d); dorsal vesical sclerite Y-shaped, elongated, broader and bifurcated at apex (Fig. 3c).

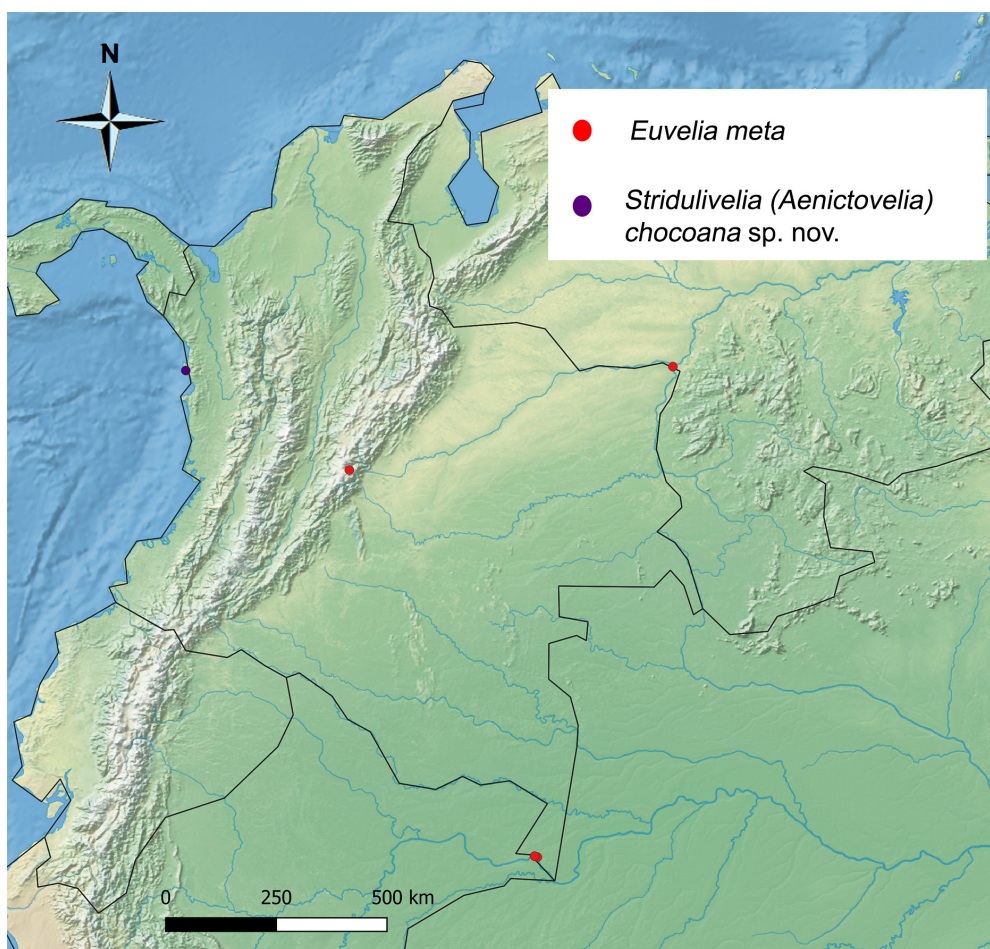


Figure 4 Distribution of *Stridulivelia (Aenictovelgia) chocoana* sp. nov. and *Euvelia meta* in Colombia.

Measurements. Body length 1.20; head length 0.22; head width 0.27; antennomere I 0.16; antennomere II 0.14; antennomere III 0.02; antennomere IV 0.26; eye width 0.18; pronotum length on midline 0.08; pronotum width 0.56; FORELEG, femoral length: 0.34; tibial length 0.34; tarsomere I 0.12; MIDLEG: femoral length: 0.66; tibial length 0.60; tarsomere I 0.18; tarsomere II 0.03; HINDLEG, femoral length: 0.40; tibial length 0.42; tarsomere I 0.06; tarsomere II 0.16.

Material examined. 2 ♂ 1 ♀ (COMAC): COLOMBIA, Amazonas, Quebrada Mata Mata, 85m, 3° 48' 48.9" S / 70° 15' 6.8" W; XII.2008; A. Solano Col. 1 ♂ 1 ♀ (COMAC): COLOMBIA, Amazonas, Leticia, Lago Julio, Madre Vieja, Río Amacayacu, 80 m, 3° 47' 39.4" S / 70° 18' 31.9" W; X.2008; A. Solano Col. 9 ♂ 5 ♀ (UPTC): COLOMBIA, Vichada, Puerto Carreño, Río Bitá, Mi Familia, Madre Vieja; 21.I.2016; C. A. Medina Col.

Comments. *Euvelia meta* was first described based on a female specimen from Meta Department, Colombia, without any further records (Molano et al., 2016). It is herein recorded for the first time from Amazonas and Vichada departments (Fig. 4). This species can be recognized by the body length of 1.20–1.50 mm, maximum width of the female 0.90 mm, and patches of silvery setae on abdominal mediotergites II and V–VII (male) or II–III and V–VII (female), and on laterotergites I and IV–VI. The most similar congener is *E. discala* Polhemus & Polhemus, 1984, in which the female maximum width is 1.19 mm and patches of silvery setae occur on abdominal mediotergites II and VI–VII, and on laterotergites I and IV.

Acknowledgments

We are thankful to Claudia Medina (IAvH), Nestor Torres, and Camilo Llano (UC) for the collection and donation of biological material; Patricia Mondragon (UPTC), Ximena Galindo (UPTC) and anonymous reviewers who improved this paper with their comments. IM and FM express their gratitude to the DIN (Dirección de Investigaciones, UPTC) and the project “Diversidad taxonómica y genética de chinches acuáticas y semiacuáticas (Insecta: Hemiptera), asociadas al complejo cenagoso de Palágua, Puerto Boyacá, Colombia: implicaciones para su conservación” (Código SGI: 2647). FFFM benefited from grants provided by the State of Rio de Janeiro Research Foundation, FAPERJ (#210.508/2016 and #203.207/2017) and the National Council for Scientific and Technological Development, CNPq (#301942/2019-6).

Conflicts of interest

The authors declare no conflicts of interest.

Author contribution statement

IM and FM conception, analysis and drafting of the manuscript. IM, FM and FFFM revision of the manuscript. All authors have approved the final article.

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