



Semiaquatic bugs (Insecta, Hemiptera, Heteroptera, Gerromorpha) from Parque Natural Municipal das Andorinhas, Ouro Preto, Minas Gerais state, Brazil

GUSTAVO LISBOA VIEIRA MACHADO^{1*}, OSÉIAS MARTINS MAGALHÃES²,
MARCO ANTONIO ALVES CARNEIRO¹, FELIPE FERRAZ FIGUEIREDO MOREIRA²

¹ Laboratório de Entomologia Ecológica, Departamento de Biodiversidade, Evolução e Meio Ambiente, Instituto de Ciências Exatas e Biológicas, Universidade Federal de Ouro Preto, Ouro Preto, Minas Gerais, Brazil • GLVM: gustavo.lisboa@aluno.ufop.edu.br  <https://orcid.org/0000-0003-2059-9527> • MAAC: marco.carneiro@ufop.edu.br  <https://orcid.org/0000-0003-3814-8118>

² Laboratório de Entomologia, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, Rio de Janeiro, Brazil • OMM: biooseiasmartins@gmail.com  <https://orcid.org/0000-0003-4988-7119> • FFFM: ppmeiameiameia@gmail.com  <https://orcid.org/0000-0002-6692-0323>

* Corresponding author

Abstract. We present a survey of the semiaquatic bugs (Insecta, Hemiptera, Heteroptera, Gerromorpha) from Parque Natural Municipal das Andorinhas and adjacent areas, Ouro Preto, Minas Gerais state, southeastern Brazil. Thirteen species are recorded from the locality based on regular collection events, namely *Brachymetra albinervus* (Amyot & Serville, 1843); *Cylindrostethus palmaris* Drake & Harris, 1934; *Halobatopsis delectus* Drake & Harris, 1941; *Ha. platensis* (Berg, 1879); *Metrobates plaumanni genikos* Nieser, 1993; *Neogerris kontos* Nieser, 1994 (Gerriidae); *Hydrometra fruhstorferi* Hungerford & Evans, 1934 (Hydrometridae); *Platyvelia brachialis* (Stål, 1860); *Rhagovelia macta* Drake & Carvalho, 1955; *R. robusta* Gould, 1931; *R. sbohos* Nieser & Melo, 1997; *R. triangula* Drake, 1953; and *R. trianguloides* Nieser & Melo, 1997 (Veliidae).

Keywords. Aquatic insects, faunistics, Neotropical Region, South America

Academic editor: Julianna Freires Barbosa

Received 7 February 2022, accepted 14 February 2022, published 14 April 2023

Machado GLV, Magalhães OM, Carneiro MAA, Moreira FFF (2023) Semiaquatic bugs (Insecta, Hemiptera, Heteroptera, Gerromorpha) from Parque Natural Municipal das Andorinhas, Ouro Preto, Minas Gerais state, Brazil. Check List 19 (2): 235–246. <https://doi.org/10.15560/19.2.235>

Introduction

Heteroptera (Insecta, Hemiptera), or true bugs, is a group of insects with worldwide distribution, which is more diverse on the tropics (Mazzucconi et al. 2009a). It comprises seven infraorders, of which Gerromorpha and Nepomorpha are intimately related to water bodies of all continents, except for Antarctica (Nieser and Melo 1997; Polhemus and Polhemus 2008). Gerromorpha contains eight families and over 60 genera of semiaquatic, predatory bugs that play an important role on aquatic ecosystems and can be used as indicators of biological quality (Moreira 2015). Here, we report a survey

of the semiaquatic bugs from Parque Natural Municipal das Andorinhas (PNMA) and adjacent areas, Ouro Preto, Minas Gerais state (MG), southeastern Brazil, an underexplored locality, including the first record from MG for one species.

Study Area

Parque Natural Municipal das Andorinhas is part of Cachoeira das Andorinhas Environmental Protection Area, located in the city of Ouro Preto, MG, southeastern Brazil. Inserted in a context of conservation importance, PNMA protects preserved fragments of Atlantic

Forest (montane seasonal semideciduous forest) and rupestrian fields, as well as a rich diversity of fauna and flora. Most of the PNMA vegetation has been subject to anthropogenic disturbance, with the forest patches predominantly formed by low trees with small-diameter trunks (IEFMG 2009; Ávila-Júnior et al. 2020). Nonetheless, we recently described a new species of *Microvelia* Westwood, 1834 (Gerromorpha, Gerridae) from this area (Magalhães et al. 2021), showing the importance of PNMA for the conservation of the local aquatic fauna.

Methods

Fieldwork was carried out monthly in 2018 and 2019 in four localities within PNMA and three adjacent to it (Figs. 1–8), by active search with the aid of aquatic nets. Geographic coordinates of the sampling stations were obtained with a GPS receiver. Specimens were fixed and preserved in 80% ethanol, and subsequently deposited in the the Laboratório de Entomologia Ecológica, Departamento de Biodiversidade, Evolução e Meio Ambiente, Universidade Federal de Ouro Preto, Ouro Preto, Brazil (LEE). Photographs were obtained using a Leica M205 C stereomicroscope coupled with a Leica DMC2900 digital camera, and captured using the Leica LAS imaging system.

Results

Family Gerridae

Subfamily Charmatometrinae

Genus *Brachymetra* Mayr, 1865

Brachymetra albinervus (Amyot & Serville, 1843)

Figure 9

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Bicicleta Station; -20.3466° , -043.4950° ; 25.V.2018; G.L.V. Machado leg.; 2 ♂, apterous, LEE-GE0003 • same data except Folhinha Station; -20.3502° , -043.4900° ; 15.VI.2018; 2 ♂, 3 ♀, apterous, LEE-GE0004 • same data except 31.VIII.2018; 6 ♂, apterous, LEE-GE0005 • same data except 05.XII.2018; 3 ♂, apterous, LEE-GE0006 • same data except 21.XII.2018; 1 ♀, apterous, LEE-GE0007 • same data except Jesus Station; -20.3622° , -043.4886° ; 06.IV.2018; 1 ♀, apterous, LEE-GE0008 • same data except Macaco Station; -20.3364° , -043.5094° ; 18.V.2018; 3 ♂, 5 ♀, apterous, LEE-GE0009 • same data except 12.VI.2018; 1 ♂, 2 ♀, apterous, LEE-GE0010 • same data except 17.VII.2018; 3 ♂, 2 ♀, apterous, LEE-GE0011 • same data except 10.IX.2018; 1 ♀, apterous; LEE-GE0012 • same data except 27.IX.2018; 1 ♂, 1 ♀, apterous, LEE-GE0013 • same data except 26.XI.2018; 3 ♂, 1

