INSTITUTO DE BIOCIÊNCIAS

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LURDIANA DAYSE DE BARROS

Sistemática dos "percevejos-do-arroz": atualizações e perspectivas para o grupo *Mecocephala* (Hemiptera: Pentatomidae: Carpocorini)

PORTO ALEGRE

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Tese apresentada ao Programa de Pós-Graduação em Biologia Animal, Instituto de Biociências da Universidade Federal do Rio Grande do Sul, como requisito parcial à obtenção do título de Doutor em Biologia Animal.

Área de concentração: Biologia Comparada

Orientadora: Profa. Dra. Jocélia Grazia

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Aprovada em ____ de _____ de _____.

BANCA EXAMINADORA

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Dr. Antônio Ricardo Panizzi

_____

Dr. Erikcsen Augusto Raimundi

_____

Dra. Mariana Terossi Rodrigues Mariano

O anjo mais velho

(O Teatro Mágico)

O dia mente a cor da noite
E o diamante a cor dos olhos
Os olhos mentem dia e noite a dor da gente

Enquanto houver você do outro lado
Aqui do outro eu consigo me orientar
A cena repete, a cena se inverte
Enchendo a minh'alma d'aquilo
Que outrora eu deixei de acreditar

Tua palavra, tua história
Tua verdade fazendo escola
E tua ausência fazendo silêncio em todo lugar
Metade de mim agora é assim
De um lado a poesia, o verbo, a saudade
Do outro a luta, a força e a coragem pra chegar no fim

E o fim é belo incerto, depende de como você vê
O novo, o credo, a fé que você deposita em você e só

Só enquanto eu respirar
Vou me lembrar de você
Só enquanto eu respirar

Em memória de Lourdes e Luiza,

meus anjos mais velhos.

Só enquanto eu respirar vou me lembrar de vocês.

À Lis, dedico.

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SUMÁRIO

Resumo

O grupo *Mecocephala*, um agrupamento de doze gêneros de percevejos que usualmente apresentam a cabeça mais longa do que larga, e informalmente chamado de "percevejos-do-arroz", compreende um dos maiores componentes da diversidade de espécies de Carpocorini na região Neotropical, com a maior parte de sua riqueza concentrando-se na América do Sul, com exceção do Chile. Seus representantes apresentam habitus conspícuos, usualmente com as proporções da cabeça "exageradas" e, a morfologia de genitália de macho distintamente notável em relação aos demais gêneros incluídos na tribo. Embora compreenda cerca de 10% da diversidade da tribo, o grupo *Mecocephala* apresenta uma considerável discrepância na riqueza de espécies entre os gêneros, refletida na quantidade de gêneros monotípicos. Além disso, variações morfológicas de algumas espécies dentro do grupo são reconhecidas, bem como subagrupamentos não formais baseados em similaridade morfológica, e discordância na composição do grupo. Apesar de historicamente ser considerado um agrupamento monofilético por diversos autores, uma proposta de relacionamento entre todos os membros do grupo baseada em análise filogenética formal, que evidencie as limitações taxonômicas entre os membros e entre as espécies, ainda não está disponível, o que o torna um grupo não bem resolvido e problemático. Deste modo, a presente tese tem por objetivos testar os limites taxonômicos do grupo *Mecocephala* e propor as relações de parentesco entre os gêneros, explorando o uso de caracteres contínuos e discretos, bem como proceder a revisão taxonômica dos gêneros e disponibilizar uma chave de identificação para os mesmos. As análises filogenéticas sugerem a monofilia do grupo *Mecocephala* e da maioria dos gêneros, suportada por diversas sinapomorfias; e o gênero *Hypanthracos* Grazia & Campos, 1996 como uma linhagem irmã dos demais membros do grupo. A diversidade do grupo é ampliada, com descrição de quatro novos gêneros e oito novas espécies, totalizando 17 gêneros e 50 espécies. A terminologia da área evaporatória e de genitália externa e interna de ambos os sexos é atualizada para todos os membros. Doze gêneros são revisados. São disponibilizados chaves de identificação, ilustrações e fotografias de alta qualidade, mapas com distribuição geográfica e novos registros de ocorrência das espécies, e uma lista atualizada das plantas alimentícias a partir do levantamento bibliográfico. Ainda, um guia ilustrado com chave de identificação e diagnoses, amostrando seis espécies do grupo *Mecocephala* associadas ao cultivo do arroz no Estado do Rio Grande do Sul é disponibilizado.

Palavras-chave: Morfologia da cabeça, morfologia de genitália, percevejos de importância econômica, *Oryza sativa* (L.), diversidade

Abstract

The *Mecocephala* group, a grouping of twelve genera of stink bugs that usually have a longer than wide head, informally called “rice bugs”, comprises one of the largest components of the diversity of Carpocorini species in the Neotropical region, with most of its wealth concentrated in South America, with the exception of Chile. Its representatives have conspicuous habitus, usually with the proportions of the head “exaggerated” and the morphology of the male genitalia distinctly remarkable in relation to the other genera included in the tribe. Although it comprises about 10% of the tribe's diversity, the *Mecocephala* group presents a considerable discrepancy in diversity between genera, reflected in the number of monotypic genera. In addition, morphological variations of some species within the group are recognized, as well as non-formal subgroups based on morphological similarity, and disagreement in the composition of the group. Still historically considered a monophyletic grouping by several authors, a formal proposal for a relationship between all members of the group based on phylogenetic analysis, which highlights the taxonomic limitations among members and among species, is not yet available, which makes it not well resolved and problematic. Thus, the present thesis aims to test the taxonomic limits of the *Mecocephala* group and to propose kinship relationships between genera, exploring continuous and discrete characters, as well as proceeding the taxonomic revision of the genera and providing an identification key for them. Phylogenetic analyzes suggest the monophyly of the *Mecocephala* group and most genera, supported by several synapomorphies; and the *Hypanthracos* Grazia & Campos, 1996 genus as a sister lineage to the other members of the group. The group's diversity is broadened, with the description of four new genera and eight new species, totaling 17 genera and 50 species. The terminology of the evaporatorium and of the external and internal genitalia of both sexes is updated for all members. Twelve genera are revised. Identification keys, illustrations and high-quality photographs, maps with geographic distribution and new records of the occurrence of species are available, and an updated list of food plants from the bibliographical survey. In addition, an illustrated guide with identification key and diagnoses, showing six species of the *Mecocephala* group associated with rice crop in the State of Rio Grande do Sul is available.

Keywords: Head morphology, genitalia morphology, stink bug of economic importance, *Oryza sativa* (L.), diversity

Introdução geral

Percevejos da superfamília Pentatomoidea representam um dos mais diversos grupos de insetos fitófagos atualmente conhecidos, apresentando ampla distribuição, com representantes em todas as regiões biogeográficas, e reunindo aproximadamente 10.000 espécies. Das dezoito famílias incluídas em Pentatomoidea (*sensu* McPherson et al. 2018), Pentatomidae é uma das maiores e morfologicamente mais diversas, dividida em nove subfamílias (*sensu* Grazia et al. 2008) com aproximadamente 940 gêneros e 5.000 espécies (Grazia et al. 2015; Rider et al. 2018).

Os pentatomídeos são considerados um grupo economicamente importante, pois inclui uma série de espécies altamente pestilentas ou pragas em potencial, que se alimentam de vagens e frutos em uma ampla gama de culturas alimentares humanas (McPherson 2018; Schwertner et al. 2021). As relações filogenéticas de subfamílias e tribos de Pentatomidae foram testadas em poucos trabalhos (Gapud 1991; Hasan & Kitching 1993; Grazia et al. 2008; Wu et al. 2016; Barão et al. 2020; Genevcius et al. 2021). No entanto, estes estudos pouco influenciaram na sistemática da família, seja pela pequena amostragem de terminais na maioria das subfamílias ou pela falta de grupos externos ou até mesmo pela metodologia utilizada (Barão et al. 2013).

Amplamente distribuída no mundo, Pentatominae corresponde a mais diversa subfamília, contendo a maioria das espécies que são consideradas pragas de plantas cultivadas e, pode estar dividida em até 42 tribos; Schuh & Slater (1995) e Grazia et al. (2008) reconhecem oito e nove tribos, respectivamente, enquanto Rider et al. (2018) reconhecem 42, das quais 33 são formadas por gêneros anteriormente incluídos em Pentatomini. Essa diversidade é estimada em 3.484 espécies, reunidas em 660 gêneros (Panizzi & Grazia 2015; Rider et al. 2018). Na região Neotropical ocorrem aproximadamente 165 gêneros e cerca de 680 espécies.

A importância econômica desses insetos varia muito de espécie para espécie e dentro de um gênero, dependendo da planta atacada (Schuh & Slater 1995; Panizzi et al. 2000).

Os pentatomíneos são percevejos de dimensões, cor e forma variáveis, e apresentam o primeiro segmento labial surgindo anteriormente à linha imaginária que tangencia os olhos, podendo estar contido ou não entre as búculas; os ângulos umerais frequentemente com processos (agudos ou não), escutelo não alcançando o ápice do abdome, metasterno raramente produzido anteriormente; segmentos abdominais com dois pares de tricóbotrias junto à linha que tangencia os espiráculos. Os machos apresentam falo com conjuntiva usualmente membranosa, às vezes ausentes, e vésica usualmente como um tubo esclerotinizado e de

comprimento variável. As fêmeas apresentam a região vesicular do *ductus receptaculi* membranosa, invaginando em uma haste pouco esclerotinizada; *capsula seminalis* com cristas anulares, portando ou não processos (Grazia et al. 2015).

Carpocorini Mulsant & Rey é uma grande tribo, incluindo cerca de 127 gêneros e 503 espécies (Rider et al. 2018; Barão et al. 2020); é também o táxon que possui mais gêneros descritos e revisados nos últimos anos, com enfoques distintos, porém utilizando caracteres de genitália para ambos os sexos (ex. *Acledra*: Faúndez (2014); *Agroecus*: Barros (2016, dissertação); *Dichelops*: Barão et al. (2020); *Euschistus*: Weiler et al. (2016), Bianchi et al. (2017), Paim (2020, dissertação); *Glyphepomis*: Carabajal et al. (em preparação); *Hypanthracos:* Barros et al. (2020b); *Oenopiella*: Fernández-Aldea et al. (2014), Barão et al. (2017); *Ogmocoris*: Barros et al. (2020b); *Parahypatropis*: Barros et al. (2020a); *Padaeus*: Carabajal (em preparação); *Proxys*: Gonçalves (2016, dissertação) e *Sibaria*: Krein et al. (2020)).

Embora não incluindo gêneros Neotropicais, as relações filogenéticas de Carpocorini foram estudadas por Gapud (1991), que encontrou Carpocorini como polifilética, e por Hasan & Kitching (1993), que recuperaram a monofilia da tribo com uma relação próxima à Menidini, suportada pelo mesosterno sulcado, e com Catacanthini, suportada pela búcula mais longa que o primeiro segmento do lábio, e o mesosterno liso. No entanto, trabalhos atuais têm demonstrado que a inclusão de subfamílias e tribos exclusivamente neotropicais, podem alterar estas hipóteses de relacionamentos tribais (K. Barão, informação pessoal).

Outros estudos sobre a tribo têm caráter regional, explorando por exemplo as relações filogenéticas de grupo de espécies recentes, catálogos ou listas regionais (Cassis & Gross 2002; Rider, 2006; Weiler et al. 2016; Bianchi et al. 2017; Barão et al. 2020; Barros et al. 2020) e morfologia comparada (Barão et al. 2013; Barão et al. 2017).

Além disso, diversos grupos de gêneros foram propostos em Carpocorini, principalmente baseados em similaridade morfológica e histórico taxonômico. Dentre estes, destacam-se os grupos *Euschistus* Rolston (1974) (17 gêneros), *Mecocephala* Schwertner et al. (2012) (12 gêneros), *Mormidea* Rider & Eger (2008) (4 gêneros) e *Oebalus* Barcellos & Grazia (2008) (4 gêneros), que possuem diversos representantes associados a danos em plantas cultivadas. O grupo *Euschistus* foi recentemente abordado no estudo filogenético por Barão (2015; 2020) e o grupo *Mecocephala* há mais de uma década, por Frey-da-Silva (2005).

A história do grupo *Mecocephala* começou quando Benvegnú (1968) ao descrever o gênero *Paramecocephala* para acomodar *P. foveata* a partir de um único exemplar macho, o comparou com machos das espécies *Mecocephala acuminata* Dallas, 1851 e *Tibraca limbativentris* Stål, 1860. Naquela comparação, Benvegnú enfatizou as semelhanças na morfologia do pigóforo e do falo, este último com o *ductus seminis distalis* muito longo.

Quase três décadas após, em um estudo cladístico do gênero *Hypatropis* Bergroth, 1891, Fernandes (1993) disponibilizou a primeira hipótese filogenética para o grupo, denominando-o de "grupo *Glyphepomis* +" (Figura 1), o qual reunia quatro gêneros de hábito similar, recuperado como monofilético principalmente por caracteres de cabeça e genitália. Mais tarde, Fernandes & Grazia (1996) revisaram *Hypatropis*, relacionando-o com *Glyphepomis* Berg, 1891, *Mecocephala*, *Tibraca* e *Paramecocephala*, e considerando-o como o mais derivado deste grupo.

Subsequentemente o grupo foi estudado por outros autores resultando na descrição e/ou revisão de mais outros gêneros. Na maioria desses estudos *Tibraca* apareceu relacionado a um gênero e outro, ora pela morfologia da cabeça ora pela morfologia de genitália. Campos & Grazia (1995) relacionaram *Tibraca* a *Paratibraca* apontando semelhanças na estrutura da cabeça (antenas e lábio principalmente) e na genitália masculina. Também o relacionaram a *Hypanthracos*, pela forma da cabeça (disposição do clípeo e das placas mandibulares, estrutura do lábio), forma da carena mesosternal, forma do bordo ventral do pigóforo e presença de processos na *phallotheca* (Grazia & Campos 1996). Ainda, durante a revisão taxonômica de *Tibraca*, Fernandes & Grazia (1998) mencionaram mais uma vez a monofilia do grupo, listando *Tibraca*, *Mecocephala*, *Paratibraca*, *Glyphepomis*, *Parahypatropis* Grazia & Fernandes, 1996 e *Hypatropis*. Dessa maneira, informalmente o grupo passou a ser chamado de "grupo *Tibraca*" (C. Schwertner, informação pessoal).

Por ocasião da revisão do gênero *Mecocephala*, a formalidade do nome do grupo foi proposta por Schwertner et al. (2002) quando os autores reconheceram o nome *Mecocephala* como o mais antigo, e relacionaram o gênero a *Amauromelpia* Fernandes & Grazia, 1998, *Glyphepomis*, *Hypanthracos*, *Hypatropis*, *Luridocimex* Grazia, Fernandes & Schwertner, 1998, *Parahypatropis*, *Paramecocephala*, *Paratibraca*, *Tibraca* e *Stysiana* Grazia, Fernandes & Schwertner, 1999, mencionando que o padrão da morfologia do pigóforo, a ausência ou redução dos parâmeros, a presença de processos na *phallotheca* e na conjuntiva e o *ductus receptaculi* enovelado são homologias compartilhadas entre estes gêneros, constituindo um grupo

monofilético.

No entanto, a composição do grupo é discordante pois, Frey-da-Silva et al. (2002) ao revisarem o gênero *Ogmocoris* Mayr, 1864 e compará-lo com *Mecocephala* decidiram incorporar *Ogmocoris* ao grupo, principalmente por reconhecerem o mesmo padrão de genitália de macho, porém não considerando *Hypanthracos*.

Por muito tempo o grupo foi considerado pelos autores como monofilético, muito embora não haja uma hipótese filogenética formal disponível. Finalmente, Frey-da-Silva (2005), seguindo a composição proposta em Frey-da-Silva et al. (2002), conduziu uma análise filogenética e biogeográfica, baseada em dados morfológicos, recuperando mais uma vez a monofilia do grupo (Figura 2), desta vez amostrando 38 das 41 espécies do grupo, encontrou as seguintes sinapomorfias: a forma das margens laterais das placas mandibulares, a proporção do tamanho do antenômero 2 em relação ao primeiro, a forma das margens mesiais dos gonocoxitos 8, a morfologia do pigóforo, este com o bordo ventral formando dois folhetos, e a morfologia do falo.

Posteriormente algumas destas características foram modificadas por Bianchi et al. (2016), a fim de incluir informações provenientes de três novas espécies de *Glyphepomis*, refletindo na diversidade do grupo que atualmente está dividida em doze gêneros (*sensu* Frey-da-Silva et al. 2002, apresentados na Tabela 1 juntamente com informação da distribuição geográfica e depositório dos holótipos).

Informalmente chamados de "percevejos-do-arroz" [1] o grupo *Mecocephala* compreende um dos maiores componentes da diversidade de espécies de Carpocorini na região Neotropical, com a maior parte de sua riqueza concentrando-se na América do Sul, com exceção do Chile (Schwertner et al. 2002; Frey-da-Silva et al. 2002). Seus representantes apresentam habitus conspícuos, coloração corporal variando do amarelo pálido a castanho escuro, usualmente apresentando as proporções da cabeça "exageradas" e a morfologia de genitália de macho distintamente notável em relação aos demais gêneros incluídos na tribo.

Além das descrições originais, alguns membros do grupo foram incluídos em trabalhos abordando taxonomia e morfologia. Ruschel et al. (2013), listaram e disponibilizaram

[1] Não se sabe a origem deste termo. Acredita-se que por conta da similaridade de alguns gêneros com *T. limbativentris* (espécie conhecida como percevejo-do-colmo do arroz), este termo estabeleceu-se informalmente para o grupo.

fotografias dos tipos de *G. pelotensis*, *G. spinosa*, *H. meridionalis*, *H. australis*, *H. rolstoni*, *M. bonariensis*, *M. magna*, *P. australis*, *P. bachmanni*, *P. bergrothi*, *P. foveata*, *P. infuscata* e *S. meridionalis* depositados no Museu da Fundação Zoobotânica do Rio Grande do Sul, e Carrenho et al. (2020), listaram os tipos de *H. ditarsus* e *P. infuscata* depositados no Museu de Zoologia da Universidade de São Paulo.

Alguns estudos morfológicos de gêneros de Carpocorini com análises cladísticas, recuperaram membros do grupo *Mecocephala* com relação próxima aos gêneros do grupo *Euschistus* (Bianchi et al. 2017; Barão et al. 2020), ainda que pouco amostrados. Mais recentemente, em um estudo filogenético de *Dichelops* Spinola, 1837 conduzido por Barão et al. (2020) um clado com membros do grupo *Mecocephala* como relação próxima a membros do grupo *Mormidea* foi recuperado, e ambos agrupamentos como grupo irmão do grupo *Euschistus*.

Em relação à distribuição geográfica, Coscarón et al. (2017), no catálogo de Heteroptera para a Argentina, listaram *Glyphepomis*, *Hypatropis*, *Mecocephala*, *Parahypatropis*, *Paramecocephala*, *Stysiana* e *Tibraca*. Silva et al. (2018), na check-list para Amazônia brasileira, registraram *Amauromelpia*, *Glyphepomis*, *Hypanthracos*, *Hypatropis*, *Ogmocoris*, *Paratibraca*, *Stysiana* e *Tibraca*.

Em relação à história natural, quase nada de planta alimentícia é conhecido para os membros do grupo, além das espécies consideradas prejudiciais a culturas. Poucas plantas hospedeiras são registradas para as espécies, e algumas dessas espécies estão intimamente associadas com a cultura do arroz, sendo *T. limbativentris*, popularmente conhecida como percevejo-do-colmo, considerada a principal praga no arroz irrigado no Brasil (Souza et al. 2008; Alves et al. 2016; Hickel et al. 2016; Krinski & Foerster 2016; Fuentes-Rodríguez et al. 2019), causadora de doenças no arroz e perdas anuais na produção (Panizzi et al. 2000, Rodrigues et al. 2009). Outras espécies encontradas no arroz e/ou que também estão em atual expansão distribucional incluem *Tibraca similima* (Equador), *Paratibraca infuscata* (Panamá, Suriname, Colômbia e Brasil), *Glyphepomis dubia* (Brasil), *Glyphepomis spinosa* (Brasil e Argentina), *Glyphepomis setigera* (Brasil), *Hypatropis inermis* (Brasil e Argentina) e *Amauromelpia miri* (Peru). Sobre imaturos, na literatura apenas é encontrado informações de juvenis para *G. spinosa* (Pollo et al. 2012) e *T. limbativentris* (Botton et al. 1996).

Embora a proposta de relacionamento de Frey-da-Silva (2005) tenha indicado a

existência de agrupamento monofilético entre os gêneros que compõem o grupo *Mecocephala*, o relacionamento entre as espécies da maioria desses gêneros continua não resolvido, incompleto, e isso se deve a diferentes motivos. Dentre estes destacam-se novas espécies descritas nos últimos anos, descrições incompletas (por falta de informação de caracteres de genitália de um dos sexos), a complementação no conhecimento da morfologia das espécies e, principalmente pela alta similaridade morfológica entre as espécies.

Outra problemática são os gêneros monotípicos. A discrepância na riqueza de espécies entre os gêneros do grupo *Mecocephala* pode ser pela falta de amostragem completa, o que impede estudos comparativos para o entendimento da diversidade morfológica e limites genéricos. E a maioria das diagnoses nos trabalhos descritivos é baseada em características relacionadas à forma e dimensões de estruturas, que geralmente são de natureza contínua. Tais características foram frequentemente descritas como curtas, estreitas, alongadas, etc., necessitando de um referencial para o melhor entendimento.

Além disso, variações morfológicas de algumas espécies dentro do grupo são reconhecidas, como por exemplo em *P. infuscata* Campos & Grazia, 1995, que apresenta diferença na forma dos ápices das projeções do folheto superior do bordo ventral, determinando maior ou menor distância do bordo dorsal em relação ao bordo lateral do pigóforo, e na forma dos ângulos póstero-laterais do pigóforo. Esta plasticidade na morfologia foi apontada pelos autores para diferentes populações.

O reconhecimento de agrupamentos não formais dentro grupo *Mecocephala* também é objeto de estudo. Grazia et al. (1999) mencionaram um agrupamento de gêneros baseado na cabeça em perfil lateral com placas mandibulares em um nível mais alto que clípeo, e ausência de parâmeros, incluindo *Hypatropis*, *Amauromelpia*, *Luridocimex* e *Stysiana*. Este agrupamento foi considerado por muito tempo uma hipótese a ser testada (Frey-da-Silva 2005).

Deste modo, embora exista uma proposta de relacionamento entre os membros do grupo, ainda não há uma análise filogenética publicada que evidencie as limitações taxonômicas entre os mesmos e entre as espécies, o que torna o grupo ainda não bem resolvido. Ao mesmo tempo, a falta de material fresco para a maioria das espécies que compõem o grupo é um obstáculo aos estudos moleculares.

Neste sentido, a presente tese tem por objetivo principal testar os limites taxonômicos do grupo *Mecocephala* e propor as relações de parentesco entre os gêneros através de métodos

filogenéticos morfológicos, com uso de caracteres contínuos e discretos e através da evolução de características morfológicas, bem como proceder a revisão taxonômica dos gêneros e disponibilizar uma chave de identificação para os mesmos.

Em razão da discordância da composição do grupo, neste trabalho nós consideramos o grupo *Mecocephala sensu* Frey-da-Silva et al. (2005), por ser a hipótese filogenética disponível, e testamos filogeneticamente a inclusão de *Hypanthracos* (grupo *Mecocephala sensu* Schwertner et al. 2002).

Estrutura da tese

Esta tese traz um compilado de informações sobre o grupo *Mecocephala*, apresentando estudos filogenéticos e taxonômicos com metodologias modernas e abordando a importância econômica que o grupo representa. Este trabalho encontra-se dividido em: Introdução geral, Capítulos (em ordem numérica), Conclusão geral e Apêndices. Os Capítulos estão estruturados em formato de artigos, de acordo com as normas das respectivas revistas.

O Capítulo I trata da revisão taxonômica de *Parahypatropis*, com descrição de duas novas espécies e um gênero monotípico próximo (publicado no Journal of Natural History – DOI: 10.1080/00222933.2020.1781274). Neste trabalho propomos a atualização e padronização da terminologia da genitália de macho para todos os membros do grupo.

O Capítulo II traz uma análise filogenética parcial do grupo *Mecocephala* com a inclusão de *Hypanthracos*, a descrição de três novos gêneros e a redescrição de *Ogmocoris* (publicado na Arthropod Systematics & Phylogeny – DOI: 10.26049/ASP78-2-2020-07). Neste trabalho abordamos a problemática da discordância da composição do grupo.

O Capítulo III traz um guia ilustrado para espécies de Pentatominae associadas a quatro cultivos de grãos no Estado do Rio Grande do Sul, com chave de identificação, diagnoses, figuras de estruturas diagnósticas e mapa de distribuição (publicado na Zootaxa – DOI: 10.11646/zootaxa.4958.1.27). Neste trabalho abordamos a importância econômica do grupo *Mecocephala*, amostrando seis espécies pertencentes ao grupo que estão associadas ao cultivo do arroz no estado do Rio Grande do Sul.

O Capítulo IV traz a revisão taxonômica do ‘complexo *Hypatropis*’com redescrição dos cinco gêneros, atualização da terminologia para genitália de macho e fêmea e novos registros de distribuição. Neste trabalho caracterizamos o ‘complexo *Hypatropis*’, relacionando o grupo-*Hypatropis* com o gênero *Pedinonotus* por similaridade morfológica.

O Capítulo V corresponde à análise filogenética do grupo *Mecocephala*, incluindo todas as espécies conhecidas, com caracteres discretos e contínuos, propondo atualizações taxonômicas, diagnose e chave de identificação para todos os gêneros, descrição de uma nova espécie de *Paratibraca* e notas sobre a importância econômica do grupo. Neste trabalho abordamos as problemáticas dos limites taxonômicos do grupo e dos gêneros, de monotipia, de variáveis contínuas utilizadas como caracteres diagnósticos e dos agrupamentos não formais.

O Capítulo VI traz a revisão taxonômica dos gêneros *Mecocephala* e *Paramecocephala*, com atualização da terminologia da genitália de macho e fêmea, novos registros de distribuição e descrição de uma nova espécie de *Paramecocephala*.

Referências

Alves T.M., Maia, A.H.N. & Barrigossi, J.A.F. (2016) Spatial distribution and coexisting patterns of adults and nymphs of *Tibraca limbativentris* (Hemiptera: Pentatomidae) in paddy rice fields. *Environmental Entomology* 1–10.

Barcellos A., Grazia J. (2008) Revision of the genus *Poriptus* Stål (Hemiptera: Heteroptera: Pentatomidae: Pentatominae). *Zootaxa* 1821: 25–36.

Barão K.R., A. Ferrari & J. Grazia (2013) Comparative morphology of selected characters of the Pentatomidae foreleg (Hemiptera, Heteroptera). *Arthropod Structure & Development* 42: 425–435.

Barão K.R. (2015) Morfologia comparada, descrição de novos táxons e filogenia de um gênero de Pentatomidae (Hemiptera: Heteroptera). Tese de doutorado, Universidade Federal do Rio Grande do Sul, Porto Alegre, Porto Alegre, Brasil.

Barão K.R., Ferrari, A. & Grazia, J. (2020) Phylogenetic analysis of the *Euschistus* group (Hemiptera: Pentatomidae) suggests polyphyly of *Dichelops* Spinola, 1837 with the erection of *Diceraeus* Dallas, 1851, stat. rev. *Austral Entomology* 1–14.

Barros L.D. (2016) Filogenia e revisão de *Agroecus* Dallas, 1851 (Heteroptera: Pentatomidae: Pentatominae: Carpocorini). Dissertação de mestrado, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil.

Barros L.D., Barão, K.R. & Grazia, J. (2020a) The genus *Parahypatropis* Grazia & Fernandes, with description of two new species and description of two new species and description of a new similar monotypic genus (Hemiptera: Pentatomidae). *Journal of Natural History* 54(15/16): 1045–1071.

Barros L.D., Barão, K.R. & Grazia, J. (2020b) Systematics of the *Mecocephala* group (Hemiptera: Heteroptera: Pentatomidae) based on a phylogenetic perspective: Inclusion of *Hypanthracos*, description of three new genera, and Redescription of *Ogmocoris*. *Arthropod Systematics & Phylogeny* 78(2): 321–360.

Benvegnú G.Q. (1968) "*Paramecocephala*", um novo gênero de Pentatomini do Brasil (Hemiptera, Pentatominae). *Revista Brasileira de Biologia* 28(1): 87–91.

Bianchi F., Gonçalves, V.R., Souza, J.R. & Campos, L.A. (2016) Description of three new species of *Glyphepomis* Berg (Heteroptera: Pentatomidae: Pentatominae). *Zootaxa* 4103(5):

443–452.

Bianchi F.M., Deprá, M., Ferrari, A., & Campos, L.A. (2017) Total evidence phylogenetic analysis and reclassification of *Euschistus* Dallas within Carpocorini (Hemiptera: Pentatomidae: Pentatominae): Total-evidence phylogeny of *Euschistus*. *Systematic Entomology* 42(2): 339–409.

Botton M., Martins, J.F.S., Loeck, A.E. & Rosenthal, M.d'Á. (1996) Biologia de *Tibraca limbativentris* Stål sobre plantas de arroz. *Anais da Sociedade Entomológica do Brasil* 25(1): 21–26.

Campos L.A. & Grazia, J. (1995) *Paratibraca*, um novo gênero de Pentatomini (Heteroptera, Pentatomidae). *Iheringia*, Série Zoologia 79: 163–171.

Carabajal V.Q. (2019) Filogenia e revisão de *Glyphepomis* Berg, 1891 (Hemiptera, Pentatomidae, Pentatominae, Carpocorini). Trabalho de conclusão de curso, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil.

Carrenho R., Rodrigues, H.D.D., Lima, A.C & Schwertner, C. (2020) Type specimens of true bugs (Hemiptera: Heteroptera) housed in the Museu de Zoologia da Universidade de São Paulo, Brazil. *Papéis Avulsos de Zoologia* 60: e20206017.

Cassis G. & Gross, G.F. (2002) Hemiptera – Heteroptera (Pentatomomorpha). In: Houston WWK, Wells, A. (eds). Zoological Catalog of Australia. Melbourne: CSIRO Publishing, B. Vol. 27.3B, xiv + 737pp.

Coscarón M.D.C. (2017) A catalogue of the Heteroptera (Hemiptera) or true bugs of Argentina. *Zootaxa* 4295: 001–432.

Faúndez E.I., Rider, D.A. & Carvajal, M.A. (2014) A new species of *Acledra* s. str. (Hemiptera: Heteroptera: Pentatomidae) from the highlands of Argentina and Bolivia, with a checklist and key to the species of the nominate subgenus. *Zootaxa* 3900(1): 127–134.

Fernandes J.A.M. (1993) Análise filogenética e revisão do gênero *Hypatropis* Bergroth, 1891 (Heteroptera: Pentatomidae). Tese de doutorado, Universidade de São Paulo, São Paulo, Brazil.

Fernandes J.A.M. & Grazia, J. (1996) Revisão do gênero *Hypatropis* Bergroth, 1891 (Heteroptera, Pentatomidae). *Revista Brasileira de Entomologia* 40 (3/4): 341–352.

Fernandes J.A.M. & Grazia, J. (1998) Revision of the genus *Tibraca* Stål (Heteroptera, Pentatomidae, Pentatominae). *Revista Brasileira de Zoologia* 15(4): 1049–1060.

Fernández-Aldea A., Barão, K.R., Grazia, J. & Ferrari, A. (2014) An integrative approach to the taxonomy of *Oenopiella* Bergroth (Hemiptera: Heteroptera: Pentatomidae: Pentatominae: Carpocorini) with the description of two new species from Argentina and Southern Brazil. *Annals of the Entomological Society of America* 107(2): 364–381.

Frey-da-Silva A. (2005) Análise cladística e biogeografia do grupo Mecocephala (Heteroptera: Pentatomidae: Pentatomini). Tese de doutorado, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil.

Frey-da-Silva A., Grazia, J. & Fernandes, J.A.M. (2002) Revisão do gênero *Paramecocephala* Benvegnú, 1968 (Heteroptera, Pentatomidae). *Revista Brasileira de Entomologia* 46: 209–225.

Frey-da-Silva A., Grazia, J. & Fernandes, J.A.M. (2002) Revision of the genus *Ogmocoris* Mayr, 1864 (Heteroptera: Pentatomidae: Pentatomini). *Beaufortia* 52: 179–185.

Fuentes-Rodríguez D., Franceschini, C., Gervazoni, P., López, G., Sosa, A. & Kruger, R. (2019). Importance of native vegetation for detection and management of rice stink bug (*Tibraca limbativentris*). *Bulletin of Entomological Research* 110(3): 352–362.

Gapud V.P. (1991) A generic revision of the Asopinae, with consideration of its phylogenetic position in the family Pentatomidae and superfamily Pentatomoidea (Hemiptera– Heteroptera). *Philippine Entomology* 8: 865–961.

Genevcius B.C., Greve, C., Koehler, S., Simmons, R.B., Rider, D.A., Grazia, J. & Schwertner, C.F. (2021) Phylogeny of the stink bug tribe Chlorocorini (Heteroptera, Pentatomidae) based on DNA and morphological data: the evolution of key phenotypic traits. *Systematic Entomology*.

https://doi.org/10.1111/syen.12464

Gonçalves V.R. (2016) Análise cladística e revisão de *Proxys* Spinola, 1837 (Hemiptera: Pentatomidae). Dissertação de mestrado, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil.

Grazia J. & Fernandes, J.A.M. (1996) *Parahypatropis*, um novo gênero de Pentatomini (Heteroptera, Pentatomidae). *Revista Brasileira de Entomologia* 40(3/4): 353–356.

Grazia J. & Campos, L.A. (1996) *Hypanthracos*, um novo gênero de Pentatomini (Heteroptera: Pentatomidae). *Iheringia*, Série Zoologia 80: 13–19.

Grazia J., Fernandes, J.A.M. & Schwertner, C.F. (1999) *Stysiana*, a new genus and four new

species of Pentatomini (Heteroptera: Pentatomidae) of the Neotropical region. *Acta Societatis Zoologicae Bohemicae* 63(1/2): 71–83.

Grazia J., Schuh, R.T. & Wheeler, W.C. (2008) Phylogenetic relationships of family groups in Pentatomoidea based on morphology and DNA sequences (Insecta: Heteroptera). *Cladistics* 24(6): 932–976.

Grazia J., Panizzi, A.R., Greve, C., Schwertner, C.F, Campos, L.A, Garbelotto, T.A. & Fernandes, J.A.M. (2015) Stink bugs (Pentatomidae). In: Panizzi A.R., J. Grazia (eds) True Bugs (Heteroptera) of the Neotropics. *Springer*, Dordrecht, p. 681–756

Hasan S.A. & Kitching, I.A. (1993) A cladistics analysis of the tribes of the Pentatomidae (Heteroptera). *Japanese Journal of Entomology* 61: 651–669.

Hickel E.R., Prando, H.F. & Eberhardt, D.S. (2016) Percevejos nas lavouras catarinenses de arroz irrigado: ocorrência, monitoramento e manejo integrado. Florianópolis: EPAGRI, boletim técnico. 54p.

Krein V., Bianchi, F.M., Rider, D.A. & Grazia, J. (2020) Taxonomic review of *Sibaria* Stål, 1872 (Heteroptera: Pentatomidae: Pentatominae: Carpocorini), with description of a new species. *Zootaxa* 4779: 391–408.

Krinski D. & Foerster, L.A. (2016) Damage by *Tibraca limbativentris* Stål (Pentatomidae) to upland rice cultivated in Amazon Rainforest Region (Brazil) at different growth stages. *Neotropical Entomology* 46: 107–114.

McPherson J.E., Bundy, C.S. & Wheeler Jr., A.G. (2018) Overview of the Superfamily Pentatomidea. Pp. 3–21 In: McPherson J.E. (ed), Invasive stink bugs and related species (Pentatomoidea) – biology, higher systematics, semiochemistry, and management – CRC Press, Boca Raton. 819 pp.

Paim M.R. (2020) Revisão de um agrupamento empírico do subgênero nominal de *Euschistus* Dallas, 1851 (Heteroptera, Pentatomidae, Pentatominae, Carpocorini) proposto por Stål, com duas novas sinonímias. Dissertação de mestrado, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil.

Panizzi A.R., McPherson, J.E., James, D.G., Javahery, J. & McPherson, R.M. (2000) Stink Bugs (Pentatomidae). In: Schaefer C.W. & Panizzi, A.R. (eds), Heteroptera of Economic Importance. CRC Press, Boca Raton, p. 421–474.

Panizzi A.R & J. Grazia (2015) True bugs (Heteroptera) of the Neotropics. *Springer*, Dordrecht, 901p.

Pollo P., Greve, C., Matesco, V.C. & Grazia, J. (2012) Description of the immature stages of *Glyphepomis spinosa* Campos & Grazia (Hemiptera: Pentatomidae: Pentatominae: Carpocorini). *Zootaxa* 3566: 61–68.

Rider D.A. (2006) Family Pentatomidae. Pp. 223–402, In: Aukema B., Rieger, C. (eds). Catalogue of the Heteroptera of the Palaeartic Region. Vol. 5. Amsterdam: The Netherlands Entomological Society. 550pp.

Rider D.A. & Eger Jr, J.E. (2008) Two new genera of Pentatomini for species previously placed in *Mormidea* Amyot & Serville (Hemiptera: Heteroptera: Pentatomidae: Pentatominae). *Proceedings of the Entomological Society of Washington* 110: 1050–1058.

Rider D.A., Schwertner C.F., Vilímová J., Rédei D., Kment P., Thomas D.B. (2018) Higher systematics of the Pentatomoidea. Pp. 76–79 In: McPherson J.E. (ed), Invasive stink bugs and related species (Pentatomoidea) – biology, higher systematics, semiochemistry, and management, CRC Press, Boca Raton, 819 pp.

Rodrigues M.C, Mesquita, A.L, Basso, L.J., Da Silva, J.T. & Da Silva, F.F. (2009) Avaliação do agrossistema orizícola associada ao manejo de *Tibraca limbativentris* Stål (1860). Anais do Salão Internacional de Ensino, Pesquisa e Extensão, Unipampa 1(1).

Rolston L.H. (1974) Revision of the genus *Euschistus* in Middle America (Hemiptera, Pentatomidae, Pentatomini). *Entomologica Americana* 48:1–102.

Ruschel T.P., Guidoti, M. & Barcellos, A. (2013) The Hemiptera type-material housed in the "Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul" of Porto Alegre, Brazil. *Zootaxa* 3716(4): 539–564.

Schuh R.T, & Slater, J.A. (1995) True bugs of the world (Hemiptera, Heteroptera). Classification and Natural History. Cornell University, Ithaca, New York, USA. 336pp.

Schwertner C.F., Grazia, J. & Fernandes, J.A.M. (2002) Revisão do gênero *Mecocephala* Dallas, 1851(Heteroptera, Pentatomidae). *Revista Brasileira de Entomologia* 46(2): 169–184.

Schwertner C.F., Carrenho, R., Moreira, F.F.F. & Cassis, G. (2021) Hemiptera sampling methods. Pp. 289–313 In: Santos J.C. & Fernandes, G.W. (eds) Measuring Arthropod Biodiversity – A Handbook of Sampling Methods. CRC Press, 600 pp.

Silva V.J., Santos, C.R.M. & Fernandes, J.A.M. (2018) Stink bugs (Hemiptera: Pentatomidae) from Brazilian Amazon: checklist and new records. *Zootaxa* 4425(3): 401–455.

Souza J.R., Ferreira, E., Chagas, E.F., Mondengo, J.M., Maciel, A.A.S., Sardinha, D.H.S., Gonçalves K.K.M. & Carvalho Filho, J.A. (2008) Resistência do tipo antibiose a ninfas de *Tibraca limbativentris* (Stål, 1860) (Heteroptera: Pentatomidae) em variedades de arroz. *Arquivos do Instituto Biológico* 75(3): 321–326.

Weiler L., Ferrari A. & Grazia, J. (2016) Phylogeny and biogeography of the South America subgenus *Euschistus* (*Lycipta*) Stål (Heteroptera: Pentatomidae: Carpocorini). *Insect Systematics & Evolution* 47: 313–346.

Wu Y.Z., Yu, S.S., Wang, Y.H., Wu, H.Y., Li, X.R., Men, X., Zhang, Y.W., Redéi, D., Xie, Q. & Bu, W.J. (2016) The evolutionary position of Lestoniidae revealed by molecular autapomorphies in the secondary structure of rRNA besides phylogenetic reconstruction (Insecta: Hemiptera: Heteroptera). *Zoological Journal of the Linnean Society* 1774: 750–763.

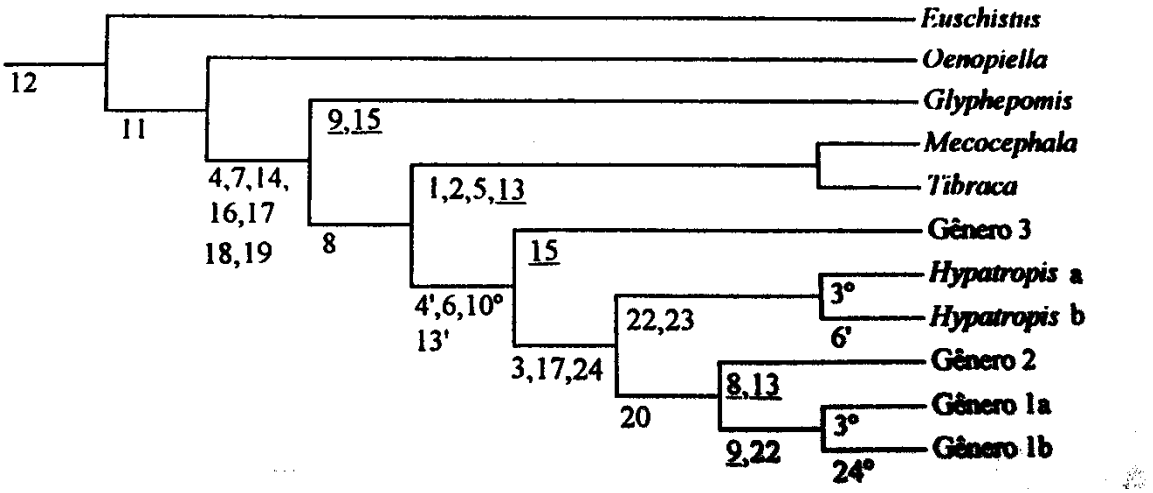

Figura 1. Cladograma resultante da filogenia de *Hypatropis*, apresentado por Fernandes (1993). Os caracteres indicados com (‘) são outros estados de um caracter multiestado. Caracteres indicados por um símbolo 9 (°) representam reversão.

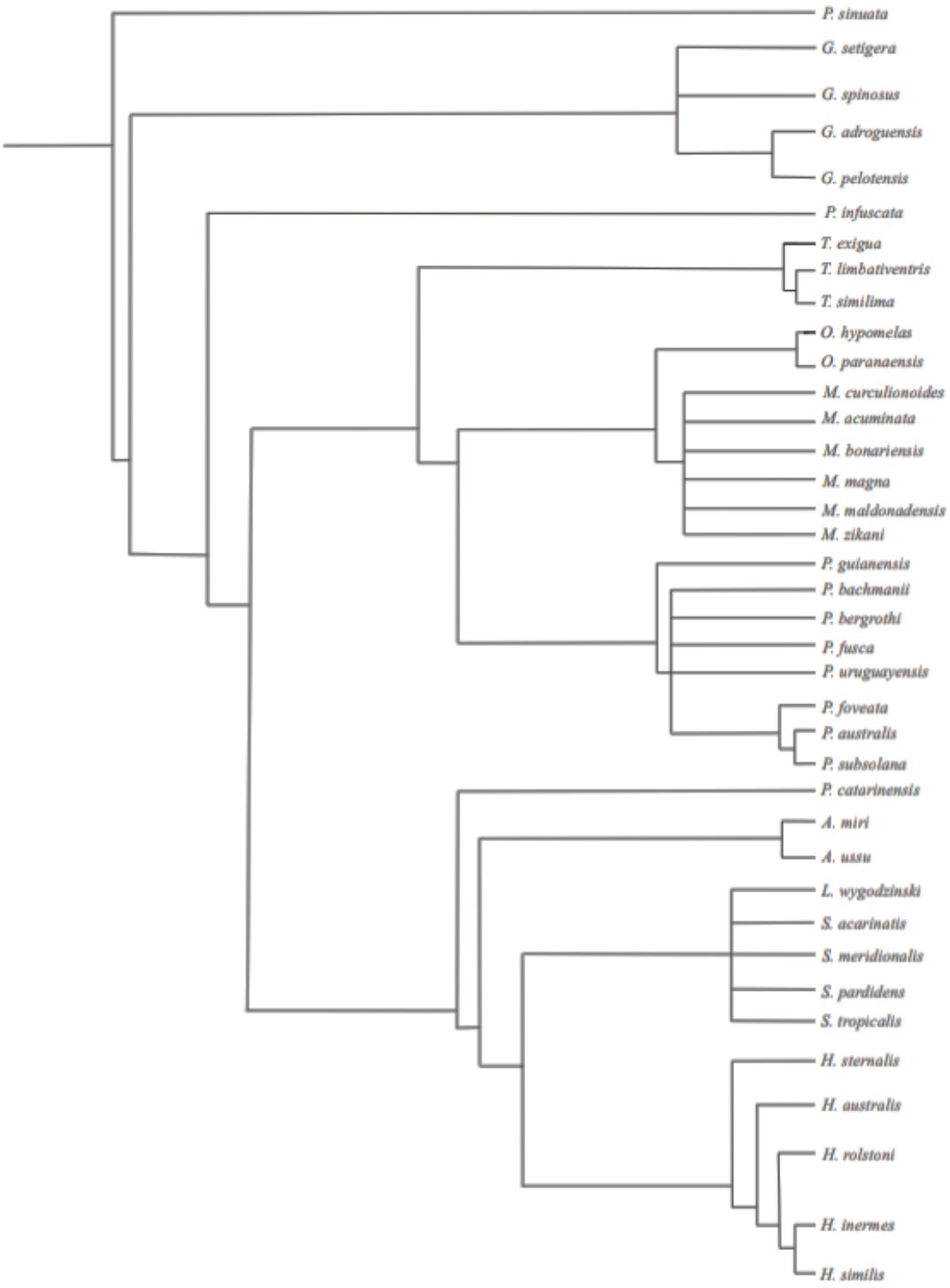

Figura 2. Cladograma resultante da filogenia do grupo *Mecocephala* apresentado por Frey-da-Silva (2005).

Tabela 1. Composição do grupo *Mecocephala sensu* Frey-da-Silva (incluindo os sinônimos), distribuição e repositório dos holótipos. (*) espécie-tipo. Continua

Espécie	Distribuição	Tipo	Repositório**
Amauromelpia Fernandes & Grazia, 1998			
A. miri	Colômbia e Peru	*Amauromelpia miri* Fernandes & Grazia, 1998	AMNH ♂
*A. ussu**	Costa Rica, Guiana Francesa, Brasil e Bolívia	*Amauromelpia ussu* Fernandes & Grazia, 1998	DZUP ♂
Glyphepomis Berg, 1891			
*G. adroguensis**	Sul do Brasil, Argentina e Uruguai	*Glyphepomis adroguensis* Berg, 1891	MLPA ♀
G. pelotensis	Sul do Brasil	*Glyphepomis pelotensis* Campos & Grazia, 1998	AMNH ♂
G. setigera	Brasil, Argentina e Uruguai	*Glyphepomis setigera* Kormilev & Pirán, 1952	MACN ♂
G. spinosa	Centro-oeste e sudeste do Brasil	*Glyphepomis spinosa* Campos & Grazia, 1998	MZUSP ♂
Hypatropis Bergroth, 1891			
H. australis	Sudeste e sul do Brasil e Argentina	*Hypatropis australis* Fernandes & Grazia, 1996	AMNH ♂
H. inermis	Suriname, Brasil e Argentina	*Melpia inermis* (Stål, 1872)	NHRS ♂
O. impicta **sin. nov.**		*Oenopiella impicta* Jensen-Haarup, 1928	ZMUC–Lectótipo ♂
H. rolstoni	Honduras, Nicarágua, Costa Rica, Panamá, Colômbia e Venezuela	*Hypatropis rolstoni* Fernandes & Grazia, 1996	USNM ♂
H. similis	Trinidad e Tobago	*Hypatropis similis* Fernandes & Grazia, 1996	AMNH ♂
*H. sternalis**	Sul do Brasil e Argentina	*Melpia sternalis* (Stål, 1869)	NHRS ♂
Luridocimex Grazia, Fernandes & Schwertner, 1998			
*L. wygodzinskyi**	Sudeste do Brasil	*Luridocimex wygodzinskyi* Grazia, Fernandes & Schwertner, 1998	USNM ♂

Tabela 1. Composição do grupo *Mecocephala sensu* Frey-da-Silva (incluindo os sinônimos), distribuição e repositório dos holótipos. (*) espécie-tipo. Continua

Espécie	Distribuição	Tipo	Repositório**
Mecocephala Dallas, 1851			
*M. acuminata**	Argentina e Uruguai	*Mecocephala acuminata* Dallas, 1851	NHM ♀
M. bonariensis	Sudeste do Brasil, Argentina e Uruguai	*Mecocephala bonariensis* Schwertner, Grazia & Fernandes, 2002	DZUP ♀
M. curculionoides	Argentina	*Mecocephala curculionoides* Pirán, 1959	MACN ♂
M. magna	Sul do Brasil e Uruguai	*Mecocephala magna* Schwertner, Grazia & Fernandes, 2002	MECB ♂
M. maldonadensis	Uruguai	*Mecocephala maldonadensis* Schwertner, Grazia & Fernandes, 2002	UYIC ♂
M. zikani	Sudeste do Brasil	*Mecocephala zikani* Schwertner, Grazia & Fernandes, 2002	FIOC ♀
Ogmocoris Mayr, 1864			
*O. hypomelas**	Norte, sudeste e sul do Brasil	*Atelocerus hypomelas* Burmeister, 1835	ZMBH ♀
O. paranaensis	Sul do Brasil	*Ogmocoris paranaensis* Frey-da-Silva, Grazia & Fernandes, 2002	DZUP ♂
Parahypatropis Grazia & Fernandes, 1996			
*P. sinuata**	Sudeste e sul do Brasil e Argentina	*Melpia sinuata* (Stål, 1872)	NHRS ♀
Paramecocephala Benvegnú, 1968			
P. australis	Sul do Brasil	*Paramecocepha australis* Frey-da-Silva & Grazia, 2002	MCNZ ♂
P. bachmanni	Argentina	*Paramecocephala bachmanni* Frey-da-Silva & Grazia, 2002	MACN ♂
P. bergrothi	Sul do Brasil	*Paramecocephala bergrothi* Frey-da-Silva & Grazia, 2002	MCNZ ♀
*P. foveata**	Centro-oeste e sudeste do Brasil	*Paramecocephala foveata* Benvegnú, 1968	MCNZ ♂
P. fusca	Suriname, Brasil e Equador	*Tibraca fusca* (Haglund, 1868)	NHRS ♂
P. guianensis	Guiana Francesa	*Paramecocephala guianensis* Frey-da-Silva & Grazia, 2002	MNHN ♂
P. subsolana	Nordeste e sudeste do Brasil	*Paramecocephala subsolana* Frey-da-Silva & Grazia, 2002	DZUP ♂
P. uruguayensis	Argentina e Uruguai	*Mecocephala uruguayensis* (Pirán, 1970)	MACN ♂

Tabela 1. Composição do grupo *Mecocephala sensu* Frey-da-Silva (incluindo os sinônimos), distribuição e repositório dos holótipos. (*) espécie-tipo.

Espécie	Distribuição	Tipo	Repositório**
Paratibraca Campos & Grazia, 1995			
*P. infuscata**	Panamá, Trinidad e Tobago, Suriname, Colômbia, Brasil, Peru e Bolívia	*Paratibraca infuscata* Campos & Grazia, 1995	RMNH ♂
Pedinonotus Fernandes & Grazia, 2002			
*P. catarinensis**	Sul do Brasil	*Pedinonotus catarinensis* Fernandes & Grazia, 2002	AMNH ♂
Stysiana Grazia, Fernandes & Schwertner, 1999			
S. acarinatis	Argentina e Paraguai	*Stysiana acarinatis* Grazia, Fernandes & Schwertner, 1999	NMNH ♂
S. meridionalis	Argentina e Brasil	*Stysiana meridionalis* Grazia, Fernandes & Schwertner, 1999	MCNZ ♂
*S. pardidens**	Sudeste e sul do Brasil	*Stysiana pardidens* Grazia, Fernandes & Schwertner, 1999	AMNH ♂
S. tropicalis	Suriname, Trinidade e Tobago e Brasil	*Stysiana tropicalis* Grazia, Fernandes & Schwertner, 1999	MZUSP ♂
Tibraca Stål, 1860			
T. exigua	Sul do Brasil, Argentina e Uruguai	*Tibraca exigua* Fernandes & Grazia, 1998	RMNH ♂
*T. limbativentris**	República Dominicana, Guadalupe, Costa Rica, Colombia, Venezuela, Brasil, Peru, Bolívia	*Tibraca limbativentris* Stål, 1860	RMNH ♀
T. similima	Equador	*Tibraca similima* Barber, 1941	NMNH ♂

(**) Lista dos repositores do material tipo do grupo *Mecocephala*

AMNH: The American Museum of Natural History, New York, Estados Unidos;

NHM: The Natural History Museum, Londres, Reino Unido;

DZUP: Museu de Entomologia Pe. Jesus Santiago Moure, Universidade Federal do Paraná, Curitiba, Brasil;

FIOC: Fundação Instituto Oswaldo Cruz, Rio de Janeiro, Brasil;

MACN: Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina;

MCNZ: Museu de Ciências Naturais da Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre, Brasil;

MECB: Museu de Entomologia "Ceslau M. Biezanko", Faculdade de Agronomia, Universidade Federal de Pelotas, Pelotas, Brasil;

MLPA: Colección de entomologia de la Facultad de Ciencias Naturales y Museo Universidad de La Plata, La Plata, Argentina;

MZUSP: Museu de Zoologia da Universidade de São Paulo, São Paulo, Brasil;

MNHN: Museum National d'Histoire Naturelle, Paris, França;

NMNH: National Museum of Natural History, Washington, Estados Unidos;

NHRS: Naturhistoriska Riksmuseet, Estocolmo, Suécia;

RMNH: Rijksmuseum Natuurlijke Historie, Leiden, Holanda;

UYIC: Museo de Entomologia, Departamento de la Republica, Montevideo, Uruguai;

ZMHB: Museum für Naturkunde, Humboldt Universität, Berlim, Alemanha;

ZMUC: Zoological Museum, University of Copenhagen, Copenhagen, Dinamarca.

CAPÍTULO I[2]

The genus *Parahypatropis* Grazia & Fernandes, with description of two new species and description of a new similar monotypic genus (Hemiptera: Pentatomidae)

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Abstract

We present a taxonomic revision of *Parahypatropis* Grazia & Fernandes, 1996 with the description of two new species: *Parahypatropis occultata* **sp. nov.** and *Parahypatropis similis* **sp. nov.** The generic diagnosis of *Parahypatropis* is modified to accommodate the new species. Also, *Prolatucoris mandibulatus* **gen. et sp. nov.** is described. Comparative illustrations of genitalia, distributional map of the described species, and a key to species of *Parahypatropis* are provided.

Key words: Taxonomy, Neotropical, Mecocephala group.

[2] Formatado conforme as normas do periódico Journal of Natutal Hystory (Fomat free). Veja: jnh-instructionsforauthors

Introduction

The *Mecocephala* are a group of genera with the head usually very long, anteocular portion longer than the head width at eyes level, antennomere II reduced or subequal to the first, and reduced or absent parameres (Fernandes 1993; Schwertner et al. 2002; Frey-da-Silva 2005). The group is currently included in the Carpocorini tribe (Rider et al. 2018), and comprises 12 genera (*Amauromelpia* Fernandes and Grazia, 1998, *Glyphepomis* Berg, 1891, *Hypatropis* Bergroth, 1891, *Luridocimex* Grazia, Fernandes & Schwertner, 1998, *Mecocephala* Dallas, 1851, *Ogmocoris* Mayr, 1864, *Parahypatropis* Grazia and Fernandes, 1996, *Paramecocephala* Benvegnú, 1968, *Paratibraca* Campos and Grazia, 1995, *Pedinonotus* Fernandes and Grazia, 2002, *Tibraca* Stål, 1860, and *Stysiana* Grazia, Fernandes & Schwertner, 1999). Although little explored biologically, it is known that some species share the behavior of feeding on rice (*Oryza sativa* L.), such as those of *Tibraca* (Idalgo et al. 2013; Alves et al. 2016; Fuentes-Rodríguez et al. 2019) and *Glyphepomis* (Alves et al. 2012; Farias et al. 2012).

Grazia and Fernandes (1996) transferred *Hypatropis sinuata* (Stål, 1872) to *Parahypatropis*, mainly because of differences in the male genitalia. In *P. sinuata* the pygophore opens dorsally, with the inferior and superior layers of the ventral rim not separated by a carina, and the paramere is reduced and present, whereas in the species of *Hypatropis* the pygophore opens posterodorsally, the inferior and superior layers of the ventral rim are separated by a carina, and the parameres are absent, among other somatic differences.

The taxonomic decision of Grazia and Fernandes (1996) was made based on an examination of the holotype of *Melpia sinuata* Stål, a female, as well as eight males and four females from Brazil (São Paulo and Rio Grande do Sul) and two females from Argentina (Corrientes) - all of which were identified as *Parahypatropis sinuata.*

However, by examining photos of the holotype of *P. sinuata* and comparing it to the 10 specimens added by Grazia and Fernandes (1996), with the description of the male and illustrations of *P. sinuata* provided by the authors, we were able to recognize that this series of specimens represents *P. sinuata* and other two species, here described. Here we redefine *Parahypatropis*, redescribe *Parahypatropis sinuata* and describe *Parahypatropis occultata* **sp. nov.** and *Parahypatropis similis* **sp. nov.** In addition, by examining a set of new specimens, from Rio Grande do Sul, Brazil we recognize a new monotypic genus. *Prolatucoris mandibulatus* **gen.** et **sp. nov.** is described and fully illustrated.

Material and methods

Abbreviations for the depositories of specimens studied are as follow (curators name):

AMNH, American Museum of Natural History, United States (Randall Schuh);

DZUP, Museu de Entomologia Pe. Jesus Santiago Moure, Universidade Federal do Paraná, Paraná, Brazil (Rodney Cavichioli);

NHRS, Naturhistoriska Riksmuseet, Stockholm, Sweden (Gunvi Lindberg);

MCNZ, Museu de Ciências Naturais da Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre, Brazil (Aline Barcellos);

MZUSP, Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (Cristiano Schwertner);

MCTP, Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Brazil (Gervásio Carvalho);

UFRG, Departamento de Zoologia, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil (Jocelia Grazia).

Specimens were photographed in multiple focal planes with a Digital Sight DS-Fi2 camera coupled to a Nikon AZ100M stereomicroscope and stacked with the software NIS Elements AR, available at the Departamento de Zoologia, UFRGS, and edited with Adobe Photoshop CS5. Line vector drawings were made with Adobe Illustrator CS5, and the specimens used in illustrations are indicated with the notation <illustrated specimen> in the examined material sections. Genitalia were prepared with cold aqueous super-saturated potassium hydroxide (KOH) solution for 48 h. Pygophores were clarified with a solution of sodium hypochlorite (NaClO) diluted in water. Measurements [mean (minimum–maximum)] are given in millimeters, followed by sample number, and are presented in Table 1. The standard deviation is presented when the sample number is ≥ 3. For Scanning Electron Microscopy (SEM) of the external scent efferent system, the right meso- and metapleuron of dried preserved specimens were removed, cleaned manually with forceps, a fine-tipped brush and isopropyl alcohol, kept submerged in Renu® contact lens solution for 48 h, and then agitated in an ultrasonic bath (5.400 kHz) with water and detergent solution for 45 s. Afterwards, the meso- and meta-pleuron were dehydrated at 50 °C for 48 h, sputter coated with carbon and gold and observed by SEM. SEM analysis was carried out at the Centro de Microscopia Eletrônica of UFRGS.

Terminology follows Tsai et al. (2011) for general anatomy, Dupuis (1955, 1970), Genevcius and Schwertner (2017) and Barros et al. (2020) for genitalia, and Kment and Vilímová (2010) and Barão et al. (2017) for the external scent efferent system.

The d*uctus receptaculi* and *ductus seminis distalis* were not preserved after dissections,

but whenever possible these structures are represented in the illustrations. Abbreviations of female external and internal genitalia follow the model presented for *P. sinuata*. The distributional records of *Parahypatropis* spp. were retrieved from labels of the examined material and the literature (Grazia and Fernandes, 1996). The locations were georeferenced using online global gazetteers and plotted with Quantum GIS 3.12 Bucuresti software.

Results and Discussion

Parahypatropis Grazia and Fernandes, 1996

Parahypatropis Grazia and Fernandes, 1996: 353–356, figs 1–9; Barão et al. 2017:1–10, fig. 5(I).

Type species. *Parahypatropis sinuata* (Stål, 1872), by monotypy.

Redescription. Body elongated. *Head*. Wider than long, rounded apically (Figures 1(a), 2(a), 4(a), 9(a)). Mandibular plates sub equal to clypeus in length and obtuse apically; lateral margins of mandibular plates sinuous. Clypeus obtuse apically, lower than mandibular plates in lateral view; clypeal suture beginning before an imaginary line crossing anterior margin of eyes. Anteocular process absent. Antenniferous tubercles visible in dorsal view, with an obtuse process laterally. Antennomere I not reaching apex of head; antennomere II smaller than or sub equal to I, visible; antennomere III cylindrical, convex dorsally; antennomere IV conical, slightly flattened dorsally. Bucculae tapering toward base of head, not reaching its base. Apex of labium reaching metacoxae, but not surpassing abdominal segment III; labial length and length of each labial segment variable in each species; first labial segment between bucculae; segment II slightly flattened laterally and smaller than III and IV combined; segments III and IV entirely cylindrical, robust. *Thorax*. Pronotum trapezoidal (Figures 1(a), 2(a), 4(a), 9(a)). Anterolateral margins of pronotum flat, punctuated, not reflected, serrated and concave. Humeral angles of pronotum obsolete. Posterior margin of pronotum rectilinear. Scutellum longer than wide (Figures 1(a), 2(a), 4(a), 9(a)). Basal angles of scutellum foveate; foveae smaller than the diameter of eye. *Wings*. Hemelytral corium longer than scutellum, surpassing apex of abdominal segment V; apex of radial vein calloused; veins of membrane linear. Mesosternal carina elevated, smooth. Metasternum flat. *Legs*. Legs not concolorous to pleurites and sternites, with dark spots. Distance between procoxae and mesocoxae twice the distance

between mesocoxae and metacoxae. Length of femora and tibiae sub equal. Unarmed femora. Tarsi 3-segmented. *External scent efferent system* (Figure 5(a–d)): ostiole elliptical (Figure 5(d)), opening lateroposteriorly; periostiolar depression present (Figure 5(d)). Peritreme spout occupying about 1/3 of evaporatorium; median furrow of peritreme long, occupying more than half of peritreme (Figure 5(d)). Evaporatorium punctuated, occupying more than half of meso- and metapleuron. Metathoracic spiracle narrow (Figure 5(b)). Anterolateral margin of evaporatorium rounded. Extension of evaporatorium on mesopleuron surpassing anterior limit of mesocoxal suture (Figure 5(b)) and reaching anterior and posterior lateral angles and outer margin of metapleural (Figure 5(c)). *Abdomen*. Connexivum punctuated, posterolateral angles protruding from sternite edge. Surface of abdominal sternites not grooved medially; sternites with an imaginary line tangential to the spiracles separating the trichobothria, one internal and another external to the line, spiracle II not visible; Mesial area adjacent to spiracles with yellowish callus. *Male genitalia*. Genital cup broad, open dorsally. Ventral rim forming two layers, the inferior and superior layers of ventral rim not separated by a carina; area between layers leveled. Superior layer of ventral rim projected toward genital cup, developed laterally to segment X; projection of superior layer not covering parameres. Segment X not carinated, with processes. Parameres reduced (Figures 6(a–f), 10(a–f)). *Female genitalia*. Gonocoxites VIII convex; mesial margins of gonocoxites VIII juxtaposed, covering gonapophyses VIII. Laterotergites VIII lacking spiracles. Gonocoxites IX oblique, in an obtuse angle, relative to the position of segment X. Laterotergites IX surpassing tergite VIII, dorsally (Figures 1(c), 3(a–d), 8(a–d)).

***Distribution*.** South America: Brazil (São Paulo, Santa Catarina, Rio Grande do Sul) and Argentina (Corrientes) (Figure 18).

***Comments*.** Grazia and Fernandes (1996) related *Parahypatropis* to *Hypatropis* Bergroth, 1891, *Pedinonotus* Fernandes & Grazia, 2002, and *Amauromelpia* Fernandes & Grazia, 1998, based on the mandibular plates higher than the clypeus in lateral view; labial segment I thin and contained between bucculae; anterolateral margins of pronotum distinctly serrated, and sternites with an imaginary line tangential to the spiracles separating the trichobothria, one internal and another external to that line. However, the parameres are present and reduced in *Parahypatropis* and *Pedinonotus*. Similarly, the anterolateral margins of the pronotum are concave, the genital cup of pygophore opens dorsally, and gonocoxites IX are oblique, at a obtuse angle, relative to the position of segment X in *Parahypatropis*, whereas in *Hypatropis*, *Pedinonotus* and

Amauromelpia the anterolateral margins are straight, the genital cup of pygophore opens dorsoposteriorly, and gonocoxites IX are levelled to the position of segment X. Differences between *P. occultata* and *P. similis* are mainly in body size and morphology of the male genitalia.

Key to species of *Parahypatropis* Grazia and Fernandes, 1996

1 Labium surpassing metacoxae; legs concolour to ventral color (Figures 2(b–c))…….....*Parahypatropis sinuata*
1’ Labium not surpassing metacoxae, legs not concolour to ventral color….……...…….……...…….. 2

2 Connexivum exposed. Hemelytral membrane, in males, reaching apex of abdominal segment VII (Figure 4(a)). Anterolateral angles of sternites not concolour to discal color. Coloration pattern of sub lateral margin of sternites concolour to discal color (Figure 4(c)). Ventral rim of pygophore concave; apical and basal regions of segment X equally wide (Figures 6(a–b), 12(a–d)) ……..……..… *Parahypatropis occultata* sp. nov.
2’ Connexivum concealed by hemelytra. Hemelytral membrane, in males, surpassing apex of abdominal segment VII (Figure 9(a)). Anterolateral angles of sternites concolour to discal color. Coloration pattern of sub lateral margin of sternites not concolour to discal color (Figure 9(c)). Ventral rim of pygophore V-shaped; apical portion of segment X narrower than basal region (Figures 10(a–b), 12(e–h)) …….....…. *Parahypatropis similis* sp. nov.

Parahypatropis sinuata (Stål, 1872)
(Figures 1(a–d), 2(a–c), 3(a–f), 18)

Melpia sinuata Stål, 1872:32; Lethierry and Severin, 1893:146.
Hypatropis sinuata; Kirkaldy, 1909:91.
Parahypatropus sinuatus (sic) Grazia and Fernandes, 1996: 353–356, figs 1–9; Barão et al. 2017: 1–10, fig. 5(I).

***Type material*.** HOLOTYPE f#, BRAZIL, “St. Catharina [Santa Catarina, Brazil] (C. A. Dohrn), Typus” (NHRS), photographs examined (Figure 1(a–d)).

***Material examined*.** f#, BRAZIL [Santa Catarina], Joinvile, Dirings leg., *Parahypatropis sinuata* (Stål, 1872) Fernandes, J.A.M. 1997 det. (MZUSP) <illustrated female>.

***Diagnosis*.** Labium surpassing the metacoxae. Anterolateral margins of pronotum serrated along anterior 2/3. Gonocoxites IX enlarged, semicircular. *Chitinellipsen* bean-shaped, half the size of each sclerotized area. Laterotergites IX (la9) spatulate. Distal *ductus receptaculi* long.

***Redescription*.** Body brown, with deep, dark brown punctures. Head with 1 + 1 bands of concentrated punctations beginning behind the ocelli and extending along the inner margins of mandibular plates. Brown legs, adjacent area to each seta dark brown. Anterior half of mesosternum and evaporatorium darker than the rest of body. Body oval, convex dorsal and ventrally (Figures 1(a–b), 2(a–c)). Proportions of antennomeres I>II<III>IV>V. Labium surpassing metacoxae; proportions of labial segments I<II>III>IV (Figure 2(b)). Anterolateral margins of pronotum serrated along anterior 2/3 (Figure 2(a)). Hemelytral membrane reaching body apex. Connexivum exposed (Figure 2(a)). Measurements in Table 1.

***Female genitalia*.** Gonocoxites VIII (gc8) convex, at least twice as long as laterotergites IX, partially covering gonocoxites IX; posterior margin sinuous. Laterotergites VIII (la8) with posterior margin obtusely projected (Figures 1(c), 3(a–b)). Gonocoxites IX (gc9) swollen, enlarged, semicircular, with anterior margin convex and posterior margin straight (Figures 3(c–d)). Gonapophyses IX (g9) with 1+1 lateral sclerotized areas placed along with *chitinellipsen*. *Chitinellipsen* (ch) bean-shaped, half the size of each sclerotized area. Laterotergites IX (la9) spatulate, obtusely projected apically. *Ectodermal ductus* (Figure 3(e–f)): anterior part of thickening of vaginal intima (tvi) as long as posterior portion of tvi. Median wall of vesicular area enlarged sub-proximally. Proximal *ductus receptaculi* (pdr) straight, shorter than the length of vesicular area; diameter of distal *ductus receptaculi* equal to the diameter of median wall of vesicular area. Vesicular area (va) long, occupying more than half the length of *ductus receptaculi*. Annular flanges divergent; anterior annular flange (aaf) developed; posterior annular flange (paf) thinner than *capsula seminalis*. *Pars intermedialis* (pi) enlarged. *Capsula seminalis* (cs) globose and larger than *pars intermedialis.*

***Male*.** Unknown.

***Distribution*.** Originally described from Santa Catarina [Brazil] without exact locality (Stål

1872). South America: Brazil (Santa Catarina) (Figure 1).

***Remarks*.** Proximal *ductus receptaculi* (pdr) not preserved after dissection. The male specimens cited by Grazia and Fernandes (1996) for the description of the male genitalia correspond to *P. occultata* sp. nov., here described.

Parahypatropis occultata Barros, Barão and Grazia sp. nov.
(Figures 4(a–c), 5(a–d), 6(a–f), 7(a–c), 8(a–f), 12(a–d), 18)

***Type material*.** HOLOTYPE 1#m, BRAZIL [Rio Grande do Sul], São Leopoldo, 6 August 1982, C.J. Becker leg., Col. MCN 47.141, *Parahypatropis sinuata* (Stål, 1872) Fernandes, J.A.M. 1997 det. (MCNZ). PARATYPES, BRAZIL, São Paulo, 1#m, Itu, Fazenda Pau d'Alho, 25 November 1959, U. Martins leg., *Parahypatropis sinuata* (Stål, 1872) Fernandes, J.A.M. 1997 det. (MZUSP) <illustrated male>; Rio Grande do Sul, 1f#, Porto Alegre, Vila Assunção, 12 October 1965, L. Buckup leg., *Parahypatropis sinuata* (Stål, 1872) Fernandes, J.A.M 1997 det. (UFRG) <illustrated female>; 3#m 1f#, São Leopoldo, 6 August 1982, C.J. Becker leg., *Parahypatropis sinuata* (Stål, 1872) Fernandes, J.A.M. 1997 det., Col. MCN 47.143, 47.144, 47.147, 47.145, (MCNZ); 1f#, São Leopoldo, 25 September 1987, C.J. Becker leg., *Parahypatropis sinuata* (Stål, 1872) Fernandes, J.A.M. 1997 det. (UFRG); 1#m, Novo Hamburgo, 28 August 1986, C.J. Becker leg., *Parahypatropis sinuata* (Stål, 1872) Fernandes, J.A.M. 1997 det. (UFRG) <illustrated male>.

***Diagnosis*.** Labium reaching between metacoxae. Hemelytral membrane not reaching apex of body. Genital cup occupying half the length of pygophore. Dorsal rim of pygophore entire medially. Gonocoxites IX elongated, triangular. *Chitinellipsen* oval, at least twice the size of each sclerotized area of gonapophyses VIII. Laterotergites IX triangular. Distal *ductus receptaculi* short.

***Description*.** General color light brown dorsally and brown ventrally. Antennomeres brownish, apex of antennomere III, IV and V dark brown. Coxae with dark brown blotches; femora and tibiae light brown with dark brown punctures; tarsi light brown. Prosterno and mesosternal carina, evaporatorium and abdominal sternites III–IV medially dark brown. Sternites III–VII light brown laterally and with deep punctures; anterolateral angles of sternites dark brown. Trichobothria yellowish. Body small and elongated, convex ventrally (Figure 4(a–c)).

Proportions of antennomeres I>II<III>IV<V. Labium reaching between the metacoxae; proportions of labial segments I<II>III>IV (Figure 4(b)). Anterolateral margins of pronotum serrated along anterior half (Figure 4(a)). Hemelytral membrane not reaching apex of body. Surface of evaporatorium with circumvolutions; metathoracic spiracle narrow, with filter system smooth and provided with lateral connections (Figure 5(a–c)). Connexivum exposed (Figure 4(a)). Measurements in Table 1.

