

**UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL  
INSTITUTO DE BIOCÊNCIAS  
BACHARELADO EM CIÊNCIAS BIOLÓGICAS**

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**PERCEVEJOS ASSASSINOS DO ESTADO DO RIO GRANDE  
DO SUL, BRASIL, (HEMIPTERA: HETEROPTERA:  
REDUVIIDAE): CATÁLOGO DE GÊNEROS**

**PORTO ALEGRE**

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Trabalho de Conclusão de curso apresentado  
como requisito parcial para obtenção do título de  
Bracharel em Ciências Biológicas na  
Universidade Federal do Rio Grande do Sul.

O artigo deste trabalho será submetido na  
Revista Brasileira de Entomologia.

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Este trabalho de conclusão será apresentado na forma de artigo científico de acordo com as normas para submissão da Revista Brasileira de Entomologia.

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## AGRADECIMENTOS

Primeiramente, gostaria de agradecer a Divindade, perfeita em sua sabedoria, que guiou meu caminho para que eu chegasse até aqui, apresentando as pessoas certas e as mais diversas situações. Foi neste caminho que eu me encontrei profissionalmente e onde espero assim realizar-me, sou plenamente grata a tudo que me ocorreu.

A minha mãe, Claci, que sempre acreditou em mim e em minha escolha de curso, porque, afinal, o amor no que fazemos é fundamental (aprendi com ela). Além de sempre ter incentivado que eu fosse atrás dos meus sonhos e sempre ter estado ao meu lado, seja quando eu queria contar minhas infinitas histórias da Biologia, seja quando eu precisei de um ombro para chorar devido as adversidades da trajetória. Foi ela a minha inspiração em me tornar uma mulher forte.

Ao meu pai, Antônio, pelos sábios conselhos, pelo incentivo em sempre dar o meu melhor e ser o melhor. A minha irmã Natália, pelo incentivo, pelas conversas, por me escutar e estar sempre ao meu lado. Aos meus irmãos, Vitor, que sabendo do meu amor pelos animais e principalmente pelos insetos, sempre tem alguma coisa a perguntar ou a mostrar, demonstrando interesse e procurando me agradar com coisas que me fazem bem e a Valentina, que apesar de ainda não compreender o momento, faz parte dele.

A Marciane, que acompanha e contempla a minha trajetória e sempre tem palavras amigas para comigo. A Fabiana, minha prima, quem incentivou muito tudo isso e a realização deste sonho; quem participou e acompanhou de forma presente o início desta trajetória, ajudando em tudo o que foi preciso. Aos meus padrinhos, Milton e Élide, que me acolheram com tanto carinho quando vim a Porto Alegre e por isso possibilitaram toda essa jornada. As minhas afilhadas, Júlia e Luísa, por todo amor e carinho e ajuda em coletas.

Ao Augusto, o maior parceiro e companheiro de caminhada, que esteve ao meu lado desde o início da graduação até o presente momento, dando suporte, equilíbrio, conselhos e amor. Agradeço a caminhada compartilhada e por tudo o que aprendemos um com o outro.

A minha orientadora Jocelia, que me acolheu no Laboratório de Entomologia Sistemática de braços abertos e que possibilitou a realização deste trabalho.

A minha coorientadora Valentina, quem me ensinou muito do que sei hoje, por toda a paciência, dedicação, incentivo e pelos ensinamentos. Agradeço principalmente por ter aceito este projeto de mente aberta quando falei que gostaria de trabalhar com Reduviidae.

Aos meus colegas do laboratório de Entomologia Sistemática da UFRGS que sempre estiveram dispostos a ajudar no que foi preciso, que contribuíram com novos registros a partir de coletas e principalmente por todo o companheirismo e pelas palavras amigas em momentos de intenso trabalho.

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## RESUMO

Os Percevejos Assassinos (Reduviidae) são o segundo maior grupo dentro de Heteroptera, com 25 subfamílias e mais de 7000 espécies distribuídas pelo mundo. Apresentam comportamento predador característico, morfologia bastante diversificada e uma variedade de comportamentos e hábitos alimentares. Além disso, possuem importância econômica como potenciais agentes de controle biológico e em saúde pública, como vetores de doenças. Apesar da importância e diversidade da família, estudos faunísticos e revisões recentes são escassas, ao menos para o Brasil; as pesquisas possuem ênfase apenas na subfamília de importância médica (Triatominae). O Rio Grande do Sul (RS) está localizado no sul do Brasil e compartilha fronteiras com o Uruguai e Argentina, apresenta clima subtropical e é composto pelos dois biomas mais ameaçados no país: Mata Atlântica e Pampa. O Catálogo Taxonômico de Fauna do Brasil (2018) registra aproximadamente 18 subfamílias e 121 gêneros para o país; com oito subfamílias e aproximadamente 29 gêneros para o RS, mas a maioria sem registros específicos de distribuição geográfica. Aqui, examinamos mais de 1500 espécimes depositados nas coleções entomológicas mais importantes do estado e apresentamos o primeiro catálogo de gêneros de Reduviidae para o RS/Brasil, com informações taxonômicas, diagnoses, distribuição no estado, comentários e material examinado para cada gênero. Além disso, macrofotografias do hábito dorsal e lateral, chaves taxonômicas para os gêneros de Reduviidae que ocorrem no RS e mapas de distribuição são fornecidos. Registramos 61 gêneros e 11 subfamílias de Reduviidae para o estado do Rio Grande do Sul.

## INTRODUÇÃO GERAL

### *Reduviidae*

Os percevejos verdadeiros (Heteroptera) pertencem a ordem Hemiptera e são caracterizados pelo aparelho bucal denominado “*rostrum*” adaptado para perfuração e sucção; e pela asa do tipo hemiélitro com a porção basal coriácea e a porção apical membranosa. Reduviidae é uma família conhecida popularmente por “percevejos assassinos”, devido ao hábito predador característico. Representam uma das maiores famílias e mais diversificadas morfologicamente dentro de Heteroptera (Schuh and Slater, 1995; Weirauch, 2008), com 25 subfamílias e mais de 7000 espécies distribuídas pelo mundo (Maldonado Capriles, 1990; Weirauch, 2008). Para a região Neotropical são conhecidos 201 gêneros e 850 a 1400 espécies (Forero, 2004; Gil-Santana et al., 2015).

Reduviidae é considerado um grupo monofilético (Weirauch 2008), tanto com caracteres morfológicos quanto com caracteres moleculares, e é grupo irmão de Pachynomidae, baseado na presença de espermateca lateral e nas glândulas de *Brindley*. Weirauch (2008), descreve como sinapomorfias do grupo a presença do “*plectrum*” no último segmento visível do labium, sulco estridulatório localizado no início do esterno e três glândulas abdominais dorsais que persistem nos indivíduos adultos

Os percevejos assassinos apresentam uma morfologia bastante diversificada e preferências alimentares das mais variadas, além de hábitos comportamentais diversos. A família tem importância econômica, pois muitas espécies são usadas no controle biológico de pragas agrícolas (Grundy and Maelzer, 2000; Grundy, 2007); e importância médica, porque espécies da subfamília Triatominae são vetores da doença de Chagas (Lent and Wygodzinsky, 1979). Apesar disso, os estudos taxonômicos e filogenéticos são escassos e desatualizados para alguns grupos.

O Catálogo Taxonômico da Fauna do Brasil (2018) registra 18 subfamílias e 121 gêneros de Reduviidae para o Brasil, das quais oito subfamílias e aproximadamente 28 gêneros são registrados para o estado do Rio Grande do Sul (RS), mas a maioria dos registros não apresentam distribuição geográfica específica (Gil-Santana and Galvão, 2018).



As informações sobre a ocorrência de Reduviidae no RS são escassas, e as informações sobre as espécies conhecidas estão dispersas na literatura. Assim, o propósito do presente trabalho é conhecer a diversidade dos percevejos assassinos no estado do Rio Grande do Sul, contribuindo para ampliar as informações acerca da diversidade deste grupo de insetos na região.

### ***Diversidade e ecologia em Reduviidae***

Com exceção da subfamília Triatominae, que alimenta-se de sangue de vertebrados, todos os outros Percevejos Assassinos são predadores de artrópodes (Miller 1953; Readio 1927). Alguns Reduviidae possuem preferência alimentar e alguns apresentam especializações para predação de organismos específicos.

Ectrichodiinae, aparentemente, apresenta especialização em predação de diplópodes (Cachan, 1952; Forthman and Weirauch, 2012). Com relação a morfologia, apresentam alto polimorfismo devido ao comprimento das asas, variando entre formas ápteras e outras com asas bem desenvolvidas, onde a fêmea comumente apresenta asas reduzidas (Dougherty, 1995).

Em Emesinae, algumas espécies adaptaram-se para viver em ambientes específicos como em ninhos e em teias de aranhas (Wygodzinsky, 1966; Gil-Santana *et al.* 2007). Quando em associação com aranhas apresentam variações anatômicas significativas no corpo e nas pernas (Wygodzinsky, 1966; Soley, *et al.* 2011).

*Apiomerus* (Harpactorinae: Apiomerini) comumente são vistos predando abelhas e por isso são chamados de “percevejos assassinos de abelhas” (Marques *et al.*, 2003; Silva and Gil-Santana, 2004; Gil-Santana and Forero, 2010). Algumas espécies do gênero se assemelham com abelhas Meliponini (Hogue, 1993), e parecem mimetiza-las (Gil-Santana *et al.*, 2003).

A maioria dos representantes de Harpactorini estão associados com culturas de plantas e são estudados como potenciais agentes de controle biológico em plantações (Grundy, 2007; Grundy and Maelzer, 2003). A tribo evoluiu um comportamento predatório único, com armadilhas pegajosas (Zhang and Weirauch, 2013).

Na subfamília Phymatinae, os organismos apresentam um comportamento denominado “senta e espera”, onde ficam repousados sobre flores aguardando suas presas

pousarem, por isso são chamados de “percevejos emboscadores” (Balduf, 1941; Dodson and Marshall, 1984). Apresentam morfologia altamente modificada, coloração que lhes permitem camuflagem de acordo com as flores as quais estão associados, além de alto grau de dimorfismo sexual (Weirauch, 2017; Gil-Santana, H. Forero, D. Weirauch, C. 2015).

Em Reduviinae, algumas espécies de *Zelurus* parecem ser miméticos de vespas *Pepsis* (Hymenoptera: Pompilidae) tanto com relação ao padrão de coloração e ao formato do corpo, assim como no padrão de voo (Costa Lima, 1940).

### ***Catálogos taxonômicos e coleções biológicas***

Os catálogos taxonômicos são bases de dados que reúnem informações dos nomes válidos dos taxa, e podem abordar uma ampla gama de informações: diagnoses, distribuição, entre outras (p.e. Catálogo da Fauna do Brasil).

Este trabalho foi construído com base na literatura, mas fundamentalmente, contém as informações dos exemplares depositados nas coleções mais importantes do estado: Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul (MCNZ); Pontifícia Universidade Católica do Rio Grande do Sul, Museu de Ciências (MCTP); Museu Anchieta de Ciências Naturais (MGAP); Universidade Federal do Rio Grande do Sul, Instituto de Biociências (UFRG); e a Coleção entomológica da Universidade Federal de Rio Grande (FURG), demonstrando a fundamental importância das coleções biológicas, para conhecimento e preservação da biodiversidade local.

Estamos fornecendo o primeiro catálogo de gêneros para o Rio Grande do Sul/Brasil, com informações taxonômicas, diagnoses, distribuição, comentários e o material examinado para cada gênero encontrado no estado. Adicionalmente, incluímos macrofotografias do hábito dorsal e lateral mapas de distribuição; e chaves de identificação.

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## CAPÍTULO I

Este artigo será submetido na Revista Brasileira de Entomologia.

### **Assassin bugs of the state of Rio Grande do Sul, Brazil, (Hemiptera: Heteroptera: Reduviidae): catalogue of genera**

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**Abstract.** Assassin bugs (Reduviidae) are the second largest group within Heteroptera, with 25 subfamilies and more than 7000 species distributed around the world. They have a characteristic predatory habit, morphology quite diverse and several feeding and behavioral habits. They are also of economic importance as potential agents of biological control and in public health, being vectors of diseases. Despite the importance and diversity, of this family, at least in Brazil, faunistic studies and up-to-date revisions are scarce, with research efforts mostly about the subfamily of medical importance (Triatominae). Rio Grande do Sul (RS) is the southernmost Brazilian state, sharing borders with Uruguay and Argentina. It presents subtropical climate and it is composed by two of the most threatened biomes: Mata Atlântica and Pampa. The Brazilian Fauna Taxonomic Catalog (2018) registers in Brazil 18 subfamilies and 121 genera. For the RS eight subfamilies and near to 28 genera recorded, but the majority records without specific geographic distribution. Here, we examined about 1500 specimens deposited in the most important entomological collections of the state and we provide the first catalogue of Reduviidae genera for RS/Brazil with taxonomic information, diagnosis, distribution on RS, comments and examined material for each genus. Besides, macrofotografies of habitus in dorsal and lateral view, taxonomic key for the genera of Reduviidae that occur in RS and distribution maps are provided. We record 61 genera and 11 subfamilies of Reduviidae for Rio Grande do Sul state.

**Keys words:** list, Neotropical region

## **Introduction**

Assassin bugs (Hemiptera: Heteroptera: Reduviidae) are one of the largest and morphologically most diverse families of Hemiptera (Schuh and Slater, 1995; Weirauch, 2008), with 25 subfamilies and more than 7000 species worldwide distributed (Maldonado Capriles, 1990; Weirauch, 2008). For the Neotropical region, 20 subfamilies, 201 genera and 850 to 1400 species are recorded (Forero, 2004; Gil-Santana et al., 2015). Reduviidae are economically important because some species are used as biological control agents in agricultural crops (Grundy and Maelzer, 2000; Grundy, 2007), and some Triatominae have medical importance, on public health, because they are vectors of Chagas disease (Lent and Wygodzinsky, 1979b). Although, taxonomic and phylogenetic knowledge are limited and scarce in the family, phylogenetic hypotheses at the subfamily level have been proposed recently with morphological (Weirauch, 2008) and molecular characters (Weirauch and Munro, 2009; Hwang and Weirauch, 2012).

Rio Grande do Sul (RS) state is located in the south of Brazil, sharing borders with Uruguay and Argentina. This state has a subtropical climate and it is composed by two of the most threatened biomes in Brazil: Mata Atlântica and Pampa. The Atlantic forest comprises 37% of the territory of RS, located in the northern part of the state with predominantly forest vegetation. Pampa is restricted to the state of RS in Brazil, it extends over 63% of the territory and it is defined by a predominant set of lowland grassland vegetation (IBGE and MMA, 2004).

The Brazilian Fauna Taxonomic Catalog (2018) register in Brazil about 18 subfamilies and 121 genera, and for Rio Grande do Sul (RS) state eight subfamilies and near to 28 genera, but the majority of the records without specific geographic distribution (Gil-Santana and Galvão, 2018). Here, we provide the first catalogue of Reduviidae genera for RS/Brazil with taxonomic information, diagnosis, distribution within RS, comments and examined material for each genus. Besides, macrofotografies of habitus in dorsal and lateral view, taxonomic key for the genera of Reduviidae that occur in RS and distribution maps are provided.

## **Material and methods**

### *Material examined*

1.523 specimens were examined. Specimens are deposited in the following institutions, abbreviations for institutions follow Evenhuis (2017): Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul (MCNZ); Pontificia Universidade Católica do Rio Grande do Sul, Museu de Ciências (MCTP); Museu Anchieta de Ciências Naturais (MGAP); Universidade Federal do Rio Grande do Sul, Instituto de Biociências (UFRG); and Coleção entomológica da Universidade Federal de Rio Grande (FURG). For examined material was used Automatex (Brown, 2013).

### *Macrophotographies of habitus*

Dorsal and lateral habitus of male and female specimens by genera were photographed using Nikon AZ100M combined with NIS-Elements. Images were edited on Photoshop CS6 v13.1.2.

### *Distribution maps*

The geographic coordinate from the locality labels in GMS format was converted in decimal degrees. The majority of locality labels of the specimens examined are without latitude and longitude coordinates. These localities were georeferenced using a combination of the Global Gazetteer v.2.3 (<http://www.fallingrain.com/world/index.html>), and Google Earth. Localities consisting of only a country and/or a state were not given GPS coordinates. Distribution maps were created using ARCGIS ver. 10.1

### *Catalogue structure*

Terminology for external structures we follow Schuh and Slater (1995) and Weirauch (2008). All the taxa are arranged in alphabetical order and we give: taxonomic information, diagnosis, comments and examined material. Additionally identification keys, distribution maps, and dorsal and lateral photos are provided. For Rio Grande do Sul state, we referred by RS. The examined material has the locality in alphabetical order.



## Results and Discussion

61 genera and 11 subfamilies of Reduviidae for the state of Rio Grande do Sul are recorded, as follow: Bactrodinae (1 genus); Ectrichodiinae (7 genera); Emesinae (9 genera); Hammacerinae (1 genus); Harpactorinae (20 genera); Peiratinae (5 genera); Phymatinae (2 genera); Reduviinae (5 genera); Saicinae (2 genera); Stenopodainae (7 genera) and Triatominae (2 genera).

### REDUVIIDAE Latreille, 1807

#### Bactrodinae Stål, 1866

*Bactrodes* (Stål, 1860) (Figs. 1A, 4A, 7A)

*Diagnosis:* postocular region rounded; each ocellus on a tubercle; labrum brown to dark brown; neck long, light brown; pronotum with anterolateral angles developed, depressed posteriorly in lateral view; meso- and metapleura with short sparse setae; scutellum smooth with two spines; prolegs raptorial, coxa elongated, with sparse thin long setae, protrochanter with a ventral spine, profemur with two rows of brown spines ventrally, claws asymmetrical; hemelytra not passing posterior edge of abdomen, chorion and clavus glabrous (Coscaron and Melo, 2003).

*Comments:* Five species are known for the genus. *Bactrodes misionensis* Coscaron and Melo, 2003 has been recorded for Argentina and Brazil (Goiás). First record of subfamily and genus for RS. Some species are associated with Melastomataceae (Gil-Santana et al., 2015).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Caxias do Sul, Vila Oliva, 1♀, 04.ii.1963, (MGAP). Derrubadas. P. E. Turvo, 1♂, 21.x.2004, L. Schmidt e L. Podgaisky, Guarda-chuva (MCNZ). Derrubadas, Parque Floresta Nacional do Turvo, 1♀, 18.i.1982, S. L. Bonatto (UFRG). Passo Fundo, 1♀, 01.x.1962, (MCNZ), São Domingos do Sul. 1♂, 1♀, 7-13.i.2018, R. Brugnera (UFRG). São Francisco de Paula, FLONA, 1♀, 08.vii.2017, Brugnera & Cremonese (UFRG).

## **Ectrichodiinae** Amyot and Serville, 1843

### *Brontostoma* Kirkaldy, 1904 (Figs. 1B, 4B, 7A)

*Diagnosis:* Usually robust specimens; profemur thickened with blunt tubercles or sharp and dentiform process set on areas with short stiff hairs, which extends through the trochanter, on ventral surface; fossula spongiosa well developed (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* 26 species are described to the genus (Maldonado, 1990) all neotropical. The genus occurs in all regions of Brazil (Gil-Santana and Galvão, 2018). Probably *B. colossus* (Distant, 1902) and *B. discus* (Burmeister, 1835) occur in RS. Terrestrial habit and free life form, several species prey on millipede and Isopoda (Carpintero and Maldonado Capriles, 1996).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Canoas, 3♂, 1♀, 01.x.1956, B. Zauza (MCNZ). Garruchos, 2♂, 3-12.x.1925, Arno Lise (MCNZ). Ijuí, 1♂, 30.x.1986, Zardo (FURG). Iraí, 2♂, 16.ix.1998, J. A. Teston (MCTP). Itapuã, 1♀, 13.iii.1975, S. Scherer (MCNZ). Maquiné, Solidão, 1♀, 12.xii.2007, L. Moura (UFRG). Montenegro, 6♂, 11.viii.1977, T. Arigony (MCNZ). Pelotas, 1♂, 01.i.2000, J. A. Teston (MCTP). Porto Alegre, 1♂, 01.xi.1954 (MCNZ), 1♂, 15.ii.1938 (MGAP), 1♂, [no date] (MGAP). Salto do Jacuí, Horta da CEEE, 1♂, 25-29.x.1999, armadilha luminosa (MCNZ). São Leopoldo, 1♂, 01.x.1947 (MGAP). São Miguel das Missões, 1♂, 05.x.1984, Jocelia Grazia (UFRG). Tenente Portela, 1♀, 29.xi.1978, H. Bischoff (MCNZ). Triunfo, 1♀, 24.ii.1989, M. L. Araujo (MCNZ). Triunfo, Copesul, 1♀, 09.viii.1990, M. H. Galileo (MCNZ). Triunfo, Polo Petroquímico Sítel Corsan, 1♀, 01.iv.1985, P. A. Buckup (MGAP). Triunfo, Copesul, 1♂, 28.xi.1989, L. Moura (MCNZ).

### *Cricetopareis* Breddin, 1903 (Figs. 1C, 1D, 4C, 4D, 7B)

*Diagnosis:* Postocular region with ventrolateral elevations posteriorly to eyes; ocellus and ocellar tubercle large, fossula spongiosa reduced (Gil-Santana et al., 2015).

*Comments:* The genus includes four species recorded in Brazil, Argentina, Paraguay and Bolivia (Carpintero and Maldonado Capriles, 1996; Maldonado Capriles, 1990). Here we provide the record of *C. tucumana* (Berg, 1884) for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Bento Gonçalves, 1♀, 13.xi.2008, R. Tagnon (MCTP). Derrubadas, P. E. Turvo, 2♂, 22.x.2004, L. Schmidt e L. Podgaisky, guarda chuva entomológico (MCNZ). Lajeado, 1♀, 01.i.1941 (MCNZ), 1♀, 01.iv.1947 (MCNZ). Derrubadas, Parque F. Estadual do Turvo, 1♂, 10.x.1981, S. L. Bonatto (UFRG). Porto Alegre, 1♀, [no date] (MCNZ). Salvador do Sul, 1♂, 29.xi.1995, A. Specht (MCTP). 1♂, 06.xi.1994, A. Specht (MCTP). São Leopoldo, 1♀, 01.iii.1956, J. A. P (UFRG).

*Daraxa* Stål, 1859 (Figs. 1E, 4E, 7B)

*Diagnosis:* Oval head with a postocular constriction; pro-, meso- and metafemur with tubercles and dentiform processes; pro- and mesoleg strongly carinated ventrally; fossula spongiosa moderately developed; small species (Carpintero and Maldonado Capriles, 1996; Forero, 2004; Gil-Santana et al., 2015).

*Comments:* Fifteen species are known for the genus (Dougherty, 1995; Carpintero and Maldonado Capriles, 1996; Bérenger and Gil-Santana, 2005). *Daraxa nigripes* Stål, 1859 is recorded from RS for the first time. Some species prey Triatominae nymphs in rodent caves and bird nests (Carpintero and Maldonado Capriles, 1996).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Butiá, 1♂, 14.v.1982, C. J. Becker (MCNZ). São Francisco de Paula, Pró-mata, 1♂, 03.xii.1997, C. Weirauch (MCTP), 1♂, 22.xi.1997, C. Weirauch (MCTP). Viamão, 1♀, 16-17.i.1980, M. E. L. de Souza (MCNZ).