SPATIAL DISTRIBUTION OF SAMPLE STATIONS IN THE PARQUE NATURAL MUNICIPAL DAS ANDORINHAS OURO PRETO - MINAS GERAIS

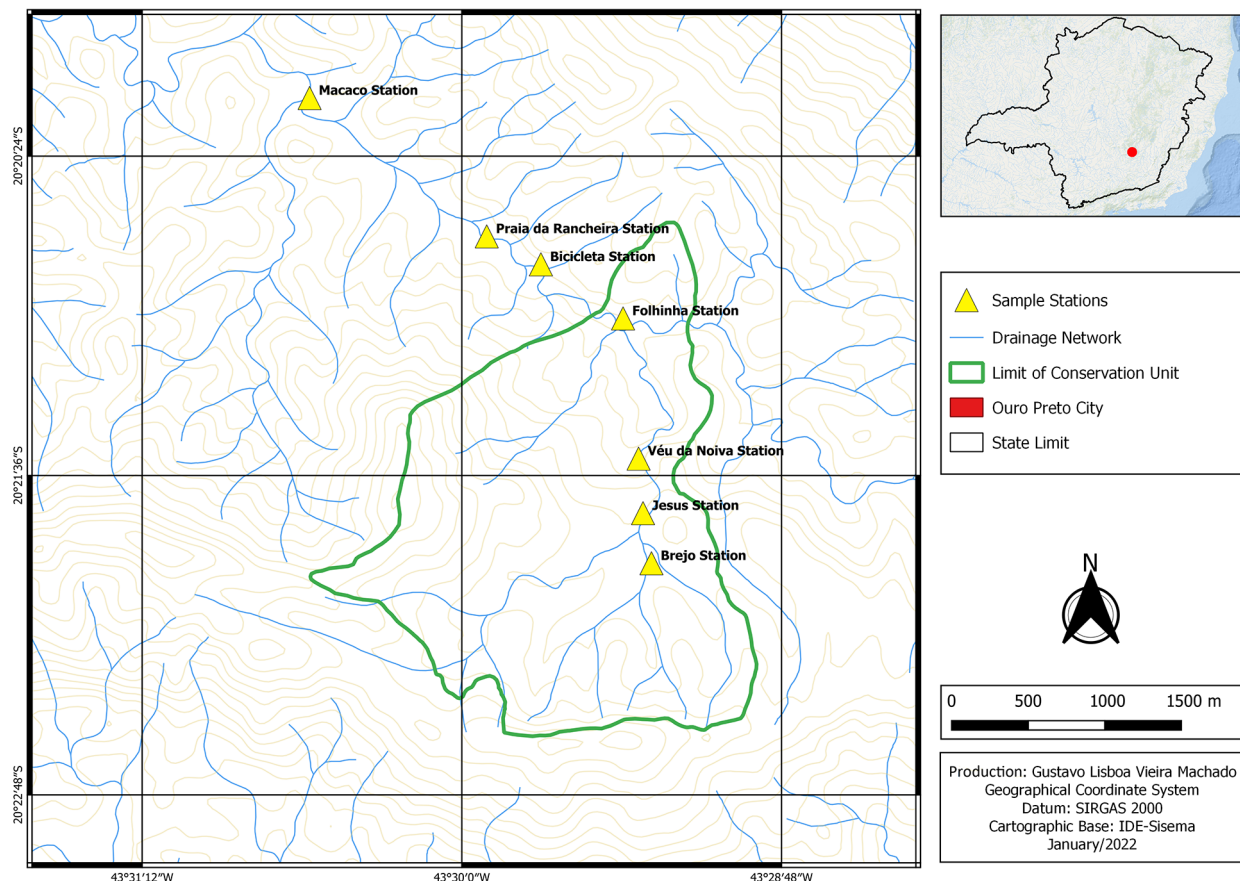
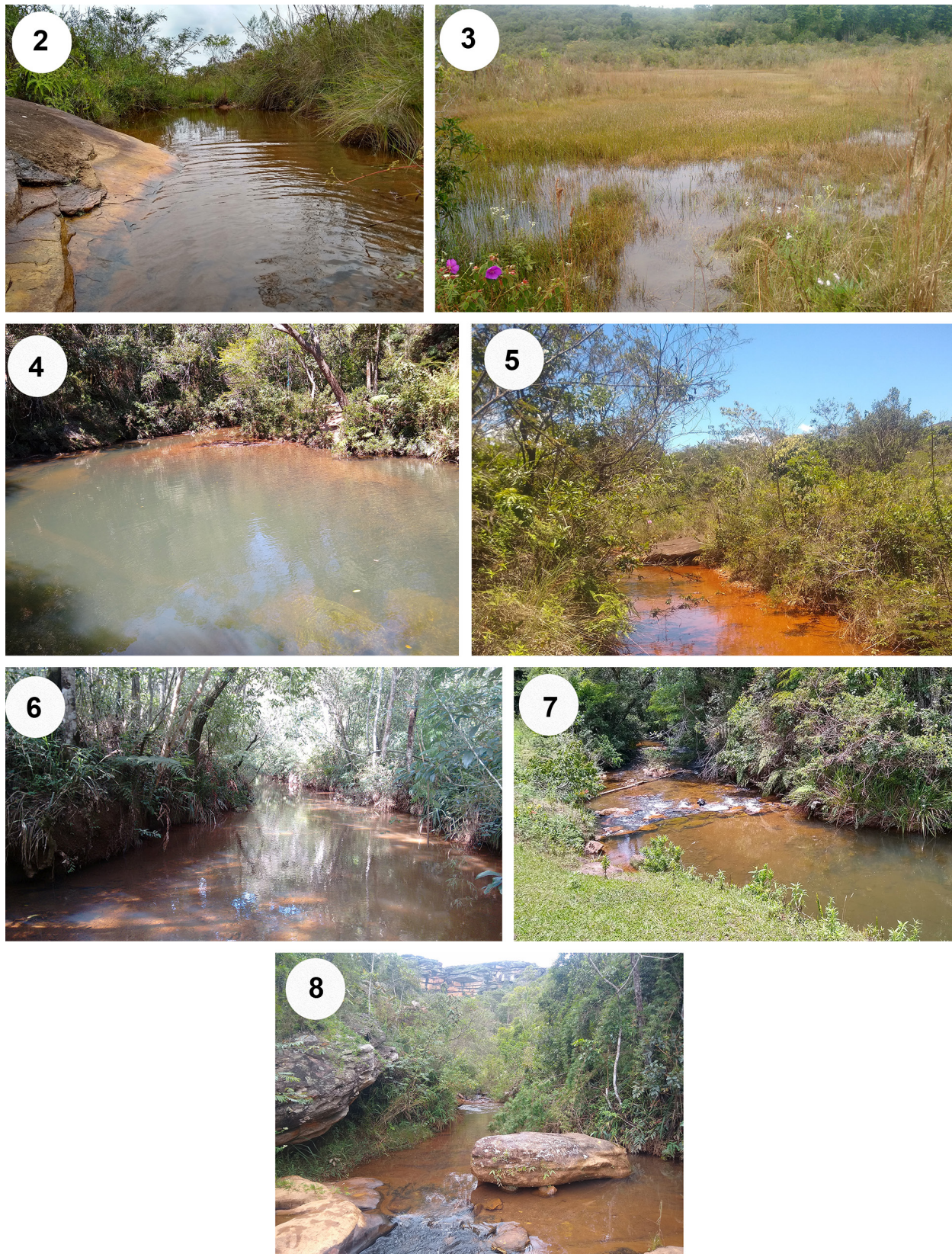


Figure 1. Map with the sampling sites within and adjacent to Parque Natural Municipal das Andorinhas, Ouro Preto, Minas Gerais state, Brazil.



Figures 2–8. Photographs of collecting localities within and adjacent to Parque Natural Municipal das Andorinhas, Ouro Preto, Minas Gerais State, Brazil. **2.** Bicicleta Station (-20.3466° , -043.4950°). **3.** Brejo Station (-20.3655° , -043.4881°). **4.** Folhinha Station (-20.3502° , -043.4900°). **5.** Jesus Station (-20.3622° , -043.4886°). **6.** Macaco Station (-20.3364° , -043.5094°). **7.** Praia da Rancheira Station (-20.3450° , -043.4983°). **8.** Veu da Noiva Station (-20.3588° , -043.4888°).

♀, apterous, LEE-GE0014 • same data except 10.I.2019;
 2 ♂, apterous, LEE-GE0015 • same data except Praia da
 Rancheira Station; -20.3450° , -043.4983° ; 18.V.2018;

1 ♂, apterous, LEE-GE0016 • same data except 10.XII.
 2018; 1 ♂, apterous, LEE-GE0017 • same data except
 11.I.2019; 1 ♂, apterous, LEE-GE0018 • same data

except Veu da Noiva Station; -20.3588°, -043.4888°; 16.III.2018; 15 ♂, apterous, LEE-GE0019 • same data except 11.V.2018; 5 ♂, apterous, LEE-GE0020 • same data except 08.VI.2018; 2 ♂, apterous, LEE-GE0021 • same data except 03.VII.2018; 4 ♂, 1 ♀, apterous, LEE-GE0022 • same data except 03.VIII.2018; 3 ♂, apterous, LEE-GE0023 • same data except 19.X.2018; 1 ♂, apterous, LEE-GE0024 • same data except 17.I.2019; 1 ♀, apterous, LEE-GE0025 • same data except 15.II.2019; 1 ♂, apterous, LEE-GE0026 • same data except 14.XII.2019; 1 ♂, 1 ♀, apterous, LEE-GE0027.

Identification. This species is 4.25–6.70 mm long and yellowish to reddish brown. Diagnostic features are as follows: pronotum of apterous form without dark median line, not reaching abdominal mediotergite I; acetabula covered by silvery setae dorsally; fore femur slightly arched, with conical black setae ventrally, at least 1.5 times wider than middle femur; male abdominal mediotergite VII trapezoid; and male abdominal segment VIII in natural position with half of its length exposed (Cordeiro 2017).