***Male genitalia*.** Pygophore sub quadrangular (Figure 6(a–f)); posterolateral angles rounded (Figure 12(c–d)). Genital cup occupying half the length of pygophore. Dorsal rim (dr) of pygophore entire medially with 1+1 dorsal process; extension of dorsal rim obsolete over segment X. Superior layer of ventral rim (slvr) without processes; median excavation of superior layer of ventral rim (me) concave (Figure 12(a–c)); lateral margin of projection of superior layer of ventral rim entire (Figure 6(a–b), 6(d)). Inferior layer of ventral rim (ilvr) without process (Figure 6(d), 6(f)). Segment X (x) ogival (Figure 6(a–b)). *Phallus* (Figure 7(a–c)): dorsal connectives (dc) short, shorter than half the length of phallotheca. *Processus capitati* (pc) short, not reaching distal margin of *phallotheca*. *Phallotheca* (ph) piriform, longer than its width apically. *Phallotheca* with 1+1 dorsal process of *phallotheca* (dpph) uniformly wide, and three pairs of projections: 1+1 ventrobasal (vbpph); 1+1 in posterodorsal (pdpph) margin, shorter than dorsal processes of *phallotheca*; and 1+1 small in posterolateral (plpph) margin, rounded. Conjunctiva (cj) with two pairs of processes and two pairs of lobes: median (mlcj) and ventral lobes (vlcj) entirely membranous. Process of vesica (pve) long. *Ductus seminis distalis* (dsd) long.

***Female genitalia*.** Gonocoxites VIII convex, at least twice as long as laterotergites IX, partially covering gonocoxites IX; posterior margin sinuous. Laterotergites VIII with posterior margin obtusely projected (Figure 8(a–b)). Gonocoxites IX swollen, elongated, triangular, with anterior margin concave and posterior margin convex (Figure 8(c–d)). Gonapophyses IX with 1+1 lateral sclerotized areas placed along with *chitinellipsen*. *Chitinellipsen* oval, at least twice the size of each sclerotized area. Laterotergites IX triangular, obtusely projected apically. *Ectodermal ductus* (Figure 8(e–f)): anterior part of thickening of vaginal intima as long as posterior portion of tvi. Proximal *ductus receptaculi* straight, shorter than the length of vesicular area; diameter of proximal *ductus receptaculi* larger than internal wall of vesicular area. Median wall of vesicular area enlarged sub-proximally. Distal *ductus receptaculi* straight, short, diameter equal to diameter of median wall of vesicular area. Vesicular area (va) long, occupying

more than half the length of the *ductus receptaculi*. Anterior annular flange developed. Posterior annular flange thinner than *capsula seminalis*. *Pars intermedialis* enlarged. *Capsula seminalis* globose and larger than *pars intermedialis.*

***Etymology*.** *occultata*, from Latin, nominative feminine singular of occultātus, which means hidden, because it was found in the additional series of *P. sinuata*.

***Remarks*.** The interpretation of the dorsal and ventral views of the phallus of *P. sinuata* by Grazia & Fernandes (1996) was misconceived. The mobile processes of the *phallotheca* are dorsal and the processes of the vesica are ventral. We also updated the terminology used for the processes and projections of the phallus, as follows: "processo 1 da phallotheca, processo 2 da phallotheca, processo 1 da conjunctiva, processo 1 da vesica" (Grazia & Fernandes, 1996: 353–354) correspond respectively to: posterodorsal projection of phallotheca, ventrobasal projection of phallotheca, dorsal process of phallotheca, and median lobe of conjunctiva.

***Distribution*.** Brazil (Rio Grande do Sul) (Figure 18).

Parahypatropis similis Barros, Barão and Grazia sp. nov.
(Figures 9a–c, 10a–f, 11a–c, 12e–h, 18)

***Type material*.** HOLOTYPE 1#m, BRAZIL [Rio Grande do Sul], Canoas, Banhado Grande, 19 October 1999, Col. MCN, 53215, I. Heydrich leg. (MCNZ). PARATYPES, BRAZIL [Rio Grande do Sul], 2#m, Canoas, Banhado Grande, 19 October 1999, Col. MCN, 53201 <Illustrated male>; 53235 <without genital capsule>, I. Heydrich leg. (MCNZ).

***Diagnosis*.** Labium reaching metacoxae. Hemelytral membrane surpassing apex of body. Connexivum concealed. Dorsal rim of pygophore concave, notched. Median excavation of superior layer of ventral rim V–shaped. Segment X subapical and apically narrower than base and projected dorsally.

***Description*.** General color light brown dorsally and dark brown ventrally. Antennomeres brownish. Coxae with dark brown blotches; femora and tibiae light brown with dark brown punctures; tarsi light brown. Prosterno and mesosternal carina, evaporatorium and sternites III–IV medially reddish-brown to brown; sternites III–VII light brown laterally and with shallow

punctures. Body small and elongated, convex ventrally (Figure 9(a–c)). Proportions of antennomers I>II<III>IV<V. Labium reaching the metacoxae; proportions of labial segments I<II>III>IV (Figure 9(b)). Anterolateral margins of pronotum serrated along anterior half (Figure 9(a)). Hemelytral membranes surpassing apex of body. Connexivum concealed (Figure 9(a)). External scent efferent system, abdomen, spiracles and trichobothria as described for the genus. Measurements in Table 1.

***Male genitalia*.** Pygophore quadrangular (Figures 10(a–f), 12(e–h)); posterolateral angles somewhat explanate, apical margin sinuous (Figure 12(g–h)). Genital cup occupying less than half the length of pygophore. Dorsal rim of pygophore notched medially with 1+1 dorsal processes; extension of dorsal rim obsolete over segment X. Superior layer of ventral rim without processes; median excavation of superior layer of ventral rim V-shaped (Figures 12(e–g)); lateral margin of projection of superior layer of ventral rim entire (Figure 10(a–b)). Inferior layer of ventral rim without processes (Figure 10(d,f)). Segment X ogival, subapical and apically narrower than the base and dorsally projected (Figure 10a–b)). *Phallus* follows the pattern described for *Parahypatropis occultata* (Figure 11(a–c)).

***Etymology*.** The specific epithet *similis*, refers to its similar morphology to other *Parahypatropis* species.

***Remarks*.** *Parahypatropis occultata* and *P. similis* present differences mainly in body size and labium length, color and morphology of the male genitalia, shown in Table 1 and in Figures 6, 7, 10, 11 and 12.

***Distribution*.** Brazil (Rio Grande do Sul) (Figure 18).

Prolatucoris Barros, Brugnera and Grazia gen. nov.
(Figures 9(a–c), 10(a–f), 11(a–c), 12(e–h), 18)

***Type species*.** *Prolatucoris mandibulatus* **sp. nov.**, here designated.

Diagnosis. Body elongated and flat dorsally. Anteocular process developed. Mandibular plates longer than clypeus. Labium short, not reaching mesocoxae. Hemelytral membrane not reaching apex of abdominal segment VII.

***Description*.** Body elongated (Figure 13(a–b)). *Head*. Wider than long, rounded apically (Figure 13(a)). Mandibular plates longer than clypeus, obtuse apically; lateral margins of mandibular plates sinuous and elevated, in relation to mesial margin. Clypeus obtuse apically, lower than mandibular plates in lateral view; clypeal suture beginning before an imaginary line crossing anterior margin of eyes. Anteocular process present. Antenniferous tubercles visible in dorsal view, with an obtuse process laterally. Antennomere I not reaching apex of head; antennomere II smaller than I, visible; antennomere III cylindrical, convex dorsally; antennomere IV conical, slightly flattened dorsally. Bucculae tapering toward base of head, not reaching its base. Labium short, not reaching mesocoxae. Labial segments entirely cylindrical; first labial segment between bucculae. *Thorax*. Pronotum trapezoidal (Figure 13(a). Anterolateral margins of pronotum explanate, punctuated, slightly reflected and serrated. Posterior margin of pronotum slightly convex. Scutellum longer than wide (Figure 13(a)). Basal angles of scutellum foveate, foveae smaller than diameter of eyes. *Wings*. Hemelytral corium longer than scutellum, not surpassing apex of abdominal segment V. Apex of radial vein punctuated, with inconspicuous callosity. Membranal veins linear (Figure 13(a)). Mesosternal carina slightly elevated, smooth. Metasternal furrow shallow. *Legs.* Legs not concolorous to pleurites and sternites, with dark spots. Distance between the procoxae and mesocoxae twice the distance between mesocoxae and metacoxae. Length of femora and tibiae sub equal. Femora unarmed. Tarsi 3-segmented. *External scent efferent system*: ostiole elliptical, opening lateroposteriorly. Periostiolar depression present. Peritreme bean-shaped. Median furrow of peritreme long, occupying more than half of peritreme. Evaporatorium punctuated, occupying more than half of meso and metapleuron. Metathoracic spiracle wide. Anterolateral margin of evaporatorium rounded. Extension of evaporatorium on mesopleuron surpassing anterior limit of mesocoxal suture, and reaching anterior and posterior lateral angles and the outer margin of metapleuron. *Abdomen*. Connexivum exposed, punctuated; posterolateral angles protruding from sternite edge (Figure 13(a)). Surface of abdominal sternites not grooved medially, sternites with an imaginary line tangential to the spiracles separating the trichobothria, one internal and another external to the line. *Male genitalia*. Genital cup broad, open dorsally. Ventral rim forming two layers, the inferior and superior layers of ventral rim, not separated by a carina; area between layers depressed. Superior layer of ventral rim projected toward genital cup, developed laterally to segment X, not covering parameres. Segment X carinated, with processes. Parameres reduced (Figure 14(a–b)). *Female genitalia*. Gonocoxites VIII flat. Mesial margins of gonocoxites VIII juxtaposed. Gonapophyses VIII not visible. Laterotergites VIII lacking spiracles. Laterotergites

IX surpassing tergite VIII (Figure 16(a–b)).

Etymology. *prolatus*, from Latin: referring to the elongated spherical body along its main axis; oblong + *coris:* meaning true bug; gender is masculine.

Distribution. Rio Grande do Sul, Brazil.

Comments. *Prolatucoris* shares characters with the *Mecocephala* group, mainly antennomere II smaller than antennomere I, ventral rim of pygophore composed of two layers, reduced parameres, *phallotheca* with one pair of processes and three pairs of projections, *ductus seminis distalis* long, mesial margins of gonocoxites VIII juxtaposed; and, shared exclusively with *Parahypatopis*, the arcuate posterior portion of thickening of vaginal intima with equal length related to round anterior portion.

It resembles *Parahypatropis*, *Hypatropis* and *Pedinonotus* in the elongated body and dorsal facies. With *Hypatropis* and *Pedinonotus*, it shares the mandibular plates longer than clypeus; with *Parahypatropis* and *Pedinonotus*, it shares the reduced parameres, which are absent in *Hypatropis*. The configuration of the male genitalia is very similar to that of *Parahypatropis*, sharing the genital cup open dorsally, and the female genitalia are similar to those of *Pedinonotus*. However, *Prolatucoris* can be distinguished from the other genera by its short labium, not reaching the mesocoxae.

Prolatucoris mandibulatus Barros, Brugnera and Grazia sp. nov.
(Figures 13(a–c), 14(a–f), 15(a–c), 16(a–f), 17(a–d), 18)

Type material. HOLOTYPE, 1f#, BRAZIL [Rio Grande do Sul], [Caxias do Sul], Vila Oliva, 11 January 1961, (7429), Pe. Buck leg. (MCNZ). PARATYPES, 1f#, same date as holotype <Illustrated female> (UFRG); 1#m, BRAZIL, São Francisco de Paula, "Barragem P. Inferno", 19 November 1997, Col. MCN, 53354, E. H. Buckup leg. <Illustrated male> (UFRG); 2#m, São Francisco de Paula, Pró-Mata, Trilha das bananeiras, 17 October 2018, R. A. Teixeira leg. (UFRG), (MCNZ); idem, 1f# (MCTP), 1#m, immature <illustrated nymph> (UFRG).

Description. General color light brown dorsally and brown ventrally; punctures spaced and deep, dark brown punctures sometimes forming stripes; antennomeres brownish. Coxae with dark brown blotches; femora and tibiae light brown with dark brown punctures; tarsi light

brown. Body small and elongated, convex ventrally (Figure 13(a–c)). *Head*. Head slightly wide than long. Mandibular plates long than clypeus, obtuse apically. Proportions of antennomeres I>II<III>IV<V. Bucculae straight. Short labium, not reaching mesocoxae; proportions of labial segments I<II>III~IV (Figure 13(b)). *Thorax*. Humeral angles of pronotum obsolete; anterolateral margin of pronotum slightly concave (Figure 13(a)). Scutellum not reaching segment V apically; scutellum slightly acute apically; hemelytral membrane not reaching apex of abdominal segment VII, with linear veins, some bifurcated basally; mesosternal carina slightly elevated, smooth and setose. External scent efferent system, abdomen, spiracles, shape of connexivum and trichobothria as described for the genus. Measurements in Table 1.

***Male genitalia*.** Pygophore quadrangular (Figure 14(a–f)). Posterolateral angles rounded. Genital cup occupying more than half of pygophore length. Dorsal rim of pygophore medially entire with 1+1 dorsal process; extension of dorsal rim over segment X obsolete. Superior layer of ventral rim without processes; lateral margin of projection of superior layer of ventral rim entire (Figure 14(c–d)). Inferior layer of ventral rim without processes (Figure 14(e–f)). Segment X ogival (Figure 14(a–b)). *Phallus* (Figure 15(a–c)): Dorsal connectives (dc) longer, not surpassing half the length of *phallotheca*. *Processus capitati* short, not reaching distal margin of *phallotheca*. *Phallotheca* piriform, longer than its width apically, with 1+1 dorsal process of *phallotheca*, wider basally than apically; and three pairs of projections: 1+1 ventrobasal; and 1+1 in posterodorsal margin, as long as dorsal processes of *phallotheca*; and, 1+1 in posterolateral margin, rounded. Conjunctiva with two pairs of processes and two pairs of lobes: median and ventral lobes, entirely membranous. Process of vesica long. *Ductus seminis distalis* long.

***Female genitalia*.** Gonocoxites VIII (gc8) flat, at least twice as long as laterotergites IX, partially covering gonocoxites IX; posterior margin straight. Laterotergites VIII (la8) with posterior margin straight (Figure 16(a–b)). Gonocoxites IX (gc9) swollen, with anterior margin convex and posterior margin straight (Figure 16(c–d)). Gonapophyses IX (g9) with 1+1 lateral sclerotized areas placed along with *chitinellipsen*. *Chitinellipsen* (ch) elliptical, at least four times smaller than the size of each sclerotized area. Laterotergites IX (la9) spatulate, obtusely projected apically. *Ectodermal ductus* (Figure 16(e–f)): anterior part of thickening of vaginal intima (tvi) as long as posterior portion of tvi. Proximal *ductus receptaculi* (pdr) convoluted, short in relation to length of vesicular area; diameter of proximal *ductus receptaculi* larger than internal wall of vesicular area. Median wall of vesicular area enlarged sub-proximally. Distal

ductus receptaculi (ddr) straight, short, its diameter equal to the diameter of median wall of vesicular area. Vesicular area (va) short, occupying half the length of the *ductus receptaculi*. Annular flanges divergent. Anterior annular flange (aaf) developed. Posterior annular flange (paf) thinner than *capsula seminalis*. *Pars intermedialis* (pi) rectilinear. *Capsula seminalis* (cs) globose and larger than *pars intermedialis.*

***Fifth instar*.** Body pale yellow, punctures dark brown, red spots on dorsal surface and ventral abdomen (Figure 17(a–b)); apex of femur and tibiae with dark brown spots; last antennal segment dark brown; spiracles dark brown; basal trichobothria pale brown. Body oval, dorsoventrally flattened; densely punctured dorsally, and ventrally with punctures concentrated on lateral margins of pleuron, close to bucculae on head and sparsely on abdomen; antennae, labium, legs, lateral margin of abdomen, and median portion of posterior margin of each of II–VIII ventral abdominal segments with setae. Head longer than wide; mandibular plates distinctly surpassing clypeus; anteocular process developed; proportions of antennomeres I<II>III<IV; proportions of labial segments I <II>III=V; apex of labium reaching halfway between pro- and mesocoxae. Lateral margins of pronotum expanded and serrated, distinctly surpassing lateral margins of eyes; wing pads almost reaching posterior margins of abdominal segment III (Figure 17(a)); abdominal plates concolorous with abdomen (Figure 17(c)); first pair of dorsal abdominal glands (DAG 1) located between III and VI segments, second pair (DAG 2) between VI and V segments, and third pair (DAG 3) located between segments V and VII; DAG 2 and DAG 3 elevated (Figure 17(d)).

***Etymology*.** *mandibulatus* refers to the mandibular plates being longer than the clypeus.

***Distribution*.** Rio Grande do Sul, Brazil (Figure 18).

Additional material examined*. *Amauromelpia ussu Fernandes and Grazia, 1998: HOLOTYPE, 1m#, BRAZIL, Amazonas, Janauacá, 29 July 1978, W. Benson leg. (DZUP); PARATYPES, 1m#, 1f#, same date as holotype (UFRG). ***Hypatropis sternalis*** (Stål, 1869): HOLOTYPE, 1m#, ARGENTINA, La Plata, "Stål, Typus" (NHRS), examined photograph; 1f#, BRAZIL, Rio Grande do Sul, Pelotas, 20 October 1975, Glória leg., *Hypatropis sternalis* (Stål, 1869), Fernandes, J. 1993 (UFRG). ***Pedinonotus catarinensis*** Fernandes and Grazia, 2002: HOLOTYPE, 1m#, BRAZIL, Santa Catarina, Nova Teotônia, Seara, -27.0500°S, -52.400°L [27°11'S 52°23'L], December 1939, Fritz Plaumann leg. (AMNH); PARATYPES,

1m#, 1f#, same date as holotype (UFRG).

Acknowledgments

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References

Alves T, Barrigossi JAF, Quintela ED. 2012. Life Cycle of *Glyphepomis spinosa* Campos and Grazia (Hemiptera: Pentatomidae): a New Pest of Rice in Brazil. Neotrop Entomol. 41(6):437–441.doi:10.1007/s13744-012-0067-3

Alves TM, Maia AHN, Barrigossi JAF. 2016. Spatial distribution and coexisting patterns of adults and nymphs of *Tibraca limbativentris* (Hemiptera: Pentatomidae) in paddy rice felds. Environ Entomol. 45(6):1505–1514. doi:10.1093/ee/nvw141

Barão RB, Ferrari A, Adami KVC, Grazia J. 2017. Diversity of the external scent efferent system of Carpocorini (Heteroptera: Pentatomidae) with character selection for phylogenetic inference. Zool Anz. 268:102–111. doi:10.1016/j.jcz.2016.08.003

Barros LD, Barão KR, Grazia J. 2020. Systematics of the *Mecocephala* group (Hemiptera: Heteroptera: Pentatomidae) based on a phylogenetic perspective: Inclusion of *Hypanthracos*, description of three new genera, and redescription of *Ogmocoris*. Arthropod Syst Phylo. 78(2):321–360. doi:10.26049/ASP78-2-2020-07 (awaiting publication).

Benvegnú GQ. 1968. "*Paramecocephala*", um novo gênero de Pentatomini do Brasil (Hemiptera, Pentatominae). Rev Bras Biol. 28(1):87–91.

Berg C. 1891. Nova Hemiptera Faunarum Argentinae et Uruguayensis. An Soc Cient Argent.

32:280–282.

Bergroth E. 1891. Contributions a 1′etude des pentatomides II. Espècies du nouveaux monde. Rer Entomol. 10:214–235.

Campos, LA, Grazia, J. 1995. *Paratibraca*, um novo gênero de Pentatomini (Heteroptera, Pentatomidae). Iheringia Ser Zool. 79:163–171.

Dupuis C. 1955. Les genitália des Hémiptères Hétéroptères (génitalia externe de deux sexes; voies ectodermiques fémèlles). Revue de la morphologie. Lexique de la nomenclature. Index bibliographique analytique. Memoires du Muséum National d'Histoire Naturelle (France). Nouvelle Ser Ser A Zool. 6:183–278.

Dupuis C. 1970. Heteroptera. In: Tuxen SL, editor. Taxonomist's glossary of genitalia of insects. Copenhagen: Munksgaard; p. 190–208.

Farias PM, Klein JT, Sant'Ana J, Redaelli LR, Grazia J. 2012. First records of *Glyphepomis adroguensis* (Hemiptera, Pentatomidae) and its parasitoid, *Telenomus podisi* (Hymenoptera, Platygastridae), on irrigated rice felds in Rio Grande do Sul, Brazil. Rev Bras Entomol. 56(3):383–384. doi:10.1590/S0085-56262012005000044

Fernandes JAM. 1993. Análise flogenética e revisão do gênero *Hypatropis* Bergroth, 1891 (Heteroptera: Pentatomidae) [Thesis]. São Paulo: Universidade de São Paulo; p. VIII+65.

Fernandes JAM, Grazia J. 1998. *Amauromelpia*, a new northern Neotropical genus (Heteroptera, Pentatomidae). Iheringia Ser Zool. 84:153–160.

Fernandes JAM, Grazia J. 2002. *Pedinonotus*, a new southern Neotropical genus (Heteroptera, Pentatomidae, Pentatomini). Zootaxa. 101(1):1–7. doi:10.11646/zootaxa.101.1.1

Frey-da-Silva A. 2005. Análise cladística e biogeografa do grupo Mecocephala (Heteroptera: Pentatomidae: Pentatomini) [Thesis]. Porto Alegre (Brazil): Universidade Federal do Rio Grande do Sul.

Fuentes-Rodríguez D, Franceschini C, Gervazoni P, López G, Sosa A, Kruger R. 2019. Importance of native vegetation for detection and management of rice stink bug (*Tibraca limbativentris*). Bull Entomol Res. Nov:1–11. doi:10.1017/s0007485319000701

Genevcius BC, Schwertner C. 2017. Strong functional integration among multiple parts of the complex male and female genitalia of stink bugs. Biol J Linn Soc. 20:1–13.

doi:10.1093/biolinnean/blx095

Grazia J, Fernandes JAM. 1996. *Parahypatropis*, um novo gênero de Pentatomini (Heteroptera, Pentatomidae). Rev Bras Entomol. 40(3–4):353–356.

Grazia J, Fernandes JAM, Schwertner CF. 1998. *Luridocimex*, um novo gênero de Pentatomini (Heteroptera, Pentatomidae) do Brasil. Iheringia Ser Zool. 84:161–166.

Grazia J, Fernandes JAM, Schwertner CF. 1999. *Stysiana*, a new genus and four new species of Pentatomini (Heteroptera: Pentatomidae) of the Neotropical region. Acta Soc Zool Bohem. 63(1–2):71–83.

Idalgo TDN, Sant'Ana J, Redaelli LR, Pires PDS. 2013. Parasitismo de ovos de *Tibraca limbativentris* Stål (Hemiptera: Pentatomidae) em lavoura de arroz irrigado, Eldorado do Sul, RS. Arq Inst Biol. 80 (4):453–456. doi:10.1590/S1808-16572013000400014

Kment P, Vilímová J. 2010. Thoracic scent efferent system of Pentatomoidea (Hemiptera: Heteroptera): a review of terminology. Zootaxa. 2706(1):1–77. doi:10.11646/zootaxa.2706.1.1

Mayr GL. 1864. Diagnosen neuer Hemipteren. Verh Zool-Bot Ges Wien. 14:903–914.

Rider DA, Schwertner CF, Vilímová J, Réidei D, Kment P, Thomas DB. 2018. Higher systematics of the Pentatomoidea. In: McPherson JE, editor. Invasive stink bugs and related species (Pentatomoidea) – biology, higher systematics, semiochemistry, and management. Boca Raton: CRC Press; p. 76–79, 819.

Schwertner CF, Grazia J, Fernandes JAM. 2002. Revisão do gênero *Mecocephala* Dallas, 1851 (Heteroptera, Pentatomidae). Rev Bras Entomol. 46(2):169–184. doi:10.1590/s00855262002000200009

Stål C. 1860. Bidrag till Rio de Janeiro – traktens Hemipter-fauna. Kungl Svenska Vetenskapsakad Handl. 2(7):1–84.

Stål C. 1872. Enumeratio hemipterorum II. Kungl Svenska Vetenskapsakad Handl. 10(4):1–159.

Tsai JF, Rédei D, Yeh GF, Yang MM. 2011. Jewel bugs of Taiwan (Heteroptera: Scutelleridae). Taichung: National Chung Hsing University; p. 30.

Figures and Tables

Figure 1. Holotype of *Parahypatropis sinuata* (Stål, 1872). (a–b), habitus, dorsal and ventral views; (c), genital plates, in ventral view; (d) holotype labels. Scale bars = 5.0 mm.

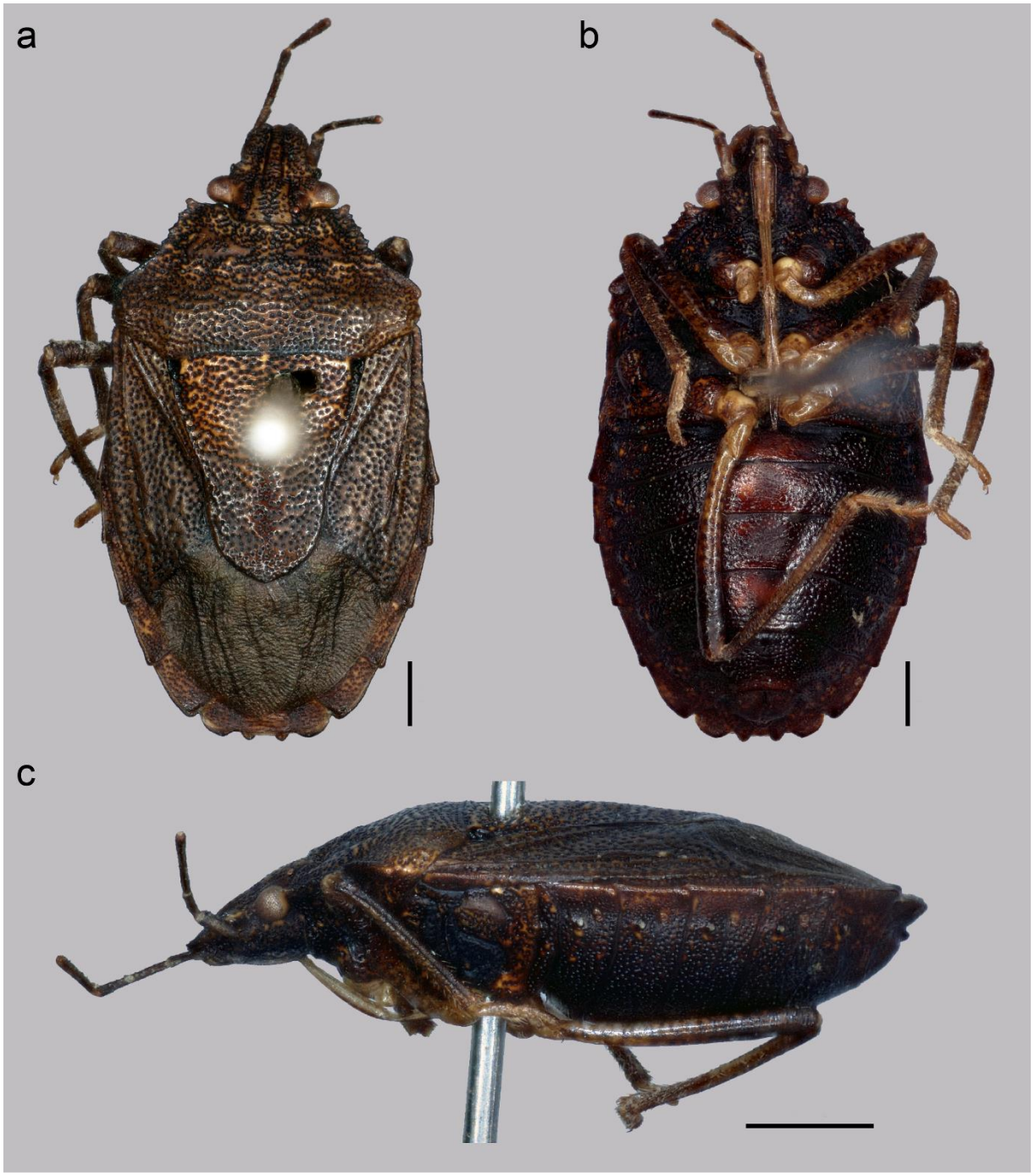

Figure 2. *Parahypatropis sinuata.* Habitus. (a) dorsal; (b) ventral; (c) lateral. Scale bars = 1.0 mm.

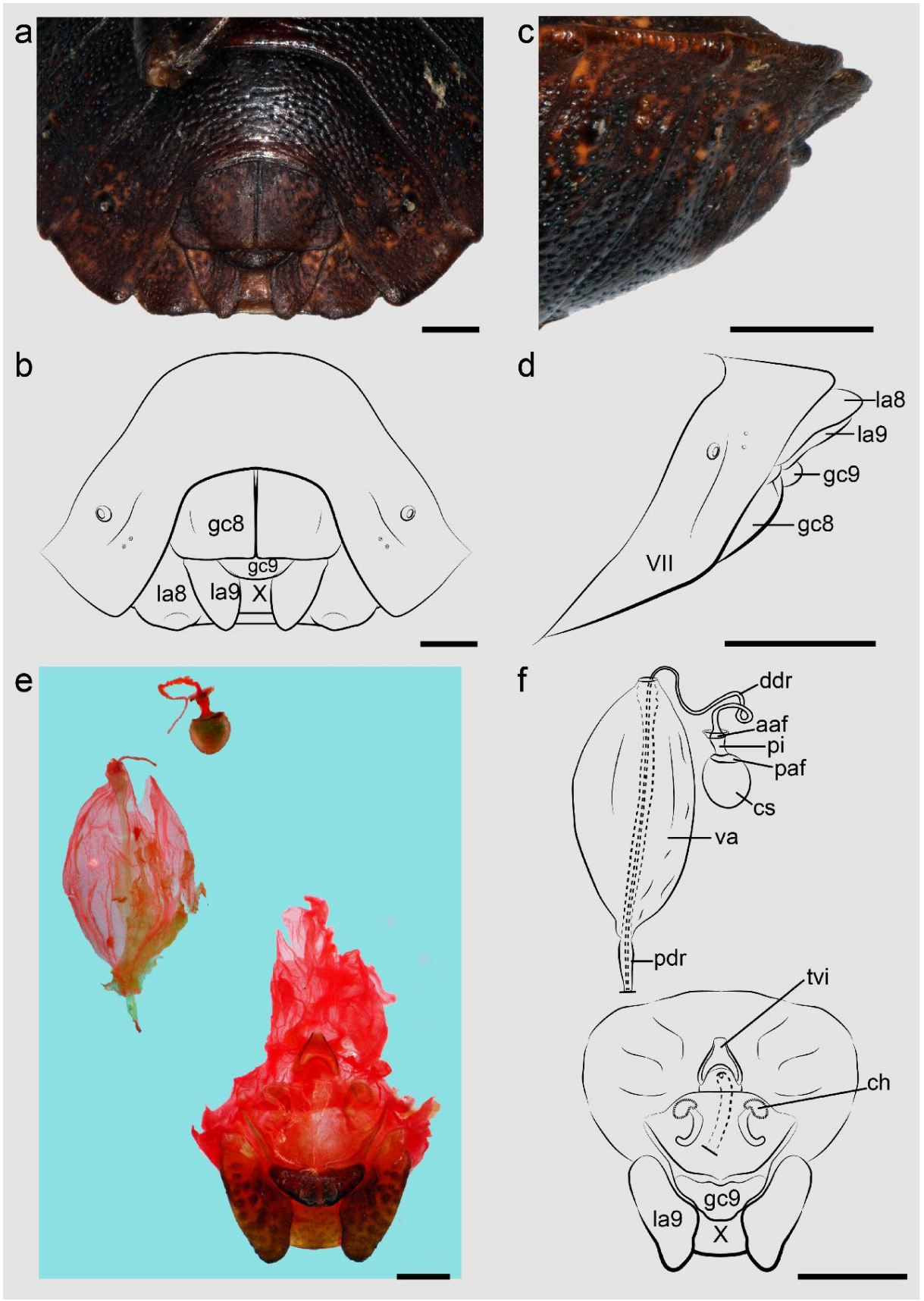
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Figure 3. Female genitalia of *Parahypatropis sinuata* (Stål, 1872). Genital plates: (a–b) posteroventral view; (c–d) lateral view; (e–f) receptaculum seminis and ausenwand. **Abbreviations:** aaf, anterior annular flange; ch, *chitinellipsen*; cs, *capsula seminalis*; ddr, distal *ductus receptaculi*; gc8, gonocoxites VIII; gc9, gonocoxites IX; la8, laterotergite VIII; la9, laterotergite IX; paf, posterior annular flange; pdr, proximal *ductus receptaculi*; pi, *pars intermedialis*; tvi, thickening of vaginal intima; va, vesicular area; X, abdominal segment X. Scale bars = 0.5 mm.

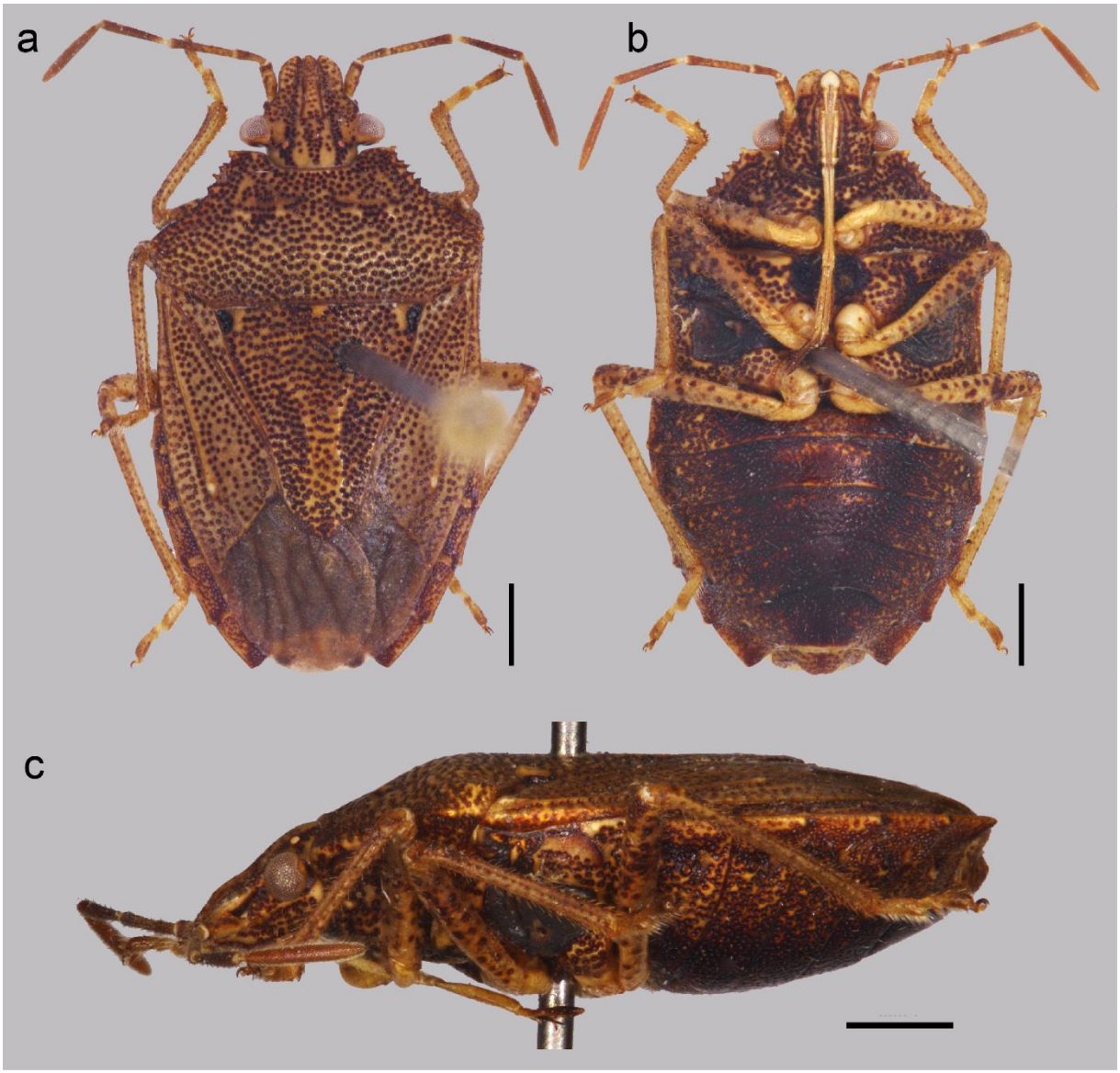


Figure 4. *Parahypatropis occultata* sp. nov. Barros, Barão & Grazia. Habitus. (a) dorsal; (b) ventral; (c) lateral. Scale bars = 1.0 mm.

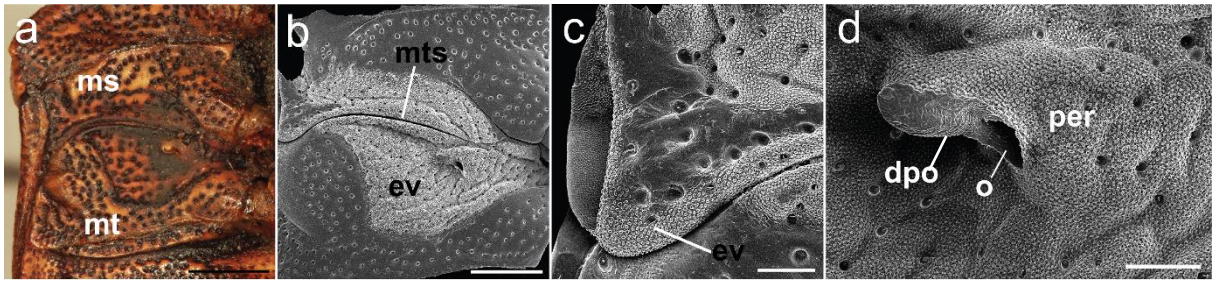


Figure 5. External scent efferent system of *Parahypatropis occultata* sp. nov. Barros, Barão & Grazia. (a) Evaporatorium; (b), scanning electron microscopy of evaporatorium; (c) details of evaporatorium in posterior lateral angles and the outer margin of metapleural; (d) peritreme. **Abbreviations:** ev, evaporatorium; ms, mesopleuron; mt, metapleuron; mts, metathoracic spiracle; o, ostiole, per, peritreme; dpo, periostiolar depression. Scale bars: a = 0.5 mm; b = 500 µm; c–d = 100 µm.

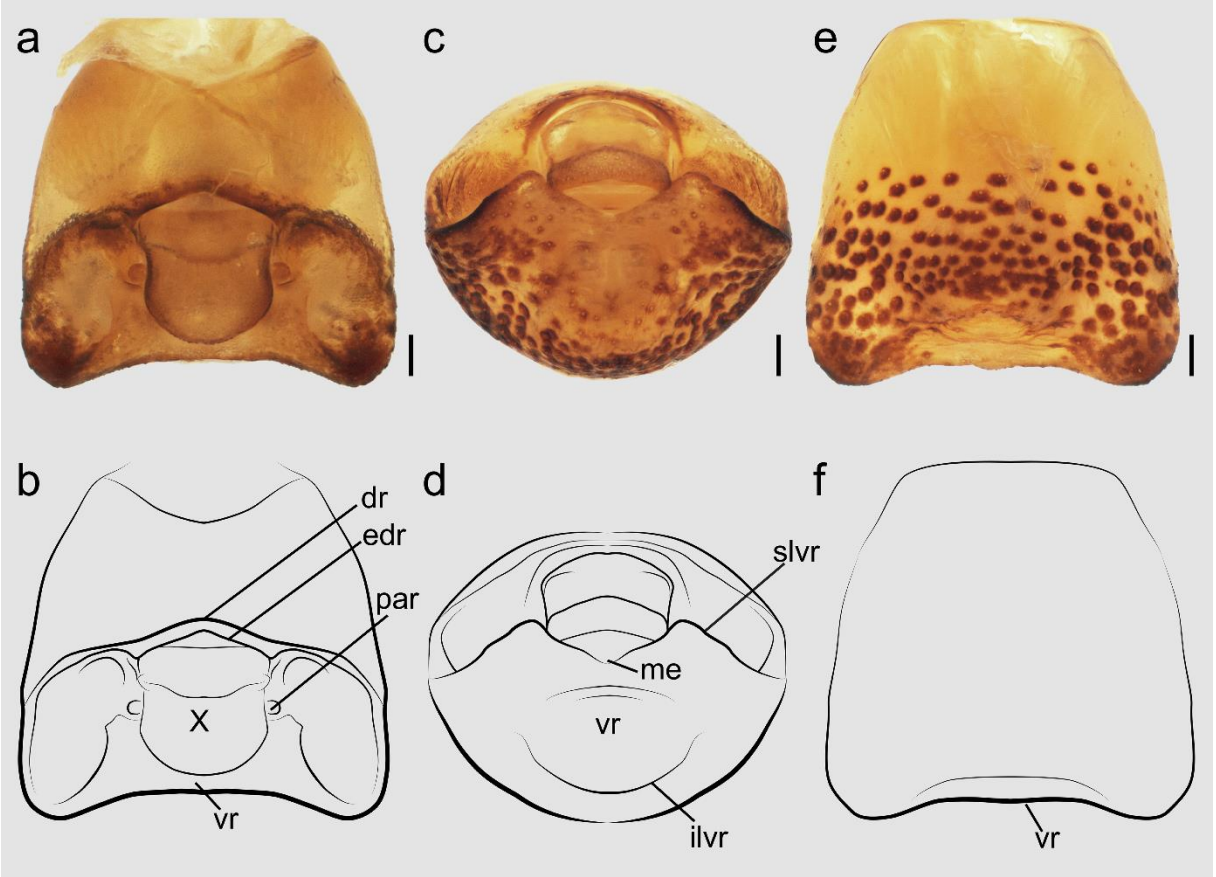


Figure 6. Male genitalia of *Parahypatropis occultata* sp. nov. Barros, Barão & Grazia. Pygophore (a–b) dorsal view; (c–d) posterior view; (e–f) ventral view. **Abbreviations:** dr, dorsal rim; edr, extension of dorsal rim; ilvr, inferior layer of ventral rim; me, median excavation of ventral rim; par, parameres; slvr, superior layer of ventral rim; vr, ventral rim; X, abdominal segment X. Scale bars = 0.1 mm.

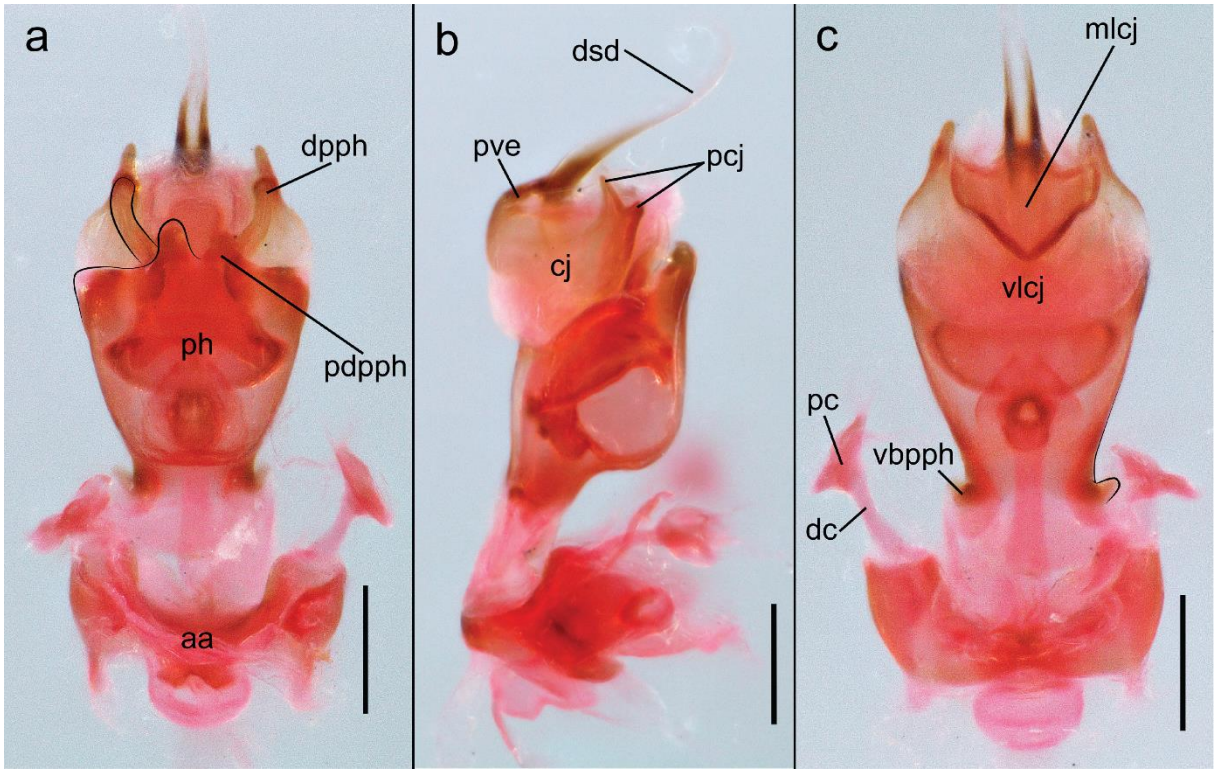


Figure 7. *Phallus* of *Parahypatropis occultata* sp. nov. Barros, Barão & Grazia. (a) dorsal view, (b) lateral view; (c) ventral view. **Abbreviations:** aa, articular apparatus; cj, conjunctiva; dc, dorsal connective; dpph, dorsal process of *phallotheca*; dsd, *ductus seminis distalis*; mlcj, median lobe of conjunctiva; pc, *processus capitati*; pcj, process of conjunctiva; ph, *phallotheca*; pdpph, posterodorsal projection of *phallotheca*; pve, process of vesica; vbpph, ventrobasal projection of *phallotheca*; vlcj, ventral lobe of conjuctiva. Scale bars = 0.2 mm.

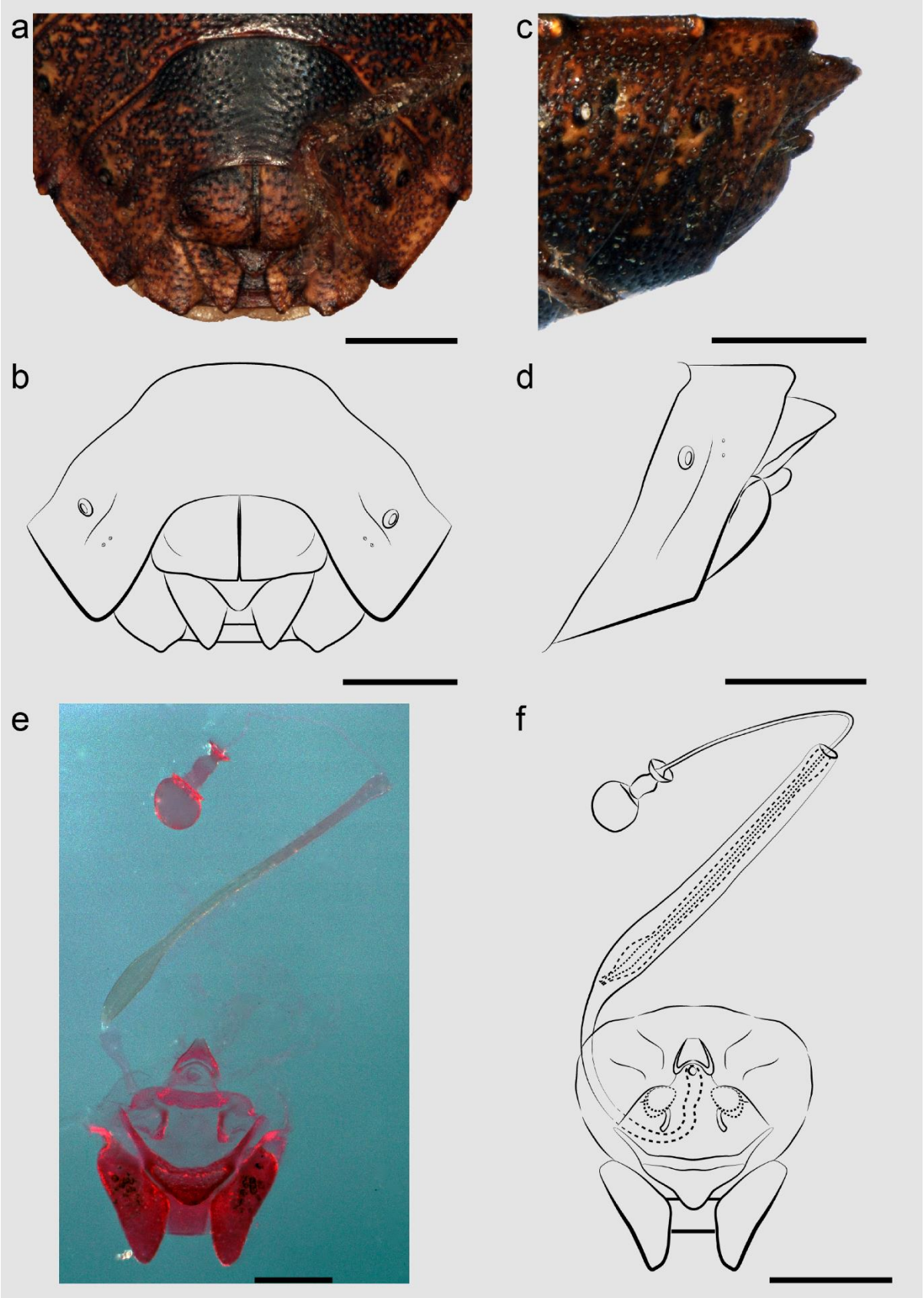


Figure 8. Female genitalia of *Parahypatropis occultata* sp. nov. Barros, Barão & Grazia. Genital plates (a–b) posteroventral; (c–d) lateral view; (e–f) receptaculum seminis and ausenwand. Scale bars = 0.5 mm.

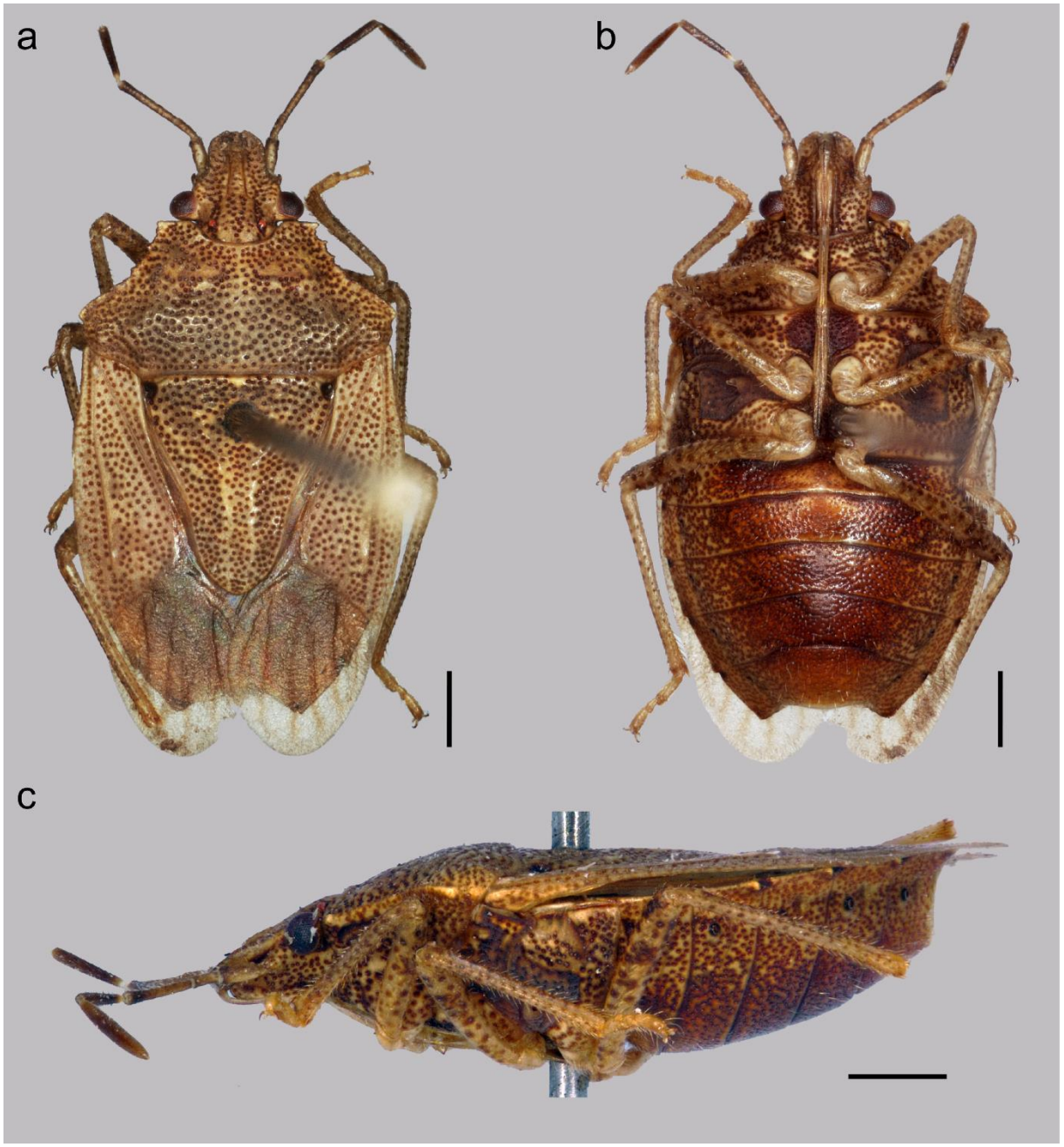


Figure 9. *Parahypatropis similis* sp. nov. Barros, Barão & Grazia. Habitus (a) dorsal; (b) ventral; (c) lateral. Scale bars = 1.0 mm.

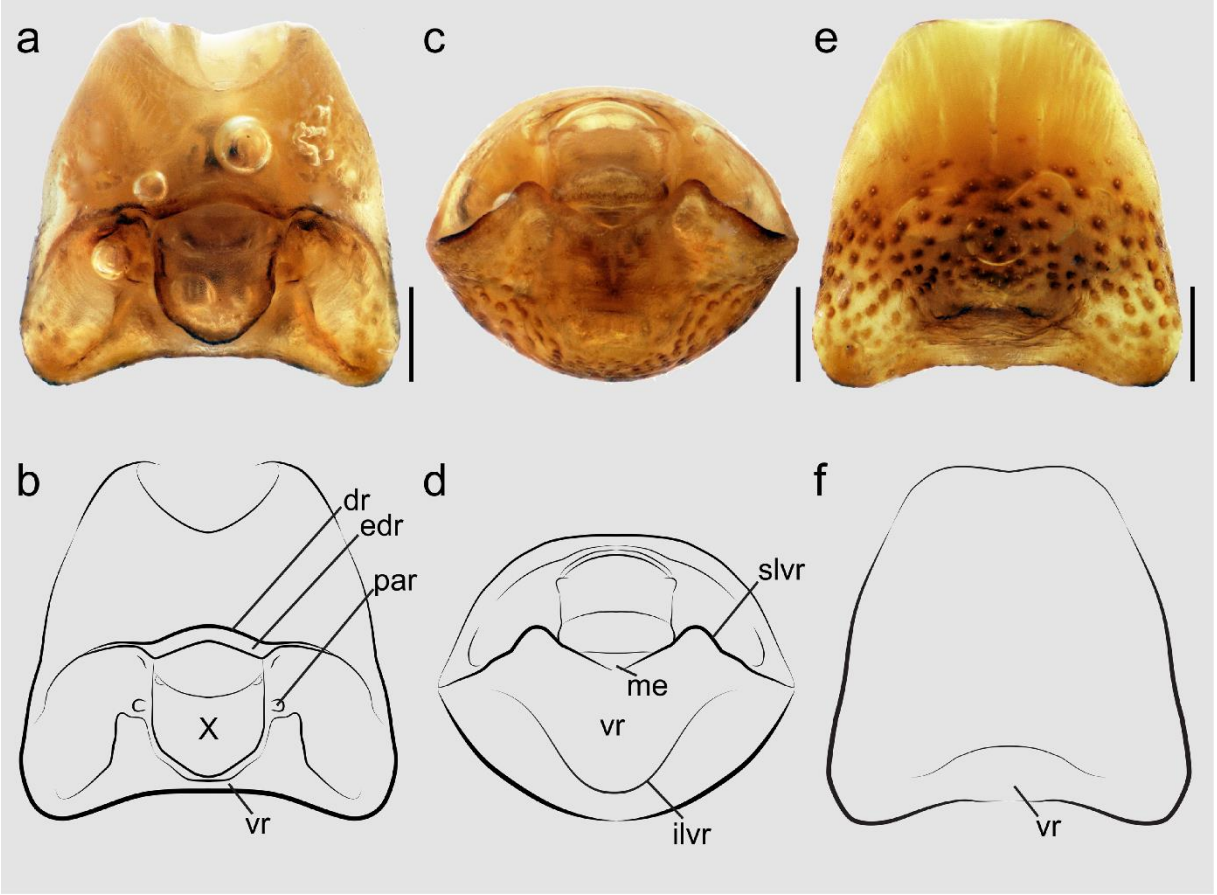


Figure 10. Male genitalia of *Parahypatropis similis* sp. nov. Barros, Barão & Grazia. Pygophore: (a–b) dorsal view; (c–d) posterior view; (e–f) ventral view. **Abbreviations:** dr, dorsal rim; edr, extension of dorsal rim; ilvr, inferior layer of ventral rim; me, median excavation of ventral rim; par, parameres; slvr, superior layer of ventral rim; vr, ventral rim; X, abdominal segment X. Scale bars = 0.2 mm.

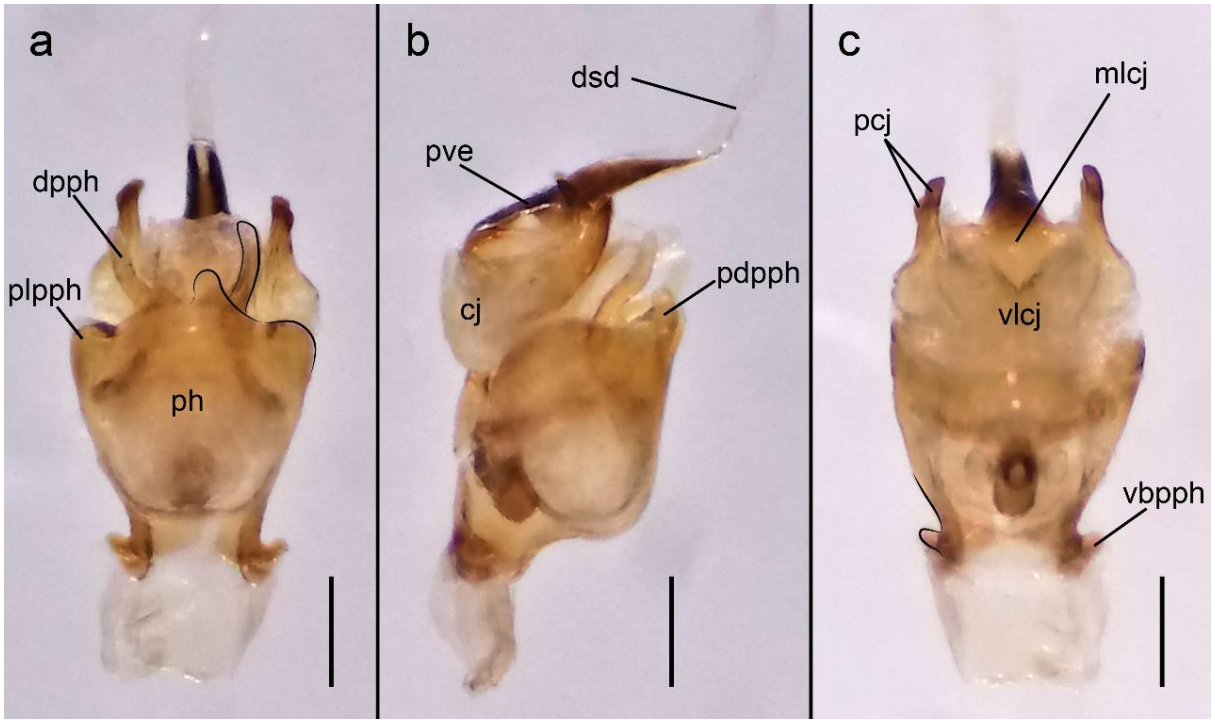


Figure 11. *Phallus* of *Parahypatropis similis* sp. nov. Barros, Barão & Grazia. (a) dorsal view, (b) lateral view; (c) ventral view. **Abbreviations:** cj, conjunctiva; dpph, dorsal process of *phallotheca*; dsd, *ductus seminis distalis*; mlcj, median lobe of conjunctiva; pcj, process of conjunctiva; pdpph, posterodorsal projection of *phallotheca*; plpph, posterolateral projection of *phallotheca*; ph, *phallotheca*; pve, process of vesica; vbpph, ventrobasal projection of *phallotheca*; vlcj, ventral lobe of conjuctiva. Scale bars = 0.2 mm.

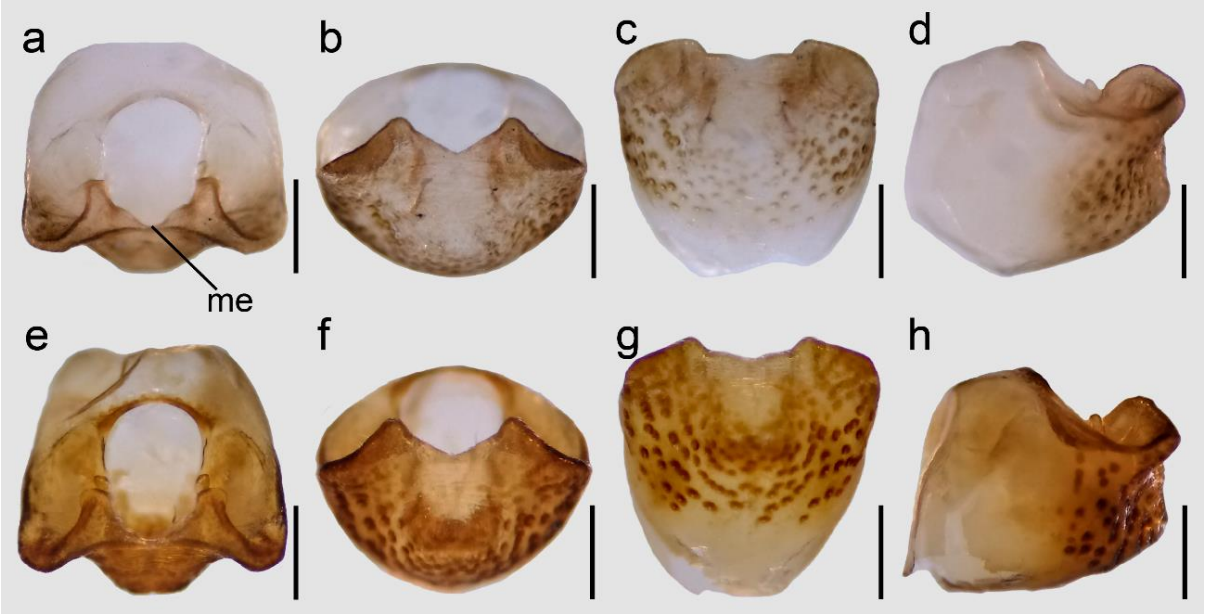


Figure 12. Comparison of male genitalia of *Parahypatropis* species in different views. (a–d) *P. occultata* sp. nov. Barros, Barão & Grazia; (e–h); *P. similis* sp. nov. Barros, Barão & Grazia. **Abbreviation:** me, median excavation of ventral rim. Scale bars = 0.2 mm.

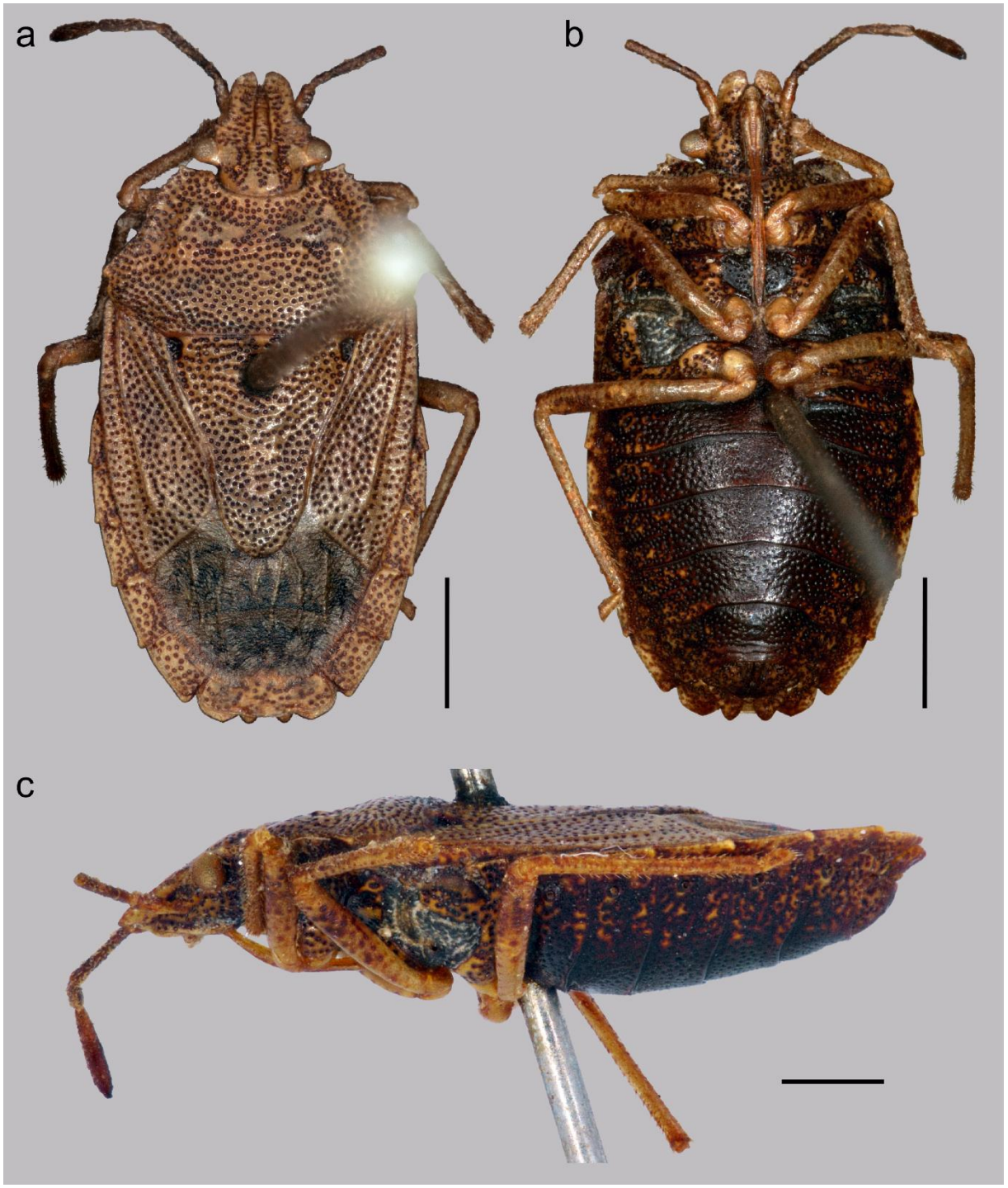


Figure 13. *Prolatucoris mandibulatus* sp. nov. Barros, Brugnera & Grazia. Habitus (a) dorsal; (b) ventral; (c) lateral. Scale bars =1.0 mm.

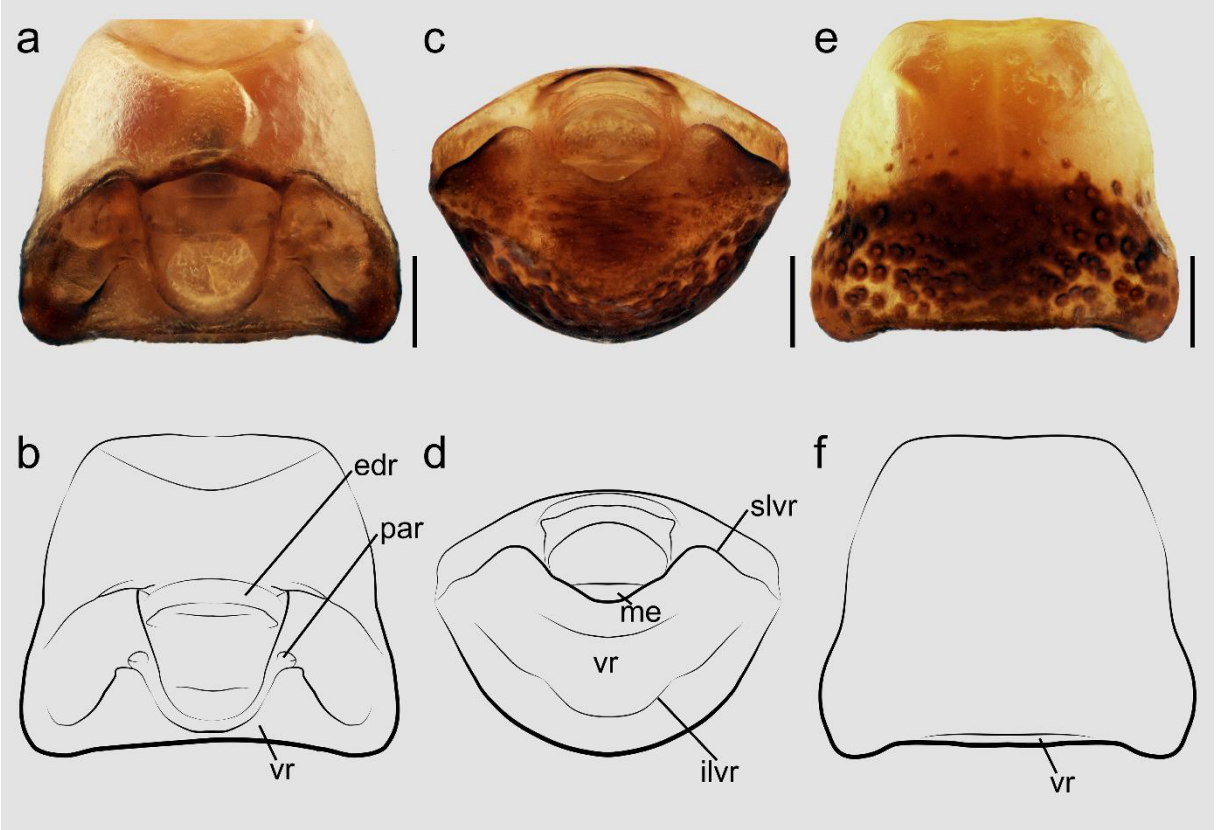


Figure 14. Male genitalia of *Prolatucoris mandibulatus* sp. nov. Barros, Brugnera & Grazia. Pygophore: (a–b) dorsal view; (c–d) posterior view; (e–f) ventral view. **Abbreviations:** edr, extension of dorsal rim IX; ilvr, inferior layer of ventral rim; me, median excavation of ventral rim; par, parameres; slvr, superior layer of ventral rim; vr, ventral rim; X, abdominal segment X. Scale bars = 0.2 mm.