*Pothea* Amyot & Serville, 1843 (Figs. 1F, 4F, 7B)

*Diagnosis:* Head conspicuously longer than wide; first visible segment of labium longer than second and third segments together (Carpintero and Maldonado Capriles, 1996; Forero, 2004).

*Comments:* Distribution from USA to Argentina (Forero, 2004). Three species are recorded in RS: *P. aenescens* Stål, 1868 *P. haglundii* Stål, 1872 and *P. amoena* (Miller, 1956).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Arroio do Sal, 1♀, 26.x.2013, Watuzy Dorneles (UFRG). Canguçu, Coxilha do fogo, 1♂, 14.vi.2003, Bunde and Silva, varredura

(UFRG). Derrubadas, P. E. Turvo - trilha p/ o Garcia, 27°08'09"S 53°52'32,1"W, 3♂, 22.x.2004, L. Schmidt e L. Podgaisky, guarda-chuva (MCNZ), 1♀, 28.x.2003, L. Moura, Guarda-chuva (MCNZ). Derrubadas, Parque Florestal Estadual do Turvo, 1♂, 10.x.1981, S. L. Bonatto (UFRG). Don Pedrito, 1♀, 01.xii.1954, Z. Valladão (UFRG). Balneário Pinhal, magistério, 1♀, 01.x.1999, A. Cavalleri (MCTP). Porto Alegre, 1♀, 15.ix.2000, N. Silva (MCTP), 1♂, 01.viii.1956, L. & E. Buckup (MCTP). São Francisco de Paula, Pró-mata, 1♂, 28.iii.1997 (MCTP). Viamão, 1♀, 17.ix.1987, V. L. Quadros (MCTP). Viamão, Estiva, 1♂, 01.ix.1958, O. A. Pereira (UFRG).

*Racelda* Signoret, 1863 (Figs. 1G, 4G, 7C)

*Diagnosis:* First visible segment of labium longer than second and third segments together; first antennal segment as long as head; longitudinal sulcus on anterior pronotum lobe very developed extending to posterior lobe (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* The genus includes four species recorded to Brazil, Argentina and Chile (Carpintero, 1980; Carpintero and Maldonado Capriles, 1996). The genus is new record for RS. Strong sexual dimorphism, with males usually winged, big eyes and ocellus well developed; female normally apterus, small eyes and lacking ocellus.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Eldorado do Sul, 1♀, 01.i.1990, M. A. dos Santos (MCNZ). Guaíba, 3♂, 16-17.i.1980, M. H. Galileo (MCNZ). Guaíba, Arroio Petim, 1♂, 17-18.xii.1979, M. H. Galileo (MCNZ). Porto Alegre, 1♂, 01.i.1992, J. A. M. Fernandes (UFRG). Viamão, 17-8.v.1980, M. H. Galileo (MCNZ).

*Rhiginia* Stål, 1859 (Figs. 1H, 4H, 7C)

*Diagnosis:* Pronotum usually rugous; longitudinal sulcus of the anterior pronotum lobe not reaching the transverse sulcus of pronotum; antenna with eight segments (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* Distribution from USA to Argentina. The genus is composed by 20 species (Maldonado, 1990). The genus is new record for RS. They are specialized in millipede predation (Carpintero and Maldonado Capriles, 1996; Forero, 2004; Forthman and Weirauch, 2012)

*Material examined:* **BRAZIL: Rio Grande do Sul:** Carlos Barbosa, 1♀, 06.xi.2016, J. Mello (UFRG). Nova Prata, 1♀, 06.iv.1987, F. C. Quadros (MCTP). São Francisco de Paula, 1♀, 19.xi.1997, E. H. Buckup (MCNZ).

*Zirta* Stål, 1859 (Fig. 7C)

*Diagnosis:* Four antennal segments; abdomen smooth; red and black coloration pattern (Dougherty, 1986; Carpintero and Maldonado Capriles, 1996).

*Comments:* This genus have five species and occurs in Brazil, Bolivia and Peru (Maldonado Capriles, 1990). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Lajeado, 1♀, 01.i.1941 (MCNZ). Porto Alegre, 1♀, 01.ix.1956, E. H. Buckup (MCNZ). São Salvador, 1♀, 04.iii.1967 (MGAP).

**Emesinae** Amyot and Serville, 1843

*Emesa* Fabricius, 1803 (Figs. 1I, 4I, 7D)

*Diagnosis:* Pronotum pedunculated; basal and subbasal cells adjacent; posteroventral and anteroventral series of profemur consisting of short spines inserted on large processes. Tarsus tri-segmented with setae (Wygodzinsky, 1966; Forero, 2004).

*Comments:* Exclusively Neotropical. *Emesa mourei* Wygodzinsky, 1946 was recorded from Southern Brazil; Paraguay and Peru (Wygodzinsky, 1966).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Palmares do Sul, Ilha Grande, 1♂, 08.iv.2003, Equipe Probio, (MCNZ).

*Emesaya* McAtee and Malloch, 1925 (Figs. 1J, 4J, 7D)

*Diagnosis:* Winged species; basal process of the posteroventral series of the profemur longer than other spiniform processes (characteristic of Deliastrini and Metapterini tribes); three-segmented tarsus.

*Comments:* Recorded from Nearctic and Neotropical regions. *Emesaya apiculata* McAtee & Malloch, 1925 and *E. pollex* McAtee & Malloch, 1925 are record in south of Brazil (Wygodzinsky, 1966).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Porto Alegre, Belém Novo, 1♀, 01.i.1959, (MGAP). Caxias do Sul, Vila Oliva, 1♂, 09.vii.1963, (MGAP), 1♂, 07.i.1960, (MGAP). Novo Hamburgo, 1♀, 20.viii.1982, C. J. Becker, (MCNZ). Palmares do Sul, Ilha Grande, 1♂, 10.iv.2003, Equipe Probio, (MCNZ). Porto Alegre, 1♂, 28.ix.1938, (MGAP). Triunfo, 1♂, 12.vi.1991, L. Moura, (MCNZ).

*Empicoris* Wolff, 1811 (Figs. 1K, 4K, 7D)

*Diagnosis:* Anterior wing with only one discal cell, with a basal vein that extends through axillar region; tarsus bisegmented (Wygodzinsky, 1966; Forero, 2004).

*Comments:* *Empicoris mirabundus* Wygodzinsky, 1966 and *E. rubromaculatus* (Blackburn, 1889) are recorded in RS (Wygodzinsky, 1966).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Barra do Ribeiro, Faz. Boa Vista, 1♀, 15.v.2003, Equipe Probio, rede de varredura (MCNZ). Maquiné, 1♂, 01.iv.2006, (MCNZ), 1♂, 1♀, 01.i.2006, (MCNZ), 1♂, 01.vii.2006, (MCNZ). Montenegro, 1♀, 12.x.2004, R. M. Moraes, (MCNZ). Riozinho, 1♀, 2-4.vi.2017, LES UFRGS, (UFRG).

*Gardena* Dohrn, 1859 (Figs. 1L, 4L, 7D)

*Diagnosis:* Anteroventral series of the profemur composed by simple setae and very short spiniform process; anterior and posterior lobe of the pronotum separated by a constriction; metanotum and scutellum without spiniform processes; first visible labial segment shorter than second segment (Wygodzinsky, 1966; Forero, 2004) .

*Comments:* The group *pipara* is exclusively to the Neotropical region (Forero, 2004). *Gardena pipara* McAtee and Malloch, 1925 is recorded in RS (Barcellos, 2006).

*Material examined:* **BRAZIL: Rio Grande do Sul:** São Francisco de Paula, Pró-mata, 1♂, 19.xii.1997, C. Weirauch, (MCTP).

*Ghinallelia* (Wygodzinsky, 1966) (Figs. 1M, 4M, 8A)

*Diagnosis:* Apterous specimens; basal process of the posteroventral series of the profemur longer than others spiniforms process (Metapterini); anteroventral series of the profemur composed by simple setae; male genitalia asymmetric.

*Comments:* Genus exclusively Neotropical. *Ghinallelia minimula* (McAtee and Malloch, 1925) is recorded in RS for first time.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Cidreira, mata de restinga, 1♀, 29.xi.2003, J. Alvenir, pitfall (MCNZ), 1♂, 29.xi.2003, J. Alvenir, (MCNZ), 1♀, 10.viii.2003, J. Alvenir, (MCNZ), Estrela Velha, Itaúba, 1♀, 11.iv.1978, C. J. Becker, (MCNZ).

*Malacopus* Stål, 1860 (Figs. 4N, 8A)

*Diagnosis:* Apex of pterostigma carried much farther toward wing tip; metanotum with a distinct slender spiniform process; pronotum not carinate laterally (Wygodzinsky, 1966)

*Comments:* Genus exclusively of the Neotropical region (Wygodzinsky, 1966). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Triunfo, parque COPESUL, 1♀, 31.viii.2007, A. Barcellos, (MCNZ), 1♀, 12.i.2007, L. Schmidt, guarda-chuva entomológico (MCNZ), 1♀, 09.vii.2008, C. Ohlweiler, (MCNZ).

*Phasmatorcoris* Breddin, 1904 (Figs. 1N, 4O, 8A)

*Diagnosis:* Anterior wing, in addition to discal cell, with basal and subbasal cell, thus with three cells closed; pronotum more or less constricted between anterior and posterior lobe but not pedunculated; three-segmented tarsus.

*Comments:* Genus exclusively Neotropical. *Phasmatorcoris minor* (McAtee and Malloch, 1925) is a new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Viamão, Faz. B. Caldas, 2♀, 4-6.x.1979, C. J. Becker, (MCNZ).

*Ploiaria* Scopoli, 1786 (Figs. 1O, 4P, 8A)

*Diagnosis:* Posterior border of prosternum emarginated, spiniform process of the profemur arranged in two simple series; scutellum and metanotum without spiniform processes (Wygodzinsky, 1966).

*Comments:* *Ploiaria* is the unique genus within Leistarchini that occurs on the New World (Wygodzinsky, 1966). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Estrela Velha, Itaúba, 1♀, 11.iv.1978, C. J. Becker, (MCNZ).

*Stenolemus* Signoret, 1858 (Figs. 1P, 4Q, 8A)

*Diagnosis:* Anterior wings with two cells; pilose body; legs longer than body; postocular region with 1+1 projections; pronotum pedunculated; scutellum with a spiniform process (Wygodzinsky, 1966).

*Comments:* *S. plaumanni* Wygodzinsky, 1943 was record to RS (Barcellos, 2006). Genus araneophagic with a complex predatory behavior, as aggressive mimicry (Wignall and Taylor, 2011).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Cachoeira do Sul, 1♂, 01.ii.2000, A. Specht, (MCTP). Palmares do Sul, Faz. Rincão do Anastácio, 1♀, 12.xi.2003, Equipe Probio, (MCNZ). Porto Alegre, 1♀, 17.x.1951, (MGAP).

#### **Hammacerinae** Stål, 1859

*Microtomus* Illiger, 1807 (Figs. 1Q, 4R, 8B)

*Diagnosis:* Second antennal segment with 23 to 28 pseudosegments; abdominal sternites of the males with setae areas (Gil-Santana et al., 2015).

*Comments:* *Microtomus* has 12 species described (Maldonado Capriles, 1990). Species of the genus are distributed from USA to Argentina (Gil-Santana et al., 2015). *M. conspicillaris* (Drury, 1782) is recorded for RS (Gil-Santana and Galvão, 2018).

*Material examined.* **BRAZIL: Rio Grande do Sul:** Barra do Ribeiro, Fazenda Boa Vista, 1♀, 18.xii.2003, noturno, Equipe Probio (MCNZ). Butiá, 2♂, 2♀, 01.iv.1982, J. L. Pinto (MCNZ). Caxias do Sul, Vila Oliva, 1♀, 04-7.iv.1975, C. J. Becker (MCNZ). Caxias do Sul, Vila Oliva, 1♀, 03.vii.1963 (MGAP), 1♀, 05.ii.1951, Pe. Buck (MGAP), 1♂, 2♀, 21.ii.1963 (MGAP). Montenegro, 2♂, 30.vi.1977, A. Lise (MCNZ). Palmares do Sul, Fazenda das Almas, 1♀, 13.xi.2003, Equipe Probio (MCNZ). Palmares do Sul, Ilha Grande, 1♀, 08.iv.2003, diurno, Equipe Probio (MCNZ). Pelotas, 2♂, 2♀, 01.i.1961 (MGAP), 1♀, 01.xi.1949, I. A. S. Pelotas (MCNZ). Porto Alegre, 1♂, 01.v.1957, L. e E. Buckup (MCNZ), 1♀, 04.iii.2018, M. B. Martins (UFRG), 1♂, 01.iii.1994, Carvalho



(MCTP), 1♂, [no date] (MCNZ). Porto Alegre, Morro do Cocó, 1♂, 1♀, 08.ii.1964 (MGAP). Porto Alegre, Morro do Sabiá, 1♀, 07.i.1975, F. R. Meyer (MGAP). Salvador do Sul, 1♀, 31.vii.1994, A. Specht (MCTP). São Francisco de Paula, 1♂, 1♀, [no date] (MGAP), 1♂, 01.ii.1942 (MGAP), 1♀, 01.i.1958 (MGAP). São Gerônimo, 1♂, 15.iv.1982, C. J. Becker (MCNZ), 1♂, 03.iv.1982, C. J. Becker (MCNZ). São Leopoldo, 1♂, 2♀, [no date] (MGAP). São Leopoldo, Banhado Schreck, 1♂, 23.iv.1975, C. J. Becker (MCNZ). Taquara, Sitio Buckup, 1♂, 17.i.1982, T. Buckup (UFRG), 1♀, 18.i.1982, T. Buckup (UFRG). Viamão, 1♂, 14.xii.1963 (MGAP), 1♀, [no date] (MCNZ), 2♂, 6♀, 01.v.1957, L. e E. Buckup (MCNZ).

### **Harpactorinae** Reuter, 1887

#### *Agriocleptes* Stål, 1866

*Diagnosis:* Head longer than wide; first antennal segment as wide as the other segments; apex of mesotibia not curved; hemelytra with hyaline patches on corium and hyaline areas on the membrane (Gil-Santana et al., 2015).

*Comments:* Exclusively Neotropical. *Agriocleptes bergi* Wygodzinsky, 1953 was recorded to RS state. Some species occur in the Atlantic Forest of Brazil (Gil-Santana and Galvão, 2018).

*Material examined:* no exemplars examined.

#### *Apiomerus* Hahn, 1831 (Figs. 1R, 4S, 8B)

*Diagnosis:* Anteocular region as long as postocular region; mesotibia apically excavated; first visible labial segment shorter than anteocular region; scutellum posteriorly flat (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* *Apiomerus* comprises more than 100 described species, and occur in a wide range of habitats (Berniker et al., 2011; Forero et al., 2011; Gil-Santana et al., 2015) from USA to Argentina (Weirauch, 2018). *Apiomerus barbiellinii* Costa Lima, Seabra & Hathaway, 1951; *A. lanipes* (Fabricius, 1803); *A. flavipennis* Herrich-Scheaffer, 1848 and *A. nigricollis* Stål, 1860 were recorded by Costa Lima *et al.* (1951) for RS. *Apiomerus mutabilis* Costa Lima, Seabra & Hathaway, 1951 and *A. rubrocinctus* Herrich-Schäffer, 1848 are new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Alegrete, 1♀, 01.xi.2000, A. R. DiMare (MCTP). Barracão, 1♀, 23.ii.2001, J. A. Teston (MCTP), 1♂, 24.i.2001, J. A. Teston (MCTP). Bento Gonçalves, 1♀, 20.xi.2008, R. Tagnon (MCTP). Derrubadas, P. E. Turvo, 1♂, 31.x.2003, L. Moura (MCNZ), 1♂, 30.x.2003, A. Barcellos; R. Ott; I. Heydrich (MCNZ). Derrubadas, Parque Floresta Estadual do Turvo, 1♂, 09.i.1982, S. L. Bonatto (UFRG). Frederico Westphalen, 1♂, 17.ix.2005, L. Massolino (MCNZ), 1♀, 01.vii.2009, E. R. Silva e M. Busatto (MCTP). Guaíba, Estação Agronômica, 1♂, 1♀, 20.xi.1982, M. Becker (UFRG). Guaporé, 1♀, 12.i.2005, Silva, A. (UFRG). Lageado, 1♀, [no date], E. H. Buckup (MGAP). Porto Alegre, 1♀, 11.xii.1984, A. Galinati (UFRG), 2♀, 08.xii.1969, Stoffel (MGAP), 1♂, 2♀, 05.xii.1967, F. R. Meyer (MGAP), 1♀, 22.vi.2009, A. L. Jalubwski (MCTP), 1♀, 01.i.1946, E. H. Buckup (MGAP), 1♀, [no date] (MCNZ). Porto Alegre, Estrada das Quirinas, 1♀, 17.xii.1978, E. H. Buckup (UFRG). Porto Alegre, Morro do Osso, 1♂, 01.xi.1995, E. H. Buckup, rede de varredura (UFRG), 1♀, 02.xi.1995, E. H. Buckup, rede de varredura (UFRG). Porto Alegre, Morro Santana, 1♂, 03.xii.2002, Araujo & Bernardes (UFRG), 1♀, 21.xi.2006, B. B. R. J. Fürstenau (UFRG), 1♀, 02.xi.1995, E. H. Buckup, rede de varredura (UFRG), 1♂, 01.xi.1995, E. H. Buckup, rede de varredura (UFRG). São Domingos do Sul, 1♂, 4♀, 7-13.i.2018, R. Brugnera (UFRG). São Francisco de Paula, Pró-mata, 2♀, 11.xii.1997, C. Weirauch (MCTP), 1♂, 05.i.1998, C. Weirauch (MCTP), 1♂, 21.i.1998, C. Weirauch (MCTP), 1♀, 20.ii.1998, C. Weirauch (MCTP), 1♀, 20.i.1998, C. Weirauch (MCTP), 1♂, 27.i.1998, C. Weirauch (MCTP). São Leopoldo, 1♂, 3♀, 01.i.1930, E. H. Buckup (MGAP). São Salvador, 1♀, 01.iv.1958, E. H. Buckup (MGAP), 1♂, 01.i.1963, E. H. Buckup (MGAP). Serra Azul, 1♀, 01.ii.1943, E. H. Buckup (MGAP). Taquara, 1♂, [no date], E. H. Buckup (UFRG). Taquara, Estrada do Paredão, 2♀, [no date], E. H. Buckup (UFRG), Vila Oliva, 1♀, 23.i.1960, E. H. Buckup (MGAP), 1♀, 05.ii.1963, E. H. Buckup (MGAP).

*Arilus* Hahn, 1831 (Figs. 1S, 4T, 8C)

*Diagnosis:* Posterior pronotal lobe with a conspicuous median longitudinal elevation with several teeth-like process on the apical margin (Weirauch et al., 2014).

*Comments:* The genus is new record for RS. Genus commonly known as “wheel bugs” due to their characteristic semicircular crest on the pronotum. *Arilus* species inhabit the

Americas and are generalist predators of insects (Hagerty and McPherson, 2000; Fitzsimmons and Fitzsimmons, 2010; Herrera, 2013).

*Material examined:* **BRAZIL: Rio Grande do Sul:** [no locality given]: 1♀, 01.ii.1984 (UFRG). Campo Bom, 1♀, 06.v.1981, C. J. Becker (MCNZ). Capão da Canoa, 1♂, 01.ii.1951 (MCNZ). Carlos Barbosa, 1♀, 28.x.1989, A. Lise (MCNZ). Curumim, 1♂, 11.ii.1978, C. J. Becker (MCNZ). Derrubadas, Parque Floresta Estadual do Turvo, 2♀, 16.i.1982, S. L. Bonatto (UFRG), 1♂, 12.i.1982, S. L. Bonatto (UFRG), 1♂, 1♀, 13.i.1982, S. L. Bonatto (UFRG). Glorinha, São Jerônimo, 1♂, 17.vii.2000, A. Bonaldo (MCNZ). Maquiné, 1♂, 28.v.2006, A. Ferrari; L. M. Weiler (UFRG). Maquiné, FEPAGRO, 1♂, 16.ix.2006, L. M. Weiler (UFRG). Montenegro, 1♂, 1♀, 01.ix.1977, E. Buckup (MCNZ). Novo Hamburgo, 1♂, 03.ix.1982, C. J. Becker (MCNZ). Porto Alegre, Agronomia, 1♀, 13.v.2008, M. W. Duarte (UFRG). Porto Alegre, Campus do Vale - UFRGS, 1♀, 18.iii.2017, R. Brugnera (UFRG). Sapucaia do Sul, 1♀, 16.x.1985, E. Balve (MCNZ). Triunfo, Copesul, 1♀, 12.vi.1991, M. H. Galileo (MCNZ). Triunfo, Parque COPEL, 1♀, 01.ix.2005, A. Barcellos; R. Ott; T. Aguzzoli, guarda-chuva (MCNZ).

*Atrachelus* Amyot & Serville, 1843

*Diagnosis:* Small size; head covered with pubescence; postocular region much longer than anteocular region; long wings extending beyond abdomen; posterolateral angles of penultimate abdominal segment spined or with salient process; sternite 8 of the female extending distally farther over sternite 9, and male parameres absent (Elkins, 1954; Melo and Coscarón, 2005).

*Comments:* *Atrachelus* comprises two subgenera *Atrachelus* and *Phorobura*. The first subgenus is composed by only one species that occurs from southern United States of America to Argentina; and the latter includes eight species, all distributed in North and South America (Elkins, 1954; Melo and Coscarón, 2005). *Atrachelus keleri* Elkins, 1954 was recorded to RS state (Barcellos, 2006; Rodrigues et al., 2015).

*Material examined:* no exemplars examined.

*Castolus* Stål, 1858 (Figs. 1T, 5A, 8C)

*Diagnosis:* Scapus longer than pedicel and longer than head; first visible labial segment longer than second segment; setae without enlarged bases; profemur without spiniform processes (Maldonado Capriles, 1976).

*Comments:* Genus exclusively of the Neotropical region, comprises 14 species described (Maldonado Capriles, 1976; Brailovsky, 1981). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** São Francisco de Paula, Pró-mata, 1♂, 21.xii.1997, C. Weirauch (MCTP).

*Cosmoclopius* Stål, 1866 (Figs. 2A, 5B, 8C)

*Diagnosis:* Apex of the scutellum narrow, convex to cylindrical, not foliaceous; first visible labial segment not surpassing the anterior margin of eyes (Melo and Coscarón, 2004).