Subfamily Cylindrostethinae
Genus *Cylindrostethus* Mayr, 1865

Cylindrostethus palmaris Drake & Harris, 1934

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Macaco Station; -20.3364°, -043.5094°; 18.V.2018; G.L.V. Machado leg.; 1 ♂, apterous, LEE-GE0028.

Identification. This species presents an elongated, robust body, at most 20 mm long; mesonotum of apterous form with a pair of longitudinal black stripes, each as wide as median yellow stripe; fore tibia black; posterior margin of male abdominal sternum VII rounded; basolateral processes of male proctiger subequal in length and width; and apex of female abdominal tergum VIII acute (Floriano et al. 2016).

Subfamily Trepobatinae
Genus *Halobatopsis* Bianchi, 1896

Halobatopsis delectus Drake & Harris, 1941

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Folhinha Station; -20.3502°, -043.4900°; 31.VIII.2018; G.L.V. Machado leg.; 2 ♂, apterous, LEE-GE0029 • same data except Jesus Station; -20.3622°, -043.4886°; 27.IV.2018; 4 ♂, 4 ♀, apterous, LEE-GE0030 • same data except 05.XI.2018; 1 ♂, macropterous, 2 ♀, apterous, LEE-GE0031 • same data except 17.I.2019; 1 ♂, apterous, LEE-GE0032 • same data except Praia da Rancheira Station; -20.3450°, -043.4983°; 10.IX.2018; 3 ♂, 1 ♀, apterous, LEE-GE0033.

Identification. Both representatives of the genus *Halobatopsis* present in the study area display the mesonotum with longitudinal black stripes. *Halobatopsis delectus* can be distinguished by the fore femur with a

tubercle at basal fourth; male abdominal segment VIII with a dark brown to blackish ventral spine; and female abdominal laterotergites reflected over the mediotergites (Nieser and Melo 1999).

Halobatopsis platensis (Berg, 1879)

Figure 10

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Bicicleta Station; -20.3466°, -043.4950°; 23.III.2018; G.L.V. Machado leg.; 9 ♂, 6 ♀, apterous, LEE-GE0034 • same data except 11.V.2018; 1 ♂, 2 ♀, apterous, LEE-GE0035 • same data except 25.V.2018; 1 ♂, 9 ♀, apterous, LEE-GE0036 • same data except 03.VII.2018; 2 ♂, 5 ♀, apterous, LEE-GE0037 • same data except 27.VIII.2018; 2 ♂, 3 ♀, apterous, LEE-GE0038 • same data except 05.XI.2018; 2 ♂, 12 ♀, apterous, LEE-GE0039 • same data except 14.XII.2018; 2 ♂, 5 ♀, apterous, LEE-GE0040 • same data except 12.II.2019; 5 ♂, 6 ♀, apterous, LEE-GE0041 • same data except Brejo Station, -20.3655°, -043.4881°; 27.IV.2018; 2 ♂, 3 ♀, apterous, LEE-GE0042 • same data except 20.VII.2018; 3 ♂, apterous, LEE-GE0043 • same data except Folhinha Station; -20.3502°, -043.4900°; 20.VII.2018; 1 ♀, apterous, LEE-GE0044 • same data except 05.XII.2018; 1 ♂, apterous, LEE-GE0045 • same data except 24.VIII.2019; 7 ♂, 3 ♀, apterous, LEE-GE0046 • same data except Jesus Station; -20.3622°, -043.4886°; 06.IV.2018; 3 ♂, 5 ♀, apterous, LEE-GE0047 • same data except 27.IV.2018; 1 ♂, apterous, LEE-GE0048 • same data except 15.VI.2018; 1 ♂, apterous, LEE-GE0049 • same data except 27.VII.2018; 4 ♂, apterous, LEE-GE0050 • same data except 05.XI.2018; 14 ♂, 6 ♀, apterous, LEE-GE0051 • same data except 12.XI.2018; 2 ♂, apterous, LEE-GE0052 • same data except Macaco Station; -20.3364°, -043.5094°; 18.V.2018; 1 ♂, apterous, LEE-GE0053 • same data except Praia da Rancheira Station; -20.3450°, -043.4983°; 13.IV.2018; 15 ♂, 8 ♀, apterous, LEE-GE0054 • same data except 08.VI.2018; 1 ♂, apterous, LEE-GE0055 • same data except Veu da Noiva Station, -20.3588°, -043.4888°; 03.VIII.2018; 2 ♂, apterous, LEE-GE0056 • same data except 14.XII.2018; 1 ♂, apterous, LEE-GE0057 • same data except 17.I.2019; 1 ♀, apterous, LEE-GE0058 • same data except 13.II.2019; 1 ♀, apterous, LEE-GE0059.

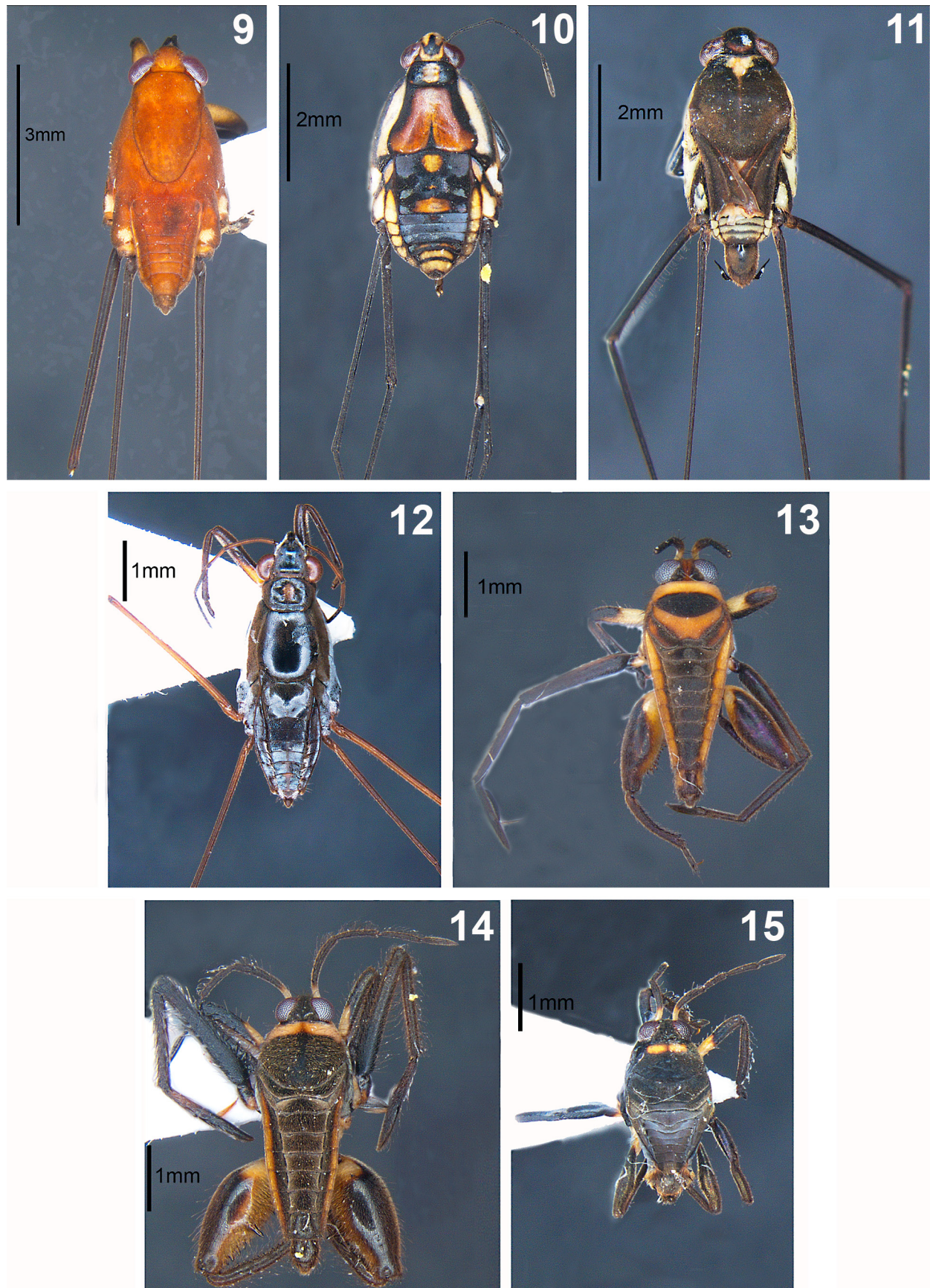
Identification. *Halobatopsis platensis* can be distinguished from *H. delectus* by the males without a ventral spine on abdominal segment VIII, and the females with abdominal laterotergites horizontal to slightly slanting dorsally (Nieser and Melo 1999).