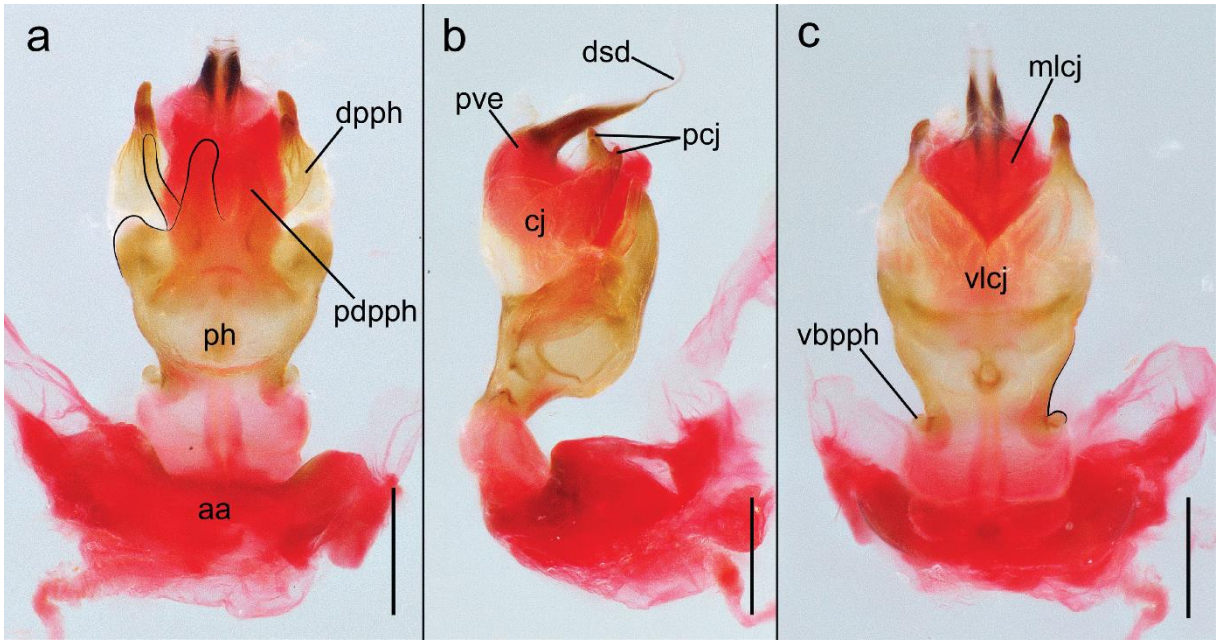
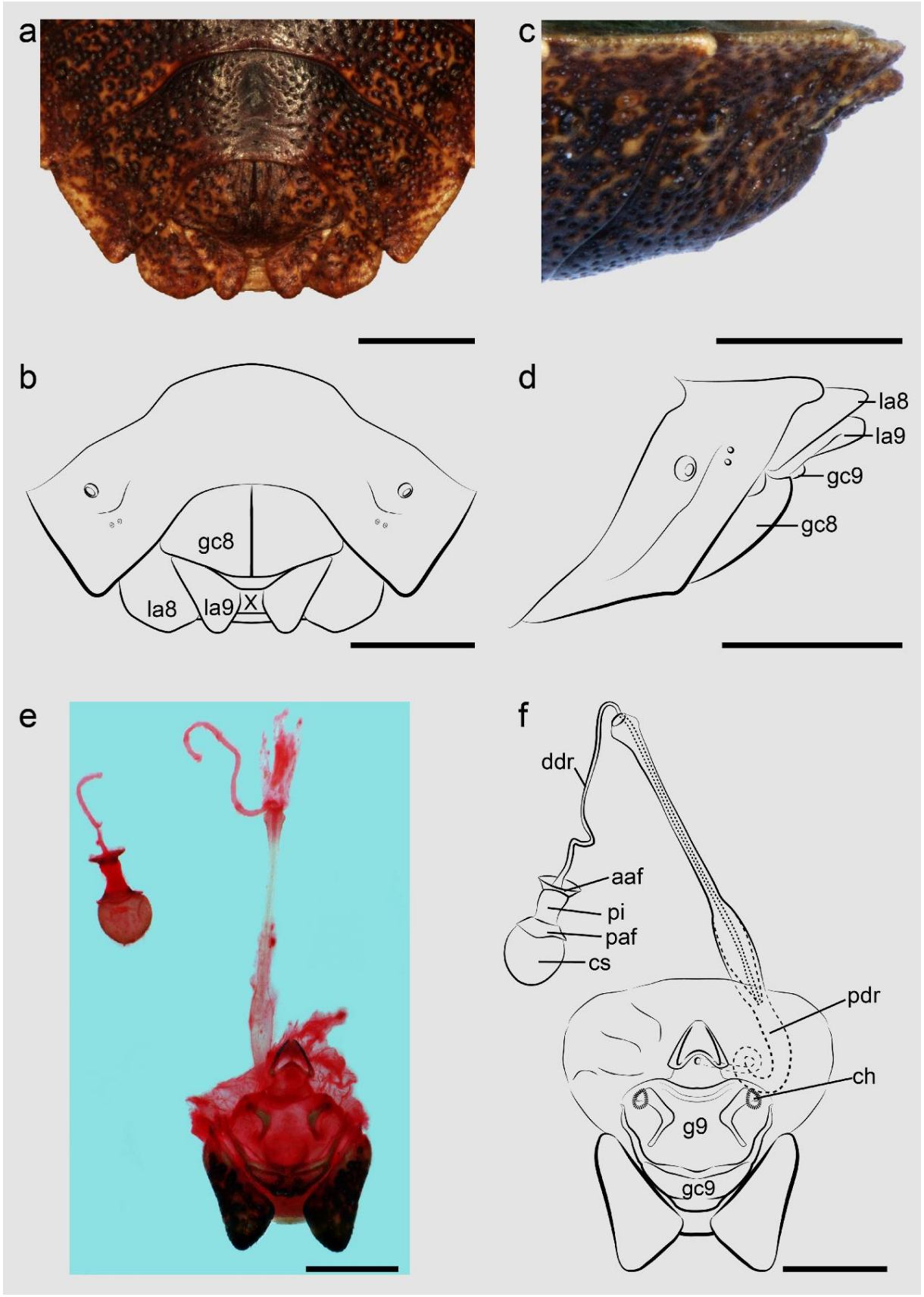


Figure 15. *Phallus* of *Prolatucoris mandibulatus* sp. nov. Barros, Brugnera & Grazia. (a) dorsal view; (b) lateral view; (c) ventral view. **Abbreviations:** aa, articular apparatus; vbpph, ventrobasal projection of *phallotheca*; cj, conjunctiva; dc, dorsal connective; dpph, dorsal process of *phallotheca*; ds, *ductus seminis distalis*; pc, *processus capitati*; pcj, process of conjunctiva; ph, *phallotheca*; pdpph, posterodorsal projection of *phallotheca*; pve, process of vesica. Scale bars = 0.2 mm.


a
c
b
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la9
X
d
la8
la9
gc9
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e
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ddr
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pi
paf
cs
pdr
ch
g9
gc9

Figure 16. Female genitalia of *Prolatucoris mandibulatus* sp. nov. Barros, Brugnera & Grazia. Genital plates: (a–b) posteroventral view; (c–d) lateral view; (e–f) receptaculum seminis and ausenwand. **Abbreviations:** aaf, anterior annular flange; ch, *chitinellipsen*; cs, *capsula seminalis*; ddr, distal *ductus receptaculi*; gc8, gonocoxites VIII; g9, gonapophyses 9; gc9, gonocoxites IX; la8, laterotergite VIII; la9, laterotergite IX; paf, posterior annular flange; pdr, proximal *ductus receptaculi*; pi, *pars intermedialis*; X, abdominal segment X. Scale bars = 0.5 mm.

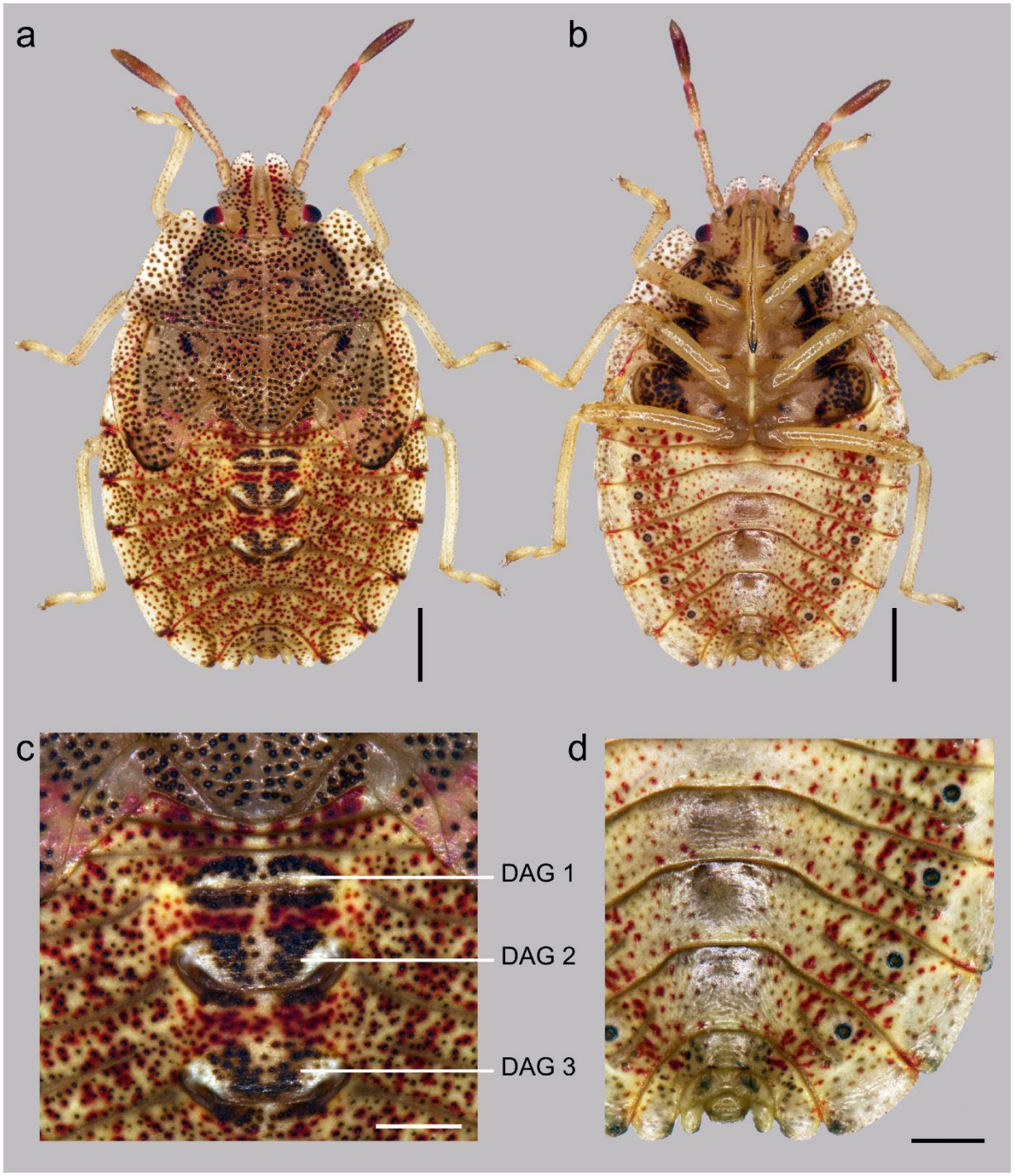

Figure 17. Fifth instar nymph of *Prolatucoris mandibulatus* sp. nov. Barros, Brugnera & Grazia. (a–b) habitus dorsal and ventral; © dorsal abdominal glands; d, abdominal plates. Scale bars = 0.5 mm.

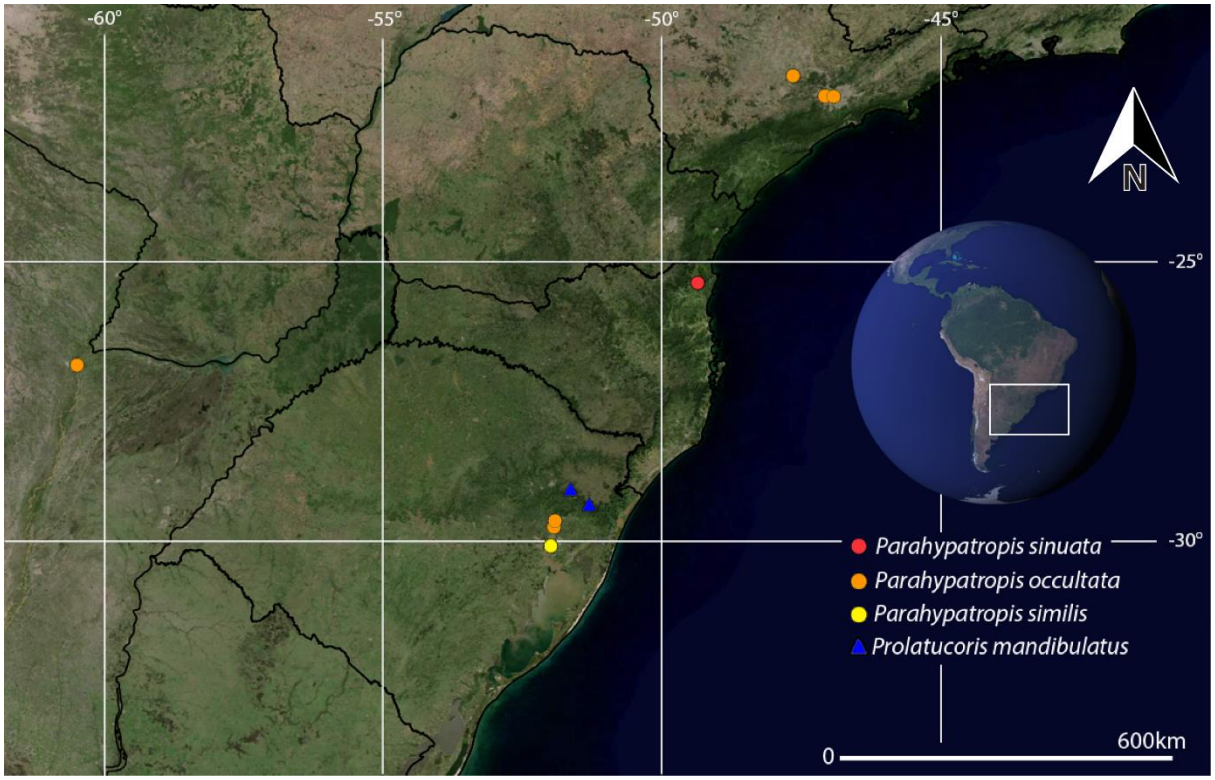

Fig 18. Occurrence records of species of *Parahypatropis* and *Prolatucoris*.

Table 1. Morphometric parameters measured. Measurements [mean (minimum–maximum)] are given in millimetres, followed by sample number. The standard deviation is presented when the sample number is ≥ 3. **Abbreviations**: HL, head length; HW, head width; HLE, length of head at eye level; IOD, interocular distance; CL, length of clypeus; AI, length of antennomere I; AII, length of antennomere II; AIII, length of antennomere III; AIV, length of antennomere IV; AV, length of antennomere V; LI, length of labium segment I; LII, length of labium segment II; LIII, length of labium segment III; LIV, length of labium segment IV; PL, pronotum length; PW, pronotum width; SL, scutellum length; SW, scutellum width; BW, Body width; BL, body length.

	Measurements									
						Antenna				
Species	**HL**	**HW**	**HLE**	**IOD**	**CL**	**AI**	**AII**	**AIII**	**AIV**	**AV**
Parahypatropis sinuata	1.90 (1.80-2.00) 2	2.08 (1.90-2.25) 2	-	1.30 1	1.25 1	0.57 1	0.43 1	1.00 1	0.93 1	-
Parahypatropis occultata **sp. nov.**	1.78 ± 0.06 (1.68-1.88) 9	1.99 ± 0.08 (1.88-2.12) 9	0.93 ± 0.03 (0.88-0.95) 7	1.16 ± 0.06 (1.07-1.25) 9	1.78 ± 0.06 (1.68-1.88) 9	0.55 ± 0.06 (0.50-0.62) 9	0.43 ± 0.05 (0.38-0.50) 9	0.97 ± 0.05 (0.88-1.00) 9	0.93 ± 0.07 (0.87-1.10) 8	1.26 ± 0.08 (1.18-1.42) 8
Parahypatropis similis **sp. nov.**	1.83 ± 0.06 (1.78-1.90) 3	1.98 ± 0.03 (1.95-2.00) 3	1.05 ± 0.22 (0.93-1.30) 3	1.11 ± 0.01 (1.10-1.12) 3	1.01 ± 0.06 (0.95-1.07) 3	0.51 3	0.43 3	0.99 ± 0.02 (0.96-1.00) 3	0.92 ± 0.02 (0.90-0.93) 3	1.22 ± 0.04 (1.20-1.27) 3
Prolatucoris mandibulatus **sp. nov.**	1.68 ± 0.09 (1.55-1.75) 6	1.85 ± 0.07 (1.75-1.93) 6	0.94 ± 0.12 (0.88-1.18) 6	1.13 ± 0.12 (1.00-1.33) 6	0.82 ± 0.06 (0.75-0.90) 6	0.48 ± 0.03 (0.45-0.50) 6	0.33 ± 0.03 (0.30-0.38) 6	0.83 ± 0.11 (0.70-1.00) 6	0.81 ± 0.07 (0.75-0.88) 6	1.11 ± 0.04 (1.05-1.15) 6

Table 1. Morphometric parameters measured. Measurements [mean (minimum–maximum)] are given in millimetres, followed by sample number. The standard deviation is presented when the sample number is ≥ 3. **Abbreviations**: HL, head length; HW, head width; HLE, length of head at eye level; IOD, interocular distance; CL, length of clypeus; AI, length of antennomere I; AII, length of antennomere II; AIII, length of antennomere III; AIV, length of antennomere IV; AV, length of antennomere V; LI, length of labium segment I; LII, length of labium segment II; LIII, length of labium segment III; LIV, length of labium segment IV; PL, pronotum length; PW, pronotum width; SL, scutellum length; SW, scutellum width; BW, Body width; BL, body length.

	Measurements									
	Labium									
Species	**LI**	**LII**	**LIII**	**LIV**	**PL**	**PW**	**SL**	**SW**	**BW**	**BL**
Parahypatropis sinuata	0.88 1	1.45 1	1.18 1	0.88 1	2.20 1	4.75 2	3.61 1	3.04 1	5.01 2	9.45 ± 0.78 (8.90-10.0) 2
Parahypatropis occultata **sp. nov.**	0.76 ± 0.05 (0.70-0.88) 9	1.27 ± 0.06 (1.20-1.38) 9	0.97 ± 0.09 (0.80-1.12) 9	0.78 ± 0.05 (0.70-0.88) 9	1.97 ± 0.10 (1.80-2.15) 9	4.67 ± 0.25 (4.25-5.10) 9	3.06 ± 0.10 (2.96-3.23) 9	2.81 ± 0.14 (2.66-3.11) 9	4.20 ± 0.24 (4.00-4.62) 7	8.62 ± 0.47 (8.12-9.25) 7
Parahypatropis similis **sp. nov.**	0.76 ± 0.06 (0.70-0.83) 3	1.12 ± 0.00 (1.12-1.12) 3	0.95 ± 0.04 (0.92-1.00) 3	0.75 3	1.80 ± 0.01 (1.70-1.90) 3	4.07 ± 0.15 (3.90-4.20) 3	2.86 ± 0.12 (2.77-3.00) 3	2.61 2	3.53 ± 0.15 (3.40-3.70) 3	7.77 ± 0.21 (7.60-8.00) 3
Prolatucoris mandibulatus **sp. nov.**	0.54 ± 0.03 (0.50-0.57) 6	0.88 6	0.64 ± 0.03 (0.62-0.70) 6	0.54 ± 0.05 (0.50-0.62) 6	1.89 ± 0.19 (1.70-2.25) 6	4.40 ± 0.61 (3.75-5.50) 6	2.87 ± 0.10 (2.74-2.96) 6	2.49 ± 0.18 (2.28-2.66) 6	4.44 ± 0.54 (3.75-5.13) 6	8.19 ± 0.51 (7.50-9.00) 6

CAPÍTULO II[3]

Systematics of the *Mecocephala* group (Hemiptera: Heteroptera: Pentatomidae) based on a phylogenetic perspective: Inclusion of *Hypanthracos*, description of three new genera, and redescription of *Ogmocoris*

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[ASP_78-2_Barros_Electronic_Supplements.zip DOI: 10.26049/ASP78-2-2020-07/1]

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Abstract. As a result of the frst phylogenetic analysis of the *Mecocephala* group, *Hypanthracos* Grazia & Campos, 1996 is included to the *Mecocephala* group; *H. meridionalis* is redescribed, and four new species in three new genera are described: the genus *Chimerocoris* **gen.n.** is proposed to accommodate *C. luridus* **sp.n**., the genus *Liscocephala* **gen.n.** is proposed to accommodate *L. fumosa* **sp.n.** and the genus *Triunfus* **gen.n.** is proposed to accommodate two new species: *T. carvalhoi* **sp.n**. and *T. incarnatus* **sp.n.** The new taxa are distributed in Brazil and Uruguay. In addition, *Ogmocoris* Mayr, 1864 is redescribed, a lectotype is designated, and the genitalia of both sexes for *O. hypomelas* (Burmeister) are described for the frst time. The

[3] Formatado conforme as normas do periódico Arthropod Systematics & Phylogeny. Veja: ASP

standard terminology for the male genitalia of members of the *Mecocephala* group is proposed. Photographs, illustrations, and a distribution map are also provided for all the species.

Keywords. Stink bug, Morphological phylogeny, Taxonomy, South America

Introduction

The Pentatomidae, commonly known as stink bugs, comprise about 5,000 species. The family is divided into nine subfamilies (GRAZIA et al. 2008). The Pentatominae is the most diverse subfamily, and it is currently divided into 42 tribes (RIDER et al. 2018). The tribe Carpocorini is also a very diverse and heterogeneous group presently containing 107 extant genera (ca. 500 species). The Carpocorini, as well as most tribes within the Pentatominae, has never been the subject of phylogenetic analyses. Traditionally, the genera assigned to the Carpocorini have been organized into groups of genera – *Carpocoris* group (MULSANT & REY 1866), *Mormidea* group (RIDER & EGER 2008), *Oebalus* group (BARCELLOS & GRAZIA 2008), *Euschistus* group (ROLSTON 1974, BARÃO et al. 2020) and *Mecocephala* group (SCHWERTNER et al. 2002) –, based especially in morphological similarity and taxonomic history.

The *Mecocephala* group is one of the most diverse groups of genera including 44 species, assigned to 13 genera, all with similar morphology, and all are distributed in the Neotropical Region (SCHWERTNER et al. 2002, FREY-DA-SILVA 2005, BARROS et al. in press.), as follows: *Amauromelpia* Fernandes & Grazia, 1998, *Glyphepomis* Berg, 1891, *Hypatropis* Bergroth, 1891, *Luridocimex* Grazia, Fernandes & Schwertner, 1998, *Mecocephala* Dallas, 1851, *Ogmocoris* Mayr, 1864, *Parahypatropis* Grazia & Fernandes, 1996, *Paramecocephala* Benvegnú, 1968, *Paratibraca* Campos & Grazia, 1995, *Pedinonotus* Fernandes & Grazia, 2002, *Prolatucoris* Barros, Brugnera & Grazia, in press., *Tibraca* Stål, 1860, and *Stysiana* Grazia, Fernandes & Schwertner, 1999. Several species (e.g. *Tibraca limbativentris* Stål, 1860, *Glyphepomis adroguensis* Berg, 1891 and *Hypatropis inermis* (Stål, 1872) are considered economically important because they feed on cultivated plants, mainly rice (PANTOJA et al. 2005, FARIAS et al. 2012, KRINSKI et al. 2015).

Historically, the genera have been grouped based on characters of head and genital morphology. The head is usually long, with the anteocular portion longer than the head width across the eyes; antennomere 2 is reduced; and the male genitalia has reduced parameres and

the tenth segment frequently covers the genital cup. In an effort to better delimit this group, we are revising all included genera and species. Moreover, even though there is no formal proposal in the literature, the genus *Hypanthracos* Grazia & Campos, 1996 has been added to the *Mecocephala* group, mainly due to similarities in its head and genitalic morphology. According to GRAZIA & CAMPOS (1996), *Hypanthracos* is related to *Tibraca* by the shape of the head, the disposition of the clypeus and mandibular plates, the shape and length of the labium, the shape of the mesosternal carina, the presence of two layers in the ventral rim of the pygophore, and the presence of processes in the phallotheca. In contrast, BARÃO et al. (2017) in a study of the morphological variation of external thoracic scent efferent system (ESES) in Carpocorini, sampling ten genera belonging to the *Mecocephala* group as well as *Hypanthracos*, demonstrated that even though *Hypanthracos* shares many morphological characters with the other genera of this group, its ESES morphology is very different from the others: "the evaporatorium is poorly developed on meso- and metapleuron and anterolateral margin of metapleural evaporatorium is tapered" (BARÃO et al. 2017).

Furthermore, measurement ratios of some structures, especially the head (e.g., width vs. length, eye width, length of antennomeres, total labial length, and the lengths of individual labiomeres) are usually considered important characters for differentiating genera belonging to this group. Some of these measurements are used as diagnostic characters, but they have never been used or tested in a phylogenetic analysis for the group.

During our effort to revise and update the systematics and taxonomy of this group, several new taxa have been discovered through the analysis of type material and literature. In this paper, we gathered representatives of eight genera of the *Mecocephala* group as well as three outgroup genera to test, through a phylogenetic analysis (using continuous and discrete characters), the hypothesis that the four undescribed taxa represent three new genera (and four new species) tentatively placed in the *Mecocephala* group. Also, we tested the inclusion of *Hypanthracos* in this group. Additionally, we redescribe *Hypanthracos meridionalis* Grazia & Campos, and *Ogmocoris*, including a designation of lectotype, and the internal male and female genitalia described for the first time for *O. hypomelas* (Burmeister), and we propose a standard terminology for the male genitalia of members of the *Mecocephala* group.

Material and methods

2.1 Material

We have selected 31 species belonging to three groupings within Carpocorini of the Neotropics (*Euschistus*, *Mormidea*, and *Mecocephala* groups), listed in Table 1, Fig. S1. Outgroup selection was based on taxonomic history and morphological diversity of characters here studied, obtained from several collections, and from the literature (Table 1). The ingroup taxa comprises 17 (about 39%) of the species currently assigned to the *Mecocephala* group + *Hypanthracos meridionalis*. Four other undescribed taxa were included to test their phylogenetic relationship with the other genera of *Mecocephala* group. Trees were rooted on *Carpocoris purpureipennis* (De Geer), a species belonging in the type genus of the Carpocorini. The additional material examined is listed in Electronic Supplement 1.

2.2. Methods

2.2.1. Phylogenetic analysis

A total of 144 characters were used, 12 continuous and 132 discrete. The terminals were coded based on the examination of the specimens or from the literature (Table 1). The matrix of discrete characters was constructed using Mesquite 3.51 (MADDISON & MADDISON 2018) and the matrix of continuous characters using a spreadsheet. Continuous characters comprise the range of one standard deviation around the mean, rescaled to vary between 0 and 1, in order to weight the same as a hierarchically perfect character. The character declarations follow SERENO (2007). Some characters were provided by GRAZIA (1997), WEILER et al. (2016), BARÃO et al. (2017) and BARÃO et al. (2020). The following notations for characters are used in the Results and Discussion sections: '(X:Y)', in which X represents the character and Y represents the state.

A combined matrix was used and imported to the TNT 1.5 (GOLOBOFF et al. 2016) and analyzed under equal weights (EW) and implied weights (IW). Strict consensus was calculated for the two weighting schemes as well as for Jackknife frequencies. The phylogenetic analysis was conducted with traditional search (*rseed* 1; *mult* = 1000; *tbr hold* = 150). The concavity value (*k*) for the IW analyses was estimated through the Mirande's protocol (MIRANDE 2009) using the default parameters. The 11 runs resulted in 1 tree each; trees were compared with Subtree Pruning Regrafting distances (SPRdiff). Six values of K (k0–k5, values shown in Table 3) were equally optimal and we performed another analysis using the average of these values, (*k*-value = 4.274) for phylogenetic discussion. Topology stability was calculated for each

weighting scheme by Jackknife with symmetric resampling, recording absolute-group frequencies (AF) and Group present/Contradicted (GC) frequency differences, using 1000 pseudo-replicates, removal probability of 36%, and collapsing nodes with values less than 50% – search parameters were the same as described above.

2.2.2 Morphology and its documentation

Twenty morphometric parameters were obtained and are presented in Table 4. Measurements [mean (minimum–maximum)] are given in millimetres, followed by sample number. The standard deviation is presented when the sample number is ≥ 3. The measurements for a single specimen correspond to the absolute value of the holotype. The male genitalia and measurements of *Paramecocephala foveata* Benvegnú were based on the study of the prepared plate of the holotype and from the literature (BENVEGNÚ 1968, FREY-DA-SILVA et al. 2002); and for the study of the female genitalia, we used the photographic examination made available by FREY-DA-SILVA (pers. comm.).

2.2.3 Specimen preparation

The genitalia were macerated with aqueous supersaturated potassium hydroxide solution (KOH) and stained with Congo red, when necessary. For those specimens in which the pygophore remained dark, a solution of sodium hypochlorite (NaClO) diluted in water was used for depigmentation. For *O. paranaensis* Frey-da-Silva, Grazia & Fernandes, *Liscocephala fumosa* **sp.n.** and *Chimerocoris luridus* **sp.n.**, the internal genitalia were not dissected because those species were represented by a single specimen each.

For Scanning Electron Microscopy (SEM) of external scent efferent system, the left meso- and metapleuron of dried preserved specimens were removed, cleaned manually with forceps and fine tipped brush and isopropyl alcohol, kept submerged in Renu® contact lens solution for 48 h, and then agitated in an ultrasonic bath (5.400 kHz) with water and detergent solution for 45 s. Afterward, meso- and metapleuron were dehydrated at 50° C for 48 h, sputter coated with carbon and gold and observed by SEM at the Centro de Microscopia Eletrônica of UFRGS.

2.2.4 Photos and illustrations

Specimens were photographed in multiple focal planes with the Digital Sight DS-Fi2 camera coupled to a stereomicroscope Nikon AZ100M and stacked with the software NIS Elements

AR, available at the Department of Zoology, UFRGS, and edited with Adobe Photoshop CS5. Line vector drawings were made with Adobe Illustrator CS5 over drawings using a camera lucida coupled to a stereomicroscope or made over photographs taken under light microscopy, and the specimens used in illustrations are indicated with the notation <illustrated specimen> in the Analyzed material sections.

2.2.5 Georeferencing and map

Distribution were retrieved from collection labels and the literature (i.e. FREY-DA-SILVA et al. 2002, GRAZIA & CAMPOS 1996) and georeferenced using online global gazetteers. Distributions were plotted with SimpleMappr using the layers "country" and "relief" in the geographic projection and edited in Adobe Illustrator CS5.

2.3 Abbreviations

Morphology. aa, articular apparatus; **aaf**, anterior annular flange; **cj**, conjunctiva; **cs**, *capsula seminalis*; **cx2**, mesocoxae; **cx3**, metacoxae; **dc**, dorsal connective; **dr**, dorsal rim; **ddr**, distal ductus receptaculi; **dpph**, dorsal process of phallotheca; **dsd**, ductus seminis distalis; **edr**, extension of dorsal rim; **eses**, external thoracic scent efferent system; **ev**, evaporatorium; **ilvr**, inferior layer of ventral rim; **la8**, laterotergites 8; **la9**, laterotergites 9; **lmp**, lateral margin of pygophore; **lr**, lateral rim; **lppph**, lateroposterior projection of phallotheca; **lvr**, layers of ventral rim; **mlcj**, median lobe of conjunctiva; **ms**; mesopleuron; **mt**, metapleuron; **om**, outer margin of evaporatorium; **pa**, posterolateral angle; **paf**, posterior annular flange; **par**, parameres; **pc**, *processus capitati*; **pcj**, process of conjunctiva; **pdr**, proximal ductus receptaculi; **pdpph**, posterodorsal projection of phallotheca; **per**, peritreme; **ph**, phallotheca; **pi**, *pars intermedialis*; **prX**, process of segment X; **pslvr**, projection of superior layer of ventral rim; **pve**, process of vesica; **rs**, ring sclerites; **slvr**, superior layer of ventral rim; **tvi**, thickening of vaginal intima; **va**, vesicular area; **va8**, valvulae 8; **va9**, valvulae 9; **vf8**, valvifers 8; **vf9**, valvifers 9; **vbpph**, ventrobasal projection of phallotheca; **vlcj**, ventral lobe of conjunctiva; **vr**, ventral rim; **X**, abdominal segment X.

Morphometric parameters measured. A1, length of antennomere 1; **A2**, length of antennomere 2; **A3**, length of antennomere 3, **A4**, length of antennomere 4; **A5**, length of antennomere 5; **BL**, body length, from the apex of the head to the apex of the abdominal tergite 7; **BW**, body width, abdominal width at level of sternite 3; **CL**, length of clypeus, from the apex

to level of the clypeal suture; **HL**, head length; **HLE**, length of head at compound eye level; **HW**, head width; **IOD**, interocular distance; **L1,** length of labiomere 1; **L2,** length of labiomere 2; **L3,** length of labiomere 3; **L4,** length of labiomere 4; **PL**, medial pronotum length; **PW**, pronotum width, width of pronotum after humeral angles; **SL**, medial scutellum length; **SW**, basal scutellum width. Represented in Figure 1.

Depositories. AMNH – The American Museum of Natural History, New York, USA; **DARC** – David Rider Collection, North Dakota State University, North Dakota, USA; **DZUP** – Museu de Entomologia Pe. Jesus Santiago Moure, Universidade Federal do Paraná, Curitiba, Brazil; **FIOC** – Fundação Instituto Oswaldo Cruz, Rio de Janeiro, Brazil; **MACN** – Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina; **MCNZ** – Museu de Ciências Naturais da Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre, Brazil; **MCTP** – Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Brazil; **MECB** – Museu de Entomologia "Ceslau M. Biezanko", Faculdade de Agronomia, Universidade Federal de Pelotas, Brazil; **MIZA** – Museo Del Instituto de Zoología Agrícola, Maracay, Venezuela; **URMU** – Museo Nacional de Historia Natural, Montevideo, Uruguay; **MNRJ** – Museu Nacional, Universidade Federal do Rio de Janeiro, Brazil; **MPEG** – Museu Paraense Emílio Goeldi, Belém, Pará, Brazil; **MPUJ** – Pontificia Universidad Javeriana, Bogota, Colombia; **MZUSP** – Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil; **UEMA** – Universidade Estadual do Maranhão, São Luiz, Brazil; **UFRG** – Departamento de Zoologia – Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; **USNM** – National Museum of Natural History, Washington, D.C., USA; **UYIC** – Museo de Entomologia, Departamento de Arthropodos, Faculdad de Ciencias, Universidad de la Republica, Montevideo, Uruguay; **ZMHB** – Museum für Naturkunde, Humboldt-Universität, Berlin, Germany.

2.4 Terminology

Terminology follows TSAI et al. (2011) for general morphology; DUPUIS (1955, 1970), GENEVCIUS & SCHWERTNER (2017) and ZHOU & RÉDEI (2020) for terminalia and genitalia; KMENT & VILÍMOVÁ (2010) and BARÃO et al. (2017) for the external scent efferent system.

We suggest the term "layers of ventral rim" to "infoldings of ventral rim" proposed by TSAI et al. (2011). Therefore, "superior layer of ventral rim" and "inferior layer of ventral rim"

for members of *Mecocephala* group, represented in Figure 2.

In past descriptions of the species that make up the *Mecocephala* group, the interpretation of the dorsal and ventral views of the phallus has been misconceived by the authors of species. The mobile processes of phallotheca are dorsal and the processes of the vesica are ventral. Here, we also updated the terminology using as an example *H. meridionalis*, used for the processes and projections of the phallus, as follows: "processo 1 da phallotheca, processo 2 da phallotheca, processo 1 da conjunctiva, processo 3 da conjuntiva, processo 4 da conjuntiva" of GRAZIA & CAMPOS (1996: 15) correspond respectively to: posterodorsal projection of phallotheca, ventrobasal projection of phallotheca, dorsal process of phallotheca, median lobe of conjunctiva, ventral lobe of conjunctiva.

Results

Of the 144 characters used in the analyses, 71 are described here. The list and matrix of characters are given in Appendix 1 and Table 2.

3.1 Phylogenetic analysis

The phylogenetic analyses employing EW (Fig. S2A) produced two most parsimonious trees, and IW resulted in one best tree, with broad agreement in relationships between them. The absolute frequencies (AF) and GC Jackknife support values for the resulting EW and IW tree are mapped above the nodes (Figs. 3A, S2A). The average group support of the IW tree was 45.7. The monophyly of the *Mecocephala* group (clade **I**) was recovered in all analyses (AF = 96, GC = 95), and is supported by the following exclusive synapomorphies (discrete characters optimisations only): apex of mandibular plates inferior in relation to clypeal apex, in lateral view (15:0) (Figs. 18D, 20E–F); antennomere 4 conical (24:1) (Fig. 18Fi, iv); evaporatorium occupying less than half of width of mesopleuron (58:0) (Fig. 18H, O), this condition may be an evolutionary novelty in the *Mecocephala* group, present in *H. meridionalis*, *Glyphepomis*, *Pedinonotus* and *H. inermis*; ventral rim of pygophore composed of two layers (86:1) (Figs. 2C, 5B, 7B, 10B, 12H, 19K, N, Q); distal ductus receptaculi convolute (138:1) (Figs. 5K, 11D, 16F, G), and also by homoplasies: labiomere 1 contained in the bucculae (29:0) (Figs. 14E 18D–E); ductus seminis distalis long to extremely long in relation to the length of the conjunctiva (104:2, 3); proximal ductus receptaculi convolute (133:1); proximal ductus receptaculi longer than the

vesicular area (135:1) (Fig. 16F–G). Most of the Jackknife frequencies for the relationships among genera of the *Mecocephala* group were relatively high. But because the investigation of intergeneric relationships within *Mecocephala* group is not the focus of this study, we do not discuss this result.

Hypanthracos was inferred to be the sister lineage of the remaining taxa of the *Mecocephala* group with high values of Jackknife AF and GC (Fig. 3A), with a combination of homoplasies. The exclusive synapomorphies of clade **II**, which *Hypanthracos* does not share are (AF = 84, GC = 76): antennomere 4 slightly flattened dorsally (25:1) (Fig. 20G), evolutionary novelty of this clade, with reversion in species *T. similima*, *Chimerocoris luridus* sp.n. (Fig. 19D) and *O. hypomelas*; evaporatorium not concolourous to the metasternum (51:1) (Fig. 18I, M); genital cup opening dorsoposteriorly (78:1); lateral margins of dorsal rim bordering the lateral rim of pygophore (81:0) (Figs. 7A, 10A), with reversion in *H. sternalis*, *H. inermis* (Fig. 2A), *P. fusca* (Fig. 19M) and *P. australis*, and by homoplasies: outline of anterolateral margins of pronotum explanate (35:1) (Figs. 12D, 15D, 18B–C, 19D–E, 20I–J); evaporatorium present in the anterolateral angle of each mesopleuron (59:1) (Fig. 18I–O); genital cup occupying more than half the length of pygophore (79:2) (Figs. 12G, 19P); posterolateral angles of pygophore quadrate (80:1); segment X with processes (98:1) (Figs. 7A, D, 10I–K, 12H, 19P); posterior margins of laterotergites 8 obtusely projected (127:2); apices of laterotergites 9 surpassing tergite 8 (129:1) (Figs. 8C, 11A, 16B). In addition to these, another homoplasies from clade **II** (AF = 86, GC = 78, Fig. S2A) was recovered in the EW scheme: extension of dorsal rim of pygophore obsolete over segment X (85:1) and phallotheca with rounded projections on posterolateral margins (107:1) (Fig. 10L).

In addition, all the new taxa proposed in this study represented independent lineages (AF = 55, GC = 43, Fig. 3A, clade **III**) and we base our taxonomic decisions on these results. The synapomorphies that support clade **III** with the new genera are the following: labiomere 2 flattened laterally (30:1) (Figs. 3B, 6C, 12C, 20F); abdominal sternites with a longitudinal groove medially (72:1) (Figs. 3C; 13E). All representatives of this clade have a long labium (at least surpassing the middle of abdominal sternite 4).

The monotypic *Chimerocoris* gen.n. shares with the other genera of clade **III** the following combination of homoplasies: presence of anteocular process (19:1) (Fig. 19D); antennomere 4 convex dorsally (25:0) (Figs. 18Fii–iii, 19D); bucculae truncate posteriorly (28:0) (Fig. 18D–E); anterior angles of pronotum without processes (32:0) (Figs. 19D, 20I–J);

size of scutellar fovea equal to diameter of eyes (41:1); outer margin of each evaporatorium on metapleuron straight (54:2) (Fig. 18I–K, M); anterolateral margin of each evaporatorium on metapleuron tapered (55:1); pygophore sub-rectangular (77:1), and layers of ventral rim of pygophore separated by a carina (87:1) (Figs. 7B–E, 19Q).

The monophyly of the *Ogmocoris* (clade **IV**) was recovered (AF = 83, GC = 75, Fig. 3A) and is supported by the following combination of homoplasies: mandibular plates as long as clypeus (14:1) (Fig. 12D–E); anterolateral margins of pronotum concave (36:1) (Figs. 9A, 12A, D); humeral angles of pronotum developed (38:0) (Figs. 8A, 9A); apex of each radial vein punctate (43:0) (Fig. 21C); hemelytra surpassing apex of abdomen (44:0) (Figs. 9A, 12A); legs concolourous with abdominal venter (65:0) (Fig. 12B), and area between layers of ventral rim excavate (88:1) (Figs. 10B, 12H). In addition, *Ogmocoris* is the only genus assigned to the *Mecocephala* group that has the crown of the paramere well-developed (102:0) (Fig. 10D–H), which is a common character in genera outside of the *Mecocephala* group.

One of the characters shared by *Liscocephala* gen.n. and *Triunfus* gen.n., clade **V** (AF = 69, GC = 66, Fig. 3A), is the strong reduction of antennomere 2 in relation to antennomere 1 (characters 5 and 6) (Figs. 18Fiv–v, 20G–H). *Liscocephala* is supported by a series of apomorphies: antennomere 3 conical (22:1) (Figs. 13D, 20G), antennomere 3 slightly flattened dorsally (23:1) (Figs. 13D, 20G); the corial apices of hemelytra not reaching the apices of abdominal tergite 5 (42:1) (Fig. 20K); the evaporatorium absent along the outer margin of each mesopleuron (61:0); metathoracic spiracles narrow (64:0) (Fig. 18K); posterior margins of valvifers 8 sinuous [(121:1); Fig. 16A, C]; valvifers 9 depressed (125:2) (Figs. 13F, 16A, C), and laterotergites 9 not surpassing abdominal tergite 8 (129:0) (Fig. 16A, C).

The monophyly of the new genus *Triunfus* was recovered with high support values, clade **VI** (AF = 99, GC = 99, Fig. 3A) by the following synapomorphies: antennomere 2 obsolete, not apparent (21:1) (Figs. 14D, 15E, 20H) and posterior margin of pronotum emarginate in the middle (39:2) (Figs. 14A, 15A, D, 20J). In addition, both species share the following combination of homoplasies: antennomere 3 convex dorsally (23:0) (Figs. 14D, 15E, 20H); bucculae rectilinear (26:1) (Fig. 14E); ostioles of metathoracic glands circular (45:1); each ostiolar peritreme extending 2/3 of width to the outer margin of the evaporatorium (49:1) (Figs. 15F, 18L); legs concolourous with the ventral abdominal surface (65:0) (Fig. 14B); anterolateral angles of each connexiva concolour with discal colouration (67:0) (Figs. 14A, 20L); mesial margins of valvifers 8 not juxtaposed (118:1) (Fig. 16B, D), and valvulae 8 visible

in ventral view (130:1) (Fig. 16D).

3.2 Taxonomy

According to the results of the phylogenetic analysis.

3.2.1 Supplementary description to genus *Hypanthracos*

***Hypanthracos meridionalis* Grazia & Campos, 1996**

Figs. 4A–C, 5A–K, 17, 18A, Fi, H

Hypanthracos meridionalis Grazia & Campos, 1996: 15–16, figs 1, 3, 5–8, 13–15, 19, 21; RUSCHEL et al. (2013: 552).

Diagnosis. Clypeal suture beginning before an imaginary line crossing anterior margin of compound eyes. Bucculae sub-rectilinear. Outline of anterolateral margins of pronotum flat. Humeral angles strongly developed into spinous processes. Basal angles of scutellum foveate, foveae smaller than the diameter of a compound eye. The outer margin of each metapleural evaporatorium is straight; gyrification of evaporatorium with low wrinkles. Sub lateral margins of sternites concolourous with abdominal venter. Spiracles concolourous with sub lateral margins of abdominal sternites. Genital cup narrow, open dorsally, occupying less than half the length of pygophore. Dorsal rim of pygophore with 1 + 1 dorsal processes; extension of dorsal rim well-developed over the segment X. Superior layer of ventral rim without processes; lateral margin of each projection of superior layer of ventral rim entire. Inferior layer of ventral rim without process. Segment X quadrangular, without process. Parameres absent. Phallotheca destitute of dorsal processes and rounded posterolateral projections. Conjunctiva with three pairs of lobes, apically sclerotized.

Redescription. ***Measurements***: Table 4. ***Colouration***: General colouration castaneous dorsally and dark castaneous to black ventrally. Dorsal and ventral surface of body with dense and dark-castaneous to black punctures. Head dark castaneous, brown punctate on basal half, concolourous apex. Antennomeres uniformly dark castaneous, black on distal half of antennomere 4 (Figs. 4A–B, 18Fi). Labium castaneous, apical labiomeres dark castaneous. Outline of anterolateral margins of pronotum black; dark castaneous punctate. Pro-, meso-, metasternum including evaporatorium dark castaneous to black. Legs castaneous, distal half of

femora dark castaneous to black (Fig. 4B). ***Head*** (Figs. 4A, 18A): Head longer than wide, apex rounded; mandibular plates obtuse and convex apically; clypeal apex obtuse, clypeal suture beginning before an imaginary line crossing anterior margin of compound eyes; anteocular processes absent; antenniferous tubercles visible in dorsal view, each with an obtuse process laterally. Proportions of antennomeres: 1 > 2 < 3 > 4, 5 missing. Bucculae sub rectilinear. ***Thorax***: Pronotum trapezoidal (Figs. 4A, 18A); anterior angles produced; outline of anterolateral margins concave, smooth, flat, not reflexed, impunctate; humeral angles strongly developed, into spinous processes, directed anteriorly; posterior margin rectilinear. Mesosternal carina elevated, smooth; metasternal furrow shallow. Each ostiole of ESES elliptical, opening posterolaterally; periostiolar depressions present; each peritreme spout-shaped, occupying about 2/3 of the distance to lateral margin of evaporatorium; medial furrow of the each ostiolar peritreme relatively long, occupying more than half of the length of peritreme; evaporatorium punctate, each occupying less than half of meso- and metapleuron; gyrification of evaporatorium with low wrinkles; anterolateral margin of each evaporatorium tapered; outer margin of each metapleural evaporatorium straight; evaporatorium on mesopleuron not reaching its anterior and posterior lateral angles, and the outer margins, as well as the anterior limits of mesocoxal sutures (Fig. 18H). Metathoracic spiracle wide. Length of femora and tibiae sub equal; femora unarmed; tarsi 3-segmented. Scutellum longer than wide (Fig. 4A). Basal angles of scutellum foveate; foveae smaller than the diameter of a compound eye. Corium longer than scutellum, surpassing apices of abdominal tergite 5; apex of each radial vein punctate (inconspicuous callosity). Membrane with veins linear. Hemelytra surpassing apex of abdomen. ***Abdomen***: Connexivum exposed; posterolateral angles of each connexivum obtusely produced (Fig. 4A). ***Male terminalia***: Pygophore trapezoidal (Fig. 5A–F); posterolateral angles rounded. Genital cup narrow, open dorsally, occupying less than half the length of pygophore; dorsal rim medially entire with 1 + 1 dorsal processes; extension of dorsal rim well-developed over segment X; ventral rim forming two layers, inferior and superior layers of ventral rim, not separated by a carina; area between layers excavated. Superior layer of ventral rim projecting toward genital cup, developed laterally to segment X, without processes and lateral margin of each projection of superior layer of ventral rim entire (Fig. 5B, E). Inferior layer of ventral rim without processes (Fig. 5C). Segment X quadrangular, not carinate, without processes. Parameres absent. ***Male genitalia***: Phallus (Fig. 5G–I): Dorsal connectives of articulatory apparatus long, in relation to distal half of phallotheca. Processus capitati long, reaching phallotheca distal margin. Phallotheca piriform, longer than wide apically, without a pair of dorsal processes, and with two pairs of projections: 1+1 on posterodorsal margin and 1 + 1

ventrobasal. Conjunctiva with two pairs of processes and three pairs of lobes: lateral, median, and ventral lobes, apically sclerotized. Process of vesica long. Ductus seminis distalis extremely long, at least four times longer than the conjunctiva, convolute. ***Female terminalia*** (Fig. 5J): Valvifers 8 convex, sub equal in length to laterotergites 9, partially covering valvifers 9; mesial margins juxtaposed, posterior margins sinuous; valvulae 8 not visible in ventral view. Laterotergites 8 with posterior margins acutely projected; spiracles absent. Valvifers 9 swollen, leveled, relative to the position of segment X, with anterior margins straight and posterior margins concave. Laterotergites 9 triangular, obtusely projected apically, not surpassing tergite 8. ***Female genitalia***: Valvulae 9 with 1 + 1 medially sclerotized areas. Ring sclerite elliptical. Ectodermal ductus (Fig. 5K): proximal ductus receptaculi convoluted, long in relation to length of vesicular area, at least two times longer; equal diameter. Median wall of vesicular area enlarged sub proximally. Distal ductus receptaculi convoluted, long, at least two times longer than vesicular area, with diameter equal to median wall of vesicular area diameter. Annular flanges divergent. Capsula seminalis wider than posterior annular flange, globose, equal in relation to the length of *pars intermedialis*. *Pars intermedialis* enlarged.

Type material: Holotype ♀, 'URUGUAY, | Artigas, 17.xi.1955, F H C leg.' (MACN). – Paratypes: ♀, 'BRAZIL, Rio Grande do Sul, Osório, Capão Alto, 13.ii.1965, L Buckup leg.' | '2854' (MCNZ) <illustrated specimen>. ♂, 'URUGUAY, Artigas, Potrero Sucio-Arroyo Tres Cruces, 17.ii.1955, F H Y C leg.' (UFRG) <illustrated specimen>.

Comments. A detailed description of the external scent efferent system, an update of the terminology of male genitalia, photographs of paratypes and of terminalia and genitalia for both sexes, and a distribution map for *H. meridionalis* are provided.

In addition to this species, *H. ditarsus* is also known, not examined here for lack of material. *H. ditarsus* can be distinguished mainly by the morphology of the genitalia of both sexes and by tarsi 2-segmented. (GRAZIA & CAMPOS 1996). *H. ditarsus* holotype is deposited in the MZUSP (GRAZIA & CAMPOS 1996; CARRENHO et al. 2020).

Distribution. Brazil: Rio Grande do Sul and Uruguay: Artigas (Fig. 17).

3.2.2 Description and diagnosis of *Chimerocoris*

***Chimerocoris* gen.n.**

Type species. *Chimerocoris luridus* sp.n., here designated.

Diagnosis. Head longer than wider; labium long; surpassing the middle of abdominal sternite 6; labiomere 2 flattened laterally. Anterolateral margins of pronotum not reflexed. Basal angles of scutellum with foveae sub equal to the diameter of a compound eye. Layers of ventral rim of pygophore separated by a carina; parameres reduced, with obsolete crown; segment X with a transverse carina and 1 + 1 thorn-like processes at base.

Description. Body ovate. ***Head***: Head longer than wide, apex rounded (Figs. 6A; 19D). Mandibular plates shorter than clypeus, obtuse at apices; lateral margins of mandibular plates sinuous. Clypeal apex obtuse, in a higher level than mandibular plates in lateral view; clypeal suture beginning after an imaginary line crossing anterior margin of compound eyes; antenniferous tubercles visible in dorsal view, each with an obtuse process laterally. Antennomere 1 not reaching apex of head; antennomere 2 visible; antennomere 3 cylindrical; antennomere 4 conical, convex dorsally (Fig. 18Fii). Bucculae sinuous, truncate posteriorly. Labium long, surpassing middle of sternite 6; first labiomere lying entirely between the bucculae; labiomere 2 flattened laterally and labiomeres 3 and 4 uniformly entire. ***Thorax***: Pronotum trapezoidal (Fig. 19D); anterolateral margins explanate, not reflexed, impunctate; posterior margin slightly convex. Mesosternal carina elevated, smooth; metasternal furrow shallow. Each of ostiole of ESES guttiform, opening posterolaterally; each peritreme spout-shaped; medial furrow of the each ostiolar peritreme long, occupying more than of length of peritreme; evaporatorium punctate, each occupying more than half of meso- and metapleuron; evaporatorium on mesopleuron reaching its anterior and posterior lateral angles, and surpassing the limits of mesocoxal sutures (Fig. 18I). Metathoracic spiracle wide. Length of femora and tibiae sub equal; femora unarmed; tarsi 3-segmented. Scutellum longer than wide (Fig. 6A). Basal angles of the scutellum foveate; foveae sub equal to diameter of a compound eye. Corium longer than scutellum, surpassing apices abdominal tergite 5 and apex of each radial vein conspicuously calloused. ***Abdomen***: Connexivum exposed (Fig. 6A). Sub lateral margins of abdominal sternites not concolourous with abdominal venter (Figs. 6C, 19H). Medial longitudinal groove reaching sternite 6 (Fig. 6B). ***Male terminalia***: Genital cup of pygophore broad, open posterodorsally; ventral rim composed of two layers, the inferior and superior layers, separated by a carina (Figs. 6E, 19J–L). Superior layer of ventral rim, projecting toward genital cup, developed laterally to segment X, not covering parameres; lateral margin of each projection of superior layer notched. Segment X carinate and with 1 + 1 thorn-like processes at base. Parameres reduced, with obsolete crown.

Etymology. From Greek *Chimero*- mythological figure characterized by a hybrid appearance referring to the combination of characters of two genera (*Tibraca* and *Paramecocephala*); and -*coris*, stink bug; masculine.

Comments. *Chimerocoris* has the habitus and length of labium similar to *Paramecocephala*, and the morphology of pygophore similar to *Tibraca*. The comparison of these genera is presented in Figure 19.

Distribution. Brazil: Rio Grande do Sul (Fig. 17).

3.2.3 *Chimerocoris luridus* sp.n.

Figs. 6A–C, 7A–F, 17, 18 Fii, I, 19A, D, F, H, J–L

Diagnosis. Each antennomere 3 cylindrical, shorter than 5 and antennomeres 4 conical, convex dorsally. Bucculae truncate, reaching base of head. Labium long, surpassing the middle of abdominal sternite 6. Anterolateral margins of pronotum not reflexed. Basal angles of scutellum with foveae sub equal to the diameter of a compound eye. Segment X ogival, with a transverse carina and 1 + 1 thorn-like processes at base.

Description. ***Measurements***: Table 4. ***Colouration***: General colour yellowish-brown dorsally and ventrally, densely punctate (Fig. 6A, B). Head with calloused, yellow longitudinal stripes on clypeus medially; antennomeres uniformly brownish (Fig. 6A); antenniferous tubercles and maxillary plates brown. Outline of anterolateral margins of pronotum yellowish. Femora, tibiae and tarsi yellowish (Figs. 6A; 19D). Connexivum yellow, each connexivum with blotchy spot brown in the posterolateral angles (Fig. 6A). Sternites brown with darkened punctures; antero- and posterolateral angles of sternites dark brown (Fig. 6B). Sternites 3–7 yellow sub laterally, with concolourous trichobothria and punctures (Fig. 6C). Spiracles dark brown. ***Head***: Anteocular processes present. Proportions of antennomeres: 1 < 2 > 3 < 4 < 5. Posterior margins of bucculae reaching base of head. Labiomere 2 shorter than labiomeres 3 and 4 combined (Fig. 6C). ***Thorax***: Anterior angles of pronotum not produced; anterolateral margins of pronotum straight and smooth; humeral angles not produced (Fig. 19D). Periostiolar depressions of ESES present; each peritreme extending about ⅔ of the distance to lateral margin of evaporatorium; gyrification of evaporatorium with high wrinkles; anterolateral margin of each evaporatorium

rounded; outer margin of each metapleural evaporatorium concave (Fig. 18I). Corium surpassing apices of abdominal tergite 5. Membrane with veins linear. Hemelytra not surpassing apex of abdomen (Fig. 6A). ***Abdomen***: Posterolateral angles of each connexivum not produced. ***Male terminalia***: Pygophore sub rectangular (Figs. 7A–F; 19J–L); posterolateral angles rounded. Genital cup occupying more than half the length of pygophore; dorsal rim medially entire; extension of dorsal rim over segment X obsolete; area between layers of ventral rim depressed, striated; superior layer of ventral rim U-shaped medially, with two pairs of processes (Fig. 7C). Inferior layer of ventral rim with 1+1 processes (Fig. 7F). Segment X ogival. Crown of parameres trapezoidal (Fig. 7D).

Female. Unknown.

Etymology. *Luridus*, in Latin, yellow, referring to the colour of legs and connexiva; adjective.

Type material: Holotype ♂, 'BRAZIL, Rio Grande do Sul, [São Francisco de Paula], Pro-Mata | Projeto Sitel/Corsan | 5.xii.1997 | C Weirauch leg.' (MCTP) <illustrated specimen>.

Distribution. Brazil: Rio Grande do Sul (Fig. 17).

3.2.4 Redescription and diagnosis of *Ogmocoris*

***Ogmocoris* Mayr, 1864**

Ogmocoris Mayr, 1864: 908

Ogmocoris: MAYR 1866: 34; STÅL 1872: 30; LETHIERRY & SEVERIN 1893: 132; KIRKALDY 1909: 72; SILVA 1945: 596; COSTA LIMA 1947: 312; FERNANDES & GRAZIA 1998: 1058; FREY-DA-SILVA et al. 2002: 179–185; SILVA et al. 2018: 432.

Ansa Walker, 1868: 548. (syn. by STÅL 1872).

Type species. *Atelocerus hypomelas* Burmeister, 1835, by monotypy.

Diagnosis. Mandibular plates and clypeus sub equal in length. Antennomere 2 shorter than first. Labium long, surpassing the middle of sternite 5. Ostioles elliptical. Conjunctiva with one pair of processes and two pairs of lobes: median and ventral lobes. Annular flanges convergent.

Redescription. Body elongate (Figs. 8A–B, 9A–B, 12A–B). ***Head***: Head longer than wide,

apex rounded (Figs. 8A, 9A, 12A, D). Mandibular plates as long as clypeus, apices obtuse; lateral margins sinuous. Clypeal apex obtuse, in a higher level than mandibular plates in lateral view; clypeal suture beginning after an imaginary line crossing anterior margin of compound eyes. Antenniferous tubercles visible in dorsal view, each with an obtuse process laterally. Antennomere 1 not reaching apex of head; antennomere 2 shorter than 1, visible (Figs. 8D, 9A–B, 12D); antennomere 3 cylindrical, slightly flattened; antennomere 4 cylindrical, convex dorsally (Fig. 18Fiii). Bucculae tapering towards the base of head, not reaching its base. Labium long labium, surpassing middle of sternite 5 (Figs. 9C, 12C); labiomere 1 lying entirely between bucculae, labiomere 2 flattened laterally, shorter than labiomeres 3 and 4 combined and labiomeres 3 and 4 uniformly entire. ***Thorax***: Pronotum trapezoidal (Figs. 8A, 9A, 12A, D, 21A–B); anterolateral margins explanate, not reflexed and impunctate; posterior margin slightly convex. Mesosternal carina elevated, smooth; metasternal furrow shallow. Each ostiole of ESES elliptical, opening posterolaterally; periostiolar depressions present; each peritrema spout-shaped, occupying about 1/3 of the distance to lateral margin of evaporatorium; medial furrow of the each ostiolar peritreme long, occupying more than half of the length of peritreme; evaporatorium punctate, occupying more than half of meso- and metapleuron; anterolateral margin of each evaporatorium rounded; evaporatorium on mesopleuron reaching its anterior and posterior lateral angles, and surpassing the limits of mesocoxal sutures (Fig. 18J). Metathoracic spiracle wide (Fig. 18J, red arrow). Legs concolourous with abdominal venter (Figs. 8B, 9B, 12B). Length of femora and tibiae sub equal; femora unarmed; tarsi 3-segmented. Scutellum longer than wide (Figs. 8A, 9A, 12A) and basal angles foveate. Corium longer than scutellum, surpassing apices of abdominal tergite 5. Membrane with veins linear. Hemelytra surpassing apex of abdomen. ***Abdomen***: Connexivum exposed (Figs. 8A, 9A, 12A, 21C–D). Medial longitudinal groove on abdominal venter reaching sternite 6 (Figs. 8B, 9B, 12B). ***Male terminalia*** (Figs. 10A–N, 12G–I): Genital cup broad, open dorsoposteriorly. Ventral rim forming two layers, inferior and superior layers of ventral rim, not separated by a carina; area between layers excavated. Superior layer of ventral rim projected toward genital cup, developed laterally to segment X, not covering parameres. Segment X not carinate, with processes. Parameres well-developed. ***Female terminalia*** (Fig. 11A–C): Valvifers 8 convex. Valvulae 8 not visible. Laterotergites 8 lacking spiracles. Laterotergites 9 surpassing tergite 8 (Fig. 11A).

Distribution. Brazil: Amazonas, Rio de Janeiro and Paraná (Fig. 17).

3.2.5 Key to species of *Ogmocoris*

1Outline of anterolateral margins of pronotum impunctate in dorsal view (Figs. 8A, 9A, 21A). Foveae on basal angles of scutellum relatively large, size equal to diameter of a compound eye (Figs. 8A, 9A, 21C). Sub lateral margins of sternites lighter than of abdominal venter (Figs. 8B, 9B–C, 21F). Superior layer of ventral rim of pygophore with one pair of processes; lateral margin of each projection of superior layer of ventral rim notched (Fig. 10A–B). Segment X rectangular, with one process, medially (Fig. 10I–K)…… ***O. hypomelas*** (Burmeister)

1'Outline of anterolateral margins of pronotum punctate in dorsal view (Figs. 12A,D, 21B). Foveae on basal angles of scutellum relatively small, size less than diameter of a compound eye (Fig. 12A, 21D). Sub lateral margins of sternites concolourous with disc of abdominal venter (Figs. 12B–C, 21G). Superior layer of ventral rim without process; lateral margin of each projection of superior layer of ventral rim entire (Fig. 12G–H). Segment X ogival, with 1+1 tumescent processes basally (Fig. 12H)..... ***O. paranaensis*** Frey-da-Silva, Grazia & Fernandes

3.2.6 *Ogmocoris hypomelas* (Burmeister, 1835)

Figs. 8A–D, 9A–C, 10A–N, 11A–D, 17, 18Fiii, J, 21A, C, F, H, J

Atelocerus hypomelas Burmeister, 1835: 362

Ogmocoris hypomelas: MAYR 1864: 908; STÅL 1872: 30; LETHIERRY & SEVERIN 1893: 132; KIRKALDY 1909: 72; FREY-DA-SILVA et al. 2002: 179–185; SILVA et al. 2018: 432.

Ansa distincta Walker, 1868: 548–549. (syn. by STÅL 1872)

Diagnosis. Bucculae rectilinear. Outline of anterolateral margins of pronotum impunctate in dorsal view. Fovea in each basal angle of the scutellum about the same size as the diameter of a compound eye. The outer margin of each metapleural evaporatorium straight; gyrification of evaporatorium with low wrinkles. Sub lateral margins of abdominal sternites not concolourous with abdominal venter (pale yellow to orange). Spiracles concolourous with abdominal venter, dark-castaneous to ferruginous. Dorsal rim of pygophore with 1 + 1 dorsal processes; extension of dorsal rim well-developed over segment X. Superior layer of ventral rim with two pairs of processes; lateral margin of each projection notched. Inferior layer of ventral rim with one median process. Segment X rectangular, with one tumescent process, medially. Valvulae 9 with

1 + 1 lateral sclerotized areas placed along with ring sclerite and one medially.

Redescription. ***Measurements***: Table 4. ***Colouration***: General colour reddish-castaneous dorsally, with dense dark-brown to black punctures; ventral surface dark-castaneous to ferruginous with dense concolourous punctures. Head reddish-castaneous, punctures on basal half castaneous, those on distal half concolourous. Antennomeres uniformly dark-castaneous (Fig. 9A). Labium reddish-castaneous, apical labiomeres dark brown. Outline of anterolateral margins of pronotum and lateral margins of coria ferruginous; punctures dark-brown. Pro-, meso-, metasternum, and evaporatorium dark-castaneous to reddish-castaneous; lateral margins yellowish. Legs reddish-castaneous; femora and tibiae immaculate, yellowish-ferruginous. Connexivum ferruginous, lateral half yellow. Sternites dark brown to reddish-castaneous, with dark-brown punctures; sub lateral band from sternite 3 to abdominal sternite 7 pale yellow to orange. Spiracles dark brown. Trichobothria yellowish. ***Head*** (Figs. 8A, 9A): Anteocular processes absent. Proportions of antennomeres: 1 > 2 < 3 > 4, 5 missing (Fig. 18Fiii). Bucculae rectilinear. ***Thorax***: Pronotum with anterior angles produced; anterolateral margins concave, crenulate; humeral angles slightly developed (Figs. 8A, 9A, 21A). Gyrification of evaporatorium with high wrinkles; outer margin of each metapleural evaporatorium straight (Fig. 18J). Fovea in each basal angle of the scutellum about the same size as the diameter of a compound eye (Fig. 21C, green arrow). Apex of each radial vein punctate (inconspicuous callosity, Fig. 21C, blue arrow). ***Abdomen***: Posterolateral angles of each connexivum produced (Fig. 21C, red arrow). Sub lateral margins of abdominal sternites not concolourous with abdominal venter, pale yellow to orange (Figs. 8C, 9C, 11A–B, 21F, blue arrow). ***Male terminalia***: Pygophore trapezoidal (Fig. 10A–D); posterolateral angles somewhat explanate, apical margin sinuous. Genital cup occupying half the length of pygophore; dorsal rim medially entire with 1 + 1 dorsal processes (Fig. 10A–B); extension of dorsal rim well-developed over segment X. Superior layer of ventral rim with two pairs of processes (Fig. 10A); lateral margin of each projection notched (Fig. 10B). Inferior layer of ventral rim with one median process (Fig. 10C). Segment X rectangular, with one tumescent process medially (Fig. 10I–K). Crown of paramere well-developed, shell-shaped (Fig. 10D–H). ***Male genitalia***. Phallus (Fig. 10L–N): Dorsal connectives of articulatory apparatus long. Processus capitati long, reaching phallotheca distal margin. Phallotheca piriform, shorter than width apically, with a pair of dorsal processes, wider basally than medially, and three pairs of projections: 1 + 1 in posterodorsal margin, 1 + 1 ventrobasal, and 1 + 1 in posterolateral margin, rounded. Conjunctiva with one pair of processes and two pairs of lobes: median and ventral lobes, membranous. Process of vesica

long. Ductus seminis distalis extremely long, at least five times longer than the conjunctiva, convolute. ***Female terminalia*** (Fig. 11A–B): Valvifers 8 convex, at least twice as long as laterotergites 9, partially covering valvifers 9; mesial margins juxtaposed, posterior margins sinuous; valvulae 8 not visible in ventral view. Laterotergites 8 with posterior margins obtusely projected; spiracles absent. Valvifers 9 flat, oblique, in an obtuse angle, relative to the position of segment X, with anterior margins concave and posterior margins straight. Laterotergites 9 triangular, obtusely projected apically, surpassing tergite 8. ***Female genitalia***: Valvulae 9 with 1 + 1 lateral sclerotized areas placed along with ring sclerite and one medially. Ring sclerite elliptical (Fig. 11C). Ectodermal ductus (Fig. 11C–D): proximal ductus receptaculi convoluted, extremely long in relation to the length of vesicular area, at least three times longer; greater diameter. Median wall of vesicular area enlarged sub proximally. Distal ductus receptaculi convoluted, extremely long, at least three times longer than vesicular area, with diameter equal to median wall of vesicular area diameter. Annular flange convergent; posterior annular flange wider than length of *capsula seminalis*. *Pars intermedialis* rectilinear. *Capsula seminalis* globose and smaller than *pars intermedialis*.

Material examined. ***Type material***: Lectotype ♀, 'BRAZIL, Rio de Janeiro | *hypomelas* <sic> Burm. | Rio Jan[neiro] Beske' (ZMHB) <illustrated specimen>. — ***Other material***: BRAZIL, Rio de Janeiro: ♂, Estrada das paineiras, x.1943, H, Monteiro leg. (UFRJ); Amazonas: ♀, Itacoatiara, Dirings leg. (MCNZ-002851) <illustrated specimen>. No data: ♀, 'Ogmocoris hypomelas Burm.' | 'coll. E P V VanDuzee' | 'Cornell U[niversity], Lot. 96, Sub.; ♀, 'Rio. Nov.' | 'coll. P R Uhler' | 'Ogmocoris hypomelas (Burm.), H G Barber det. (USNMNH-2068399) <illustrated specimen>.

Distribution. Brazil: Amazonas and Rio de Janeiro (Fig. 17).

Comments. The female specimen deposited in the ZMHB examined by FREY-DA-SILVA et al. (2002), was mistakenly conceived as a holotype. From the original description by Burmeister, it is not possible to know the number of specimens examined by the author, so this specimen must be considered a syntype. Therefore, the designation of this specimen as a lectotype is made here.

We did not examine the type material of *Ansa distincta*, but we accept Stål's authority.

3.2.7 *Ogmocoris paranaensis* Frey-da-Silva, Grazia & Fernandes, 2002

Figs. 12A–I, 17, 21B, D, G

Ogmocoris paranaensis Frey-da-Silva et al., 2002: 183–185.

Diagnosis. Bucculae sinuous. Outline of anterolateral margins of pronotum punctate. Foveae in basal angles of scutellum relatively small, each less than the diameter of a compound eye. The outer margin of each metapleural evaporatorium convex; gyrification of evaporatorium with low wrinkles. Sub lateral margins of sternites concolourous with abdominal venter. Spiracles dark brown to black. Dorsal rim of pygophore without dorsal process; extension of dorsal rim over segment X obsolete. Superior layer of ventral rim with one pair of processes; lateral margin of each projection entire. Inferior layer of ventral rim with one pair of processes. Segment X ogival, with 1 + 1 tumescent processes basally.

Redescription. ***Measurements***: Table 4. ***Colouration***: General colour castaneous dorsally, with dense dark-brown to black punctures; ventral surface dark-brown to ferruginous, with dense concolourous punctures. Head reddish-castaneous, punctures on basal half brown, those on distal half concolourous. Antennomeres dark-brown. Labium yellowish-castaneous, apical labiomeres dark brown. Anterolateral margins of pronotum and lateral margins of coria castaneous; punctures dark brown. Pro-, meso-, and metasternum uniformly dark-brown to reddish-castaneous, densely punctate with dark-brown to black punctures. Legs reddish-castaneous. Connexivum brown, anterolateral angles with black spot, posterolateral angles yellow. Sternites dark reddish-castaneous, with dark-brown punctures. Spiracles dark brown to black. Trichobothria reddish. ***Head*** (Fig. 12A, D): Anteocular processes absent. Proportions of antennomeres: 1 > 2 < 3 > 4 < 5. Bucculae sinuous (Fig. 12E). ***Thorax***: Pronotum with anterior angles produced; anterolateral margins concave, crenulate; humeral angles slightly developed (Figs. 12A, D, 21B). Gyrification of evaporatorium with low wrinkles; outer margin of each metapleural evaporatorium convex. Foveae in basal angles of scutellum relatively small, each less than the diameter of a compound eye (Fig. 21D). Apex of each radial vein conspicuously calloused (Fig. 21D, blue arrow) ***Abdomen***: Posterolateral angles of each connexivum produced (Fig. 21D, red arrow). Sub lateral margins of abdominal sternites concolourous with abdominal venter, dark-brown to ferruginous (Figs. 12A, C, 21G, blue arrow). ***Male terminalia***: Dorsal rim of pygophore without dorsal process; extension of dorsal rim over segment X obsolete. Superior layer of ventral rim with one pair of processes; lateral margin of each projection entire (Fig. 12H). Inferior layer of ventral rim with one pair of processes (Fig. 12I). Segment X ogival, with 1 + 1 tumescent processes basally (Fig. 12H). Crown of paramere well-developed,

spatulate (Fig. 12H).

Female. Unknown.

Material examined. ***Type material***: Holotype ♂, 'BRAZIL, Paraná, Curitiba | [?].ix.1961 | S Laroca leg.' (DZUP) <illustrated specimen>.

Distribution. Brazil: Paraná (Fig. 17).

3.2.8 Description and diagnosis of *Liscocephala*

***Liscocephala* gen.n.**

Type species. *Liscocephala fumosa* sp.n., here designated.

Diagnosis. Antennomere 2 much reduced, less than 1/4 of the length of antennomere 1, hardly visible and antennomere 3 conical, flattened dorsally, longer than antennomere 5. Posterior margin of pronotum rectilinear. Scutellum longer than wide, post-frenal width of scutellum more than the basal width of the scutellum. Foveae smaller than the diameter of a compound eye. Coria longer than scutellum, not surpassing apices of abdominal tergite 5. Metathoracic spiracle narrow. Valvifers 8 flat.

Description. Body oval, small (total length: 8.55 mm) (Fig. 13A–B). ***Head:*** Head longer than wide, apex rounded (Figs. 13A, 20C). Mandibular plates shorter than clypeus, apices obtuse; lateral margins sinuous. Clypeal apex obtuse, in a higher level than mandibular plates in lateral view; clypeal suture beginning after an imaginary line crossing anterior margin of compound eyes. Antenniferous tubercles visible in dorsal view, each with an obtuse process laterally. Antennomere 1 not reaching apex of head; antennomere 2 much reduced, less than 1/4 the length of the first antennomere, hardly visible; antennomere 3 conical, flattened dorsally; antennomere 4 conical, slightly flattened dorsally (Figs. 13D, 18Fiv, 20G). Bucculae sinuous, tapering toward the base of head. First labiomere robust, lying entirely between bucculae, labiomere 2 flattened laterally (Figs. 13D, 20E). ***Thorax***: Pronotum trapezoidal (Figs. 13A, 20I); anterolateral margins explanate, not reflexed, impunctate; posterior margin rectilinear. Mesosternal carina elevated, smooth (Fig. 13E); metasternal furrow shallow. Each ostiole of ESES guttiform, opening posterolaterally; each peritreme spout-shaped; medial furrow of the each ostiolar peritreme relatively long, extending more than half of the length of peritreme;

evaporatorium punctate, occupying more than half of each meso- and metapleuron; evaporatorium on mesopleuron reaching its anterior and posterior angles, surpassing the limits of mesocoxal sutures (Fig. 18K). Metathoracic spiracle narrow (Fig. 18K, red arrow). Femora longer than tibiae; unarmed femora; tarsi 3-segmented (Fig. 13C). Scutellum longer than wide (Figs. 13A). Basal angles of scutellum foveate; fovea relatively smaller than the diameter of a compound eye (Fig. 20K, red arrow). Corium longer than scutellum, extending beyond apex of scutellum; apex of each radial vein punctate (inconspicuous callosity, Fig. 20K). ***Abdomen***: Connexivum exposed (Fig. 13A). Sub lateral margins of abdominal sternites not concolourous with abdominal venter (lighter than abdominal venter, Fig. 13C). Medial longitudinal groove reaching abdominal sternite 6 (Fig. 13F, red arrow). ***Female terminalia*** (Figs. 13F, 16A, C): Valvifers 8 flat. Valvulae 8 not visible. Valvifers 9 leveled, relative to the position of X segment X in lateral view. Laterotergites 9 not surpassing tergite 8.