*Comments:* *Cosmoclopius* comprises seven species described and they are widely distributed in the Neotropical region, from Brazil to Argentina, including Curaçao (Melo and Coscarón, 2004). The species *C. annulipes* (Fallou, 1887), *C. annulosus* Stål, 1872 and *C. nigroannulatus* (Stål, 1860) were recorded to RS state by Barcellos (2006).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Caxias do Sul, Vila Oliva, 1♂, 20.ii.1952, Pe. Buck (MGAP), 1♀, 26.i.1960, E. H. Buckup (MGAP). Rio Grande, Estação Ecologica Taim, 2♂, 3♀, 23.iii-03.iv.1981, J. Grazia (UFRG). Porto Alegre, Morro Santana, 1♂, 03.ii.1979, E. H. Buckup (UFRG). Porto Alegre, 1♀, 23.ix.2011, P. Poock (UFRG). Rio Grande, 1♀, 25.ix.1986, M. Farias (FURG), 1♀, 06.xi.1985, A. Oliveira (FURG). Riozinho, 1♀, 02-04.vi.2017, LES UFRGS (UFRG). São Domingos do Sul, 2♂, 1♀, 07-13.i.2018, R. Brugnera (UFRG).

*Debilina* Stål, 1859 (Figs. 2B, 5C, 8C)

*Diagnosis:* Body long and slender; first and second visible labial segments subequal in length; scutellum rounded apically; scutellar median process, if present, very minute, postscutellum with a median apical spine; posterior lobe of pronotum armed with four spines, two on disc and two on humeral angles; terminal abdominal segment with two lateral conspicuous spines (Martin-park et al., 2012).

*Comments:* The genus is composed by nine species (Maldonado, 1990). *Debilina longa* (Stål, 1860) was recorded to RS state (Barcellos, 2006).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Barra do Ribeiro, Fazenda Guar, 1♀, 19.viii.2003, A. Carvalho (MCNZ). Belm Novo, 1♂, 01.i.1959, E. H. Buckup (MGAP). Buti, 1♀, 01.iv.1982, E. H. Buckup (MCNZ), 1♀, 04.iv.1982, H. A. Gastal (MCNZ). Caapava do Sul, Pedra do Segredo, 1♀, 11.iv.2003, Bunde (UFRG). Caxias do Sul, Vila Oliva, 1♀, 12.ii.1949, Pe. Buck (MGAP). Charqueadas, Capo da Roa, 1♀, 25.ix.2003, R. Ott e A. Barcellos, guarda-chuva entomolgico (MCNZ). General Cmara, 1♂, [no date], C. J. Becker (MCNZ). Gravata, 1♀, 20.iv.1983, M. Rosengo (MCNZ). Gravata, rea da GM, 1♀, 25.xi.1996, R. Araujo (MCNZ). Guaba, 1♀, [no date], M. H. Galileo (MCNZ). Montenegro, 2♀, 17.xi.1977, E. H. Buckup (MCNZ). Mostardas, 1♂, 01.ii.1999, C. Weirauch (UFRG). Osrio, 1♂, 25.i.1958, E. H. Buckup (MGAP). Palmares do Sul, Gateados Oeste, 1♀, 07.iv.2003, Equipe Probio (MCNZ). Porto Alegre, 1♂, 05.xi.1958, E. H. Buckup (MGAP), 1♀, 19.iv.1961, E. H. Buckup (MGAP), 1♀, 04.iv.1951, E. H. Buckup (MGAP), 1♀, 12.xi.1947, Pe. Buck (MGAP). Porto Alegre, Curso mdio do Arroio do Salso, 1♂, 17.ix.2003, A. Barcellos (MCNZ). Rio Grande, Estcao Ecolgica do TAIM, 1♂, 17.xii.1985, A. Lise (MCNZ); Riozinho, 3♂, 2♀, [no date], LES UFRGS (UFRG). Santa Rosa, Rinco Santo Cristo, 1♂, 15.viii.2017, V. Krein (UFRG). Santa Vitria do Palmar, Estcao Ecolgica Taim, 1♂, 26.xi.1985, M. A. L. Marques (MCNZ). So Domingos do Sul, 1♀, [no date], R. Brugnera (UFRG), So Domingos do Sul, Santa Gema, 1♀, 15.viii.2017, J. Avedao, R. Brugnera, V. Castro, Pano de batida (UFRG). So Francisco de Paula, FLONA, 1♂, 08.vii.2017, Brugnera & Cremonese, guarda-chuva (UFRG). So Jernimo, 1♂, [no date], C. J. Becker (MCNZ). So Leopoldo, 1♂, 1♀, [no date], E. H. Buckup (MGAP). Tapas, 1♂, 01.xi.1963, E. H. Buckup (MGAP). Tapes, Fazenda Guar, 1♂, 19.xii.2003, Equipe Probio (MCNZ), 1♀, 15.v.2003, Equipe Probio (MCNZ). Torres, P. E. Itapeva, 1♂, 12.i.2005, L. Moura e I. Heydrich (MCNZ). Triunfo, 1♀, 28.xi.1977, E. H. Buckup (MCNZ). Viamo, 1♀, 01.ix.1956, L. e E. Buckup (MCNZ).

*Harpactor* Laporte, 1833 (Figs. 2C, 5D, 8D)

*Diagnosis:* Head cylindrical; scape much longer than head; collum much longer than postocular region; posterior pronotal lobe with two distinct longitudinal submedian discal carinae; corial veins and apical corial cell distinct; protibia concave between ventral processes (Stl, 1872).

*Comments:* *Harpactor* comprises 4 species (Maldonado Capriles, 1990). *Harpactor tuberculosus* Stål, 1872 was recorded to RS state by Barcellos (2006).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Campo Bom, 1♀, 06.v.1988, C. J. Becker (MCNZ). Derrubadas, Parque Estadual do Turvo/Trilha Porto Garcia, 1♂, 18.iv.2004, J. L. C. Bernardes (UFRG). Derrubadas, Parque Estadual do Turvo/Trilha Salto Yucumã, 1♂, 19.iv.2004, J. L. C. Bernardes (UFRG). Estrela Velha, Itaúba, Ponto 10, 1♂, 27.x.1999, Franceschini, Bonaldo e Silva (MCNZ). Maquiné, Trilha 1, 1♀, 01.iv.2006, V. C. Matesco, guarda-chuva (UFRG). Montenegro, 1♂, 07.viii.1977, H. Bischoff (MCNZ). Novo Hamburgo, 1♀, 17.vi.1988, C. J. Becker (MCNZ), 1♀, 04.xi.1985, C. J. Becker (MCNZ). Palmares do Sul, Faz. Rincão do Anastácio, 1♀, 12.xi.2003, Equipe Probio, Guarda-chuva entomológico (MCNZ). Porto Alegre, Campus do Vale - UFRGS, 2♂, 18.iii.2017, R. Brugnera (UFRG). Porto Alegre, Morro Santana, 1♂, 13.x.2009, L. C. S (UFRG), 1♂, 07.iv.2009, T. P. Melo (UFRG), 1♀, 13.iv.2010, G. Andrade (UFRG). Rio Grande, Est. Ecológica Taim, 1♂, 15.x.1985, A. Lise (MCNZ). São Borja, Garruchos, 1♀, 07.xi.1979, A. Lise (MCNZ). São Leopoldo, 1♂, 26.xii.1983, C. J. Becker (MCNZ). Triunfo, Copesul, 1♂, 21.ix.1989, E. H. Buckup (MCNZ). Triunfo, P. COPESUL, 1♂, 03.iv.2008, M. Pasolis, guarda-chuva (MCNZ). Triunfo, Parque COPESUL, 1♂, 01.iii.2008, M. Pairet, Coleta manual (MCNZ).

*Heniartes* Spinola, 1837 (Figs. 2D, 5E, 8D)

*Diagnosis:* Head as long as the pronotum; first antennal segment thicker than the others; membrane of hemelytra darkened; apex of mid-tibia curved (Gil-Santana et al., 2015).

*Comments:* *Heniartes* comprises 32 species described (Forero and Gil-Santana, 2003). The genus is new record for RS, probably the species is *H. erythromerus* Spinola, 1840.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Encruzilhada do Sul, 1♂, 10.x.1992, L. A. Campos (UFRG). Garruchos, 1♀, [no date], Arno Lise (MCNZ). Guaíba, 1♂, 01.x.2005 (MCTP). Guaíba, Estação Agronômica, 1♂, 20.xi.1982, M. Becker (UFRG). Porto Alegre, 2♀, [no date] (MCNZ), 1♀, 01.x.1956, L. e E. Buckup (MCNZ). Porto Alegre, Morro do Osso, 1♀, 01.xii.1998, C. Weirauch (UFRG). Porto Alegre, Morro Santana, 1♀, 17.xi.1981, S. L. Bonatto (UFRG), 1♂, 27.vii.2004, A. P. Pinto (MCTP), 1♂, 12.xii.2002, M. G. Araujo (MCNZ), 1♂, 15.x.2013, V. A. Alves (UFRG). Porto Alegre, Nonoai, 1♀,

13.i.1985, A. Lise (MCNZ). São Domingos do Sul, 1♀, [no date], R. Brugnera (UFRG). São Sepé, 1♂, 01.ix.1993, R. Canela (UFRG). Triunfo, 1♀, 07.i.2002, Equipe do Projeto (MCTP).

*Heza* Amyot & Serville, 1843 (Figs. 2E, 5F, 8D)

*Diagnosis:* Long head; filiform antenna longer than body; developed spine behind each antennal insertion; posterior lobe of pronotum with two humeral and two discal spines or tubercles (Maldonado Capriles, 1975).

*Comments:* *Heza* comprises 36 species described (Maldonado Capriles, 1975; Maldonado Capriles and Brailovsky, 1983). *Heza insignis* Stål, 1959 and *H. similis* Stål, 1859 were record to RS state (Barcellos, 2006).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Barra do Quaraí, Marco Geográfico, 1♀, 24.iii.2003, Bunde & Schwertner (UFRG). Barra do Quaraí, Mata Ciliar/Marco Geográfico, 2♀, 24.iii.2003, Bunde & Schwertner (UFRG). Derrubadas, Parque Estadual do Turvo, 1♀, [no date], S. L. Bonatto (UFRG). Guaporé, 1♂, 12.i.2005, A. Silva (UFRG). Itapuã, Praia das Pombas, 1♀, 29.i.2002, Depto. Zoologia UFRGS (UFRG). Maçambará, 1♂, 1♀, 28.vii.2003, Andrelize Falcão (MCTP). Porto Alegre, 1♀, 20.ix.1993, JAM Fernandes (UFRG), 1♂, 25.v.2017, R. Brugnera, L. Weiler, L. Barros (UFRG), 1♀, 18.iv.1993, JAM Fernandes (UFRG). Porto Alegre, Morro de Teresópolis, 1♀, 01.viii.1958, T. de Lema (UFRG). Rio Grande, Estação Ecologica Taim, 1♂, 13.iii.1982, J. Grazia (UFRG). Riozinho, 2♂, [no date], LES UFRGS (UFRG). São Domingos do Sul, Santa Gema, 1♂, 15.viii.2017, J. Avedaño, R. Brugnera, V. Castro, pano de batida (UFRG). Torres, 1♀, 08.v.1993, E. Ledebur (UFRG).

*Isocondylus* Amyot & Serville, 1843 (Figs. 2F, 5G, 8D)

*Diagnosis:* Head shorter than pronotum; head narrowing into a long neck; short tubercle behind each antennal insertion; posterior pronotal lobe unarmed; flat scutellum; hemelytra surpassing apex of abdomen (Coscarón et al., 2008).

*Comments:* Genus with ten species known and distribution on Neotropical region (Maldonado Capriles, 1990; Coscarón et al., 2008). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Derrubadas, Parque Estadual do Turvo, 1♂, 12.i.1982, S. L. Bonatto (UFRG). Guaporé, 2♀, 12.i.2005, A. Silva (UFRG). Montenegro, 1♂, 20.xii.1977, H. A. Gastal (MCN). Planalto, Parque Estadual Nonai, 1♂, 2♀, 01.iii.1993, JAM Fernandes (UFRG). São Domingos do Sul, 1♂, 2♀, [no date], R. Brugnera (UFRG). São Leopoldo, 1♀, 30.i.1981, C. J. Becker (MCNZ).

*Montina* Amyot & Serville, 1843 (Figs. 2G, 5H, 9A)

*Diagnosis:* Abdominal segments with lateral margins rounded, forming distinct lobes; abdomen very widened, broadest in the middle; body ovoid (Stål, 1872).

*Comments:* Genus distributed on South America and composed by 10 species (Maldonado Capriles, 1990). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Glorinha, BR 290 Freeway, 1♂, 10.xii.1997, L. Moura (MCNZ). Montenegro, 1♀, 12.x.1977, T. Arigony (MCNZ), 1♀, 12.v.1977, A. Lise (MCNZ). Porto Alegre, Campus do Vale - UFRGS, 1♀, 18.iii.2017, R. Brugnera (UFRG). São Domingos do Sul, 1♂, [no date], R. Brugnera (UFRG). Tramandaí, Emboaba, 1♀, 01.iv.1953, L. Buckup (MCNZ). Triunfo, 2♂, 3♀, 28.xi.1977, E. H. Buckup (MCNZ). Triunfo, Parque COPEsul, 1♀, 05.ii.2003, M. G. Araujo; A. Barcellos, guarda-chuva (MCNZ).

*Pselliopus* Bergroth, 1905 (Figs. 2H, 5I, 9A)

*Diagnosis:* Basal rostrum segment surpassing anterior margin of eyes; scutellar process foliaceous apically, sometimes dilated (Stål, 1872; Brailovsky et al., 2007).

*Comments:* Genus with 22 species described and distributed from Mexico to Argentina (Brailovsky et al., 2007). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Porto Alegre, 1♀, 27.iii.2007, J. B. Abreu Neto (UFRG). São Francisco de Paula, Pró-Mata, 1♂, 24.i.1999, A. Köhler (MCTP).

*Repipta* Stål, 1859 (Figs. 2I, 5J, 9A)

*Diagnosis:* Head shiny, covered with sparse erect setae; two spines on antennifer (short to long); first visible labial segment longer than second; labial segments with setae; hemelytra



extended beyond abdomen, about one-third length of membrane; male with parameres present (Martin-park et al., 2012).

*Comments:* Genus with 25 species described with distribution on the Neotropical and Nearctic regions (Martin-park et al., 2012). *R. flavicans* (Amyot & Serville, 1843) is record on RS state.

Material examined. **BRAZIL: Rio Grande do Sul:** São Domingos do Sul, 2♂, 2♀, [no date], R. Brugnera (UFRG).

*Ricolla* Stål, 1859 (Figs. 2J, 5K, 9A)

*Diagnosis:* Postocular region gradually narrowed toward collum; ocelli on slight elevation; abdomen wider behind middle; apices of femora bispinuous (Martin-park et al., 2012).

*Comments:* The genus comprises four described species (Maldonado Capriles, 1990). *R. quadrispinosa* (Linné, 1767) was recorded to RS state (Barcellos, 2006).

Examined material: Material examined. **BRAZIL: Rio Grande do Sul:** Belém Velho, 1♂, 21.iv.1974, R. Hanisch & R. Ruszlzyk (UFRG). Caçapava do Sul, Pedra do Segredo, 1♂, 15.vi.2003, Bunde e Silva (UFRG). Derrubadas, P. E. Turvo, 2♂, 2♀, 28.x.2003, L. Moura (MCNZ), 1♂, 04.v.2004, L. Podgaisky (MCNZ). Derrubadas, Parque Estadual do Turvo, 2♀, 10.x.1981, S. L. Bonatto (UFRG), 1♀, 09.i.1982, S. L. Bonatto (UFRG), 2♀, 19.iv.2004, J. L. C. Bernardes (UFRG), 1♀, 16.iv.2004, J. L. C. Bernardes (UFRG), 1♂, 13.x.1981, S. L. Bonatto (UFRG). Eldorado do Sul, 1♀, 01.iv.1993, JAM Fernandes (UFRG). Frederico Westphalen, 6♂, 7♀, 01.iv.2010, E. R. Silva e M. Busatto (MCTP). Itaara, 1♂, 1♀, 12.v.2007, A. A. Lise (MCTP), Maçambará, 1♂, 1♀, 28.vi.2003, Falcão Andrelize (MCTP). Maquiné, Barra do Ouro, 1♀, 03.ii.2002, Depto. Zoologia UFRGS (UFRG), 2♂, 1♀, 13.v.2002, E. Silva & C. Schwertner (UFRG). Maquiné, FEPAGRO 5, 1♀, 27.v.2006, A. Ferrari & L. M. Weiler, Rede de Varredura (UFRG). Montenegro, 1♀, 21.i.2011, Citro Pq. Gaúcho, Varredura (MCTP), 1♂, 31.iii.2011, Citro Pq. Gaúcho, Varredura (MCTP), 1♂, 07.i.2011, Citro Pq. Gaúcho, Varredura (MCTP), 1♂, 12.v.2011, Citro Pq. Gaúcho, Varredura (MCTP), 1♀, 03.iii.2011, Citro Pq. Gaúcho, Varredura (MCTP), 1♂, 2♀, 28.iii.2011, Citro Pq. Gaúcho, varredura (MCTP). Parque Estadual de Itapuã, Trilha Lagoa Negra, 1♀, 25.iii.2002, E. Silva & C. Schwertner (UFRG). Parque Estadual Nonai, 1♂, 1♀, 01.iii.1993, JAM Fernandes (UFRG). Porto Alegre, 1♀,

21.xi.2006, B. B. R. J. Fürstenau (UFRG), 1♂, 1♀, 15.iv.2017, Isabella Morais (UFRG). Porto Alegre, Agronomia, 1♂, 22.x.1985, JAM Fernandes (UFRG). Porto Alegre, Morro Santana, 2♂, 1♀, 12.iv.2011, T. F. L. Mendes (UFRG). Riozinho, 3♂, [no date], LES UFRGS (UFRG). São Domingos do Sul, 1♀, 7-13.i.2018, R. Brugnera (UFRG). Taquara, Estrada do Paredão, 1♀, [no date], E. H. Buckup (UFRG). Triunfo, 1♂, 3♀, [no date], Equipe Projeto (MCTP). Viamão, 2♀, 01.i.1994, L. A. Campos (UFRG).

*Rocconota* Stål, 1859 (Figs. 2K, 5L, 9B)

*Diagnosis:* Third antennal segment slender; integument of posterior pronotal lobe rugose, pitted; abdomen with one or more basal segments armed with spines; body elongated to oval (Martin-Park *et al.*, 2012).

*Comments:* Genus with 11 species (Maldonado Capriles, 1990). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Porto Alegre, 2♀, 13.xii.2005, E. Pinheiro & F. Valdez (UFRG). Riozinho, 1♂, 2-4.vi.2017, LES UFRGS (UFRG), São Domingos do Sul, 1♀, 7-13.i.2018, R. Brugnera (UFRG). São Francisco de Paula, Prómata, 1♂, 26.iii.1997 (MCTP).

*Sindala* Stål, 1862 (Figs. 2L, 5M, 9B)

*Diagnosis:* Fore femur with a long spine dorsally; fore tibia without two series of spines ventrally (Stål, 1872).

*Comments:* Four species are known to the genus (Maldonado Capriles, 1990). *Sindala purpurascens* Distant, 1903 was record to RS state (Barcellos, 2006).

*Material examined:* **BRAZIL: Rio Grande do Sul:** São Domingos do Sul, 1♂, 16.vii.2017, J. Avedaño, R. Brugnera, V. Castro, Pano de batida (UFRG). São Francisco de Paula, FLONA, 1♀, 10.xii.2007, R. M. Moraes (UFRG).

*Sinea* Amyot and Serville, 1843 (Figs. 2M, 5N, 9B)

*Diagnosis:* Head and fore femur with numerous long spines; fore tibia with two series of three long spines ventrally (Stål, 1872).

*Comments:* Genus with 13 species described and distributed from Canada to South America and extend to Greater Antilles (Maldonado Capriles, 1990). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** São Domingos do Sul, 2♀, 7-13.i.2018, R. Brugnera (UFRG).

*Sosius* Champion, 1898 (Figs. 2N, 5O, 9B)

*Diagnosis:* Head with subequal lobes in length; lateral borders of abdominal segments (1 to 4) spineless; fifth and sixth abdominal segments abruptly flaring to form prominent lateral salients (Maldonado Capriles and Carpintero, 1993).

*Comments:* The genus comprises two species described (Maldonado Capriles and Carpintero, 1993). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Barra do Quaraí, Oeste da Estrada, 1♀, 24.iii.2003, Bunde & Schwertner (UFRG).

*Zelus* Fabricius, 1802 (Figs. 2O, 2P, 5P, 5Q, 9C)

*Diagnosis:* Postocular lobe of head longer than antecular region; unarmed antenniferous tubercles; first visible labial segment not attaining posterior border of eye; basal distal cell of membrane longitudinal; male with claspers (Zhang et al., 2016).

*Comments:* *Zelus* comprises more of 90 species described with worldwide distribution, but predominantly Neotropical (Zhang et al., 2016). The genus is new record for RS, with the species *Z. armillatus* (Lepeletier & Serville, 1825) and *Z. nigrispinus* (Herrich-Schaeffer, 1848). Some species are collected on Asteraceae and cultivated tree species on Brazil (Gil-Santana et al., 2015; Zhang et al., 2016).

