Semiaquatic bugs (Hemiptera, Heteroptera, Gerromorpha) from Rio Grande do Sul, southern Brazil

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Abstract
Rio Grande do Sul (RS) is the southernmost state in Brazil and includes areas within the Pampa and Atlantic Forest biomes. The semiaquatic bugs (Hemiptera, Heteroptera, Gerromorpha) from RS are poorly known, with only 14 previously recorded species. We carried out two expeditions in this state, in 2002 and 2019, across 19 municipalities. Here, we provide new records for 19 species, of which 13 are recorded for the first time from the state, five have their distributions expanded, and one is recorded again from a same locality previously reported in the literature. Furthermore, 13 species were collected for the first time in the Pampa biome and one in the Atlantic Forest.

Keywords
Aquatic insects, Atlantic Forest, geographic distribution, Neotropical region, Pampa

Introduction
Gerromorpha (Hemiptera, Heteroptera), or semiaquatic bugs, comprise more than 2100 extant species divided among approximately 160 genera and eight families (Polhemus and Polhemus 2008; Moreira 2015). Most representatives of this suborder have the ability to walk on the surface of the water (Andersen 1982; Schuh and Slater 1995). They occur on all continents, except for Antarctica (Polhemus and Polhemus 2008), and are characterized by having the antennae longer than the head, inserted in front of eyes and plainly visible from above, the metacoxae small, conical or cylindrical, freely rotatory in the acetabula, and the forewing membrane without cells or with dissimilar cells (Moreira et al. 2018).

So far, 238 species of Gerromorpha have been recorded from Brazil belonging to the families Gerridae (57 species), Hebridae (9), Hydrometridae (14), Mesoveliidae (7), and Veliidae (151) (Moreira 2021a, 2021b, 2021c, 2021d, 2021e). Historically, the northern and southeastern regions of the country were the best explored (Moreira et al. 2011a), but this has been changing in recent years due...
to surveys performed by local researchers, especially in the northeastern region (e.g., Franco et al. 2020, 2021; Rodrigues et al. 2021).

The semiaquatic bugs from Rio Grande do Sul state, southern Brazil, are poorly known, with only 14 species recorded so far (localities, biomes and references in parentheses): Halobatopsis platensis (Berg, 1879) (unspecified; Nieser 1970); Ha. spiniventris Drake & Harris, 1936 (Santiago; Atlantic Forest; Moreira and Campos 2012); Hydrometra argentina Berg, 1879 (Ibarama and Pinhal Grande; Atlantic Forest; Neri et al. 2005); Limnogonus ignotus Drake & Harris, 1934 (Pinhal Grande; Atlantic Forest; Moreira et al. 2011b); Mesovelia mulsanti White, 1879 (Porto Alegre or Eldorado do Sul; Pampa; Neering 1954); Oiovelia brasiliensis Moreira, Nessimian & Rúdio, 2010 (Santiago; Atlantic Forest; Moreira and Campos 2012); Rhagovelia janeira Drake, 1953 (unspecified; Nieser and Melo 1997; Nieser and Polhemus 1999); Rha. lucida Gould, 1931 (Caxias do Sul, Chapada, and Lagoa dos Quadros; Atlantic Forest; Bacon 1956; Polhemus 1997); Rha. novana Drake, 1953 (Quarai; Pampa; Museo Civico di Rovereto 2010); Rha. plaumanni Polhemus, 1997 (Arroio Grande; Pampa; Polhemus 1997); Rha. thaumana Drake, 1958 (Santiago; Atlantic Forest; Moreira and Campos 2012); Rha. trepida Bacon, 1948 (Carazinho; Atlantic Forest; Polhemus 1997); Rheumatobates bonariensis (Berg, 1898) (Ibarama; Atlantic Forest; Neri et al. 2005); and Steinovelia virgata (White, 1879) (Bos soroca; Pampa; Moreira et al. 2020). We present here new records for 19 species based on material collected from understudied areas in Rio Grande do Sul, both in the Atlantic Forest and Pampa biomes.