Genus *Metrobates* Uhler, 1871

Metrobates plaumanni genikos Nieser, 1993

Figure 11

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Folhinha Station; -20.3502°, -043.4900°; 05.XII.2018; G.L.V. Machado leg.; 1 ♂, macropterous, LEE-GE0060 • same data except Praia da Rancheira Station; -20.3450°,



Figures 9–15. Collected specimens, habitus. **9.** *Brachymetra albinervus*, apterous male. **10.** *Halobatopsis platensis*, apterous female. **11.** *Metrobates plaumanni genikos*, macropterous male. **12.** *Neogerris kontos*, apterous female. **13.** *Rhagovelia macta*, apterous male. **14.** *Rhagovelia robusta*, apterous male. **15.** *Rhagovelia triangula*, apterous female.

–043.4983°; 10.XII.2018; 2 ♀, apterous, LEE-GE0061.

Identification. This species is diagnosed by the following features: antennomere I longer than II + III; antennomere IV shorter than III; mesoacetabulum without a ventral spine; fore femur without a ventral spine; and paramere not distinctly widened after middle curve (Nieser 1993).

Subfamily Gerrinae

Genus *Neogerris* Matsumura, 1913

***Neogerris kontos* Nieser, 1994**

Figure 12

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Brejo Station; –20.3655°, –043.4881°; 27.IV.2018; G.L.V. Machado leg.; 1 ♂, 1 ♀, apterous, LEE-GE0062.

Identification. *Neogerris kontos* can be distinguished from American congeners based on the following characteristics: body 3.90–5.20 mm long; length of antennomere I subequal to width of interocular space + one eye; apterous pronotum broader than long, with posterior lobe virtually absent; and male abdominal segment VIII without tufts of setae laterally (Nieser 1994).

Family Hydrometridae

Subfamily Hydrometrinae

Genus *Hydrometra* Latreille, 1797

***Hydrometra fruhstorferi* Hungerford & Evans, 1934**

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Folhinha Station; –20.3502°, –043.4900°; 15.VI.2018; G.L.V. Machado leg.; 1 ♂, apterous, LEE-GE0001 • same data except Macaco Station; –20.3364°, –043.5094°; 18.V.2018; 1 ♂, apterous, LEE-GE0002.

Identification. This species can be distinguished by its elongated body; clypeus broad, subquadrate, with the anterior margin obtusely pointed, not excavated; pro- and mesoacetabula with circular punctures; and male abdominal sternum VI with a pair of mammilose projections joined by a wide transverse ridge (Hungerford and Evans 1934; Moreira and Barbosa 2013).

Family Veliidae

Subfamily Rhagoveliinae

Genus *Rhagovelia* Mayr, 1865

***Rhagovelia macta* Drake & Carvalho, 1955**

Figure 13

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Macaco Station; –20.3364°, –043.5094°; 17.VII.2018; G.L.V. Machado leg.; 2 ♂, 4 ♀, apterous, LEE-GE0065.

Identification. *Rhagovelia macta* belongs to the *itai-aiana* group of species, based on the body blackish with distinctively contrasting yellow or orange markings on pronotum and abdominal laterotergites; the pronotum

of the apterous form distinctly shorter than three times the length of the exposed mesonotum, but longer than the dorsal length of the eye, with the posterior margin convex; the ventral abdominal sutures simple and unmodified; and the apterous female without a dorsal, median, abdominal carina. Within this group, it is diagnosed by the following features: male abdominal sternum VII with a median tuft of setae anteriorly; mesonotum orange at least centrally; and male hind femur greatly incrassate, with two large spines separated by about eight smaller ones (Polhemus 1997).

***Rhagovelia robusta* Gould, 1931**

Figure 14

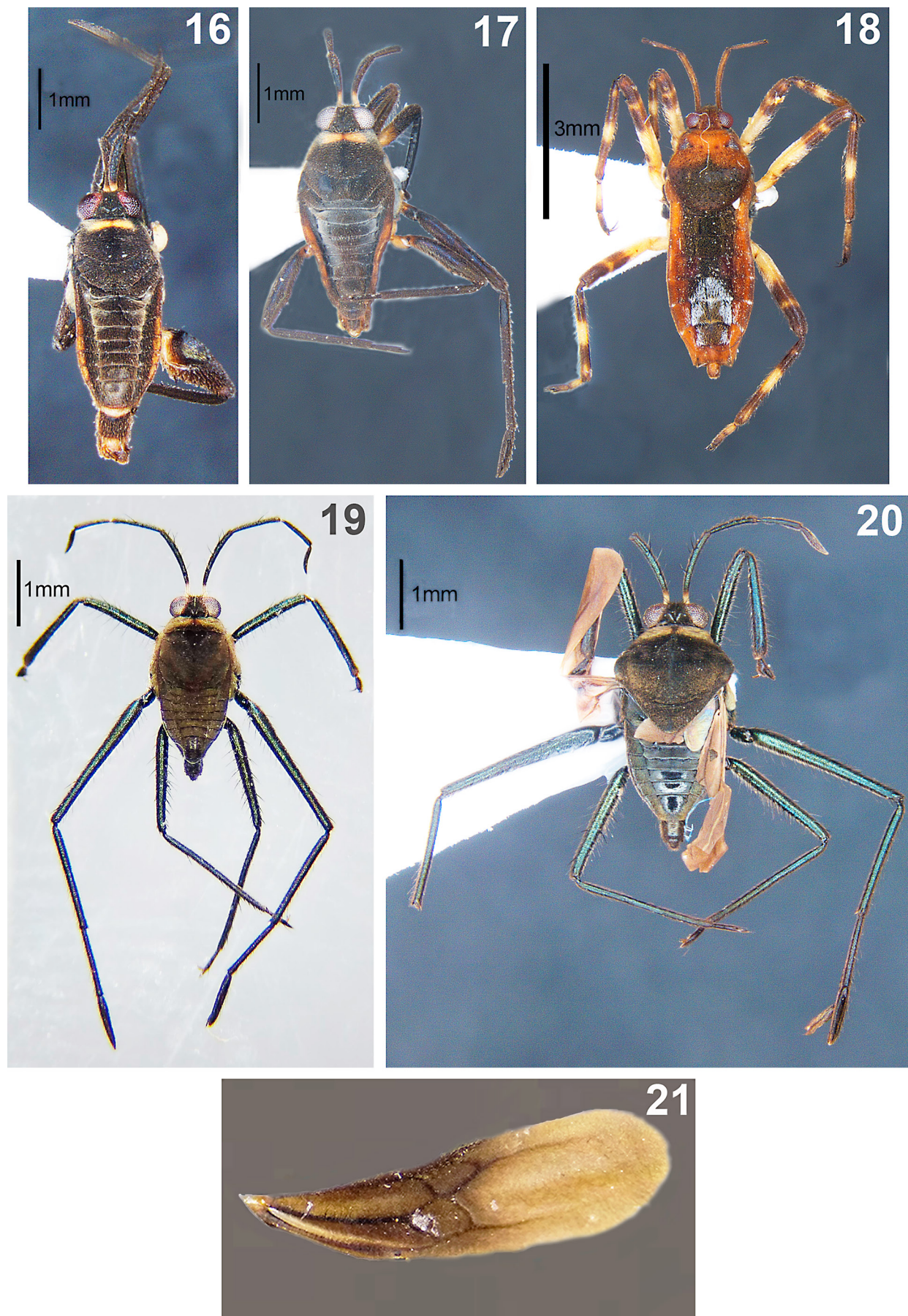
New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Bicicleta Station; –20.3466°, –043.4950°; 11.V.2018; G.L.V. Machado leg.; 2 ♀, apterous, LEE-GE0066 • same data except 25.V.2018; 5 ♀, macropterous, LEE-GE0067 • same data except 30.XI.2018; 8 ♂, 10 ♀, apterous, LEE-GE0068 • same data except Folhinha Station; –20.3502°, –043.4900°; 20.VII.2018; 1 ♀, apterous, LEE-GE0069 • same data except 20.XII.2018; 2 ♂, 1 ♀, apterous, LEE-GE0070.