Etymology. *Lis*-, given in honour of Lis de Barros Borges, L. D. Barros's daughter; "-*cocephala*", relative to the *Mecocephala* group; feminine.

Distribution. Uruguay: Canelones (Fig. 17).

3.2.9 *Liscocephala fumosa* sp.n.

Figs. 13A–F, 16A, C, 17, 18Fiv, K, 20A, C, E, G, I, K

Diagnosis. Body oval. Head wider than longer. Antennomere 1 robust compared to the other antennomeres; antennomere 2 less than 1/4 of the first, hardly visible; antennomere 3 conical, flattened dorsally, longer than antennomere 5. Labiomere 1 robust. Anterior margin of pronotum strongly concave; posterior margin of pronotum rectilinear. Scutellum longer than wide. Foveae smaller than the diameter of a compound eye. Coria longer than scutellum, not surpassing apices of abdominal tergite 5. Valvifers 9 depressed. Laterotergites 9 not surpassing tergite 8.

Description. Body small (total length: 8.55 mm). ***Measurements***: Table 4. ***Colouration***: General coloration brownish gray dorsally, dark brown ventrally, densely punctate with large punctures. Head and clypeus with dark brown callosities. Ocelli red. Antennomeres uniformly brownish. Antenniferous tubercles and maxillary plates dark brown. A longitudinal line on pronotum, anterolateral margins of pronotum and lateral margins of coria pale yellow.

Scutellum with impunctate brownish callosities, laterally foveate (Fig. 13A). Pro-, meso- and metasternum uniformly dark brown. Coxae, trochanters and basal 2/3 of femora pale yellow, apices of femora, tibiae and tarsi brown. Connexivum and tergite 8 pale yellow and brownish and anterolateral and posterolateral angles of connexivum. Sternites dark brown, sub lateral band from prosternum to abdominal sternite 7 and laterotergites 8 pale yellow; anterolateral angles of sternites dark brown. Spiracles dark brown to black. Trichobothria dark brown (Figs. 13C, F). ***Head*** (Figs. 13A, D, 20C, E, G): Anteocular processes absent. Proportions of antennomeres: 1 > 2 < 3 > 4 < 5 (Figs. 13D, 18Fiv, 20G). Bucculae reaching base of head. ***Thorax***: Pronotum with anterior angles not produced; anterolateral margins straight, smooth; humeral angles not produced (Figs. 13A, 20I) and posterior margin rectilinear. Periostiolar depressions of ESES present; each ostiolar peritreme occupying about 1/3 of evaporatorium; gyrification of evaporatorium with high wrinkles; outer margin of each metapleural evaporatorium concave; anterolateral margin of each evaporatorium rounded (Fig. 18K). Metathoracic spiracle narrow (Fig. 18K, red arrow). Foveae smaller than the diameter of a compound eye (Fig. 20K, red arrow). Corium not surpassing apices of abdominal tergite 5 (Figs. 13A, 20K, blue arrow). Membrane with linear veins, some bifurcate basally. Hemelytra not surpassing apex of abdomen. ***Abdomen*** (Figs. 13B–C, 20K): Posterolateral angles of each connexivum not produced. Sub lateral margins of abdominal sternites pale yellow. ***Female terminalia*** (Figs. 13F, 16A, C): Valvifers 8 smaller than laterotergites 9, and partially covering valvifers 9, and posterior margins sinuous, mesial margins juxtaposed. Laterotergites 8 lacking spiracles; posterior margins straight. Valvifers 9 depressed, leveled, relative to the position of segment X; posterior margins rectilinear, lateral margins with 1 + 1 processes. Laterotergites 9 spatulate, obtusely rounded apically, not surpassing tergite 8.

Male. Unknown.

Etymology. The specific epithet refers to the brownish gray colour of the dorsal surface.

Type material: Holotype ♀, ‘URUGUAY, Canelones, [Atlantida] | 28.ii.1932’ | ‘MNHN-1344’(URMU) <illustrated specimen>.

Distribution. Uruguay: Canelones (Fig. 17).

Comments. Labium lacking part of labiomere 2 and remaining labiomeres in single specimen. However, we believe that the labium is long, at least exceeding the middle of the abdominal sternite 4, due to the presence of a medial longitudinal groove reaching abdominal sternite 6

(Fig. 13D, F). This groove is observed only in species where the labium is considered long.

3.2.10 Description and diagnosis of *Triunfus*

***Triunfus* gen.n.**

Type species. *Triunfus carvalhoi* sp.n., here designated

Diagnosis. Antennomere 2 much reduced, not visible. Labium surpassing the middle of sternite 4; labiomere 1 robust, labiomeres 3 and 4 strongly flattened. Anterior margin of pronotum shallowly concave and posterior margin of pronotum emarginate medially. Post-frenal width of scutellum less than the basal width of the scutellum. Foveae smaller than the diameter of a compound eye. Ostioles circular. Valvifers 8 convex; mesial margins not juxtaposed, valvulae 8 visible.

Description. Body elongate, small (total length: 9.79 mm) (Figs. 14A–B, 15A–B). ***Head***: Head longer than wide, apex rounded (Figs. 14A, 15A, D, 20D, H). Mandibular plates shorter than clypeus, apices obtuse; lateral margins sinuous. Clypeal apex obtuse, in a higher level than mandibular plates in lateral view; clypeal suture beginning after an imaginary line crossing anterior margin of compound eyes. Antenniferous tubercles visible in dorsal view, each with an obtuse process laterally. Antennomere 1 not reaching apex of head; antennomere 2 much reduced, not visible; antennomere 3 cylindrical; antennomere 4 conical, slightly flattened dorsally (Figs. 14D, 15E, 18Fv, 20H). Bucculae rectilinear, tapering toward base of head, not reaching its base (Fig. 14E). Labium long, surpassing middle of sternite 4 (Figs. 14 B–C, 15C); labiomere 1 robust, lying entirely between bucculae (Figs. 14E, 15C), labiomere 2 flattened laterally, shorter than labiomeres 3 and 4 combined, and labiomeres 3 and 4 strongly flattened (Figs. 14C, 15C). ***Thorax***: Pronotum trapezoidal (Figs. 14A, 15A, D, 20J); anterolateral margins explanate, reflexed, impunctate; posterior margin emarginate medially (Fig. 15D). Mesosternal carina elevated, smooth; metasternal furrow shallow. Each ostiole of ESES circular, opening posterolaterally; periostiolar depressions present; each peritreme spout-shaped, extending about ⅔ of the distance to lateral margin of evaporatorium; medial furrow of the each ostiolar peritreme relatively long, occupying more than half of the length of peritreme; evaporatorium punctate, occupying more than half of meso- and metapleuron; evaporatorium on mesopleuron reaching its anterior and posterior angles and the outer margins, surpassing the limits of mesocoxal sutures (Figs. 15F, 18L). Metathoracic spiracle wide. Length of femora and

tibiae sub equal; femora unarmed; tarsi 3-segmented (Figs. 14C, 15C). Scutellum broader than long (Figs. 14A, 15A). Basal angles of scutellum foveate; foveae smaller than the diameter of a compound eye (Fig. 20L, red arrow). Corium longer than scutellum, extending beyond apex of scutellum, surpassing apices of abdominal tergite 5 (Fig. 20L, blue arrow); apex of each radial vein punctate (inconspicuous callosity, Fig. 20L). ***Abdomen***: Connexivum exposed (Figs. 14A, 20L). Sub lateral margins of abdominal sternites not concolourous with the abdominal venter (lighter than abdominal venter, Fig. 14C). Medial longitudinal groove reaching sternite 6. Spiracles concolourous with abdomen. Trichobothria concolourous with abdominal venter (Fig. 14F). ***Female terminalia*** (Figs. 14F, 16B, D): Valvifers 8 convex; mesial margins not juxtaposed. Valvulae 8 visible. Laterotergites 8 lacking spiracles. Valvifers 9 leveled, relative to the position of segment X in lateral view. Laterotergites 9 surpassing tergite 8. ***Female genitalia***: Valvulae 9 with 1 + 1 lateral sclerotized areas placed along with ring sclerite. Ring sclerite elliptical. Ectodermal ductus (Fig. 16E–G): thickening of vaginal intima with anterior portion rounded, posterior portion conical. Proximal ductus receptaculi convoluted, extremely long in relation to length of vesicular area, at least three times longer. Median wall of vesicular area enlarged sub proximally. Distal ductus receptaculi long, at least one and a half times longer than vesicular area, with diameter equal to median wall diameter. Posterior annular flange wider than *capsula seminalis*.

Etymology. *Triunfus*, corresponding to the type-locality Triunfo, Rio Grande do Sul, Brazil; masculine.

Distribution. Brazil: Rio Grande do Sul (Fig. 17).

3.2.11 Key to species of *Triunfus*

1Valvifers 8 shorter in length than laterotergites 9; valvifers 9 swollen, posterior margins convex (Fig. 16E). Proximal ductus receptaculi equal in diameter to median wall of vesicular area; *capsula seminalis* sub equal in length to *pars intermedialis* (Fig. 16F)..... ***Triunfus carvalhoi* sp.n.**

1'Valvifers 8 equal in length to laterotergites 9; valvifers 9 flat, posterior margins straight (Fig. 16G). Proximal ductus receptaculi greater in diameter than median wall of vesicular area; *capsula seminalis* shorter in length to *pars intermedialis* (Fig. 16G) ……....***Triunfus incarnatus* sp.n.**

3.2.12 *Triunfus carvalhoi* sp.n.

Figs. 14A–F, 16B, D–F, 17, 18Fv, L, 20B, D, H, J, L

Diagnosis. Valvifers 8 shorter than laterotergites 9. Valvifers 9 swollen, posterior margins convex. Lateral sclerotized areas of valvulae 9 well-defined, sclerotized. Diameter of proximal ductus receptaculi equal to diameter of median wall of vesicular area. *Capsula seminalis* equal in length to *pars intermedialis*, with a process.

Description. ***Measurements***: Table 4. ***Colouration***: General colour dark brown dorsally and ventrally; densely punctate. Head and clypeus with ferruginous callosities; antennomeres uniformly brownish; brown blotches on antenniferous tubercles and maxillary plates. Sub lateral margins of pronotum and lateral margins of coria ferruginous. Pro-, meso-, metasternum and evaporatorium dark brown. Coxae, trochanters, and apical half of each femur ferruginous, tibiae and tarsi brown. Connexivum ferruginous. Abdominal sternites brown, sub lateral band from prosternum to abdominal sternite 7 ferruginous. Spiracles dark brown. Trichobothria brown. ***Head*** (Figs. 14A, D–E, 20D, F, H): Anteocular processes absent. Proportions of antennomeres: 1 > 2 < 3 > 4 < 5 (Figs. 14D, 18Fv, 20H). ***Thorax***: Pronotum with anterior angles not produced; anterolateral margins straight, smooth; humeral angles not produced (Figs. 14A, 20J). Gyrification of evaporatorium with high wrinkles; anterolateral margin of each evaporatorium rounded; outer margin of each metapleural evaporatorium concave (Fig. 18L). Membrane with veins linear, some bifurcated basally. Hemelytra not surpassing apex of abdomen. ***Abdomen***: Posterolateral angles of each connexivum not produced (Figs. 14A, 20L). ***Female terminalia*** (Figs. 14F, 16B, D): Valvifers 8 shorter than laterotergites 9, partially covering valvifers 9. Laterotergites 8 triangular, straight apically. Valvifers 9 swollen, leveled, relative to the position of segment X; posterior margins convex, lateral margins with 1 + 1 processes. Laterotergites 9 triangular, obtusely rounded apically (Fig. 16B). ***Female genitalia***: Ectodermal ductus (Fig. 16E–F): Diameter of proximal ductus receptaculi equal to diameter of median wall of vesicular area. Annular flanges divergent. *Pars intermedialis* rectilinear. *Capsula seminalis* globose, equal in length to *pars intermedialis*, with a process.

Male. Unknown.

Etymology. This species is named in honour to Dr. Gervásio Silva Carvalho, specialist dedicated to phylogeny and biogeography of Neotropical Auchenorrhyncha.

Type material: Holotype ♀, 'BRAZIL, Rio Grande do Sul, Triunfo | Projeto Sitel/Corsan | 7–11.i.2002 | Equipe do Projeto leg.' | '17302-1 MCTP' (MCTP). – Paratype: ♀, 'BRAZIL, Rio Grande do Sul, Capão do Leão' (UFRG) <illustrated specimen>.

Distribution. Brazil: Rio Grande do Sul (Fig. 17).

3.2.13 *Triunfus incarnatus* sp.n.

Figs. 15A–F, 16G, 17

Diagnosis. Valvifers 8 equal in length to laterotergites 9. Valvifers 9 flat with posterior margins straight. Lateral sclerotized areas of valvulae 9 scarcely defined or sclerotized. Diameter of proximal ductus receptaculi greater than diameter of median wall of vesicular area. *Capsula seminalis* without processes, shorter than *pars intermedialis.*

Description. ***Measurements***: Table 4. ***Colouration.*** General colour orange-castaneous dorsally, dark brown ventrally; densely punctate. Head and clypeus with oranges callosities; ocelli orange; antennomeres brownish, except antennomere 5 orange-castaneous; yellow blotches on antenniferous tubercles and maxillary plates; labium orange-brown. Outline of anterolateral margins of pronotum and a medial longitudinal line on scutellum orange-castaneous. Pro-, meso-, metasternum and evaporatorium dark brown; ostiolar peritremes orange. Legs dark brown, except coxae, trochanters, and apical third of each femora orange. Connexivum yellowish-orange. Abdominal sternites dark castaneous, sub lateral band from prosternum to abdominal sternite 7 yellowish-orange. Spiracles dark castaneous. Trichobothria castaneous. ***Head*** (Fig. 15A, D): Anteocular processes absent. Proportions of antennomeres: 1 > 2 < 3 > 4 < 5 (Fig. 15E). ***Thorax***: Pronotum with anterior angles not produced; anterolateral margins straight, smooth; humeral angles not produced (Fig. 15A, D). Gyrification of evaporatorium with high wrinkles; anterolateral margin of each evaporatorium rounded; outer margin of each metapleural evaporatorium concave (Fig. 15F). Membrane with veins linear, some bifurcate basally. Hemelytra not surpassing apex of abdomen. ***Female terminalia***: Valvifers 8 sub equal in length to laterotergites 9, partially covering valvifers 9. Laterotergites 8 triangular, posterior margins straight. Valvifers 9 flat, leveled, relative to the position of segment X; posterior margins straight, lateral margins entire. Laterotergites 9 triangular, posterior margins obtusely rounded. ***Female genitalia***: Valvulae 9 with 1+1 lateral areas scarcely defined or sclerotized, placed along with ring sclerite. Ectodermal ductus (Fig. 16G):

diameter of the proximal ductus receptaculi greater than diameter of median wall of vesicular area. Annular flanges divergent. *Pars intermedialis* rectilinear. *Capsula seminalis* globose, without processes, shorter than *pars intermedialis.*

Male. Unknown.

Etymology. *Incarnatus*, in Latin, orange, referring to the orange body colour; adjective.

Type material: Holotype ♀, 'BRAZIL, Rio Grande do Sul, [probably São Lourenço do Sul] | [?].iv.1995 Loescher L. leg.' (MECB) <Illustrated specimen, abdomen and terminalia prepared>.

Distribution. Brazil: Rio Grande do Sul (Fig. 17).

3.3 Remarks

Hypanthracos shares with *Mecocephala* the basal limits of clypeal sutures arising anterior to an imaginary line connecting the anterior margins of the compound eyes (Fig. 18A–B). In this study, in addition to the synapomorphies for the *Mecocephala* group, *H. meridionalis* shares the antennomere 2 shorter than 1 (Fig. 18F), the ostiolar peritreme extending to 2/3 of the outer margin of the metapleural evaporatorium (from the origin of the peritreme to the outer margin of the evaporatorium; Fig. 18G–O) with *Triunfus*; the outer margin of the metapleural evaporatorium straight with *Pedinonotus catarinensis*, *Chimerocoris*, and *O. hypomelas*; the absence of the evaporatorium in the posterolateral angles of the mesopleuron with *P. foveata*; the pygophore trapezoidal with *Glyphepomis setigera*, *Paramecocephala fusca* and *Mecocephala magna*; the genital cup occupying less than half the length of the pygophore with *Hypatropis sternalis*; the absence of parameres with *Hypatropis* (Fig. 2A); the phallotheca medially longer than wide with *P. foveata* and *M. magna*; the conjunctiva with two pairs of processes, in dorsal view, with *P. catarinensis*, *Hypatropis*, *P. fusca, Paramecocephala australis* and *M. magna*; the valvifers 8 convex with *P. catarinensis*, *O. hypomelas* and *Paramecocephala*, and the distal ductus receptaculi long in relation to the length of the vesicular area with *Hypatropis inermis*, *Triunfus* and *Mecocephala acuminata*.

According to our study, *Chimerocoris* appears to be related to *Paramecocephala* and *Tibraca*. This relationship is observed by morphological similarity between *C. luridus* and *P. fusca*, and with *Tibraca exigua* (Fig. 19A–R). *Chimerocoris* resembles *Tibraca* and

Paramecocephala by having the head longer than wide, the lateral margins of the mandibular plates sinuous, the reduced parameres, and the segment X of males with processes basally. *Chimerocoris* shares with *Tibraca* the sublateral margins of the abdominal sternites not concolourous with the abdominal venter (lighter than the abdominal venter, Fig. 19F–H), and the following characters of the male terminalia: posterolateral angles of the pygophore rounded, and the shape of the dorsal rim (Fig. 19J, P); inferior layer of ventral rim carinated, with 1 + 1 processes (Figs. 2C, 19K, Q); segment X with 1 + 1 thorn-like processes basally (Figs. 2C, 19J, P), and paramere trapezoidal. With *Paramecocephala*, it shares the anterolateral margins of the pronotum rectilinear (Fig. 19A–B, D), the length of labium which surpasses the middle of abdominal sternite 4, and the abdomen grooved along midline (Fig. 19H–I).

Liscocephala and *Triunfus* share a similar facies, a similar body length (Fig. 20A–L), antennomere 1 robust compared to the others antennomeres and antennomere 2 strongly reduced (Fig. 20G–H), the labiomere 1 short and robust (Figs. 14E, 20E–F), the anterior angles of the pronotum lacking processes (Fig. 20C–D), the posterolateral angles of sternites not produced (Fig. 20K–L), and the posterior margins of laterotergites 8 straight. *Liscocephala* can be distinguished from *Triunfus* by the antennomere 2 reduced but scarcely visible, antennomere 3 conical and flattened dorsally (Fig. 20G–H), the anterior margin of pronotum strongly concave (Fig. 20C–D, red dashed line), the posterior margin of the pronotum rectilinear (Fig. 20I–J, red dashed rectangle), the coria not surpassing the apices of abdominal tergite 5 (Fig. 20K–L, red arrow), ostiole guttiform, the metathoracic spiracle narrow, the valvifers 8 flat with mesial margins juxtaposed, and the valvulae 8 not visible in ventral view (Fig. 16A–B). *Triunfus* and *Liscocephala* species were described based on female specimens, while no male is known so far.

Triunfus resembles *Ogmocoris* by the head shape (distal portion of head rounded, as wide as interocular distance), and the morphology of the female terminalia (valvifers 8 separated from each other, and valvifers 9 tumescent). With *Mecocephala* the elongated head profile in lateral view and the strong flattening of labiomeres 3 and 4.

The terminalia of both sexes of *Ogmocoris* are peculiar, despite having the general pattern of the *Mecocephala* group. It is the only genus of the group with the crown of parameres well-developed (Fig. 10D–H). In addition, the inferior layer of the ventral rim of the pygophore has one or a pair of processes (Figs. 10C, 12I). In *O. hypomelas*, the male has the segment X rectangular, projected apically, with a tumescent process medially (Fig. 10I–K), the ductus

seminis distalis is extremely long (Fig. 21H), the phallotheca has a pair of dorsal processes (Fig. 21J, red arrow), and three pairs of projections (Fig. 10L). The posterodorsal projections of phallotheca are well-developed and robust (Figs. 10L–M, 21J, green arrow). The conjunctiva has one pair of processes which is a character shared only with *P. foveata* (Fig. 21J–K, blue arrow). The female has the valvifers 9 obliquely placed in relation to segment X in lateral view, valvulae 9 have well-defined secondary thickenings, 1 + 1 along ring sclerite, and another medially, and the proximal and distal ductus receptaculi are extremely long and convoluted.

Discussion

The *Mecocephala* group was hypothesized as being a monophyletic grouping for the first time by FERNANDES (1993), who empirically brought together four genera of similar habitus (*Mecocephala*, *Tibraca*, *Glyphepomis* and *Hypatropis*). Since the work of FERNANDES (1993), this group has been subsequently studied by other authors which has resulted in the description and/or review of eight more genera (*Paratibraca*, *Parahypatropis*, *Amauromelpia*, *Luridocimex*, *Stysiana*, *Pedinonotus*, *Paramecocephala* and *Ogmocoris*), all of which have been historically grouped mainly by the characters of the head and by the morphology of the genitalia.

In a preliminary phylogenetic analysis by FREY-DA-SILVA (2005, unpublished data), the group was again found to be monophyletic, mainly by the shape of the lateral margins of the mandibular plates anteriorly to the compound eyes; the proportions of antennomeres 2 in relation to antennomere 1; the presence of a sub callous area on the mesial side of the trichobothria; the shape of mesial margins of valvifers 8; the ventral rim of the pygophore forming layers; the superior layer of the ventral rim of the pygophore forming 1 + 1 conical projections lateral to segment X; the number of projections on phallotheca; the shape of vesica; the number of processes of conjunctiva; the aspect and length of ductus seminis distalis.

More recently, BARÃO et al. (2017), in his study of the diversity of the external thoracic scent efferent system of the Carpocorini, discovered that all members of the *Mecocephala* group have a similar morphology of external scent efferent system. That is, they have a well-developed evaporatorium on the meso- and metapleuron, a spout-shaped ostiolar peritreme (except *Glyphepomis*), and the presence of punctures on the evaporatorium.

In the present analysis, all diagnostic characters for the *Mecocephala* group proposed

by SCHWERTNER et al. (2002) were included, i.e., in the male genitalia, the pattern of the pygophore structure, and in the female genitalia, the ductus receptaculi developed and strongly convolute, are here corroborated. Some exceptions include the reduced or missing parameres, the phallotheca with processes, and the conjunctiva with two pairs of processes. In *Ogmocoris,* the parameres are well-developed; this condition may be an evolutionary novelty in the *Mecocephala* group, with a reversal in this genus. In addition, the conjunctiva with a pair of processes is shared only with *P. foveata*. There are, however, no exclusive characteristics for any of the included genera. Each genus is distinguished by an exclusive combination of characters; that is, some characters are shared among the genera.

The monophyly of the *Mecocephala* group was recovered in all analyses under equal weights and implied weights. According to our results, we suggest that *H. meridionalis* should be included in the *Mecocephala* group. GRAZIA & CAMPOS (1996) highlighted four putative diagnostic characteristics of *Hypanthracos*: the form and proportions of the antennomeres, the shape of the dorsal rim of the pygophore, the absence of parameres, and the form and size of the conjunctival processes. RIDER et al. (2018) suggested the inclusion of *Hypanthracos* in the *Mecocephala* group mainly because they shared characters of the head and genitalia.

From our results, based on continuous characters, it is possible to tentatively recognize groupings by the shape and size of some structures, i.e. A. the total length of the labium: 1) short to medium labium in length – not surpassing the middle of abdominal sternite 3 – (*Glyphepomis*, *Hypatropis*, *Hypanthracos*, *Paratibraca*, *Pedinonotus* and *Tibraca*) or, 2) long to extremely long labium – surpassing the middle of abdominal sternite 4 to surpassing the apex of the body – (*Chimerocoris*, *Liscocephala*, *Mecocephala*, *Ogmocoris*, *Paramecocephala* and *Triunfus*). B. Head length vs. head width: 1) wider than long (*Glyphepomis* and *Hypatropis*) or, 2) longer than wide (*Chimerocoris*, *Hypanthracos*, *Liscocephala*, *Mecocephala*, *Ogmocoris*, *Paramecocephala*, *Paratibraca*, *Pedinonotus*, *Tibraca* and *Triunfus*).

Chimerocoris, *Liscocephala*, and *Triunfus* have the head longer than wide, the labium long, reaching at least to the middle of abdominal sternite 4, and a shallow groove along abdominal midline. These characters are shared with *Mecocephala*, *Paramecocephala*, and *Ogmocoris*. The relation between the length of the head and the labial length is not yet known for the *Mecocephala* group; however, it is possible to recognize species that have a longer head and a longer labium, which surpasses the middle of abdominal sternite 6.

Another character treated in the literature as diagnostic for the *Mecocephala* group is

the reduction of antennomere 2, compared with antennomere 1. This relationship between the two measurements was also observed in our results (characters 5 and 6). The only exception is the genus *Glyphepomis* in which antennomere 2 is longer than antennomere 1. FERNANDES (1993) and FREY-DA-SILVA et al. (2005) proposed two states for this character: antennomere 2 sub equal in length to antennomere 1, or that antennomere 2 is shorter than antennomere 1. Here, we record for the first time the very strong reduction of antennomere 2, occurring in *Liscocephala* (about of 1/4 of the length of antennomere 1) and *Triunfus* (total reduction).

Conclusion

The *Mecocephala* group was found to be monophyletic in all analyses, and *H. meridionalis* is a member of this group. The measurement ratios treated in the literature as diagnostic characters for the genera of the group were presented as a phylogenetic component. All new taxa proposed were recovered as independent lineages and therefore their descriptions were validated from a phylogenetic perspective. Now the *Mecocephala* group consists of seventeen genera.

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References

BARÃO K.R., FERRARI A., ADAMI C.V.K., GRAZIA J. 2017. Diversity of the external thoracic scent efferent system of Carpocorini (Heteroptera: Pentatomidae) with character selection for phylogenetic inference. – Zoologischer Anzeiger, **268**:102–111. doi:10.1016 /

j.jcz.2016.08.003

BARÃO K.R., FERRARI A., GRAZIA J. 2020. Phylogenetic analysis of the *Euschistus* group (Hemiptera: Pentatomidae) suggests polyphyly of *Dichelops* Spinola, 1837 with the erection of *Diceraeus* Dallas, 1851, stat. rev. – Austral Entomology. https://doi.org/10.1111/aen.12489.

BARBER H.G. 1941. A new species of *Tibraca* injurious to rice in Ecuador (Hemiptera–Heteroptera–Pentatomidae). – Proceedings of the Entomological Society of Washington, **43**: 110.

BARCELLOS A., GRAZIA J. 2008. Revision of the genus *Poriptus* Stål (Hemiptera: Heteroptera: Pentatomidae: Pentatominae). – Zootaxa, **1821**: 25–36. https://doi.org/10.11646/zootaxa.1821.1.3

BARROS L.B., BRUGNERA R., BARÃO K.R., GRAZIA J. (in press.) The genus *Parahypatropis* Grazia & Fernandes, with description of two new species and description of a new similar monotypic genus (Hemiptera: Pentatomidae). – Journal of Natural History

BENVEGNÚ G.Q. 1968. *Paramecocephala*, um novo gênero de Pentatomini do Brasil (Hemiptera: Pentatomidae: Pentatominae). – Revista Brasileira de Biologia, **28**(1): 87–96.

CAMPOS L.A., GRAZIA, J. 1995. *Paratibraca*, um novo gênero de Pentatomini (Heteroptera: Pentatomidae). – Iheringia, Série Zoologia, **79**: 163–171.

CAMPOS L.A., GRAZIA, J. 1998. Revisão de *Glyphepomis* Berg, 1891 (Heteroptera: Pentatomidae). – Revista Brasileira de Entomologia, **41**: 203–212.

CARRENHO R., RODRIGUES, H.D.D., LIMA, A.C., SCHWERTNER, C.F. 2020. Type specimens of true bugs (Hemiptera: Heteroptera) housed in the Museu de Zoologia da Universidade de São Paulo, Brazil. – Papéis Avulsos de Zoologia, **60**(e20206017): 1–16. http://doi.org/10.11606/1807-0205/2020.60.17

DUPUIS C. 1955. Les genitália des Hémiptères Hétéroptères (génitalia externe de deux sexes; voies ectodermiques femelles) –Revue de la morphologie– Lexique de la nomenclature– Index bibliographique analytique– Memoires du Muséum National d'Histoire Naturelle (France).– Nouvelle Serie. Serie A. Zoologie, **6**: 183–278.

DUPUIS C. 1970. Heteroptera. in: TUXEN S.L (ed), Taxonomist's Glossary of Genitalia of Insects. – Copenhagen – Munksgaard. 190–208 pp.

FARIAS P.M., KLEIN J.T., SANT'ANA J., REDAELLI L., GRAZIA J. 2015. First records of *Glyphepomis adroguensis* (Hemiptera: Pentatomidae) and its parasitoid, *Telenomus podisi* (Hymenoptera: Platygastridae), on irrigated rice fields in Rio Grande do Sul, Brazil. – Revista Brasileira de Entomologia, **56**(3): 383–384. doi:10.1590/S0085-56262012005000044

FERNANDES J.A.M. 1993. Análise filogenética e revisão do gênero *Hypatropis* Bergroth, 1891 (Heteroptera: Pentatomidae). Thesis, Universidade de São Paulo, São Paulo, Brazil.

FERNANDES J.A.M., GRAZIA J. 1996. Revisão do gênero *Hypatropis* Bergroth, 1891 (Heteroptera: Pentatomidae: Pentatominae). – Revista Brasileira de Entomologia, **40**: 341–352.

FERNANDES J.A.M., GRAZIA J. 1998. Revision of the genus *Tibraca* Stål (Heteroptera: Pentatomidae: Pentatominae). – Revista Brasileira de Zoologia, **15**(4): 1049–1060. doi:10.1590/S0101-81751998000400022

FERNANDES J.A.M., GRAZIA J. 2002. *Pedinonotus*, a new southern Neotropical genus (Heteroptera: Pentatomidae: Pentatomini). – Zootaxa, **101**: 1–7. doi:10.11646 / zootaxa.101.1.1

FREY-DA-SILVA A., GRAZIA J., FERNANDES J.A.M. 2002. Revisão do gênero *Paramecocephala* Benvegnú, 1968 (Heteroptera: Pentatomidae). – Revista Brasileira de Entomologia, **46**(2): 209–225. doi:10.1590/S0085-56262002000200013

FREY-DA-SILVA A., GRAZIA J., FERNANDES J.A.M. 2002. Revision of the genus *Ogmocoris* Mayr, 1864 (Heteroptera: Pentatomidae: Pentatomini). – Beaufortia, **52**: 179–185.

FREY-DA-SILVA, A. 2005. Análise cladística e biogeografia do grupo Mecocephala (Heteroptera: Pentatomidae: Pentatomini). Thesis, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil.

GENEVCIUS B.C., SCHWERTNER C. 2017. Strong functional integration among multiple parts of the complex male and female genitalia of stink bugs. – Biological Journal of the Linnean Society, **20**: 1–13. doi:10.1093 / biolinnean / blx095

GOLOBOFF P.A., FARRIS J.S., NIXON K.C. 2008. TNT, a free program for phylogenetic analysis. – Cladistics, **24**: 774–786. doi:10.1111/j.1096-0031.2008.00217.x

GOLOBOFF P.A., CATALANO S. 2016. TNT, version 1.5, with a full implementation of phylogenetic morphometrics. – Cladistics, **32**(3): 1–18. doi:10.1111 / cla.12160

GRAZIA J. 1978. Revisão do gênero *Dichelops* Spinola, 1837 (Heteroptera: Pentatomidae: Pentatomini). – Iheringia, Série Zoologia, **35**: 45–59.

GRAZIA J., HILDEBRAND, R. 1982. Revisão do gênero *Berecynthus* Stål, 1862 (Heteroptera: Pentatomidae: Pentatomini). – Revista Brasileira de Entomologia, **26**: 173–182.

GRAZIA J., CAMPOS, L.A. 1996. *Hypanthracos*, um novo gênero de Pentatomini (Heteroptera: Pentatomidae). – Iheringia, Série Zoologia, **80**: 13–19.

GRAZIA J. 1997. Cladistic analysis of the *Evoplitus* genus group of Pentatomini (Heteroptera, Pentatomini). – Journal of Comparative Biology, **2**: 115–129.

KLEIN J.T., BARCELLOS A., GRAZIA J., REDAELLI L.R. 2012. Contributions to the knowledge of *Dichelops* (*Dichelops*) with the description of new species (Hemiptera: Heteroptera: Pentatomidae: Pentatominae: Carpocorini).– Zootaxa, **3157**: 61–68. doi:10.11646 / zootaxa.3157.1.6

KMENT P., VILÍMOVÁ J. 2010. Thoracic scent efferent system of Pentatomoidea (Hemiptera: Heteroptera) – a review of terminology. – Zootaxa, **2706**: 1–77. doi:10.11646/zootaxa.2706.1.1

KRINSKI D., FOERSTER L.A., GRAZIA J. 2015. *Hypatropis inermis* (Hemiptera: Pentatomidae) first record on rice crops. – Revista Brasileira de Entomologia, **59**: 12–13. doi:10.1016/j.rbe.2014.11.001

MADDISON W.P., MADDISON D.R. 2018. Mesquite: a modular system for evolutionary analysis. Version 3.51. – URL <http://www.mesquiteproject.org> [accessed 01 May 2019].

MIRANDE J.M. 2009. Weighted parsimony phylogeny of the family Characidae (Teleostei: Characiformes). – Cladistics, **25**: 574–613. doi:0.1111/j.1096-0031.2009.00262.x

MULSANT E., REY C. 1866. Historie Naturelle de Punaises de France (Parti I.) Paris, 112pp.

PANTOJA A., TRIANA M., BASTIDAS H., GARCÍA C., DUQUE M.C. 2005. Development of – *Tibraca obscurata* and *Tibraca limbativentris* (Hemiptera: Pentatomidae) in rice in southwestern Colombia. – Journal of Agriculture of the University of Puerto Rico, **89**(3–4): 221–228.

RIDER D.A., ROLSTON L.H. 1987. Review of the genus *Agroecus* Dallas, with the description of a new species (Hemiptera: Pentatomidae). – Journal of the New York Entomological Society, **95**(3): 428–439.

RIDER D.A., EGER JR J.E. 2008. Two new genera of Pentatomini for species previously placed in *Mormidea* Amyot & Serville (Hemiptera: Heteroptera: Pentatomidae: Pentatominae). – Proceedings of the Entomological Society of Washington, **110**: 1050–1058.

RIDER D.A., SCHWERTNER C.F., VILÍMOVÁ J., RÉIDEI D., KMENT P., THOMAS D.B. 2018. Higher systematics of the Pentatomoidea. Pp. 76–79 in: MCPHERSON J.E. (ed), Invasive stink bugs and related species (Pentatomoidea) – biology, higher systematics, semiochemistry, and management – Boca Raton (USA), CRC Press, 819 pp.

ROLSTON L.H. 1974. Revision of the genus *Euschistus* in Middle America (Hemiptera: Pentatomidae: Pentatomini). – Entomologica Americana, **48**: 1–102.

ROLSTON L.H. 1978. A new subgenus of *Euschistus* (Hemiptera: Pentatomidae: Pentatomini). – Journal of the New York Entomological Society, **86**: 102–120.

RUSCHEL T.P., GUIDOTI M., BARCELLOS A. 2013. The Hemiptera type-material housed in the "Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul" of Porto Alegre, Brazil. – Zootaxa, **3716**(4): 539–564.

http://dx.doi.org/10.11646/zootaxa.3716.4.3

SCHWERTNER C.F., GRAZIA J., FERNANDES J.A.M. 2002. Revisão do gênero *Mecocephala* Dallas, 1851 (Heteroptera: Pentatomidae). –Revista Brasileira de Entomologia, **46**: 169–184.

SERENO P.C 2007. Logical basis for morphological characters in phylogenetics. – Cladistics, **23**: 565–587. doi:10.1111 / j.1096-0031.2007.00161.x

SILVA V.J., SANTOS C.R.M., FERNANDES J.A.M. 2018. Stink bugs (Hemiptera– Pentatomidae) from Brazilian Amazon: checklist and new records. – Zootaxa, **4425**(3): 401–455. doi:10.11646/zootaxa.4425.3.1

STÅL C. 1860. Bidrag till Rio de Janeiro – traktens Hemipter – fauna. – Kongliga Svenska Vetenskaps-Akademiens Handlingar, **2**(7): 1–84.

TSAI J.F., RÉDEI D., YEH G.F., YANG M.M. 2011. Jewel bugs of Taiwan (Heteroptera– Scutelleridae). – National Chung Hsing University – Taiwan. 309 pp.

WEILER L., FERRARI A., GRAZIA J. 2016. Phylogeny and biogeography of the South American subgenus *Euschistus* (*Lycipta*) Stål (Heteroptera: Pentatomidae: Carpocorini). – Insect Systematics & Evolution, **47**: 313–346. doi:10.1163/1876312X-47032145

ZHOU Y., RÉDEI D. 2020. From lanceolate to plate-like: Gross morphology, terminology and evolutionary trends of the trichophoran ovipositor. – Arthropod Structure & Development, **54**(100914): 1–29. https://doi.org/10.1016/j.asd.2020.100914

Appendix 1.

List of characters

Continuous characters.

1 Total length

2 Head length (BARÃO et al. 2020: 0)

3 Head width

4 Anteocular distance

5 Length of antennomere 1

6 Length of antennomere 2

7 Length of antennomere 3

8 Length of antennomere 5

9 Length of labiomere 1

10 Length of labiomere 2

11 Length of labiomere 3

12 Length of labiomere 4

Discrete characters.

Head

13 Mandibular plates, distal margin, shape: (0) obtuse (e.g. Fig. 20C–D; (1) pointed (e.g. Fig. 18B). (modified from (BARÃO et al. 2020: 11)

14 Mandibular plates, length related to apex of clypeus: (0) shorter; (1) equal; (2) longer. (modified from GRAZIA 1997: 0; WEILER et al. 2016: 0)

15 Mandibular plates, apices position in relation to clypeal apex, in lateral view: (0) inferior (e.g. Figs. 9C, 18D, indicated with a red arrow); (1) leveled; (2) superior (e.g. Fig. 18E, indicated with a red arrow). (modified from WEILER et al. 2016: 3)

16 Mandibular plates, lateral margins before the eyes, shape: (0) sinuous (e.g. Fig. 18C); (1) rectilinear (e.g. Fig. 18B).

17 Clypeus, proximal limit of clypeal suture related to an imaginary line across anterior

margins of compound eyes: (0) posterior (e.g. Fig. 18C, indicated with a blue dashed line); (1) anterior. (e.g. Fig. 18A–B, indicated with a red dashed line) (modified from Weiler 2016: 1)

18 Clypeus, height related to mandibular plates, longitudinally: (0) leveled; (1) higher (e.g. Fig. 18D). (BARÃO et al. 2020: 19)

19 Anteocular processes: (0) absent; (1) present. (BARÃO et al. 2020: 27)

20 Antenniferous tubercles, dorsal view of head: (0) not visible; (1) visible. (modified from GRAZIA et al. 2008:0)

21 Antenna, antennomere 2, dorsal view of head: (0) apparent; (1) not apparent (e.g. Fig. 14A).

22 Antenna, antennomere 3, form: (0) cylindrical (e.g. Fig. 20H); (1) conical (e.g. Figs. 13D, 20G).

23 Antenna, antennomere 3, dorsal region: (0) convex (e.g. Fig. 20H, indicated with a red arrow); (1) slightly flattened (e.g. Figs. 13D, 20G, indicated with a red arrow).

24 Antenna, antennomere 4, form: (0) cylindrical (e.g. Figs. 6A, 9A, 18Fii–iii); (1) conical (e.g. Figs. 4A, 13D, 18Fi, iv).

25 Antenna, antennomere 4, dorsal region: (0) convex (e.g. Fig. 20H, indicated with a red arrow; (1) slightly flattened (e.g. Figs. 13D, 20G, indicated with a red arrow).

26 Bucculae, ventral margin, form: (0) sinuous; (1) rectilinear.

27 Bucculae, posterior margin related to the base of head: (0) reaching; (1) not reaching.

28 Bucculae, posterior margin, form: (0) truncate; (1) tapering toward base of head. (modified from WEILER et al. 2016: 7)

29 Labium, length of labiomere 1 related to bucculae: (0) contained (e.g. Fig. 18D–E, indicated with a green arrow); (1) surpassing. (BARÃO et al. 2020: 22)

30 Labium, labiomere 2, form: (0) cylindrical (e.g. Fig. 18E); (1) flattened laterally (e.g. Figs. 3B, 11C).

31 Labium, labiomeres 3–4, form: (0) entirely cylindrical; (1) flattened (e.g. Fig. 15C).

Thorax

32 Pronotum, anterior angles, process: (0) absent; (1) present. (BARÃO et al. 2020: 29)

33 Pronotum, anterolateral margins, outline colour related to background colour of pronotum: (0) concolourous (e.g. Figs. 18A–B, 19D, 21B); (1) not concolourous (e.g. Figs. 18C–D, 19E, 20E–F, I–J, 21A).

34 Pronotum, anterolateral margins, ornamentation: (0) smooth (e.g. Fig. 18C); (1) serrate; (2) crenulate (e.g. Fig. 21A). (modified from WEILER et al. 2016: 10)

35 Pronotum, anterolateral margins, dorsal surface, outline: (0) flat (e.g. Fig. 18A); (1) explanate (e.g. Fig. 18C). (BARÃO et al. 2020: 31)

36 Pronotum, anterolateral margins, form: (0) straight (e.g. Fig. 18B–C); (1) concave (e.g. Figs. 18A, 21A–B). (modified from (BARÃO et al. 2020)

37 Pronotum, anterolateral margins, outline, impunctate area: (0) absent (e.g. Fig. 18A, indicated with a red arrow); (1) present (e.g. Figs. 18C, indicated with a red arrow, 19E).

38 Pronotum, humeral angles, development in relation to anterolateral margins: (0) developed (e.g. Figs. 9A, 18A, 21A–B); (1) not developed (e.g. Figs. 19A–C, 20I–J). (BARÃO et al. 2020: 34)

39 Pronotum, posterior margin, form: (0) slightly convex (e.g. Fig. 21B); (1) rectilinear (e.g. Fig. 20I, indicated with a red dashed rectangle); (2) emarginate in the middle (e.g. Fig. 20J, indicated with a red dashed rectangle).

40 Scutellum, foveae: (0) absent; (1) present.

41 Scutellum, basal angles, foveae in relation to the diameter of a compound eye, size: (0) < eye (e.g. Fig. 20K–L, indicated with a red arrow); (1) = eye (e.g. Fig. 21C, indicated with a green arrow); (2) > eye (e.g. Fig. 21E, indicated with a green arrow).

42 Hemelytrum, corium, length related to the apex of abdominal tergite 5: (0) reaching (e.g. Fig. 20L, indicated with a blue arrow); (1) not reaching (e.g. Fig. 20K, indicated with a blue dashed line).

43 Hemelytrum, corium, radial vein apex, aspect: (0) punctate (e.g. Fig. 21C, indicated a blue arrow); (1) calloused (e.g. Fig. 21D–E, indicated a blue arrow); (2) smooth. (modified from WEILER et al. 2016: 16)

44 Hemelytrum, length related to abdominal apex: (0) surpassing; (1) not surpassing. (BARÃO et al. 2020: 46)

45 External scent efferent system, ostiole, shape in ventral view: (0) elliptical; (1) circular; (2) guttiform.

46 External scent efferent system, ostiole, opening orientation: (0) posterolaterally; (1) ventrally. (modified from BARÃO et al. 2017: 3)

47 External scent efferent system, periostiolar depression: (0) absent; (1) present. (BARÃO et al. 2017: 4)

48 External scent efferent system, ostiolar peritreme, shape: (0) ruga; (1) spout-shaped (e.g. Fig. 18H–N); (2) bean-shaped (e.g. Fig. 18O, R). (modified from BARÃO et al. 2017: 5)

49 External scent efferent system, ostiolar peritreme, extension to the outer margin: (0) half; (1) ⅔ (e.g. Fig. 18H–N); (2) 1/3.

50 External scent efferent system, ostiolar peritreme, median furrow, development related to peritremal length: (0) < half (e.g. Fig. 18R); (1) > half (e.g. Fig. 18N, P, indicated with a red arrow). (BARÃO et al. 2017: 6)

51 External scent efferent system, evaporatorium, colour, in relation to the metapleuron colour: (0) concolourous (e.g. Fig. 18N); (1) not concolourous (e.g. Fig. 18M).

52 External scent efferent system, vestiture, evaporatorium, punctures: (0) absent; (1) present (e.g. Fig. 18O, Q, S). (BARÃO et al. 2017: 22)

53 External scent efferent system, metapleuron, evaporatorium, development related to metapleuron width: (0) < half; (1)> half; (2) half. (modified from BARÃO et al. 2017: 8)

54 External scent efferent system, metapleuron, evaporatorium, shape of outer margin: (0) convex (e.g. Fig. 18L); (1) concave (e.g. Fig. 18I, K); (2) straight (e.g. Fig. 18H, J). (BARÃO et al. 2017: 10)

55 External scent efferent system, metapleuron, evaporatorium, form of anterolateral margin: (0) rounded; (1) tapered. (BARÃO et al. 2017: 11)

56 External scent efferent system, metapleuron, evaporatorium, area close to outer margin raised: (0) absent; (1) present. (BARÃO et al. 2017: 12)

57 External scent efferent system, mesopleuron, evaporatorium, development degree related to anterior limit of mesocoxal suture: (0) not attaining; (1) surpassing. (BARÃO et al. 2017: 13)

58 External scent efferent system, mesopleuron, range of evaporatorium related to mesopleuron width: (0) < half (e.g. Fig. 18O, indicated with a red line); (1) > half (e.g. Fig. 18M, indicated with a white line). (BARÃO et al. 2017: 14)

59 External scent efferent system, mesopleuron, evaporatorium at anterolateral angle: (0) absent; (1) present. (BARÃO et al. 2017: 15)

60 External scent efferent system, mesopleuron, evaporatorium at posterolateral angle: (0) absent; (1) present (e.g. Fig. 18S, indicated with a red arrow). (BARÃO et al. 2017: 16)

61 External scent efferent system, mesopleuron evaporatorium along the outer margin: (0) absent; (1) present (e.g. Fig. 18S, indicated with a blue arrow). (BARÃO et al. 2017: 17)

62 External scent efferent system, mesopleuron, evaporatorium, in a diagonal from mesepimeron to mesepisternum: (0) absent; (1) present. (BARÃO et al. 2017: 18)

63 External scent efferent system, evaporatorium, gyrification, height of the wrinkles: (0) low (e.g. Fig. 18H); (1) high (e.g. Fig. 18L). (modified from BARÃO et al. 2017: 21)

64 Metathoracic spiracle, form: (0) narrow (e.g. Fig. 18K, indicated with a red arrow); (1) wide (e.g. Fig. 18J, indicated with a red arrow). (BARÃO et al. 2017: 25)

65 Legs, colouration pattern related to the main colouration of abdominal venter: (0) concolourous; (1) not concolourous.

66 Legs, vestiture, femora, ventral surface, setae: (0) absent; (1) present.

Abdomen

67 Connexivum, colouration pattern of anterolateral angles in relation to discal colouration: (0) concolourous (e.g. Fig. 21C); (1) not concolourous. (BARÃO et al. 2020: 81)

68 Connexivum, colouration pattern of posterolateral angles in relation to discal colouration: (0) concolourous (e.g. Fig. 21C); (1) not concolourous (e.g. Fig. 21D–E). (BARÃO et al. 2020: 82)

69 Connexivum, in dorsal view, related to mesosternal wing development: (0) exposed (e.g. Fig. 21E); (1) concealed. **(**modified from BARÃO et al. 2020)

70 Sternites, colouration pattern of anterolateral angles related to discal colouration: (0) concolour; (1) not concolour (e.g. Fig. 19I). (BARÃO et al. 2020: 74)

71 Sternites, colouration pattern of sub lateral margin in relation to discal colouration: (0) concolourous (e.g. Figs. 4C, 19I, indicated with a red dashed rectangle, 21G); (1) not concolourous (e.g. Figs. 13C, 14C, 19H, indicated with a red dashed rectangle, 21F).

72 Sternites, longitudinal groove medially: (0) absent; (1) present (e.g. Figs. 3C, 13E, indicated with a red arrow).

73 Sternites, posterolateral angles protruding from sternite edge: (0) absent (e.g. Fig. 21E); (1) present (e.g. Fig. 21C–D, indicated with a red arrow). (BARÃO et al. 2020: 72)

74 Sternites, posterolateral angles, form of apex: (0) obtuse; (1) acute. (BARÃO et al. 2020: 37)

75 Spiracles, colour in relation to venter abdominal colour: (0) concolourous (e.g. Fig. 21F); (1) not concolourous (e.g. Fig. 21G). (BARÃO et al. 2020: 79)

76 Trichobothria, colour of base in relation to abdominal colour: (0) concolourous (e.g. Figs. 13E, 21F–G); (1) not concolourous.

Male terminalia

77 Pygophore, shape: (0) sub quadrangular, as wide as long; (1) sub rectangular, longer than wide; (2) trapezoidal.

78 Pygophore, genital cup, opening orientation: (0) dorsal; (1) posterodorsally.

79 Pygophore, genital cup, length in relation to the length of pygophore: (0) < half (e.g. Fig.

5A); (1) half; (2) > half.

80 Pygophore, posterolateral angle, shape: (0) rounded (e.g. Fig. 2B); (1) quadrate; (2) acute. (BARÃO et al. 2020: 110)

81 Pygophore, dorsal rim, lateral margin related to lateral rim of pygophore, development: (0) bordering (e.g. Figs. 2B, 7A); (1) not bordering (e.g. Figs. 2A, 5A).

82 Pygophore, dorsal rim, marginal process: (0) absent; (1) present. (BARÃO et al. 2020: 107)

83 Pygophore, dorsal rim, superior process: (0) absent; (1) present. (BARÃO et al. 2020: 108)

84 Pygophore, dorsal rim, middle region, outline: (0) entire; (1) notched.

85 Pygophore, dorsal rim, extension of dorsal rim, development: (0) well-developed; (1) obsolete.

86 Pygophore, ventral rim, number of layers: (0) single; (1) double (e.g. Figs. 2C, 5B, 7B, 10B, 12H).

87 Pygophore, ventral rim, carina separating the layers: (0) absent (e.g. Figs. 10B, 12H, 19N); (1) present (e.g. Figs. 2C, indicated with a blue arrow, 7E, 19Q).

88 Pygophore, ventral rim, area between layers, surface: (0) depressed; (1) excavate (e.g. Fig. 2C, indicated with a green arrow).

89 Pygophore, ventral rim, superior layer, projection in relation to paramere, degree of development: (0) not covering (e.g. Figs. 7A, 10D, 12A); (1) covering.

90 Pygophore, ventral rim, superior layer projected toward genital cup: (0) absent; (1) present (e.g. Fig. 2A). (BARÃO et al. 2020: 113)

91 Pygophore, ventral rim, superior layer in superior view, lateral margin of projection, outline: (0) entire (e.g. Figs. 2A, 12H, 19N); (1) notched (e.g. Figs. 2B–C, indicated with a red arrow, 10B, 19K, Q).

92 Pygophore, ventral rim, superior layer, superior process: (0) absent; (1) present.

93 Pygophore, ventral rim, superior layer, number of process: (0) one pair; (1) two pairs.

94 Pygophore, ventral rim, inferior layer, process: (0) absent; (1) present (e.g. Fig. 2C).

95 Pygophore, ventral rim, inferior layer, number of processes: (0) one (e.g. Fig. 10C); (1) two (e.g. Figs. 7C, 12I, 19O, R).

96 Pygophore, segment X, shape: (0) rectangular, longer than wide (e.g. Fig. 10I); (1) quadrangular, as wide as long; (2) ogival, arcuate apex (e.g. Fig. 2A).

97 Pygophore, segment X, transverse carina: (0) absent; (1) present.

98 Pygophore, segment X, process: (0) absent; (1) present (e.g. Figs. 10J, 19J, P). (BARÃO

et al. 2020: 120)

99 Pygophore, segment X, process shape: (0) tumescence (e.g. Fig. 2B); (1) thorn-like (e.g. Figs. 2C, 19P). (modified from BARÃO et al. 2020)

100 Pygophore, segment X, process, placement of insertion: (0) basally; (1) medially. (BARÃO et al. 2020: 123)

101 Pygophore, paramere: (0) absent (e.g. Fig. 2A); (1) present (e.g. Fig. 2B).

102 Pygophore, paramere, development of crown: (0) well-developed (e.g. Fig. 10D–H); (1) reduced (e.g. Figs. 2B, 19J, M, P).

Male genitalia

103 Phallus, phallotheca, length medially related to width apically: (0) shorter; (1) longer. (BARÃO et al. 2020: 126)

104 Phallus, phallotheca, ductus seminis distalis, length in relation to conjunctiva: (0) shorter; (1) equally; (2) longer, up to three times longer; (3) extremely long, at least five times longer (e.g. Fig. 21H).

105 Phallus, phallotheca, posterodorsal margin, median projections: (0) absent; (1) present. (modified from BARÃO et al. 2020)

106 Phallus, phallotheca, posterodorsal margin, number of projections, medially: (0) one; (1) two. (BARÃO et al. 2020: 130)

107 Phallus, phallotheca, posterolateral margins, rounded projections: (0) absent; (1) present (e.g. Figs. 10L, 21I–K). (BARÃO et al. 2020: 131)

108 Phallus, phallotheca, process of phallotheca: (0) absent; (1) present. (BARÃO et al. 2020: 133)

109 Phallus, phallotheca, process of phallotheca, width basally related to width medially: (0) narrower; (1) wider; (2) uniformly wide. (BARÃO et al. 2020: 134)

110 Phallus, phallotheca, projections ventrobasally: (0) absent; (1) present (e.g. Figs. 5I, 10N).

111 Phallus, conjunctiva, number of processes: (0) one pair (e.g. Figs. 10L, 21J–K); (1) two pairs (e.g. Figs. 5H, 21I).

112 Phallus, conjunctiva, lateral lobes: (0) absent; (1) present. (BARÃO et al. 2020: 137)

113 Phallus, conjunctiva, median lobes: (0) absent; (1) present (e.g. Figs. 5H, 10L, 21I). (BARÃO et al. 2020: 138)

114 Phallus, conjunctiva, median lobes, aspect: (0) entirely membranous (e.g. Fig. 21I–J); (1) sclerotized apically (e.g. Fig. 5H); (0) entirely sclerotized. (BARÃO et al. 2020: 139)

115 Phallus, conjunctiva, ventral lobes: (0) absent; (1) present. (BARÃO et al. 2020: 141)

116 Phallus, process of vesica: (0) absent; (1) present. (BARÃO et al. 2020: 142)

Female terminalia

117 Genital plates, valvifers 8, discal surfaces: (0) flat (e.g. Fig. 16A); (1) convex (e.g. Figs. 5J, 11A, 16B); (modified from WEILER et al. 2016: 24)

118 Genital plates, valvifers 8, mesial margins related to each other: (0) juxtaposed (e.g. Figs. 5J, 16A); (1) not juxtaposed (e.g. Fig. 15B).

119 Genital plates, valvifers 8, length in relation to laterotergites 9: (0) sub equal; (1) at least twice as long; (1) smaller.

120 Genital plates, valvifers 8, development degree over valvifers 9: (0) partially covering; (1) completely covering. (BARÃO et al. 2020: 87)

121 Genital plates, valvifers 8, posterior margins, shape: (0) straight; (1) sinuous.

122 Genital plates, valvifers 9, position in relation to segment X: (0) leveled; (1) oblique, in an obtuse angle. (WEILER et al. 2016: 29; BARÃO et al. 2020: 89)

123 Genital plates, valvifers 9, anterior margins, shape: (0) straight; (1) concave; (1) convex.

124 Genital plates, valvifers 9, posterior margins, shape: (0) convex; (1) straight; (2) concave; (3) emarginate.

125 Genital plates, valvifers 9, surface: (0) flat; (1) swollen; (2) depressed. (BARÃO et al. 2020: 90)

126 Genital plates, valvifers 9, sclerotized lateral arms: (0) absent; (1) present. (BARÃO et al. 2020: 91)

127 Genital plates, laterotergites 8, posterior margins, form: (0) straight; (1) acutely projected; (2) obtusely projected. (BARÃO et al. 2020: 92)

128 Genital plates, laterotergites 8, spiracles: (0) absent; (1) present. (BARÃO et al. 2020: 93)

129 Genital plates, laterotergites 9, apices in relation to abdominal tergite 8: (0) not surpassing; (1) surpassing. (BARÃO et al. 2020: 95)

130 Genital plates, valvulae 8, visible in ventral view: (0) absent; (1) present. (BARÃO et al. 2020: 96)

131 Genital plates, valvulae 9, sclerotized areas: (0) absent; (1) present. (BARÃO et al. 2020: 97)

Female genitalia

132 Ectodermal ductus, thickening of vaginal intima, length of arcuate posterior portion

related to round anterior portion: (0) shorter; (1) longer. (BARÃO et al. 2020: 98)

133 Ectodermal ductus, proximal ductus receptaculi, aspect: (0) straight; (1) convolute.

134 Ectodermal ductus, proximal ductus receptaculi, diameter, in relation the diameter of the distal ductus receptaculi: (0) smaller; (1) sub equal; (2) larger.

135 Ectodermal ductus, proximal ductus receptaculi, length in relation to vesicular area: (0) shorter; (1) longer, up to three times longer (e.g. Fig. 16F); (2) extremely long, at least four times as long (e.g. Fig. 11D).

136 Ectodermal ductus, vesicular area, median wall, shape sub proximally: (0) enlarged (e.g. Fig. 5K); (1) cylindrical. (BARÃO et al. 2020: 100)

137 Ectodermal ductus, distal ductus receptaculi, length in relation to vesicular area: (0) shorter; (1) longer, up to three times longer (e.g. Fig. 5K); (2) extremely long, at least four times as long (e.g. Fig. 11D).

138 Ectodermal ductus, distal ductus receptaculi, form: (0) straight; (1) convolute (e.g. Fig. 16F–G); (2) twisted.

139 Ectodermal ductus, distal ductus receptaculi, annular flanges, related to each other: (0) convergent; (1) divergent.

140 Ectodermal ductus, posterior annular flange, width related to *capsula seminalis* width: (0) thinner; (1) wider. (BARÃO et al. 2020: 104)

141 Ectodermal ductus, *pars intermedialis*, form: (0) enlarged; (1) rectilinear; (2) twisted; (3) posteriorly fan-fold.

142 Ectodermal ductus, *capsula seminalis*, length related to *pars intermedialis*: (0) smaller; (1) sub equal; (2) longer.

143 Ectodermal ductus, *capsula seminalis*, form: (0) globose; (1) elongate.

144 Ectodermal ductus, *capsula seminalis*, process: (0) absent; (1) present. (BARÃO et al. 2020: 106)

Figures and Tables

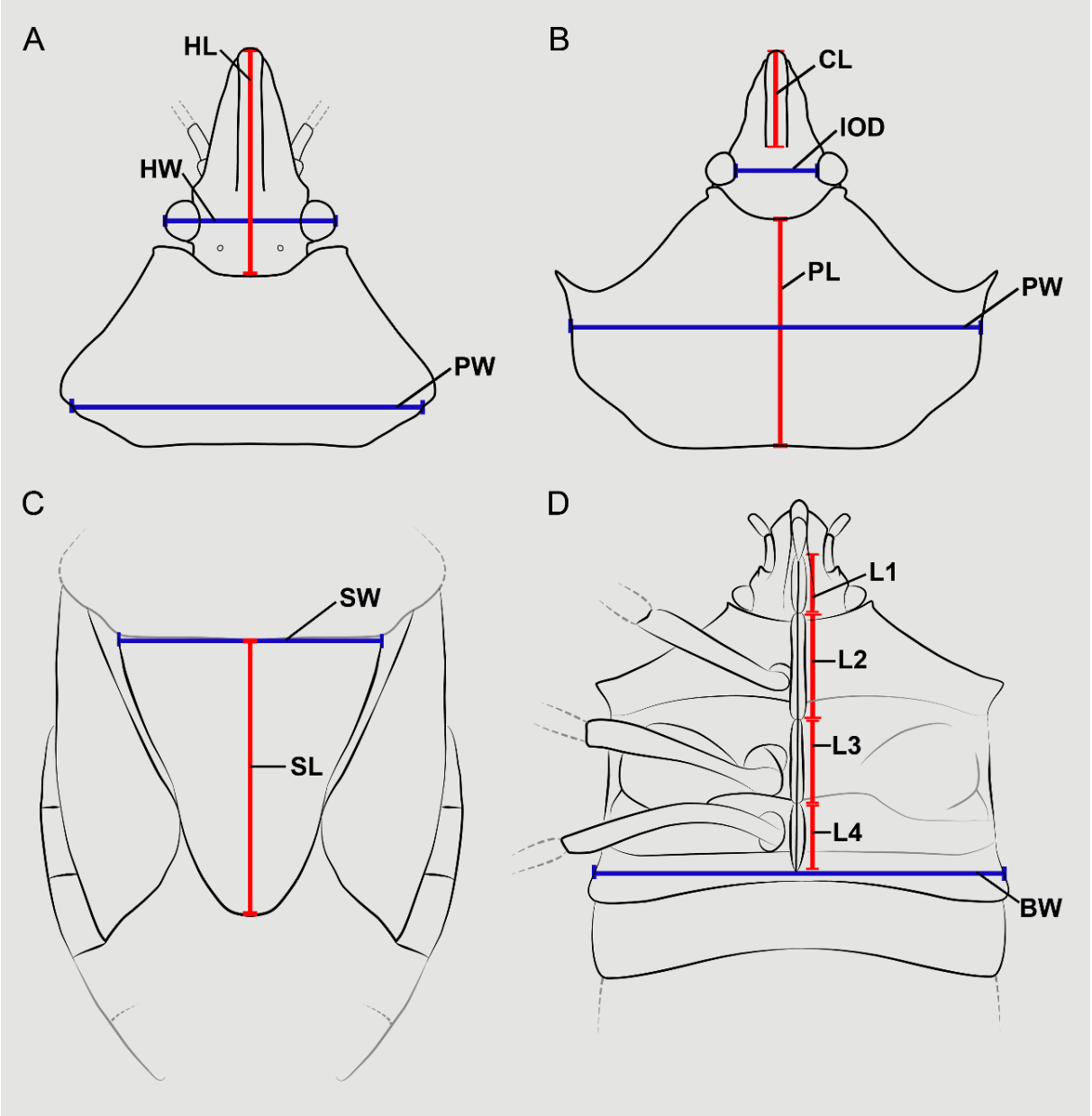

Fig. 1. Representation of measured morphometric parameters. — ***Abbreviations***: **A**: HL – head length; HW – head width; PW – pronotum width (width of pronotum after humeral angles). **B**: CL – length of clypeus; IOD – interocular distance; PL – pronotum length; PW – pronotum width. **C**: SL – scutellum length; SW – scutellum width. **D**: L1 – length of labiomere 1; L2 – length of labiomere 2; L3 – length of labiomere 3; L4 – length of labiomere 4; BW – body width (abdominal width at level of abdominal sternite 3).

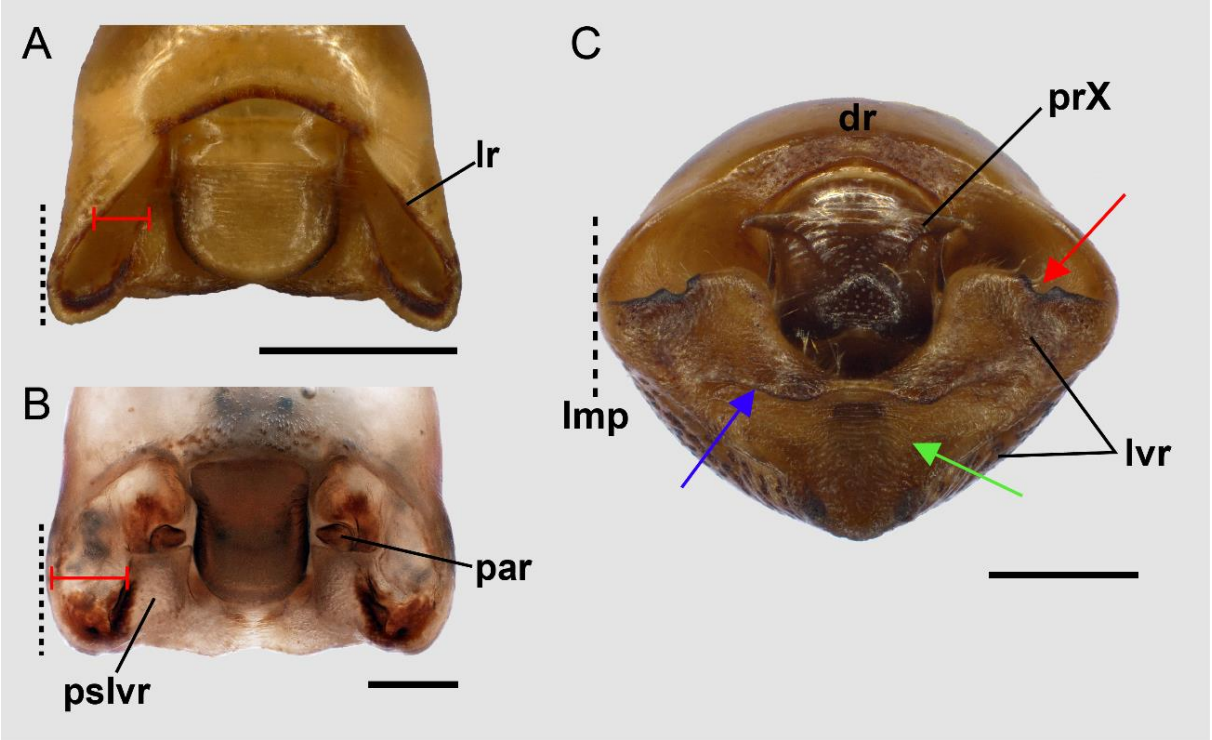

Fig. 2. Representation of male terminalia of genera of *Mecocephala* group. **A**–**B**: pygophore, dorsal view. **A**: showing the genital cup narrow and absence of parameres; **B**: showing the genital cup broad and reduced parameres; **C**: pygophore, posterior view, showing the layers of ventral rim, the carina between layers (blue arrow), the area between layers (green arrow), and lateral margins of projections of superior layer of ventral rim notched (red arrow). — (A): *Hypatropis inermis*; (B): *Tibraca similima*; (C): *Tibraca limbativentris*. The red line showing the distance between the lateral margin of pygophore and the lateral rim of pygophore. Scale bars = 1.0 mm.

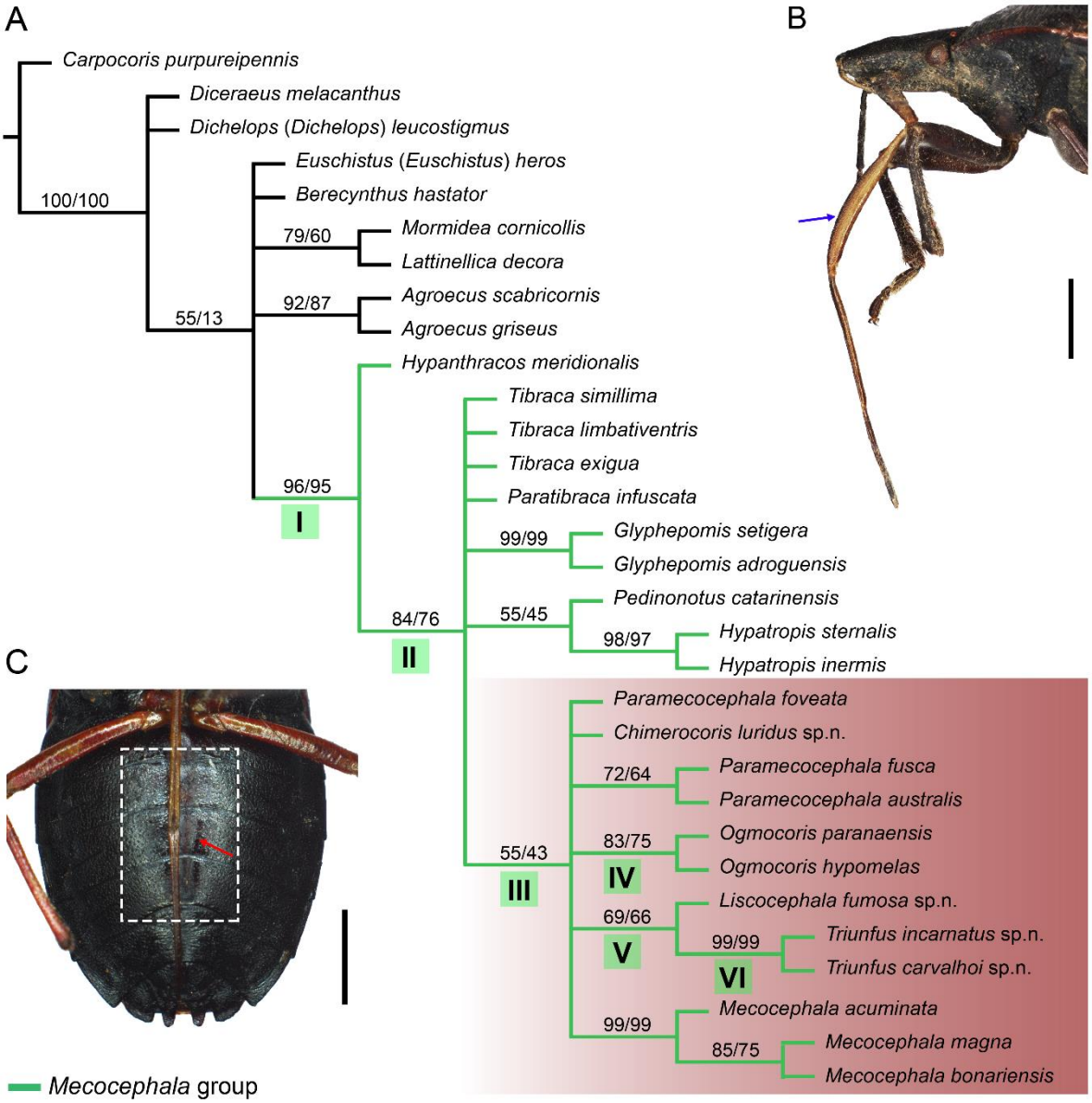

Fig. 3. Phylogenetic relations of genera of *Mecocephala* group. **A**: tree resulting from implied weighting scheme. Jackknife support values mapped above represent absolute frequencies and GC values, respectively. Number in capital letters indicated the target clades. **B**–**C**: exclusive synapomorphies of the clade III (labiomere 2 flattened laterally, blue arrow, and longitudinal groove on abdominal sternites, red arrow). — (B): *Paramecocephala bergrothi* Frey-da-Silva & Grazia, 2002; (C): *Mecocephala magna*. Scale bars = 2.0 mm.