Study Area

Southern Brazil includes three states, with a total area of 576,783.781 km², occupying 6.77% of the country area (IBGE 2018). Rio Grande do Sul (RS) is the southernmost state in the region, bordering Argentina to the northwest and Uruguay to the southwest. The state has an area of 281,707 km² divided into two biomes: Atlantic Forest (87,871 km²) and Pampa (193,836 km²) (IBGE 2019; Fig. 1).

The Atlantic Forest in RS consists mainly of Dense Ombrophilous Forest associated with the warm and humid coastal climate, with no systematic dry period, and thermal amplitudes mitigated by the maritime influence. Such conditions are reflected in the high structural and floristic richness of the vegetation (IBGE 2019). The Pampa biome comprises 2.3% of the total area of Brazil and is found only in the southern half of RS. It constitutes the Brazilian portion of the South American Pampas, which also extend through the territories of Uruguay and Argentina, and is classified as a steppe in the international phytogeographic system (IBGE 2019). It is characterized by the rainy climate, without a systematic dry period, but marked by the frequent polar fronts and low temperatures during the winter, which produce the seasonality typical of a dry, cold climate. The Pampa has phytosocieties that include forests and grasslands, but the most common is the steppe (86.8%), an open formation of trees and low shrubs, with a predominance of grasses (IBGE 2019).

Rio Grande do Sul includes two of the 12 major

Figure 1. Geographical distribution of the collecting localities of Gerromorpha in Rio Grande do Sul, Brazil.
hydrographic regions of Brazil: Uruguai and Atlântico Sul (MMA 2003). Within the state, there are three hydrographic regions and 25 watersheds: Apuê-Inhandava, Butuí-Icamaquã, Ibicui, Ijuí, Negro, Passo Fundo, Piratim, Quaraí, Santa Maria, Turvo, and Várzea (Rio Uruguai basin, about 57% of the total area of the state); Alto Jacuí, Baixo Jacuí, Cai, Gravataí, Lago, Pardo, Sinos, Taquari-Antas, Yacacai, (Guaíba basin, 30%); and Camaquã, Mampituba, Mirim São Gonçalo, Litoral Médio, and Tramandai (coastal watersheds, 13% of the state) (RS 2018; SPGG 2021).

Methods

Material from Rio Grande do Sul state was collected during two expeditions, the first in 2002 and the second in 2019 (Fig. 1). We sampled in various types of water bodies (puddles, lakes, streams and rivers; Figs. 2–7) across 19 municipalities in the state: Barra Funda, Boa Vista do Buricá, Bossoroca, Candelária, jaguari, Lagoa Vermelha, Novos Cabrais, Pantano Grande, Piratini, Rosário do Sul, Santa Maria, Santiago, São Borja, São José do Norte, São Luiz Gonzaga, São Nicolau, São Vicente do Sul, Tio Hugo, and Tupanciretã.

We identified specimens based mainly on Moreira et al. (2018) and the literature specific for each genus and species group: McKinstry (1937), Hungerford (1954), Bachmann (1966), Spangler (1990), Nieser and Melo (1997, 1999), Nieser and Polhemus (1999), Moreira (2012), Moreira and Barbosa (2013), Rodrigues et al. (2014), Floriano and Rodrigues (2016), Magalhães et al. (2016), Cordeiro (2017), and Floriano et al. (2017). Whenever necessary, we compared the specimens with type or reference material. We deposited the material in the Coleção Entomológica do Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil (CEIOC).

We obtained the geographical coordinates of the collecting localities with a GPS receiver. We took photographs of the specimens with a Leica M205 C stereomicroscope coupled with a digital camera, using the Leica LAS imaging system. We produced maps using ArcGIS 10.5 (ESRI, Redlands, USA). The distribution presented for each species is according to Moreira (2021a, 2021c, 2021d, 2021e), and abbreviations of Brazilian states are according to the official standard (IBGE 2021). The list of species is organized alphabetically by family, subfamily, tribe, genus, and specific epithet. First records from Rio Grande do Sul are marked in bold font and with an asterisk (*).