*Material examined.* **BRAZIL: Rio Grande do Sul:** Arroio Teixeira, 1♀, 10.ix.1987, F. C. Quadros (MCTP). Atlântida Sul, 1♀, 12.iii.1989, G. O. Neves (MCNZ). Bagé, 1♂, 01.iii.1955, T. de Lema (MCNZ). Barra do Quaraí, Fazenda Espinilho, 1♀, 23.iii.2003, Bunde & Schwertner (UFRG). Barra do Quaraí, Marco Geográfico, 1♀, 24.iii.2003, Bunde & Schwertner, Varredura (UFRG). Barra do Ribeiro, 1♀, 03.vii.2016, G. S. Carvalho (MCTP). Belém Novo, 1♂, 01.i.1959, E. H. Buckup (MGAP). Caçapava do Sul, Pedra do Segredo, 1♂, 11.iv.2003, Bunde (UFRG). Canguçu, Coxilha do fogo, 1♀, 10.iv.2003,

Bunde e Silva (UFRG). Derrubadas, Parque Floresta Estadual do Turvo, 2♂, 1♀, 12.i.1982, S. L. Bonatto (UFRG), 1♀, 16.i.1982, S. L. Bonatto (UFRG). Derrubadas, Parque Estadual do Turvo, 1♀, 11.x.1981, S. L. Bonatto (UFRG), 2♀, 13.x.1981, S. L. Bonatto (UFRG), 1♂, 1♀, 18.i.1982, S. L. Bonatto (UFRG). Derrubadas, Parque Estadual do Turvo, Estrada Salto, 1♂, 13.iv.1983, S. L. Bonatto (UFRG). Gramado, 1♂, [no date], J. W. Thomi (MCNZ). Gravataí, 1♂, 05.iv.1974, S. G. Julei (MCTP). Guaíba, 1♀, 01.iii.1993, JAM Fernandes (UFRG), 1♀, 13.iv.1975, H. A. Gastal (MCNZ). Guaíba, Estação Agronômica, 1♂, 20.xi.1982, M. Becker (UFRG). Imbé, 1♀, 07.ix.1991, T. G. Rosa (MCTP). Montenegro, 1♀, 06.x.1977, A. Lise (MCNZ), 1♂, 07.i.2011, Citros Pq. Gaúcho (MCTP). Porto Alegre, Morro do Cocô, 1♀, 01.i.1960, Backup (MCNZ). Novo Hamburgo, 1♂, 23.ix.1985, C. J. Becker (MCNZ), 1♀, 22.ix.1986, C. J. Becker (MCNZ). Osório, 1♀, 23.iv.1981, V. M. Storchi (MCNZ). Pantano Grande, 1♀, 01.ii.1999, C. Weirauch (UFRG). Pantano Grande, 1♂, 01.x.1989, M. H. Galileo (MCNZ). Pinhal-Cidreira, 1♂, 13.vi.1993, P. S. Lima (UFRG). Porto Alegre, 1♂, 13.viii.2959, O. A. Pereira (UFRG), 2♂, 3♀, 12.vii.1968, E. H. Backup (MGAP), 1♀, 01.x.1975, M. Muzema (MCNZ), 1♀, 21.viii.1975, T. Arigoni (MCNZ), 1♂, 01.iii.1983, S. Dequesh (UFRG), 1♀, 27.iii.2007, J. B. Abreu Neto (UFRG), 1♂, 15.xi.1982, J. C. Coimbra (MCNZ), 1♀, 01.ii.1983, S. Dequesh (UFRG), 1♂, 06.vi.1951, E. H. Backup (MGAP), 1♀, 19.xi.1978, R. Barbosa (MCNZ), 1♀, 17.vii.1977, R. F. Netto (MCNZ). Porto Alegre, Ipanema, 1♂, 01.ix.1952, T. de Lema (MCNZ). Porto Mauá, Próximo ao Rio Uruguai, 2♀, [no date], R. Moraes (MCNZ). Quaraí, Chico, Mata Ciliar, 1♂, 17.v.2003, Bunde e Schwertner, guarda-chuva (UFRG). Quaraí, Chico Mata ciliar, 1♀, 22.iii.2003, Bunde & Schwertner (UFRG). Rio Grande, 1♀, 22.v.1988, L. H. P. Espinosa (FURG), 8♂, 5♀, 01.i.2016, A. Ferrari (FURG), 1♂, 23.ii.1989, S. Rocha (FURG). Rio Grande, Est. Ecológica Taim, 2♂, 02.xi.1986, M. Rostrav (MCNZ), 1♂, 1♀, 04.xii.1986, M. Rosenov (MCNZ). Riozinho, 1♂, 1♀, [no date], LES UFRGS (UFRG). Salinas, 2♀, 10.iv.2004, L. Schmidt (MCNZ). Santa Vitória do Palmar, Est. Ecológica Taim, 1♂, 03.xii.1986, E. H. Backup (MCNZ). São Domingos do Sul, Santa Gema, 1♂, 2♀, [no date], J. Avedaño, R. Brugnera, V. Castro, Pano de batida (UFRG), 5♂, 6♀, [no date], R. Brugnera (UFRG), 2♀, 16.vii.2017, J. Avedaño, R. Brugnera, V. Castro, Pano de batida (UFRG), 1♀, 15.viii.2017, J. Avedaño, R. Brugnera, V. Castro, Pano de batida (UFRG). São Francisco de Paula, 2♀, 01.i.1999, C. Weirauch

(UFRG), 1♂, 16.i.1939, Pe. Buck (MGAP). São Francisco de Paula, Faz. 3 Cachoeiras, 1♀, 24.xi.1996, A. Silva (MCNZ). São Francisco de Paula, Pró-mata, 1♂, 12.xii.1997, C. Weirauch (MCTP). São Leopoldo, 1♂, [no date], Pe. Buck (MGAP). Sentinela do Sul, Fazenda Capão Alto das Criúvas, 1♂, 16.ii.2005, A. Souza (MCTP), 1♀, 14.ii.2005, A. Souza (MCTP). Torres, 1♀, 02.xi.1964, G. Benvegnu (MCNZ). Torres, Colônia São Pedro, 1♀, 02.xi.1964, G. Benvegnu (MCNZ), 1♂, 01.x.1966, G. Benvegnu (MCNZ). Tramandaí, 1♀, 29.ix.1962, E. H. Buckup (MGAP). Três Coroas, 1♂, 1♀, 01.ii.1996, JAM Fernandes (UFRG). Três Coroas, Figueira, RS 020 Km 68, 1♂, 26.iv.2008, D. Loose (MCTP). Triunfo, 1♂, 3♀, 15.ix.1977, M. H. Galileo (MCNZ), 1♀, 20.ix.1983, M. Hoffmann (MCNZ), 1♂, 19.ii.1981, M. Rosenav (MCNZ), 1♂, [no date], Equipe Projeto (MCTP), 1♀, 20.x.1977, Buckup (MCNZ), 1♀, 28.xi.1977, A. Lise (MCNZ). Xangri-lá, 1♂, 29.xi.1986, E. H. Buckup (UFRG).

### **Peiratinae Stål, 1859**

#### *Melanolestes* Stål, 1866 (Figs. 2Q, 5R, 9D)

*Diagnosis:* Black and brown body; wings when present uniformly black; fossula spongiosa restricted to the distal third of the tibia; ocellus on a tubercle; metapleural sulcus curved (Coscaron and Carpintero, 1993; Forero, 2004; Gil-Santana et al., 2015).

*Comments:* The genus is composed by six species and occur from south east of Canada to north of Argentina (Coscaron and Carpintero, 1994; Forero, 2004). The genus is new record for RS. Some species prey *Triatoma* and other scarabaeoid beetles (Coscaron and Carpintero, 1993).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Cachoeirinha, 1♀, 16.xii.1980, H. A. Gastal (MCNZ). Canoas, 1♀, 01.x.1956, G. Zauza (MCNZ), 1♀, 24.i.1991, G. D. Souza (MCNZ). Derrubadas, Parque Estadual do Turvo, 1♀, 19.x.2004, A. Barcellos; L. Schmidt (MCNZ). Estrela Velha, Itaúba, 1♀, 11.iv.1975, C. J. Becker (MCNZ), 1♀, 06.iv.1978, H. Bischoff (MCNZ), Guaíba, 1♀, 7-18.xii.1979, H. A. Gastal (MCNZ). Novo Hamburgo, 1♂, 23.vi.1986, C. J. Becker (MCNZ), 1♀, 27.viii.1982, C. J. Becker (MCNZ). Pelotas, 1♂, 01.x.1949, I. A. S (MCNZ). Porto Alegre, 1♀, 19.xi.1961, E. H. Buckup (MGAP), 1♀, 28.iv.1966, E. H. Buckup (MGAP). Porto Alegre, Ipanema, 1♂, 01.v.1957, M. Palova

(MCNZ). Rio Grande, 1♀, 02.ix.1986, A. Lise (MCNZ). São Francisco de Paula, Pró-Mata, 1♂, 05.v.2013, G. S. Carvalho (MCTP), 1♂, [no date], G. S. Carvalho (MCTP). São Jerônimo, 1♀, 26.viii.1982, T. Arigony (MCNZ), 1♀, 10.ix.1982, M. E. L. de Souza (MCNZ), 1♀, 03.ix.1982, H. A. Gastal (MCNZ), 1♀, 10-15.ix.1982, H. A. Gastal (MCNZ). São Leopoldo, 1♂, 30.vii.1982, C. J. Becker (MCNZ), 1♀, 01.x.1986 (MCNZ). Sapucaia do Sul, 1♂, 24.ix.1985, C. J. Becker (MCNZ). Sarandi, 1♀, 30.vi.1973, P. Brown (MCNZ). Viamão, 1♀, 24.iii.1980, M. H. Galileo (MCNZ). Vila Maria, 1♂, 17.ix.1998, A. Specht (MCTP).

*Rasahus* Amyot and Serville, 1843 (Figs. 2R, 5S, 9D)

*Diagnosis:* Scutellum with posterior process short and rounded; metapleural sulcus curved; procoxa elongate; fossula spongiosa occupying more than half part of pro- and mesotibia; scape with setae; (Forero 2004; Gil-Santana *et al.* 2015).

*Comments:* Twenty-eight species which occur from north of USA to Argentina (Maldonado, 1990). *R. hamatus* (Fabricius, 1781) is recorded for RS state. Some species prey Triatominae (Forero, 2004).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Barra do Ribeiro, Fazenda Boa Vista, 1♀, 16.v.2003, Equipe Probio (MCNZ). Butiá, 1♀, 26.viii.1982, C. J. Becker (MCNZ). Cachoeirinha, 1♂, 22.xi.1980, M. E. L. de Souza (MCNZ). Camaquã, 1♀, 30.iii.1983, J. Caleffi (UFRG). Canoas, 1♂, 01.x.1956, G. Zauza (MCNZ). Capão da Canoa, Arroio Teixeira, 1♀, 31.xi.1989, F. C. Quadros (MCTP), 1♀, 03.v.1998, Felipe C. Quadros (MCTP). Cruz Alta, 4♂, 26.ii.1998, A. Specht (MCTP), 3♂, 22.vii.1998, A. Specht (MCTP). Derrubadas, Parque Estadual do Turvo, 1♂, 24.i.2001, J. A. Teston (MCTP). Encruzilhada do Sul, 1♂, 10.x.1992, L. A. Campos (UFRG). Estrela Velha, Itaúba, 1♀, 08.iv.1978, H. Bischoff (MCNZ). Frederico Westphalen, 1♂, 17.ix.2005, L. Massolino; G. G. Mansur (UFRG). Guaíba, 1♂, 07.xii.1979, M. H Galileo (MCNZ). Ijuí, 1♂, 17.ii.1999, M. C. P. Araujo (MCTP). Itapeva, 1♂, 01.x.1956, T. de Lema (MCNZ). Pelotas, 1♀, 18.v.1989, J. Mendez (FURG). Porto Alegre, 1♀, 20.iii.1996, J. A. M. Fernandes (UFRG), 2♂, 07.iii.1986, Stoffel (MGAP), 1♀, 21.iii.1941, E. H. Buckup (MCNZ), 2♂, 01.iii.1956, E. W. Gruman (UFRG), 1♂, 20.v.1988, E. F. Silveira (MCTP). Porto Alegre, Bairro Bom Fim, 1♀, 26.iii.2007, C. A. Iserhard (UFRG). Porto Alegre, Bairro Petrópolis, 1♀,

19.ii.1989, L. M. Bernardini (UFRG). Porto Alegre, Bairro Tristeza, 1♀, 01.xi.1955, A. R. Cordeiro (UFRG). Porto Alegre, Praça da Redenção, 1♂, 01.v.1960, S. Mello (UFRG). Salto do Jacuí, 1♂, 25.x.1999, E. H. Buckup (MCNZ). São Francisco de Paula, 1♂, 01.i.1999, C. Weirauch (UFRG), 1♀, 16.i.1939, E. H. Buckup (MGAP), 1♂, 17.i.1939, E. H. Buckup (MGAP), 1♂, 20.i.1939, E. H. Buckup (MGAP). São Francisco de Paula, Prómata, 1♂, 03.xii.1997, C. Weirauch (MCTP). São Leopoldo, 1♂, [no date], E. H. Buckup (MGAP). São Salvador, 1♂, 23.vi.1965, E. P. Buckup (MGAP). Sarandi, 1♀, 30.vi.1973, P. Brown (MCNZ). Tenente Portela, 1♀, 08.ix.1976, S. Sherer (MCNZ). Veracruz, 1♂, 01.xii.1965, E. H. Buckup (MGAP). Viamão, 1♂, 23.xi.1979, M. H. Galileo (MCNZ). Vila Maria, 1♂, 29.i.1998, A. Specht (MCTP), 1♂, 17.ix.1998, A. Specht (MCTP).

*Sirthenea* Spinola, 1840 (Figs. 2S, 5T, 10A)

*Diagnosis:* Meso- and metatibia without fossula spongiosa; black body and hemelytra with red spots (Willemse, 1985; Forero, 2004; Gil-Santana et al., 2015).

*Comments:* The genus comprises 38 species worldwide distributed, but with emphasis on tropical regions; nocturnal predators and some species associated with scarabaeoid beetles (Willemse, 1985; Forero, 2004; Gil-Santana et al., 2015). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Albatroz, 1♂, 06.xii.1973, R. Wagner; A. Hanisch (UFRG), 1♀, 07.xii.1973, R. Wagner; A. Hanisch (UFRG). Bagé, 1♂, 14.i.1990, G. Carvalho (MCTP), 1♂, 14.i.1999, G. Carvalho (MCTP). Cachoeirinha, 14♂, 22.xi.1980, M. E. L. de Souza (MCNZ), 10♂, 02.xii.1980, M. H. Galileo (MCNZ), 2♂, 22.xii.1980, M. H. Galileo (MCNZ), 1♀, 07.xii.1980, M. E. L. de Souza (MCNZ), 1♂, 18.xii.1980, H. A. Gastal (MCNZ), 1♂, 03.iii.1981, H. A. Gastal (MCNZ), 2♂, 24.xii.1980, M. H. Galileo (MCNZ), 4♂, 19.xii.1980, M. E. L. de Souza (MCNZ), 3♂, 11.xii.1980, M. E. L. de Souza (MCNZ), 7♂, 22.i.1981, M. H. Galileo (MCNZ). Canoas, 4♂, 01.x.1956, G. Zauza (MCNZ). Capão Novo, 1♂, 12.xi.1983, F. Bandeira (UFRG). Cassino, 1♂, 09.xii.1982, C. Lemos (FURG). Derrubadas, Parque Estadual do Turvo, 1♂, 24.i.2001, J. A. Teston (MCTP). Dois Irmãos, 1♂, 30.xii.1962, E. H. Buckup (MGAP). Frederico Westphalen, 1♀, 17.ix.2005, L. Massolino (MCNZ). Guaíba, 2♂, 29.x.1979, H. A. Gastal (MCNZ), 1♂, 05.xi.1979, M. E. L. de Souza (MCNZ), 1♂, 21.xi.1979, M. H. Galileo (MCNZ), 2♂, 16.xi.1979, M. H. Galileo (MCNZ), 1♂, 28.xi.1979, M. E. L. de Souza

(MCNZ). Ijuí, 1♂, 17.vii.1999, M. C. Araujo (MCTP). Itaqui, 1♀, 07.xii.1989, R. A. Ramos (MCNZ), Morro Alto, 1♂, 30.x.1989, M. E. L. de Souza (MCNZ). Mostardas, 3♂, 20.x.1998, L. S. Alves (MCTP). Nova Prata, 1♂, 03.i.1987, F. C. Quadros (MCTP). Parque Estadual de Itapuã, Trilha da Onça, Praia Pombas, 1♂, 29.x.2002, D. S. Martins; S. M. Pimpão (UFRG). Pelotas, 4♂, 18.i.1999, A. Specht (MCTP). Porto Alegre, 1♂, 07.xi.1966, E. H. Buckup (MCNZ), 1♀, 11.xi.1928, E. H. Buckup (MGAP). Quaraí, 1♀, 19.xi.1985, M. Hoffmann (MCNZ). Rio Grande, 1♂, 27.x.1985, L. Valentim (FURG). Rio Grande, Estação Ecológica do TAIM, 8♂, 02.xii.1986, M. C. Moraes (MCNZ), 3♂, 01.xii.1986, M. Rosenav (MCNZ), 1♂, 04.xi.1986, A. Lise (MCNZ), 2♂, 13.xii.1985, A. Lise (MCNZ), 1♂, 28.xi.1985, H. A. Gastal (MCNZ). Salvador do Sul, 1♂, 29.xi.1995, A. Specht (MCTP). São Francisco de Paula, 1♂, 22.i.1939, E. P. Buckup (MGAP). São Francisco de Paula, Pró-mata, 2♂, 1♀, 22.iii.1998, C. Weirauch (MCTP), São Jerônimo, 2♂, 29.x.1982, T. Arigony (MCNZ), 1♂, 06.xi.1982, C. J. Becker (MCNZ), 2♂, 30.x.1982, T. Arigony/C. J. Becker (MCNZ), 1♂, 03.xii.1982, M. E. L. de Souza (MCNZ), 1♂, 08.x.1982, T. Arigony (MCNZ), 1♂, 01.xi.1982, C. J. Becker (MCNZ), 3♂, 02.xi.1982, H. A. Gastal (MCNZ), 1♂, 27.x.1982, C. J. Becker (MCNZ), 1♂, 20.x.1982, T. Arigony (MCNZ). Uruguaiana, 1♂, 14.xi.1940, E. H. Buckup (MCNZ). Veracruz, 1♂, 01.xii.1965, E. H. Buckup (MGAP). Viamão, 3♂, [no date], H. A. Gastal (MCNZ), 1♂, 10.xii.1979, M. E. L. de Souza (MCNZ), 1♂, 07.xii.1979, H. A. Gastal (MCNZ), 1♂, 27.xii.1964, E. H. Buckup (MGAP), 1♂, 01.i.1980, M. E. L. de Souza (MCNZ), 1♂, 05.xii.1979, M. H. Galileo (MCNZ). Viamão, Águas Belas, 1♂, 23.i.1980, H. A. Gastal (MCNZ).

*Tydides* Stål, 1865 (Figs. 2T, 5U, 10A)

*Diagnosis:* Antecular region longer than postocular region, metapleural sulcus straight; ocelli large (Forero, 2004; Gil-Santana *et al.*, 2015).

*Comments:* The genus comprises four species, with record in several countries to Central and South America (Maldonado Capriles, 1990; Forero, 2004). *T. imitator* Lent, 1955 is record from RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Estrela Velha, Itaúba, 2♀, 6-8.iv.1978, C. J. Becker (MCNZ), 1♀, 12.iv.1978, H. Bischoff (MCNZ). Montenegro, 1♂, 1♀,



17.xi.1977, A. Lise (MCNZ). Tapes, 1♂, 14.v.2003, Equipe Probio (MCNZ). Viamão, 1♂, 24.iii.1980, H. A. Gastal (MCNZ).

*Zeraikia* Gil-Santana & Costa, 2003 (Figs. 3A, 5V, 10A)

*Diagnosis:* Oval head; head longer than anterior pronotal lobe of pronotum; postocular transversal sulcus conspicuous; pleuras with shiny integument; procoxa robust (Gil-Santana and Costa, 2003; Gil-Santana, 2017).

*Comments:* Genus with two species described from Brazil. *Zeraikia novafriburgensis* Gil-Santana and Costa, 2003 is a new record for RS. *Zeraikia novafriburgensis* known from Rio de Janeiro and Santa Catarina and *Z. zeraikae* Gil-Santana, 2017 known from Rio de Janeiro (Gil-Santana, 2017).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Montenegro, 1♀, 06.x.1977, A. Lise (MCNZ).

### **Phymatinae** Laporte, 1832

*Macrocephalus* Swederus, 1787 (Figs. 3B, 6A, 10B)

*Diagnosis:* Rhomboid pale spot on scutellum; parameres with a subapical branch (Gil-Santana et al., 2015).

*Comments:* Thirteen species are known from the Neotropical region (Maldonado Capriles, 1990; Forero, 2004; Gil-Santana et al., 2015). *M. tuberosus* Klug, 1842 is new record for RS. Some specimens were collected on *Eryngium* sp. inflorescence (Apiaceae).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Butiá, 1♀, 01.iv.1982, E. H. Buckup (MCNZ). Canoas, 1♂, 15.x.1990, M. Hoffmann (MCNZ). Charqueadas, 1♀, 01.viii.1990, M. H. Galileo (MCNZ). Estrela Velha, 1♀, 22.x.1998, L. Moura (MCNZ). Gravataí, 1♂, 1♀, 01.xi.1960, E. H. Buckup (MCNZ). Novo Hamburgo, 1♀, 13.iv.1984, C. J. Becker (MCNZ). Porto Alegre, 1♂, 21.xi.2007, em inflorescência de *Eryngium* sp. (Apiaceae), L. Moura (MCNZ), 1♂, 05.v.1949, E. H. Buckup (MGAP), 1♂, 06.iv.1960, E. H. Buckup (MGAP). Porto Alegre, Jardim Botânico, 1♂, 1♀, 21.xi.2007, L. Moura (MCNZ). São Domingos do Sul, 1♂, 13.v.2017, R. Brugnera (UFRG). São Francisco de Assis, 2♀, 26.xi.2009, A. Barcellos; R. Ott (MCNZ). Triunfo, 1♂, 20.x.1977, T. Arigony (MCNZ),

1♀, 25.v.1990, M. E. L. de Souza (MCNZ), 1♀, 14.i.1997, L. Moura (MCNZ). Viamão, 1♂, 01.iv.1956, L. Buckup (MCNZ), 1♂, 05.i.1965, E. H. Buckup (MGAP).