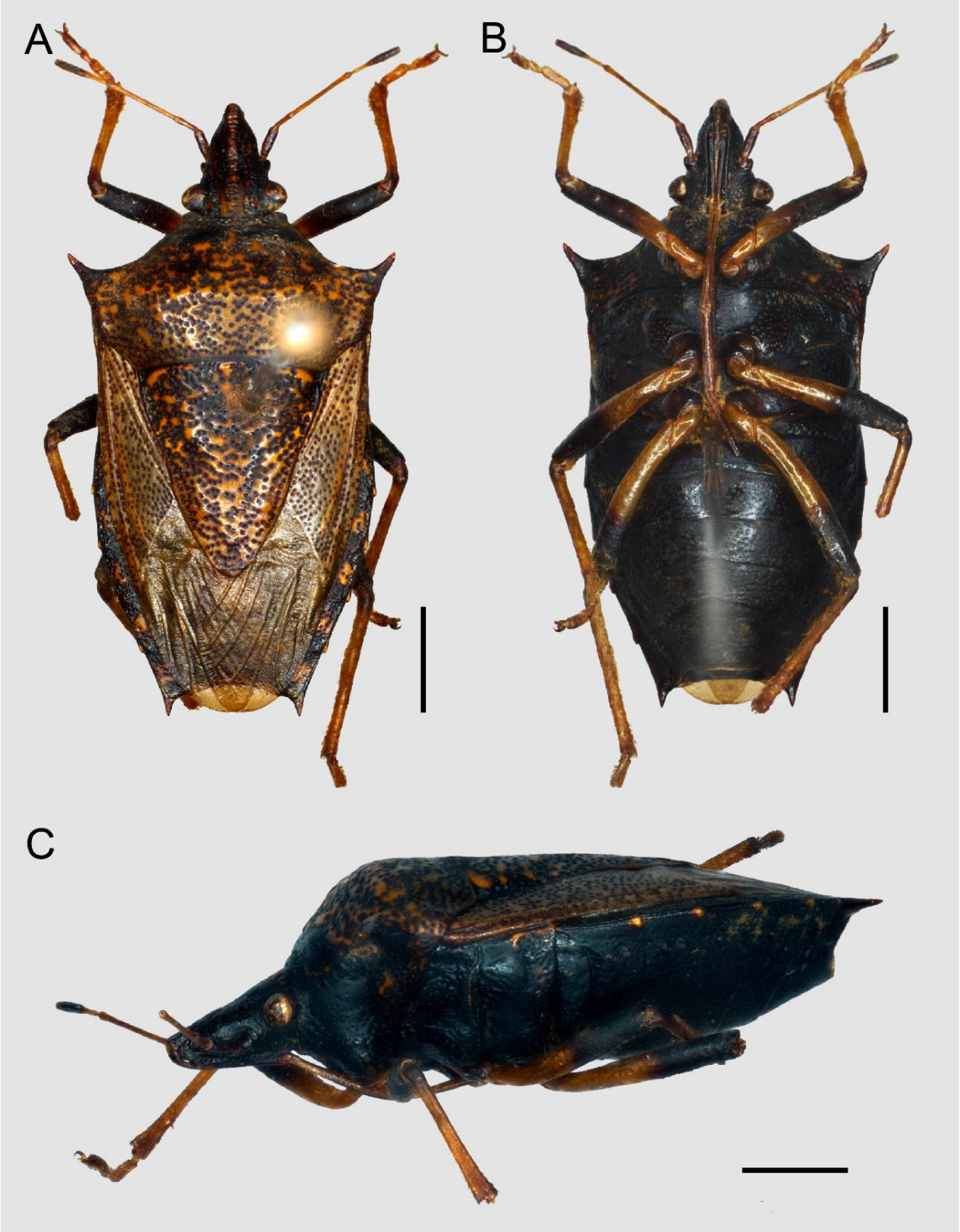

Fig. 4. *Hypanthracos meridionalis* Grazia & Campos, 1996: **A**: dorsal; **B**: ventral; **C**: lateral. Scale bars = 2.0 mm

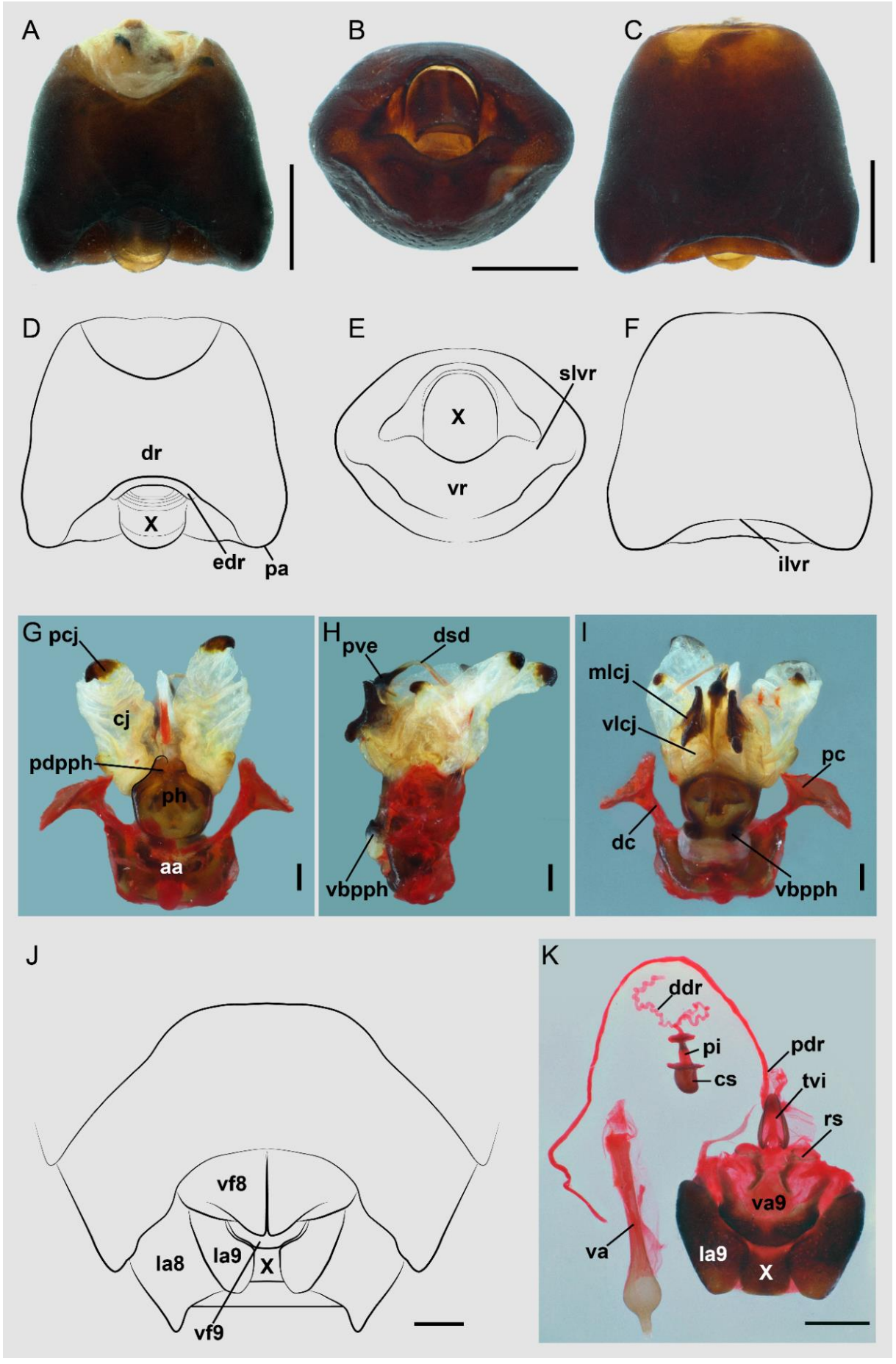
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Fig. 5. *Hypanthracos meridionalis* Grazia & Campos, 1996: **A**–**F**: male terminalia: **A**–**D**: dorsal; **B**–**E**: posterior: **C**–**F**: ventral; **G**–**I**: male genitalia: **G**: dorsal; **H**: lateral; **I**: ventral; **J**: female terminalia; **K**: female receptaculum seminis and ausenwand. Scale bars: A–F = 1.0 mm; G–I: 0.01 mm; J–K = 0.5 mm.

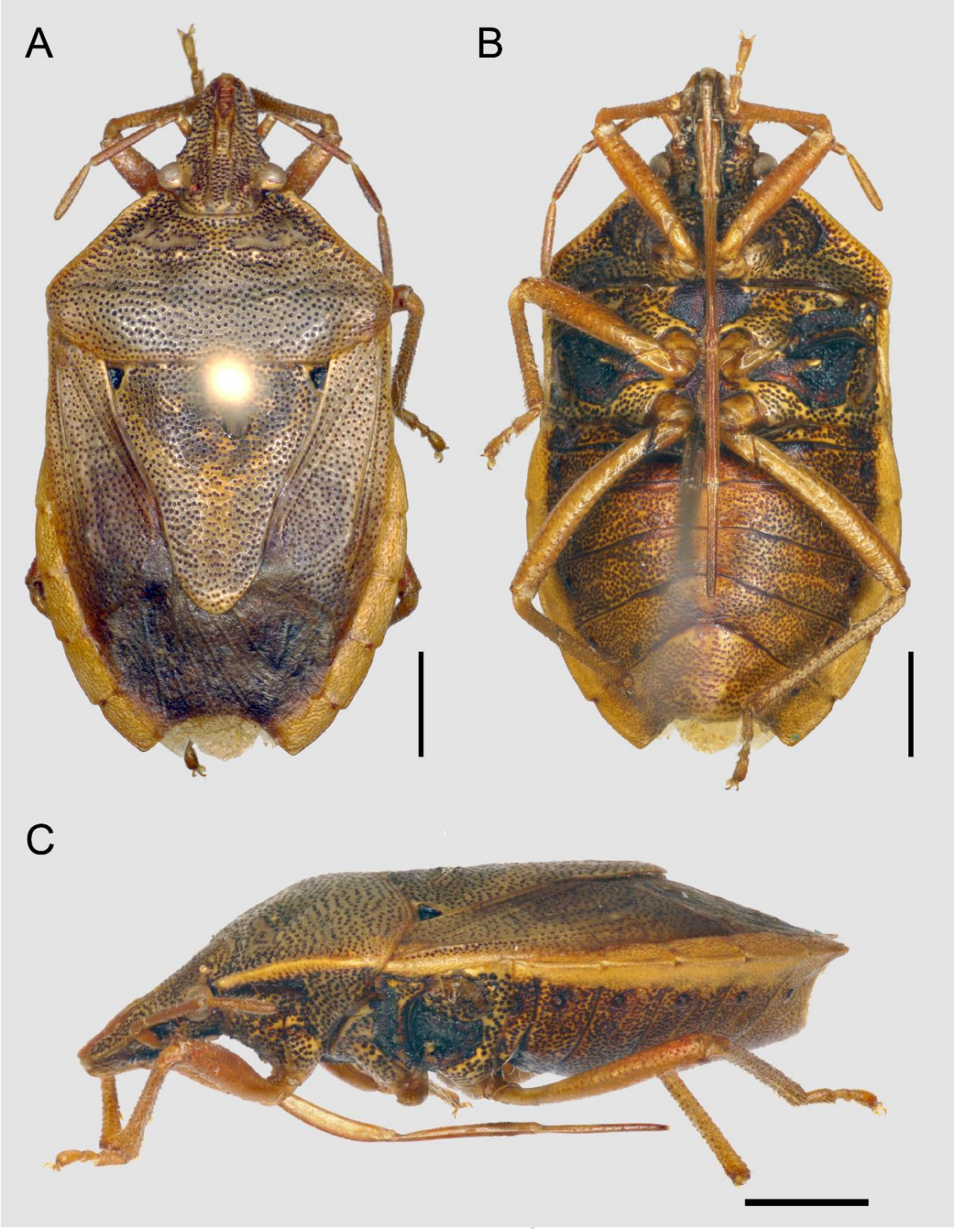

Fig. 6. *Chimerocoris luridus* sp.n. ♂: **A**: dorsal; **B**: ventral; **C**: lateral. Scale bars = 2.0 mm.

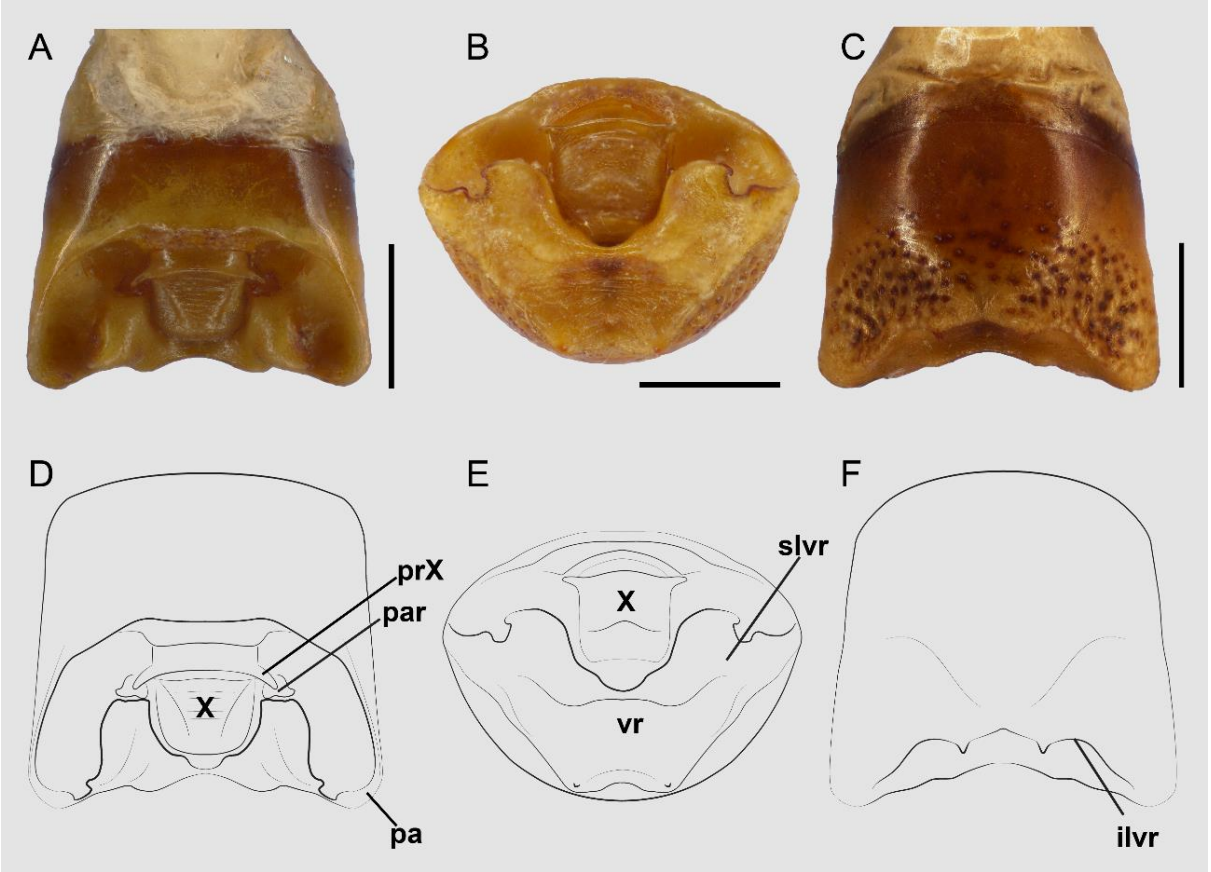

Fig. 7. *Chimerocoris luridus* sp.n. ♂: Male terminalia: **A**–**D**: dorsal; **B**–**E**: posterior; **C**–**F**: ventral. Scale bars = 1.0 mm.

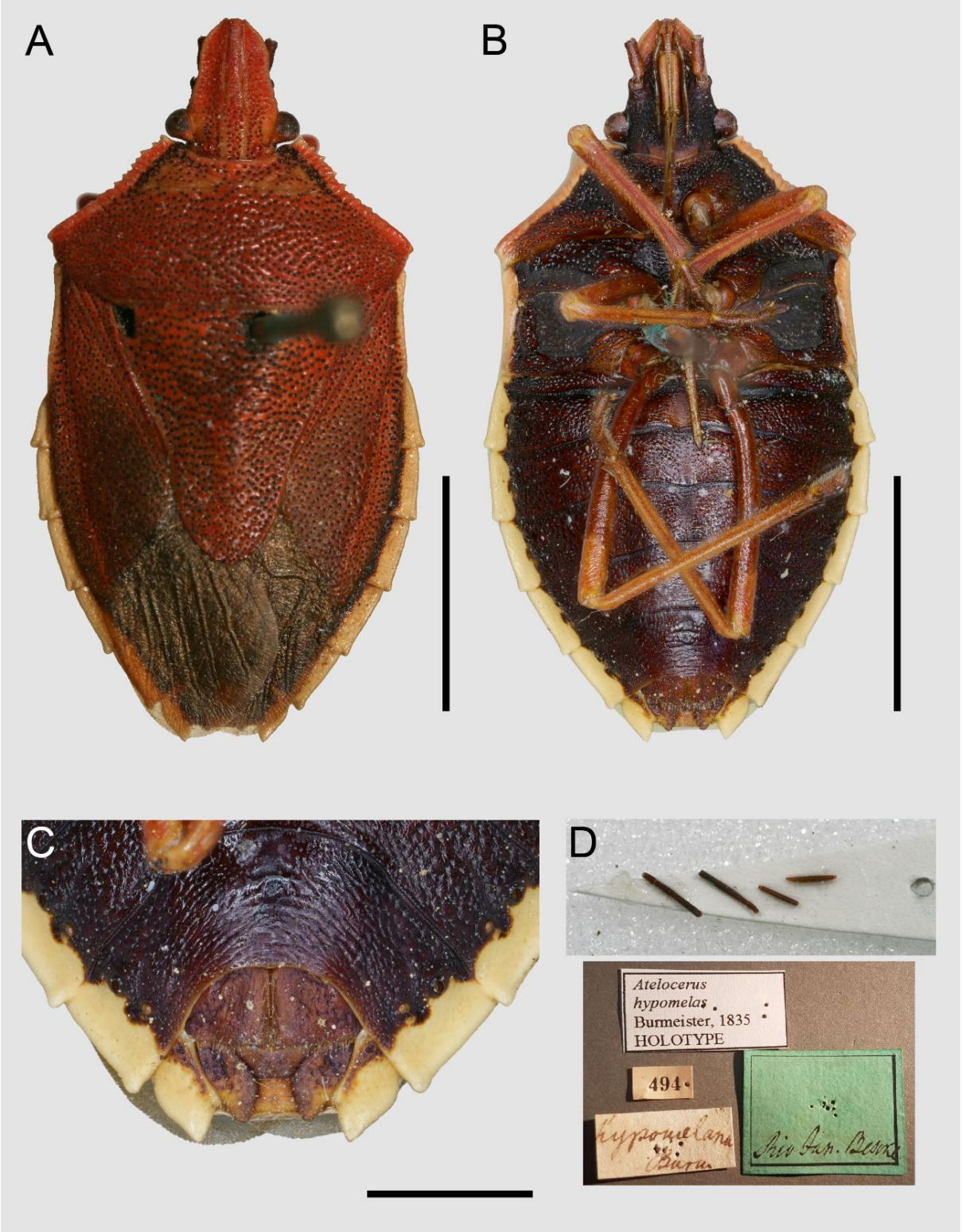

Fig. 8. *Ogmocoris hypomelas* (Burmeister, 1835) ♀, lectotype: **A**: dorsal; **B**: ventral; **C**: female terminalia; **D**: antenna and labels. Scale bars: A–B = 5.0 mm; C = 2.0 mm.

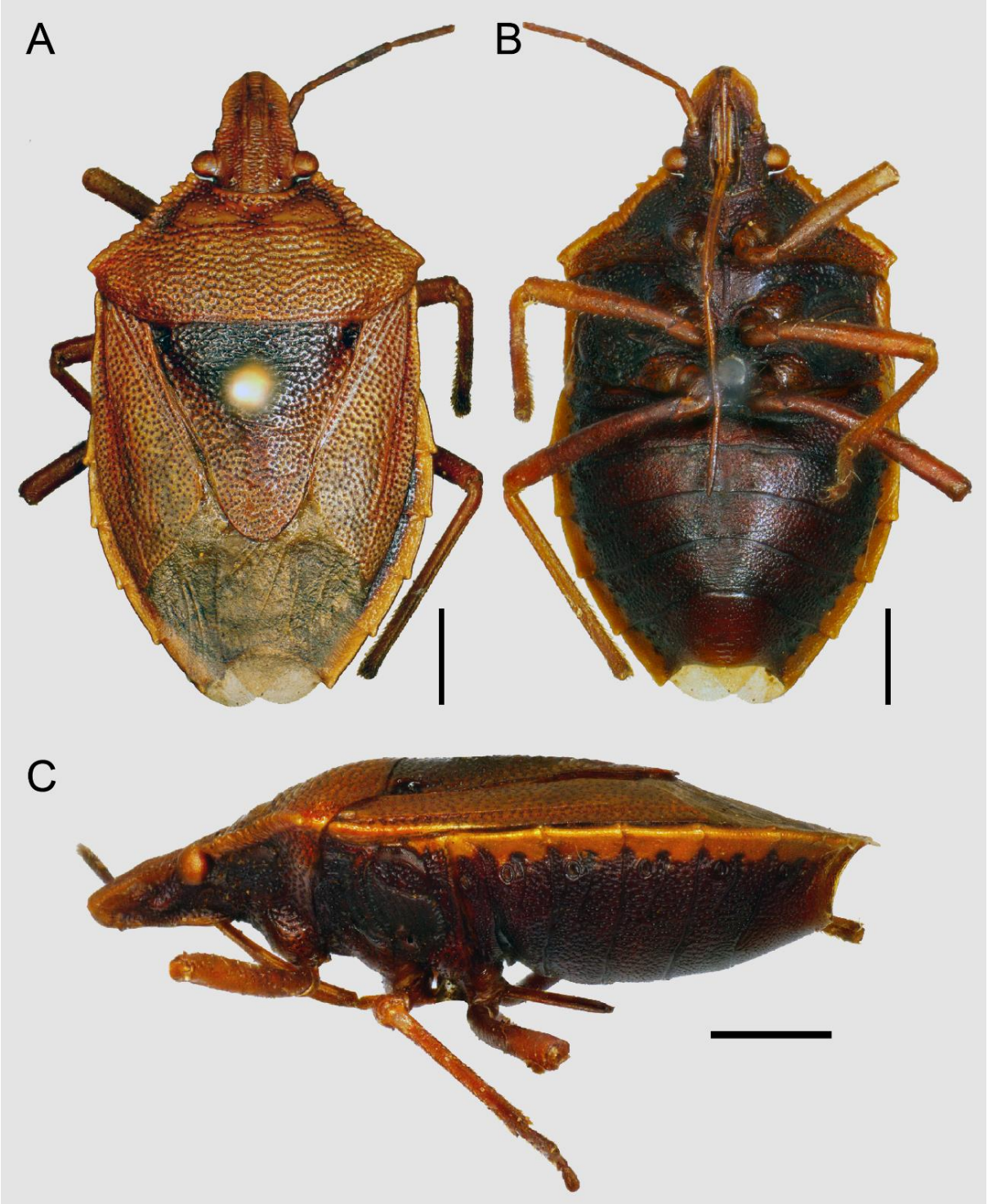

Fig. 9. *Ogmocoris hypomelas* (Burmeister, 1835) ♂: **A**: dorsal; **B**: ventral; **C**: lateral. Scale bars = 2.0 mm.

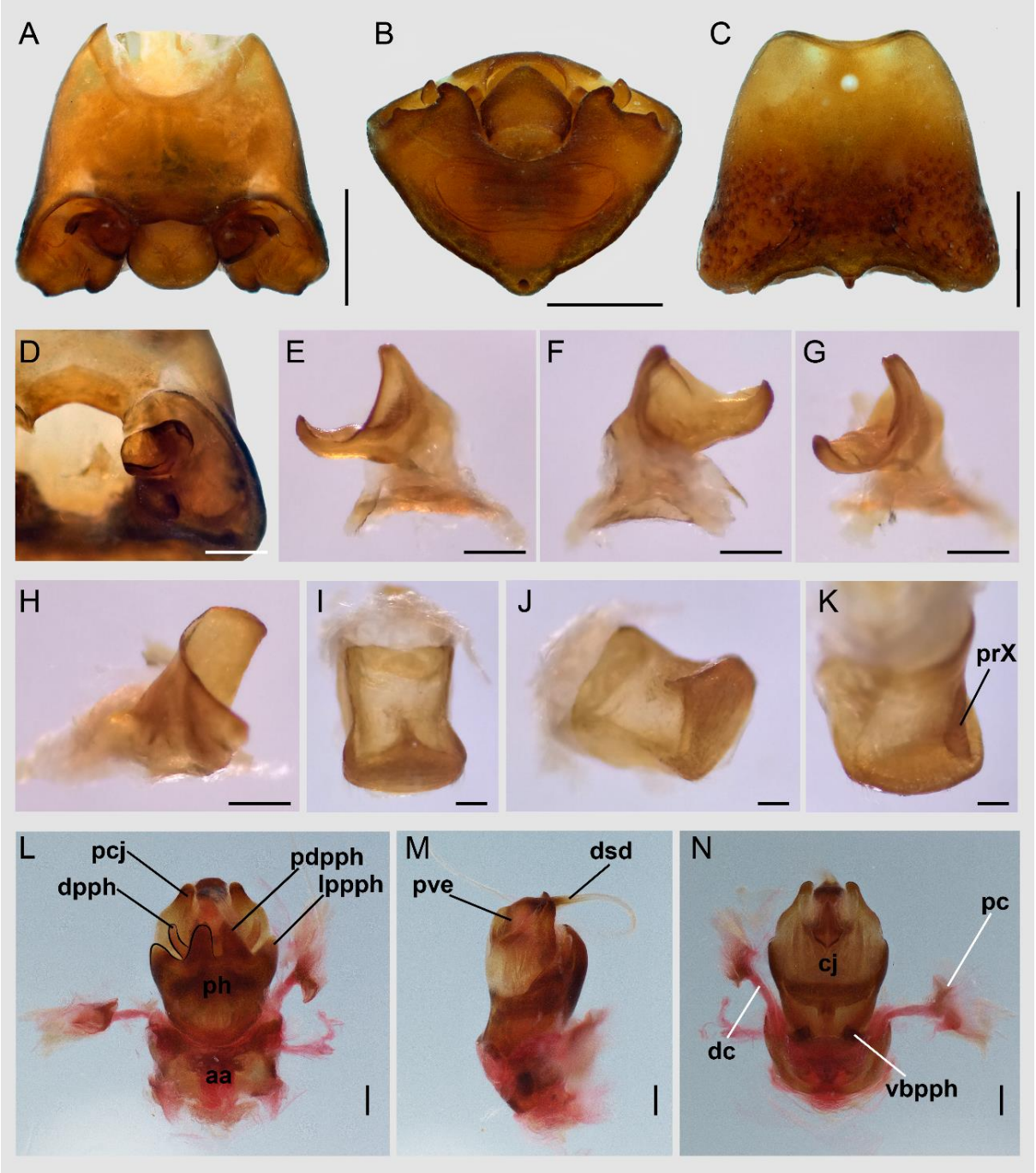

Fig. 10. *Ogmocoris hypomelas* (Burmeister, 1835): **A**–**C**: male terminalia: **A**: dorsal; **B**: posterior: **C**: ventral; **D**–**H**: paramere: **D**: left paramere, original position; **E–H**: right paramere, different views; **I**–**K**: segment X, different views; **L–N**: male genitalia; **L**: dorsal; **M**: lateral; **N**: ventral. Scale bars: A–C = 1.0 mm; D–H: 0.5 mm; I–N = 0.25 mm.

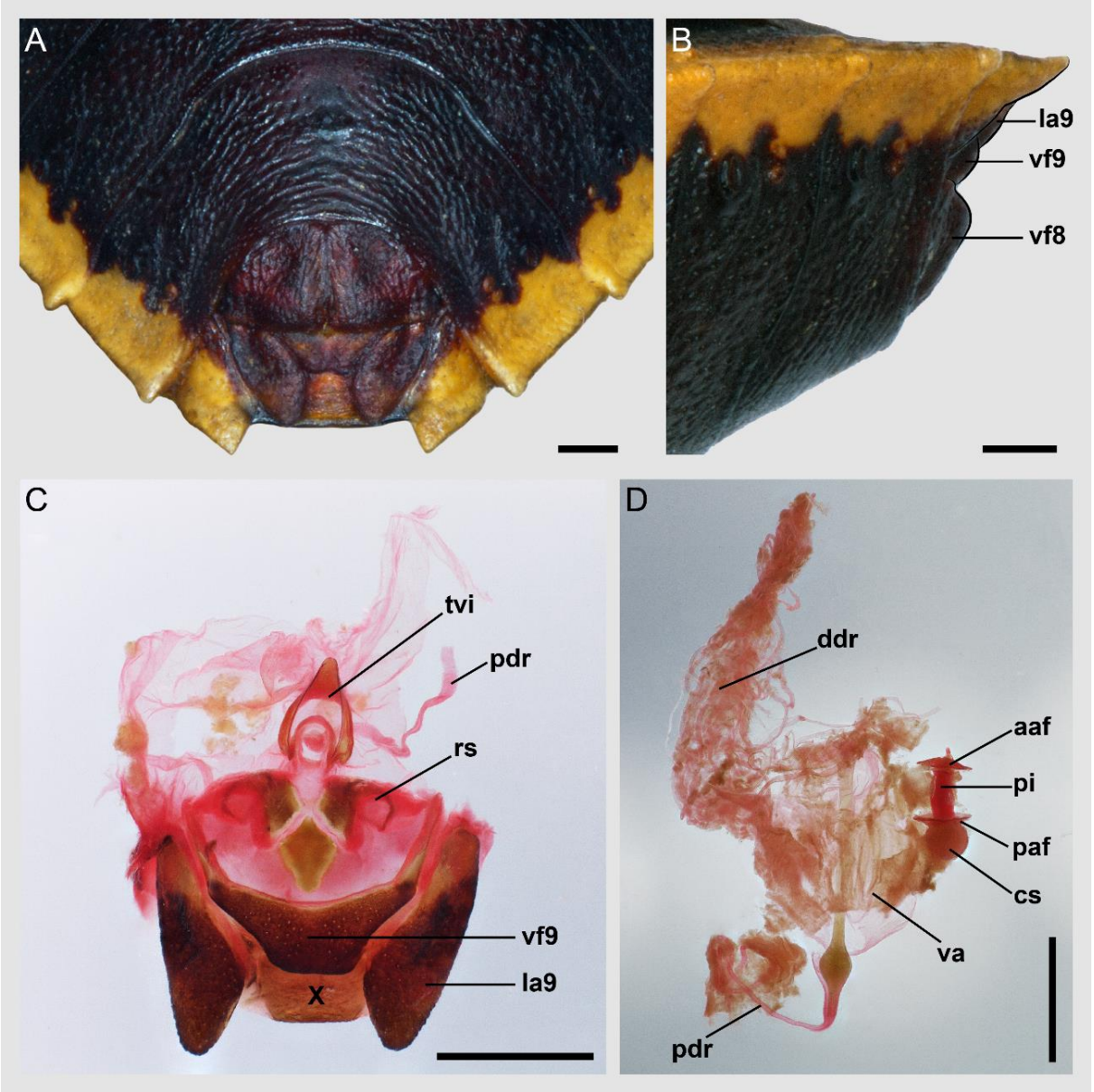

Fig. 11. *Ogmocoris hypomelas* (Burmeister, 1835): **A**–**B**: female terminalia: **A**: posteroventral view; **B**: lateral view; **C**–**D**: female receptaculum seminis and ausenwand. Scale bars = 0.5 mm.

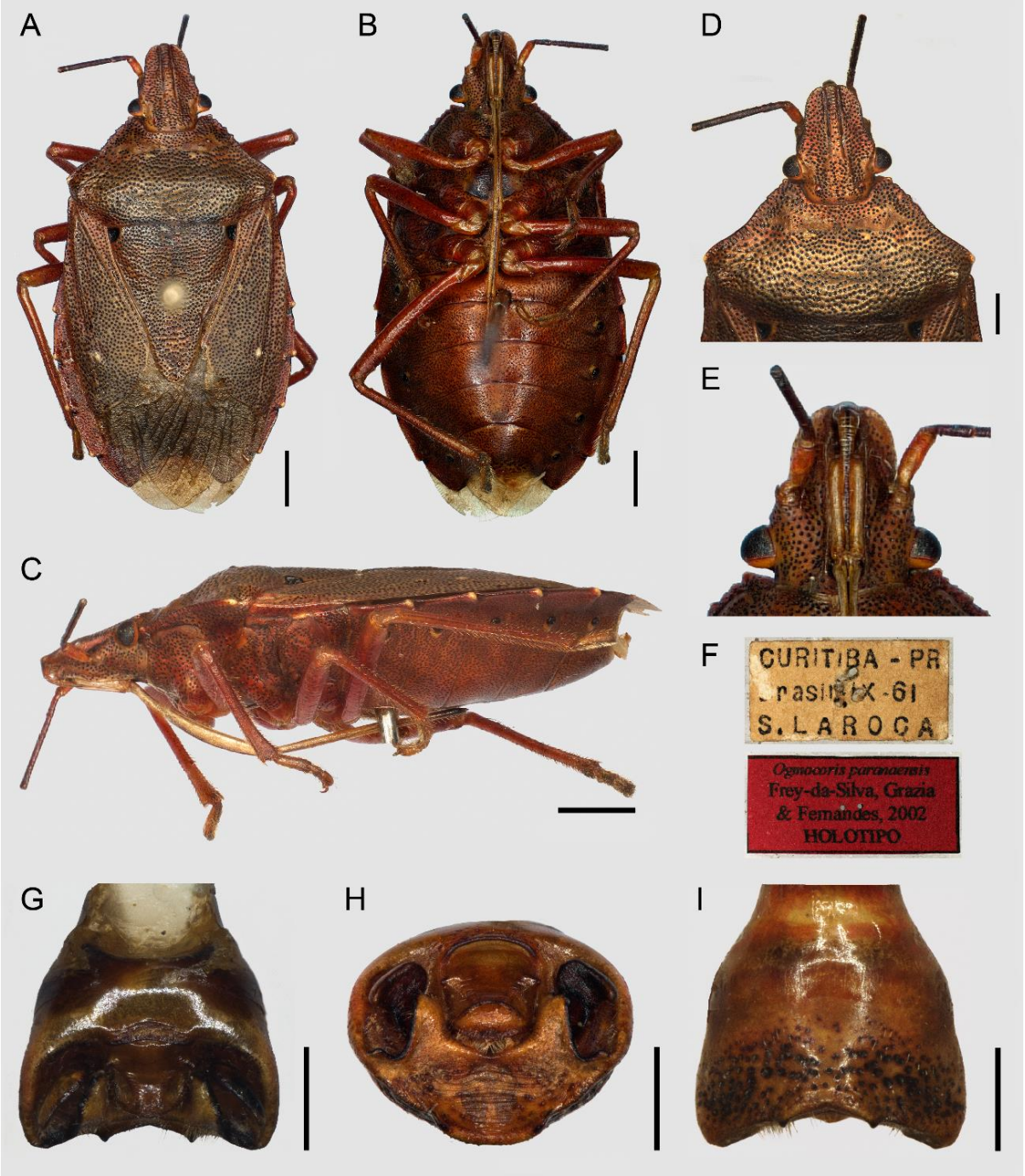

Fig. 12. *Ogmocoris paranaensis* Frey-da-Silva, Fernandes & Grazia, 2002 ♂, holotype: **A**: dorsal; **B**: ventral; **C**: lateral; **D**: head and pronotum; **E**: head, ventral view; **F**: labels; **G–I**: male terminalia: **G**: dorsal; **H**: posterior; **I**: ventral; Scale bars: A–C = 2.0 mm; D = 0.5 mm; G–H = 1.0 mm.

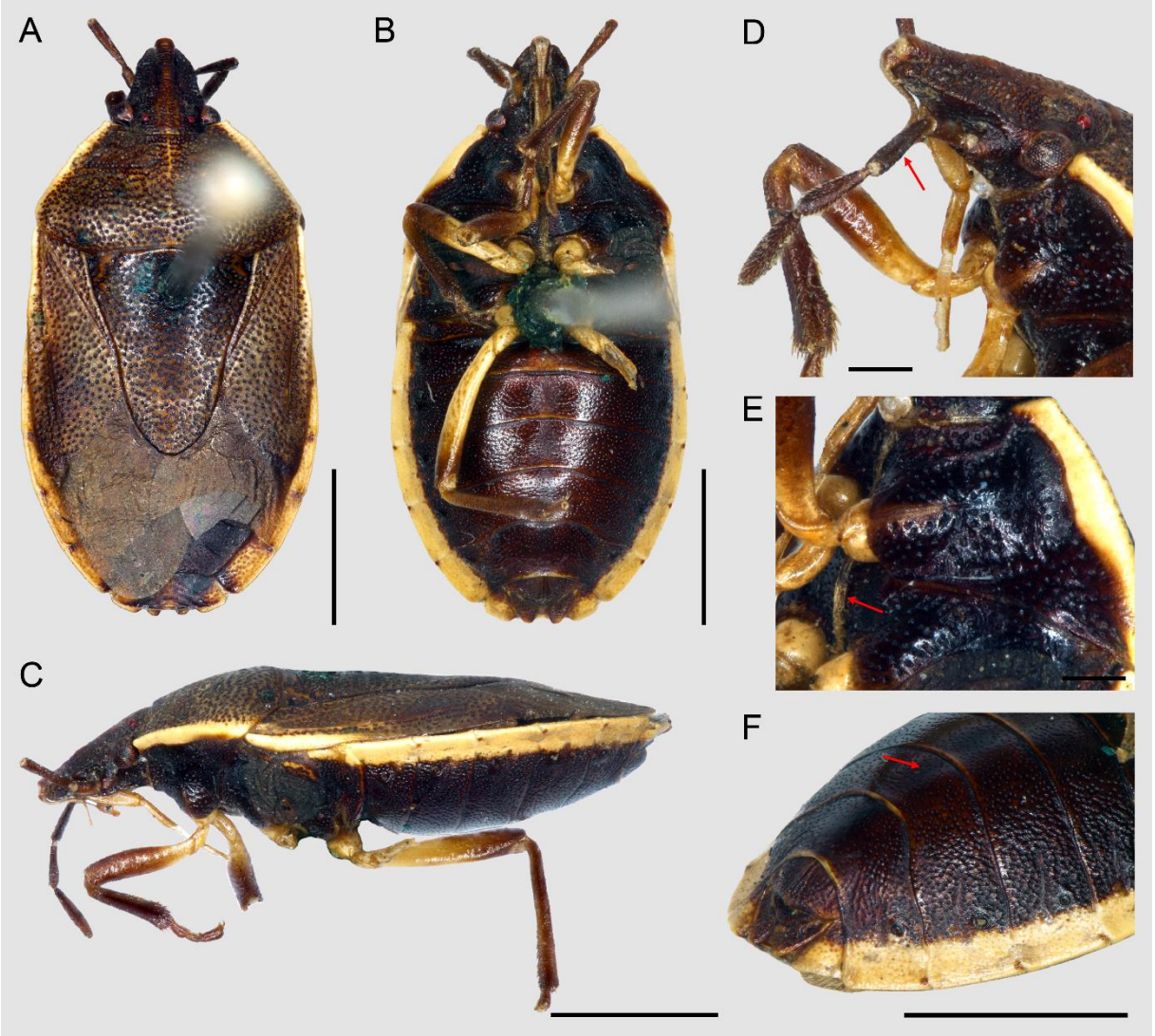

Fig. 13. *Liscocephala fumosa* sp.n. ♀: **A**: dorsal; **B**: ventral; **C**: lateral; **D**: head and pronotum, lateral view, antennomere 3 grooved (red arrow); **E**: pro- and mesosternum, ventral view, showing the carina mesosternal (red arrow); **F**: abdomen, lateral view, showing the abdominal groove (a red arrow). Scale bars: A–C, F = 2.0 mm; D–E = 0.5 mm.

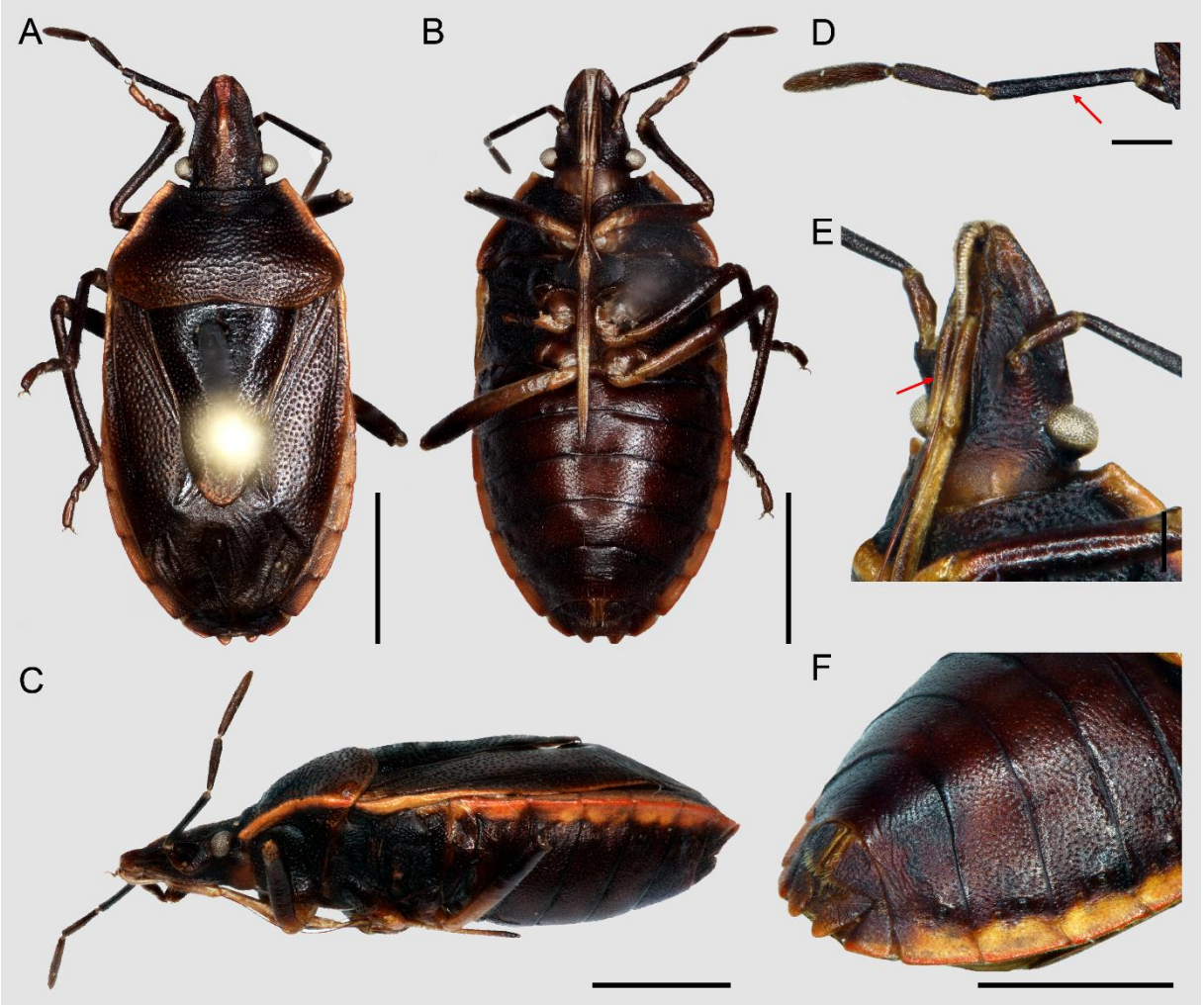

Fig. 14. *Triunfus carvalhoi* sp.n. ♀: **A**: dorsal; **B**: ventral; **C**: lateral; **D**: antenna, dorsal view, antennomere 3 convex (a red arrow); **E**: head, ventral view, showing of labiomere 1 (red arrow); **F**: abdomen. Scale bars: A–C, F = 2.0 mm; D–E = 0.5 mm.

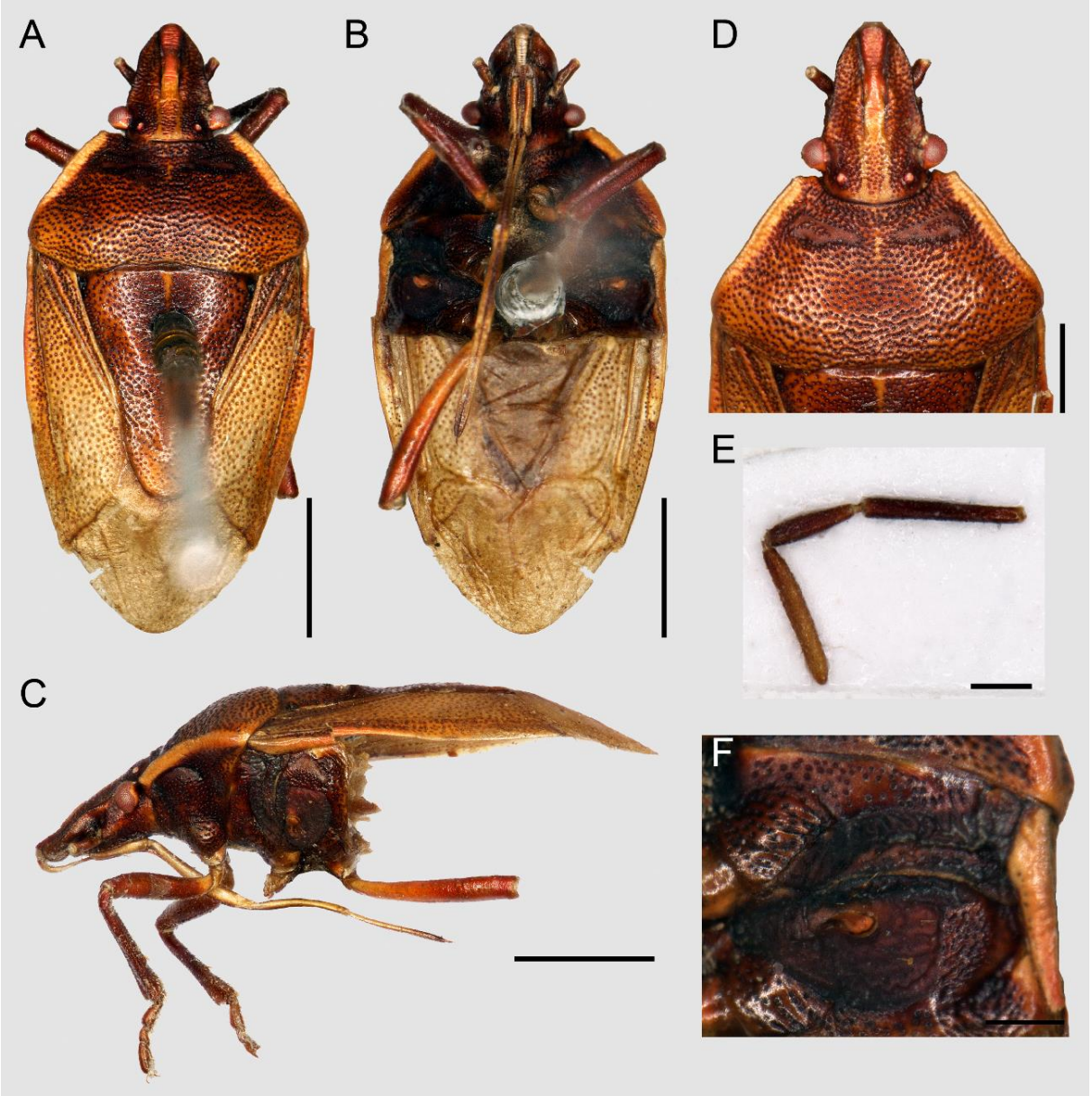

Fig. 15. *Triunfus incarnatus* sp.n. ♀: **A**: dorsal; **B**: ventral; **C**: lateral; **D**: head and pronotum; **E**: antenna; **F**: external scent efferent system. Scale bars: A–C = 2.0 mm; D = 1.0 mm; E–F = 0.5 mm.

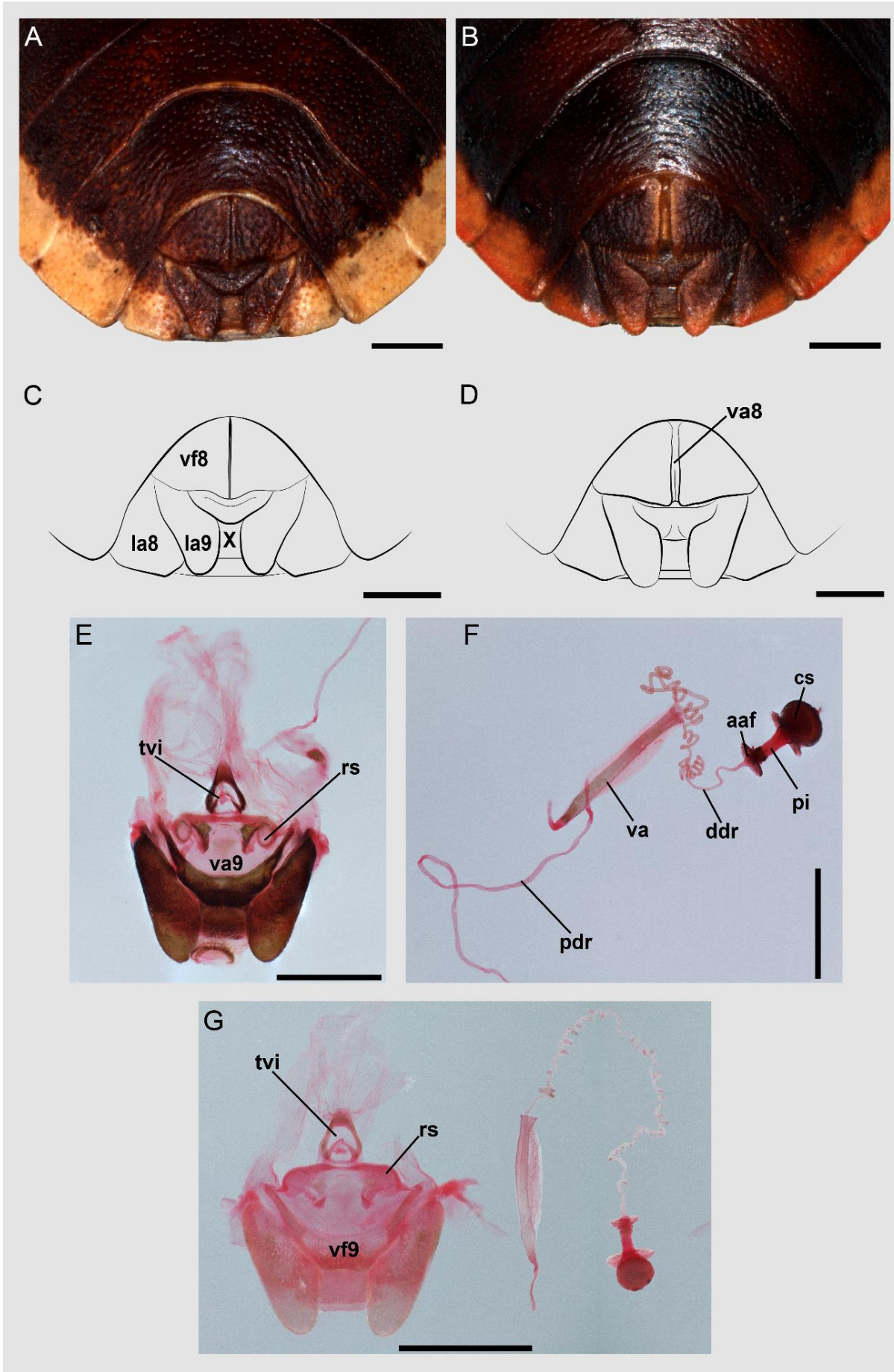
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Fig. 16. *Liscocephala* gen.n. and *Triunfus* gen.n. ♀: *L. fumosa*: **A**, **C**: female terminalia. *T. carvalhoi*: **B**, **D**: female terminalia; **E**, **F**: female receptaculum seminis and ausenwand. *T. incarnatus*: **G**: female receptaculum seminis and ausenwand. Scale bars = 0.5 mm.

Fig. 17. Map of geographical distribution. — ***Colors***: yellow – *Chimerocoris luridus* sp.n.; purple – *Hypanthracos meridionalis*; red – *Liscocephala fumosa* sp.n.; green – *Ogmocoris* Mayr, 1864; blue – *Triunfus* gen. n.

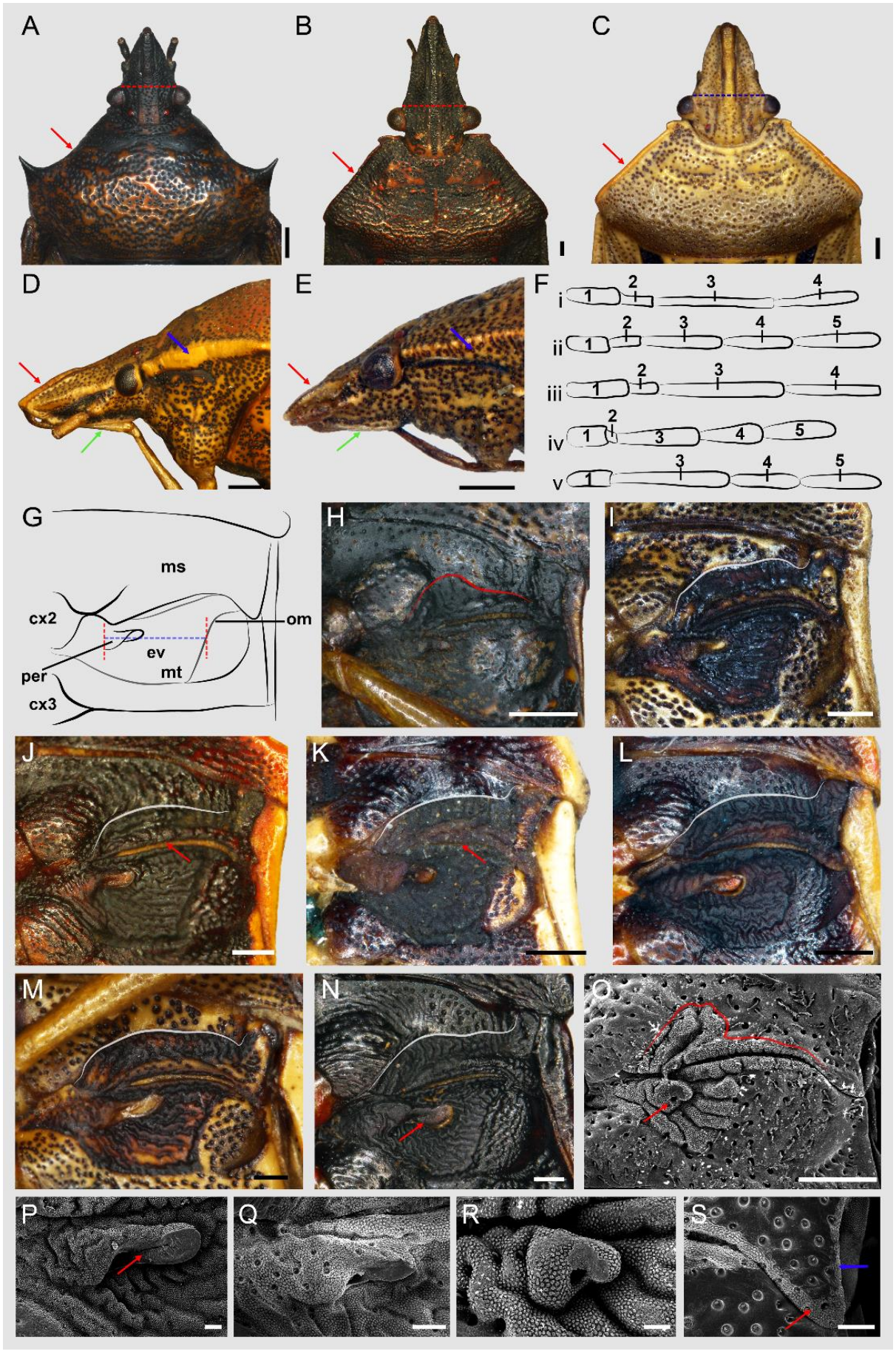
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Fig. 18. Representation and comparison of head and thoracic characters. **A–C**: head, dorsal view; **D–E**: head and prothorax, lateral view (antennomeres not showing due to edition of photo); **F**: schematic drawing showing the antennomeres; **G–S**: external scent efferent system; **G–N**: meso- and metapleura, ventral view; **G**: schematic drawing showing the parts of eses; **O–S**: SEM images of characters of eses of mestasternal glands. — (A, Fi, H): *Hypanthracos meridionalis*; (B, N): *Mecocephala magna*; (C): *Paramecocephala foveata*; (D, M): *Tibraca limbativentris*; (E, S): *Hypatropis inermis*; (Fii, I): *Chimerocoris luridus*; (Fiii, J): *Ogmocoris hypomelas*; (Fiv, K): *Liscocephala fumosa*; (Fv, L): *Triunfus carvalhoi*; (O): *Glyphepomis adroguensis*; (P): *Paramecocephala fusca*; (Q): *Pedinonotus catarinensis*; (R): *Glyphepomis setigera*; Scale bars: A–E, H–N = 0.5 mm; O–S = 100 μm.

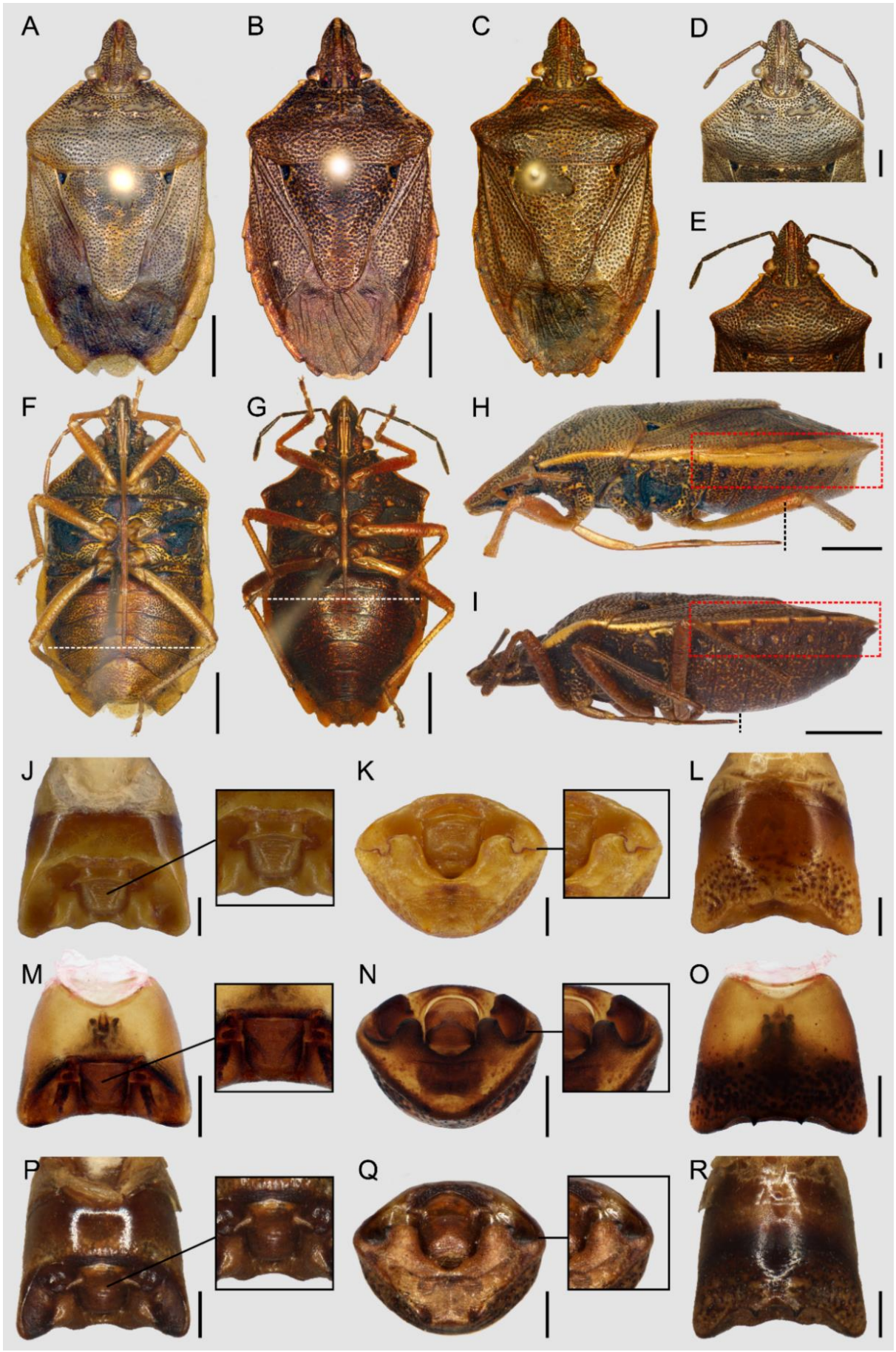
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Fig. 19. Comparative figure of *Chimerocoris*, *Paramecocephala* and *Tibraca*. **A–C**: habitus dorsal (antennomeres and legs not showing due to edition of photo); **D–E**: head and pronotum; **F–G**: habitus ventral; **H–I**: habitus lateral; **J–R**: male terminalia: **J**, **M**, **P**: dorsal view; **K**, **N**, **Q**: posterior view; **L**, **O**, **R**: ventral view. — (A, D, F, H, J–L): *Chimerocoris luridus*; (B, I, M–O): *Paramecocephala fusca*; (C, E, G, P–R): *Tibraca exigua*. Scale bars: A–C, F–I = 2.0 mm; D–E = 0.5 mm; J–R = 1.0 mm.

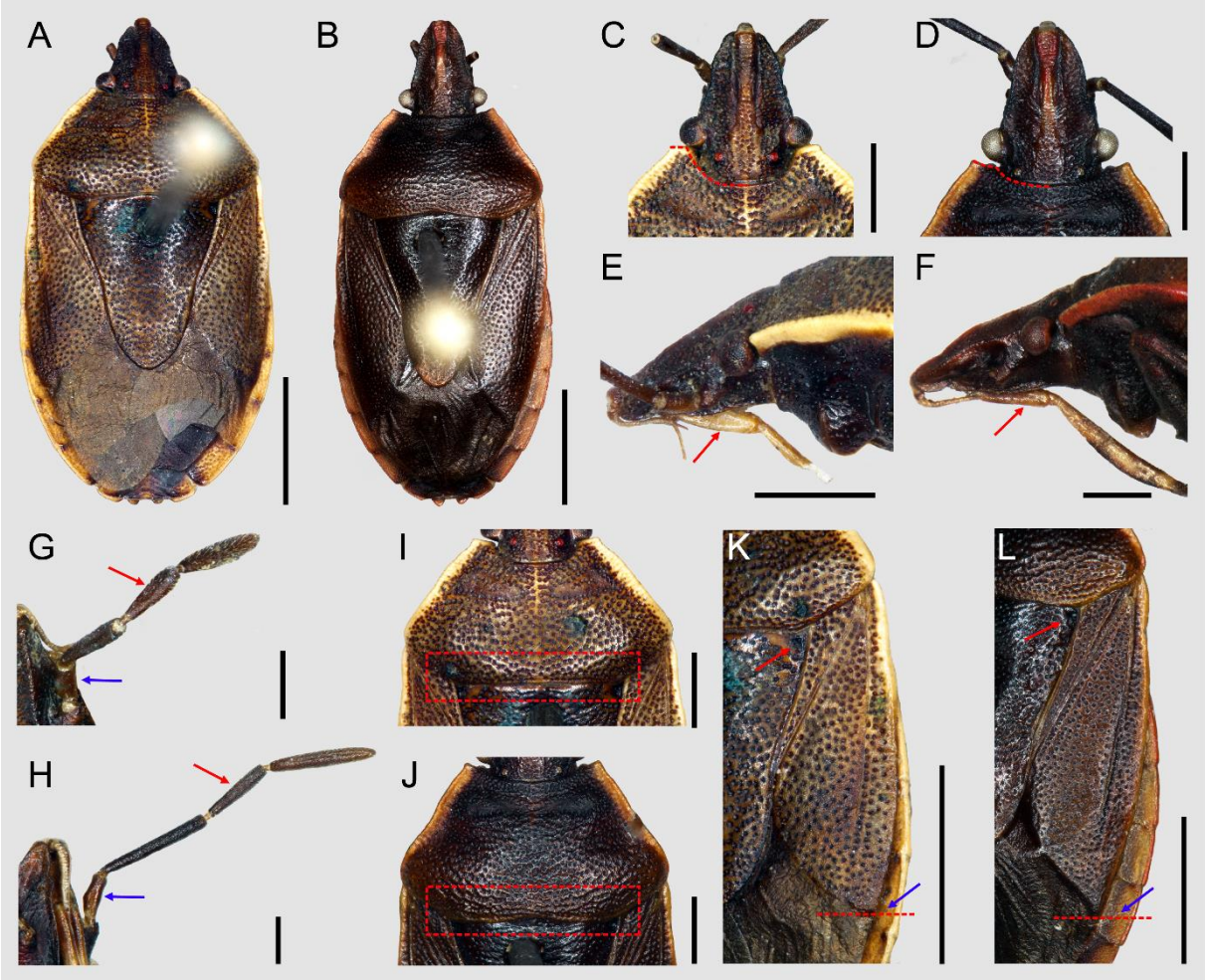

Fig. 20. Comparative figure of *Liscocephala* and *Triunfus*. **A–B**: habitus dorsal (antennomeres and legs not showing due to edition of photo); **C–D**: head and pronotum, dorsal view; **E–F**: head and prothorax, lateral view; **G–H**: right antenna; **I–J**: pronotum, dorsal view; **K–L**: hemelytra. — (A, C, E, G, I, K): *Liscocephala fumosa*; (B, D, F, H, J, L): *Triunfus carvalhoi*. Scale bars: A–C, K–L = 2.0 mm; C–F, I–J = 1.0 mm; G–H = 0.5 mm.

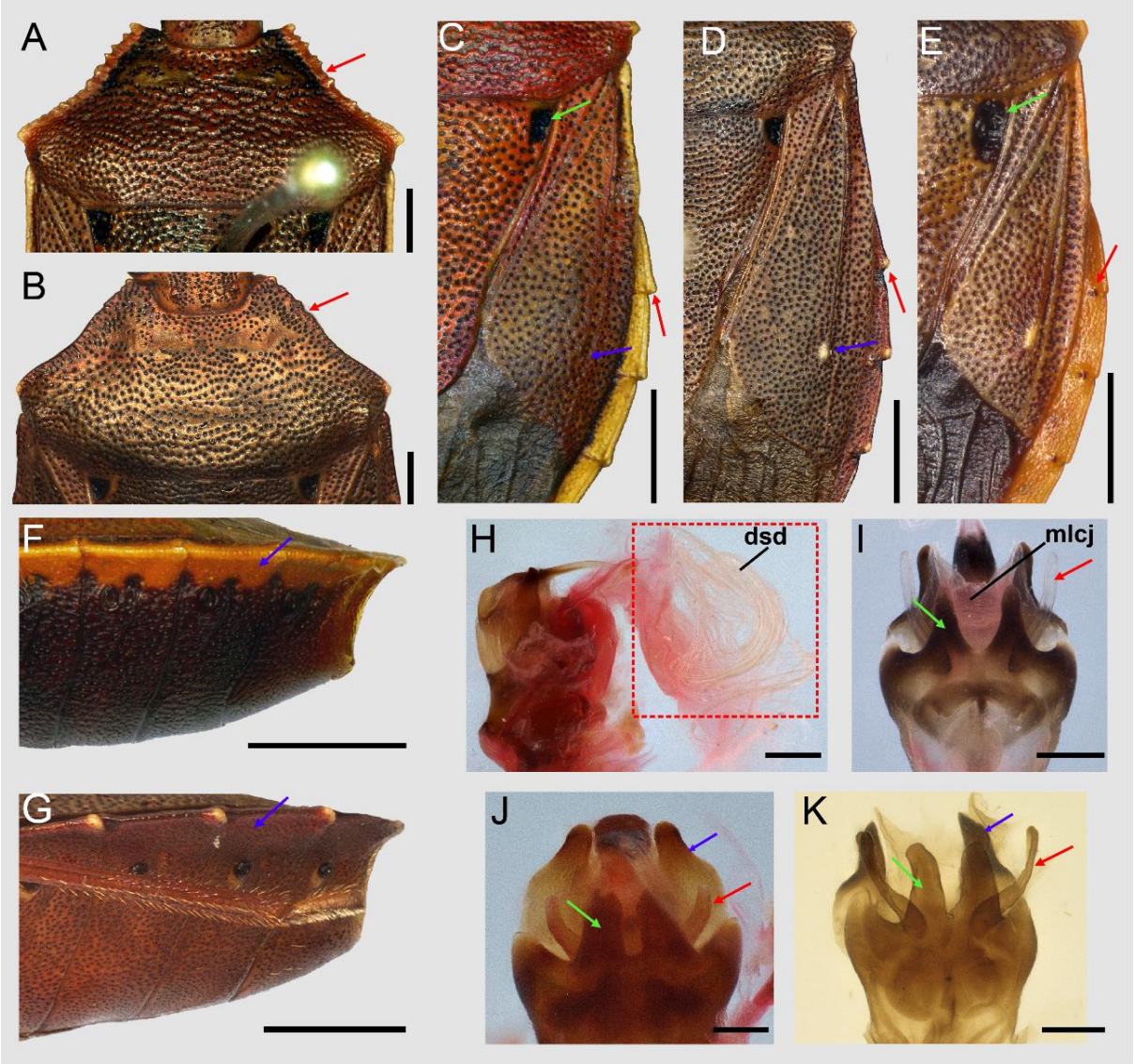

Fig. 21. Comparative figure of *Ogmocoris* species, and some male genitalia characters. **A–B**: pronotum, dorsal view; **C–E**: hemelytra; **F–G**: abdomen, lateral view; **H–K**: male genitalia. — (A, C, F, H–J): *Ogmocoris hypomelas*; (B, D, G): *Ogmocoris paranaensis*; (E, K): *Paramecocephala foveata*; (I), *Tibraca limbativentris*. Scale bars: A–B = 1.0 mm; C–G = 2.0 mm; H–K = 0.5 mm.

Table 1. List of terminals included in the analysis, with information on the genitalia studied per species and sex, number of specimens measured per species, and literature used for species determination when available.— ***Symbols***: "*" only data on external genitalia was available; "L", data on internal genitalia was retrieved from literature.— ***Abbreviation***: N – sample number.

Group of Carpocorini	Species	Genitalia ♂	Genitalia ♀	N	Literature for determination
Euschistus (Rolston 1974)	*Agroecus griseus* Dallas, 1851	X	X	20	Rider & Rolston (1987)
	Agroecus scabricornis (Herrich-Schäffer, 1844)	X	X	20	Rider & Rolston (1987)
	Berecynthus hastator (Fabricius, 1798)	X	X	20	Grazia & Hildebrand (1982)
	Carpocoris purpureipennis (De Geer, 1773)	X[L]	X[L]	6	
	Diceraeus melacanthus Dallas, 1851	X	X	10	Barão et al. (2020)
	Dichelops (*Dichelops*) *leucostigmus* (Dallas, 1851)	X	X	20	Grazia (1978), Klein et al. (2012)
	Euschistus (*Euschistus*) *heros* (Fabricius, 1794)	X	X	20	Rolston (1974)
Mormidea (Rider & Eger 2008)	*Lattinellica decora* (Walker, 1867)	X*[L]	X*[L]	2	Rider & Eger (2008)
	Mormidea cornicollis Stål, 1860	X	X	20	Rolston (1978b)
Mecocephala (Schwertner et al. 2002)	*Chimerocoris luridus* sp.n.	X*	-	1	
	Glyphepomis adroguensis Berg, 1891	X	X	18	Campos & Grazia (1998)
	Glyphepomis setigera Kormilev & Pirán, 1852	X	X	14	Campos & Grazia (1998)
	Hypatropis inermis (Stål, 1872)	X	X	14	Fernandes & Grazia (1996)
	Hypatropis sternalis (Stål, 1869)	X	X	2	Fernandes & Grazia (1996)
	Hypanthracos meridionalis Grazia & Campos, 1996	X*[L]	X	2	Grazia & Campos (1996)
	Liscocepala fumosa sp.n.	-	X*	1	
	Mecocephala acuminata Dallas, 1851	X	X	3	Schwertner et al. (2002)
	Mecocephala bonariensis Schwertner, Grazia & Fernandes, 2002	X	X	10	Schwertner et al. (2002)
	Mecocephala magna Schwertner, Grazia & Fernandes, 2002	X	X	10	Schwertner et al. (2002)
	Ogmocoris hypomelas (Burmeister, 1835)	X	X	4	Frey-da-Silva et al. (2002)
	Ogmocoris paranaensis Frey-da-Silva, Grazia & Fernandes, 2002	X*		1	Frey-da-Silva et al. (2002)
	Paramecocephala australis Frey-da-Silva & Grazia, 2002	X	X	38	Frey-da-Silva et al. (2002)
	Paramecocephala foveata Benvegnú, 1968	X*[L]	X*[L]	2	Benvegnú (1968), Frey-da-Silva et al. (2002)
	Paramecocephala fusca (Haglund, 1868)	X*	X*	5	Frey-da-Silva et al. (2002)
	Paratibraca infuscata Campos & Grazia, 1995	X	X	10	Campos & Grazia (1995)
	Pedinonotus catarinensis Fernandes & Grazia, 2002	X	X	14	Fernandes & Grazia (2002)
	Tibraca limbativentris Stål, 1860	X	X	20	Fernandes & Grazia (1998)
	Tibraca similima Barber, 1941	X	X	20	Fernandes & Grazia (1998)
	Tibraca exigua Fernandes & Grazia, 1998	X	X	20	Fernandes & Grazia (1998)
	Triunfus carvalhoi sp.n.	-	X	2	
	Triunfus incarnatus sp.n.	-	X	1	

Table 2. Character matrix for taxa included in phylogenetic analysis.— ***Symbols***: "-" inapplicable data (for continuous characters: "?"); "?" missing data.