Results

Family Gerridae
Subfamily Charmatometrinae
Genus Brachymetra Mayr, 1865

Brachymetra albinervus (Amyot & Serville, 1843)
Figure 8

Identification. Our specimens of B. albinervus were identified based on the antennomere I shorter than II and III together; the eye not surpassing the anterolateral angle of the pronotum; the pronotum with the apex not reaching the mesoacetabulum in the apterous form; the fore femur robust and slightly arched, with sparse conical black setae ventrally; the dorsum of the acetabula with silvery setae; and the male paramere wide, with obtuse apex (Cordeiro 2017).

General distribution. Bolivia, Brazil, Colombia, Costa Rica, Dominica, Ecuador, French Guiana, Grenada, Guatemala, Honduras, Martinique, Panama, Paraguay, Peru, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Venezuela.

Distribution in Brazil. AL, AM, BA, CE, MA, MG, MT, PA, RJ, RS*, SE, SP.

Subfamily Gerrinae
Tribe Gerrini
Genus Limnogonus Stål, 1868

Limnogonus profugus Drake & Harris, 1930

Figure 9A–E


**Figure 5.** Photographs of collecting localities in Rio Grande do Sul, Brazil. São Luiz Gonzaga, Fazenda do Cerro, 27.XI.2019. **A, B.** Weir and stream, $28^\circ12'32.0"S$, $054^\circ58'40.4"W$. **C, D.** Stream, $28^\circ12'29.6"S$, $054^\circ58'35.7"W$. **E, F.** Stream, $28^\circ12'09.3"S$, $054^\circ58'21.1"W$. 
Figure 6. Photographs of collecting localities in Rio Grande do Sul, Brazil. A–D. São Luiz Gonzaga, Fazenda do Cerro, 27.XI.2019. A, B. Puddle, 28°12′07.9″S, 054°58′07.1″W. C, D. Weir, 28°12′12.1″S, 054°57′41.7″W. E, F. Boa Vista do Buricá, Rio Buricá, river, 27°42′52.4″S, 054°08′06.7″W, 28.XI.2019.
Identification. Our specimens were recognized by the color of the mesopleuron, mainly brown and ventrally limited by a band of silvery setae (Fig. 9C). Other characteristics that helped us in the identification: antennomere I longer than head width, including eyes; abdominal segment VIII of males without apical projection on the ventral surface; and last abdominal laterotergite of females not projected posteriorly (Nieser and Melo 1997).

General distribution. Argentina, Brazil, Paraguay, Peru.

Distribution in Brazil. AL, CE, GO, MG, MS, MT, PA, PB, PE, RJ, RS*, SE, SP.

Genus Neogerris Matsumura, 1913

Neogerris lubricus (White, 1879) Figure 9F, G

New records. BRAZIL – Rio Grande do Sul • São Borja; 28°42′07.4″S, 055°47′12.5″W; 2002; J.R.I. Ribeiro leg.; 1 ♂, CEIOC 56024.

Identification. Our specimens of Neogerris lubricus were distinguished from other species of Neogerris by the body length smaller than 5 mm; the pronotum of the aperteroform longer than wide, with clearly defined anterior and posterior lobes; the posterior lobe of the pronotum covering the mesonotum entirely or almost entirely; and the abdominal segment VIII of the male, in dorsal view, with subequal length and width (Nieser and Melo 1997).

General distribution. Argentina, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago.

Distribution in Brazil. AL, AM, AP, BA, MA, MG, MS, MT, PA, PI, RJ, RO, RS*, SE, SP.