*Phymata* Latreille, 1802 (Figs. 3C, 3D, 6B, 6C, 10B)

*Diagnosis:* Meso- and metatibia carinate and sulcate; profemur subtriangular and swollen (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* Worldwide distribution, with 84 species occurring on Neotropical region (Forero, 2004; Gil-Santana et al., 2015). *P. armata* Handlirsch, 1897; *P. debilis* Handlirsch, 1897; *P. fortificata* (Herrich-Schäffer, 1844); *P. praestans* Handlirsch, 1897; *P. reticulata* Handlirsch, 1897; *P. simulans* Stål, 1860 are recorded for RS. Some specimens were collected on Bromeliaceae, *Eryngium* sp. (Apiaceae), *Oryza* (Poaceae), *Brassica* (canola) (Brassicaceae) and on *Solidago microglossa* (Asteraceae).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Arroio do Sal, 1♂, 22.iii.1991, N. Silveira (MCNZ). Cachoeira do Sul, 1♂, 23.iv.1983, M. Sobnol (UFRG). Campo Bom, 1♂, 04.iii.1985, C. J. Becker (MCNZ). Canela, 1♂, 13.ix.1992, M. Hoffmann (MCNZ), 2♂, 17.i.1990, M. Hoffmann (MCNZ), 1♂, 28.xii.1989, M. Hoffmann (MCNZ), 1♀, 27.xii.1989, M. Hoffmann (MCNZ). Catuípe, 1♂, 02.iii.2005, F. L. Santos (UFRG). Caxias do Sul, Vila Oliva, 1♂, 09.ii.1951, E. H. Buckup (MGAP), 1♀, 31.i.1952, E. H. Buckup (MGAP). Charqueadas, 3♀, 15.iv.1982, T. Arigony & E. H. Buckup (MCNZ). Farroupilha, 1♂, 30.v.1978, C. J. Becker (MCNZ). General Câmara, 1♀, 07.xi.1980, C. J. Becker (MCNZ). General Câmara, 1♂, 07.xi.1980, C. J. Becker (MCNZ). Gravataí, 1♀, 01.xi.1960, E. H. Buckup (MCNZ). Gravataí, Morro Itacolomi, 1♀, 01.xi.1960, E. H. Buckup (MCNZ). Guaíba, 1♀, 19.vi.1996, N. Matzembacher (MCTP). Guaíba, Sitio prof. Matzembacher, 1♀, 01.iii.2004, A. D. Pinto (MCTP). Ijuí, 1♀, 17.iii.2005, F. L. Santos (UFRG), 1♂, 22.vi.2004, L. Woltechumas (UFRG). Montenegro, 2♂, 1♀, 03.xi.1977, H. Bischoff (MCNZ), 1♂, 5♀, 05.v.1977, M. H. Galileo (MCNZ). Passo Fundo, 2♂, 20.xi.2017, A. L. Marsaro Jr (UFRG). Porto Alegre, 1♀, 01.xii.1930, E. H. Buckup (MGAP), 1♀, 09.iii.1960, E. H. Buckup (MGAP), 1♀, 04.vi.1984, M. C. Pons. Da Silva (MCNZ), 1♂, 12.xi.1952, E. H. Buckup (MGAP), 2♂, 2♀, 01.xii.1998, C. Weirauch (UFRG), 1♀, 08.v.2005, E. A. Lise (MCTP), 1♂, 1♀, 16.vii.1944, E. H. Buckup (MCNZ), 1♀, 25.xi.1931, E. H. Buckup (MGAP), 1♂, 01.xi.1935, E. H. Buckup (MGAP), 1♂, 1♀,

[no date], T. Lema (MCNZ), 2♂, 13.iv.1955, E. H. Buckup (MGAP), 1♀, 21.xi.2007, E. H. Buckup (MCNZ), 1♀, 27.ix.1950, E. H. Buckup (MGAP), 1♀, 01.viii.1957, T. de Lema (MCNZ), 1♀, 21.x.1931, E. H. Buckup (MGAP), 1♀, 28.xii.1931, E. H. Buckup (MGAP), 1♀, 01.iv.1967, E. H. Buckup (MCNZ), 1♀, 19.iii.1958, E. H. Buckup (MGAP), 1♀, 09.xi.1946, E. H. Buckup (MCNZ), 1♀, 13.v.1930, E. H. Buckup (MGAP), 8♂, 1♀, 26.xii.1954, T. de Lema (MCNZ), 1♀, 22.x.1936, E. H. Buckup (MGAP), 3♂, 1♀, 01.x.1930, E. H. Buckup (MGAP). Porto Alegre, Agronomia, 1♀, 15.iii.2008, M. W. Duarte (UFRG). Porto Alegre, Jardim Botânico, 1♂, 21.xi.2007, L. Moura (MCNZ). Porto Alegre, Morro de Terezópolis, 1♂, 11♀, 26.xii.1954, T. de Lema (MCNZ). Porto Alegre, Morro do Osso, 1♀, 03.iii.2017, M. B. Neves (MCTP). Porto Alegre, Morro São Pedro, 1♂, 16.ix.2016, M. B. Neves (MCTP). Rio Grande, Estação Ecológica do TAIM, 1♂, 01.ix.1986, A. Lise (MCNZ). Rio Grande, Estação Ecologica Taim, 1♀, 23.iii-3.iv.1981, J. Grazia (UFRG), 1♀, 15.iii.1982, J. Grazia (UFRG), 1♂, 11.iii.1982, J. Grazia (UFRG), 4♂, 1♀, 30.iii.1981, J. Grazia (UFRG), 1♀, 26.iii.1981, J. Grazia (UFRG). Rosário do Sul, 1♂, 19.iv.1986, M. Frozi (MCNZ). Santana da Boa Vista, Guaritas, 1♂, 07.xi.1991, C. Schindwein (MCTP). São Domingos do Sul, Santa Gema, 1♀, 15.viii.2017, J. Avedaño, R. Brugnera, V. Castro, Pano de batida (UFRG), 1♂, 16.viii.2017, J. Avedaño, R. Brugnera, V. Castro (UFRG). São Francisco de Assis, Sanga da Areia / Cerro Norte, 1♂, 27.v.2009, A. Barcellos; R. Ott, guarda-chuva (MCNZ), 1♀, 26.xi.2009, A. Barcellos; R. Ott (MCNZ). São Francisco de Paula, 1♂, 3♀, 01.i.1999, C. Weirauch (UFRG), 1♂, 01.i.1955, E. H. Buckup (MGAP), 6♂, 2♀, 01.i.1936, E. H. Buckup (MGAP), 4♀, 01.ii.1956, L. Buckup (MCNZ), 1♀, 09.i.1997, Arno A. Lise (MCTP). São Francisco de Paula, FLONA, 1♀, 08.vii.2017, Brugnera & Cremonese, guarda-chuva entomológico (UFRG), 1♀, 01.xi.2007, B. B. Fürstenau & L. M. Weiler (UFRG). São Francisco de Paula, Pró-mata, 1♀, 04.i.1999, A. Lise (MCTP), 1♂, 1♀, 21.i.1998, C. Weirauch (MCTP), 1♂, 25.iii.1998, C. Weirauch (MCTP), 1♀, 21.xi.1997, C. Weirauch (MCTP), 1♀, 18.xii.1997, C. Weirauch (MCTP). São Leopoldo, 1♀, 01.ix.1933, E. H. Buckup (MGAP), 1♂, 01.xi.1955, E. H. Buckup (MGAP), São Salvador, 1♂, 1♀, 01.xii.1968, E. H. Buckup (MGAP). Sapucaia, 1♂, 2♀, 03.ii.1956, E. H. Buckup (MGAP). Santa Vitória Do Palmar, Estação Ecológica do TAIM, 1♀, 09.iv.1986, E. H. Buckup (MCNZ). Taquara, 1♂, 30.iii.1974, A. Lise (MCNZ). Três Coroas, 1♀, 18.iv.2008, D. Loose (MCTP). Triunfo, 1♂, 1♀, 08.xi.1988, M. Hoffmann

(MCNZ), 1♀, 11.viii.1993, M. Hoffmann (MCNZ), 1♀, 20.x.1977, M. H. Galileo (MCNZ). Triunfo, Copesul, 1♂, 25.v.1990, M. E. L. de Souza (MCNZ). Viamão, 1♂, 01.v.1957, L. & E. Buckup (MCNZ), 3♀, 12.iv.1975, A. Lise (MCNZ). Viamão, Lagoa do Casamento, 6♂, 1♀, 12.iv.1975, A. Lise (MCNZ).

### **Reduviinae** Amyot & Serville, 1843

#### *Leogorrus* Stål, 1859 (Figs. 3E, 6D, 10C)

*Diagnosis:* Apex of femur with a distinct pair of dentiform processes on ventral surface; tibia with fossula spongiosa; coloring brown to dark with pale spots on hemelytra (Forero, 2004; Melo, 2007; Gil-Santana et al., 2015).

*Comments:* *Leogorrus* comprises 13 species distributed on the Neotropical region, and Central America the most diverse in species of the genus. Some species cover their body with soil and organic material to camouflage themselves (Forero, 2004; Melo, 2007; Gil-Santana et al., 2015). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Triunfo, 1♀, 29.vii.2003, R. Ott e A. Barcellos, coleta manual noturna (MCNZ).

#### *Nalata* Stål, 1860 (Figs. 3F, 6E, 10C)

*Diagnosis:* Fossula spongiosa absent; protrochanter ventrally with a spiniform process (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* The genus comprises ten species described and occur on Mexico, Nicaragua, Panama, French Guiana, Brazil and Bolivia (Maldonado Capriles, 1990; Gil-Santana et al., 2015). *N. setulosa* Stål, 1862 was recorded to RS state by Barcellos (2006).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Palmares do Sul, Fazenda das Almas, 1♂, 10.xi.2003, Equipe Probio, coleta manual diurna (MCNZ).

#### *Neivacoris* Lent & Wygodzinsky, 1947 (Figs. 3G, 6F, 10C)

*Diagnosis:* Short head; anteocular region as long as postocular region; antenna insert dorsally on head; mandibular plates well developed and surpassing the apex of the head;

anterior lobe of pronotum with 1+1 tubercles (Lent and Wygodzinsky, 1947; Forero, 2004; Gil-Santana and Coletto-Silva, 2005).

*Comments:* The genus comprises three species described and occur on Brazil and Bolivia (Forero, 2004; Lent and Wygodzinsky, 1947). *Neivacoris steini* (Stål, 1859) is new record for RS. They are often collected in termite nests (Gil-Santana et al., 2015).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Alegrete, 1♀, xi.2000, R.A. Di Mare (MCTP).

*Opisthacidius* Berg, 1879 (Figs. 3H, 6G, 10C)

*Diagnosis:* Cuticular surface of the pronotum granulated; anterior lobe of pronotum with four tubercles; pro- and mesofemur fairly thickened, fossula spongiosa present (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* The genus comprises eight species with distribution on Central and South America (Forero, 2004; Maldonado Capriles, 1990). *O. rubropictus* (Herrich-Schaeffer, 1848) is recorded in RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Barra do Ribeiro, Fazenda Boa Vista, 1♀, 18.xii.2003, Equipe Probio, coleta manual (MCNZ). Canela, 1♂, 01.x.1977, J. W. Thome (MCNZ). Pelotas, 1♂, 01.vi.1998, G. Moura (MCNZ). Porto Alegre, 1♂, 01.ix.2000, A. L. Ruas (MCTP). Sapucaia, 1♂, 27.viii.1982, L. I. Schiefferdecker (MCNZ).

*Zelurus* Hahn, 1826 (Fig. 3I, 6H, 10C)

*Diagnosis:* Pronotum with spiniform processes but cuticular surface smooth; mandibular plates less developed; fossula spongiosa presents (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* *Zelurus* is the largest genus of the Neotropical Reduviinae (approximately 130 species) (Gil-Santana et al., 2015). *Z. buchi* Lent & Wygodzinsky, 1954; *Z. femoralis* (Stål, 1854); *Z. femoralis intermedius* Lent & Wygodzinsky, 1954; *Z. femoralis longispinis* Lent & Wygodzinsky, 1954; *Z. luctuosus* (Costa Lima, 1940); *Z. opaciventris* (Stål, 1859); and *Z. rubropictus* (Herrich-Schaeffer, 1848) are recorded for RS state. Some species mimic *Pepsis* wasps (Hymenoptera: Pompilidae) (Gil-Santana et al., 2015).

*Material examined:* **BRAZIL: Rio Grande do Sul:** Bagé, 1♂, 23.iv.1989, M. Garcia (FURG). Bento Gonçalves, 1♂, 14.i.2008, G. S. Carvalho (MCTP). Canela, 1♀,

26.xii.1989, M. Hoffmann (MCNZ). Cassino, 1♀, 19.xii.1982, R. Novelli (FURG). Derrubadas, P. E. Turvo, 2♀, 21.x.2004, L. Moura, guarda-chuva (MCNZ), 1♀, 28.x.2003, E. Borsatto e R. Ott (MCNZ). Derrubadas, Paque Floresta Estadual do Turvo, 1♀, 09.i.1982, S. L. Bonatto (UFRG). Dois Irmãos, Cascata 48, 1♂, 23.ix.1979, V. Hennann (MCNZ). Dois Irmãos, Morro Reuter, 1♂, 10.xii.1991, M. Schneider (UFRG). Dom Feliciano, Fazenda Chapada, 1♂, 18-19.iii.2000, A. B. Bonaldo (MCNZ). El dorado do Sul, Fazenda São José, 1♂, 5-7.i.2000, A. Bonaldo e A. Silva (MCNZ). Frederico Westphalenm, URAU, 1♀, 17.ix.2005, L. Massolino; G. G. Mansur (UFRG). Guaíba, Arroio Petim, 1♂, 7-9.xii.1979, H. A. Gastal (MCNZ). Ivoti, Rua Alemanha, 1♀, 21.xii.2004, G. Velter-Júnior (UFRG). Livramento, 1♂, 1♀, 01.ii.1963, Thome (MCNZ). Nonoai, Parque Florestal Estadual Nonoai, 1♂, 01.iii.1993, JAM Fernandes (UFRG). Nova Petrópolis, Picada Café, 1♀, 04.xii.1985, M. Hoffmann (MCNZ). Pelotas, 1♂, 15.v.1989, I. Mendez (FURG). Porto Alegre, 1♀, 06.xii.1969, E. H. Buckup (MGAP), 1♀, 07.xii.1999, R. A. Trais (MCTP), 1♀, 12.i.1929 (MCNZ). Porto Alegre, Bairro Ponta Grossa, 1♂, 16.xi.1986, F. C. Quadros (MCTP). Porto Alegre, Campus do Vale - UFRGS, 1♂, 01.i.2005 (UFRG), 1♂, [no date] (UFRG). Quaraí, Estr. S. Roberto, 1♂, 18.xi.1979, J. W. Thomé (MCNZ). Rio Grande, 1♂, 18.iii.1985, C. Rocha (FURG). S. P. da Serra, 1♂, 29.i.1995, A. Specht (MCTP). Salto do Jacuí, Horta CEEE, 1♀, 25.x.1999, A. Franceschini (MCNZ). Salvador do Sul, 1♂, 24.i.1994, A. Specht (MCTP), 2♂, 24.xi.1996, A. Specht (MCTP). Santana do Livramento, APA Ibirapuiã, Faz. S. Maurício, 1♂, 5♀, 10.xi.2012, Equipe PELD (MCNZ). Santana do Livramento, Fazenda Rincão Bonito, 3♀, 10.xi.2012, Equipe PELD (MCNZ). São Borja, 1♀, 08.xi.1979, H. Bischoff (MCNZ). São Domingos do Sul, 2♂, 7-13.i.2018, R. Brugnera (UFRG). São Francisco de Paula, 1♂, 01.i.1999, C. Weirauch (UFRG), 3♀, 01.i.1955, L. Buckup (MCNZ). São Francisco de Paula, Est. Boca da Serra, 1♂, 01.i.2004, L. Moura e I. Heydrech (MCNZ). São Francisco de Paula, FLONA - Ibama, 1♀, 21.xii.2006, L. Moura (MCNZ). São Francisco de Paula, Pró-Mata, 1♀, 16.ii.2000, Jochen Ketterl (MCTP). Pró-mata, 1♀, 14.i.1998, C. Weirauch (MCTP), 1♀, 27.xi.1997, C. Weirauch (MCTP). São Salvador, 1♂, 1♀, 12.xii.1967, F. R. Meyer (MGAP). Taquara, Estrada do Paredão, 1♂, [no date] (UFRG). Triunfo, 1♂, 30.xi.2010, G. Minervini (MCTP). Uruguaiana, 1♀, 30.xii.1991, S. Pinent (MCTP). Viamão, 1♀, 16.xii.1994, F. F. C. Koller (MCTP).

## **Saicinae** Stål, 1859

### *Oncerotrachelus* Stål, 1860 (Figs. 3J, 6I, 10D)

*Diagnosis:* Pronotum unarmed; sometimes with humeral spines; mesonoto with a big triangular process which extends over metanoto; meso- and metaesterno with central carina; head and labium ventral with dense setae (Forero, 2004; Gil-Santana, 2013; Gil-Santana et al., 2015).

*Comments:* The genus is composed by 14 species with distribution from south of USA to Argentina. Some species are collected on leaf litter or spider webs. Apparently, some species hibernate in colonies (Gil-Santana, 2013). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** São Francisco de Paula, 1♂, 01.xii.1998, C. Weirauch, (UFRG).

### *Tagalis* Stål, 1860 (Figs. 3K, 6J, 10D)

*Diagnosis:* Humeral angles of pronotum without processes, rounded; half of pronotum heavily compressed; anterior lobe of pronotum with two rounded tubercles prominent and two less prominent; profemur and protibia with strong spines and curved (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* The genus comprises 10 species and occurs from USA to Argentina (Castro-Huertas and Forero, 2014; Varela and Melo, 2017). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** São Domingos do Sul, 1♂, 7-13.i.2018 R. Brugnera, (UFRG). São Jerônimo, 1♂, 1♀, 07.xi.1982, C. J. Becker, (MCNZ), 1♀, 10-15.ix.1982, T. Arigony, (MCNZ), 1♂, 02.x.1982, H. A. Gastal, (MCNZ), 1♂, 08.x.1982, T. Arigony, (MCNZ).

## **Stenopodainae** Amyot & Serville, 1843

### *Ctenotrachelus* Stål, 1868 (Figs. 3L, 6K, 11A)

*Diagnosis:* Head elongated, anteocular region longer than postocular region; pronotum two times longer than wide; anterior prosternal processes short; profemur thickened with a row of spiniform processes; sides of abdomen parallel or subparallel; last abdominal segment

ending in two developed apical lobes; body elongated, narrow, with rectangular format (Diez and Coscaron, 2014; Forero, 2004).

*Comments:* Genus composed by 21 species with distribution in USA, Mexico, Cuba, Panama, Colombia, Venezuela, Guiana, French Guiana, Brazil, Bolivia, Uruguay and Argentina (Bérenger, 2001; Forero, 2004). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Cachoeirinha, 1♂, 27.i.1981, M. H. Galileo (MCNZ). Porto Alegre, 1♂, 01.xi.1951, L. Buckup (MCNZ).

*Diaditus* Stål, 1859 (Figs. 3M, 6L, 11A)

*Diagnosis:* Mandibular plates well developed, subcylindrical, parallel, apically rounded and produced between antennae; the mandibular plates overlap the clypeus; second visible labial segment about half as long as the first one (Forero, 2004; Gil-Santana et al., 2015).

*Comments:* *Diaditus* is composed by six species with distribution in USA, Mexico, Guatemala, Belize, Nicaragua, Jamaica, Colombia, Suriname, Guyana, Curaçao, Brazil, Bolivia, Uruguay and Argentina (Blinn, 2009; Forero, 2004). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Cachoeirinha, 2♂, 16.xii.1980, M. H. Galileo (MCNZ), 1♂, 18.xii.1980, M. E. L. de Souza (MCNZ), 1♂, 27.xii.1980, M. E. L. de Souza (MCNZ). Canoas, 2♂, 01.x.1956, G. Zauza (MCNZ). Derrubadas, Parque Estadual do Turvo, 1♂, 24.i.2001, J. A. Teston (MCTP). Nova Prata, 1♂, 02.i.1988, F. C. Quadros (MCTP). Porto Alegre, 2♂, 10.xii.1979, M. E. L. de Souza (MCNZ), 1♂, 26.xi.1991, J. A. M. Fernandes (UFRG), 1♂, 08.i.1977, A. P. Silva (MCNZ). Rio Grande, Estação Ecológica do TAIM, 2♀, 13.xii.1985, A. Lise (MCNZ), 1♂, 02.xii.1986, C. J. Becker (MCNZ), São Francisco de Paula, 1♂, 01.i.1999, C. Weirauch (UFRG). São Francisco de Paula, Pró-mata, 3♂, 1♀, 19.xii.1997, C. Weirauch (MCTP).

*Gnathobleda* Stål, 1859 (Figs. 3N, 6M, 11A)

*Diagnosis:* Anteoocular region as long as postocular region; body elongate, often five times as long as maximum width, and fusiform; male genitalia with cuplike posterior extension of pygophore completely covering parameres; external female genital acuminate (Diez and Coscaron, 2014; Forero, 2004).



*Comments:* The genus is composed by three species described and distributed from USA to Argentina (Maldonado Capriles, 1990; Forero, 2004). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Canoas, 1♂, 2♀, 01.x.1956, G. Zauza (MCNZ), 1♂, 01.xi.1956, G. Zauza (MCNZ). Montenegro, 2♂, 01.i.1952, L. Buckup (MCNZ). Porto Alegre, 1♀, 01.i.1954, L. Buckup (MCNZ), 1♀, 01.i.1967, M. Becker (MCNZ), 1♀, 05.i.1965, T. de Lemacol (MCNZ), 1♀, 01.i.1955, L. Buckup (MCNZ), 3♂, 01.xi.1951, L. Buckup (MCNZ). Porto Alegre, Bairro Ipanema, 1♀, 01.ii.1957, E. H. Buckup (MCNZ).

*Oncocephalus* Klug, 1830 (Figs. 3O, 6N, 11B)

*Diagnosis:* Anteorcular region longer than postocular region; conspicuous setigerous tubercles behind the eyes; ocellus elevated; collar angles truncated apically; humeral angles triangular; profemur strongly thickened and with ventral spines; protibia without distinct fossula spongiosa, or the latter not longer than diameter of tibia (Diez and Coscaron, 2014; Forero, 2004).

*Comments:* Genus cosmopolite with ten American species (Diez and Coscaron, 2014; Gil-Santana et al., 2015). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Cachoeirinha, 3♂, 03.xii.1980, M. E. L. de Souza (MCNZ), 1♂, 27.xii.1980, M. E. L. de Souza (MCNZ), 1♂, 03.ii.1981, M. H. Galileo (MCNZ), 2♂, 16.xii.1980, M. H. Galileo (MCNZ), 1♂, 11.xii.1980, M. E. L. de Souza (MCNZ). Canoas, 1♀, 01.x.1956, G. Zauza (MCNZ). Frederico Westphalen, 1♂, 17.ix.2005, L. Massolino; G. G. Mansur (UFRG). Porto Alegre, 1♀, 01.ii.1957, T. de Lema (MCNZ). Rio Grande, Estação Ecológica do TAIM, 1♂, 1♀, 13.xii.1985, A. Lise (MCNZ).

*Pnirontis* Stål, 1859 (Figs. 3P, 6O, 11B)

*Diagnosis:* Scapus strongly incrassate, projected in an apical process that extends beyond the insertion of the second segment; first visible labial segment almost three times longer than the second and third together, mandibular plates elongated; anterior angles of pronotum acute; profemur and protibia armed with a series of spines; body elongate but small in size (Diez and Coscaron, 2014; Forero, 2004).