Identification. This species belongs to the *robusta* group of species, based on the pronotum of the apterous form longer than three times the exposed portion of the mesonotum; the hind tibia with the apical spur straight, when present; the venter of the body not densely covered by black denticles; the posterolateral margins of male abdominal segment VII without large black denticles; the abdomen of the apterous female without a median carina dorsally; and the pronotum of the macropterous female without an elevated posterior projection (Polhemus 1997; Moreira et al. 2012). Among the species of this group, it is diagnosed by the following characteristics of the apterous male: jugum and adjacent portion of proepisternum with small black denticles; pronotum mostly dark brown to black, strongly contrasting with an yellowish-brown or orange-brown mark on anterior lobe; middle trochanter dark-brown to black; hind trochanter with small subequal spines; hind femur with 3 or 4 irregular rows of spines, with a large spine near its middle dorsally displaced from others; hind tibia with several subequal spines throughout length, a large preapical spine, and an apical spur; and sides of abdominal segment VII without patches of small black denticles (Magalhães et al. 2016).

***Rhagovelia sbolos* Nieser & Melo, 1997**

Figures 19–21

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Brejo Station; –20.3655°, –043.4881°; 12.XI.2018; G.L.V. Machado leg.; 1 ♂, apterous, LEE-GE0071 • same data except 14.IX.2018; 2 ♂, 2 ♀, apterous, LEE-GE0072 • same data except Folhinha Station; –20.3502°, –043.4900°; 11.V.2018; 1 ♂, macropterous, LEE-GE0073 • same



Figures 16–21. Collected specimens, habitus. **16–17.** *Rhagovelia trianguloides*. **16.** Apterous male. **17.** Apterous female. **18.** *Platyvelia brachialis*, micropterous female. **19–21.** *Rhagovelia sbolos*. **19.** Apterous male. **20.** Macropterous male. **21.** Forewing.

data except 05.X.2018; 1 ♂, 4 ♀, apterous, LEE-GE0074 • same data except 20.VII.2018; 1 ♀, apterous, LEE-GE0075 • same data except 05.XII.2018; 1 ♂, apterous; LEE-GE0076 • same data except Jesus Station; -20.3502°, -043.4900°; 15.VI.2018; 1 ♂, 2 ♀, apterous, LEE-GE0077 • same data except Macaco Station; -20.3364°, -043.5094°; 18.V.2018; 1 ♀, apterous, LEE-GE0078 • same data except 17.VIII.2018; 10 ♀, apterous, LEE-GE0079 • same data except 27.IX.2018; 2 ♀, apterous, LEE-GE0080 • same data except 26.XI.2018; 5 ♂, apterous, LEE-GE0081 • same data except 26.XI.2018; 1 ♂, apterous, LEE-GE0082 • same data except 05.II.2019; 13 ♂, 3 ♀, apterous, LEE-GE0083 • same data except 20.IV.2018; 5 ♂, 5 ♀, apterous, LEE-GE0084 • same data except 12.VI.2018; 2 ♂, 7 ♀, apterous, LEE-GE0085 • same data except 10.I.2019; 1 ♀, apterous, LEE-GE0086 • same data except Praia da Rancheira Station; -20.3450°, -043.4983°; 10.IX.2018; 3 ♂, 1 ♀, apterous, LEE-GE0087 • same data except 13.II.2019; 2 ♀, apterous, LEE-GE0088 • same data except 18.V.2018; 1 ♂, 3 ♀, apterous, LEE-GE0089 • same data except 17.VII.2018; 3 ♂, 2 ♀, apterous, LEE-GE0090 • same data except 11.I.2019; 2 ♀, apterous, LEE-GE0091 • same data except 12.VI.2018; 4 ♂, apterous, LEE-GE0092 • same data except Veu da Noiva Station; -20.3588°, -043.4888°; 16.III.2018; 7 ♂, 4 ♀, apterous, LEE-GE0093 • same data except 11.V.2018; 1 ♂, apterous, LEE-GE0094 • same data except 17.I.2019; 1 ♀, apterous, LEE-GE0095 • same data except 15.II.2019; 1 ♂, apterous, LEE-GE0096 • same data except 15.II.2019; 3 ♂, 8 ♀, apterous, LEE-GE0097 • same data except 19.II.2019; 1 ♂, macropterous, LEE-GE0098 • same data except 19.II.2019; 2 ♂, 2 ♀, apterous, LEE-GE0099 • same data except 08.VI.2019; 2 ♂, 14 ♀, apterous, LEE-GE0100.

Identification. *Rhagovelia sbolos* belongs to the *angustipes* complex of species, based on the pronotum of the apterous form shorter than the dorsal length of the eye, with the posterior margin straight or slightly concave (Polhemus 1997). The apterous females of this species are readily distinguished by the complex modifications of the abdomen (Nieser and Polhemus 1999: 62, fig. 13). The males, in turn, can be identified by the margins of the acetabula dark; the fore and hind coxae and trochanters yellow to light-brown; the fore trochanter without a small, anteriorly directed spine; the middle coxa blackish; and the hind femur with one to three spines (Nieser and Polhemus 1999). *Rhagovelia sbolos* was provisionally assigned to the *bisignata* group by Padilla-Gil and Moreira (2013), because macropterous specimens were unknown at that time. Here, we found two macropterous males, which have four closed cells on the forewing (Fig. 21). Therefore, it is now possible to confirm the placement of this species in the *bisignata* group.

Rhagovelia triangula Drake, 1953

Figure 15

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Brejo Sta-

tion; -20.3655°, -043.4881°; 14.IX.2018; G.L.V. Machado leg.; 2 ♂, apterous, LEE-GE0101 • same data except Folhinha Station; -20.3502°, -043.4900°; 20.XII.2018; 4 ♂, 1 ♀, apterous, LEE-GE0102 • same data except 15.VI.2018; 5 ♂, 7 ♀, apterous, LEE-GE0103 • same data except 20.VII.2018; 3 ♂, apterous, LEE-GE0104 • same data except 05.X.2018; 2 ♀, macropterous, LEE-GE0105 • same data except 05.X.2018; 4 ♂, apterous, LEE-GE0106 • same data except Praia da Rancheira Station; -20.3450°, -043.4983°; 12.VI.2018; 1 ♂, 6 ♀, apterous, LEE-GE0107 • same data except 12.VI.2018; 22 ♂, apterous, LEE-GE0108 • same data except 17.VII.2018; 1 ♀, macropterous, LEE-GE0109 • same data except 27.IX.2018; 1 ♂, apterous, LEE-GE0110 • same data except 13.II.2019; 3 ♂, 4 ♀, apterous, LEE-GE0111 • same data except 13.IV.2019; 1 ♂, apterous, LEE-GE0112 • same data except Veu da Noiva Station; -20.3450°, -043.4983°; 16.III.2018; 1 ♂, apterous, LEE-GE0113.

Identification. *Rhagovelia triangula* belongs to the *lucida* group of species, which can be separated from the *itaitiaiana* group by the body uniformly blackish except for a small orange spot medially on the pronotum, in addition to the male antennomere III dilated or at least thicker than II and IV in some species (Polhemus 1997). Within this group, this species is recognized by the male antennomere III not distinctly expanded, at most slightly thicker on apex than antennomere II, the male hind femur with a few short spines on proximal half that do not form a distinct row; and the abdomen of the apterous female strongly modified, with the margins of the laterotergites sinuously folded on the sides of mediotergites VI–VIII (Fig. 15; Moreira 2012).

Rhagovelia trianguloides Nieser & Melo, 1997

Figure 16–17

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Folhinha Station; -20.3502°, -043.4900°; 20.VII.2018; G.L.V. Machado leg.; 2 ♂, 2 ♀, apterous, LEE-GE0114 • same data except Praia da Rancheira Station; -20.3450°, -043.4983°; 12.VI.2018; 10 ♂, apterous, LEE-GE0115.