Subfamily Rhagadotarsinae

Genus Rheumatobates Bergroth, 1892

Rheumatobates bonariensis (Berg, 1898) Figure 10A, B


Identification. Our male specimen of R. bonariensis was recognized by the absence of modifications on the antennae and legs, in addition to the following characteristics: first antennal segment black and longer than the others; hind femur straight; and venter of abdominal segments VII and VIII deeply, longitudinally grooved (Fig. 10B) (Hungerford 1954).

General distribution. Argentina, Bolivia, Brazil, Paraguay, Peru, Uruguay.

Distribution in Brazil. MA, MT, RS, SC, SP.
**Rheumatobates crassifemur crassifemur** Esaki, 1926


**Identification.** This species was recognized by the following characteristics of the males: antennomere IV with a fairly uniform row of strong setae on the dorsolateral margin; hind trochanter incrassate, as thick as hind coxa, not armed with a very long basal spur, and inserted beyond the base of the hind femur; hind femur not straight; basal extremity of the hind femur bare; and basal lobe of the hind trochanter densely margined ventrally with long setae (Fig. 10C, D) (Hungerford 1954). Our females were identified by association with the males collected in the same area.

**General distribution.** Argentina, Bolivia, Brazil, Colombia, Panama, Paraguay.

**Distribution in Brazil.** ES, MG, MS, MT, PA, RJ, RS*, SP.

**Subfamily Trepobatinae**

**Tribe Trepobatini**

**Genus Halobatopsis** Bianchi, 1896

**Halobatopsis platensis** (Berg, 1879)

Identification. Our specimens were recognized by the following characteristics: mesonotum with longitudinal black marks; male abdominal segment VIII without ventral spine; and females with abdominal laterotergites horizontal or only slightly slanting upward (Nieser and Melo 1999).

General distribution. Argentina, Brazil, Peru, Uruguay.

Distribution in Brazil. AL, BA, DF, ES, GO, MA, MG, MS, MT, PI, PR, RJ, RS, SE, SP.

Halobatopsis spiniventris Drake & Harris, 1936

Figure 11C–H


Identification. The male specimens collected in RS have their abdominal segment VIII with a dark brown to blackish ventral spine (Fig. 11E), and females have their abdominal laterotergites reflected over the mediotergites horizontal or only slightly slanting upward (Nieser and Melo 1999).

General distribution. Argentina, Brazil, Paraguay.

Distribution in Brazil. PR, RJ, RS, SC, SP.
Genus *Ovatametra* Kenaga, 1942

*Ovatametra gualeguay* Bachmann, 1966

**Figure 12.** Collected specimen of *Ovatametra gualeguay*; macropterous female from Pantano Grande (30°11′54.5″S, 052°24′48.1″W), habitus. A. Dorsal view. B. Ventral view. Scale bars: 1 mm.


**Identification.** Our female specimens of *Ovatametra gualeguay* were identified based on the body length over 2.75 mm; the interocular space in dorsal view wider than 1.75 times the width of an eye; and the color pattern of the body, which agrees with that described by Bachmann (1966).

**General distribution.** Argentina, Brazil.

**Distribution in Brazil.** MG, MT, RS*.

Family Hydrometridae

Subfamily Hydrometrinae

Genus *Hydrometra* Latreille, 1797

*Hydrometra argentina* Berg, 1879

**Figure 13**


**Identification.** We identified this female of *H. argentina*...
by the body length shorter than 12.5 mm, the clypeus co
cinate, clearly longer than broad (Fig. 13B), the pro-
and mesoacetabula with two circular punctures each, and
the metacetabula without circular punctures (Fig. 13D)
(Moreira and Barbosa 2013). The specimen is not in pris
tine conditions and the abdomen is twisted, so that the
posterior portion is upside down in Figure 13A and C.
Additionally, the posterior projection of abdominal ter
gum VIII is kneaded (Fig. 13E), not as usually seen in
this species.

**General distribution.** Argentina, Bolivia, Brazil, Chile,
Colombia, Ecuador, Panama, Paraguay, Peru, Suriname,
Trinidad and Tobago, Uruguay, Venezuela.