*Comments:* Approximately 32 species described with distribution from USA to Argentina (Diez and Coscaron, 2014; Forero, 2004; Gil-Santana et al., 2015). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Bagé , 1♂, 1♀, 14.i.1990, G. Carvalho (MCTP). Butiá, 1♀, 05.Viii.1982, T. Arigony (MCNZ), 1♀, 18.V.1982, H. A. Gastal (MCNZ), 1♀, 04.Viii.1982, T. Arigony (MCNZ), 1♀, 26.Viii.1982, M. E. L. de Souza (MCNZ). Cachoeirinha, 8♂, 1♀, 23.ii.1981, H. A. Gastal (MCNZ), 7♂, 1♀, 14.i.1981, M. E. L. de Souza (MCNZ), 9♂, 10♀, 18.xii.1980, M. E. L. de Souza (MCNZ), 3♂, 19.xii.1980, M. E. L. de Souza (MCNZ), 5♂, 24.xi.1980, H. A. Gastal (MCNZ), 1♂, 1♀, 03.iii.1981, M. H. Galileo (MCNZ), 3♂, 1♀, 03.xii.1980, M. E. L. de Souza (MCNZ), 2♀, 24.V.1980, M. H. Galileo (MCNZ), 8♂, 5♀, 30.xii.1980, H. A. Gastal (MCNZ), 4♂, 5♀, 08.i.1981, M. E. L. de Souza (MCNZ), 12♂, 6♀, 05.i.1981, H. A. Gastal (MCNZ), 8♂, 2♀, 27.i.1981, H. A. Gastal (MCNZ), 8♂, 7♀, 04.i.1981, H. A. Gastal (MCNZ), 2♂, 09.i.1981, H. A. Gastal (MCNZ), 2♂, 2♀, 21.ii.1981, M. E. L. de Souza (MCNZ), 1♂, 2♀, 11.xii.1980, M. E. L. de Souza (MCNZ), 1♂, 10.ii.1981, H. A. Gastal (MCNZ), 1♂, 3♀, 14.xii.1980, M. H. Galileo (MCNZ), 1♂, 23.xii.1980, H. A. Gastal (MCNZ), 2♂, 12.i.1981, H. A. Gastal (MCNZ), 5♂, 2♀, 17.i.1981, H. A. Gastal (MCNZ), 10♂, 4♀, 03.ii.1981, M. E. L. de Souza (MCNZ), 3♂, 09.xii.1980, M. E. L. de Souza (MCNZ), 1♂, 8.i.1981, M. E. L. de Souza (MCNZ), 6♂, 5♀, 13.xii.1980, M. H. Galileo (MCNZ), 1♂, 20.x.1982, M. E. L. de Souza (MCNZ), Canoas, 2♂, 01.x.1956, G. Zauza (MCNZ). Capão da Canoa, Arroio Teixeira, 1♀, 03.V.1998, Felipe C. Quadros (MCTP). Caxias do Sul, Vila Oliva, 1♂, 17.i.1960, E. H. Buckup (MGAP), 1♀, 19.ii.1949, E. H. Buckup (MGAP), 1♂, 01.ii.1968, E. H. Buckup (MGAP). Gravataí, Morro do Coco, 1♀, 23.ii.1962, E. H. Buckup (MGAP). Mostardas, 1♀, 29.i.1998, A. Specht (MCTP). Porto Alegre, 1♂, 01.xi.1951, L. Buckup (MCNZ), 1♀, 15.x.1936, E. H. Buckup (MGAP), 1♀, 02.x.1952, E. H. Buckup (MCNZ), 1♀, 01.x.1952, E. H. Buckup (MCNZ). Porto Alegre, Bairro Assunção, 1♂, 1♀, 27.x.1998, Felipe C. Quadros (MCTP). Salvador do Sul, 1♂, 16.xi.1996, A. Specht (MCTP). São Domingos do Sul, 1♂, 1♀, 7-13.i.2018, R. Brugnera (UFRG). São Francisco de Paula, Prómata , 1♂, 03.xii.1997, C. Weirauch (MCTP), 2♂, 05.i.1998, C. Weirauch (MCTP), 2♂, 15.xii.1997, C. Weirauch (MCTP). São Jerônimo, 1♀, 16-23.ix.1982, M. E. L. de Souza (MCNZ). São Jerônimo, 1♀, 05.ii.1982, C. J. Becker (MCNZ). São Leopoldo, 1♀,

15.iV.1977, M. Sander (MCNZ), 1♀, 01.iV.1933, E. H. Buckup (MGAP). Viamão, 1♀, 13.iV.1983, C. J. Becker (MCNZ).

*Pygolampis* Germar, 1825 (Figs. 3Q, 6P, 11C)

*Diagnosis:* Antecular region longer than postocular region; first visible labial segment approximately twice as long as the second and third segments combined, reaching half of the postocular region (Wygodzinsky and Giacchi, 1994; Forero, 2004; Diez and Coscaron, 2014).

*Comments:* Genus with cosmopolita distribution, with four species from south of USA to Bolivia and Brazil (Wygodzinsky and Giacchi, 1994; Forero, 2004; Diez and Coscaron, 2014). The genus is new record for RS.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Porto Alegre, Bairro Ipanema, 1♀, 01.i.1957, M. Palova (MCNZ). São Domingos do Sul, 1♂, 7-13.i.2018, R. Brugnera (UFRG).

*Stenopoda* Laporte, 1832 (Figs. 3R, 6Q, 11C)

*Diagnosis:* Head dorsally with lateral margins nearly parallel, abruptly constricted at neck; head as long as pronotum; salient eyes; humeral angles of pronotum acute; protibia with elongate fossula spongiosa; body and appendages with dense, adpressed pubescence and numerous tiny, erect bristles (Wygodzinsky and Giacchi, 1994; Forero, 2004; Diez and Coscaron, 2014).

*Comments:* The genus comprises 14 species described (Maldonado Capriles, 1990). *S. cinerea* Laporte, 1833 and *S. guaranítica* Giacchi, 1969 are new record for RS state.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Caçapava do Sul, Pedra do Segredo, 1♀, 08.iii.2003, Bunde e Schwertner (UFRG). Cachoeirinha, 1♂, 27.xii.1980, H. A. Gastal (MCNZ), 1♂, 11.xii.1980, M. E. L. de Souza (MCNZ), 2♂, 28.xii.1980, M. E. L. de Souza (MCNZ), 1♂, 07.i.1987, J. Santana (MCNZ). Canoas, 7♂, 01.x.1956, G. Zauza (MCNZ). Charqueadas, 1♀, 01.i.1940, E. H. Buckup (MGAP). Guaíba, 1♂, 08.i.1974, M. (MCNZ). Iraí, 1♂, 20.x.1998, J. A. Teston (MCTP). Nova Prata, 7♂, 30.xii.1989, Felipe C. Quadros (MCTP). Parecy Novo, 1♂, [no date], E. H. Buckup (MGAP). Pelotas, 2♂, 31.xii.2005, L. A. Campos (UFRG). Portão, 1♂, 17.iii.1988, S. Pinent (MCTP). Porto Alegre, 1♂,

01.xi.1951, L. Buckup (MCNZ), 1♂, 05.i.1965, T. de Lemancol (MCNZ), 1♂, 22.ii.1980, M. E. L. de Souza (MCNZ), 1♂, 31.i.1969, E. H. Buckup (MGAP), 1♂, 01.i.1955, L. Buckup (MCNZ), 1♂, 18.i.1980, H. A. Gastal (MCNZ), 1♂, 16.xii.1967, Tania Nudelmann (MCNZ), 1♂, 10.i.1982, E. Aynev (MCNZ), 1♂, 03.iii.1980, H. A. Gastal (MCNZ), 1♂, 23.xii.1969, E. H. Buckup (MCNZ), 1♀, 03.xii.2000, C. M. Joenck (MCTP). Porto Alegre, Bairro Petrópolis, 1♂, 05.xii.1971, T. Lema (MCNZ). Porto Alegre, Morro Santana, 1♂, 25.i.1980, M. H. Galileo (MCNZ). Salto do Jacuí, Horto da CEEE, 1♂, 17.i.2000, A. Franceschini (MCNZ). Salvador Sul, 1♂, 08.i.1995, A. Specht (MCTP). São Francisco de Paula, 1♂, 01.i.1955, L. Buckup (MCNZ), São Jerônimo, 1♂, 07.xi.1982, C. J. Becker (MCNZ), 1♂, 02.xi.1982, H. A. Gastal (MCNZ). São Leopoldo, 1♂, 1♀, [no date], E. H. Buckup (MGAP). Tapes, 1♂, 18.i.1976, F. R. Munaiar (MCNZ). Taquara, Estrada do Paredão, 1♂, [no date] (UFRG). Torres, 1♂, 01.xii.1977, P. Braum (MCNZ). Uruguaiana, 1♂, 02.xii.1990, Laboratório de Entomologia (MCTP). Viamão, 1♂, 05.xi.1979, H. A. Gastal (MCNZ), 2♂, 07.xii.1979, M. E. L. de Souza (MCNZ), 1♂, 10.xii.1979, M. H. Galileo (MCNZ), 1♀, 10.xi.1979, M. E. L. de Souza (MCNZ), 1♂, 11.i.1980, M. H. Galileo (MCNZ), 1♂, 09.i.1980, H. A. Gastal (MCNZ). Viamão, Águas Belas, 1♂, 11.i.1980, H. A. Gastal (MCNZ). Viamão, Águas Claras, 2♂, 26.ii.1995, N. Alves (MCNZ).

### **Triatominae** Jeannel, 1919

#### *Panstrongylus* Berg, 1879 (Figs. 3S, 6R, 11D)

*Diagnosis:* Head shorter than pronotum; antenna insert near to the anterior margin of eyes; head and body glabrous; first visible labial segment shorter than second segment (Lent and Wygodzinsky, 1979a; Forero, 2004).

*Comments:* *Panstrongylus* comprises 13 species with wide distribution on Neotropical region and occur in all Brazilian regions (Maldonado Capriles, 1990; Forero, 2004; Gil-Santana and Galvão, 2018). Two species are record to RS state *P. megistus* (Burmeister, 1835) and *P. tupynambai* Lent, 1942.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Belém Novo, 2♀, 01.i.1959, E. H. Buckup (MGAP), 1♀, 01.xi.2000, A. Ruas (MCTP). Bento Gonçalves, 1♂, 14.i.2008, G. S.

Carvalho (MCTP). Dois irmãos, Cascata 48, 1♀, 23.ix.1979, V. Hennann (MCNZ). Dois irmãos, Cascata 49, 1♀, 23.ix.1979, V. Hennann (MCNZ). Guaíba, 1♀, 18-20.i.1980, M. E. L. Souza (MCNZ), 1♂, 01.x.1978, Luiz Flamarion (MGAP). Iraí, 1♂, 01.xii.1961, E. H. Buckup (MCNZ). Itapuã, 1♂, 14.i.1985 (UFRG), M. Sabiá, 1♂, 30.xi.1961, E. H. Buckup (MGAP). Porto Alegre, 2♀, 27.xii.1961, E. H. Buckup (MGAP), 1♂, 15.xii.1995, S. Hartz (UFRG), 1♂, 18.V.1963, E. H. Buckup (MGAP). Porto Alegre, PUC-RS, 1♂, 29.xi.2005, Rosane Sá (MCTP). Porto Alegre, Morro Santana, 1♂, 01.iV.2008, M. W. Duarte (UFRG). Rio Grande, 1♀, 25.iV.1985, R. Quaresma (FURG). Santana do Livramento, 2♂, [no date], E. H. Buckup (UFRG). Sapucaia do Sul, Parque Zoológico, 1♂, 17.xi.1994, A. N. de Assis (MCNZ). Viamão, 1♀, 01.iii.1989, M. Gonçalves (MCNZ), 1♂, 22.xi.1991, N. Fortes (UFRG), 1♂, 01.xi.1956, M. Palova (MCNZ), 1♀, 20.i.1985, V. H. Dahmer (MCNZ).

*Triatoma* Laporte, 1832 (Figs. 3T, 6S, 11D)

*Diagnosis:* First visible labial segment shorter than second; subcylindrical head; humeral angles of pronotum without spines; anterior margin of scutellum without processes segment (Lent and Wygodzinsky, 1979a; Forero, 2004).

*Comments:* *T. carcavallo* Jurberg, Rocha & Lent, 1998, *T. circummaculata* (Stal, 1859), *T. delpontei* Romana & Abalos, 1947, *T. klugi* Carcavallo, Jurberg, Lent & Galvão, 2001, *T. oliveirai* (Neiva, Pinto & Lent, 1939), *T. pintodiasi* Jurberg, Cunha & Rocha, 2013, *T. platensis* Neiva, 1913 and *T. rubrovaria* (Blanchard, 1843) occur on Pampa biome (Galvão, 2014), but we found additional locality records of these species for Mata Atlantica bioma.

*Material examined:* **BRAZIL: Rio Grande do Sul:** Alegrete, 1♀, 15.ii.2003, R. A. Dimare (MCTP), 1♀, 01.xi.2000, J. Teston (MCTP). Bagé, Fazenda Camaquã, 2♂, 2♀, 24.i.1965, A. D. Goulart (MCNZ). Bossoroca, 2♂, 01.iii.1998, J. Jesus (MCTP). Caçapava do Sul, 1♀, [no date], Rudi Lang (UFRG), 1♀, 30.x.2003, A. Ruas (MCTP), 2♀, 01.i.1956, Rude Lang (UFRG). Cassino, 1♂, 13.iV.1985, R. Quaresma (FURG). Cerro Largo, 1♂, 1♀, [no date] (UFRG). Dom Feliciano, 2♂, 1♀, 01.i.1999, A. Ruas Neto (MCTP). Encruzilhada do Sul, 1♂, 16.ix.2003, A. Ruas (MCTP). Fazenda Nhamandu, BR 267 Km 499, 1♂, 01.iii.2008, R. Zachia (UFRG). Guaíba, 1♂, 18.x.2003, A. Ruas (MCTP). Guarani das Missões, 1♀, 30.ix.2003, A. Ruas (MCTP), 1♂, 07.iV.2004, Ruas Neto (MCTP), 1♂, 15.xii.2003, Ruas Neto (MCTP). Montenegro, 1♀, 07.ii.1982, R. Meyster (MCNZ). Porto

Alegre, 1♂, 1♀, 07.V.1951 (MGAP), 1♂, 23.xii.2000 (MCTP), 1♂, 27.iii.2007, J. Abreu Neto (UFRG), 1♂, 07.ix.2000 (MCTP), 1♂, 18.iV.1985, I. Brum (FURG), 1♀, 26.xii.2001 (MCTP). Porto Alegre, Bairro Belém Novo, 1♂, 07.xi.1983, Nívia Lothaimmer, Roseli Santos (UFRG). Quaraí, 1♂, 1♀, [no date] (UFRG). Quaraí, Cerro Chapéu, 1♀, 06.i.1980, J. W. Thomé (MCNZ). Rio Grande, 8♂, 2♀, 01.xi.1987, A. U. G. Görden (FURG), 1♂, 20.iV.1987, R. A. Silva (FURG), 1♂, 22.iii.1985, G. Trindade (FURG), 5♀, 10.xi.1987, A. U. G. Görden (FURG). Santa Maria, 1♀, 25.ix.1986, M. C. Sonego (UFRG), 1♀, 31.x.1986, R. L. Salet (UFRG). Santana do Livramento, 1♂, 16.ii.2003, A. Juvenal (MCTP). São Borja, 1♀, 23.ix.1986, J. Costa (UFRG). São Gabriel, 5♂, 12♀, 01.xii.1963, C. Souza (MCNZ). São Jerônimo, 1♂, 01.iii.1985, R. Hildebrand (UFRG), 1♀, 23.xii.2003, A. Ruas (MCTP). São Jerônimo, Fazenda Duas Figueiras, 2♂, 1♀, 15.iV.1951 (UFRG). São Luiz Gonzaga, 1♂, 1♀, [no date] (UFRG). São Salvador, 1♂, 16.i.1943 (MGAP). Sapucaia do Sul, 1♂, 01.x.1998, A. Ruas Neto (MCTP). Sapucaia do Sul, Morro Sapucaia, 1♀, 19.x.1986, A. Barcellos (UFRG), 1♂, 23.iii.1986, I. Fernandes (UFRG). Uruguaiana, 1♀, [no date], R. di Primio (UFRG). Viamão, 1♂, 1♀, 11.i.1964, Kummecke (MCNZ).

### **Keys to genera of Reduviidae from Rio Grande do Sul, Brazil**

We offer identification keys for eight of the 11 genera recorded from RS state, because Bactrodinae and Hammacerinae only have one genus each and Harpactorinae, without recent taxonomic revisions, it is very difficult offer a key even to generic level.

*Key to the genera of Ectrichodiinae recorded in the state of Rio Grande do Sul, Brazil (modified from Gil-Santana et al. (2015))*

1. Four antennal segments..... *Zirta*  
 1'. Six or more (apparent) antennal segments..... 2

2. Robust species of 15 to more than 40 mm length; profemur thickened, sometimes strongly so; mesofemur less frequently thickened, both with blunt tubercles or sharp and dentiform processes set on areas with short stiff hairs; pro- and mesotrochanter with similar

- armature; pro- and mesotibia slightly or strongly thickening toward the apex, with fossula spongiosa well developed..... *Brontostoma*
- 2'. Smaller and/or less robust species; profemur slender or slightly thickened; another set of characters..... 3
3. Head longer than wide..... 4
- 3'. Head length as long as or shorter than the width ..... 6
4. First visible labial segment elongate, longer than second and third (visible) together; pronotum smooth and shiny..... *Pothea*
- 4'. First visible labial segment shorter than or at most subequal to second and third together; pronotum opaque, typically rugose, seldom smooth and shin ..... 5
5. First visible labial segment shorter than second and third together; second segment subequal to first, longitudinal sulcus of the anterior pronotal lobe well developed anteriorly, but not reaching transverse sulcus at most slightly longer or shorter; body red orange and black, rarely brownish species ..... *Rhiginia*
- 5'. First visible labial almost as long as or longer than second and third together; second distinctly shorter than first; first antennal segment about as long as the head; median longitudinal sulcus well developed on anterior pronotal lobe and extending onto posterior lobe continuously body dark brown, brownish, blackish, at most with yellowish markings on species ..... *Racelda*
6. With ventrolateral elevations posterior to eyes; eyes, ocellar tubercles, and ocelli large to very large; legs slender, ventrally without spines or carinae; fossula spongiosa very small, less than 1/5 length of fore and 1/10 length of mid-tibiae; length 14–25 mm ..... *Cricetopareis*
- 6'. Without ventrolateral elevations posterior to eyes; eyes, ocellar callus conical or flattened; pro- and mesoleg strongly carinated below, femur with setigerous tubercles and dentiform spines; fossula spongiosa on the pro-and mesotibia moderately developed,

extending to between 1/5 and 1/3 length of segment; body length 6–13 mm  
..... *Daraxa*

*Key to the genera of Emesinae recorded in the state of Rio Grande do Sul, Brazil* (modified from Forero (2004); Wygodzinsky (1966))

1. Winged ..... 2

1'. Micropterous or apterous ..... 5

2. Small insects, generally less than 10 mm.; under surface of protibia only with Strong setae; basal angle of discal cell of anterior wing connected to costal margin by a short oblique vein; apex of anal lobe of hind wings with a small lobate projection  
..... Ploiariolini 3

2'. Larger insects, only rarely less than 10 mm.; under surface of fore tibiae with strongly sclerotized spinulets or denticles; base of discal cell not connected to costal margin by a vein; apex of anal lobe of hind wing not projecting ..... Emesini 4

3. Distance from apex of pterostigma to tip of anterior wing about as large as, or larger than, distance from apex of pterostigma to insertion of M on same; base of discal cell shortly truncate, basal half of anterior border of cell distinctly separate from wing margin, connected to it by two oblique cross veins; protarsus two-segmented  
..... *Empicoris*

3'. Apex of pterostigma carried much farther toward wing tip, or even attaining same; base of discal cell narrowly pointed, anterior border of cell fused for most of its extension to anterior wing margin, free at extreme base only and there connected to wing margin by one cross vein only; protarsus three-segmented ..... *Malacopus*

4. Anterior wing with a single closed cell, first rostral segment much shorter than second; anteroventral series of profemur composed only of delicate, spinelike setae or very small spines, spiniferous processes absent altogether; M and Cu completely fused basad of cell  
..... *Gardena*



- 4'. Anterior wing with one or two smaller cells in addition to large discal cell, thus with two or three cells ..... 5
3. Protarsus two-segmented ..... *Stenolemus*
- 3'. Protarsus three-segmented ..... 4
4. Pronotum elongate-pedunculate ..... *Emesa*
- 4'. Pronotum more or less constricted between anterior and posterior lobe but not pedunculate ..... *Phasmatocoris*
5. Protibia with two irregular series of conspicuous spiniferous processes; protarsus not bare above and at sides, some spines present on lateral surface ..... Metapterini 7
- 5'. Protibia without conspicuous spiniferous processes; protarsus virtually bare above and at sides, lateral surface invariably without spines ..... *Ploiaria* (Leistarchini)
6. Protarsus three segmented ..... *Emesaya*
- 6'. Protarsus unsegmented ..... *Ghinallelia*

*Key to the genera of Peiratinae recorded in the state of Rio Grande do Sul, Brazil*  
(modified from Gil-Santana *et al.* (2015))

1. Head with preocellar transverse groove deeply impressed; procoxa elongated, apical third to half-extended caudad of the prosternal process..... 2
- 1'. Head with obsolete or shallowly impressed transverse groove; procoxa short, the apex not or only slightly extending caudad of prosternal process..... *Zeraikia*
2. Mesotibia without fossula spongiosa ..... *Sirthenea*
- 2'. Mesotibia with fossula spongiosa occupying a fifth or more of tibial length..... 3
3. Metapleural sulcus straight, anteocular region distinctly longer than the postocular portion ..... *Tydides*

- 3'. Metapleural sulcus curved..... 4
4. Protibia with fossula spongiosa restricted to its apical third; hemelytra, when present, uniformly fuscous to black ..... *Melanolestes*
- 4'. Protibia with fossula spongiosa occupying more than the apical third; hemelytra, with at least two colors..... *Rasahus*

*Key to the genera of Phymatinae recorded in the state of Rio Grande do Sul, Brazil*  
(modified from Gil-Santana *et al.* (2015))

1. Head above the eye and propleura just ventral to the lateral margin each with a distinct longitudinal groove for reception of antennae at rest..... *Phymata*
- 1'. Head and propleura without such a longitudinal groove for reception of antennae..... *Macrocephalus*

*Key to the genera of Reduviinae recorded in the state of Rio Grande do Sul, Brazil*  
(modified from Gil-Santana *et al.* (2015))

1. Protibia without fossula spongiosa, protrochanter ventrally with a stout spiniform process ..... *Nalata*
- 1'. Protibia with fossula spongiosa ..... 2
2. Apex of pro-, meso- and metafemur ventral surface with a distinct pair of dentiform processes ..... *Leogorrus*
- 2'. Apex of pro-, meso- and metafemur ventral surface without dentiform processes ..... 3
3. Disc of anterior pronotal lobe with four tubercles; pro- and mesofemur wider than metafemur ..... *Opisthacidius*

- 3'. Disc of anterior pronotal lobe with a pair of tubercles or spines; pro- and mesofemur slender, about the same diameter as metafemur ..... 4
4. Mandibular plates swollen, prominent, reaching or surpassing the apex of the head; clypeus vertical..... *Neivacoris*
- 4'. Mandibular plates less developed, not reaching the apex of the head; clypeus never vertical ..... *Zelurus*

*Key to the genera of Saicinae recorded in the state of Rio Grande do Sul, Brazil (modified from Gil-Santana et al. (2015))*

1. Proleg without spines, at most with erect setae, pronotum generally unarmed, but sometimes with humeral spines; apex of mesoscutum produced into a long horizontal tapering spine, metanotum without spine or tubercle ..... *Oncerotrachelus*
- 1'. Profemur with two rows of spines, protibia either with setae or with spines, humeral angles of pronotum without processes, rounded ..... *Tagalis*

*Key to the genera of Stenopodainae recorded in the state of Rio Grande do Sul, Brazil (modified from Gil-Santana et al. (2015))*

1. First antennal segment produced beyond insertion of the second segment; distinct hemelytral cell present proximad of the basal cell ..... *Pnirontis*
- 1'. First antennal segment not produced beyond insertion of the second segment; distinct hemelytral cell proximad of basal cell absent ..... 2
2. First visible labial segment approximately twice as long as the second and third combined ..... *Pygolampis*
- 2'. First visible labial segment subequal to, or shorter than, the second and third combined ..... 3

3. Prosternum distinctly elongate behind the fore coxae as long as, or longer than, coxae, pronotum at least twice longer than wide; anterior prosternal processes short; sides of abdomen parallel or subparallel; last abdominal segment ending in two moderately developed, not acute apical lobes ..... *Ctenotrachelus*
- 3'. Prosternum shorter behind coxae than length of coxae, or coxae inserted at the hind margin of prosternum ..... 4
4. Body and appendages with dense, adpressed pubescence and numerous tiny, erect bristles; protibia with elongate fossula spongiosa; postocular region of the head nearly parallel-sided in dorsal view, abruptly constricted at neck ..... *Stenopoda*
- 4'. Body glabrous or variously pubescent but not as above; basal cell fused to M for a considerable distance or not in direct contact with M at all ..... 5
5. Body elongate fusiform, often five times (or more) as long as the maximum width; head subcylindrical, anteocular and postocular regions of equal length; antennae long and slender, first segment always longer than anteocular region; pronotum narrow, its length along midline at least equal to width across humeri ..... *Gnathobleda*
- 5'. Body not elongate fusiform, broader, always less than five times as long as the maximum width; anteocular region longer than postocular; mandibular plates produced anteriorly between antennae; pronotum wider across humeri than along midline ..... 6
6. Profemur strongly incrassate, at least twice as thick as the meso- and metafemur ..... *Diaditus*
- 6'. Profemur slender, less than twice as thick as the meso- and metafemur ..... *Oncocephalus*

*Key to the genera of Triatominae recorded in the state of Rio Grande do Sul, Brazil (modified from Lent and Wygodzinsky,(1979))*

1. Head very short and wide ; antenniferous tubercles inserted extremely close to anterior border of eyes; head and body glabrous or with short adpressed setae..... *Panstrongylus*

2. Head varied in shape, elongated, in most cases subcylindrical; antenniferous tubercles not in close proximity to eyes ..... *Triatoma*

### **Conclusion remarks**

The taxonomic catalogues are very important for the knowledge of the local fauna diversity, conservation strategies and plans emergence. Our results offer not only an increment of the records number, as also provide specific information of the taxa that occur in this region. Similar efforts must done with others groups poorly known.