Character:	00	00	00	00
Taxon:	**1**	**2**	**3**	**4**
Carpocoris purpureipennis	?	0.418–0.471	0.265–0.287	0.599–0.664
Agroecus griseus	0.362–0.458	0.385–0.488	0.186–0.268	0.539–0.611
Agroecus scabricornis	0.397–0.451	0.343–0.398	0.207–0.255	0.532–0.566
Berecynthus hastator	0.027–0.044	0.282–0.377	0.239–0.285	0.543–0.596
Chimerocoris luridus sp.n.	0.543	0.404	0.431	0.617
Diceraeus melacanthus	0.042–0.057	0.225–0.296	0.165–0.219	0.531–0.592
Dichelops (*Dichelops*) *leucostigmus*	0.053	0.247–0.293	0.132–0.198	0.487–0.526
Euschistus (*Euschistus*) *heros*	0.057–0.072	0.327–0.407	0.294–0.352	0.565–0.639
Glyphepomis adroguensis	0.005–0.028	0.052–0.124	0.000–0.160	0.341–0.408
Glyphepomis setigera	0.000–0.017	0.000–0.030	0.045–0.070	0.297–0.329
Hypanthracos meridionalis	0.517–0.784	0.330–0.569	0.304–0.471	0.499–0.705
Hypatropis inermis	0.098–0.133	0.185–0.260	0.066–0.113	0.475–0.548
Hypatropis sternalis	0.103	0.208–0.244	0.079–0.098	0.483–0.544
Lattinellica decora	0.336	0.268–0.304	0.155	0.494–0.535
Liscocephala fumosa sp.n.	0.357	0.091	0.155	0.398
Mecocephala acuminata	0.267	0.388–0.443	0.444–0.527	0.617–0.684
Mecocephala bonariensis	0.719–0.868	0.630–0.755	0.635–0.721	0.782–0.856
Mecocephala magna	0.853–0.999	0.850–1.000	0.832–1.000	0.859–1.000
Mormidea cornicollis	0.091–0.117	0.273–0.329	0.161–0.205	0.506–0.577
Ogmocoris hypomelas	0.638	0.586–0.678	0.500–0.511	0.666–0.728
Ogmocoris paranaensis	0.826	0.821	0.588	0.938
Pedinonotus catarinensis	0.116–0.130	0.195–0.264	0.125–0.171	0.465–0.506
Paratibraca infuscata	0.351–0.496	0.190–0.268	0.188–0.234	0.432–0.487
Tibraca exigua	0.461–0.540	0.316–0.390	0.266–0.328	0.520–0.595
Tibraca limbativentris	0.581–0.732	0.455–0.528	0.423–0.493	0.641–0.721
Tibraca similima	0.581–0.682	0.461–0.550	0.411–0.461	0.668–0.718
Paramecocephala australis	0.614–0.687	0.470–0.548	0.438–0.502	0.621–0.690
Paramecocephala foveata	0.578–0.598	0.504–0.560	0.415–0.452	0.668–0.847
Paramecocephala fusca	0.506–0.546	0.300–0.372	0.348–0.384	0.527–0.590
Triunfus carvalhoi sp.n.	0.420	0.151–0.188	0.207–0.229	0.483–0.503
Triunfus incarnatus sp.n.	0.428	0.182	0.250	0.486

Table 2. Character matrix for taxa included in phylogenetic analysis.— ***Symbols***: "-" inapplicable data (for continuous characters: "?"); "?" missing data.

Character:	0 0	0 0	0 0	0 0
Taxon:	**5**	**6**	**7**	**8**
Carpocoris purpureipennis	0.282-0.358	0.776-1.000	0.311-0.356	0.549
Agroecus griseus	0.318-0.357	0.496-0.592	0.370-0.495	0.437-0.538
Agroecus scabricornis	0.295-0.345	0.463-0.575	0.345-0.442	0.349
Berecynthus hastator	0.234-0.318	0.382-0.477	0.308-0.444	0.246-0.338
Chimerocoris luridus sp.n.	0.342	0.236	0.496	0.345
Diceraeus melacanthus	0.342	0.517-0.610	0.308-0.396	0.300-0.389
Dichelops (*Dichelops*) *leucostigmus*	0.263-0.355	0.413-0.553	0.258-0.327	0.464
Euschistus (*Euschistus*) *heros*	0.353-0.506	0.601-0.687	0.485-0.625	0.507-0.570
Glyphepomis adroguensis	0.037-0.116	0.085-0.111	0.015-0.079	0.026-0.126
Glyphepomis setigera	0.005-0.080	0.075-0.121	0.000-0.050	0.000-0.136
Hypanthracos meridionalis	0.308-0.541	0.272-0.300	0.560-0.789	?
Hypatropis inermis	0.351-0.490	0.341-0.432	0.401-0.585	0.379-0.482
Hypatropis sternalis	0.507	0.335	0.539	?
Lattinellica decora	0.000-0.092	0.469-0.497	0.067-0.113	0.208
Liscocephala fumosa sp.n.	0.111	0.000	0.204	0.055
Mecocephala acuminata	0.891	0.500	1000	?
Mecocephala bonariensis	0.476-0.594	0.255-0.343	0.492-0.663	0.559-0.620
Mecocephala magna	0.636-0.728	0.373-0.427	0.621-0.696	0.634
Mormidea cornicollis	0.182-1.000	0.667-0.946	0.443-0.527	0.564-1.000
Ogmocoris hypomelas	0.507	0.236	0.805	?
Ogmocoris paranaensis	0.605	0.375	0.918	?
Pedinonotus catarinensis	0.627-0.770	0.380-0.471	0.624-0.773	0.676-0.847
Paratibraca infuscata	0.215-0.291	0.201-0.257	0.234-0.351	0.203-0.234
Tibraca exigua	0.239-0.338	0.171-0.223	0.328-0.404	0.208-0.286
Tibraca limbativentris	0.462-0.552	0.334-0.393	0.585-0.686	0.354-0.458
Tibraca similima	0.453-0.517	0.294-0.351	0.491-0.610	0.372-0.430
Paramecocephala australis	0.416-0.508	0.301-0.350	0.440-0.501	0.376-0.418
Paramecocephala foveata	0.363-0.596	0.191-0.275	0.636-0.713	0.305
Paramecocephala fusca	0.318-0.406	0.212-0.261	0.323-0.422	0.293
Triunfus carvalhoi sp.n.	0.177	?	0.431	0.242
Triunfus incarnatus sp.n.	0.243	?	0.480	0.293

Table 2. Character matrix for taxa included in phylogenetic analysis.— ***Symbols***: "-" inapplicable data (for continuous characters: "?"); "?" missing data.

Character:	0 0	0 1	0 1	0 1
Taxon:	**9**	**0**	**1**	**2**
Carpocoris purpureipennis	0.287-0.380	0.147-0.200	0.046-0.080	0.039-0.098
Agroecus griseus	0.196-0.270	0.141-0.187	0.033-0.052	0.043-0.058
Agroecus scabricornis	0.211-0.286	0.130-0.168	0.027-0.036	0.039-0.047
Berecynthus hastator	0.240-0.328	0.140-0.193	0.046-0.062	0.042-0.060
Chimerocoris luridus sp.n.	0.450	0.452	0.328	0.262
Diceraeus melacanthus	0.219-0.301	0.151-0.172	0.056-0.075	0.054-0.068
Dichelops (*Dichelops*) *leucostigmus*	0.228	0.056-0.084	0.053	0.035
Euschistus (*Euschistus*) *heros*	0.309-0.417	0.199-0.251	0.096-0.147	0.091-0.114
Glyphepomis adroguensis	0.058-0.118	0.000-0.061	0.012-0.049	0.014-0.036
Glyphepomis setigera	0.000-0.134	0.019-0.048	0.000-0.036	0.000-0.052
Hypanthracos meridionalis	0.466-0.665	0.269-0.387	0.188-0.292	0.157-0.229
Hypatropis inermis	0.270-0.333	0.147-0.224	0.090-0.142	0.077-0.099
Hypatropis sternalis	0.096	0.071	0.121	0.070
Lattinellica decora	0.215	0.080	0.000-0.021	0.001-0.046
Liscocephala fumosa sp.n.	0.149	?	?	?
Mecocephala acuminata	0.889	0.976	0.812	0.768
Mecocephala bonariensis	0.692-0.789	0.644-0.794	0.678-0.776	0.731-0.859
Mecocephala magna	0.877-1.000	0.823-0.999	0.863-1.000	0.921-1.000
Mormidea cornicollis	0.424-0.616	0.241-0.299	0.095-0.122	0.092-0.108
Ogmocoris hypomelas	0.334-0.476	0.452	0.365-0.522	0.203-0.311
Ogmocoris paranaensis	0.616	0.659	0.536	0.327
Pedinonotus catarinensis	0.297-0.410	0.243-0.272	0.181-0.221	0.145-0.158
Paratibraca infuscata	0.202-0.242	0.119-0.170	0.101-0.133	0.073-0.085
Tibraca exigua	0.225-0.505	0.162-0.224	0.135-0.205	0.103-0.137
Tibraca limbativentris	0.398-0.477	0.266-0.362	0.232-0.290	0.156-0.194
Tibraca similima	0.365-0.429	0.265-0.311	0.196-0.248	0.145-0.175
Paramecocephala australis	0.407-0.493	0.444-0.533	0.381-0.458	0.284-0.325
Paramecocephala foveata	0.365-0.514	0.226-0.657	0.127-0.622	0.127-0.425
Paramecocephala fusca	0.312-0.391	0.339-0.425	0.290-0.357	0.217-0.267
Triunfus carvalhoi sp.n.	0.197	0.191	0.153	0.186
Triunfus incarnatus sp.n.	0.197	0.191	0.153	0.206

Table 2. Character matrix for taxa included in phylogenetic analysis.— ***Symbols***: "-" inapplicable data (for continuous characters: "?"); "?" missing data.

Character:	00000000	0000000000	0000000000	0000000000	0000000000
	11111112	2222222223	3333333334	4444444445	5555555556
Taxon:	34567890	1234567890	1234567890	1234567890	1234567890
Carpocoris purpureipennis	02111000	0000011000	0100101110	-000210000	0010011111
Agroecus griseus	01200111	0000001010	0101010111	0101201121	0110110-00
Agroecus scabricornis	01200101	0000001110	0101010011	0001201121	0110110-00
Berecynthus hastator	10100111	0000011010	0101000011	0020100121	0100100-01
Chimerocoris luridus sp.n.	00000111	0001000001	0000101101	1011201120	1112111111
Diceraeus melacanthus	12100001	000?011000	0111011001	0011001121	0012110-01
Dichelops (*Dichelops*) *leucostigmus*	12100011	0000011000	0101010001	0010201121	0111001111
Euschistus (*Euschistus*) *heros*	00100101	0000001110	0101010011	0020101121	0012101100
Glyphepomis adroguensis	00000101	0011111100	0100110011	0110100220	1100100011
Glyphepomis setigera	00000101	0011111100	0100110001	0010100220	1100100011
Hypanthracos meridionalis	00001101	0001010100	0100010011	0000001111	0102100000
Hypatropis inermis	01200011	0001110100	0102101101	0010001120	0111001011
Hypatropis sternalis	02200011	0001110100	0102101101	0011001120	0111001111
Lattinellica decora	00100011	0000001110	0100011010	-020210221	0012111101
Liscocephala fumosa sp.n.	00000101	0111100102	?010101111	0101201121	0111011111
Mecocephala acuminata	10011111	0001101101	0100101111	0011001100	0110011111
Mecocephala bonariensis	10011111	0001101101	0112101111	0010001100	0111011111
Mecocephala magna	10011110	0011101101	0102100111	0011001101	0111011111
Mormidea cornicollis	00200011	0000001110	0112011010	-010001111	0100110101
Ogmocoris hypomelas	01000101	0010011101	0102111001	1000001121	0112011111
Ogmocoris paranaensis	01000101	001??01101	0102110001	0000001121	0110001111
Paramecocephala australis	00000101	0011101101	0110101101	0011201120	1112001111
Paramecocephala foveata	00000101	001??01101	0110101101	2011201101	1121011110
Paramecocephala fusca	00000101	0011101101	0112111101	1010201120	1112001111
Pedinonotus catarinensis	02200111	0001100100	0002100111	0021201121	1112111011
Paratibraca infuscata	00000101	0001111100	0100010001	0001001101	1111001111
Tibraca exigua	00000101	0001100100	0100101101	0010201121	1111001111
Tibraca limbativentris	00000101	0001101100	0100011101	0011201101	1111001111
Tibraca similima	00000101	0001000100	0100110001	0011201121	1111001111
Triunfus carvalhoi sp.n.	00000101	1001111101	1010101121	000110110	0111001111
Triunfus incarnatus sp.n.	00000101	1001111101	1010101121	000110110	0111001111

Table 2. Character matrix for taxa included in phylogenetic analysis.— ***Symbols***: "-" inapplicable data (for continuous characters: "?"); "?" missing data.

Character:	0000000000	0000000000	0000000000	0000000001
	6666666667	7777777778	8888888889	9999999990
Taxon:	1234567890	1234567890	1234567890	1234567890
Carpocoris purpureipennis	0101011101	0011001002	1101-0---0	-----?10--
Agroecus griseus	0001010001	0010101020	100000---0	-----110--
Agroecus scabricornis	0011110001	0010100020	100000---0	-----110--
Berecynthus hastator	1001111000	0011002001	100000---0	-----100--
Chimerocoris luridus sp.n.	1111101001	1110101120	0000111001	1111121110
Diceraeus melacanthus	1001010000	0011001001	101000---0	-----100--
Dichelops (*Dichelops*) *leucostigmus*	1111010000	0011101001	101000---0	-----10101
Euschistus (*Euschistus*) *heros*	1001011101	0010111010	100000---0	-----00101
Glyphepomis adroguensis	0011000010	100-110121	0000110001	1100-00100
Glyphepomis setigera	0011000010	1010102121	0000111001	1100-00100
Hypanthracos meridionalis	0011100000	0010002000	10000101-1	00-0-100--
Hypatropis inermis	1000000001	000-100121	1000-100-1	00-0-21100
Hypatropis sternalis	1100000001	100-100100	10000110-1	00-1121100
Lattinellica decora	1000100010	0011000010	110110----	-----00101
Liscocephala fumosa sp.n.	0110101001	110-10????	??????????	??????????
Mecocephala acuminata	1101100000	010-001102	0000110001	0111121100
Mecocephala bonariensis	1100100000	010-010100	0010110001	0100-21100
Mecocephala magna	1100100000	010-012101	0000110001	0101121100
Mormidea cornicollis	0010100010	0011110020	111000----	-----200--
Ogmocoris hypomelas	1101000001	1110002111	0000010101	1111000101
Ogmocoris paranaensis	0111000001	0110102111	0010110101	0101120100
Paramecocephala australis	1111001001	1110000101	1101110111	0110-20100
Paramecocephala foveata	0101101001	1110110120	0000110001	0110-20100
Paramecocephala fusca	1111001000	0110012100	1110110101	00-1120100
Pedinonotus catarinensis	1101100000	000-000121	0000010101	1110-20100
Paratibraca infuscata	1111101101	0010111121	0100110011	01111000--
Tibraca exigua	1111101101	100-001111	0000011001	1101110110
Tibraca limbativentris	1111101001	1010100111	0010111001	1111110110
Tibraca similima	1111001001	000-100111	0000110001	1101110110
Triunfus carvalhoi sp.n.	1111000000	110-10????	??????????	??????????
Triunfus incarnatus sp.n.	1111000000	110-10????	??????????	??????????

Table 2. Character matrix for taxa included in phylogenetic analysis.— ***Symbols***: "-" inapplicable data (for continuous characters: "?"); "?" missing data.

Character:	1111111111	1111111111	1111111111	1111111111	1111
	0000000001	1111111112	2222222223	3333333334	4444
Taxon:	1234567890	1234567890	1234567890	1234567890	1234
Carpocoris purpureipennis	100?0-10-0	?100001120	0011002111	000?0100?0	1?0?
Agroecus griseus	10100-0120	1111011010	1011112000	1101010010	0200
Agroecus scabricornis	10100-0120	1111011111	1012112000	1101000010	0200
Berecynthus hastator	1000101120	-110010011	0020011000	1101010011	0000
Chimerocoris luridus sp.n.	11????????	??????????	??????????	??????????	????
Diceraeus melacanthus	10100-0110	-10-011000	1020011010	0101010001	2000
Dichelops (*Dichelops*) *leucostigmus*	10100-0110	0112011011	0000011110	0002000001	0011
Euschistus (*Euschistus*) *heros*	1002101100	0011010100	1021111010	1112000211	1200
Glyphepomis adroguensis	1103111121	0011110000	0000112010	1111200011	0100
Glyphepomis setigera	1103011121	0011110000	0000112010	1111200110	1100
Hypanthracos meridionalis	0-131100-1	1112111000	1000111000	1111101110	0100
Hypatropis inermis	0-02111111	1012110000	0011112010	1111101111	1000
Hypatropis sternalis	0-03111111	1012110000	0011212010	1111202101	1010
Lattinellica decora	10????????	???????0110	11?0111001	1????00010	1210
Liscocephala fumosa sp.n.	??????????	???????0000	10?1210000	??????????	????
Mecocephala acuminata	1103111111	0012110020	0011012010	1111201111	1000
Mecocephala bonariensis	1102111111	1111110000	0010112010	1110110201	1000
Mecocephala magna	1113111111	0010110000	1022010010	1111202111	1000
Mormidea cornicollis	10000-00-1	000-100100	1100111001	1102000000	1000
Ogmocoris hypomelas	1003111111	0010111010	1111012010	1112202101	1000
Ogmocoris paranaensis	10????????	??????????	??????????	??????????	????
Paramecocephala australis	1102111111	1110111000	1000010010	1112202111	1000
Paramecocephala foveata	1113111111	0011111000	00?00?1010	??????????	????
Paramecocephala fusca	1103111111	1110111000	1000012000	1112202110	1100
Pedinonotus catarinensis	1102111111	1112111010	1001012000	1102000011	1001
Paratibraca infuscata	1102111121	0110110100	1000212010	1110010211	3000
Tibraca exigua	1102111121	0110110000	0000012010	1111202111	1000
Tibraca limbativentris	1102111121	0110110020	0001011010	1111100211	1000
Tibraca similima	1102111121	0110110000	1013012010	1111100111	0000
Triunfus carvalhoi sp.n.	??????????	???????1120	0000110011	1111201111	1101
Triunfus incarnatus sp.n.	??????????	???????1100	0001010011	1112201111	1000

Table 3. Summary of results from the phylogenetic analysis.— ***Symbol***: "*" best k-values. — ***Abbreviations***: EW – equal weighting; IW – implied weighting.

Analysis (K-value)	Kref	Tree length	Trees	Total fit
k0*	2.711	645.643	1	66.463
k1*	3.182	645.643	1	61.910
k2*	3.743	645.643	1	57.308
k3*	4.423	645.643	1	52.638
k4*	5.262	645.643	1	47.880
k5*	6.325	645.643	1	43.013
k6	7.715	643.732	1	37.999
k7	9.610	640.583	1	32.803
k8	12.348	640.583	1	27.427
k9	16.651	640.583	1	21.841
k10	24.396	640.583	1	16.007
IW (k-average)	4.274	645.643	1	53.5884
EW	-	640.583	2	-

Table 4. Morphometric parameters measured.— ***Abbreviations***: HL – head length; HW – head width; HLE – length of head at eye level; IOD – interocular distance; CL – length of clypeus; A1 – length of antennomere 1; A2 – length of antennomere 2; A3 – length of antennomere 3; A4 – length of antennomere 4; A5 – length of antennomere 5; L1 – length of labiomere 1; L2 – length of labiomere 2; L3 – length of labiomere 3; L4 – length of labiomere 4; PL – pronotum length; PW – pronotum width; SL – scutellum length; SW – scutellum width; BW – body width; BL – body length.

	Measurements									
						Antenna				
Species	**HL**	**HW**	**HLE**	**IOD**	**CL**	**A1**	**A2**	**A3**	**A4**	**A5**
Hypanthracos meridionalis	2.62 2	2.35 2	1.74 2	1.35 2	1.65 2	0.68 2	0.52 2	1.65 2	1.16 2	-
Chimerocoris luridus sp.n.	2.79 1	2.25 1	1.65 1	1.38 1	1.65 1	0.60 1	0.45 1	1.32 1	0.99 1	1.29 1
Ogmocoris hypomelas	3.19±0.15 (3.06-3.39) 4	2.86±0.13 (2.70-3.00) 4	1.92±0.14 (1.80-2.04) 4	1.64±0.13 (1.50-1.80) 4	1.94±0.08 (1.86-2.01) 4	0.82±0.09 (0.75-0.90) 4	0.48 2	2.00 2	1.44 2	-
Ogmocoris paranaensis	3.39 1	3.21 1	2.70 1	2.04 1	2.10 1	0.84 1	0.66 1	2.10 1	-	-
Liscocephala fumosa sp.n.	1.74 1	1.53 1	1.05 1	0.93 1	1.05 1	0.39 1	0.09 1	0.78 1	0.54 1	0.78 1
Triunfus carvalhoi sp.n.	1.98 2	1.71 2	1.33 2	1.12 2	1.38 2	0.45 2	-	1.20 2	0.75 1	1.11 1
Triunfus incarnatus sp.n.	2.10 1	1.74 1	1.44 1	1.11 1	1.35 1	0.51 1	-	1.29 1	0.75 1	1.20 1

Table 4. Morphometric parameters measured.— ***Abbreviations***: HL – head length; HW – head width; HLE – length of head at eye level; IOD – interocular distance; CL – length of clypeus; A1 – length of antennomere 1; A2 – length of antennomere 2; A3 – length of antennomere 3; A4 – length of antennomere 4; A5 – length of antennomere 5; L1 – length of labiomere 1; L2 – length of labiomere 2; L3 – length of labiomere 3; L4 – length of labiomere 4; PL – pronotum length; PW – pronotum width; SL – scutellum length; SW – scutellum width; BW – body width; BL – body length.

	Measurements									
	Labium									
Species	**L1**	**L2**	**L3**	**L4**	**PL**	**PW**	**SL**	**SW**	**BL**	**BW**
Hypanthracos meridionalis	1.54 2	2.28 2	1.71 2	1.48 2	3.65 2	6.93 2	5.25 2	4.62 2	14.38 2	6.38 2
Chimerocoris luridus sp.n.	1.32 1	2.85 1	2.16 1	1.89 1	2.60 1	6.00 1	4.50 1	4.00 1	12.25 1	6.88 1
Ogmocoris hypomelas	1.37±0.15 (1.14-1.44) 4	2.96±0.14 (2.85-3.15) 4	2.82±0.24 (2.47-3.04) 4	2.03±0.09 (1.90-2.10) 4	3.20±0.33 (2.75-3.50) 4	7.99±0.58 (7.22-8.55) 4	5.23±0.53 (4.65-5.75) 4	5.00±0.55 (4.35-5.50) 4	15.34±1.43 (14.12-16.88) 4	8.28±1.04 (6.88-9.12) 4
Ogmocoris paranaensis	1.63 1	3.80 1	3.23 1	2.28 1	3.60 1	8.30 1	6.00 1	5.00 1	17.88 1	9.38 1
Liscocephala fumosa sp.n.	0.75 1	-	-	-	1.65 1	3.60 1	2.90 1	2.50 1	8.55 1	4.32 1
Triunfus carvalhoi sp.n.	0.84 2	1.65 2	1.26 2	1.44 2	2.00 2	3.90 2	3.40 2	2.50 2	9.79 2	5.10 2
Triunfus incarnatus sp.n.	0.84 1	1.65 1	1.26 1	1.56 1	2.10 1	4.08 1	3.50 1	2.60 1	9.96 1	4.40 1

CAPÍTULO III[4]

Illustrated guide to Pentatominae (Hemiptera: Pentatomidae) species associated with the four main grain crops in Rio Grande do Sul state, Brazil

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Abstract

Several stink bugs in the subfamily Pentatominae are crop pests or have the potential to damage plants of economic importance. In the Brazilian state of Rio Grande do Sul, where agriculture plays a major role in the economy, the knowledge about pest stink bugs is fragmented and, in some instances, outdated. This work provides a summary of Pentatominae species recorded in Rio Grande do Sul feeding on the four most important grain crops for the state, i.e. soybean, rice, maize, and wheat, plus canola, an emerging crop. This survey is enhanced with new records from scientific collections, a short diagnosis for each species, distribution maps, an identification key, and carefully illustrated to allow for species recognition in the field. With this work, we aim to reunite the scattered knowledge of the group in one single revision, and provide a useful tool for identifying the pest stink bugs of Rio Grande do Sul.

Key words: Stink bugs, species survey, checklist, species records, pest species

[4] Formatado conforme as normas do periódico Zootaxa. Veja: Zootaxa

Introduction

The stink bug family Pentatomidae is the third most diverse within suborder Heteroptera, with approximately 940 genera and 5000 species widely distributed (Grazia *et al*. 2015; Rider *et al*. 2018). Out of the 10 subfamilies included in this family, Pentatominae is greatly represented in the Neotropical region (Rider *et al*. 2018), and includes a variety of potential crop pests (Schmidt & Barcellos 2007; Grazia & Schwertner 2008). These species prefer immature fruits and seeds, as well as feeding on the plant vascular system (Schuh & Slater 1995; Lucini & Panizzi 2017). When a preferred host plant is not available, stink bugs can explore alternative plants (Panizzi & Lucini 2017).

Pentatominae is a polyphyletic group and does not have a definition based on phylogenetic studies (Gapud 1991; Hassan & Kitching 1993; Grazia *et al*. 2008; Grazia *et al*. 2015). Moreover, the number of tribes included in this subfamily is inconsistent, ranging from eight (Schuh & Slater 1995) to 42 (Rider *et al.* 2018) tribes (Barão *et al*. 2020). In addition, the relationships between tribes is poorly studied and most of them lack diagnostic characters, which makes the exact composition of these groups difficult to establish (Grazia *et al*. 2015).

The economic importance of these insects varies widely among species and within genera, depending on the host plant (Schuh & Slater 1995; Panizzi *et al*. 2000; McPherson & McPherson 2000; Grazia & Schwertner 2008). Within Pentatominae, the genera *Euschistus* Dallas, *Nezara* Amyot & Serville and *Piezodorus* Fieber are the most important crop pests in the Americas, damaging a wide variety of plants (McPherson & McPherson 2000; Panizzi *et al*. 2000; Grazia & Schwertner 2008; Rider *et al*. 2018). In addition, it is common to have multiple species simultaneously associated with a single crop. In South America, the complex of stink bug species associated with a plant species is usually similar morphologically (Hickmann *et al.* 2019).

Knowing the host plants of a specific group of phytophagous insects is important for studies in bioecology, population dynamics, host alternation, and for monitoring and detecting new pest species in crops of economic relevance (Link & Grazia 1987; Pasini *et al*. 2018). In addition, many species may not be as severe as other already consolidated crop pests, but it is of vital importance to record their occurrence on different host plants, to monitor potential pests.

Agriculture plays an important role in the Brazilian economy. In 2019, exports of

products generated US$224 billion for the country, of which 43.2% (US$96.8bn) was obtained through exports of agricultural products (MAPA 2020). Within Brazil, the southernmost state of Rio Grande do Sul is one of the main agricultural producers, especially in crops such as apple, grape, rice, soybean, tobacco and wheat. Soybean, rice, maize and wheat are the agricultural crops with the largest cultivated area and production in Rio Grande do Sul (Rio Grande do Sul 2020; Feix *et al.* 2016; IBGE 2020).

Within Rio Grande do Sul, several species surveys of economically important Pentatomidae were carried out at different times: Lopes *et al.* (1974) created a preliminary list of Pentatomidae species and their host plants in Santa Maria; Galileo *et al.* (1977) performed a populational survey of Pentatomidae in soybean crops in Guaíba; Link & Grazia (1987) listed Pentatomidae species and their host plants for the central region of Rio Grande do Sul; Costa *et al.* (1995) identified Pentatomidae species with their host plants in São Sepé, among other studies. However, all of these works are scarcely illustrated and are limited to a specific crop or state region.

Among these surveys of Pentatominae associated with crops, Link & Grazia (1987) is remarkable for being the most complete list to date, featuring most of the pest stink bugs occurring in Rio Grande do Sul, despite sampling only the state's central region. In the 25 years after this work, several authors reported these species related to crops of economic importance in other regions of the state, and recorded new species (e.g. Gassen 1996; Medeiros & Megier 2009; Pereira & Salvadori 2011; Roza-Gomes *et al*. 2011; Farias 2012; Farias *et al.* 2012; Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019).

The aims of this paper are to produce an updated species list, and a fully illustrated identification guide to Pentatominae species associated with the five main crops in Rio Grande do Sul state, suitable for use by agronomists and other agriculture workers. A short account of each species is given, including relevant synonymy and literature, and brief notes on identification, size, and distribution. The overall appearance of each species, and diagnostic characters of importance, are also illustrated. This work is an attempt to summarize the list of Pentatominae species of economic importance in Rio Grande do Sul, which has been scattered across several papers with a more specific scope.

Among the several researchers that have studied the stink bug fauna of Rio Grande do Sul, one of the scientists that contributed the most to our current knowledge about this group is Professor Jocélia Grazia. Ever since the species survey of Santa Maria and nearby region (Link

& Grazia 1987), Professor Jocélia has collaborated in several other species surveys (e.g. Mendonça *et al*. 2009; Bunde *et al*. 2010; Farias *et al*. 2012; Weiler *et al*. 2012; Marsaro Jr. *et al*. 2017). She has also described almost 200 new species and close to 20 new genera in her career, identified specimens and revisited the taxonomy of several groups that occur in Rio Grande do Sul (e.g. Pentatomidae, Phloeidae, Reduviidae, Thyreocoridae, Cydnidae). Moreover, Professor Jocélia contributed to the formation of numerous researchers working with Heteroptera, including the authors of the current work. Thus, this article is both a tribute to Professor Jocélia, and a continuation of her efforts in unveiling knowledge regarding the stink bugs of Rio Grande do Sul.

Material and Methods

Material studied and species selection

The list of species presented in this work was constructed with information from literature, updated with records from the collection at Laboratório de Entomologia Sistemática – LES (UFRG), and other museum collections (Museu de Entomologia Pe. Jesus Santiago Moure, Universidade Federal do Paraná, Curitiba, Brazil – DZUP; Museu de Ciências Naturais da Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre, Brazil – MCNZ; Museu de Entomologia Ceslau Biezanko, Universidade Federal de Pelotas, Pelotas, Brazil – MECB; Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil – MZUSP). We only considered specimens collected from Rio Grande do Sul (RS), the area of focus of this work, excluding records from other Brazilian states.

To build our list of species for this work, we have performed an extensive review of Pentatominae species records for the four most important crops in the state of Rio Grande do Sul (soybean [*Glycine max*], rice [*Oryza sativa*], maize [*Zea mays*], and wheat [*Triticum* spp.]), considering the amount produced and profit generated (Rio Grande do Sul 2020; IBGE 2020). We have also included in this list the species recorded on canola (*Brassica* spp.), which were reviewed recently (Bianchi *et al*. 2019). After completing this checklist, we also verified if the species included were recorded attacking other crops besides the five listed above, such as oat (*Avena sativa*) and rye (*Secale cereale*) (Pereira & Salvadori 2020).

We have considered records from outside Rio Grande do Sul for the list of host plants, but for the maps only crops recorded within the state were included.

Species checklist

The list of species is arranged in alphabetical order. Each species is entered with its current binomial nomenclature, author and year of publication. Under each species is given its list of synonymies, a short diagnosis with its main identifying features, distribution within Rio Grande do Sul, list of host plants recorded within the state, and for some species a small section for remarks on biology, morphological variation or other useful notes.

All information presented for each species, including the size and coloration indications, were obtained from a literature survey and records from the UFRG collection. All characters and measurements are of adult stink bugs.

Distribution maps

Distribution records were retrieved from collection labels and literature, and georeferenced using online global gazetteers and Global Positioning System (GPS). Occurrences were plotted with the software QGIS Desktop version 3.14.0. Only records within Rio Grande do Sul were considered for this work.

The following works were consulted to create our distribution lists and maps: Bianchi *et al.* 2019; Botta *et al.* 2014; Bunde *et al.* 2006; Campos & Grazia 1998; Chevarria *et al.* 2013; Costa & Link 1974; Del Vecchio & Grazia 1992; Farias *et al.* 2012; Fernandes & Grazia 1996; Genevcius *et al.* 2012; Genevcius & Schwertner 2014; Grazia 1977, 1978, 1982; Link & Grazia 1987; Lopes *et al.* 1974; Marsaro Jr. *et al.* 2017; Martins *et al.* 1986; Matesco *et al.* 2006; Medeiros & Megier 2009; Pereira & Salvadori 2011, 2020; Schwertner & Grazia 2007; Scopel *et al.* 2016; Tomacheski & Panizzi 2018; Weber *et al.* 1988 and Weiler *et al.* 2012.

To situate the state of Rio Grande do Sul within Brazil and South America, an infographic was prepared (Fig. 1). This image also illustrates the main regions within Rio Grande do Sul, and the five main crops investigated in this work.

Photography

Specimens were photographed in multiple focal planes with the digital camera Digital Sight DS-Fi2, coupled to a stereomicroscope Nikon AZ100M, and stacked with the software NIS Elements AR, available at Departamento de Zoologia, UFRGS. Images were further edited and organized in plates with the softwares Adobe Illustrator CS5.1 and Adobe Photoshop CS5.

Results

Notes on morphology

Like other Pentatomidae stink bugs, members of Pentatominae have antennae with five antennomeres (Fig. 2), and produce a characteristic smell when disturbed. Grazia *et al*. 2015 characterized subfamily Pentatominae by the following characters: first labiomere arising anterior to the line of anterior margin of the eyes (Fig. 3, red line), with variable length in relation to the bucculae; humeral angles frequently with a process, which may be acute or not (Fig. 4); scutellum not reaching the apex of abdomen, with frenal region extending from ⅖ to ⅔ the length of the scutellum (Fig. 5); metasternum rarely produced anteriorly; and abdominal segments with two pairs of trichobothria, near the spiracular line.

Key to the species of Pentatominae on grain crops of economic importance in Rio Grande do Sul (including only the species listed in this work)

1 Abdominal sternite 3 with process (Fig. 21) … 2

- Abdominal sternite 3 without process … 12

2 Mandibular plates surpassing the clypeus and acute apically (Fig. 22) … *Arvelius albopunctatus*

- Mandibular plates subequal to clypeus and rounded apically (Fig. 102) … 3

3 Living specimens yellowish castaneous to green, pronotum with a reddish-brown trans-humeral band (Figs 100, 102) … *Piezodorus guildinii*

- Living specimens green, pronotum without reddish-brown trans-humeral band (Fig. 92) ... 4

4 Abdominal spine short, rounded, not reaching coxae (Fig. 93); spiracles with juxtaposed green

maculae, without callosity (Fig. 94, black arrow) … *Nezara viridula*

- Abdominal spine variable in size, rounded or acute, spiracles with juxtaposed maculae, concolourous or not, and with a callosity … 5

5 Humeral angles produced into a spine (Figs 24, 42) … 6

- Humeral angles not produced (Figs 30, 48) … 7

6 Lateral margins of body yellowish, apical portion of head broad (Fig. 25)… *Chinavia armigera*

- Lateral margins of body reddish to orange, apical portion of head narrow (Fig. 42) … *Chinavia nigridorsata*

7 Abdominal spine surpassing the mesocoxae (Fig. 45) … *Chinavia obstinata*

- Abdominal spine not reaching the mesocoxae … 8

8 Abdominal spine reaching the anterior margin of metacoxae (Fig. 35)… *Chinavia herbida*

- Abdominal spine not reaching the anterior margin of metacocoxae … 9

9 Cicatrices of pronotum and basal angles of scutellum black (Fig. 30)… 10

- Cicatrices of pronotum and basal angles of scutellum concolorous with remaining dorsal surface, never black … 11

10 Antennae black (Fig. 30), coxae, trochanters, apices of femora and tibiae red (Fig. 32) … *Chinavia erythrocnemis*

- Antennae and legs green … *Chinavia impicticornis*

11 Lateral margin of body broadly red to orange red (Figs 47, 48), posterior margin of connexivum black (Fig. 47) … *Chinavia pengue*

- Lateral margin of body narrowly light red (Figs 27, 28), posterior margin of connexivum concolourous with dorsal surface (Fig. 27)… *Chinavia aseada*

12 Live specimens green; distal apex of all femora bearing a strong spine (Fig. 79, black arrow) … 13

- Live specimens pale yellow to black; distal apex of all femora unarmed … 14

13 Humeral angles strongly developed, directed laterally, reddish (Fig. 80); corium with multiple pale callosities, irregularly distributed (Fig. 78) … *Loxa deducta*

- Humeral angles slightly developed, directed anteriorly, black (Fig. 83); each corium with a single pale callosity (Fig. 82) … *Mayrinia curvidens*

14 Inferior surface of all femora with small tubercles bearing setae (Fig. 18) … 15

- Inferior surface of all femora lacking tubercles … 19

15 Anterolateral margins of pronotum straight (Fig. 16); corium banded, not punctate and with minute teeth on lateral margin (Fig. 17); femoral tubercles arranged in two rows … *Agroecus griseus*

- Anterolateral margins of pronotum concave (Figs 13, 57); corium without bands or minute teeth on lateral margin, not punctate; femoral tubercles arranged irregularly … 16

16 Humeral angles quadrate (Fig. 13); apex of scutellum immaculate… *Adustonotus irroratus*

- Humeral angles acute (Figs 57, 61, 63); apex of scutellum maculate … 17

17 Anterolateral margins of pronotum serrate (Fig. 57); legs without black spots; membrane of hemelytra with linear veins (Fig. 56) … *Euschistus* (*Euschistus*) *heros*

- Anterolateral margins of pronotum with spaced denticles (Figs 61, 63); legs with black spots (Fig. 59); membrane of hemelytra with reticulate veins (Fig. 60) … 18

18 Dorsal surface of body wrinkled; humeral angles rounded apically and directed anterolaterally (Fig. 61); conspicuous macule on apex of scutellum Fig. 59) … *Euschistus* (*Lycipta*) *picticornis*

- Dorsal surface of body not wrinkled; humeral angles acute apically and directed laterally (Fig. 63); inconspicuous maculae on apex of scutellum … *Euschistus* (*Lycipta*) *triangulator*

19 Basal angles of scutellum not foveate (Fig. 7) … 20

- Basal angles of scutellum foveate … 21

20 Anterolateral margins of pronotum convex (Figs 6, 8); basal angles of scutellum not black

(Fig. 7); mandibular plates subequal to clypeus and divergent apically (Fig. 8) … *Acledra bonariensis*

-Anterolateral margins of pronotum straight to slightly concave (Figs 10, 11); basal angles of scutellum black (Figs 10, 11); mandibular plates longer than clypeus and convergent apically (Fig. 11) … *Acledra fraterna*

21 First labiomere surpassing the bucculae (Fig. 86, black arrow) … 22

- First labiomere between the bucculae (Fig. 76, black arrow) … 23

22 Body color castaneous; humeral angles black, slightly produced and obtuse apically (Fig. 85); scutellum with a small pale yellow callosity on each angle, the callosities on basal angles not extending to lateral margins (Fig. 85) … *Mormidea notulifera*

- Body color black; humeral angles variable, from a small round projection (Fig. 90) to an acute spine apically (Fig. 89); scutellum with a pale yellow callosity on each angle, the ones on basal angles extending through half of lateral margins (Fig. 88) … *Mormidea v-luteum*

23 Anterolateral margins of pronotum straight (Fig. 75) … *Hypatropis inermis*

- Anterolateral margins of pronotum concave (Fig. 51) … 24

24 Apex of mandibular plates acute (Figs 51, 53) … 25

- Apex of mandibular plates rounded (Figs 96, 98) … 26

25 Humeral angles concolorous with pronotum (Figs 50, 51); scutellum without pale line on apical margin (Fig. 50) … *Diceraeus furcatus*

- Humeral angles black (Fig. 53); scutellum with pale line along apical margin (Fig. 53) … *Diceraeus melacanthus*

26 Mandibular plates subequal to clypeus (Figs 98, 105); antennomere 2 longer than antennomere 1 (Fig. 104) … 27

- Mandibular plates smaller than clypeus (Figs 66, 73); antennomere 2 shorter than antennomere 1 (Fig. 110) … 30

27 Body slender; scutellum with large pale callosities (Figs 96, 98) … 28

- Body oval; scutellum without callosities … 29

28 Apex of radial vein of corium with a large pale yellow callosity; body ferruginous to dark castaneous, with one pair of yellow callosities on pronotum (Fig. 96) … *Oebalus poecilus*

- Apex of radial vein of corium without callosity; body castaneous, with one pair of small yellow spots, not callosities, on pronotum (Fig. 98) … *Oebalus ypsilongriseus*

29 Humeral angles slightly produced, rounded apically, directed laterally (Figs 104, 105); scutellum with dark apex (Fig. 104); connexivum concolor to dorsal surface … *Thyanta humilis*

- Humeral angles produced, acute apically, directed anterolaterally (Fig. 107); scutellum apex concolor to dorsal surface; connexivum with orange maculae (Fig. 107) … *Thyanta perditor*

30 Outline of anterolateral margins of pronotum not punctate (Figs 110, 113); antennomere 4 cylindrical (Fig. 2); sub lateral margin of abdomen not concolorous with abdominal venter (Figs 111, 115) … 31

- Outline of anterolateral margins of pronotum uniformly punctate (Figs 66, 73); antennomere 4 conical (Fig. 66); sub lateral margin of abdomen concolorous with abdominal venter (Fig. 67) … 32

31 Small specimens (not surpassing 12.00 mm); legs red to dark red; connexivum margin light castaneous with small black spot at apex (Fig.111) … *Tibraca exigua*

- Large specimens (surpassing 12.00 mm); legs castaneous, concolor with the venter; connexivum with dark castaneous macule on anterior angles (Fig. 115) … *Tibraca limbativentris*

32 Dorsal surface setose (Fig. 72); anterior angles of pronotum acute (Fig. 73, black arrow) … *Glyphepomis setigera*

- Dorsal surface glabrous; anterior angles of pronotum rounded (Fig. 66) … 33

33 Abdominal sternites with densely distributed punctures medially, and sparse on sub lateral margin (Fig. 67) … *Glyphepomis adroguensis*

- Abdominal sternites with uniformly distributed punctures (Fig. 70) … *Glyphepomis pelotensis*

List of Pentatominae species associated to grain crops of economic importance in Rio Grande do Sul

***Acledra bonariensis* (Stål, 1859)**

(Figs 6–9)

Pentatoma bonariensis Stål, 1859: 227.

Acledra bonariensis: Stål, 1867: 528.

Melpia integra Berg, 1878: 310–311 (syn. by Berg, 1891).

Hypatropis integra: Kirkaldy, 1909: 91.

Material studied. Albatroz: 1#m, 06.XII.1973, R. Wagner, H. Hanisch, A. Ruszczyk leg. (UFRG). Canguçu: 1#f, Coxilha do fogo, varredura, borda mata, 22.I.2004, Bunde, Schwertner, Ely e Silva leg., LES–569 (UFRG); 1#f, Rincão da Ronda (Campo), 16.X.2003, varredura no campo, P. Bunde & J. Cabeleira leg. (UFRG). Maquiné: 1#m, Garapiá, varredura, 21.XII.06, R. C. Bins-Neto & L. M. Weiler leg. (UFRG). Santa Maria: 1#m, 05.X.1986, A. Scorsatto leg. (UFRG).

Diagnostic features. Body yellowish, dorsal surface immaculate. Mandibular plates subequal to clypeus. Anterolateral margins of pronotumAnterolateral margins of pronotum convex; humeral angles rounded (Fig. 8). Basal angles of scutellum immaculate (Fig. 7, black arrow). Mesosternum dark. Legs with dark spots. Body length: 8.00 mm.

Recorded host plants. Soybean (Link & Grazia 1987; Bunde *et al*. 2010).

Distribution in Rio Grande do Sul. Albatroz, Canguçu, Maquiné and Santa Maria (Fig. 9).

New records: Albatroz, Canguçu and Maquiné.

***Acledra fraterna* (Stål, 1859)**

(Figs 10–12)

Pentatoma fraterna Stål, 1859: 225–226.

Acledra reflexa Signoret, 1863: 547–548, pl. 12, fig. 13 (syn. by Stål, 1867).

Acledra fraterna: Stål, 1867: 528.

Material studied. Júlio de Castilhos: 1#f, 29.X.1981, Link & Costa leg., "Colza", J. Grazia det. 1986 (UFRG). Santa Maria: 1#m, 2#f, XI.1981, D. Link leg., "Colza", J. Grazia det. 1986 (UFRG). Três Passos: 1#f, 5.XI.1986, I. H. Kuhn (UFRG).

Diagnostic features. Body yellow with greenish tones. Mandibular plates longer than clypeus (Fig. 11, black arrow). Humeral angles rounded (Fig. 11). Internal angle of cicatrices of pronotum with dark spots. Basal angles of scutellum with black maculae (Figs 10, 11). Apex of radial vein of corium with a dark spot. Body length: 8.90 mm (Faúndez & Verdejo 2010; Garbelotto & Campos 2014).

Recorded host plants. Soybean (Link & Grazia 1987).

Distribution in Rio Grande do Sul. Júlio de Castilhos, Santa Maria and Três Passos (Fig. 12).

New records: Júlio de Castilhos and Três Passos.

***Adustonotus irroratus* (Bunde, Grazia & Mendonça, 2006)**

(Figs 13–15)

Euschistus (*Mitripus*) *irroratus* Bunde, Grazia & Mendonça, 2006: 289.

Adustonotus irroratus: Bianchi *et al*. 2017: 408 (new comb. by Bianchi *et al*. 2017); Bianchi *et al*. 2019.

Material studied. Canguçu: 1#m, 1#f, Rincão da Ronda, 16.X.2003, *Euschistus* (*Mitripus*) *irroratus* Bunde, Grazia & Mendonça PARATYPE (UFRG).

Diagnostic features. Body dorsal and ventral surfaces castaneous to dark castaneous, antennae orange. Dorsal surface reticulatereticulate. Mandibular plates subequal to clypeus, rounded apically. Anterolateral margins of pronotum concave. Anterior half of pronotum dark. Humeral angles dark, strongly developed, quadrate apically and directed anterolaterally (Fig. 13). Legs castaneous with small dark castaneous spots irregularly distributed (Fig. 14). Veins of the membranous portion of the hemelytra reticulate (Fig. 13). Angles of connexivum with a dark spot. Body length: 9.00–9.50 mm.

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al.* 2019).

Distribution in Rio Grande do Sul. Canguçu, Pelotas and Passo Fundo (Fig. 15).

***Agroecus griseus* Dallas, 1851**

(Figs 16–19)

Agroecus griseus Dallas, 1851: 199; Walker, 1867: 243; Stål, 1872b: 23; Distant, 1880: 329; Lethierry & Severin, 1893: 126; Kirkaldy, 1909: 63; Jensen-Haarup, 1937: 171; Buckup, 1957: 8; Buckup, 1961: 9; Rider & Rolston, 1987: 437–438.

Agroecus tenebricosus Buckup, 1957: 8.

Material studied. Barra do Ribeiro: 1#m, Boa Vista farm, 30°27’25,4”S 51°16’23,8”W, 16.XII.2003, Probio Team leg. (MCNZ). Itaúba: 1#f, 06.IV.1978, H. Bischoff leg. (MCNZ); 1#m, 1#f, 18.IV.1978, M. H. Galileo leg. (MCNZ); 1#m, 1#f, 06.IV.1978, E. H. Buckup leg. (MCNZ); 2#f, 06.IX.1978, E. H. Buckup leg. (MCNZ). Palmares do Sul: 1#f, 1#m, Capivari Lake isthmus, 30°15’08,2”S 50°32’01,1”W, 20.V.2004, Probio Team leg. (MCNZ). Porto Alegre: 1#m, Agronomia, 24.X.1985, Fernandes leg. (UFRG); 1#m, Vila Assunção, 21.IV.1985, A. Mohr leg. (UFRG); 1#m, 26.XI.1991, J. A. M. Fernandes leg. (UFRG); 1#f, 24.IX.1952 (MCNZ); 1#f, 23.IX.1952 (MCNZ); 1#f, 09.V.1951 (MCNZ); 1#f, 23.XII.1952 (MCNZ); 1#f, 08.IX.1948 (MCNZ); 1#f, 18.II.1953 (MCNZ); 1#m, 13.V.1953 (MCNZ); 1#m, 03.X.1951 (MCNZ), 1#m, 18.VIII.1954 (MCNZ); 1#m, 24.X.1956 (MCNZ); 1#m, 27.VI.1953 (MCNZ); 1#m, 20.IX.1954 (MCNZ); 1#m, 05.X.1949 (MCNZ). São Leopoldo: 1#f, (MCNZ). Triunfo: 1#m, Parque Braskem, main trail, 16.IX.2009, A. Barcellos & D. Casagrande leg.

(MCNZ); 1#m, Parque Copesul, Mirante do Umbu trail, 29.IV.2003, (MCNZ); 1#m, Parque Copesul, portico trail, 29.IV.2003, (MCNZ); 1#m, Parque Copesul, 19.XI.2002, (MCNZ). Tupandi: 1#f, V.2009, R. V. Dalbem leg. (UFRG).

Diagnostic features. Body grayish. Head wider than long; mandibular plates and clypeus subequal in length. Anterolateral margins of pronotum straight or sub rectilinear and crenulate (Rider & Rolston 1987); humeral angles weakly produced and obtuse; trans-humeral band with callosities but without punctures (Fig. 16). Scutellum with a prominent Y-shaped tubercle (Fig. 16). Corium bands without punctures (Fig. 17, red arrow) and minute teeth on lateral margins (Fig. 17). All femora with two rows of small tubercles bearing setae (Fig. 18). Body length: 7.00–8.50 mm.

Recorded host plants. Maize (Gassen 1996; Fávaro *et al*. 2012).

Distribution in Rio Grande do Sul. Barra do Ribeiro, Itaúba, Palmares do Sul, Porto Alegre, Santa Maria, São Leopoldo, Triunfo and Tupandi (Fig. 19).

New records: Barra do Ribeiro, Itaúba, Palmares do Sul, Porto Alegre, São Leopoldo, Triunfo and Tupandi.

Comments. This species feeds at the base of plants, affecting tissue formation during growth (Gassen 1996).

***Arvelius albopunctatus* (De Geer, 1773)**

(Figs 20–23)

Cimex albopunctatus De Geer, 1773: 331–332, pl. 34, fig. 6.

Cimex gladiator Fabricius, 1775: 705 (syn. by Lepeletier & Serville, 1825).

Arvelius albopunctatus: Amyot & Serville, 1843: 150–151; Costa & Link, 1974: 399.

Material studied. Eldorado do Sul: 1#m, Est[ação] Agron[ômica], Universidade Federal do Rio Grande do Sul, 28.III.2015, N. Pires leg. (UFRG). Itaara: 1#f, Barragem, 2006, R. Costa e Silva & J. Garlet leg. (UFRG). Jóia, 1#m, 2009, M. F. Aguero leg. (UFRG). São

Domingos do Sul: 2#f, 13.VII.2018, R. Brugnera, leg. (UFRG). São Francisco de Paula: 1#f, Pro-Mata, 22.XI.1997, C. Weirauch leg. (UFRG).

Diagnostic features. Body green in living specimens, muted yellow in pinned specimens. Mandibular plates longer than clypeus (Fig. 22) (Brailovsky 1981). Pronotal disc and scutellum with black punctuations (Figs 20, 22). Anterolateral margins of pronotum sub rectilinear to strongly concave, and crenulate (Fig. 22). Humeral angles yellowish and projected laterally. Corium with yellowish punctures (Fig. 20). Body length: 13.80–16.00 mm (Garbelotto & Campos 2014).

Recorded host plants. Soybean (Costa & Link 1974; Link & Grazia 1987; Garbelotto & Campos 2014).

Distribution in Rio Grande do Sul. Eldorado do Sul, Itaara, Jóia, Santa Maria, São Sepé, São Domingos do Sul and São Francisco de Paula (Fig. 23).

New records: Eldorado do Sul, Itaara, Jóia, São Domingos do Sul and São Francisco de Paula.

***Chinavia armigera* (Stål, 1859)**

(Figs 24–26)

Rhaphigaster armiger Stål, 1859: 229.

Nezara (*Acrosternum*) *armigera*: Stål, 1872b: 43.

Nezara armigera: Berg, 1878: 28.

Acrosternum armigera: Pennington, 1920: 9; Costa & Link 1974: 398.

Acrosternum (*Chinavia*) *armigerum*: Rolston, 1983: 108.

Chinavia armigera: Schwertner & Grazia, 2007: 425; Fürstenau *et al*. 2013: 61–64, table 1, figs 1–6, 75–78 (key); Matesco *et al*. 2014: 368, figs 6, 47–48, 49–51; Servino & Schwertner, 2020 (electronic key).

Material studied. Júlio de Castilhos: 1#m, 19.X.1981, Link & Costa leg., "Tremoço" (UFRG). Santa Maria: 1#f, X.1984, "Tremoço azul", Equipe DFS/UFRGS leg. (UFRG); 1#f, 02.X.1970, M. F. Tarragó leg., "s/ [sobre] Trigo", J. Grazia det. 1973 (UFRG); 1#f, 18.IX.1970, D. Link leg., "s/ [sobre] Alcachofra", J. Grazia det. 1973 (UFRG).

Diagnostic features. Body green to light green (Figs 24, 25), lateral margins yellowish; some specimens may have a narrow light yellow band near mandibular plates. Humeral angles produced into a spine (Fig. 25) (Schwertner & Grazia 2007). Abdominal spine reaching metacoxae. Spiracles black (Servino & Schwertner 2020). Body length: 10.00–13.00 mm (Schwertner & Grazia 2007).

Recorded host plants. Soybean and wheat (Schwertner & Grazia 2007).

Distribution in Rio Grande do Sul. Júlio de Castilhos, Rio Grande and Santa Maria (Fig. 26).

New records: Júlio de Castilhos.

***Chinavia aseada* (Rolston, 1983)**

(Figs 27–29)

Acrosternum (*Chinavia*) *aseadum* Rolston, 1983: 132; Link & Grazia, 1987: 117.

Chinavia aseada: Schwertner & Grazia, 2007: 431; Bunde *et al*. 2010; Fürstenau *et al*. 2013: 61 (table), 65 –68, figs 7–12, 75, 77–78 (key); Matesco *et al*. 2014: 368, figs 7, 52–55; Servino & Schwertner, 2020 (electronic key).

Material studied. Cruz Alta: 3#f, 14.X.1981, Link & Costa leg., Linho (UFRG). Santa Maria: 1#m, 03.VI.1982, J. A. [unreadable] leg., J. Grazia det. 1986 (UFRG); 1#m, X.1984, Tremoço branco, D. Link leg. (UFRG); 1#m, XII.1981, D. Link leg., "Feijoeiro" (UFRG); 1#f, X.1984, "Girassol", D. Link leg., J. Grazia det. 1986 (UFRG). São Sepé: 1#f, 13.XII.1981, E. C. Costa leg., "Feijoeiro" (UFRG).

Diagnostic features. Body light green. Lateral margin of body light red to orange (Fig. 27). Cicatrices of pronotum and basal angles of scutellum immaculate (Fig. 27). Connexivum and abdominal sternites immaculate (Fig. 28). Humeral angles not produced. Abdominal spine not produced, not reaching metacoxae; spiracles black and surrounded by a yellow callus (Fig. 28) (Schwertner & Grazia 2007; Servino & Schwertner 2020). Body length: 12.00–14.00 mm (Schwertner & Grazia 2007).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019) and soybean (Link & Grazia 1987).

Distribution in Rio Grande do Sul. Barra do Quaraí, Cruz Alta, Esmeralda, Santa Maria, São Sepé, Passo Fundo and Pelotas (Fig. 29).

***Chinavia erythrocnemis* (Berg, 1878)**

(Figs 30–33)

Nezara erythrocnemis Berg, 1878: 27–28.

Nezara (*Acrosternum*) *erythrocnemis*: Kirkaldy, 1909: 118.

Acrosternum erythrocnemis: Pennington, 1920: 9.

Acrosternum (*Chinavia*) *erythrocnemis*: Rolston, 1983: 161; Frey-da-Silva & Grazia, 2001: 112.

Chinavia erythrocnemis: Matesco *et al*., 2006: 483–488; Schwertner & Grazia, 2007: 426; Genevcius & Schwertner, 2014: 43–44; Fürstenau *et al*. 2013: 74–78 (key); Bianchi *et al*. 2019; Servino & Schwertner, 2020 (electronic key).

Material studied. Derrubadas: 1#f, Parque Estadual do Turvo, 1982, S. L. B. Bonatto leg. (UFRG). Rio Grande: 1#f, Estação Ecológica do Taim, 1982, J. Grazia leg. (UFRG); 1#m, Estação Ecológica do Taim, 1981. J. Grazia leg. (UFRG).

Diagnostic features. Body dorsal surface light green to dark green. Lateral margin of mandibular plates with a largely reddish band (Fig. 31). Anterolateral margins of pronotum

yellowish (Figs 30, 31). Cicatrices of pronotum darker (Fig. 31, red arrow). Basal angles of scutellum dark (Fig. 30). Connexivum yellowish, with a black spot at anterior and posterior margins (Fig. 30). Abdominal spine reaching metacoxae. Spiracles pale, abdominal suture and pseudo-suture dark (Fig. 32). Body length: 11.00–14.00 mm (Schwertner & Grazia 2007).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al.* 2019) and soybean (Schwertner & Grazia 2007).

Distribution in Rio Grande do Sul. Barra do Quaraí, Derrubadas, Planalto, Passo Fundo, Pelotas, Rio Grande and Uruguaiana (Fig. 33).

Comments. Species easily recognized by the general color pattern of the body.

***Chinavia herbida* (Stål, 1859)**

(Figs 34–36)

Rhaphigaster herbidus Stål, 1859: 229.

Nezara (*Acrosternum*) *herbida*: Stål, 1872a: 42; Kirkaldy, 1909: 119; Pennington, 1919: 529.

Nezara herbida Berg: 1878: 28; Berg, 1892: 6.

Acrosternum herbida: Pennington, 1920: 9.

Acrosternum (*Chinavia*) *herbidum*: Rolston, 1983: 169.

Chinavia herbida: Schwertner & Grazia, 2007: 428; Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019; Servino & Schwertner, 2020 (electronic key).

Material studied. None, entry based on literature data (Schwertner & Grazia 2007; Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019).

Diagnostic features. Body green to light green. Cicatrices of pronotum and basal angles of scutellum without black spots (Fig. 34). Connexivum with a small black spot. Abdominal spine reaching the anterior margins of metacoxae (Fig. 35). Body length: 10.00–12.00 mm (Schwertner & Grazia 2007; Marsaro Jr. *et al*. 2017; Servino & Schwertner 2020).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al.* 2019).

Distribution in Rio Grande do Sul. Passo Fundo (Fig. 36).

Comments. Figures 34–35 were photographed by Leonardo Matheus Servino.

***Chinavia impicticornis* (Stål, 1872)**

(Figs 37–40)

Nezara (Acrosternum) impicticornis Stål, 1872: 42.

Nezara vicina Berg, 1892: 8.

Nezara (*Acrosternum*) *vicina*: Kirkaldy, 1909: 120.

Acrosternum vicina: Pennington, 1920: 9; Pirán, 1963: 337.

Acrosternum impicticorne: Grazia, 1977: 163; Grazia *et al*. 1982;

Acrosternum (*Chinavia*) *impicticorne*: Rolston, 1983: 167; Link & Grazia, 1987: 117; Panizzi 2002: 331–332.

Chinavia impicticornis: Schwertner & Grazia, 2007: 428; Grazia & Schwertner, 2008: 233; Genevcius *et al*. 2012: 4 (table), 6 (table), 7–8, 11, 14, 19; Fürstenau *et al*. 2013: 74–78 (key); Bianchi *et al*. 2019; Servino & Schwertner, 2020 (electronic key).

Material studied. Cacequi: 1#f, 19.V.1984, R. Ragagnin leg., J. Grazia det. 1986 (UFRG).

Diagnostic features. Body light green, antenna green, cicatrices of pronotum darker (Fig. 37, black arrow). Basal angles of scutellum dark (Fig. 37). Legs green (Fig. 39). Connexivum orange, with a black spot at posterior margins (Fig. 37). Abdominal spine reaching metacoxae. Spiracles green. Body length: 11.00–16.00 mm (Schwertner & Grazia 2007).

Recorded host plants. Canola (Bianchi *et al.* 2019) and Soybean (Grazia *et al*. 1982; Link & Grazia 1987).

Distribution in Rio Grande do Sul. Cacequi, Santa Maria and Passo Fundo (Fig. 40).

***Chinavia nigridorsata* (Breddin, 1901)**

(Figs 41–43)

Nezara nigridorsata Breddin, 1901: 123.

Acrosternum armigera: Costa & Link, 1974: 398.

Acrosternum (Chinavia) bellum Rolston, 1983: 110; Link & Grazia, 1987: 117.

Acrosternum bellum: Panizzi *et al*., 2000

Chinavia nigridorsata: Schwertner & Grazia, 2007: 430; Fürstenau *et al*. 2013: 74–78 (key); Bianchi *et al*. 2019; Servino & Schwertner, 2020 (electronic key).

Material studied. Cruz Alta: 1#f 1#m, 19.X.1981, Link & Costa leg., "Colza" (UFRG). Guaíba: 1#f, Estação Experimental Agronômica, XII.1982, G. Moreira leg. (UFRG); 1#f, 01.X.1985, Joá, Del Vecchio leg. (UFRG). Rio Grande: 1#m, Estação Ecológica do Taim, 01.IV.1981, J. Grazia leg. (UFRG).

Diagnostic features. Body green to light green (Fig. 41), lateral margins of mandibular plates, pronotum, hemelytra and connexivum reddish (Fig. 41). Cicatrices of pronotum and basal angles of scutellum immaculate (Fig. 42). Posterolateral angles of connexivum maculate (Fig. 41). Spiracles black surrounded by a yellow callus. Humeral angles produced into a spine (Figs 41–42). Body length: 11.00–13.00 mm (Schwertner & Grazia 2007; Garbelotto & Campos 2014).

Recorded host plants. Soybean and wheat (Lopes *et al*. 1974; Link & Grazia 1987), and Canola (Bianchi *et al*. 2019).

Distribution in Rio Grande do Sul. Cruz Alta, Guaíba, Rio Grande, Santa Maria and Passo Fundo (Fig. 43).

Comments. This species is similar to *C. armigera*, being differentiated by having the mandibular plates narrower and margins of body reddish instead of yellowish.

New records: Cruz Alta and Guaíba.

***Chinavia obstinata* (Stål, 1860)**

(Figs 44–46)

Rhaphigaster obstinatus Stål, 1860: 23; Walker, 1867: 360.

Acrosternum (*Chinavia*) *panizzii* Frey-da-Silva & Grazia, 2001: 113, 115–117 (Syn. by Schwertner & Grazia, 2007).

Acrosternum obstinatum: Matesco *et al.* 2003: 82–88.

Chinavia obstinata: Schwertner & Grazia, 2006: 243; 2007: 430–431; Genevcius *et al*. 2012: 26–27; Campos *et al*. 2012, figs 2–3; Fürstenau *et al*. 2013: 74–78 (key); Bianchi *et al*. 2019; Servino & Schwertner, 2020 (electronic key).

Material studied. Pelotas: 1#m, 1#f, 20.III.2001, L. M. Vivian leg. (UFRG). Porto Alegre: 1#m, II.1995, J. A. M. Fernandes leg. (UFRG). Rio Grande: 1#m, Estação Ecológica do Taim, 17.III.1982, J. Grazia leg. (UFRG).

Diagnostic features. Body oval, light to dark green. Cicatrices of pronotum, basal angles of scutellum and connexivum immaculate (Fig. 44), but the latter may bear black spots at the posterolateral angles. Abdominal spine surpassing mesocoxae (Fig. 45, red arrow). Spiracles pale or dark. Body length: 11.00–15.00 mm (Schwertner & Grazia 2007; Campos *et al*. 2012; Garbelotto & Campos 2014).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019) and soybean (Garbelotto & Campos 2014).

Distribution in Rio Grande do Sul. Estrela, Pelotas, Porto Alegre, Passo Fundo, Rio Grande and Viamão (Fig. 46).

***Chinavia pengue* (Rolston, 1983)**

(Figs 47–49)

Acrosternum (*Chinavia*) *pengue* Rolston, 1983: 170.

Chinavia pengue: Schwertner & Grazia, 2007: 431; Fürstenau *et al*. 2013: 75, 77–78 (key). Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019; Servino & Schwertner, 2020 (electronic key).

Material studied. Catuípe: 1#m, 01.XI.1979, E. Bernardi leg., J. Grazia det. 19?? (UFRG). Cruz Alta: 04.IX.1981, Link & Costa leg., J. Grazia det. 19?? (UFRG). Santa Maria: 1#f, 01.IX.1974, C. R. Bestelli leg., J. Grazia det. 1986 (UFRG); 1#f, 15.VII.1984, R. Dalmolin leg., J. Grazia det. 1986 (UFRG).

Diagnostic features. Body light to dark green. Margins of mandibular plates, pronotum, basal third of hemelytra and posterior margin of connexivum red to orange red (Figs 47–48). Basal angles of scutellum immaculate (Fig. 47, black arrow). Spiracles green. Body length: 11.00–13.00 mm (Schwertner & Grazia 2007; Garbelotto & Campos 2014).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019) and soybean (Link & Grazia 1987; Matesco *et al*. 2007).

Distribution in Rio Grande do Sul. Catuípe, Cruz Alta, Passo Fundo, Santa Maria and São Francisco de Paula (Fig. 49).

New records: Catuípe and Cruz Alta.

***Diceraeus furcatus* (Fabricius, 1775)**

(Figs 50–52)

Cimex furcatus Fabricius, 1775: 705.

Dichelops furcatus: Berg, 1878: 308; Costa & Link, 1974: 398–399.

Dichelops (*Neodichelops*) *furcatus*: Grazia, 1978: 68.

Dichelops (*Diceareus*) *furcatus*: Grazia & Schwertner, 2008: 234; Bianchi *et al*. 2019.

Diceareus furcatus: Barão *et al*. 2020: 10 (stat. rev. by Barão *et al*. 2020)

Material studied. Bagé: 3#f, Arroio S[an]ta Maria Chicó, 30.XI.2006, Schwertner & Cohen leg. (UFRG). Derrubadas: 2#m, 1#f, Parque Estadual do Turvo, 26–30.IX.1983, S. L. Bonatto leg. (UFRG). Guaíba: 1#f, 01.X.1998, Del Vecchio, M.C. leg., "em Joá" (UFRG). Passo Fundo: 02.III.1974, A. R. Panizzi leg. (UFRG). Porto Alegre: 1#f, Ponta Grossa, 06.III.1974, A. R. Panizzi leg. (UFRG). Santa Maria: 1#m, 06.III.1990, D. Link leg., "Picão Preto" (UFRG). São Sepé: 2#f, 13.XII.1891, E. C. Costa leg., "Feijoeiro", J. Grazia det. 1986 (UFRG).

Diagnostic features. Body light castaneous, ventral surface usually lighter. Mandibular plates longer than clypeus and acute apically (Figs 50–51). Humeral angles variable in development, from weakly produced to forming a spine (Fig. 51). Outline of anterolateral margins of pronotum with dark punctures. Body length: 10.00–12.00 mm (Grazia 1978; Garbelotto & Campos 2014).

Recorded host plants: Barley; canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019), maize (Roza-Gomes *et al.* 2011), oat (Pereira & Salvadori 2020), rye (Pereira & Salvadori 2020), soybean (Costa & Link 1974; Lopes *et al.* 1974; Grazia 1978; Link & Grazia 1987; Panizzi *et al.* 2015) and wheat (Panizzi *et al.* 2015).

Distribution in Rio Grande do Sul. Bagé, Bom Jesus, Butiá, Carazinho, Caxias do Sul, Derrubadas, Farroupilha, Flores da Cunha, Gramado, Guaíba, Imbé, Lajeado, Marau, Marcelino Ramos, Nova Prata, Osório, Passo Fundo, Pelotas, Porto Alegre, Quaraí, Rio Pardo, Santa Maria, Santo Augusto, São Sepé, Torres, Vacaria and Viamão (Fig. 52).

New records: Bagé and Derrubadas.

Comments. Both adults and nymphs cause damage to the base of the plants, through the leaf sheath, reaching the inner leaves.

***Diceraeus melacanthus* Dallas, 1851**

(Figs 53–55)

Diceareus melacanthus Dallas, 1851: 208.

Dichelops melacanthus: Pennington, 1920: 8.

Dichelops (*Neodichelops*) *melacanthus*: Grazia, 1978: 76.

Dichelops (*Diceareus*) *melacanthus*: Grazia & Schwertner, 2008: 234; Bianchi *et al*. 2019.

Diceareus melacanthus: Barão *et al*. 2020: 10 (stat. rev. by Barão *et al*. 2020).

Material studied. Santa Maria: 3#f, XII.1981, D. Link. leg (UFRG). São Sepé: 1#m, 2#f, 1981, Costa & Link leg. (UFRG).

Diagnostic features. Living specimens have the dorsal surface light castaneous to orange-castaneous (Fig. 53) and ventral surface green (Fig. 54). Mandibular plates longer than clypeus, acute apically (Fig. 53). Internal angles and posterior margin of cicatrices of pronotum dark castaneous. Anterolateral margins of pronotum concave and serrate, with pale outline (Fig. 53). Humeral angles dark, strongly developed into an elongate spine, directed laterally (Fig. 53). Pale spots along lateral margins of scutellum and corium, apex of scutellum pale. Connexivum green in live specimens and straw-colored in mounted specimens, with anterior angles maculate and posterior angle produced. Posterior margin of abdominal sternite 7 strongly acute. Body length: 10.00 mm.

Recorded host plants: Barley, canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019), maize (Roza-Gomes *et al*. 2011; Panizzi *et al.* 2012), oat (Pereira & Salvadori 2020; Panizzi *et al.* 2012), rye (Pereira & Salvadori 2020), soybean (Link & Grazia 1987; Panizzi *et al.* 2012) and wheat (Panizzi *et al.* 2012).

Distribution in Rio Grande do Sul. Canoas, Encruzilhada do Sul, Guaíba, Imbé, Osório, Passo Fundo, Porto Alegre, Rio Pardo, Santa Maria, São Sepé and Torres (Fig. 55).

Comments. This species is known as the green-bellied bug. Both adults and nymphs cause damage to the base of the plants, through the leaf sheath, reaching the inner leaves. Fifth instar nymphs are green.

***Euschistus (Euschistus) heros* (Fabricius, 1798)**

(Figs 56–58)

Cimex heros Fabricius, 1798: 532.

Euschistus apicalis Dallas, 1851: 203.

Euschistus heros: Stål, 1868: 26; Rolston, 1974: 46–49; Bianchi *et al*. 2019.

Material studied. Cruz Alta: 2#m, 2#f, 24.V.2006, M. T. B. da Silva leg. (UFRG). Derrubadas: 1#f, 13.IV.1983, S. L. Bonatto leg. (UFRG); 2#m, 1#f, 26–30.IX.1983, S. L. Bonatto leg. (UFRG). Santa Maria: 1#m, 1#f, X. 1980, D. Link leg. (UFRG).

Diagnostic features. Body dorsal and ventral surfaces castaneous. Mandibular plates subequal to clypeus, rounded apically (Fig. 57). Internal angles of cicatrices of pronotum dark castaneous. Anterolateral margins of pronotum concave and serrate (Fig. 57). Humeral angles dark, strongly developed, rounded apically and directed anterolaterally (Fig. 57). Scutellum with pale spots and apex with large pale callosity (Fig. 56). Connexivum dark castaneous with a pale macule, posterior angle produced. Posterior margin of abdominal sternite 7 acute. Body length: 10.00–11.00 mm.

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019), maize (Roza-Gomes *et al.* 2011) and soybean (Link & Grazia 1987; Medeiros & Megier 2009; Chevarria *et al*. 2013; Scopel *et al*. 2016). Also reported feeding in mature seeds of red-root amaranth (*Amaranthus retroflexus*), and mature fruits of S*olanum megalochiton*, *S. mauritianum* and *Vassobia breviflora* (Medeiros & Megier 2009).

Distribution in Rio Grande do Sul. Augusto Pestana, Cruz Alta, Derrubadas, Passo Fundo, Santa Maria, Santa Rosa, and Três de Maio (Fig. 58).

New records: Cruz Alta and Derrubadas.

Comments. This species is known as the brown bug or soybean bug. The damage results from the suction of sap from the branches or stems and from pods, limiting production. They also inject toxins, causing "leaf retention".

***Euschistus (Lycipta) picticornis* Stål, 1872**

(Figs 59–62)

Euschistus (*Lycipta*) *picticornis* Stål, 1872b: 23; Rolston, 1982: 291–293.

Euschistus picticornis: Berg, 1879: 280; Berg, 1883: 206; Kirkaldy, 1909: 65; Pennington, 1920: 8; Pirán, 1948: 11.

Material studied. Caçapava do sul: 1#f, mata ciliar, campo, 15.VI.2003, varredura, Bunde & Silva leg. (UFRG); Rio Grande: 1#m, 4#f, Estação Ecológica do Taim, BR 47 Km 96, 04–05.XII.2010, B. B. R. J, Fürstenau & R. J. Fürstenau leg. (UFRG). São Francisco de Paula: 1#f, Floresta Nacional de São Francisco de Paula, 13.I.2007, C. F., Schwertner leg. (UFRG).

Diagnostic features. Body dorsal and ventral surfaces dark castaneous, with wrinkled appearance (Fig. 59). Mandibular plates subequal to clypeus, rounded apically (Fig. 61). Anterolateral margins of pronotum concave and with spaced denticles. Humeral angles dark castaneous to reddish castaneous, strongly developed, rounded apically and directed anterolaterally (Fig. 61). Pronotum, scutellum and corium with pale spots, impunctate. Apex of scutellum with a large pale yellow callosity (Fig. 59). Legs with dark castaneous spots. Veins of the membranous portion of hemelytra reticulate (Fig. 60, black arrow). Connexivum dark castaneous to greenish castaneous with dark spot on angles, posterior angle produced (Fig. 59). Body length: 10.00 mm.

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019), rice (Grazia 1977; Link & Grazia 1987) and soybean (Lopes *et al.* 1974; Link & Grazia 1987).

Distribution in Rio Grande do Sul. Caçapava do Sul, Passo Fundo, Rio Grande, Santa Maria, São Francisco de Paula and Sobradinho (Fig. 62).

New records: Caçapava do Sul.

***Euschistus (Lycipta) triangulator* (Herrich-Schäffer, 1842)**

(Figs 63–64)

Cimex triangulator Herrich-Schäffer, 1842: 95–96.

Euschistus triangulator: Stål, 1860: 19.

Lycipta triangulator: Stål, 1862: 58.

Euschistus (Lycipta) triangulator: Stål, 1872b: 23; Rolston, 1982: 290–291; Weiler *et al*. 2011: 59, 60, 64.