**Distribution in Brazil.** AL, AM, AP, BA, ES, MG, MS,
MT, PA, PB, PR, RJ, RS, SC, SE, SP.

**Family Mesoveliidae**
**Subfamily Mesoveliinae**
**Genus Mesovelia** Mulsant & Rey, 1852

**Mesovelia mulsanti** White, 1879

Figure 14

**New records.** BRAZIL – Rio Grande do Sul • Santiago;
29°22′19.3″S, 054°44′41.3″W; 26.XI.2019; J.M.S. Rodrigues,
I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr.
& L. Nery leg.; flooded area; 2 apterous ♂, CEIOC 76950
• São Luiz Gonzaga, Fazenda do Cerro; 28°12′12.1″S,
054°57′41.7″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S.
Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery
leg.; weir; 1 apterous ♀, 4 apterous ♀; CEIOC 76951 •

Figure 13. Collected specimen of *Hydrometra argentina*; apterous female from Pantano Grande (30°11′54.5″S, 052°24′48.1″W). **A, B.** Dorsal view. **A.** Habitus. **B.** Head. **C-E.** Lateral view. **C.** Habitus. **D.** Thorax. **E.** Last abdominal segments. Scale bars: **A, C = 2 mm; B, D–E = 1 mm.** Abdomen is twisted; posterior portion is upside down in **A** and **C.** Posterior projection of abdominal tergum VIII is kneaded in **E.**

Figure 14. Collected specimens of *Mesovelia mulsanti* from São Luiz Gonzaga (28°12′32.0″S, 054°58′40.4″W), habitus. **A, B.** Apterous male. **A.** Dorsal view. **B.** Ventral view. **C, D.** Apterous female. **C.** Dorsal view. **D.** Ventral view. Scale bars: 1 mm.

**Identification.** Our male specimens of *Mesovelia multisanti* were identified by the following characteristics: middle femur with a row of 8–15 black spines on its posterior surface; and abdominal sternum VIII with two tightly packed clusters of stout black spinules (Spangler 1990). The females were identified by the presence of black spines on the middle femur and by association with the males collected in the same area.

**General distribution.** Antigua and Barbuda, Argentina, Aruba, Barbados, Belize, Bolivia, Bonaire, Brazil, Canada, Colombia, Costa Rica, Cuba, Curaçao, Dominica, Dominican Republic, French Guiana, Grenada, Guadeloupe, Guatemala, Guyana, Hawaiian Islands, Honduras, Jamaica, Klein Curaçao, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Martin, Saint Vincent and the Grenadines, Trinidad and Tobago, United States of America, United States Virgin Islands, Venezuela.

**Distribution in Brazil.** AL, AM, AP, BA, CE, ES, GO, MA, MG, MS, MT, PA, PI, PE, PR, RJ, RO, RS, SC, SE, SP.

Family Veliidae
Subfamily Microveliinae
Tribe Microveliini
Genus *Microvelia* Westwood, 1834

*Microvelia braziliensis* McKinstry, 1937

**Figure 15.** Collected specimens of *Microvelia braziliensis* from São Luiz Gonzaga (28°12′07.9″S, 054°58′07.1″W), habitus. A, B. Macrop terous male. A. Dorsal view. B. Ventral view. C, D. Macrop terous female. C. Dorsal view. D. Ventral view. Scale bars: 1 mm.


**Identification.** Our males were recognized by their abdominal segment VIII ventrally concave, with a pair of lateral triangular projections. Our specimens of *M. braziliensis* were also distinguished from other species of *Microvelia* by the following characteristics: body length 3.00–3.50 mm; hind femur of males and females surpassing the apex of the abdomen; and male hind tibia straight (Moreira 2012).

**General distribution.** Argentina, Bolivia, Brazil, Ecuador, Paraguay, Peru.

**Distribution in Brazil.** MG, RJ, RS*, SC.

*Microvelia mimula* White, 1879

**Figure 16.** Collected specimens of *Microvelia mimula* from São Luiz Gonzaga (28°12′07.9″S, 054°58′07.1″W), habitus. A, B. Macrop terous male. A. Dorsal view. B. Ventral view. C, D. Macrop terous female. C. Dorsal view. D. Ventral view. Scale bars: 1 mm.