### **Acknowledgements**

To the curators of the collections, Aline Barcellos (MCNZ); Gervasio S. Carvalho (MCTP); Fernando Meyer (MGAP) and Augusto Ferrari (FURG). To Dimitri Forero (MPUJ) and Helcio Gil-Santana (Fiocruz) we thank for help with some specimens ID confirmation.

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## FIGURE CAPTIONS

**Fig. 1.** Dorsal habitus of Assassin Bugs of Rio Grande do Sul/Brazil: Bactrodinae: **A.** *Bactrodes*.; Ectrichodiinae: **B.** *Brontostoma*, **C.** *Cricetopareis* (female), **D.** *Cricetopareis* (male), **E.** *Daraxa*, **F.** *Pothea*, **G.** *Racelda*, **H.** *Rhiginia*.; Emesinae: **I.** *Emesa*, **J.** *Emesaya*, **K.** *Empicoris*, **L.** *Gardena*, **M.** *Ghinallelia*, **N.** *Phasmatocoris*, **O.** *Ploiaria*, **P.** *Stenolemus*.; Hammacerinae: **Q.** *Microtomus*.; Harpactorinae: **R.** *Apiomerus*, **S.** *Arilus*, **T.** *Castolus*.

**Fig. 2.** Dorsal habitus of Assassin Bugs of Rio Grande do Sul/Brazil: Harpactorinae: **A.** *Cosmoclopius*, **B.** *Debilis*, **C.** *Harpactor*, **D.** *Heniartes*, **E.** *Heza*, **F.** *Isocondylus*, **G.** *Montina*, **H.** *Pselliopus*, **I.** *Repipta*, **J.** *Ricolla*, **K.** *Rocconota*, **L.** *Sindala*, **M.** *Sinea*, **N.** *Sosius*, **O.** *Zelus*, **P.** *Zelus*.; Peiratinae: **Q.** *Melanolestes*, **R.** *Rasahus*, **S.** *Sirthenea*, **T.** *Tydides*.

**Fig. 3.** Dorsal habitus of Assassin Bugs of Rio Grande do Sul/Brazil: Peiratinae: **A.** *Zeraikia*.; Phymatinae: **B.** *Macrocephalus*, **C.** *Phymata* (female), **D.** *Phymata* (male).; Reduviinae: **E.** *Leogorrus*, **F.** *Nalata*, **G.** *Neivacoris*, **H.** *Opisthacidius*, **I.** *Zelurus*.; Saicinae: **J.** *Oncerothachelus*, **K.** *Tagalis*.; Stenopodainae: **L.** *Ctenotrachelus*, **M.** *Diaditus*, **N.** *Gnathobleda*, **O.** *Oncocephalus*, **P.** *Pnirontis*, **Q.** *Pygolampis*, **R.** *Stenopoda*.; Triatoma: **S.** *Panstrongylus*, **T.** *Triatoma*.

**Fig. 4.** Lateral habitus of Assassin Bugs of Rio Grande do Sul/Brazil: Bactrodinae: **A.** *Bactrodes*.; Ectrichodiinae: **B.** *Brontostoma*, **C.** *Cricetopareis* (female), **D.** *Cricetopareis* (male), **E.** *Daraxa*, **F.** *Pothea*, **G.** *Racelda*, **H.** *Rhiginia*.; Emesinae: **I.** *Emesa*, **J.** *Emesaya*, **K.** *Empicoris*, **L.** *Gardena*, **M.** *Ghinallelia*, **N.** *Malacopus*, **O.** *Phasmatocoris*, **P.** *Ploiaria*, **Q.** *Stenolemus*.; Hammacerinae: **R.** *Microtomus*.; Harpactorinae: **S.** *Apiomerus*, **T.** *Arilus*.

**Fig. 5.** Lateral habitus of Assassin Bugs of Rio Grande do Sul/Brazil: Harpactorinae: **A.** *Castolus*, **B.** *Cosmoclopius*, **C.** *Debilis*, **D.** *Harpactor*, **E.** *Heniartes*, **F.** *Heza*, **G.** *Isocondylus*, **H.** *Montina*, **I.** *Pselliopus*, **J.** *Repipta*, **K.** *Ricolla*, **L.** *Rocconota*, **M.** *Sindala*, **N.** *Sinea*, **O.** *Sosius*, **P.** *Zelus*, **Q.** *Zelus*.; Peiratinae: **R.** *Melanolestes*, **S.** *Rasahus*, **T.** *Sirthenea*, **U.** *Tydides*, **V.** *Zeraikia*.

**Fig. 6.** Lateral habitus of Assassin Bugs of Rio Grande do Sul/Brazil: Phymatinae: **A.** *Macrocephalus*, **B.** *Phymata* (female), **C.** *Phymata* (male).; Reduviinae: **D.** *Leogorrus*, **E.** *Nalata*, **F.** *Neivacoris*, **G.** *Opisthacidius*, **H.** *Zelurus*.; Saicinae: **I.** *Oncerothachelus*, **J.** *Tagalis*.; Stenopodainae: **K.** *Ctenotrachelus*, **L.** *Diaditus*, **M.** *Gnathobleda*, **N.** *Oncocephalus*, **O.** *Pnirontis*, **P.** *Pygolampis*, **Q.** *Stenopoda*.; Triatoma: **R.** *Panstrongylus*, **S.** *Triatoma*.

**Fig. 7.** Distribution maps of Assassin Bugs of Rio Grande do Sul. **A.** *Bactrodes* (Bactrodinae), *Brontostoma* (Ectrichodiinae); **B.** *Cricetopareis*, *Daraxa*, *Pothea*

(Ectrichodiinae); **C.** *Racelda*, *Rhiginia*, *Zirta* (Ectrichodiinae); **D.** *Emesa*, *Emesaya*, *Empicoris*, *Gardena* (Emesinae).

**Fig. 8.** Distribution maps of Assassin Bugs of Rio Grande do Sul. **A.** *Ghinallelia*, *Malacopus*, *Phasmatocoris*, *Ploiaria*, *Stenolemus* (Emesinae); **B.** *Microtomus* (Hammacerinae), *Apiomerus* (Harpactorinae); **C.** *Arilus*, *Castolus*, *Cosmoclopius*, *Debilis* (Harpactorinae); **D.** *Harpactor*, *Heniartes*, *Heza*, *Isocondylus* (Harpactorinae).

**Fig. 9.** Distribution maps of Assassin Bugs of Rio Grande do Sul. **A.** *Montina*, *Pselliopus*, *Repipta*, *Ricolla* (Harpactorinae); **B.** *Rocconota*, *Sindala*, *Sinea*, *Sosius* (Harpactorinae); **C.** *Zelus* (Harpactorinae); **D.** *Melanolestes*, *Rasahus* (Peiratinae).

**Fig. 10.** Distribution maps of Assassin Bugs of Rio Grande do Sul. **A.** *Sirthena*, *Tydides*, *Zeraikia* (Peiratinae); **B.** *Macrocephalus*, *Phumata* (Phymatinae); **C.** *Leogorrus*, *Nalata*, *Neivacoris*, *Opisthacidius*, *Zelurus* (Reduviinae); **D.** *Oncerothelus*, *Tagalis* (Saicinae).

**Fig. 11.** Distribution maps of Assassin Bugs of Rio Grande do Sul. **A.** *Ctenotrachelus*, *Diaditus*, *Gnathobleda* (Stenopodainae); **B.** *Oncocephalus*, *Pnirontis* (Stenopodainae); **C.** *Pygolampis*, *Stenopoda* (Stenopodainae); **D.** *Panstrongylus*, *Triatoma* (Triatominae).

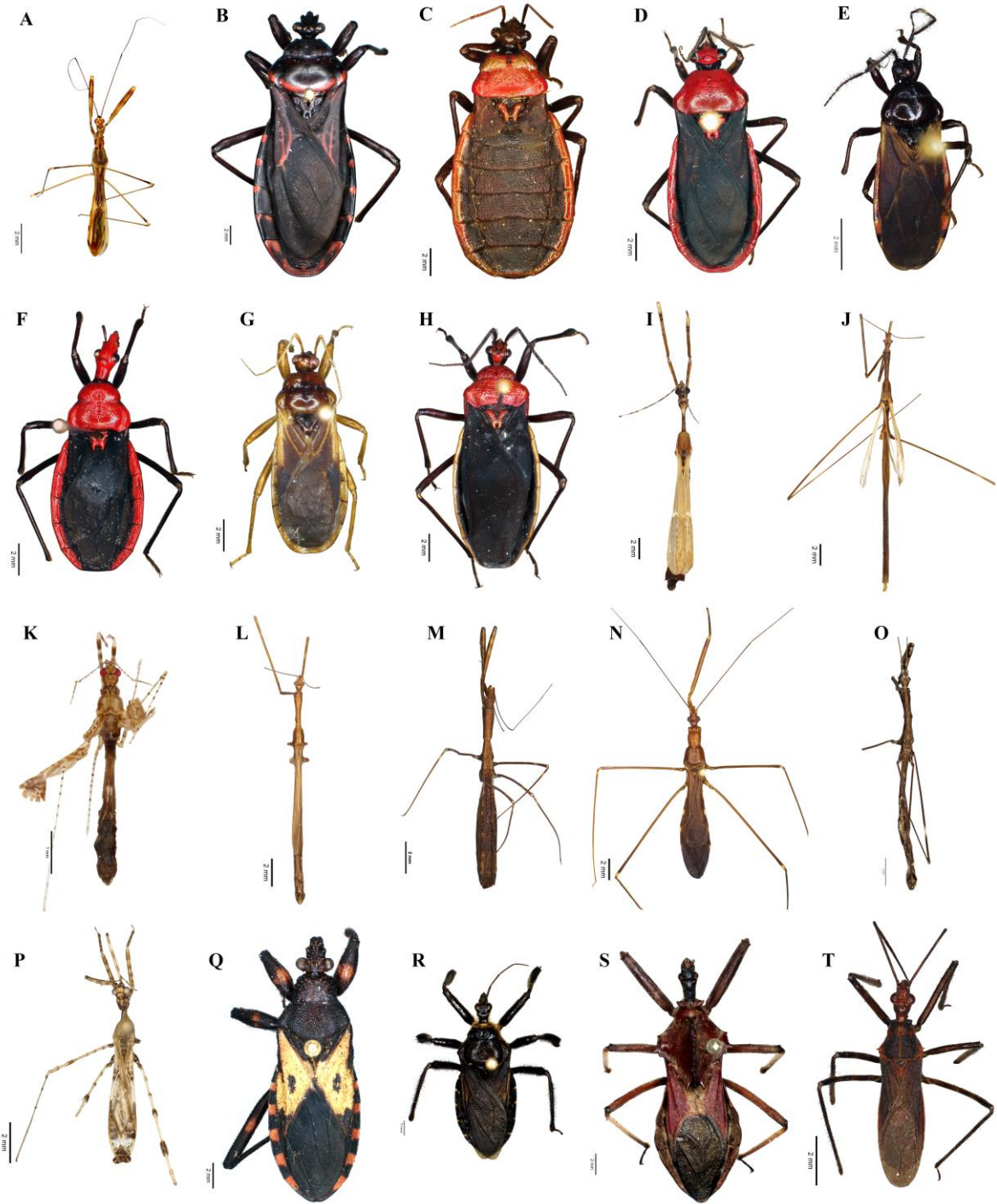


Figure 1

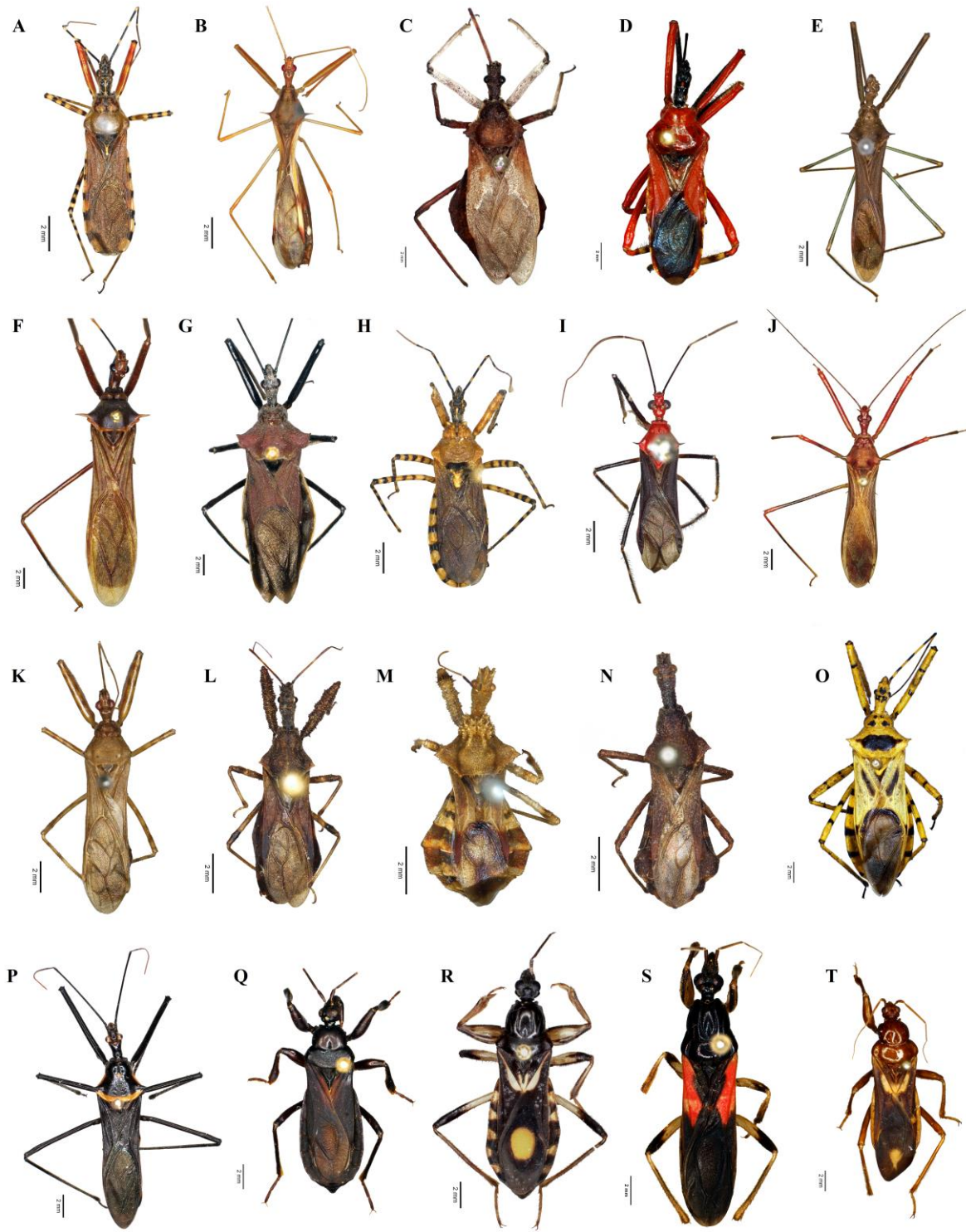
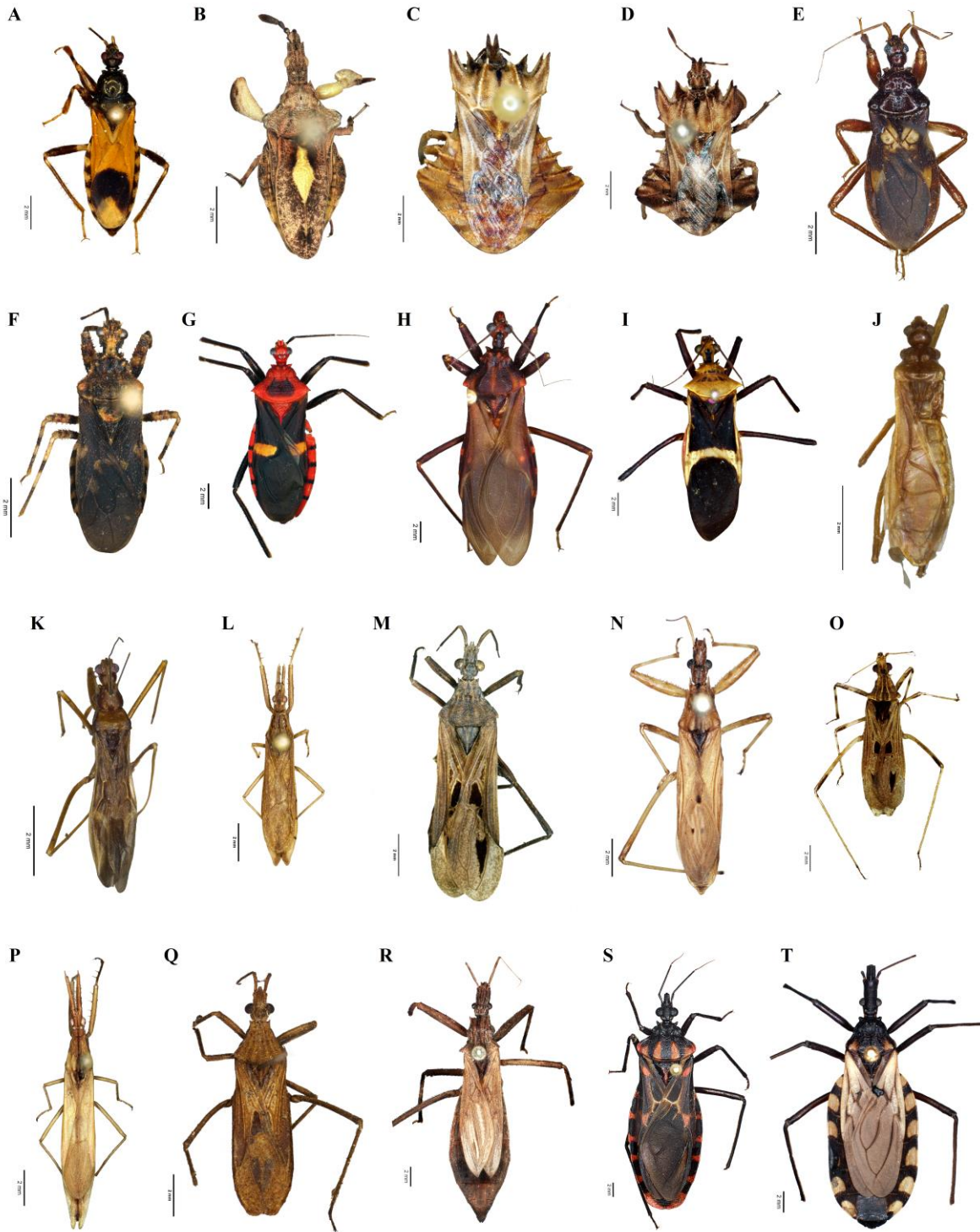