Material studied. Maquiné: 1#f, 01.IV.2006, V. C. Matesco leg. (UFRG); 1#m, 12.X.2005, M. O. Marchiori leg. (UFRG). São Francisco de Paula: 1#m, 18.III.2007, C. F. Schwertner leg. (UFRG).

Diagnostic features. Body dorsal and ventral surfaces castaneous to reddish castaneous, antennae reddish. Mandibular plates subequal to clypeus, rounded apically. Anterolateral margins of pronotum concave and with spaced denticles (Fig. 63). Internal angles of cicatrices of pronotum dark. Humeral angles reddish castaneous, strongly developed, acute apically and directed laterally (Fig. 63). Pronotum with callous transumeral band. Pronotum and scutellum with multiple concolorous impunctate callosities. Apex of scutellum with inconspicuous callosity (Fig. 63). Legs pale with dark castaneous spots. Apex of radial vein with pale yellow callosity. Veins of the membranous portion of hemelytra reticulate. Body length: 9.50–10.50 mm (Garbelotto & Campos 2014).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019).

Distribution in Rio Grande do Sul. Maquiné, Passo Fundo and São Francisco de Paula (Fig. 64).

Glyphepomis adroguensis Berg, 1891

(Figs 65–68)

Glyphepomis adroguensis Berg, 1891: 280–282; Lethierry & Severin, 1893: 129; Kirkaldy, 1909: 68; Pennington, 1920: 8; Kormilev & Pirán, 1952: 301–306; Pirán, 1956: 32; Ruffinelli & Pirán, 1959: 18; Pirán, 1970: 127; Campos & Grazia, 1998: 208–209; Bianchi *et al.*, 2016: 444 (key), 446 (map).

Material studied. Cachoeirinha: 1#m, 1#f, 27.I.1981, M. H. Galileo leg. (UFRG); 2#f,

27.I.1981, H. A. Gastal leg., col. MCN 46112, MCN 46113 (MCNZ); 2#m, II–IV.2004, E. Costa leg. (MCNZ). Capão do Leão: 1#f, X.1990, Romano, C. M., MECB p207, UFPEL, Museu Entomológico, Família Pentatomidae, *Glyphepomis* sp. Silva, E. J. E det. (MECB). Gravataí: 1#m, 17.III.1983, V. L. Pitoni leg., col. MCN 46624 (MCNZ). Guaíba: 1#f, 10–11.III.1980, H. A. Gastal leg., col. MCN–16960 (MCNZ); 1#m, Est. Exp [Estação Experimental Agronômica] Universidade Federal do Rio Grande do Sul, 21.IX.1982, G. Moreira leg. "em Colza", (UFRG). Pelotas: 1#f, XI.1999, Kicköfel, A. leg. (MECB); 1#f, XI.1999, Rodriguez, F. leg. UFPEL (MECB). Porto Alegre: 1#m, 1#f, 31.II.1982, Soffel leg., nº 6797, nº 6300 (UFRG); 13.VII.1986, J. Grazia leg. (UFRG). Rio Grande: 1#f, ESEC Taim [Estação Ecológica do Taim], BR 47, Km 96, 04–05.XII.2010, B. B. R. J. Fürstenau & R. J. Fürstenau leg. (MCZN). Santa Maria: 2#f, 08.III.1986, D. Link leg., "Arroz", (DZUP); 2#f, 04.II.1986, D. Link leg., "Arroz" (DZUP); 1#f, 22.IV.1984 D. Link leg., "Arroz", (DZUP). Santo Antônio da Patrulha: 1#m, 24.VII.1985, Becker leg., "touceiras", (UFRG).

Diagnostic features. Body dorsal and ventral surfaces castaneous, glabrous. Head longer than wide. Mandibular plates shorter than clypeus, rounded apically. Clypeus robust and raised above mandibular plates (Fig. 66). Antennomere 4 conical and slightly grooved dorsally (Fig. 66, arrow). Surface of pronotum convex, anterolateral margins of pronotum concave and reflected (Fig. 66). Humeral angles slightly produced into small tubercles, directed laterally. Basal angles of scutellum with one pale callosity each. Apex of radial vein of corium with inconspicuous callosity (Fig. 65). Mesosternum and abdominal disc black (Fig. 67). Body length: 6.00–7.00 mm.

Recorded host plants. Rice (Campos & Grazia 1998; Farias *et al.* 2012).

Distribution in Rio Grande do Sul. Cachoeirinha, Capão do Leão, Charqueadas, Eldorado do Sul, Gramado, Gravataí, Guaíba, Pelotas, Porto Alegre, Rio Grande, Santa Maria, Santo Antônio da Patrulha and Taquara (Fig. 68).

Glyphepomis pelotensis Campos & Grazia, 1998

(Figs 69–71)

Glyphepomis pelotensis Campos & Grazia, 1998: 210–212; Bianchi *et al.*, 2016: 444 (key), 446 (map).

Material studied. Pelotas: 1#m, 25.IX.1975, Trebien leg., *Glyphepomis pelotensis* Campos & Grazia PARATYPE (UFRG); 1#f, 07.X.1975, Haglioni leg., *Glyphepomis pelotensis* Campos & Grazia PARATYPE (UFRG); 1#f, 17.II.1950, Biezanko leg., *Glyphepomis pelotensis* Campos & Grazia PARATYPE, col. MRCN 002788, Série: 20 - N.º 067 (MCZN); 1#f, 05.IX.1994, Adriano leg., *Glyphepomis pelotensis* Campos & Grazia PARATYPE (MZUSP).

Diagnostic features. Body dorsal and ventral surfaces dark castaneous. Head longer than wide. Mandibular plates shorter than clypeus, rounded apically. Clypeus robust and raised above the mandibular plates. Antennomere 4 conical and slightly grooved dorsally. Surface of pronotum convex, anterolateral margins of pronotum concave and reflected (Fig. 69). Humeral angles slightly projected into small tubercles, directed laterally (Fig. 69). Basal angles of scutellum with one callosity each. Apex of radial vein of corium with inconspicuous callosity. Thoracic and abdominal disc black (Fig. 70). Body length: 7.00–7.50 mm.

Recorded host plants. Rice (Campos & Grazia 1998).

Distribution in Rio Grande do Sul. Pelotas and Santa Maria (Fig. 71).

Comments. External appearance very similar to *G. adroguensis*; both can be differentiated with certainty only by analyzing the morphology of external genitalia.

Glyphepomis setigera Kormilev & Pirán, 1952

(Figs 72–74)

Glyphepomis setigera Kormilev & Pirán, 1952: 301–306; Pirán, 1956: 32; Ruffinelli & Pirán, 1959: 18; Pirán, 1963: 337; Pirán, 1967: 21; Campos & Grazia, 1998: 207–208; Bianchi *et al*., 2016: 444 (key), 446 (map).

Material studied. Capão do Leão: 4#m, 9#f, II.1988, Belarmino, L. C. leg., light trap near rice crops (UFRG); 2#m, 1#f, 04.IV.1996, MECB p210, UFPEL, Museu Entomológico, Família Pentatomidae, *Glyphepomis* sp. Silva, E. J. E. det. (MECB). Imbé: 1#m, II.1961,

R.G.S.E & L. Buckup leg., (UFRG). Pelotas: 1#m, 01.V.1965. Santa Vitória do Palmar: 1#f, XI.1999, Schuemam leg., MECB, Família Pentatomidae, *Glyphepomis* Silva, E. J. E. det., UFPEL (MECB).

Diagnostic features. Body dorsal and ventral surfaces dark castaneous and with bristles. Head longer than wide. Mandibular plates shorter than clypeus, rounded apically. Clypeus robust and raised above the mandibular plates. Antennomere 4 conical and slightly grooved dorsally (Fig. 72). Surface of pronotum convex, anterior angles of pronotum strongly developed into an acute spine (Fig. 73, black arrow). Anterolateral margins of pronotum concave and reflected. Humeral angles slightly projected into small tubercles, directed laterally (Figs 72–73). Basal angles of scutellum with one callosity each. Apex of radial vein of corium with inconspicuous callosity. Distal half of legs dark castaneous with small spots. Mesosternum and abdominal disc black. Body length: 4.50–6.50 mm.

Recorded host plants. Rice (Campos & Grazia 1998).

Distribution in Rio Grande do Sul. Capão do Leão, Imbé, Pelotas, Santa Maria and Santa Vitória do Palmar (Fig. 74).

***Hypatropis inermis* (Stål, 1872)**

(Figs 75–77)

Melpia inermis Stål, 1872: 31; Berg, 1879: 50; Lethierry & Severin, 1893: 146.

Hypatropis inermis: Kirkaldy, 1909: 91.

Oenopiella impicta Jensen-Haarup, 1928: 186; Fernandes & Grazia, 1996: 347–349.

Material studied. Cachoeirinha: 2#f, 17.VII.1985, Albuquerque leg. (UFRG). Eldorado do Sul: 1#m, 16.VII.1983, V. Aner leg. (UFRG). Pelotas: 1#m, 10.X.1967 (UFRG); 1#f, 08.V.1978, Elói leg. (UFRG). Triunfo: 1#f, 25.V.1990, L. Moura leg. (MCNZ).

Diagnostic features. Body elongate, convex ventrally. Body dorsal and ventral surfaces pale yellow to castaneous (Fig. 75). Mandibular plates subequal to clypeus, rounded apically. Antennomeres 1 and 2 subequal in length. Labium short, ending between mesocoxae (Fig. 76).

Anterolateral margins of pronotum straight and crenulate. Humeral angles not developed. Apex of radial vein of corium with inconspicuous callosity (Fig. 75). Body length: 8.00–9.00 mm (Garbelotto & Campos 2014).

Recorded host plants. Rice (Fernandes & Grazia 1996; Krinski *et al.* 2015).

Distribution in Rio Grande do Sul. Cachoeirinha, Eldorado do Sul, Guaíba, Pelotas, Santo Antônio da Patrulha and Triunfo (Fig. 77).

***Loxa deducta* Walker, 1867**

(Figs 78–81)

Loxa deducta Walker, 1867: 242.

Material studied. Cachoeira do Sul: 1#f, Bairro Santo Antônio, 14.VI.2008, P. Albuquerque leg. (UFRG). Porto Alegre: 1#m, 23.XII.1999, (CMPA), J. Grazia leg. (UFRG); 1#f, Universidade Federal do Rio Grande do Sul, 26.III.1999, J. Grazia leg. (UFRG). Santa Maria: 1#m, 21.I.1972, D. Link leg., light trap, ZUEC–1558 (UFRG); 2#f, 19.XII.1971, D. Link leg., light trap, ZUEC–1555, 1556 (UFRG).

Diagnostic features. Body dorsal and ventral surfaces green (Fig. 78). Outline of lateral margin of mandibular plates, anterolateral margins of pronotum and lateral margin of corium reddish (Fig. 80). Mandibular plates longer than clypeus and rounded apically, with dense red punctures on the mesial and lateral margins. Anterolateral margins of pronotum concave and with spaced denticles (Fig. 80). Humeral angles strongly developed, acute apically and directed laterally. Corium with impunctate pale callosities, irregularly distributed (Fig. 78). Body length: 13.00–19.50 mm (Garbelotto & Campos 2014).

Recorded host plants. Soybean (Costa & Link 1974; Lopes *et al.* 1974; Link & Grazia 1987; Grazia & Frey-da-Silva 2001).

Distribution in Rio Grande do Sul. Cachoeira do Sul, Porto Alegre, Santa Maria and São Sepé (Fig. 81).

***Mayrinia curvidens* (Mayr, 1864)**

(Figs 82–84)

Loxa curvidens Mayr, 1864: 909.

Mayrinia curvidens: Pirán, 1956: 30; Grazia-Vieira, 1972: 119–121.

Material studied. Derrubadas: 1#f, Parque Estadual do Turvo, Trilha Salto Yucumá, 19.IV.2004, J. L. C. Bernardes leg. (UFRG); 1#m, Parque Estadual do Turvo, 17.IV.2004, J. L. C. Bernardes leg. (UFRG). Maquiné: 1#m, Forqueta, varredura, 16.IX.2006, A. Ferrari leg., J. Grazia det. 2006, LES–936 (UFRG); 2#f, Sítio da Amizade, inspeção visual, 27.V.2006, A. Ferrari & L. M. Weiler leg., J. Grazia det. 2006, LES–930, 932 (UFRG). São Francisco de Paula: 1#f, Floresta Nacional de São Francisco de Paula, Trilha 1, Varredura, 09.VI.2006, A. Frey da Silva leg., J. Grazia det. 2006 (UFRG).

Diagnostic features. Body dorsal and ventral surfaces green (Fig. 82), antennae reddish. Mandibular plates longer than clypeus. Anterolateral margins of pronotum concave and with spaced denticles. Humeral angles slightly developed, acute apically and anteriorly directed, black (Fig. 83). Each corium with one pale calosity. Connexivum concealed and immaculate. Body length: 11.00–14.00 mm (Garbelotto & Campos 2014).

Recorded host plants. Rice (Lopes *et al.* 1974; Link & Grazia 1987) and soybean (Costa & Link 1974; Lopes *et al.* 1974; Link & Grazia 1987).

Distribution in Rio Grande do Sul. Derrubadas, Maquiné, Pelotas, Porto Alegre, Santa Maria, São Francisco de Paula, São Leopoldo and São Sepé (Fig. 84).

New records: Derrubadas, Maquiné and São Francisco de Paula.

***Mormidea notulifera* Stål, 1860**

(Figs 85–87)

Mormidea notulifera Stål, 1860: 21.

Mormidea (*Mormidea*) *notulifera*: Berg, 1878: 300; Kirkaldy, 1909: 60; Pennington, 1920: 7;

Pirán, 1948: 12; Rolston 1978: 191.

Material studied. Derrubadas: 1#m, Parque Estadual do Turvo, Estrada Salto 13.IV.1983, S. L. Bonatto leg., S. L. Bonatto det. 1985 (UFRG). Júlio de Castilhos: 1#f, 19.X.1981, Link & Costa leg., Tremoço, J. Grazia det, 1986 (UFRG); 1#m, 19.XI.1981, Link & Costa leg., Tremoço. Santa Maria: 1#m, 15.XI.1973, J. A. Fonseca leg., J. Grazia det. 1986 (UFRG); 1#m, 28.IV.1981, D. Link leg. (UFRG).

Diagnostic features. Body dorsal surface light castaneous, humeral angles black, pale yellow spots next to cicatrices of pronotum (Fig. 85); ventral surface yellow. Anterolateral margins of pronotum concave. Humeral angles slightly produced and obtuse. All angles of scutellum and apex of radial vein of corium with a pale yellow callosity each (Fig. 85). Body length: 7.00– 8.50 mm (Garbelotto & Campos 2014).

Recorded host plants. Oat (Campos *et al.* 2009), rice (Link & Grazia 1987; Weber *et al*. 1988; Campos *et al.* 2009) and wheat (Link & Grazia 1987; Campos *et al.* 2009).

Distribution in Rio Grande do Sul. Derrubadas, Guaíba, Júlio de Castilhos, Santa Maria and São Francisco de Paula (Fig. 87).

Comments. The damage this species causes in rice depends on the development stage of the plant. During the milk stage of grain filling, rice grains wither due to the stink bug's feeding. During dough phase the punctured area darkens and thickens.

***Mormidea v-luteum* (Lichtenstein, 1796)**

(Figs 88–91)

Cimex V-luteum Lichtenstein, 1796: 106.

Mormidea (*Mormidea*) *croceipes*: Berg, 1878: 299.

Mormidea (*Mormidea*) *spegazinii* Berg, 1883: 204; Kirkaldy, 1909, 61; Pennington, 1920: 8.

Mormidea (*Mormidea*) *v-luteum*: Kirkaldy, 1909: 59; Pennington, 1920: 8; Rolston, 1978: 208.

Material studied. Guaíba: 1#m, 22.X.1985, M. C. Del Vecchio leg. (UFRG). Júlio de Castilhos: 1#f, 14.X.1981, Tremoço, J. Grazia det. 1986 (UFRG); 1#f, 19.XI.1981, Link & Costa leg., Tremoço, J. Grazia det. 1986 (UFRG). Santa Maria: 1#f, 04.II.1986, D. Link leg., J. Grazia det. 1986 (UFRG). Rio Grande: 1#f, Estação Ecológica do Taim, 17.III.1982, J. Grazia leg., J. Grazia det. 19?? (UFRG).

Diagnostic features. Body dorsal surface black, with pale yellow spots next to cicatrices of pronotum (Fig. 88); ventral surface yellow. Anterolateral margins of pronotum concave. Humeral angles with variable development, from a small round projection (Fig. 90) to an acute spine (Fig. 89). Basal angles, basal half of lateral margins and apex of scutellum, and apex of radial vein of corium with a pale yellow callosity each (Fig. 88). Connexivum of variable color, from pale green to orange. Body length: 7.50– 8.50 mm (Garbelotto & Campos 2014).

Recorded host plants. Canola **(**Bianchi *et al*. 2019), rice (Grazia 1977; Martins *et al*. 1986; Link & Grazia 1987), soybean (Costa & Link 1974; Lopes *et al.* 1974) and wheat (Lopes *et al.* 1974).

Distribution in Rio Grande do Sul. Guaíba, Júlio de Castilhos, Passo Fundo, Pelotas, Rio Grande, Santa Maria, São Francisco de Paula, São Sepé and Viamão (Fig. 91).

***Nezara viridula* (Linnaeus, 1758)**

(Figs 92–95)

Cimex viridulus Linnaeus, 1758: 444.

Nezara viridula; Amyot & Serville, 1843; Stål, 1865: 193–195; 1872: 41; 1876: 91; Lethierry & Severin, 1893: 167; Kirkaldy, 1909: 117, 381; Schouteden, 1910: 88; Freeman, 1940: 357–360; Pirán, 1948: 13; DeWitt & Godfrey, 1972: 1–23; Costa & Link, 1974: 398–399; Azim & Shafee 1978: 507–508; Zheng, 1982: 195–196; Cassis & Gross, 2002: 520–524; Rider, 2006: 329–330; Ferrari *et al*. 2010: 17–18.

Material studied. Cachoeirinha: 1#f, 18.IV.1981, R. P. Mocellin leg. (UFRG). Canoas: 1#m, 22.XII.1985, J. A. M. Fernandes leg. (UFRG). Cruz Alta: 1#m, 19.X.1981, Link & Costa leg., "em Colza", (UFRG). Estrela: 1#f, 01.IV.07, C. Greve leg. (UFRG). Guaíba: 1#m, 2#f,

01.X.1985, M. C. Del Vecchio leg., “em Joá”(UFRG). Rio Grande: 1#m, Estação Ecológica do Taim, 23.III.1981, 04.IV.1981, J. Grazia leg. (UFRG). Santa Maria: 1#m, 02.VII.1980, J. Pauichi leg., J. Grazia det. 1986 (UFRG); 1#m, 26.IV.1982, Costa & Link leg., “em soja” (UFRG); 1#m, 2#f, XII.1981, D. Link leg., “em Feijão”, J. Grazia det. 1986 (UFRG); 1#m, 07.XII.1981, Link & Costa leg., “em Colza”, J. Grazia det. 1986 (UFRG).

Diagnostic features. Body dorsal and ventral surfaces green to yellow. Mandibular plates subequal to clypeus and rounded apically. Anterolateral margins of pronotum straight. Humeral angles not developed (Fig. 92). Abdominal spine free, not reaching metacoxae (Fig. 93). Spiracles green, surrounded by a green maculae (Fig. 94). Body length: 10.00 to 15.00 mm.

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019), maize (Roza-Gomes *et al.* 2011; Valicente 2015), oat (Pereira & Salvadori 2020), rice (Lopes *et al.* 1974; Link & Grazia 1987), rye (Pereira & Salvadori 2020), soybean (Costa & Link 1974; Lopes *et al.* 1974; Grazia 1977; Link & Grazia 1987; Medeiros & Megier 2009) and wheat (Lopes *et al.* 1974; Link & Grazia 1987).

Distribution in Rio Grande do Sul. Cachoeirinha, Canoas, Cruz Alta, Estrela, Guaíba, Passo Fundo, Rio Grande, Santa Maria and São Sepé (Fig. 95).

Comments. In some specimens, the anterior half of pronotum and posterolateral margins of head are yellowish (see Garbelotto & Campos 2014).

***Oebalus poecilus* (Dallas, 1851)**

(Figs 96–97)

Mormidea poecila Dallas, 1851: 55.

Oebalus rufescens Haglund, 1868.

Mormidea (*Mormidea*) *exigua* Berg, 1891: 239.

Mormidea (*Mormidea*) *poecila*: Pennington, 1920: 7.

Solubea poecila: Sailer, 1944: 121.

Oebalus poecilus: Quintanilla *et al*., 1976: 125.

Material studied. Eldorado do Sul: 1#m, Fazenda Minuano, 16.VIII.1989, Aner, U. leg. (UFRG). Guaíba: 2#m, Km 9, BR 116, 08.XI.1985, M. C. Del Vecchio leg., J. Grazia det. (UFRG). Tapes: 1#m, XI.1963, M. Becker det. 1967 (UFRG). Rio Grande: 2#m, Estação Ecológica do Taim, 17.III.1982, J. Grazia leg. (UFRG).

Diagnostic features. Body elongate, dorsal surface ferruginous to dark castaneous, with one pair of pale yellow callosities on pronotum, three on scutellum and one at the apex of corium radial vein (Fig. 96). Mandibular plates subequal to clypeus and rounded apically. Pronotum sloping. Anterolateral margins of pronotum concave. Humeral angles with variable development, from weakly produced to forming an acute spine, directed laterally (Fig. 96). Body length: 7.00–10.00 mm.

Recorded host plants. Canola (Bianchi *et al*. 2019), rice, soybean and wheat (Grazia 1977; Link & Grazia 1987; Kishino & Alves 1994; Panizzi 2008a).

Distribution in Rio Grande do Sul. Eldorado do Sul, Guaíba, Passo Fundo, Pelotas, Rio Grande, Santa Maria and Tapes (Fig. 97).

Comments. This species is known as the small rice stink bug. Comparisons between this species and *O. ypsilongriseus* are written in the latter's comments section.

***Oebalus ypsilongriseus* (De Geer, 1773)**

(Figs 98–99)

Cimex ypsilon-griseus De Geer, 1773: 333.

Oebalus ypsilonoides Berg, 1878: 302.

Solubea ypsilonoides: Kirkaldy, 1909: 62.

Solubea ypsilionides [*sic*]: Pennington, 1920: 8.

Solubea ypsilongriseus: Sailer, 1944: 116.

Solubea grisescens Sailer, 1944: 118.

Oebalus ypsilongriseus: Quintanilla *et al*., 1968: 33.

Material studied. Guaíba: 1#m, 24.II.1988, M. C. Del Vecchio & J. A. M, Fernandes leg., "Sobre gramíneas vizinhas à lavouras de Soja", J. Grazia det. (UFRG); 1#f, 15.III.1974, E. Heinrichs leg., "Soja" (UFRG); 1#f, 24.VIII.1988, "vizinho à lavoura de Soja", M. C. Del Vecchio & J. A. M. Fernandes, J. Grazia det. 19?? (UFRG).

Diagnostic features. Body elongate and slim, dorsal surface castaneous with two small pale yellow spots on pronotum (Fig. 98). Mandibular plates subequal to clypeus and rounded apically. Pronotum sloping, anterolateral margins of pronotum concave. Humeral angles with variable development, from weakly produced to forming an acute spine, directed anterolaterally, black. Scutellum with three yellow callosities, of variable size (Fig. 98). Body length: 8.00–10.00 mm.

Recorded host plants. Oat (Campos *et al.* 2009); rice, soybean (Grazia 1977; Link & Grazia 1987; Del Vecchio & Grazia 1992) and wheat (Link & Grazia 1987; Campos *et al.* 2009). This species may also use sorghum (*Sorghum bicolor*) and *Echinochloa* spp., *Paspalum* spp., *Brachiaria* spp., *Digitaria* spp. grasses as alternative hosts (Ferreira *et al*. 2001; Hickel *et al*. 2016).

Distribution in Rio Grande do Sul. Eldorado do Sul, Guaíba, Santa Maria and São Gabriel (Fig. 99).

Comments. This species is similar to *O. poecilus*, being differentiated by having yellow callosities only on scutellum (while *O. poecilus* also has spots on pronotum and corium). The humeral angles spines, when strongly developed, are also different: they are directed anterolaterally in *O. ypsilongriseus*, but directed laterally in *O. poecilus*. Both species have seasonal morphological dimorphism, with active adults being more colorful and with well-developed spines, and overwintering adults mostly castaneous with shorter and rounded lateral spines (Albuquerque 1993) (see Garbelotto & Campos 2014).

***Piezodorus guildinii* (Westwood, 1837)**

(Figs 100–103)

Rhaphigaster guildinii Westwood, 1837: 31.

Piezodorus guildinii: Uhler, 1894.

Material studied. Cruz Alta: 1#m, 14.X.1981, Link & Costa leg., Linho, J. Grazia det. 1986 (UFRG); 1#m, Fecotrigo, M. T. B. da Silva leg. (UFRG). Júlio de Castilhos: 1#f, 14.X.1981, Link & Costa leg., Tremoço, J. Grazia det. 1986 (UFRG). Santa Maria: 1#m, XI.1981, D. Link leg., Linho, J. Grazia det. 1986 (UFRG); 1#m, Tremoço Amarelo, J. Grazia det. 1986 (UFRG).

Diagnostic features. Body dorsal and ventral surfaces green to yellow (Fig. 100). Mandibular plates subequal to clypeus and rounded apically. Pronotum with a red stripe at posterior third (Fig. 102). Anterolateral margins of pronotum straight. Humeral angles not developed (Fig. 102). Abdominal spine reaching the mesocoxae (Fig. 101, red arrow), sometimes extended to the head. Body length: 8.00–9.00 mm (Garbelotto & Campos 2014).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019) and soybean (Costa & Link 1974; Link & Grazia 1987; Panizzi 2008b; Medeiros & Megier 2009).

Distribution in Rio Grande do Sul. Cruz Alta, Júlio de Castilhos, Passo Fundo, Santa Maria and São Sepé (Fig. 103).

New records: Cruz Alta and Júlio de Castilhos.

***Thyanta (Argosoma) humilis* Bergroth, 1891**

(Figs 104–106)

Pentatoma patruelis Stål, 1859: 226. Preoccupied.

Thyanta patruelis Berg, 1878: 23; Torre-Bueno 1915: 161.

Thyanta (*Argosoma*) *humilis* Bergroth, 1891: 225.

Thyanta (*Argosoma*) *patruelis* Rider & Chapin, 1991: 37.

Material studied. Maquiné: 1#f, Garapiá-varredura, 21.XII. 2006, R. C. Bins-Neto & L. M. Weiler, LES–926; 1#f, Trilha 5, guarda-chuva, 03.IV.2006, J. L. C. Bernardes leg., LES –925, J. Grazia det. 2006 (UFRG); 1#f, Trilha 4, 02.IV.2006, J. L. C. Bernardes leg., LES–922, J. Grazia det. 2006 (UFRG). Santa Maria: 1#f, 26.IV.1987, D. Link leg., "Erva de bicho" (UFRG).

Diagnostic features. Body dorsal and ventral surfaces green to castaneous. Red macule on dorsal median area of head and apex of scutellum (Fig. 104). Mandibular plates subequal to clypeus and rounded apically (Fig. 105). Pronotum with a red to purple transumeral band (Fig. 104). Anterolateral margins of pronotum straight to slightly concave (Figs 104–105). Humeral angles slightly developed, rounded apically (Fig. 105). Body length: 7.50–9.50 mm (Garbelotto & Campos 2014).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019).

Distribution in Rio Grande do Sul. Maquiné, Passo Fundo and Santa Maria (Fig. 106).

New records: Maquiné and Santa Maria.

***Thyanta (Thyanta) perditor* (Fabricius, 1794)**

(Figs 107–108)

Cimex perditor Fabricius, 1794: 102.

Thyanta perditor: Pennington, 1920: 9; Rider & Chapin, 1991: 10.

Material studied. Alecrim: 27.X.1982, R. Golfetto leg., J. Grazia det. 1986 (UFRG). Júlio de Castilhos: 1#m, 19.X.1981, "Tremoço", J. Grazia det. 1986 (UFRG). Santa Maria: 1#m, 1#f, XI.1981, Linho, D. Link leg., J. Grazia det. 1986 (UFRG).

Diagnostic features. Body dorsal and ventral surfaces green. Ferruginous macule on dorsal median area of head (Fig. 107). Mandibular plates subequal to clypeus and rounded apically. Pronotum with a red transumeral band; cicatrices of pronotum with dark internal

angles. Anterolateral margins of pronotum slightly concave (Fig. 107). Humeral angles developed, acute apically, directed anterolaterally (Fig. 107). Connexivum with yellow to orange macule. Body length: 10.50–11.00 mm (Garbelotto & Campos 2014).

Recorded host plants. Canola (Marsaro Jr. *et al*. 2017; Bianchi *et al*. 2019), maize (Tomacheski & Panizzi 2018), oat (Pereira & Salvadori 2020), rice (Panizzi *et al.* 2012), soybean (Tomacheski & Panizzi 2018) and wheat (Pereira & Salvadori 2011).

Distribution in Rio Grande do Sul. Alecrim, Júlio de Castilhos and Passo Fundo (Fig. 108).

***Tibraca exigua* Fernandes & Grazia, 1998**

(Figs 109–112)

Tibraca exigua Fernandes & Grazia, 1998: 1057.

Material studied. Camaquã: 1#m, 08.V.1991, H. Moreira leg. (UFRG). Pelotas: 1#f, VI.1991, Marcolin leg. (UFRG); 1#m, 10.VI.1990, M. N. Miranda leg. (UFRG); 1#m, 20.II.1991, P. Welzel leg. (UFRG); 1#m, V.1991, R. Zepra leg. (UFRG); 1#f, 28.IV.1991, R. Von Laer leg. (UFRG); 1#m, III.1991, Silveira leg. (UFRG); 1#m, 27.V.1994, J. T. Zanusso leg. (UFRG); VI.1990, 1#m, Costa leg. (UFRG); 27.IV.1993, 1#m, O. Maguelly leg. (MCNZ); 1#m, VI.1990, Marques leg. (UFRG); 1#m, V.1990, Schallens leg. (UFRG); 1#m, IV.1991, Monteiro leg. (UFRG); 1#m, 26.X.1994, I. M. Silva leg. (UFRG); 1#f, 17.III.1991, H. Gastal leg. (UFRG); 1#m, 17.V.1991, D. Chapon leg. (MECB). São Francisco de Paula: 1#f, 17–19.XII.2005, V. C. Matesco leg. (UFRG).

Diagnostic features. Body dorsal and ventral surfaces dark castaneous (Fig. 109, 111). Head longer than wide. Mandibular plates shorter than clypeus, rounded apically (Fig. 110). Clypeus robust and raised above the mandibular plates. Antennomere 2 smaller than the first (Fig. 110, red arrow). Anterolateral margins of pronotum impunctate or rarely punctate at the lateral portion (Fig. 110). Internal angles of cicatrices of pronotum with pale yellow callosity. Humeral angles slightly developed (Fig. 110). Apex of radial vein of corium with pale yellow callosity. Connexivum castaneous with margin light castaneous and a small black spot at the

apex (Fig. 109). Body length: 9.00–12.00 mm (Fernandes & Grazia 1998).

Recorded host plants. Rice (Fernandes & Grazia 1998).

Distribution in Rio Grande do Sul. Camaquã, Canguçu, Capão do Leão, Pelotas and São Francisco de Paula (Fig. 112).

Comments. This species is similar to *T. limbativentris*, being differentiated by its darker color and smaller body size.

***Tibraca limbativentris* Stål, 1860**

(Figs 2–3; 113–116)

Tibraca limbativentris Stål, 1860: 18; Stål, 1867: 26; Stål, 1872b: 30; Lethierry & Severin, 1893: 132; Kirkaldy, 1909: 72; Bosq, 1937: 127; Barber, 1941: 111; Costa Lima, 1947: 312; Pirán, 1956: 32; Ruffinelli & Pirán, 1959: 21; Benvegnú, 1968: 88; Becker & Grazia, 1971: 20; Fernandes & Grazia, 1998: 1052–1054.

Mormidea basalis Walker, 1868: 553.

Mormidea walkeri Lethierry & Severin, 1893: 124; Kirkaldy, 1909: 72.

Tibraca basalis; Distant, 1899: 438.

Ogmocoris reinigeri Costa Lima, 1935: 16; Silva, 1945: 596; Costa Lima, 1947: 311.

Material studied. Cachoeirinha: 10#m, 8#f, IRGA [Instituto Rio Grandense do Arroz], 05.IV.2000, J. Oliveira leg. (UFRG). Eldorado do Sul: 2#m, 2#f, 17.IX.1992, J. A. M. Fernandes leg. (UFRG). Porto Alegre: 1#f, 21.VII.1993, J. Grazia leg. (UFRG); 1#m, 27.VIII.1974, Dalmolin leg. (UFRG).

Diagnostic features. Body dorsal and ventral surfaces castaneous. Head longer than wide. Mandibular plates shorter than clypeus, rounded apically (Fig. 113). Clypeus robust and raised above the mandibular plates. Antennomere 2 smaller than the first. Outline of anterolateral margins of pronotum impunctate and pale yellow, straight (Fig. 113). Internal angles of cicatrices of pronotum with one pale yellow callosity each. Humeral angles slightly

developed, acute apically, directed laterally. Apex of radial vein of corium with pale yellow callosity (Fig. 114). Connexivum with dark castaneous macule on anterior angles (Figs 2, 113). Sub-lateral margin of sternites yellow with sparsely distributed punctures. (Fig. 115). Body length: 13.00–16.00 mm (Fernandes & Grazia 1998; Garbelotto & Campos 2014).

Recorded host plants. Rice (Botta *et al*. 2014; Hickel *et al*. 2016; Alves *et al.* 2016; Fuentes-Rodriguez *et al*. 2019), soybean (Costa & Link 1974; Link & Grazia 1987) and wheat (Link & Grazia 1987). May use as alternate hosts a variety of grasses (*Andropogon lateralis*, *Eryngium eburneum*, *Paspalum urvillei*, *Schizachyrium microstachyum*, *Tridens brasiliensi*s) and, sometimes, maize.

Distribution in Rio Grande do Sul. Cachoeirinha, Capão do Leão, Eldorado do Sul, Guaíba, Itaqui, Pelotas, Porto Alegre, Santa Maria and São Sepé (Fig. 116).

Comments. This species is the most important pest in rice crops in Brazil.

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References

Albuquerque, G.S. (1993) Planting time as a tactic to manage the small rice stink bug, *Oebalus poecilus* (Hemiptera, Pentatomidae), in Rio Grande do Sul, Brazil. *Crop Protection*, 12 (6), 627–630.

https://doi.org/10.1016/0261-2194(93)90128-6

Alves, T.M., Maia, A.H.N. & Barrigossi, J.A.F. (2016) Spatial distribution and coexisting patterns of adults and nymphs of *Tibraca limbativentris* (Hemiptera: Pentatomidae) in paddy rice fields. *Environmental Entomology*, 45 (6), 1505–1514.

https://doi.org/10.1093/ee/nvw141

Amyot, C.J.B. & Serville, A. (1843) *Histoire Naturelle des Insectes*. *Hémiptères.* Librairie Encyclopédique de Roret, Fain et Thunot, Paris, 144–151 pp.

Azim, M.N. & Shafee, S.A. (1978) Indian species of the genus *Nezara* Amyot and Serville (Hemiptera: Pentatomidae). *Journal of the Bombay Natural History Society*, 75 (2), 507–508.

Barber, H.G. (1941) A new species of *Tibraca*, injurious to rice in Ecuador (Hemiptera-Heteroptera: Pentatomidae). *Proceedings of the Entomological Society of Washington*, 43 (5), 110–111.

Barão, K.R., Ferrari, A. & Grazia, J. (2020) Phylogenetic analysis of the *Euschistus* group (Hemiptera: Pentatomidae) suggests polyphyly of *Dichelops* Spinola, 1837 with the erection of *Diceraeus* Dallas, 1851, stat. rev. *Austral Entomology*, 1–14.

https://doi.org/10.1111/aen.12489

Becker, M. & Grazia, J. (1971) Contribuição ao conhecimento da superfamília Pentatomoidea na Venezuela (Heteroptera). *Iheringia, Série Zoologia*, 40, 3–26.

Benvegnú, G.H. (1968) "*Paramecocephala*" um novo gênero de Pentatomini do Brasil (Hemiptera, Pentatomidae, Pentatominae). *Revista Brasileira de Biologia*, 28 (1), 87–96.

Berg, C. (1878) Hemiptera Argentina enumeravit speciesque novas descripsit. *Anales de la Sociedad Científica Argentina*, 6, 23–311.

https://doi.org/10.5962/bhl.title.36493

Berg, C. (1879) *Hemiptera Argentina enumeravit speciesque novas*. ex typographiae P.E. Coni, Bonariae, 316 pp.

https://doi.org/10.5962/bhl.title.36493

Berg, C. (1883) Addenda at emendanda ad Hemiptera Argentina. *Anales de la Sociedad Científica Argentina*, 16, 204–206.

Berg, C. (1891) Nova Hemiptera Faunarum Argentinae et Uruguayensis. *Anales de la Sociedad Científica Argentina*, 32, 239–287.

Berg, C. (1892) Nova Hemiptera faunarum Argentinae et Uruguayensis. *Anales de la Sociedad Científica Argentina*, 33, 6.

Bergroth, E. (1891) Contributions à l'étude des Pentatomides. *Revue d'Entomologie*, 10, 200–235.

Bianchi, F.M., Gonçalves, V.R., Souza, J.R. & Campos, L.A. (2016) Description of three new species of *Glyphepomis* Berg (Heteroptera: Pentatomidae: Pentatominae). *Zootaxa*, 4103 (5), 443–452.

http://doi.org/10.11646/zootaxa.4103.5.2

Bianchi, F.M., Deprá, M., Ferrari, A., Grazia. J., Valente, V.L.S. & Campos, L.A. (2017) Total evidence phylogenetic analysis and reclassification of *Euschistus* Dallas within Carpocorini (Hemiptera; Pentatomidae: Pentatominae). *Systematic Entomology*, 42, 399–409.

https://doi.org/10.1111/syen.12224

Bianchi, F.M., Marsaro Jr., A.L., Grazia, J., Pereira, P.R.V.S. & Panizzi, A.R. (2019) Diversity of Stink Bugs (Pentatomidae) Associated with Canola: Looking for Potential Pests. *Neotropical Entomology*, 48, 219–224.

https://doi.org/10.1007/s13744-018-0642-3

Binns, M.R., Nyrop, J.P. & Van der Werf, W. (2000) *Sampling and monitoring in crop protection: the theoretical basis for developing practical decision guides*. CABI Press, Wallingford, 284 pp.

https://doi.org/10.1079/9780851993478.0000

Bosq, J.M. (1937) Lista preliminar de los hemipteros (heteropteros), especialmente relacionados con la agricultura nacional. *Revista de la Sociedade Entomologica Argentina*, 9, 111–134.

Botta, R.A., Silva, F.F., Pazini, J.B. & Rubernich, R. (2014) Estratégia de manejo de *Tibraca limbativentris* Stål (Hemiptera: Pentatomidae) na entressafra da cultura do arroz irrigado. *Revista de agricultura*, 89 (3), 224–231.

https://doi.org/10.37856/bja.v89i3.97

Brailovsky, H. (1981) Revisión del gênero *Arvelius* Spinola (Hemiptera-Heteroptera-Pentatomidae-Pentatomini). *Anais do Instituto de Biología de la Universidad Nacional Autónoma de México*. *Serie Zoología*, 51, 239–298.

Buckup, L. (1957) Pentatomídeos Neotropicais - I. Sobre o gênero *Agroecus* Dallas, 1851 com a descrição de duas espécies novas (Hemiptera-Pentatomidae). *Iheringia, Série Zoologia*, 6, 1–20.

Buckup, L. (1961) Os pentatomídeos do Estado do Rio Grande do Sul (Brasil) (Hemiptera-Heteroptera-Pentatomidae). *Iheringia, Série Zoologia*, 16, 1–24.

Bunde, P.R.S., Grazia, J., Mendonça Júnior, M.S., Schwertner, C. F., Silva, E. J. E. & Garcia, É.N. (2010) Pentatomidae (Hemiptera: Heteroptera) of the Pampa biome: Serra do Sudeste and Parque de Espinilho da Barra do Quaraí, Rio Grande do Sul, Brazil. *Biota Neotropica*, 10 (3), 83–88.

https://doi.org/10.1590/S1676-06032010000300008

Bunde, P.R.S., Grazia, J. & Mendonça Filho, M. (2006) Nova espécie de *Euschistus* (*Mitripus*) da Argentina e sul do Brasil (Hemiptera, Pentatomidae, Pentatominae). *Iheringia, Série Zoologia*, 96 (3), 289–291.

https://doi.org/10.1590/S0073-47212006000300003

Campos, L.A. & Grazia, J. (1998) Revisão de *Glyphepomis* Berg, 1891 (Heteroptera, Pentatomidae). *Revista Brasileira de Entomologia*, 41 (2–4), 203–212.

Campos, L.A., Bertolin, T.B.P. & Martins, F.S. (2009) Diversidade de Pentatomoidea

(Hemiptera, Heteroptera) em três fragmentos de Mata Atlântica no sul de Santa Catarina. *Iheringia, Série Zoologia*, 99 (2), 165–171.

https://doi.org/10.1590/S0073-47212009000200008

Campos, L.A., Bianchi, F.M. & Garbelotto, T.A. (2012) On the Genus *Chinavia* Orian: Additions to the Descriptions of Three Species (Hemiptera: Pentatomidae). *Neotropical Entomology*, 41, 163–167.

https://doi.org/10.1007/s13744-012-0027-y

Cassis, G. & Gross, G.F. (2002) Hemiptera: Heteroptera (Pentatomomorpha). *In:* Houston, W.W.K. & Wells, A. (Eds.), *Zoological Catalog of Australia*. *Vol. 27*. CSIRO, Melbourne, pp. 1–737.

Chevarria, V.V., Del Ponte, E.M. & Jahnke, M.S. (2013) Número de geração de um percevejo e seu parasitóide e da severidade da ferrugem asiática em soja, simulados em cenários de clima e manejo no norte do RS. *Ciência Rural*, 43 (4), 571–578.

https://doi.org/10.1590/S0103-84782013000400002

Costa, E.C. & Link, D. (1974) Incidência de percevejos em soja. *Revista do Centro de Ciências Rurais*, 4 (4), 397–400.

Costa, E.C., Bogorni, P.C. & Bellomo, V.H. (1995) Percevejos coletados em copas de diferentes espécies florestais, Pentatomidae vol. 1. *Ciência Florestal*, 5 (1), 123–128.

Costa Lima, A.M. (1935) Um novo "frade" praga de arroz no Rio Grande do Sul (Hemiptera: Pentatomoidea). *Campo*, 6 (10), 16.

Costa Lima, A.M. (1947) Notas sobre alguns pentatomídeos. *Anais da Academia Brasileira de Ciências*, 19 (4), 311–313.

Dallas, W.S. (1851) *List of the specimens of Hemipterous Insects in the collection of the British Museum. Part II*. Taylor & Francis, London, 592 pp.

De Geer, C. (1773) *Mémoires pour servir à l´histoire des Insectes. Tomo 3*. L.L. Grefing, Stockholm, 696 pp.

Del Vecchio, M.C. & Grazia, J. (1992) Obtenção de posturas de *Oebalus ypsilongriseus* (De

Geer, 1773) em laboratório (Heteroptera: Pentatomidae). *Anais da Sociedade Entomológica do Brasil*, 21 (3), 367–372.

DeWitt, N.B. & Godfrey, G.L. (1972) The literature of arthropods associated with soybeans. II. A bibliography of the southern green stink bug *Nezara viridula* (Linnaeus) (Hemiptera: Pentatomidae). *Illinois Natural History Survey*, 78, 1–23.

https://doi.org/10.5962/bhl.title.15872

Distant, W.L. (1880) Insecta. Rhynchota. Hemiptera-Heteroptera, I. *In:* Godman, F.D. & Salvin, O. (Eds.), *Biologia Centrali-Americana. Vol. 1.* R. H. Porter, London, 1–88.

Distant, W.L. (1899) Rhynchotal notes III. Heteroptera: Discocephalinae and Pentatominae (part). *Annals & Magazine of Natural History*, 7 (4), 421–445.

https://doi.org/10.1080/00222939908678226

Fabricius, J.C. (1775) *Systema Entomologiae, sistens Insectorum classes, ordines, genera, species, adjectis synonymis, locis, descriptionibus, observationibus*. Korte, Flensburg et Lipsiae, 832 pp.

http://dx.doi.org/10.5962/bhl.title.36510

Fabricius, J.C. (1794) *Entomologia systematica emendata et aucta secundum classes, ordines, genera, species adjectis synonymis, locis, observationibus, descriptionibus*. *Vol. 3, Pars II.* C.G. Proft, Hafniae, 349 pp.

Fabricius, J.C. (1798) *Supplementum Entomologiae Systematicae.* Proft et Storch, Hafniae, [1-3], 572 pp.

Farias, P.M. (2012) *Pentatomídeos e seus inimigos naturais na cultura do arroz irrigado no Rio Grande do Sul*. Universidade Federal do Rio Grande do Sul, Porto Alegre. [Dissertation]

Farias, P.M., Klein, J.T., Sant'Ana, J., Redaelli, L.R. & Grazia, J. (2012) First records of *Glyphepomis adroguensis* (Hemiptera, Pentatomidae) and its parasitoid, *Telenomus podisi* (Hymenoptera, Platygastridae), on irrigated rice fields in Rio Grande do Sul, Brazil. *Revista Brasileira de Entomologia*, 56 (3), 383–384.

https://doi.org/10.1590/S0085-56262012005000044

Faúndez, E.I. & Verdejo, L.M. (2010) La singular morfología de *Acledra haematopa* (Spinola, 1852) dentro del género *Acledra* Signoret, 1864 (Hemiptera: Heteroptera: Pentatomidae): Un caso de mimetismo batesiano, com descripción de un nuevo subgénero. *Boletín de la Sociedad Entomológica Argentina*, 46, 77–82.

Fávaro, C.F., Santos, T.B. & Zarbin, P.H.G. (2012) Defensive compounds and male-produced sex pheromone of the stink bug, *Agroecus griseus*. *Journal of Chemical Ecology*, 38 (9), 1121–1132.

https://doi.org/10.1007/s10886-012-0172-0

Feix, R.D., Leusin Jr., S., Agranonik, C. (2016) *Painel do agronegócio no Rio Grande do Sul – 2016*. Fundação de Economia e Estatística, Porto Alegre, 54 pp.

Fernandes, J.A.M. & Grazia, J. (1996) Revisão do gênero *Hypatropis* Bergroth, 1891 (Heteroptera, Pentatomidae). *Revista Brasileira de Entomologia*, 40 (3–4), 341–352.

Fernandes, J.A.M. & Grazia, J. (1998) Revision of the genus *Tibraca* Stål (Heteroptera, Pentatomidae, Pentatominae). *Revista Brasileira de Zoologia*, 15 (4), 1049–1060.

https://doi.org/10.1590/S0101-81751998000400022

Ferrari, A., Schwertner, C.F. & Grazia, J. (2010) Review, cladistic analysis and biogeography of *Nezara* Amyot & Serville (Hemiptera: Pentatomidae). *Zootaxa*, 2424, 1–41.

https://doi.org/10.11646/zootaxa.2424.1.1

Ferreira, E., Barrigossi, J.A.F. & Vieira, N.R.A. (2001) *Percevejos das Panículas do Arroz: Fauna Heteroptera Associada ao Arroz*. Embrapa Arroz e Feijão, Santo Antônio de Goiás, 52 pp.

Freeman, P. (1940) A contribution to the study of the genus *Nezara* Amyot & Serville (Hemiptera, Pentatomidae). *Transactions of the Royal Entomological Society of London*, 90, 351–374.

Frey-da-Silva, A. & Grazia, J. (2001) Novas espécies de *Acrosternum* subgênero *Chinavia* (Heteroptera, Pentatomidae, Pentatomini). *Iheringia, Série Zoologia*, 90, 107–126.

https://doi.org/10.1590/S0073-47212001000100011

Fuentes-Rodríguez, D., Franceschini, C., Gervazoni, P., López, G., Sosa, A. & Kruger, R. (2019) Importance of native vegetation for detection and management of rice stink bug (*Tibraca limbativentris*). *Bulletin of Entomological Research*, 110 (3), 352–362.

https://doi.org/10.1017/S0007485319000701

Fürstenau, B.B.R.J., Schwertner, C.F. & Grazia, J. (2013) Comparative morphology of immature stages of four species of *Chinavia* (Hemiptera, Pentatomidae), with a key to the species of Rio Grande do Sul, Brazil. *ZooKeys*, 319, 59–82.

https://doi.org/10.3897/zookeys.319.4310

Galileo, M.H.M., Gastal, H.A.O. & Grazia, J. (1977) Levantamento populacional de Pentatomidae (Hemiptera) em cultura de soja (*Glycine max* (L.) Merr.) no município de Guaíba, Rio Grande do Sul. *Revista Brasileira de Biologia*, 37 (1), 111–120.

Gapud, V.P. (1991) A generic revision of the Asopinae, with consideration of its phylogenetic position in the family Pentatomidae and superfamily Pentatomoidea (Hemiptera, Heteroptera). *Philippine Entomology*, 8, 865–961.

Garbelotto, T.A. & Campos, L.A. (2014) *Pentatominae do Sul de Santa Catarina*. Sociedade Brasileira de Zoologia, Curitiba, 80 pp.

https://doi.org/10.7476/9788598203089.0001

Gassen, D.N. (1996) *Manejo de pragas associadas à cultura do milho*. Aldeia Norte, Passo Fundo, 127 pp.

Genevcius, B.C., Grazia, J. & Schwertner, C.F. (2012) Cladistic analysis and revision of the *obstinata* group, genus *Chinavia* Orian (Hemiptera: Pentatomidae). *Zootaxa*, 3434, 1–30.

https://doi.org/10.11646/zootaxa.3434.1.1

Genevcius, B.C. & Schwertner, C.F. (2014) Review and phylogeny of *geniculata* group, genus *Chinavia* (Heteroptera: Pentatomidae), with notes on biogeography and morphological evolution. *Zootaxa*, 3447 (1), 33–56.

https://doi.org/10.11646/zootaxa.3847.1.2

Grazia, J. (1977) Revisão dos Pentatomíneos citados no Quarto Catálogo dos Insetos que Vivem

nas Plantas do Brasil (Hemiptera: Pentatomidae, Pentatomini). *Dusenia*, 10 (3), 161–174.

Grazia, J. (1978) Revisão do gênero *Dichelops* Spinola, 1837 (Heteroptera, Pentatomidae, Pentatomini). *Iheringia, Série Zoologia*, 53, 3–119.

Grazia, J. (1982) Situação atual do reconhecimento das espécies de pentatomídeos (Heteroptera) coletados em soja, no Brasil. *In: Reunião de Pesquisa de Soja da Região Sul, Atas e Resumos*. Porto Alegre, 199 pp.

Grazia, J. & Frey-da-Silva, A. (2001) Descrição dos imaturos de *Loxa deducta* Walker e *Pallantia macunaima* Grazia (Heteroptera: Pentatomidae) em Ligustro, *Ligustrum lucidum* Ait. *Neotropical Entomology*, 30 (1), 73–80.

https://doi.org/10.1590/S1519-566X2001000100012

Grazia, J. & Schwertner, C.F. (2008) Pentatomidae. *In*: Roig-Juñent, S., Claps, L. & Debandi, G. (Eds.), *Biodiversidad de Artrópodos Argentinos*. *Vol. 2*. Sociedad Entomológica Argentina, Mendoza, pp. 223–234.

Grazia, J., Del Vecchio, M.C. & Hildebrand, R. (1982) Estudo das ninfas de Pentatomídeos (Heteroptera) que vivem sobre a soja (*Glycine max* (L.) Merrill): IV – Acrosternum impicticorne (Stål, 1872). *Anais da Sociedade Entomológica do Brasil*, 11 (2), 261–268.

Grazia, J., Panizzi, A.R., Greve, C., Schwertner, C.F., Campos, L.A., Garbelotto, T. de A. & Fernandes, J.A.M. (2015) Stink Bugs (Pentatomidae). *In*: Panizzi, A.R. & Grazia, J. (Eds.) *True Bugs (Heteroptera) of the Neotropics*. Springer, Dordrecht, pp. 681–756.

Grazia-Vieira, J. (1972) O gênero *Mayrinia* Horvath, 1925 (Heteroptera, Pentatomidae, Pentatomini). *Revista Peruana de Entomologia*, 15, 117–124.

Haglund, C.J.E. (1868) Hemiptera nova. *Stettiner Entomologische Zeitung*, 29, 150–163.

Hasan, S.A. & Kitching, I.A. (1993) A cladistics analysis of the tribes of the Pentatomidae (Heteroptera). *Japanese Journal of Entomology*, 61, 651–669.

Herrich-Schaeffer, G.A.W. (1842) *Die Wanzenartigen Insekten*. Vol. 6. C.H. Zeh, Nürnberg, pp. 73–118.

Hickel, E.R., Prando, H.F. & Eberhardt, D.S. (2016) *Percevejos nas lavouras catarinenses de arroz irrigado: Ocorrência, monitoramento e manejo integrado*. Epagri, Florianópolis, 54 pp.

Hickmann, F., Moraes, T., Bianchi, F.M., Corrêa, A.S. & Schwertner, C.F. (2019) Integrating data to redescribe *Euschistus taurulus* Berg (Hemiptera: Pentatomidae). *Zootaxa*, 4688 (1), 119–134.

https://doi.org/10.11646/zootaxa.4688.1.7

Instituto Brasileiro de Geografia e Estatística - IBGE (2020) Levantamento sistemático da produção agrícola: pesquisa mensal de previsão e acompanhamento das safras agrícolas no ano civil. Available from: https://sidra.ibge.gov.br/tabela/6588 (accessed January 2020).

Instituto Rio Grandense do Arroz - IRGA (2020) Colheita do arroz próxima dos 90% no RS. Available from: https://irga.rs.gov.br/colheita-do-arroz-proxima-dos-90-no-rs (accessed September 2020)

Jensen-Haarup, A.C. (1928) Hemipterological notes and descriptions V. *Entomologiske Meddelelser*, 16 (4), 185–202.

Jensen-Haarup, A.C. (1937) Einige neue Pentastomiden Arten aus der Sammlung des Zoologischen Museums in Hamburg (Hem. Het.). *Entomologische Rundschau*, 54, 169–171, 321–324.

Kirkaldy, G.W. (1909) *Catalogue of the Hemiptera (Heteroptera) 1-Cimicidae*. Felix L. Dames, Berlin, XL + 392 pp.

Kishino, K. & Alves, R.T. (1994) Ecologia de percevejos que atacam o colmo e a panícula do arroz na região dos cerrados. *In:* EMBRAPA Centro de Pesquisa Agropecuária dos Cerrados (Ed.), *Relatório técnico do projeto nipo-brasileiro de cooperação em pesquisa agrícola nos cerrados 1987/1992*. EMBRAPA-CPAC/JICA, Planaltina, pp. 156–179.

Kormilev, N.A. & Pirán, A.A. (1952) Una Especie Nueva del Género *Glyphepomis* Berg (1891) de la Argentina (Hemiptera, Pentatomidae). *Revista de la Sociedad Entomológica Argentina*, 15, 301–306.

Krinski, D., Foerster, L.A. & Grazia, J. (2015) *Hypatropis inermis* (Hemiptera, Pentatomidae): first record on rice crops. *Revista Brasileira de Entomologia*, 59 (1), 12–13.

https://doi.org/10.1016/j.rbe.2014.11.001

Lepeletier, A.L.M. & Serville, J.G.A. (1825) Articles on Hemiptera. *In:* Olivier, G.A. (Ed.),

Encyclopédie Méthodique. 10, pp. 1–344.

Lethierry, L. & Severin, G. (1893) *Catalogue général des Hémiptères. Vol. 1*. F. Hayez, Bruxelles and Berlin, 1, i–x, 1–286 pp.

Lichtenstein, A.A.H. (1796) *Catalogus musei Zoologici ditissimi Hamburgi d. III. Auctionis lege distrahendi. Sectio Tertia continens Insecta*. Gottlieb Friedrich Schniebes, Hamburg, 222 pp.

Link, D. & Grazia, J. (1987) Pentatomídeos da região central do Rio Grande do Sul (Heteroptera). *Anais da Sociedade Entomológica do Brasil*, 16 (1), 115–129.

Linnaeus, C. (1758) Hemiptera. *In*: Linnaeus, C. (Ed.), *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentis, synonymis, locis. Vol. 1. Editio decima, reformata.* L. Salvii, Holmiae, pp. 434–457.

https://doi.org/10.5962/bhl.title.542

Lopes, O.J., Link, D. & Basso, L.V. (1974) Pentatomídeos de Santa Maria – lista preliminar de plantas hospedeiras. *Revista Centro de Ciências Rurais*, 4 (4), 317–322.

Lucini, T. & Panizzi, A.R. (2017) Behavioral comparisons of ingestion and excretion by selected species of Pentatomids: Evidence of feeding on different food sources supports pest status. *Neotropical Entomology*, 46 (4), 361–367.

https://doi.org/10.1007/s13744-016-0474-y

Mayr, G. (1864) Diagnosen neuer Hemipteren. *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien*, 14, 903–914.

Marsaro Jr., A.L., Panizzi, A.R., Pereira, P.R.V.S., Grazia, J., Bianchi, F.M. & Scarparo, A.P. (2017) *Percevejos (Heteroptera) fitófagos e predadores associados à cultura de Canola no Norte do Estado do Rio Grande do Sul.* Embrapa Trigo, Documentos online 167, Passo Fundo, 20 pp.

Martins, F.J.M., Del Vecchio, M.C. & Grazia, J. (1986) Estudo dos imaturos de Pentatomídeos (Heteroptera) que vivem no arroz (*Oryza sativa* L.): I - *Mormidea quinqueluteum* (Lichtenstein, 1796). *Anais da Sociedade Entomológica do Brasil*, 15 (2), 349–359.

Matesco, V.C., Fortes, N.D.F. & Grazia, J. (2003) Imaturos de Pentatomídeos (Hemiptera,

Heteroptera): Morfologia e biologia de *Acrosternum obstinatum*. *Iheringia, Série Zoologia,* 93 (1), 81–88.

https://doi.org/10.1590/S0073-47212003000100009

Matesco, V.C., Schwertner, C.F. & Grazia, J. (2006) Descrição dos estágios imaturos de *Chinavia erythrocnemis* (Berg) (Hemiptera: Pentatomidae). *Neotropical Entomology*, 35 (4), 483–488.

https://doi.org/10.1590/S1519-566X2006000400009

Matesco, V.C., Schwertner, C.F. & Grazia, J. (2007) Descrição dos estágios imaturos e biologia de *Chinavia pengue* (Rolston) (Hemiptera, Pentatomidae). *Revista Brasileira de Entomologia*, 51 (1), 93–100.

https://doi.org/10.1590/S0085-56262007000100016

Matesco, V.C., Bianchi, F.M., Fürstenau, B.B.R., Poock da Silva, P., Campos, L.A. & Grazia, J. (2014) External egg structure of the Pentatomidae (Hemiptera: Heteroptera) and the search for characters with phylogentic importance. Zootaxa, 3768 (3), 351–385.

https://doi.org/10.11646/zootaxa.3768.3.5

McPherson, J.E. & McPherson, R.M. (2000) *Stink Bugs of Economic Importance in America North of Mexico*. CRC Press, Boca Raton, 253 pp.

https://doi.org/10.1201/9781420042429

Medeiros, L. & Megier, G.A. (2009) Ocorrência e desempenho de *Euschistus heros* (F.) (Heteroptera: Pentatomidae) em Plantas Hospedeiras Alternativas no Rio Grande do Sul. *Neotropical Entomology*, 38 (4), 459–463.

https://doi.org/10.1590/S1519-566X2009000400003

Mendonça, M.S., Schwertner, C.F. & Grazia, J. (2009) Diversity of Pentatomoidea (Hemiptera) in riparian forest of southern Brazil: taller forests, more bugs. *Revista Brasileira de Entomologia*, 53 (1), 121–127.

https://doi.org/10.1590/S0085-56262009000100026

Ministério da Agricultura, Pecuária e Abastecimento - MAPA (2020) Balança Comercial

Brasileira e Balança Comercial do Agronegócio: Série Histórica. Available at https://www.gov.br/agricultura/pt-br/assuntos/relacoes-internacionais/estatisticas-de-comercio-exterior (accessed 6 July 2020).

Panizzi, A.R. (2002) Stink bugs on soybean in northeastern Brazil and a new record on the southern sreen stink bug, *Nezara viridula* (L.) (Heteroptera: Pentatomidae). *Neotropical Entomology*, 31 (2), 331–332.

Panizzi, A.R. (2008a) Small Rice Stink Bug, *Oebalus poecilus* (Dallas) (Hemiptera: Heteroptera: Pentatomidae). *In*: Capinera, J.L. (Ed.) *Encyclopedia of Entomology*. Springer, Dordrecht.

https://doi.org/10.1007/978-1-4020-6359-6_4234

Panizzi, A.R. (2008b) Small Green Stink Bug, *Piezodorus guildinii* (Westwood) (Hemiptera: Heteroptera: Pentatomidae). *In*: Capinera J.L. (Ed.) *Encyclopedia of Entomology*. Springer, Dordrecht.

https://doi.org/10.1007/978-1-4020-6359-6_4231

Panizzi, A.R., Agostinetto, A., Lucini, T., Smaniotto, L.F. & Pereira, P.R.V.S (2015) *Manejo Integrado dos Percevejos Barriga-Verde*, Dichelops *spp. em Trigo*. Embrapa Trigo, Passo Fundo, 36 pp.

Panizzi, A.R. & Lucini, A. (2017) Host plant-stink bug (pentatomidae) relationships. *In*: Cokl, A. & Borges, M. (eds), *Stinkbugs: Biorational control based on communication processes*. CRC Press, Boca Raton, pp. 31–58.

https://doi.org/10.1201/9781315120713

Panizzi, A.R, McPherson, J.E., James, D.G., Javahery, J. & McPherson, R.M. (2000) Stink Bugs (Pentatomidae). *In*: Schaefer, C.W. & Panizzi, A.R. (Eds.), *Heteroptera of Economic Importance*. CRC Press, Boca Raton, London, New York, Washington, D.C., pp. 421–474.

Panizzi, A.R., Bueno, A.F. & Silva, F.A.C. (2012) Insetos que atacam vagens e grãos. *In:* Hoffmann-Campo, C.B., Corrêa-Ferreira, B.S. & Moscardi, F. (Eds.), *Soja: manejo integrado de insetos e outros artrópodes-praga*. Embrapa, Brasília, pp. 335–420.

Pasini, M.P.B., Lúcio, A.D., Filho, A.C., Ribeiro, A.L.P., Zamberlan, J.F., Lopes, S.J. (2018)

Population density of *Tibraca limbativentris* on flood irrigated rice and alternative host plants. *Pesquisa Agropecuária Brasileira*, 53 (3), 265–278.

https://doi.org/10.1590/s0100-204x2018000300001

Pennington, M.S. (1919) Notas sobre las especies Argentinas del género *Nezara* A. & S.

Physis, 4, 527–530.

Pennington, M.S. (1920) *Lista de los Hemipteros Heteropteros de la Republica Argentina*.

Buenos Aires, Quilmes, 47 pp.

Pereira, P.R.V.S. & Salvadori, J.R. (2011) Pragas da lavoura de trigo. *In:* Pires, J.L.F., Vargas, L. & Cunha, G.R. (Eds.), *Trigo no Brasil: bases para produção competitiva e sustentável*. Embrapa Trigo, Passo Fundo, pp. 263–282.

Pereira, P.R.V.S. & Salvadori, J.R. (2020) Árvore do conhecimento – Centeio, Insetos. AGEITEC – Agência Embrapa de Informação Tecnológica. Available at http://www.agencia.cnptia.embrapa.br/gestor/centeio/arvore/CONT000fz2zy82a02wx5ok0ejlyhd0qlyuvr.html (accessed Mar 2020).

Pirán, A.A. (1948) Contribución al conocimiento de la dispersión geográfica de los Hemípteros neotropicales. *Acta Zoologica Lilloana*, 5, 5–17.

Pirán, A.A. (1956) Hemipteros raros o poco conocidos y no mencionados para las faunas de Brasil, Uruguay, Argentina, Paraguay y Bolivia. *Revista de la Sociedad Uruguaya de Entomología*, 1 (1), 29–35.

Pirán, A.A. (1963) Hemiptera Neotropica, VII. Algunas especies nuevas o poco conocidas del noroeste argentino I. *Acta Zoológica Lilloana*, 19, 336–337.

Pirán, A.A. (1967) Hemiptera Neotropica, XI. *Revista de la Sociedad Entomológica Argentina*, 30, 21.

Pirán, A.A. (1970) Hemiptera Neotropica, XIII. *Acta Zoológica Lilloana*, 26 (8), 127.

Quintanilla, R.H., Margheritis, A.E. & Rizzo, H.F. (1968) Catálogo de hemípteros hallados en la Provincia de Entre Ríos. *Revista de la Facultad de Agronomía y Veterinaria de Buenos Aires*, 16, 29–38.

Quintanilla, R.H., Margheritis, A.E., Rizzo, H.F. (1976) Catálogo de hemípteros hallados en la Provincia de Corrientes (Argentina). *Revista de la Sociedad Entomológica Argentina*, 35, 115–133.

Rider, D.A. (2006) Family Pentatomidae. *In*: Aukema, B. & Rieger, C. (Eds.), *Catalogue of the Heteroptera of the Palaearctic Region. Vol. 5.* The Netherlands Entomological Society, Amsterdam, pp. 233–402.

Rider, D.A. & Chapin, J.B. (1991) Revision of the genus *Thyanta* Stål, 1862 (Heteroptera: Pentatomidae) I. South America. *Journal of the New York Entomological Society*, 99, 1–77.

Rider, D.A. & Rolston, L.H. (1987) Review of the genus *Agroecus* Dallas, with the description of a new species (Hemiptera: Pentatomidae). *Journal of the New York Entomological Society*, 95 (3), 428–439.

Rider, D.A., Schwertner, C.F., Vilímová J., Rédei D., Kment, P. & Thomas, D.B. (2018) Higher systematics of the Pentatomoidea. *In:* McPherson, J.E. (Ed.), *Invasive Stink bugs and related species (Pentatomoidea) – biology, higher systematics, semiochemistry, and management.* CRC Press, Boca Raton, pp. 76–79.

https://doi.org/10.1201/9781315371221-2

Rio Grande do Sul (2020) Atlas Socioeconômico do Rio Grande do Sul. Secretaria de Planejamento, Governança e Gestão. 5 Ed., Porto Alegre, 125p. Available from: https://atlassocioeconomico.rs.gov.br/inicial (accessed October 2020)

Rolston, L.H. (1974) Revision of the genus *Euschistus* in Middle America (Hemiptera, Pentatomidae, Pentatomini). *Entomologica Americana*, 48, 1–102.

Rolston, L.H. (1978) A new subgenus of *Euschistus* (Hemiptera: Pentatomidae). *Journal of the New York Entomological Society*, 86 (2), 102–120.

Rolston, L.H. (1982) A revision of *Euschistus* Dallas subgenus *Lycipta* Stål (Hemiptera: Pentatomidae). *Proceedings of the Entomological Society of Washington*, 84, 281–296.

Rolston, L.H. (1983) A revision of the genus *Acrosternum* Fieber, subgenus *Chinavia* Orian in the Western Hemisphere (Hemiptera, Pentatomidae, Pentatomini). *Journal of the New York Entomological Society*, 91, 97–176.

Roza-Gomes, M.F., Salvadori, J.R., Pereira, P.R.V.S. & Panizzi, A.R. (2011) Injúrias de quatro espécies de percevejos pentatomídeos em plântulas de milho. *Ciência Rural*, 41 (7), 1115–1119.

https://doi.org/10.1590/S0103-84782011005000081

Ruffinelli, A. & Pirán, A.A. (1959) Hemipteros heteropteros del Uruguay. *Boletín Facultad de Agronomía, Montevideo*, 51, 3–60.

Sailer, R.I. (1944) The genus *Solubea* (Heteroptera: Pentatomidae). *Proceedings of the Entomological Society of Washington*, 46, 105–127.

Schmidt, L.S. & Barcellos, A. (2007) Abundância e riqueza de espécies de Heteroptera (Hemiptera) do Parque Estadual do Turvo, sul do Brasil: Pentatomoidea. *Iheringia, Série Zoologia*, 97, 73–79.

https://doi.org/10.1590/S0073-47212007000100011

Schouteden, H. (1910) Wissenschaftliche ergebnisse der schwedischen zoologischen expedition nach dem Kilimandjaro, dem Meru und den Umgebenden Massaisteppen Deutsch-Ostafrikas 1905–1906 unter leitung von Prof. Dr. Yngve Sjöstedt. Herausgegeben mit Unterstützung von der Königl. Schwedischen akademie der Wissenschaften. 12. Hemiptera. 6. Pentatomidae. *In*: *Sjöstedts Kilimandjaro-Meru Expedition*. Stockholm, 12, pp. 73–96.

Schuh, R.T. & Slater, J.A. (1995) *True bugs of the world (Hemiptera, Heteroptera). Classification and Natural History.* Cornell University, Ithaca, New York, 336 pp.

Schwertner, C.F & Grazia, J. (2006) Descrição de seis espécies de *Chinavia* (Hemiptera: Pentatomidae: Pentatominae) da América do Sul. *Iheringia, Série Zoologia*, 96 (2), 237–248.

https://doi.org/10.1590/S0073-47212006000200015

Schwertner, C.F. & Grazia, J. (2007) O gênero *Chinavia* Orian (Hemiptera, Pentatomidae, Pentatominae) no Brasil, com chave pictórica para os adultos. *Revista Brasileira de Entomologia*, 51 (4), 416–435.

https://doi.org/10.1590/S0085-56262007000400005

Scopel, W., Salvadori, J.R., Panizzi, A.R. & Pereira, P.R.V.S. (2016) Danos de *Euschistus heros* (F.) (Hemiptera: Pentatomidae) em soja infestada no estádio de grão cheio. *Agropecuária Catarinense*, 29 (3), 81–84.

Servino, L.M. & Schwertner, C.F. (2020) Electronic identification key and data base to the genus Chinavia (Heteroptera: Pentatomidae) with morphological and distributional data. Zootaxa, 4809 (1),

https://doi.org/10.11646/zootaxa.4809.1.13

Servino & Schwertner (2020) Complementary website to the paper "Electronic identification key to the genus *Chinavia* (Heteroptera: Pentatomidae) with morphological and distributional data". Available at: https://sites.google.com/view/chinaviaoriandatabase/home[acess data]. (accessed October 2020).

Signoret, V. (1863) Revision des Hémiptères du Chile. *Annales de la Société Entomologique de France, Série 4*, 3, 541–588.

Silva, A. (1945) Sobre a identidade de *Tibraca limbativentris* Stål, 1860 e *Ogmocoris reinigeri* Costa Lima, 1935. *Chácaras e Quintais*, 72, 596.

Silva, F.F., Martins, J.F.S., Barrigossi, J.A.F., Meus, N.C., Ramão, C.J. & Lorentz, L.H. (2012) Monitoramento de *Tibraca limbativentris* Stål, 1860 (Hemiptera: Pentatomidae) em arrozais do Planalto da Campanha do Rio Grande do Sul. *Embrapa, Circular técnica*, 132, 1–6.

Stål, C. (1859) Hemiptera, species novas descripsit. *Konglika Svenska Fregattens Eugenies Resa Omkring Jorden. IV. Zoologi, Insekter*, 219–298.

Stål, C. (1860) Bidrag till Rio Janeiro - Traktens Hemipter-fauna. Part I. *Kongliga Svenska Vetenskaps-Akademiens Handlingar*, 2 (7), 1–84.

Stål, C. (1862) Bidrag till Rio Janeiro - Traktens Hemipter-fauna. Part I. *Kongliga Svenska Vetenskaps-Akademiens Handlingar*, 3 (6), 1–75.

Stål, C. (1865) *Hemiptera Africana I*. Norstedtiana, Stockholm, 256 pp.

Stål, C. (1867) Bidrag till hemipterernas systematik. *Öfversigt af Kongliga Vetenskaps-Akademiens Förhandlingar*, 24 (7), 491–560.

https://doi.org/10.5962/bhl.title.61897

Stål, C. (1868) Hemiptera Fabriciana I. *Kongliga Svenska Vetenskaps - Akademiens Handlingar*, 7, 1–148.

Stål, C. (1872a) Bidrag till Hemiptererans systematik. Conspectus generum Pentatomidum Americae. *Ofv. Kongliga Svenska Vetenskaps-Akademiens Handlingar, Förhandlingar*, 24 (7), 522–534.

Stål, C. (1872b) Enumeratio Hemipterorum. II. *Kongliga Svenska Vetenskaps-Akademiens Handlingar*, 10 (4), 1–159.

Tomacheski, J.F. & Panizzi, A.R. (2018) Seasonal abundance of *Thyanta perditor* (F.) (Heteroptera: Pentatomidae) and its preference among cultivated and non-cultivated plants. *Agropecuária Catarinense, Florianópolis*, 31 (3), 50–55.

http://dx.doi.org/10.22491/RAC.2018.v31n3.6

Torre-Bueno, J.R. (1915) Nota sobre hemípteros del Chaco de Santiago del Estero (R.A). *Anales del Museo Nacional, Buenos Aires*, 26, 157–162.

Uhler, P.R. (1894) On the Hemiptera-Heteroptera of the Island of Grenada, West Indies. *Proceedings of the Zoological Society of London*, 1894, 167–224.