Identification. Like *R. macta*, *R. trianguloides* belongs to the *itaitiaiana* group of species (Polhemus 1997). This species can be immediately distinguished from the former by the male abdominal sternum VII without a median tuft of setae. Additionally, its body length is 3.30–3.60 mm; the male hind femur has an irregular row of spines at proximal 2/5; and the abdominal mediotergite I of the apterous female is depressed, while II–IV are elevated (Moreira 2012).

Subfamily Veliinae

Genus *Platyvelia* Polhemus & Polhemus, 1993

Platyvelia brachialis (Stål, 1860)

Figure 18

New records. BRAZIL – MINAS GERAIS • Ouro Preto, Parque Natural Municipal das Andorinhas, Brejo Sta-

Station; -20.3655° , -043.4881° ; 12.XI.2018; G.L.V. Machado leg.; 1 ♂, micropterous, LEE-GE0063 • same data except Jesus Station; -20.3622° , -043.4886° ; 15.VI.2018; 1 ♂, 1 ♀, micropterous, LEE-GE0064.

Identification. This species belongs to the *brachialis* group of species, based on the male abdominal sternum VI without a median projection; the male abdominal sternum VII with the posterior margin concave; and the paramere not sculptured. It can be separated from similar congeners by the body length 4.50–5.10 mm; the anterior margin of the pronotum narrower than or subequal to the head width through the eyes, with the anterolateral corners not projected; and the angulate metanotal projections not exposed in micropterous or apterous specimens (Rodrigues et al. 2021a).

Discussion

Among the species identified, *Hydrometra fruhstorferi* had been recorded from Espírito Santo state, Brazil (Hungerford and Evans 1934), to Misiones province, Argentina (Bachmann 1977). The record presented here is the first of this rarely collected species from MG. The remaining 12 species in our samples are new for Parque Natural Municipal das Andorinhas and adjacent areas but had already been collected in MG. *Brachymetra albinervus* is widely distributed from Guatemala (Drake and Harris 1942) southward to Paraguay (Drake and Harris 1930), including some of the Windward Islands of the Caribbean (Uhler 1893, 1894; de Kort-Gommers and Nieser 1969; Bass 2007, 2010), and Trinidad and Tobago (Drake and Harris 1942). In this work, we present the first record from Ouro Preto Municipality. In MG, it had been reported from Itacarambi (Monte and Bichuette 2020), Brumadinho (Vianna and Melo 2003), and Carmo do Rio Claro (Moreira et al. 2011).

Cylindrostethus palmaris is the most common and widespread species of the genus in the Neotropical Region, occurring from Trinidad and Tobago (Drake and Harris 1934) and eastern Colombia (Aristizábal 2002) to Argentina (Mazzucconi et al. 2009b). It had been previously recorded from MG based on specimens from Januária (Melo and Nieser 2004), Perdizes, Conceição das Alagoas, Delta (Nieser and Melo 1997), Mariana (Souza et al. 2006), Conselheiro Lafaiete, Carmo do Rio Claro, and Alfenas (Nieser and Melo 1997), and it is herein recorded for the first time from Ouro Preto.

Halobatopsis delectus occurs in southeastern Brazil, in the states of MG and Rio de Janeiro (Moreira and Campos 2012). This paper presents the first record from Ouro Preto Municipality. Previously, it had been recorded in MG from Belo Horizonte (Drake and Harris 1941), Nova Lima, Ibitiré (Nieser and Melo 1997), Brumadinho (Goulart et al. 2002), Sacramento, São Roque de Minas (Pelli et al. 2006), and the Serra da Moeda mountain range (Nieser and Melo 1997).

Halobatopsis platensis is much more widespread than the previous species, ranging from northeastern Brazil (Rodrigues et al. 2012, 2021b; Moreira et al.

2016; Franco et al. 2020, 2021) westward to Peru (Florianiano et al. 2017), and southward to Argentina and Uruguay (Berg 1879; Ruffinelli and Pirán 1959). It is herein recorded from Ouro Preto for the first time, which narrows a gap on the southeastern region of the state. Previous records from MG were based on specimens collected in Bocaiúva, Três Marias (Nieser and Melo 1997), Santana do Riacho (Nieser and Melo 1999), Perdizes, Tapira (Nieser and Melo 1997), Belo Horizonte (Drake and Harris 1941), Betim, Santa Bárbara, Nova Lima (Nieser and Melo 1997), São Roque de Minas (Nieser and Melo 1999), Mariana (Souza et al. 2006), Viçosa (Drake and Harris 1938), and São Vicente de Minas (Nieser and Melo 1997).

Metrobates plaumanni genikos is a subspecies endemic to Brazil and heretofore recorded only from Nova Lima, MG, when described (Nieser 1993). The present record expands the distribution of the subspecies by about 60 km to the southeast. Like the previous taxon, *Neogerris kontos* is endemic to MG and had only been recorded once in its original description (Nieser 1994). The published record from Mato Grosso state (Fernandes and Wanzeler 2010) is erroneous, since the material has been checked and this species was not present. Here, we expand its distribution by about 215 km to the southeast. Both taxa above are apparently endemic to the southeastern edges of the São Francisco river basin.

Platyvelia brachialis is widespread in the Americas, from Arizona (Snow 1905), eastern (Barber 1914) and southern (Hungerford 1929) United States, through Central America (Champion 1898) and the Caribbean Islands (Uhler 1894), to Argentina (Torres et al. 2008). In MG, it had been previously reported from Itacarambi (Melo and Nieser 2004), Três Marias, Perdizes, Conceição das Alagoas, Delta, Nova Lima (Nieser and Melo 1997), Mariana (Souza et al. 2006), and Ouro Branco (Nieser and Melo 1997). The records presented here are the first from Ouro Preto Municipality.

Rhagovelia macta is restricted to southeastern Brazil, in the states of MG and Rio de Janeiro (Moreira et al. 2012). It was previously known from only two localities in the former state: Carmo do Rio Claro, southwestern region (Drake and Carvalho 1955), and Carrancas, southern region (Moreira and Barbosa 2012). This work presents the first record from the southeastern region of the state. *Rhagovelia robusta* is distributed in Brazil (Polhemus 1997), Paraguay (Gould 1931), and Argentina (Polhemus 1997). This includes MG, where it was previously recorded from Mariana (Souza et al. 2006), Viçosa, Visconde do Rio Branco (Polhemus 1997), Carmo do Rio Claro (Moreira and Barbosa 2012), Alfenas (Nieser and Melo 1997), Pains (Taylor and Ferreira 2012), and Paraguaçu (Nieser and Melo 1997). The records above are the first from Ouro Preto Municipality.

Rhagovelia sbolos occurs only in MG, with previous records from Nova Lima (Nieser and Polhemus 1999) and Mariana (Souza et al. 2006). The several records above are the first from Ouro Preto Municipality, and

show that the species is quite common in the south-eastern region of the state. *Rhagovelia triangula* is endemic from the four states of southeastern Brazil (MG, Espírito Santo, Rio de Janeiro, and São Paulo) (Drake 1953; Nieser and Melo 1997; Moreira and Ribeiro 2009; Moreira et al. 2010). The records above are the first from Ouro Preto Municipality. *Rhagovelia trianguloides* also occurs in southeastern Brazil, but not in São Paulo state (Cordeiro and Moreira 2015). In MG, it was previously recorded from Sete Lagoas, Nova Lima (Nieser and Melo 1997), Brumadinho (Vianna and Melo 2003), Itabirito (Nieser and Melo 1997), Araponga (Cordeiro and Moreira 2015), Carrancas, Juiz de Fora (Moreira and Barbosa 2012), and the Serra da Moeda mountain range (Nieser and Melo 1997). This new record helps to fill a gap in the distribution of the species in the south-eastern region of the state.

Acknowledgements

Financial support for field trips was provided by the Federal University of Ouro Preto and by the authors (MAAC and GLVM). This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001. FFFM benefited from grants provided by Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (#E-26/201.362/2021, #E-26/203.250/2021) and Conselho Nacional de Desenvolvimento Científico e Tecnológico (#301942/2019-6). This study was carried out as partial fulfillment of the requirements for the MSc degree of GLVM at Universidade Federal de Ouro Preto.