**Identification.** *Microvelia mimula* can be recognized by the terminalia of the male, which is distinctly modified, with the dorsum of abdominal segment VIII expanded laterally, the venter of this segment widely excavated on the posterior margin, and the proctiger with large lateral projections (Drake and Carvalho 1954). This species can also be distinguished from other congener species by the following characteristics: mesonotum of the apterous form covered by the pronotum (Fig. 16A, E); hind femur not surpassing the apex of the abdomen; and male hind tibia straight (Fig. 16D) (Moreira 2012).

**General distribution.** Argentina, Barbados, Brazil,
Colombia, Costa Rica, Cuba, Ecuador, French Guiana, Galápagos Islands, Grenada, Panama, Paraguay, Peru, Puerto Rico, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

**Distribution in Brazil.** AL, AM, CE, ES, MA, MG, MS, MT, PA, RJ, RS*, SC, SE, SP.

*Microvelia pulchella* Westwood, 1834


**Identification.** Our specimens of *Microvelia pulchella* were recognized by the short pronotum of the apterous form, which does not cover the mesonotum (Fig. 17A, C); the bent hind tibia of the males (Fig. 17A, B); the male terminalia aligned with the longitudinal axis of the body; and the male abdominal segment VIII ventrally without depressions, projections or notches (Moreira 2012). Additionally, males are elongated, with the sides of body more or less parallel, whereas females are much more robust and rounded (Moreno et al. 2018).

**General distribution.** Alaska, Anguilla, Argentina, Aruba, Bahamas, Barbados, Bonaire, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, Ecuador, French Guiana, Grenada, Guadeloupe, Guatemala, Jamaica, Klein Bonaire, Klein Curacao, Martinique, Mexico, Panama, Peru,
Puerto Rico, Saba, Saint Kitts and Nevis, Saint Martin, Saint Vincent and the Grenadines, Trinidad and Tobago, United States of America, United States Virgin Islands, Venezuela.

**Distribution in Brazil.** AL, AM, BA, ES, MA, MG, MS, PA, PE, PI, RJ, RS*, SC, SE, SP.

Subfamily Rhagoveliinae

Genus *Rhagovelia* Mayr, 1865

*Rhagovelia rivulosa* Polhemus & Polhemus, 1985

**Figure 18.** Collected specimens of *Rhagovelia rivulosa* from Boa Vista do Buricá (27°42′52.4″S, 054°08′06.7″W), habitus. **A.** Apterous male. **B.** Apterous female. **C.** Dorsal view. **D.** Ventral view. Scale bars: 1 mm.


**Identification.** This species can be distinguished from others of the *angustipes* complex (Polhemus 1997) by a set of characteristics presented by males and females. Males (Fig. 18A, B, D) have the body about 2.80 mm long; the mesonotum without a shiny black spot; the abdomen shiny black on a small patch centrally on mediotergite VI, a large shiny black patch on mediotergite VII, and on tergum VIII; the margins of the abdominal laterotergites not sinuate; the middle coxa blackish; the anterior trochanter unarmed; the hind femur with 7–9 spines on the posterior surface; and the posterior tibia 1.1 times as long as the hind femur (Nieser and Polhemus 1999). Females have the body about 3.15 mm long; the antennomere II subequal to slightly longer than the antennomere III; the abdominal laterotergites vertical or nearly so, not reflexed and folded over the mediotergites, and not distinctly thickened and/or strongly convergent posteriorly (Fig. 18C); and the hind femur with at least 6 spines ventrally (Nieser and Polhemus 1999).