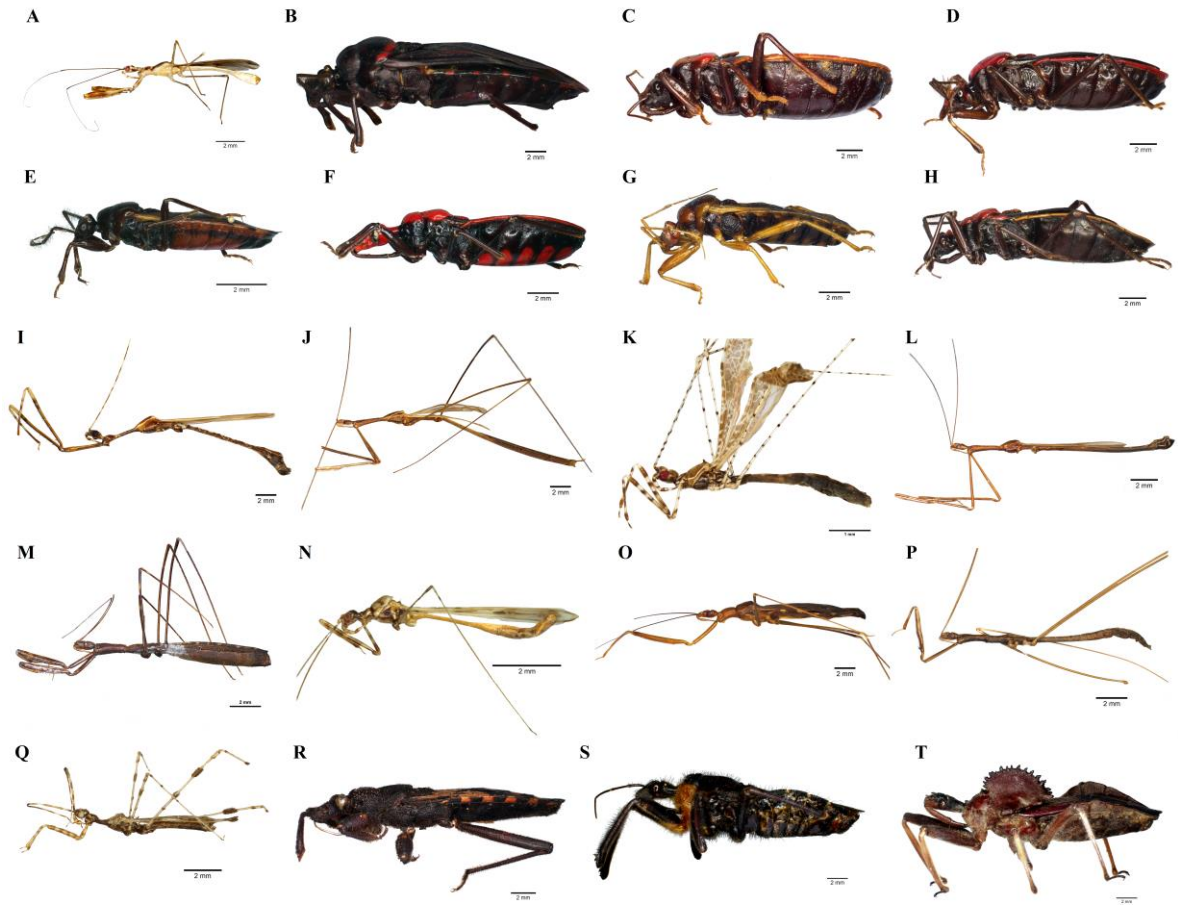
Figure 2





**Figure 3**





**Figure 4**

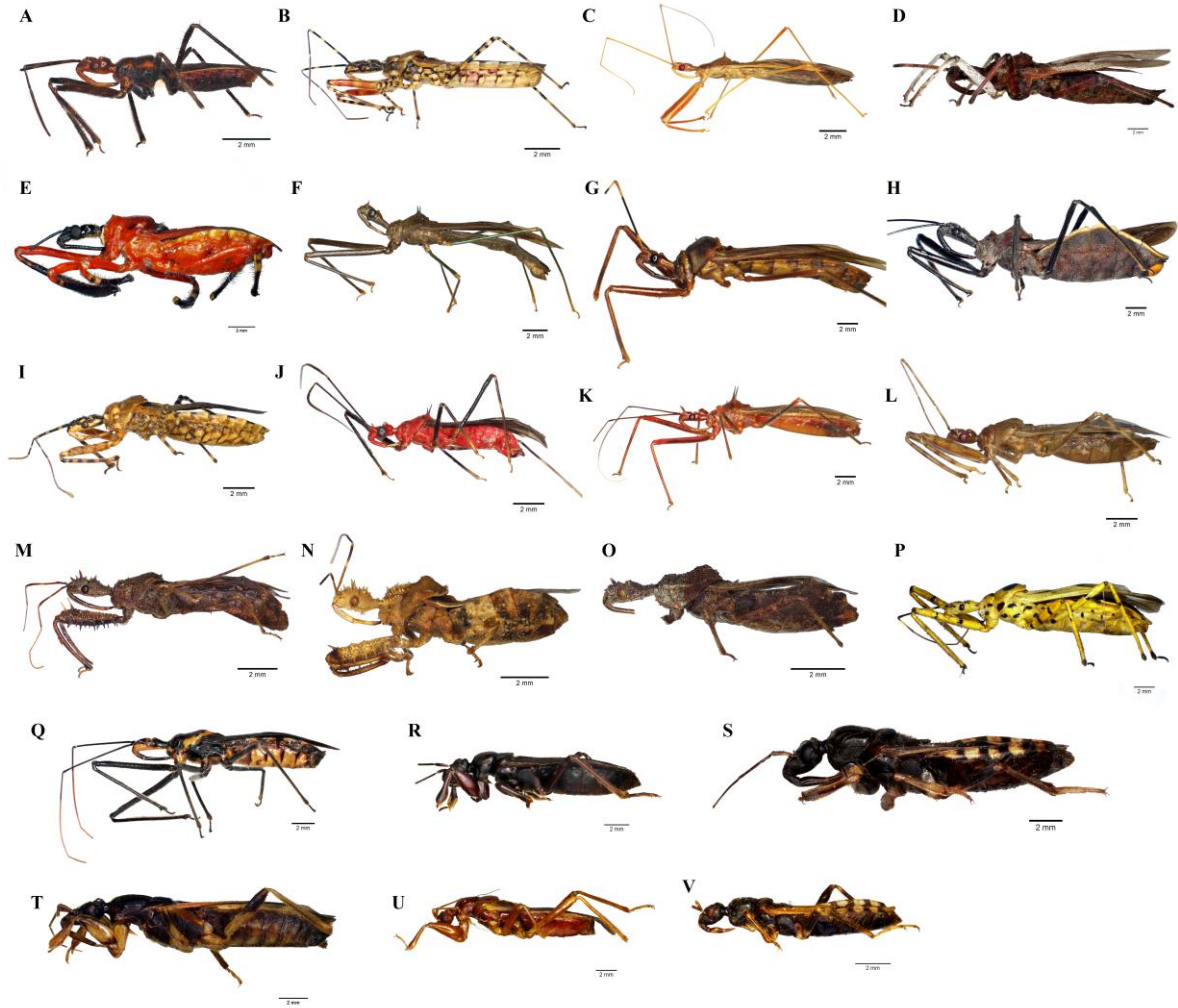


Figure 5



**Figure 6**



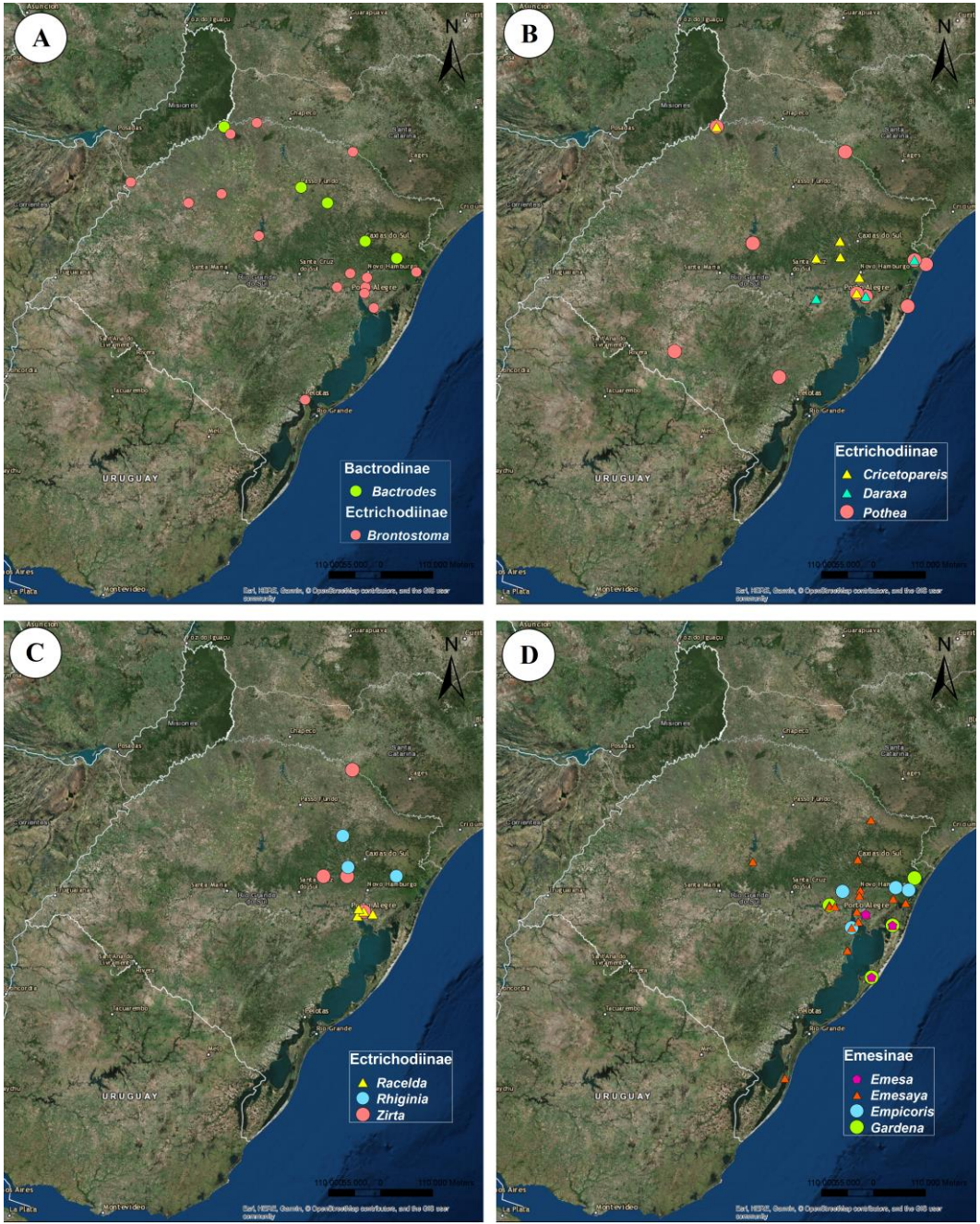


Figure 7



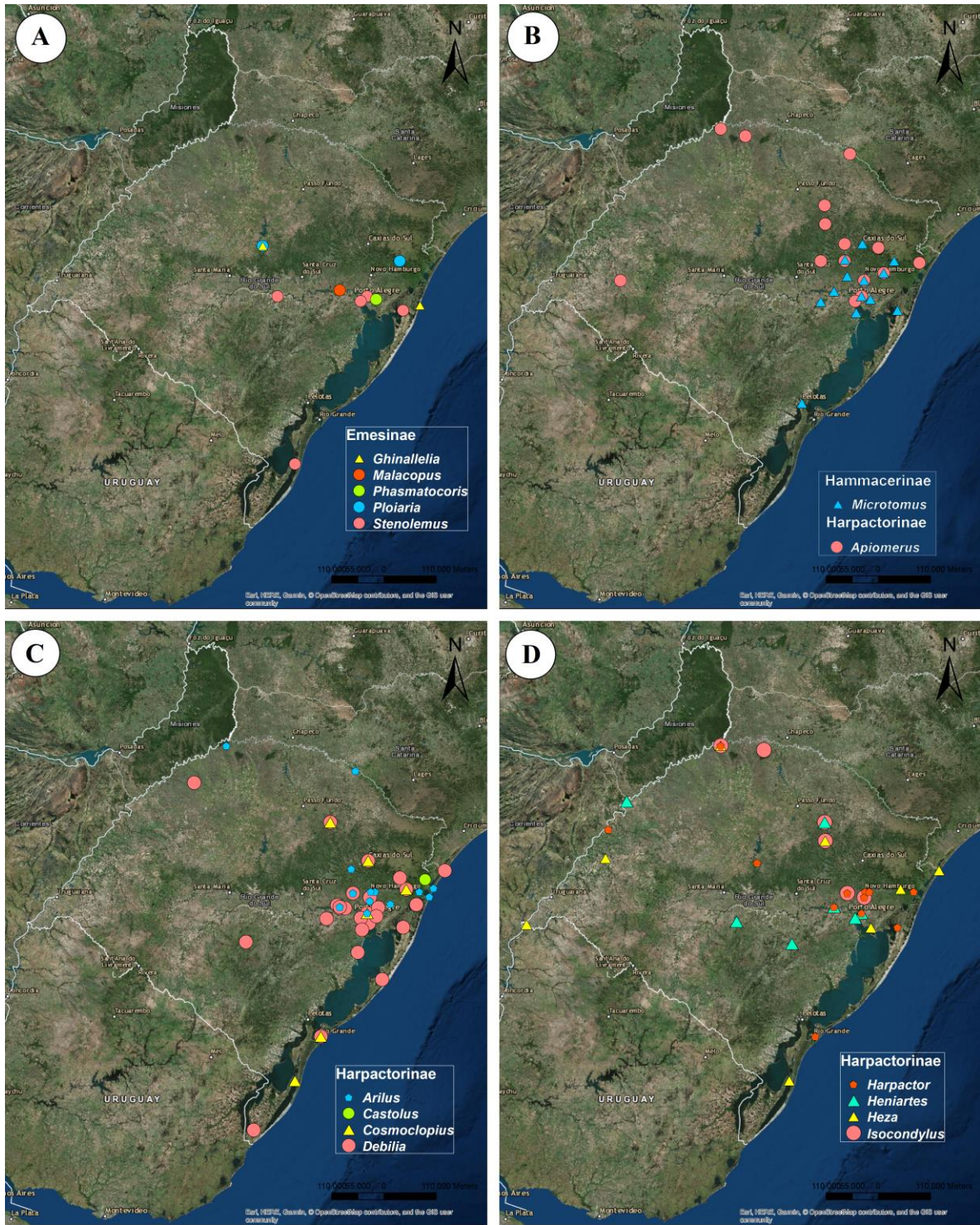


Figure 8



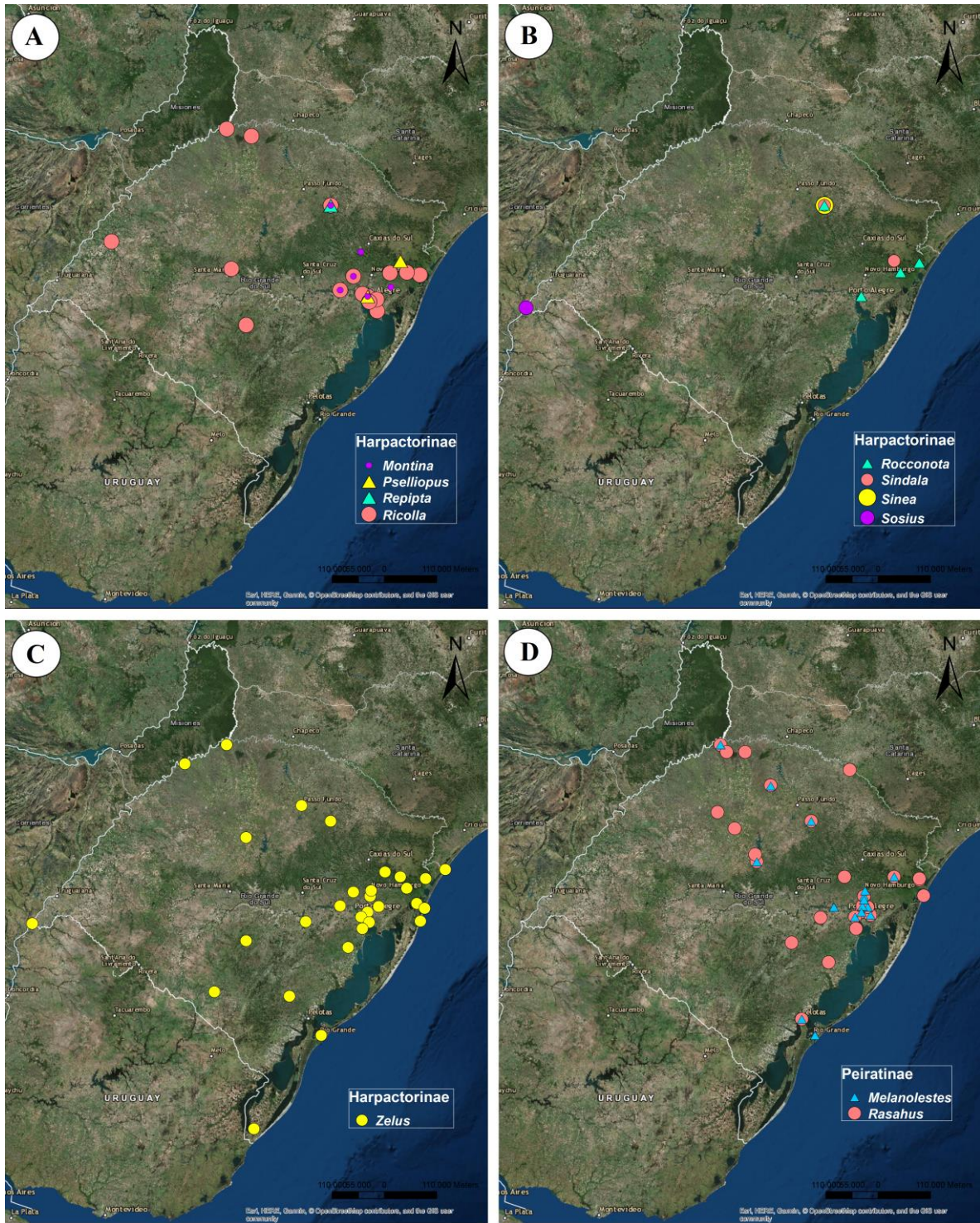


Figure 9



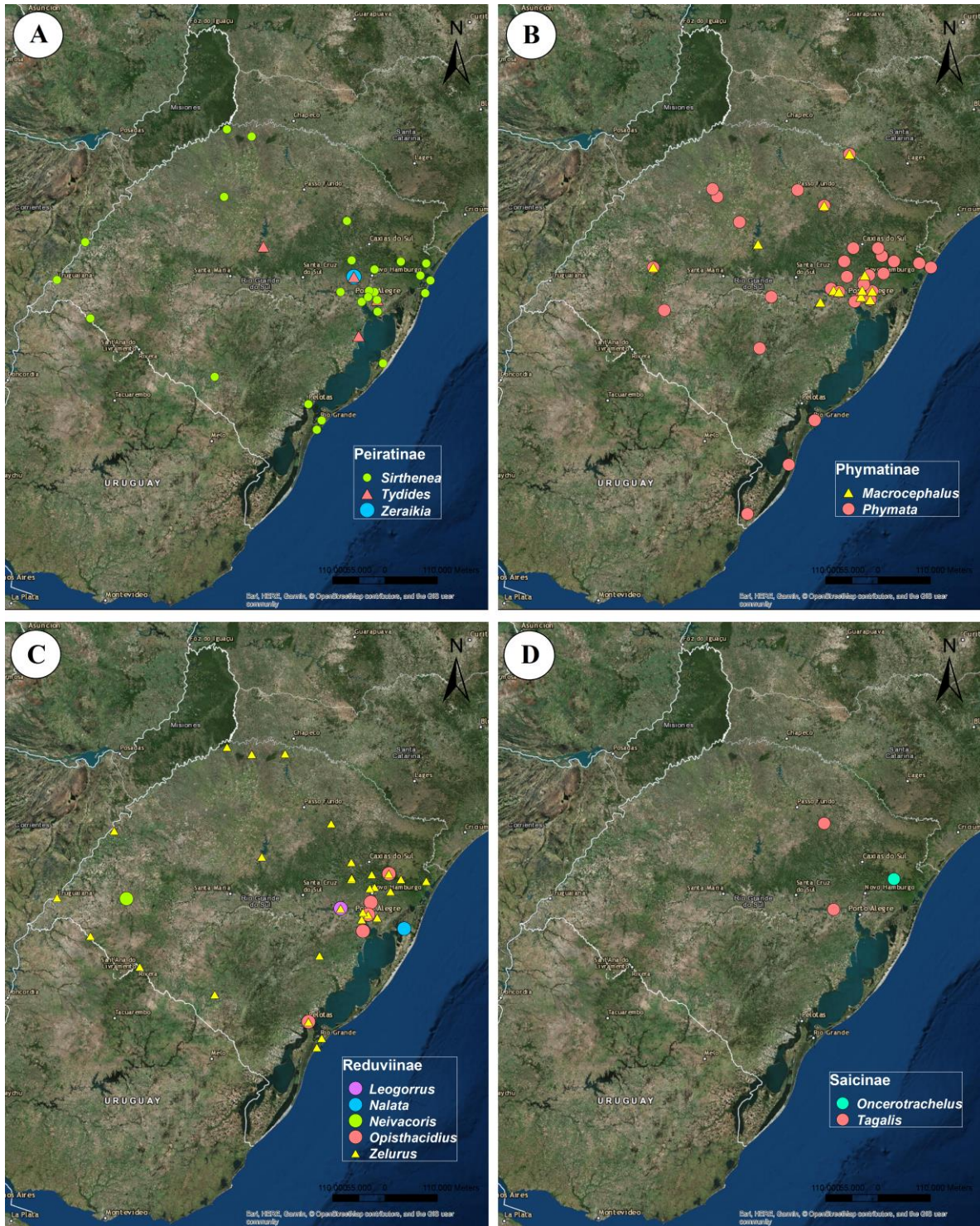


Figure 10



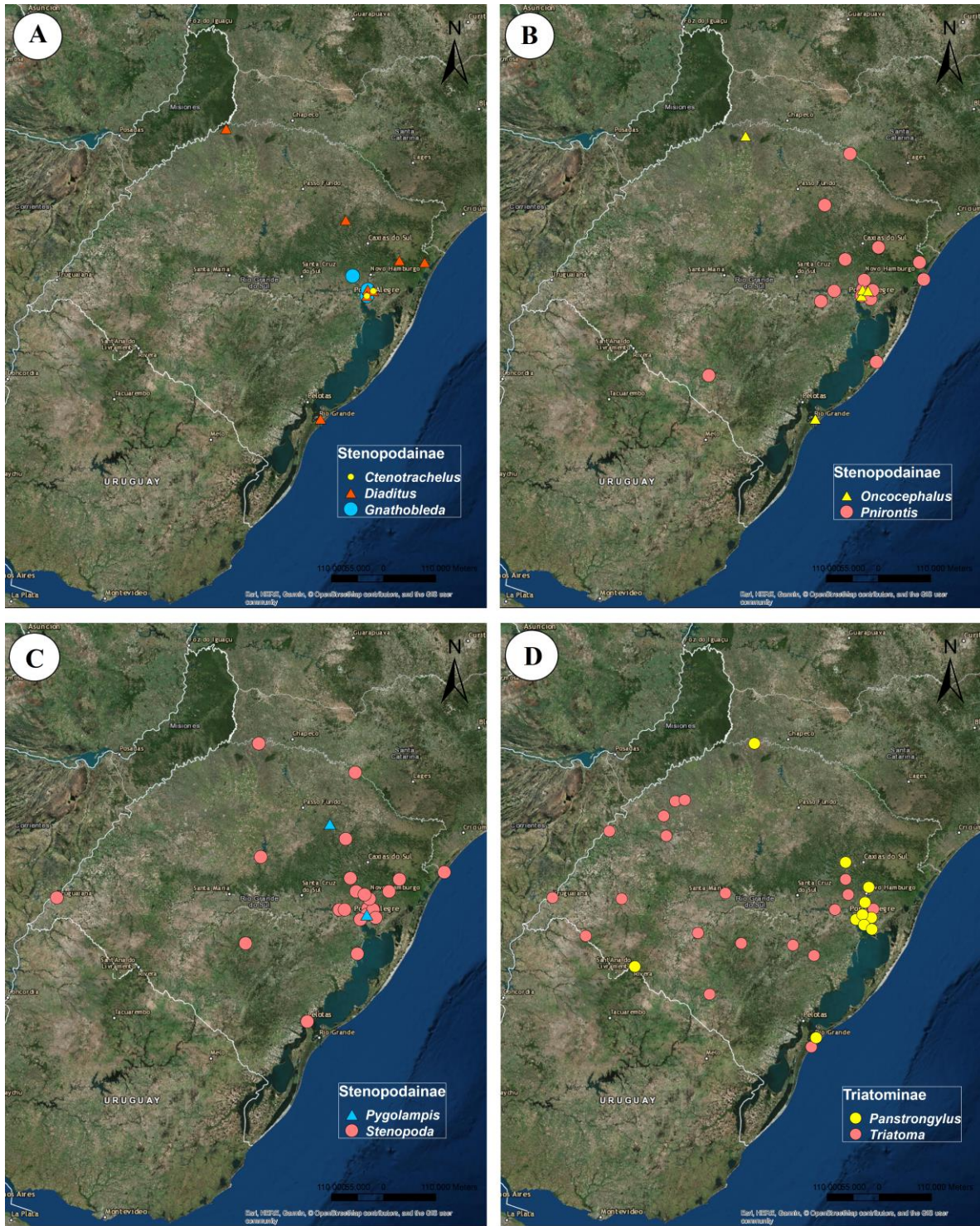


Figure 11