Author Contributions

Conceptualization: GLVM. Data curation: FFFM. Formal analysis: OMM, GLVM. Funding acquisition: FFFM, MAAC. Investigation: OMM, GLVM. Methodology: GLVM, MAAC. Project administration: MAAC. Resources: GLVM. Supervision: MAAC, FFFM. Validation: FFFM. Visualization: OMM, GLVM. Writing – original draft: GLVM, OMM. Writing – review and editing: MAAC, FFFM.

References

- Aristizábal H** (2002) Los hemípteros de la película superficial del agua en Colombia. Academia Colombiana de Ciencias Exactas, Físicas y Naturales, Bogotá, Colombia, 241 pp.
- Ávila-Júnior WF, Machado GLV, Lencioni FAA, Carneiro MAA** (2020) Distribution and composition of dragonfly and damselfly species (Odonata) of the upper Rio das Velhas, Ouro Preto, Minas Gerais state, Brazil. *Papeis Avulsos do Museu de Zoologia* 60: e20206065. <https://doi.org/10.11606/1807-0205/2020.60.65>.
- Bachmann AO** (1977) Nota sobre las Hydrometridae de la Argentina (Heteroptera). *Revista de la Sociedad Entomológica Argentina* 35: 1–4.
- Barber HG** (1914) Insects of Florida. II. Hemiptera. *Bulletin of the American Museum of Natural History*, 33: 495–535.
- Bass D** (2007) Freshwater macroinvertebrates and their habitats in Dominica. *Living World, Journal of the Trinidad and Tobago Naturalists' Club* 2007: 21–30.
- Bass D** (2010) List of freshwater macroinvertebrates from Saint Lucia. In: Krauss U (Ed.) *Critical Situation Analysis (CSA) of Invasive Alien Species (IAS) status and management*, Saint Lucia, 2010. Ministry of Agriculture, Lands, Forestry and Fisheries (MALFF), Union, St. Lucia, 96–98.
- Berg C** (1879) Hemiptera Argentina enumeravit speciesque novas descripsit. Ex Typographiae Pauli E. Coni, in Bibliopolio Gassmanni (Frederking et Graf.), Bonariae/Hamburg, 316 pp.
- Champion GC** (1898) Hemiptera-Heteroptera. *Biologia Centrali-Americana, Rhynchota* 2: 1–416. <https://doi.org/10.5962/bhl.title.730>
- Cordeiro IRS** (2017) Revisão taxonômica de *Brachymetra* Mayr, 1865 (Insecta: Heteroptera: Gerridae). Master's thesis, Universidade Federal Rural do Rio de Janeiro, Seropédica, Brazil, 116 pp.
- Cordeiro IRS, Moreira FFF** (2015) New distributional data on aquatic and semiaquatic bugs (Hemiptera: Heteroptera: Gerromorpha & Nepomorpha) from South America. *Biodiversity Data Journal* 3: e4913. <https://doi.org/10.3897/bdj.3.e4913>
- De Kort-Gommers M, Nieser N** (1969) Records of Antillean water-striders (Heteroptera). *Studies on the Fauna of Curaçao and other Caribbean Islands* 30: 72–87.
- Drake CJ** (1953) New Neogaeian *Rhagovelia* (Hemiptera: Veliidae). *Proceedings of the Biological Society of Washington* 66: 145–152.
- Drake CJ, Carvalho JCM** (1955) Two new Brazilian *Rhagovelia* (Hemiptera, Veliidae). *Anais da Academia Brasileira de Ciências* 27: 361–363.
- Drake CJ, Harris HM** (1930) Notes on some South American Gerridae (Hemiptera). *Annals of the Carnegie Museum* 19: 235–239.
- Drake CJ, Harris HM** (1934) The Gerrinae of the Western Hemisphere (Hemiptera). *Annals of the Carnegie Museum* 23: 179–241.
- Drake CJ, Harris HM** (1938) “Veliidae” y “Gerridae” sudamericanos descriptos por Carlos Berg. *Notas del Museo de La Plata, Zoología* 3: 199–204.
- Drake CJ, Harris HM** (1941) Concerning some halobatinids from the Western Hemisphere (Hemip. Gerridae). *Iowa State College Journal of Science* 15: 237–240.
- Drake CJ, Harris HM** (1942) A new *Brachymetra* from Venezuela (Hemiptera-Gerridae). *Boletín de Entomología Venezolana* 1: 95–96.
- Fernandes JAM, Wanzeler E** (2010) Percevejos aquáticos. In: Oliveira ACM, Santos JB, Santos-Costa MC (Eds.) *Os animais da Tanguro, Mato Grosso: diversidade na zona de transição entre a Floresta Amazônica e o Cerrado*. MPEG, UFPA, IPAM, Belém, 24–25 + 101–102.
- Floriano CFB, Moreira FFF, Bispo PC** (2017) New records of Gerromorpha (Insecta: Hemiptera: Heteroptera) from the Neotropical Region. *Transactions of the American Entomological Society* 143: 103–118. <https://doi.org/10.4289/0013-8797.119.1.24>
- Floriano CFB, Paladini A, Cavichioli RR** (2016) Systematics of the South American species of *Cylindrostethus* Mayr, 1865 (Hemiptera: Heteroptera: Gerridae), with a new species from Amazonian Brazil and Peru. *Invertebrate Systematics* 30: 431–462. <https://doi.org/10.1071/IS14059>
- Franco CL, Lima LRC, Rodrigues JMR, de Azevêdo CAS, Moreira FFF** (2020) New records of Gerromorpha (Insecta, Hemiptera, Heteroptera) from Piauí state, northeastern