**General distribution.** Brazil.

*Rhagovelia robusta* Gould, 1931

**Figure 19.** Collected specimens of *Rhagovelia robusta* from São Luiz Gonzaga, Fazenda do Cerro: 28°12′13.2″S, 054°57′41.6″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; stream; 17 apterous ♂, 7 apterous ♀, CEIOC 76962.

**Identification.** This species can be distinguished from others of the *robusta* group (Polhemus 1997; Moreira et al. 2012) by the following characteristics of males: small black denticles present on jugum and adjacent region of proepisternum; pronotum mostly dark brown to black,
strongly contrasting with yellowish brown or orange brown mark on anterior lobe; middle trochanter dark brown to black; hind femur with 3–4 irregular rows of spines, with a large spine near its middle dorsally displaced from others; and hind trochanter armed only with small subequal spines (Magalhães et al. 2016). Our females were identified by association with the males collected in the same area and by comparison with other identified specimens deposited in the CEIOC.

**General distribution.** Argentina, Brazil, Paraguay.

**Distribution in Brazil.** ES, GO, MG, MA, MT, PA, RJ, RS*, SC, SE, SP.

**Subfamily Veliinae**

**Genus Callivelia** Polhemus, 2021

**Callivelia bipunctata** (Rodrigues, Moreira, Nieser, Chen & Melo, 2014)

**Figure 20A–C**


**Identification.** This male specimen of *C. bipunctata* was distinguished from the other three species of *Callivelia* by the absence of a prominent vertical process centrally on the pronotum (Fig. 20C); the body length smaller than 5 mm; antennomere II distinctly shorter than the
antennomere III; and the paramere slender and elongate (Polhemus 2021).

**General distribution.** Brazil, Paraguay.

**Distribution in Brazil.** MG, MS, MT, RS*.

Genus *Oiovelia* Drake & Maldonado-Capriles, 1952

*Oiovelia brasiliensis* Moreira, Nessimian & Rúdio, 2010

Figure 20D–G


**Identification.** Our specimens of *O. brasiliensis* were recognized by the following diagnostic characteristics: pronotum reddish orange and legs yellowish to light brown; male proctiger with a pair (1+1) of small spines medially on dorsal surface; and paramere with a slight ventral expansion and apex rounded, not hook-like (Moreira et al. 2010; Floriano and Rodrigues 2016). *Oiovelia machadoi* Rodrigues & Moreira, 2016 is the only described species of the genus that shares with *O. brasiliensis* the spines medially on the proctiger, but differs from it by the pronotum and legs blackish, and the male paramere not expanded on the ventral surface (Floriano and Rodrigues 2016).

Genus *Paravelia* Breddin, 1898

*Paravelia capixaba* Moreira, Nessimian & Rúdio, 2010

Figure 21A–C


**Identification.** This specimen was identified by its small body densely covered by long setae (Fig. 21A–C; Rodrigues et al. 2014), along with the following characteristics: antennomere III longer than antennomere I; thoracic sternum without tubercles; trochanters and femora without spines; tibiae with a ventral row of acute black spinules throughout their length; male proctiger without central projections; and parameres symmetrical, narrow.

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Table 1. General distribution of the 27 species of Gerromorpha recorded from Rio Grande do Sul, and distribution within Brazilian biomes. New records are marked with an asterisk. (Atl. For., Atlantic Forest; S.A. + T.&T., South America and, in some cases, also Trinidad and Tobago).

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<td>Brazil</td>
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<td>Hydrometra argentina</td>
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</tr>
<tr>
<td>Microvelia multiverti</td>
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<tr>
<td>Micravelia capixaba</td>
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<tr>
<td>Micravelia mimula</td>
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<tr>
<td>Micravelia pulchella</td>
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<tr>
<td>Rhagovelia janeira</td>
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<td>Rhagovelia lucida</td>
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</tr>
<tr>
<td>Rhagovelia novana</td>
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<tr>
<td>Rhagovelia plaumanni</td>
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<tr>
<td>Rhagovelia rivulosa</td>
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<tr>
<td>Rhagovelia robusta</td>
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<tr>
<td>Rhagovelia thaumana</td>
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<td>Rhagovelia trepida</td>
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</tr>
<tr>
<td>Callivelia bipunctata</td>
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</tr>
<tr>
<td>Oiovelia brasiliensis</td>
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<td>X</td>
</tr>
<tr>
<td>Paravelia capiabu</td>
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<td>X</td>
</tr>
<tr>
<td>Steinovelia virgata</td>
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<tr>
<td>Stridulivelia astralis</td>
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</table>