- Brazil. Check List 16: 1755–1763. <https://doi.org/10.15560/16.6.1755>
- Franco CL, Rodrigues JMR, de Azevêdo CAS, Moreira FFF** (2021). Gerromorpha (Insecta, Hemiptera, Heteroptera) from eastern Maranhão state, northeastern Brazil. Check List 17: 551–568. <https://doi.org/10.15560/17.2.551>
- Goulart M, Melo AL, Callisto M.** (2002) Qual a relação entre variáveis ambientais e a diversidade de heterópteros aquáticos em nascente de altitude? BIOS, Cadernos do Departamento de Ciências Biológicas da PUC Minas 10: 63–76.
- Gould GE** (1931) The *Rhagovelia* of the Western Hemisphere with notes on world distribution (Hemiptera, Veliidae). University of Kansas Science Bulletin 20: 5–61.
- Hungerford HB** (1929) A new *Velia* from Arizona with notes on other species (Hemiptera-Veliidae). Annals of the Entomological Society of America 22: 759–761.
- Hungerford HB, Evans NE** (1934) The Hydrometridae of the Hungarian National Museum and other studies in the family (Hemiptera). Annales Historico-Naturales Musei Nationalis Hungarici 28: 31–112.
- Instituto Estadual de Florestas do Estado de Minas Gerais [IEFMG]** (2009) Parque Estadual Municipal Cachoeira das Andorinhas. Plano de Manejo. http://www.andorinhas.gorceix.org.br/Inicio/plano_de_manejo. Accessed on: 2019-12-8.
- Magalhães OM, Moreira FFF, Galvão C** (2016) A new species of *Rhagovelia* Mayr, 1865 (Hemiptera: Heteroptera: Veliidae) from Pará state, with an updated key to Brazilian species of the *robusta* group. Zootaxa 4171: 586–594. <https://doi.org/10.11646/zootaxa.4171.3.12>
- Magalhães OM, Machado GLV, Carneiro MAA, Moreira FFF** (2021) A new species of *Microvelia* Westwood, 1834 (Hemiptera: Heteroptera: Veliidae) from southeastern Brazil. Zootaxa 4958: 160–166. <https://doi.org/10.11646/zootaxa.4958.1.10>
- Mazzucconi SA, López-Ruf ML, Bachmann AO** (2009a) Hemiptera-Heteroptera: Gerromorpha y Nepomorpha. In: Domínguez E, Fernández HR (Eds.) Macroinvertebrados bentónicos sudamericanos. Sistemática y biología. Fundación Miguel Lillo, Tucumán, Argentina, 167–231.
- Mazzucconi SA, López-Ruf ML, Bachmann AO** (2009b) Gerromorpha y Nepomorpha (Insecta: Heteroptera) del Parque Provincial Salto Encantado del Valle del Cuñá Pirú, Provincia de Misiones, Argentina. Lundiana 9: 57–66.
- Melo AL, Nieser N** (2004) Faunistic notes on aquatic Heteroptera of Minas Gerais (Brazil): an annotated list of Gerromorpha and Nepomorpha collected near Januária, MG. Lundiana 5: 43–49.
- Monte BGO, Bichuette ME** (2020) Taxonomic distinctness of the subterranean fauna from Peruçu Caves National Park, state of Minas Gerais, eastern Brazil. Biota Neotropica 20: e20190801. <https://doi.org/10.1590/1676-0611-bn-2019-0810>
- Moreira FFF** (2012) Sinopse da fauna de Veliidae (Insecta: Heteroptera: Gerromorpha) ocorrente na Região Sudeste do Brasil. PhD Thesis, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil.
- Moreira FFF** (2015) The semiaquatic gerromorphans. In: Panizzi AR, Grazia J (Eds.) True bugs (Heteroptera) of the Neotropics. Springer Science+Business Media, Dordrecht, 113–156. <https://doi.org/10.1007/978-94-017-9861-76>
- Moreira FFF, Barbosa JF** (2012) Two new species of *Paravelia* Breddin, 1898 and distributional notes concerning the Veliidae from Minas Gerais state, Brazil (Insecta: Hemiptera: Heteroptera: Gerromorpha). Zootaxa 3354: 58–68. <https://doi.org/10.11646/zootaxa.3354.1.2>
- Moreira FFF, Barbosa JF** (2013) A new *Hydrometra* (Hemiptera: Heteroptera: Hydrometridae) from northeastern Brazil, with a key to the species recorded from the country. Zootaxa 3619: 70–74. <https://doi.org/10.11646/zootaxa.3619.1.4>
- Moreira FFF, Campos GGF** (2012) New distributional data concerning some Gerromorpha (Insecta: Hemiptera: Heteroptera) from Brazil. Check List 8: 542–547. <https://doi.org/10.15560/8.3.542>
- Moreira FFF, Ribeiro JRI** (2009) Two new *Rhagovelia* (Heteroptera: Veliidae) and new records for twelve species in southeastern Brazil. Aquatic Insects 31: 45–61. <https://doi.org/10.1080/01650420802444449>
- Moreira FFF, Barbosa JF, Ribeiro JRI** (2012). Veliidae (Insecta, Heteroptera, Gerromorpha) from southeastern Brazil: three new species from Rio de Janeiro state, a new species group for Neotropical *Rhagovelia* Mayr, and notes on distribution and synonymy. Revista Brasileira de Entomologia 56 (2): 147–158.
- Moreira FFF, Nessimian JL, Rúdio JA, Salles FF** (2010) New species and new records of Veliidae from Espírito Santo state and adjacent Minas Gerais state, Brazil, with notes on nomenclature (Insecta: Heteroptera: Gerromorpha). Journal of Natural History 44: 2761–2801. <https://doi.org/10.1080/00222933.2010.512423>
- Moreira FFF, Rodrigues HDD, Barbosa JF, Reducendo-Klementová B, Svitok M** (2016) New records of Gerromorpha and Nepomorpha (Insecta: Hemiptera: Heteroptera) from South America. Biodiversity Data Journal 4: e7975. <https://doi.org/10.3897/BDJ.4.e7975>
- Moreira FFF, Ribeiro JRI, Nessimian JL, Itoyama MM, Castanhole MMU, Pereira LLV** (2011) New records and distribution expansions for Neotropical water-striders (Insecta: Heteroptera: Gerromorpha). Check List 7: 303–309. <https://doi.org/10.15560/7.3.303>
- Nieser N** (1993) Two new South American taxa of *Metrobates* (Heteroptera: Gerridae). Storkia 2: 21–25.
- Nieser N** (1994) A new species and a new status in *Neogerris* Matsumura (Heteroptera: Gerridae) with a key to American species. Storkia 3: 27–37.
- Nieser N, Melo AL** (1997) Os heterópteros aquáticos de Minas Gerais: guia introdutório com chave de identificação para as espécies de Nepomorpha e Gerromorpha. Editora UFMG, Belo Horizonte, Brazil, 180 pp.
- Nieser, N, Melo AL** (1999) A new species of *Halobatopsis* (Heteroptera: Gerridae) from Minas Gerais (Brazil), with a key to the species. Entomologische Berichten 59: 97–102.
- Nieser N, Polhemus DA** (1999) Four new species of *Rhagovelia* (Heteroptera: Veliidae) from Minas Gerais (Brazil), with a key to the regional species of the *angustipes* complex. Aquatic Insects 21: 53–76. <https://doi.org/10.1076/aqin.21.1.53.4540>
- Padilla-Gil DN, Moreira FFF** (2013) Checklist, taxonomy and distribution of the *Rhagovelia* Mayr, 1865 (Hemiptera: Heteroptera: Veliidae) of the Americas. Zootaxa 3640: 409–424. <https://doi.org/10.11646/zootaxa.3640.3.5>
- Pelli A, Nieser N, Melo AL** (2006) Nepomorpha and Gerromorpha (Insecta: Heteroptera) from the Serra da Canastra, southwestern Minas Gerais state, Brazil. Lundiana 7: 67–72.
- Polhemus DA** (1997) Systematics of the genus *Rhagovelia* Mayr (Heteroptera: Veliidae) in the Western Hemisphere (exclusive of the *angustipes* complex). Entomological Society of America, Lanham, USA, 386 pp.

- Polhemus JT, Polhemus DA** (2008) Global diversity of true bugs (Heteroptera; Insecta) in freshwater. *Hydrobiologia* 595: 379–391. <https://doi.org/10.1007/978-1-4020-8259-740>
- Rodrigues HDD, Melo AL, Ferreira-Keppler RL** (2012) New records of Gerromorpha (Insecta: Hemiptera: Heteroptera) from Brazil. *Check List* 8: 908–913. <https://doi.org/10.15560/8.5.908>
- Rodrigues HDD, Floriano CFB, Zettel H, Moreira FFF** (2021a) Revision of the American genus *Platyvelia* Polhemus & Polhemus, 1993 (Heteroptera: Gerromorpha: Velidae). *Revista Brasileira de Entomologia* 65:e20200120. <https://doi.org/10.1590/1806-9665-rbent-2020-0120>
- Rodrigues JMS, Nery L, Rodrigues, HD, Moreira FFF** (2021b) Survey of the semiaquatic bugs (Hemiptera: Heteroptera: Gerromorpha) from Alagoas and Sergipe, northeast Brazil. *Zootaxa* 4958: 103–159. <https://doi.org/10.11646/zootaxa.4958.1.9>
- Ruffinelli A, Pirán AA** (1959) Hemípteros heterópteros del Uruguay. *Boletín de la Facultad de Agronomía de Montevideo* 51: 3–60.
- Souza MAA, Melo AL, Vianna GJC** (2006) Heterópteros acuáticos oriundos do Município de Mariana, MG. *Neotropical Entomology* 35: 803–810. <https://doi.org/10.1590/S1519-566X2006000600013>
- Snow FH** (1905) Some results of the University of Kansas entomological expeditions to Arizona in 1904 and 1905. *Transactions of the Kansas Academy of Science* 20: 155–181.
- Taylor ELS, Ferreira RLL** (2012) Determinants on the structure of an aquatic invertebrate community in a Neotropical limestone cave. *Revista Brasileira de Espeleologia* 2: 1–12.
- Torres PL, Mazzucconi SA, Michat MC, Bachmann AO** (2008) Los coleópteros y heterópteros acuáticos del Parque Nacional Calilegua (Provincia de Jujuy, Argentina). *Revista de la Sociedad Entomológica Argentina* 67: 127–144.
- Uhler PR** (1893) A list of Hemiptera-Heteroptera collected in the island of St. Vincent by Mr. Herbert H. Smith, with description of new genera and species. *Proceedings of the Zoological Society of London* 1893: 705–719.
- Uhler PR** (1894) On the Hemiptera-Heteroptera of the Island of Grenada, West Indies. *Proceedings of the Zoological Society of London* 1894: 167–224.
- Vianna GJC, Melo AL** (2003) Distribution patterns of aquatic and semi aquatic Heteroptera in Retiro das Pedras, Brumadinho, Minas Gerais, Brazil. *Lundiana* 4: 125–128.