**General distribution.** Argentina, Brazil, Paraguay.

**Distribution in Brazil.** MA, MG, MT, MS, RS*, TO.

**Discussion**

Our work increases to 27 the number of semiaquatic bug species recorded from Rio Grande do Sul (Table 1; Fig. 22). Seven genera (Brachymetra, Callivelia, Microvelia, Neogerris, Ovatameta, Paravelia, and Stridulivelia) and 13 species are recorded for the first time from the state. Eight of these species are also newly recorded from southern Brazil (B. albinervus, Limnogonus profugus, N. fabricius, Rheumatobates crassifemur crassifemur, Ov. gualeguay, C. bipunctata, P. capiabu, and Str. astralis), and five are recorded for the second time from this region of the country (Mi. braziliensis, Mi. mimula, Mi. pulchella, Rhagovelia rivulosa, and Rha. robusta).

Additionally, we expand the distribution in RS for five species previously recorded from the state: Rhe. bonariensis, Halobatopsis platensis, Ha. spiniventris, Hydrometra argentina, and Mesovelia multisanti. Among the 14 species of Gerromorpha previously recorded from RS, we did not collect specimens of L. ignotus, Rha. janeira, Rha. lucida, Rha. novana, Rha. plaumanni, Rha. thaumana, Rha. trepida, and Steinovelia virgata. We did not find any of the Rhagovelia species previously known from RS, but added two species of this genus to the state.
Oiovelia brasiliensis was previously recorded by Moreira and Campos (2012) from Santiago municipality, Jaguarizinho River, under Ernesto Alves bridge (−29.3676, −054.7365), and we only collected this species in the same river, at 0.6 km to the north of the previous record. In contrast, Ha. spiniventris was collected in the same river both previously (Moreira and Campos 2012) and in our samples, but we expand its distribution to Jaguari municipality, about 20 km south from Santiago, and to São Luiz Gonzaga municipality, about 130 km to the northwest. Furthermore, both Jaguari and São Luiz Gonzaga are in the Pampa biome, while Santiago is in the Atlantic Forest biome.

Thirteen species were collected for the first time in the Pampa and one in the Atlantic Forest (Table 1). All of the 27 species now known from RS occur in the Atlantic Forest, while nine (33.3%) are not found in the Pampa. Most species (19 spp., 70.4%) represented in the state have a wide distribution in Brazil and are recorded from at least three of its six biomes. Four species (14.8%) are found in all Brazilian biomes, three (11.1%) are absent only from the Pantanal, three (11.1%) are found only in the Atlantic Forest and the Pampa, one (3.7%) only in the Cerrado and the Atlantic Forest, and four (14.8%) only in the Atlantic Forest. No species are endemic from the Pampa.

Finally, considering only the distribution within RS, six species are recorded just from the Pampa (Ha. platensis, Ov. gualeguay, Mi. braziliensis, Rha. robusta, C. bipunctata, and P. capixaba), eight only from the Atlantic Forest (Rhe. crassifemur crassifemur, Rha. janeira, Rha. lucida, Rha. rivulosa, Rha. thaumana, Rha. trepida, Oi. brasiliensis, and Ste. virgata), and 13 from both biomes (B. albinervus, L. ignotus, L. profugus, N. lubricus, Rhe. bonariensis, Ha. spiniventris, Hy. argentina, Me. mulsanti, Mi. mimula, Mi. pulchella, Rha. novana, Rha. pluva, and Ste. virgata).
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