Valicente, F.H. (2015) *Manejo integrado de pragas na cultura do milho*. EMBRAPA Milho e Sorgo, Circular Técnica 208, Sete Lagoas, 13 pp.

Walker, F. (1867) *Catalogue of the specimens of Hemiptera-Heteroptera in the collection of the British Museum*. British Museum, London, 1655 pp. [Part 2, 241–417].

https://doi.org/10.5962/bhl.title.118688

Walker, F. (1868) *Catalogue of the specimens of Hemiptera-Heteroptera in the collection of the British Museum*. British Museum, London, 1655 pp. [Part 3, 419–599].

https://doi.org/10.5962/bhl.title.118688

Weber, M.A., Del Vecchio, M.C. & Grazia, J. (1988) Estudo dos imaturos de Pentatomídeos (Heteroptera) que vivem sobre arroz (*Oryza sativa* L.): II - *Mormidea notulifera* Stål, 1860. *Anais da Sociedade Entomológica do Brasil*, 17, 160–173.

Weiler, L., Ferrari, A. & Grazia, J. (2011) Contributions to the knowledge of *Euschistus* (*Lycipta*) with the description of *E.* (*L.*) *riograndensis* sp. nov. (Hemiptera: Heteroptera: Pentatomidae: Pentatominae: Carpocorini). *Zootaxa*, 3067, 59–64.

https://doi.org/10.11646/zootaxa.3067.1.5

Weiler, L., Bianchi, F.M. & Grazia, J. (2012) Percevejos-do-mato (Hemiptera: Heteroptera: Pentatomoidea) da Floresta Nacional de São Francisco de Paula, RS, Brasil. *Revista Brasileira de Biociências*, 10 (2), 186–191.

Westwood, J.O. (1837) *A catalogue of Hemiptera in the collection of the Rev. F.W. Hope, with short latin descriptions of new species. Part 1*. J. Bridgewater, London, 46 pp.

Zheng, Z.M. (1982) A new species of Pentatomidae (Heteroptera) from Qinling. *Acta Entomologica Sinica*, 25 (2), 195–196.

Figures and Table

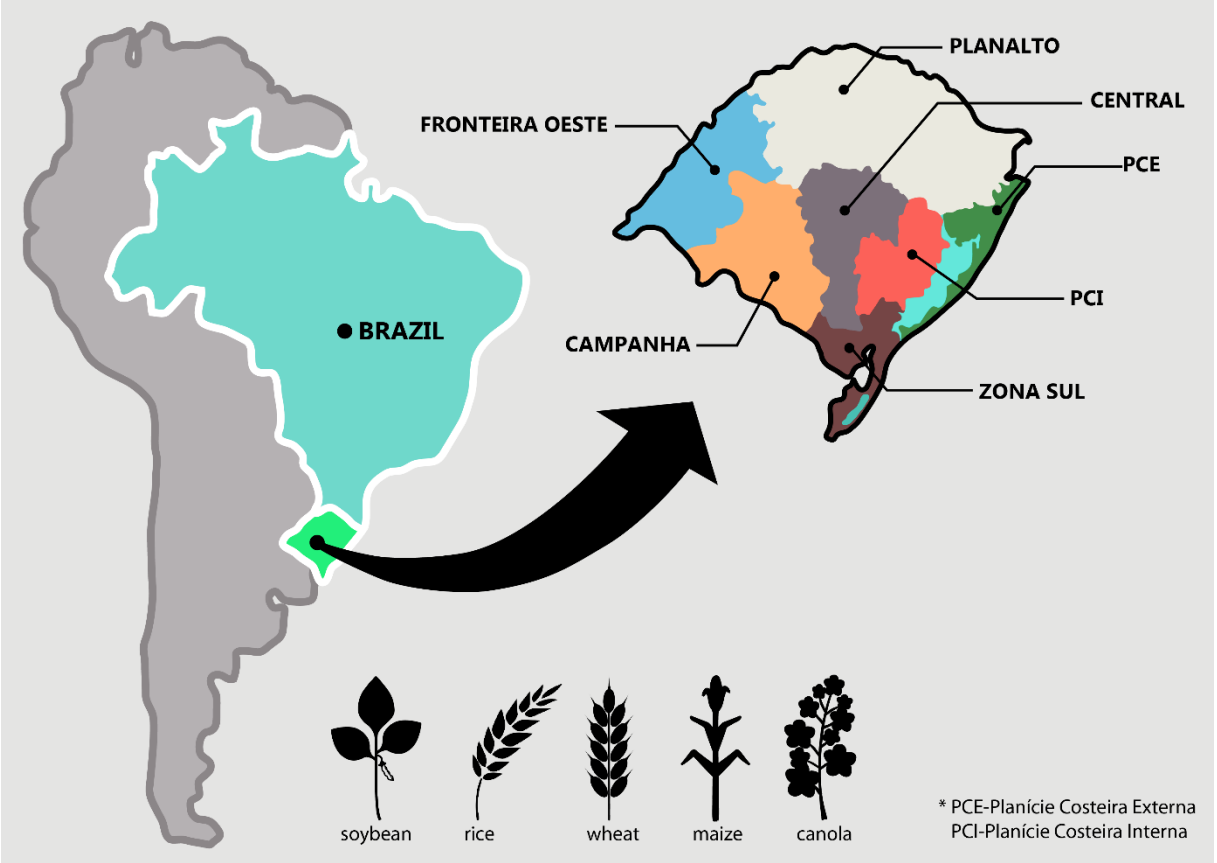
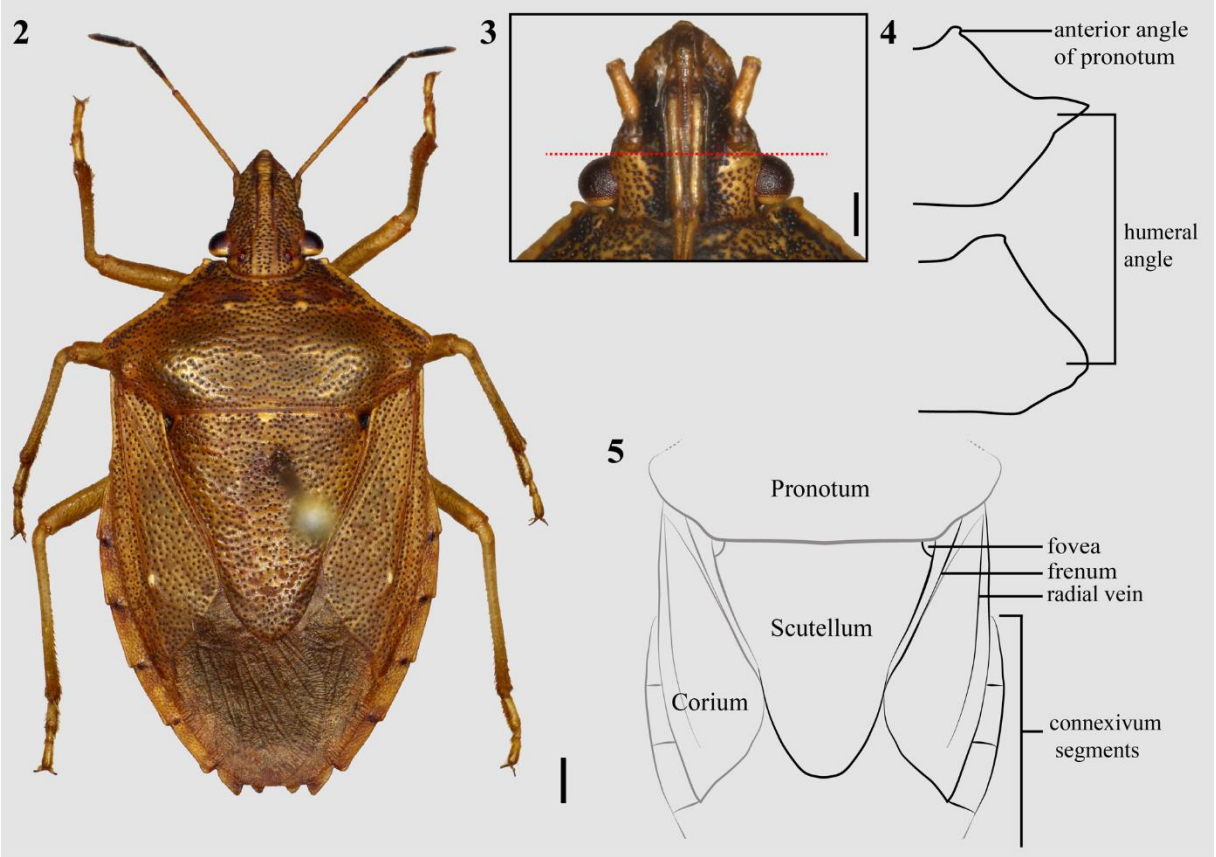
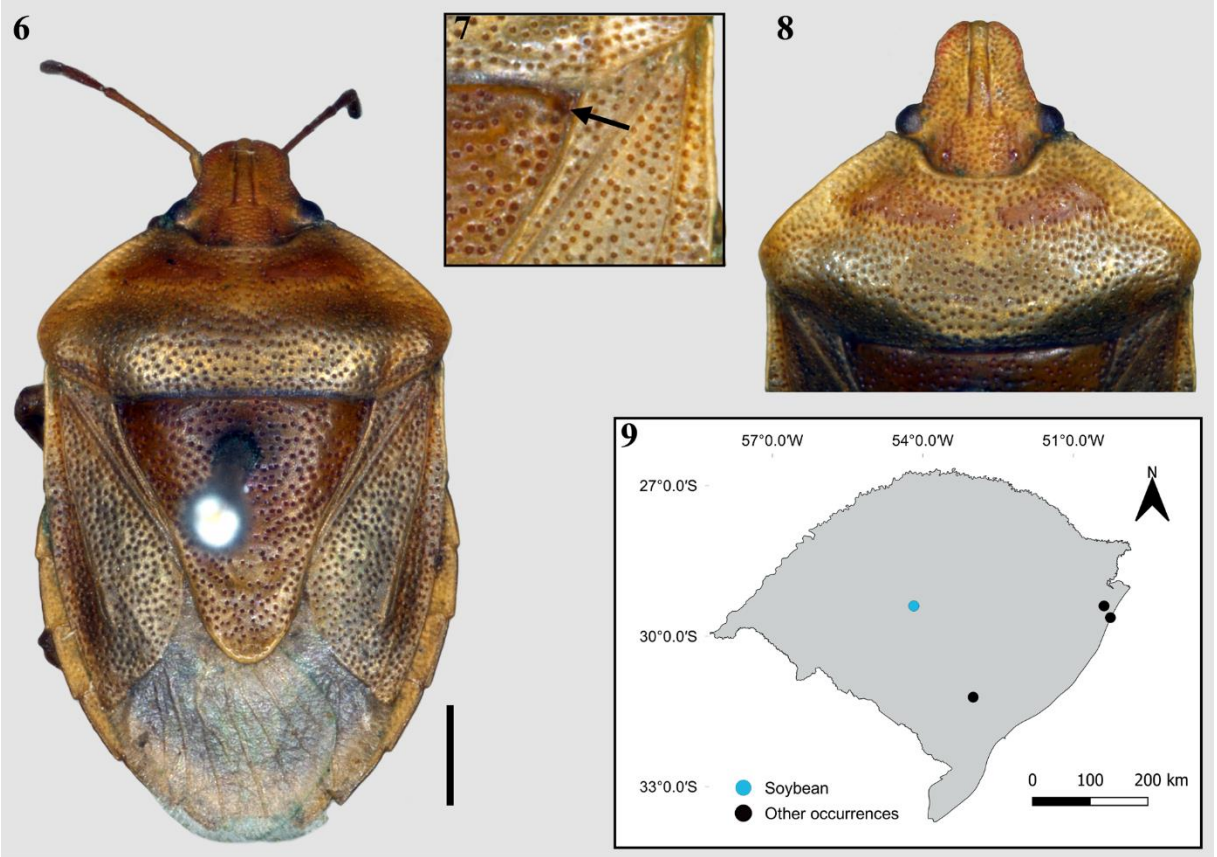


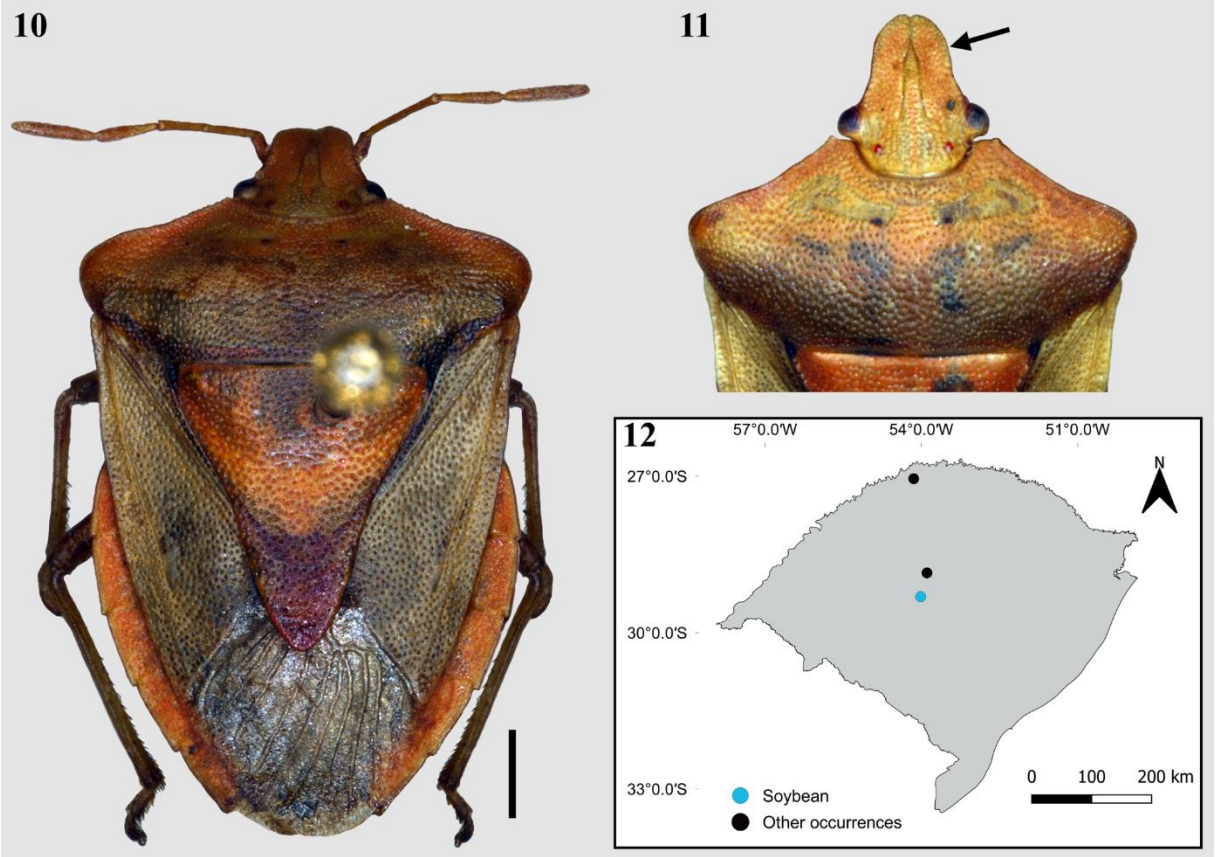
FIGURE 1. Infographic representing the location of Rio Grande do Sul state within Brazil and South America, the state's main regions (following IRGA 2020), and the five crops reviewed in this work.



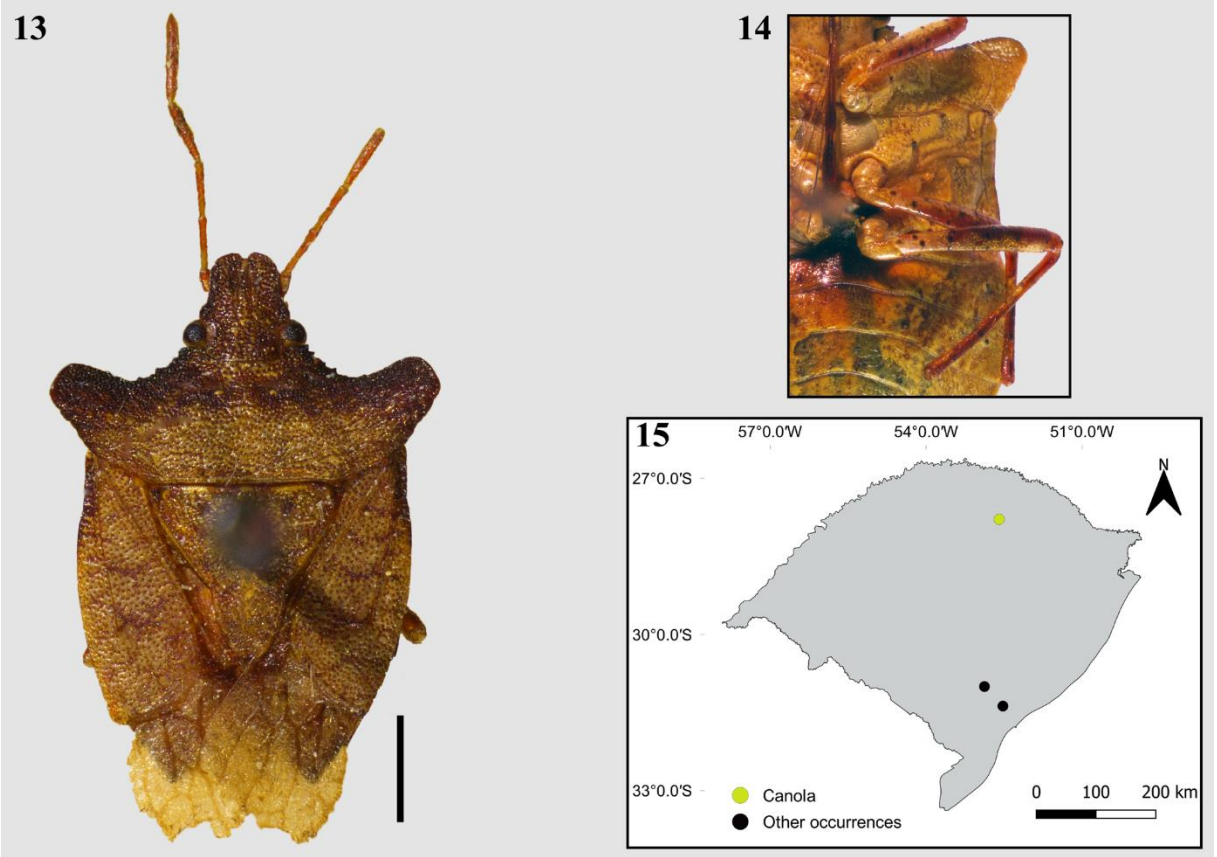
FIGURES 2–5. Characteristics of subfamily Pentatominae. 2–3: *Tibraca limbativentris*, dorsal view and head ventral view, respectively. 4: Pronotal lateral margin, humeral angles development. 5: Dorsal structures. Scale bars = 2: 1.0 mm; 3: 0.5 mm.



FIGURES 6–9. *Acledra bonariensis*. 6: Dorsal view, sacle bar: 1.0 mm. 7: Basal angle of scutellum. 8: Head and pronotum. 9: Distribution within Rio Grande do Sul.



FIGURES 10–12. *Acledra fraterna*. 10: Dorsal view, sacle bar: 1.0 mm. 11: Head and pronotum. 12: Distribution within Rio Grande do Sul.



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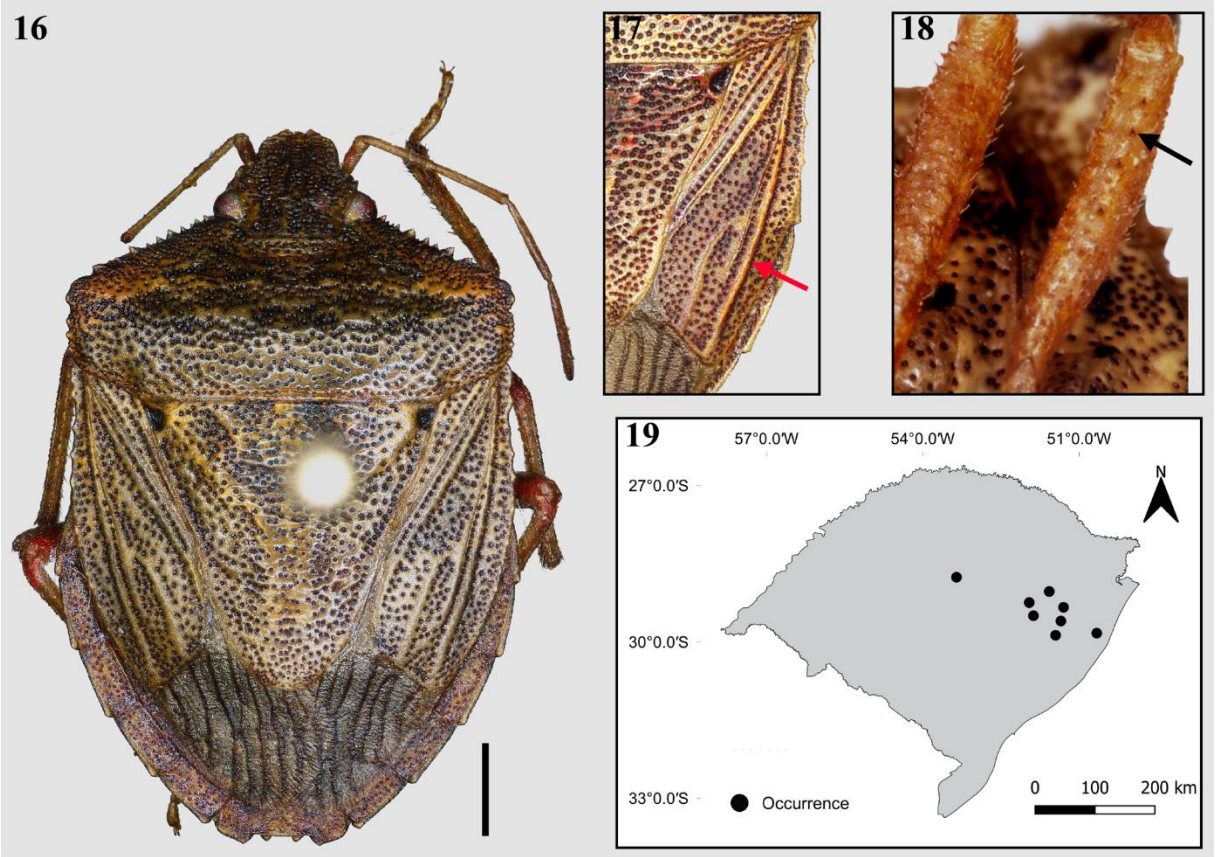
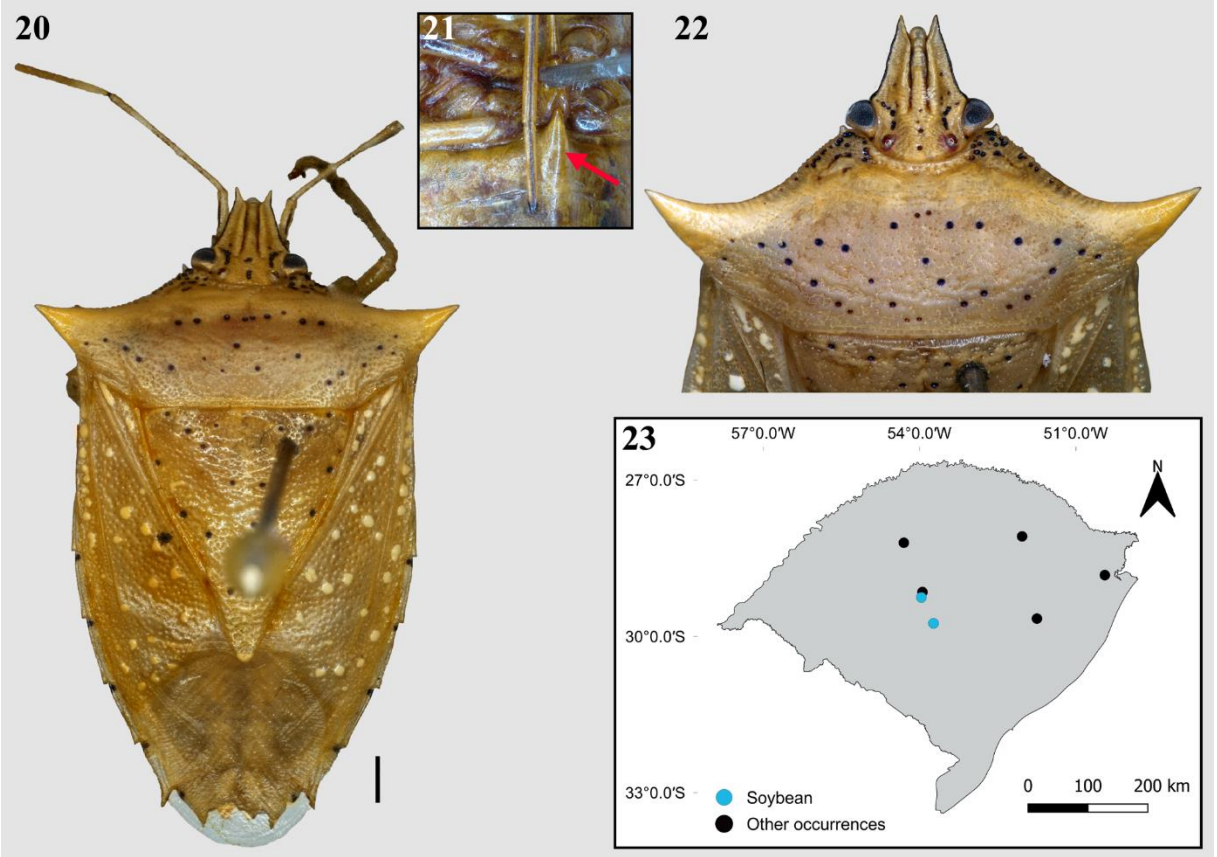
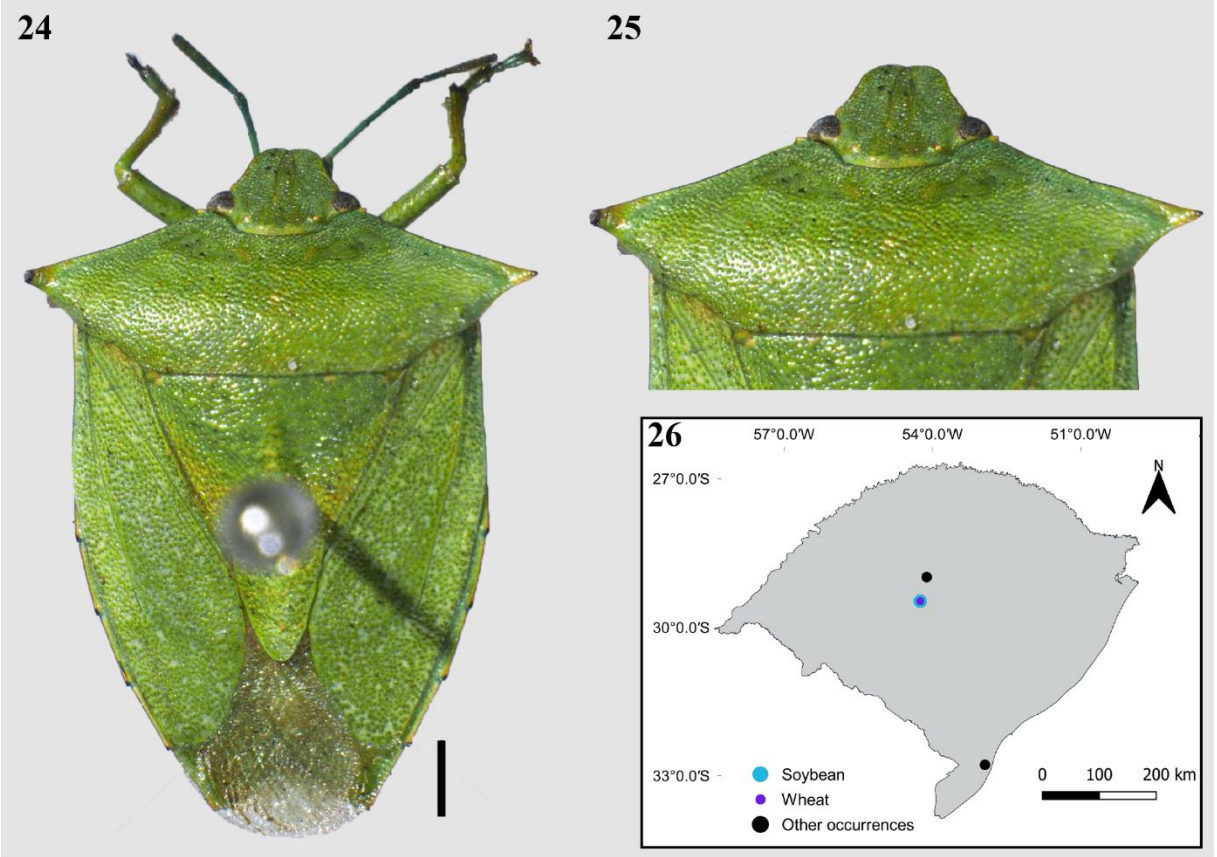


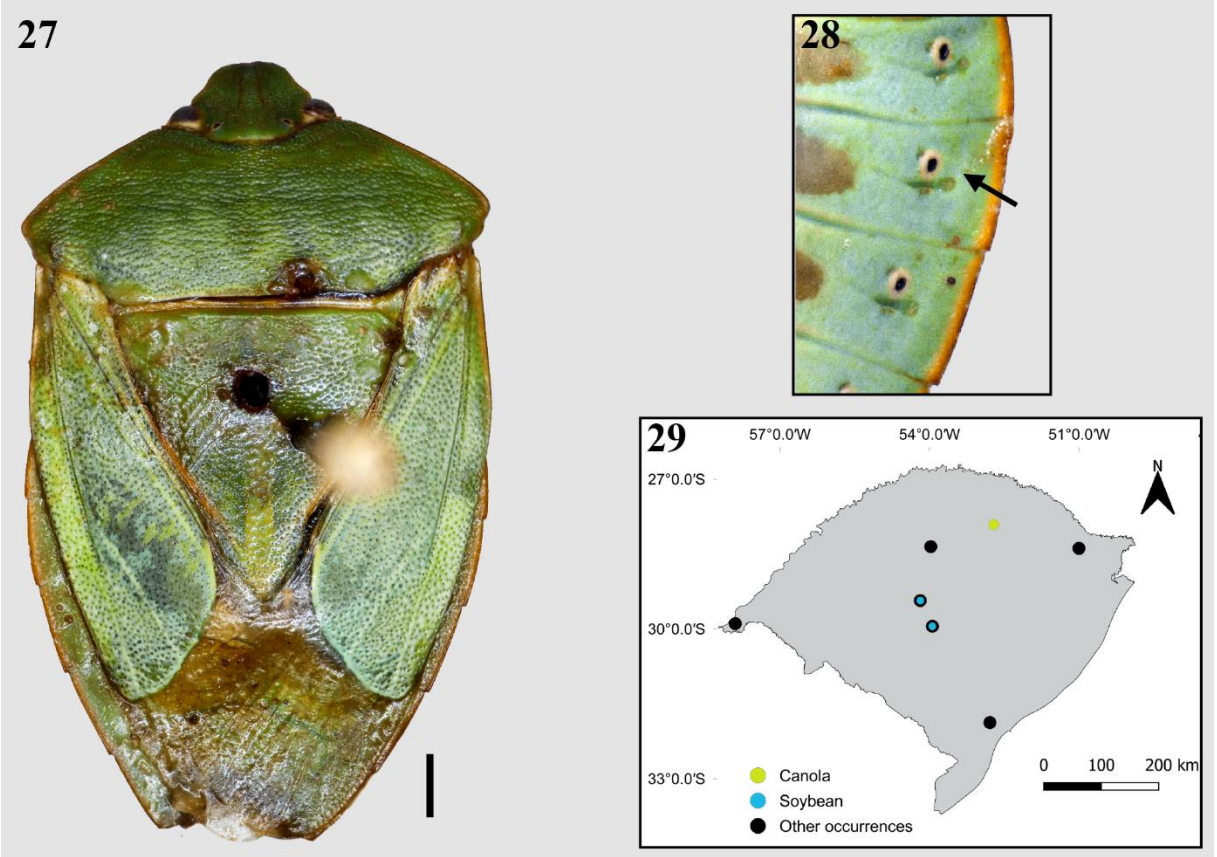
FIGURES 16–19. *Agroecus griseus*. 16: Dorsal view, scale bar= 1.0 mm. 17: Corium, with impunctate bands. 18: Fore and mid femora bearing small tubercles. 19: Distribution within Rio Grande do Sul.



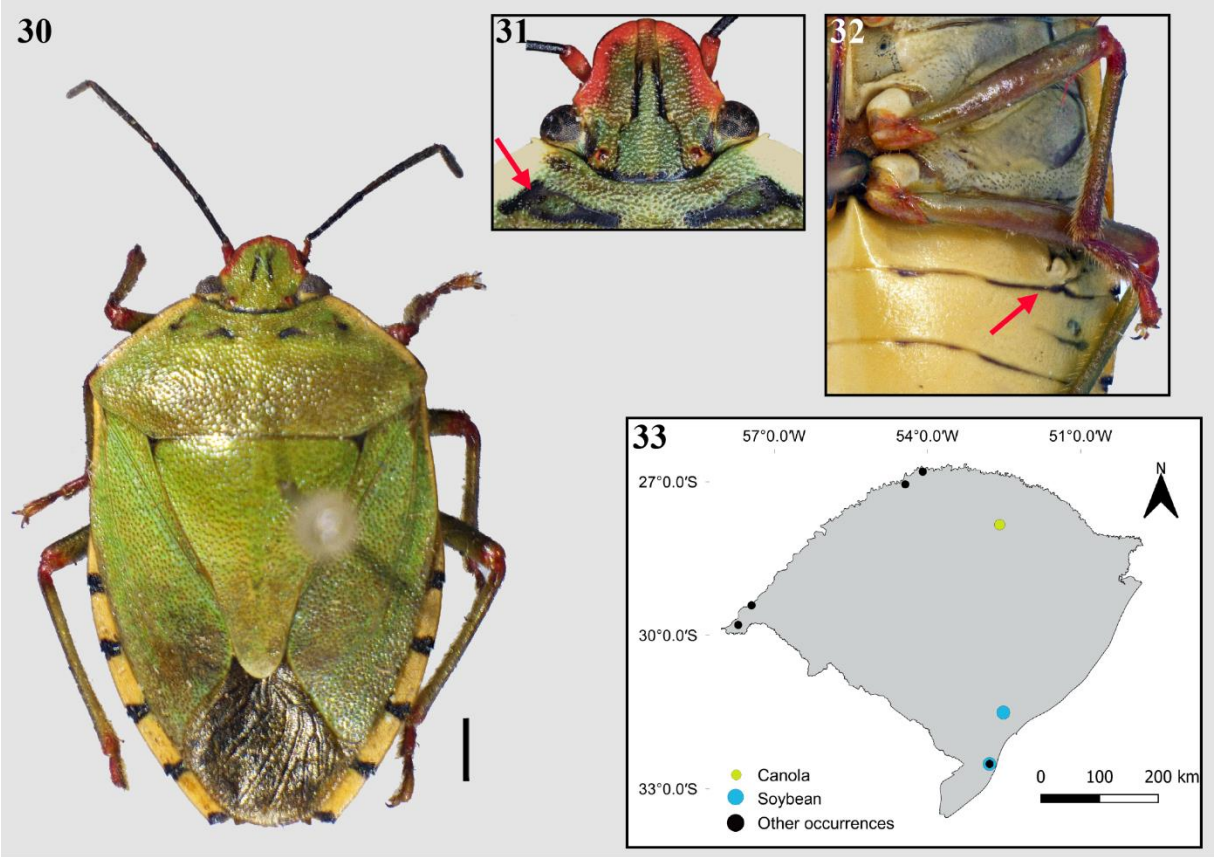
FIGURES 20–23. *Arvelius albopunctatus.*20: Dorsal view, sacle bar= 1.0 mm. 21: Ventral view, abdominal spine (red arrow). 22: Head and pronotum. 23: Distribution within Rio Grande do Sul.



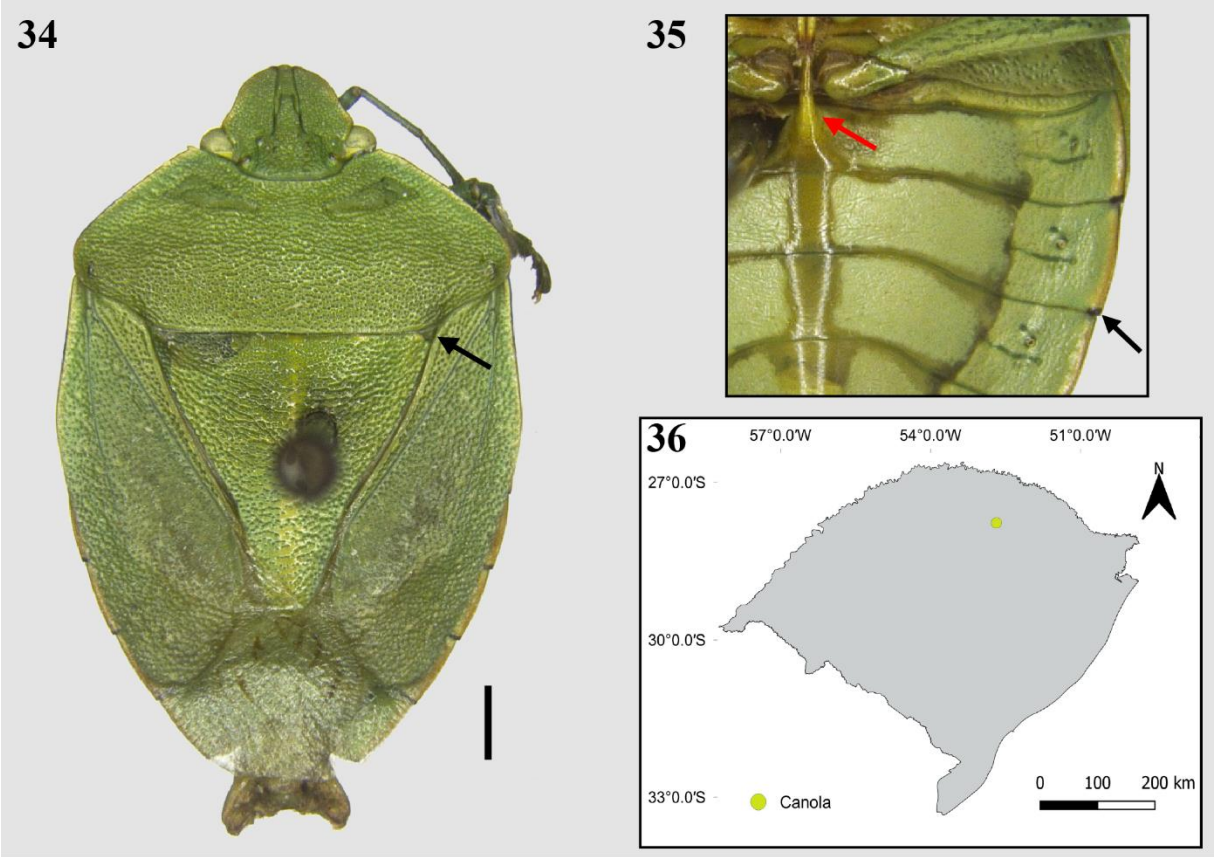
FIGURES 24–26. *Chinavia armigera*. 24: Dorsal view, scale bar = 1.0 mm. 25: Head and pronotum. 26: Distribution within Rio Grande do Sul.



FIGURES 27–29. *Chinavia asseada.* 27: Dorsal view, scale bar = 1.0 mm. 28: Abdominal venter, spiracles. 29: Distribution within Rio Grande do Sul.



FIGURES 30–33. *Chinavia erythrocnemis.* 30: Dorsal view, scale bar = 1.0 mm. 31: Head and anterior margin of pronotum. 32: Ventral view of thorax and abdomen, showing legs, spiracles and pseudosutures (red arrow). 33: Distribution within Rio Grande do Sul.



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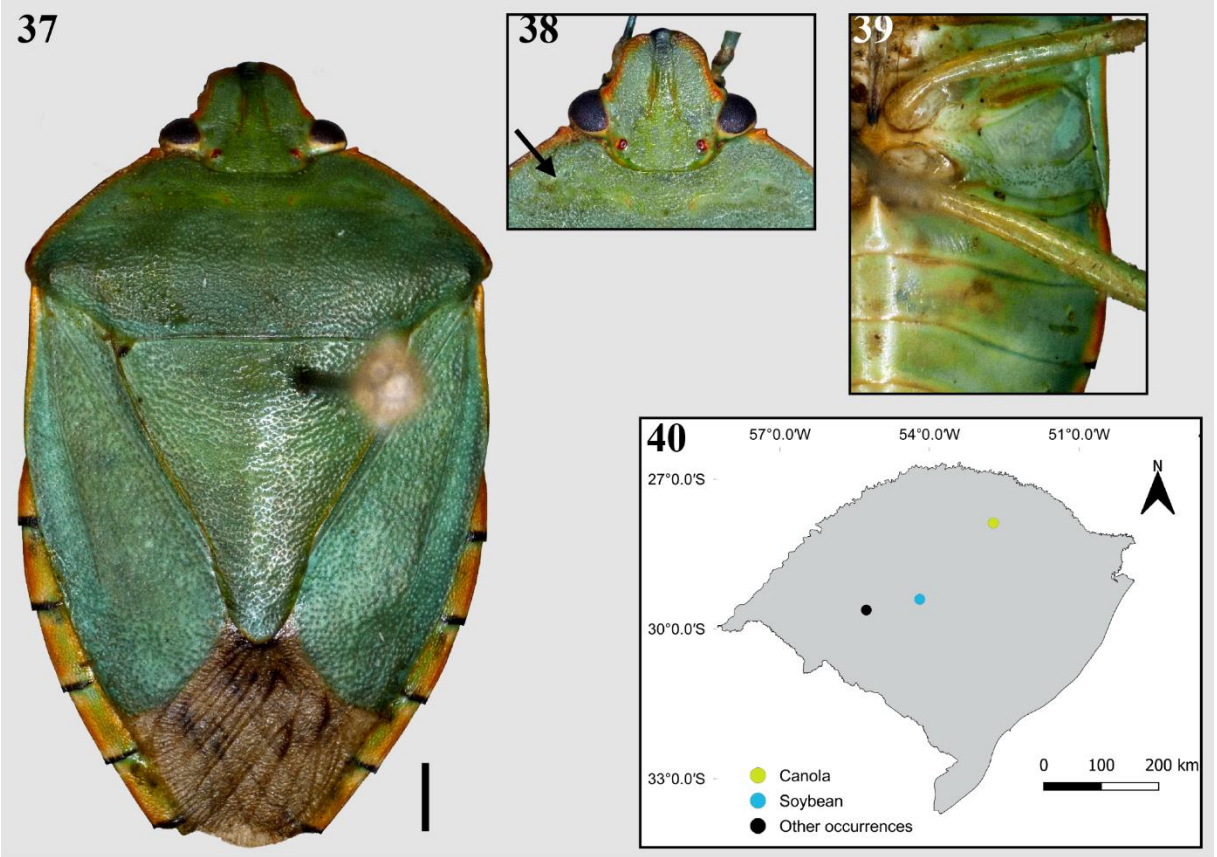

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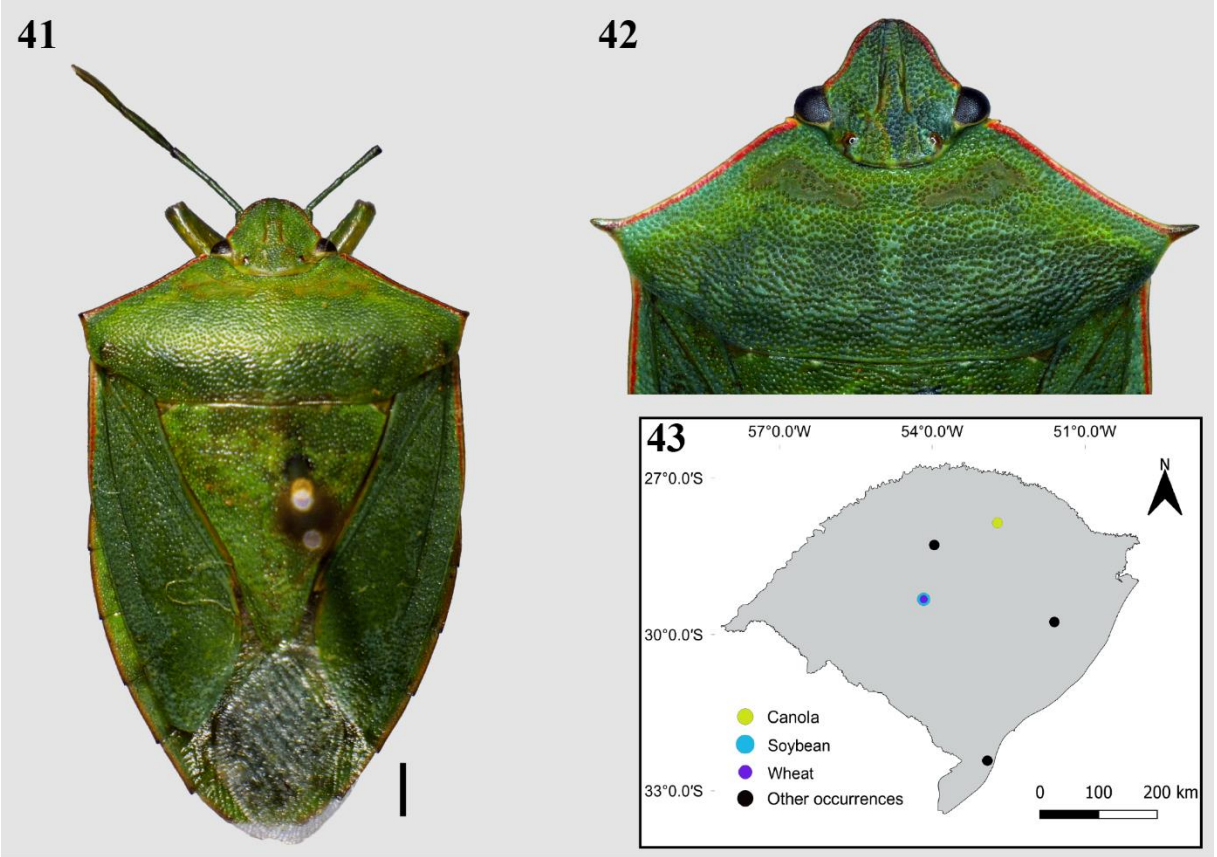
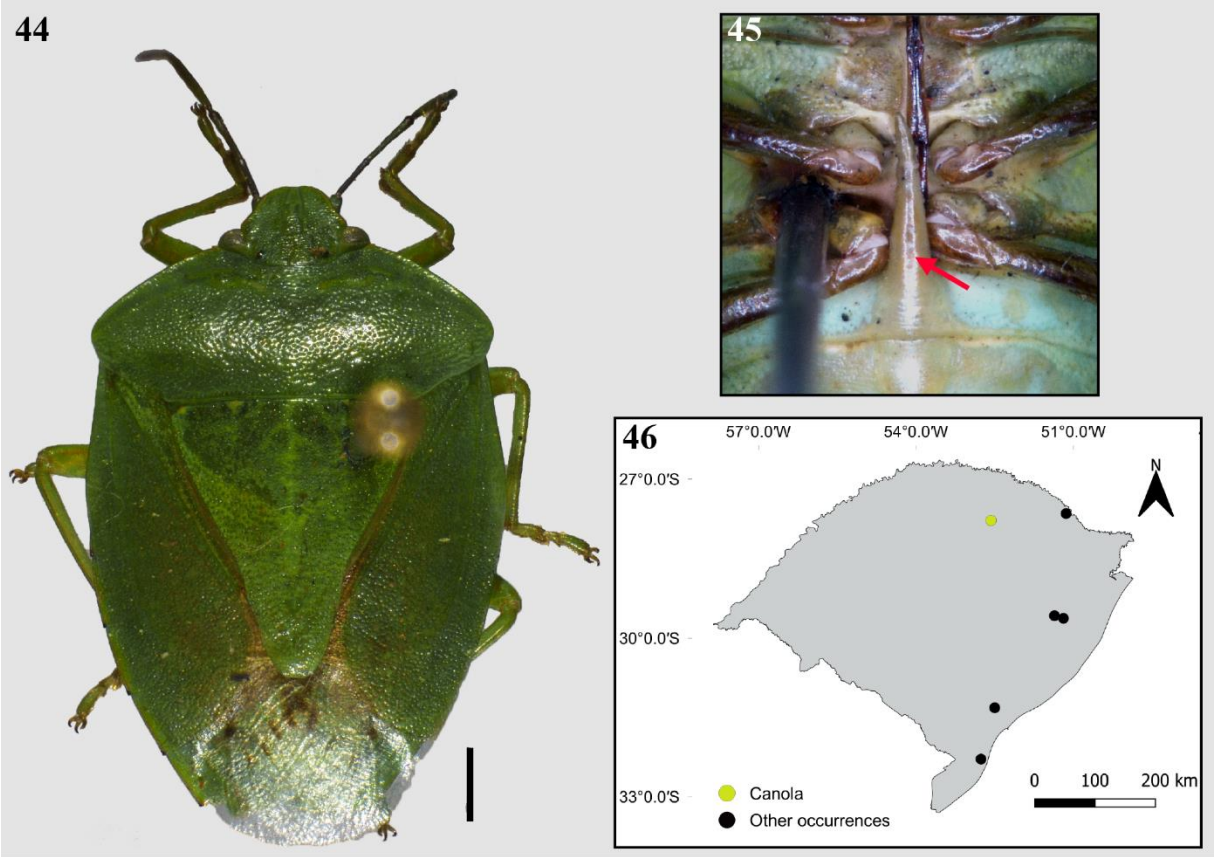


FIGURES 41–43. *Chinavia nigridorsata*. 41: Dorsal view, scale bar = 1.0 mm. 42: Head and pronotum. 43: Distribution within Rio Grande do Sul.



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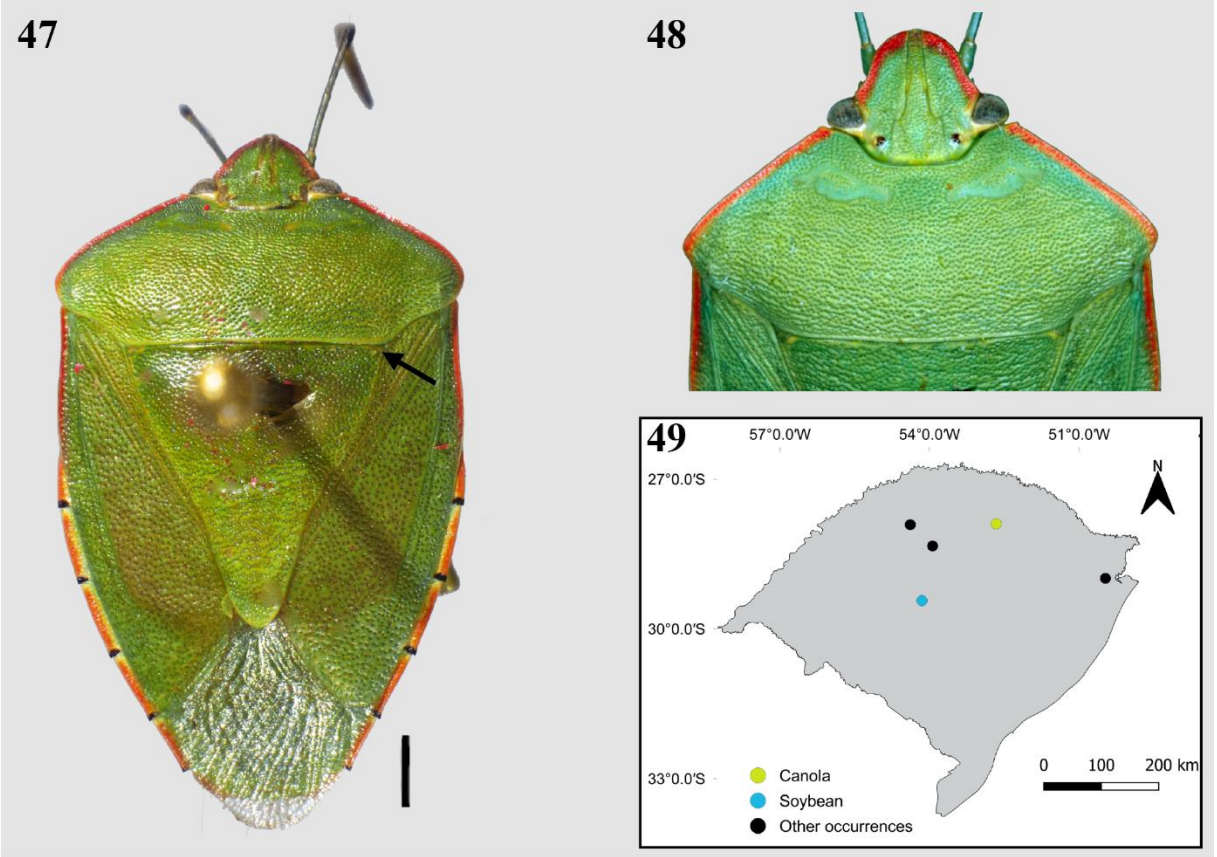
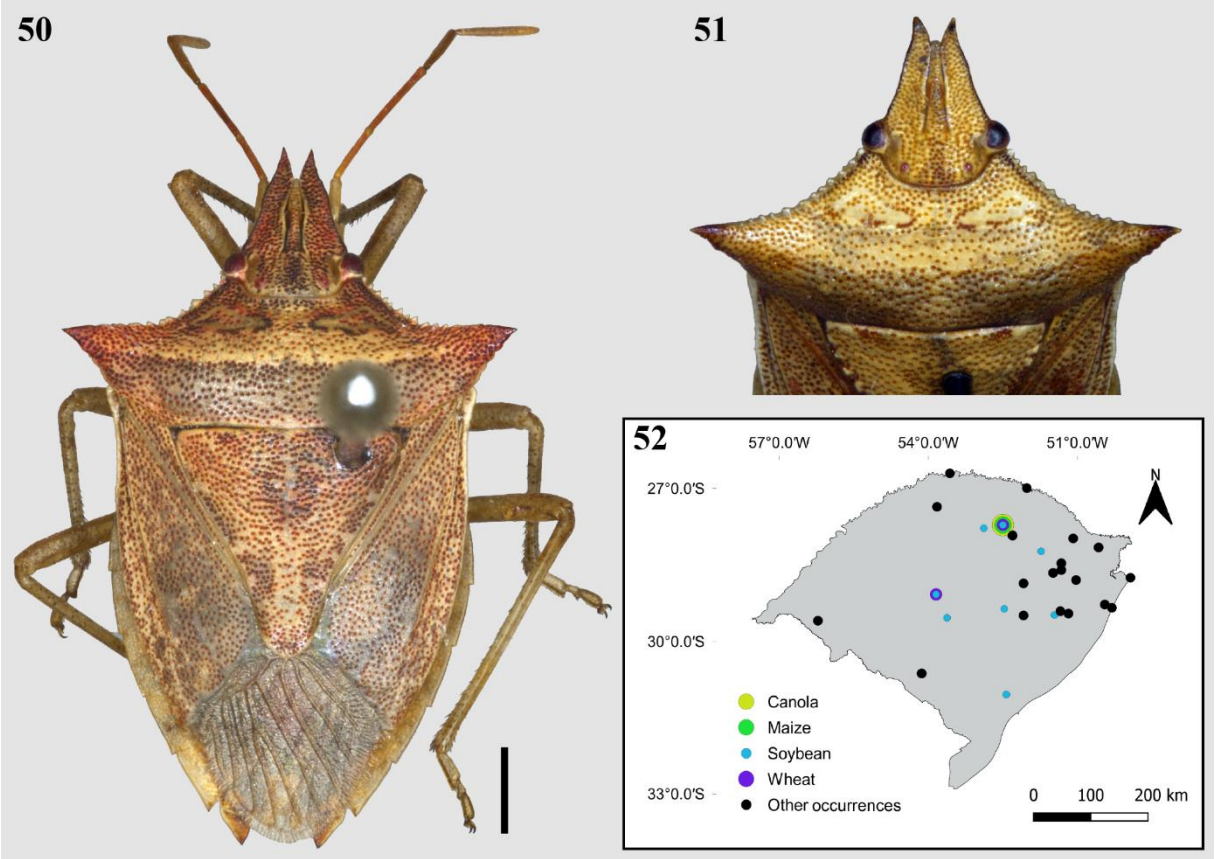
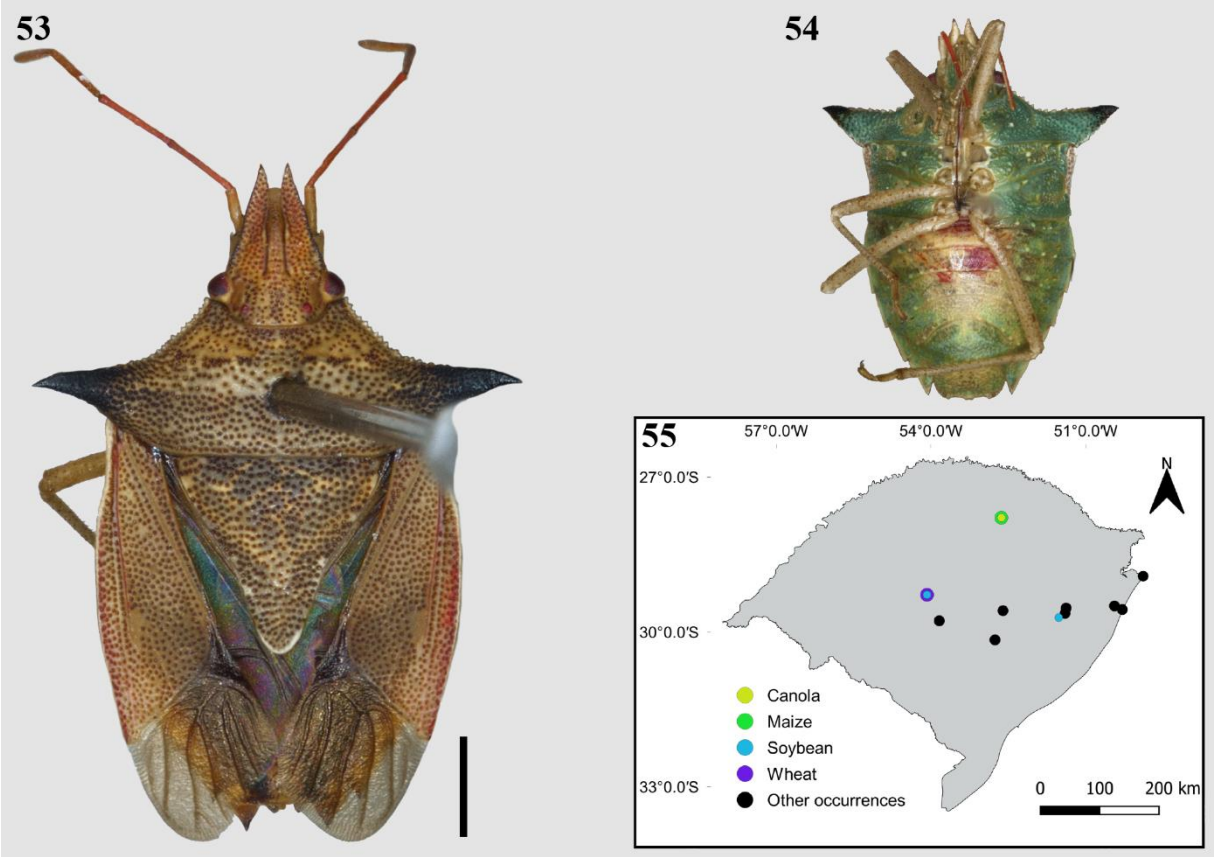


FIGURES 47–49. *Chinavia pengue.* 47: Dorsal view, scale bar = 1.0 mm. 48: Head and pronotum. 49: Distribution within Rio Grande do Sul.



FIGURES 50–52. *Diceraeus furcatus.* 50: Dorsal view, scale bar = 1.0 mm. 51: Head and pronotum. 52: Distribution within Rio Grande do Sul.



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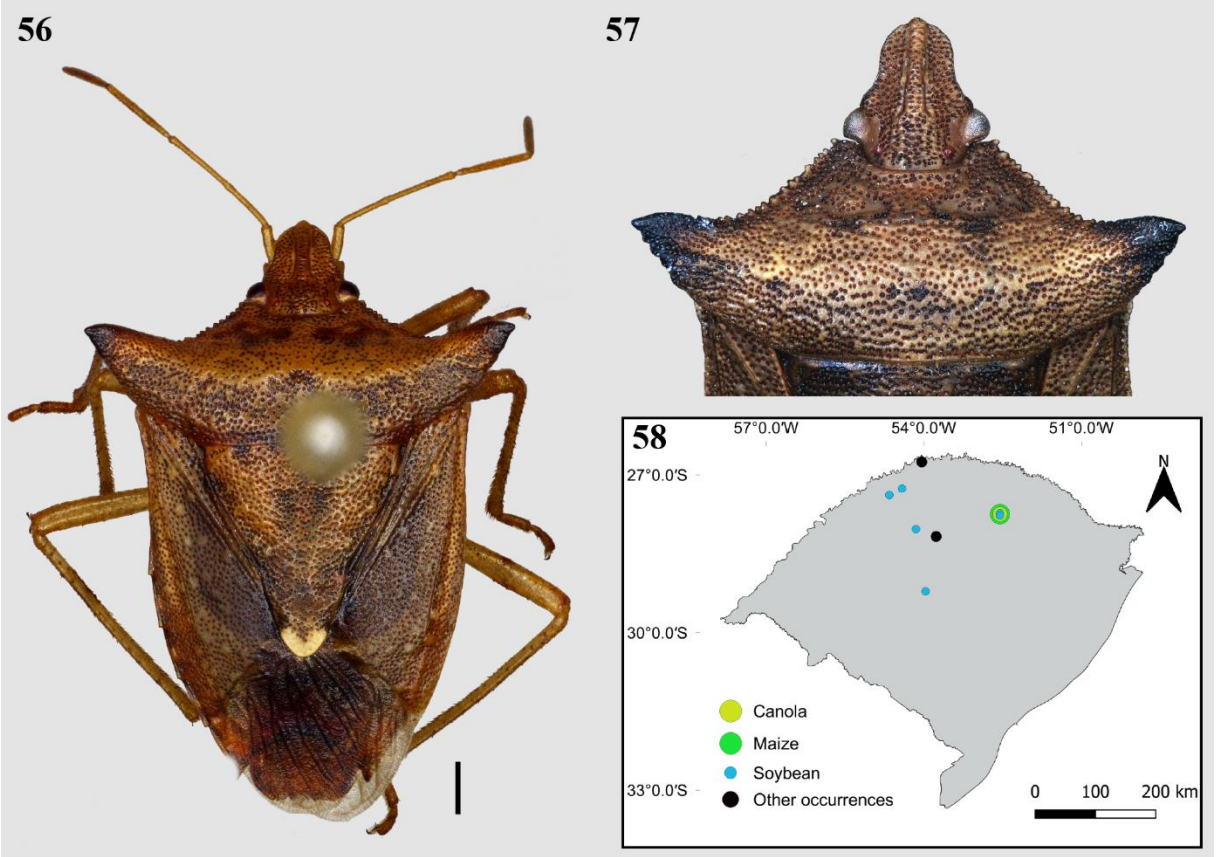

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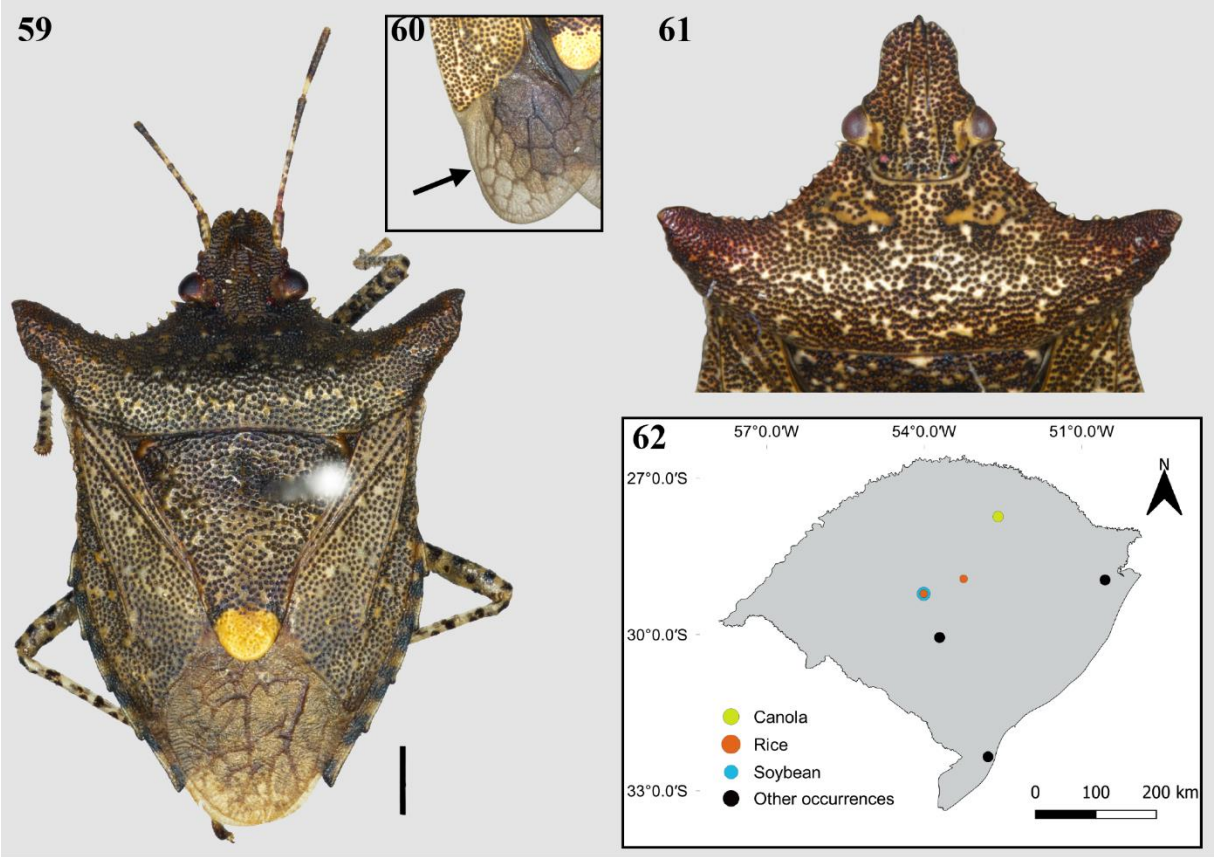
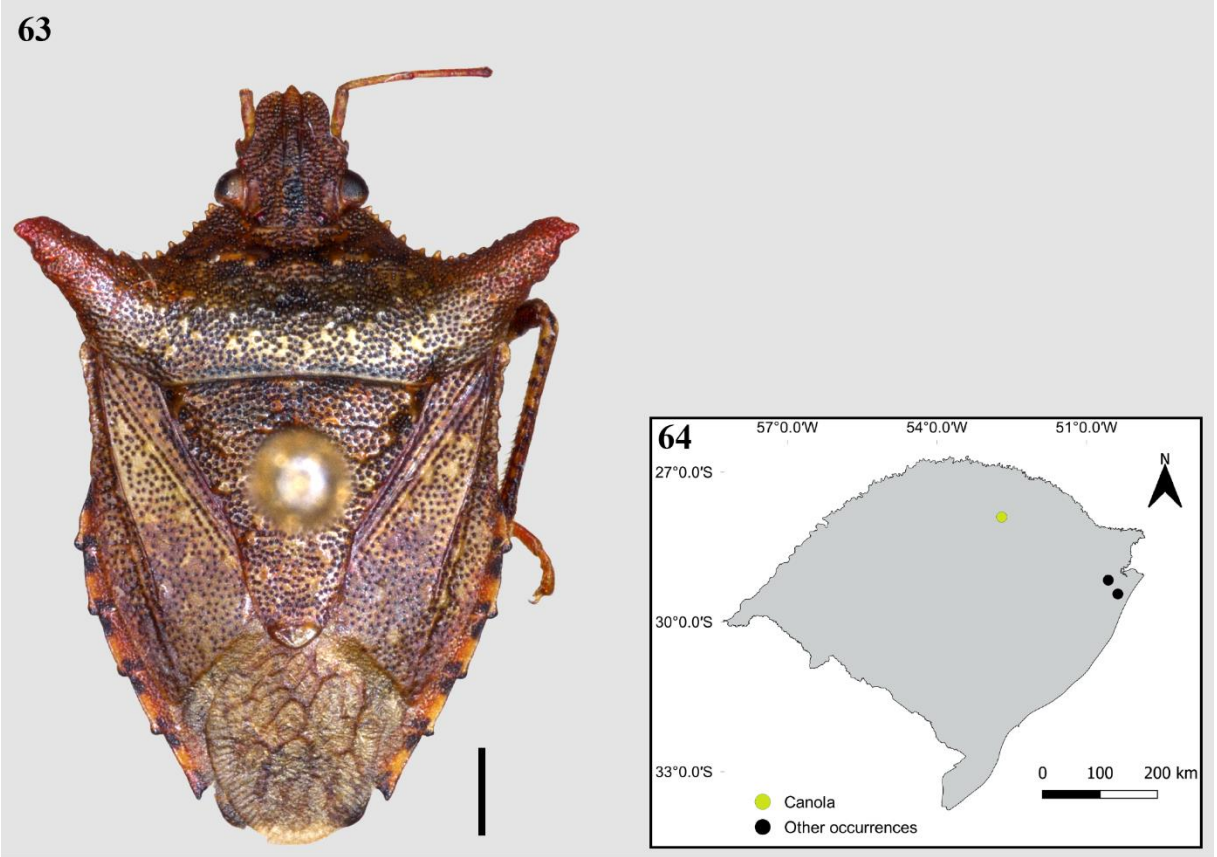
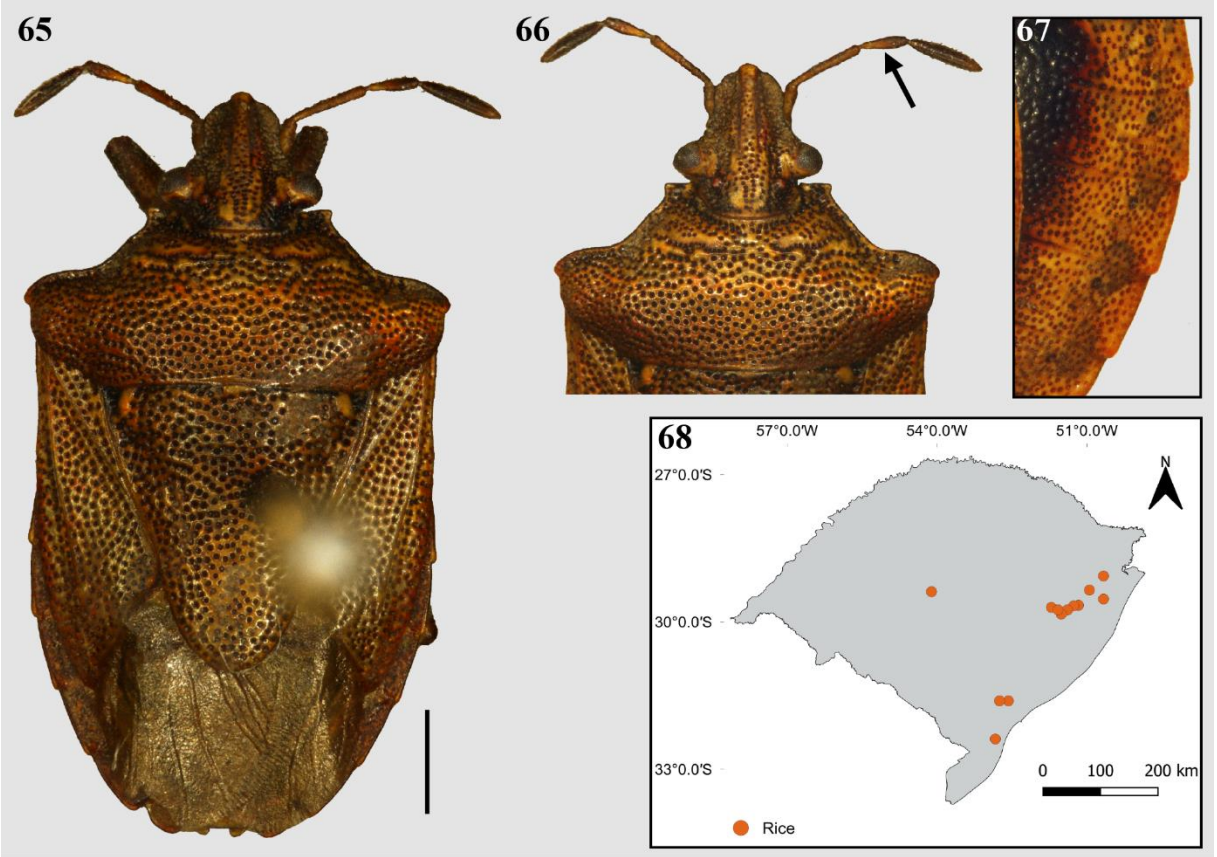


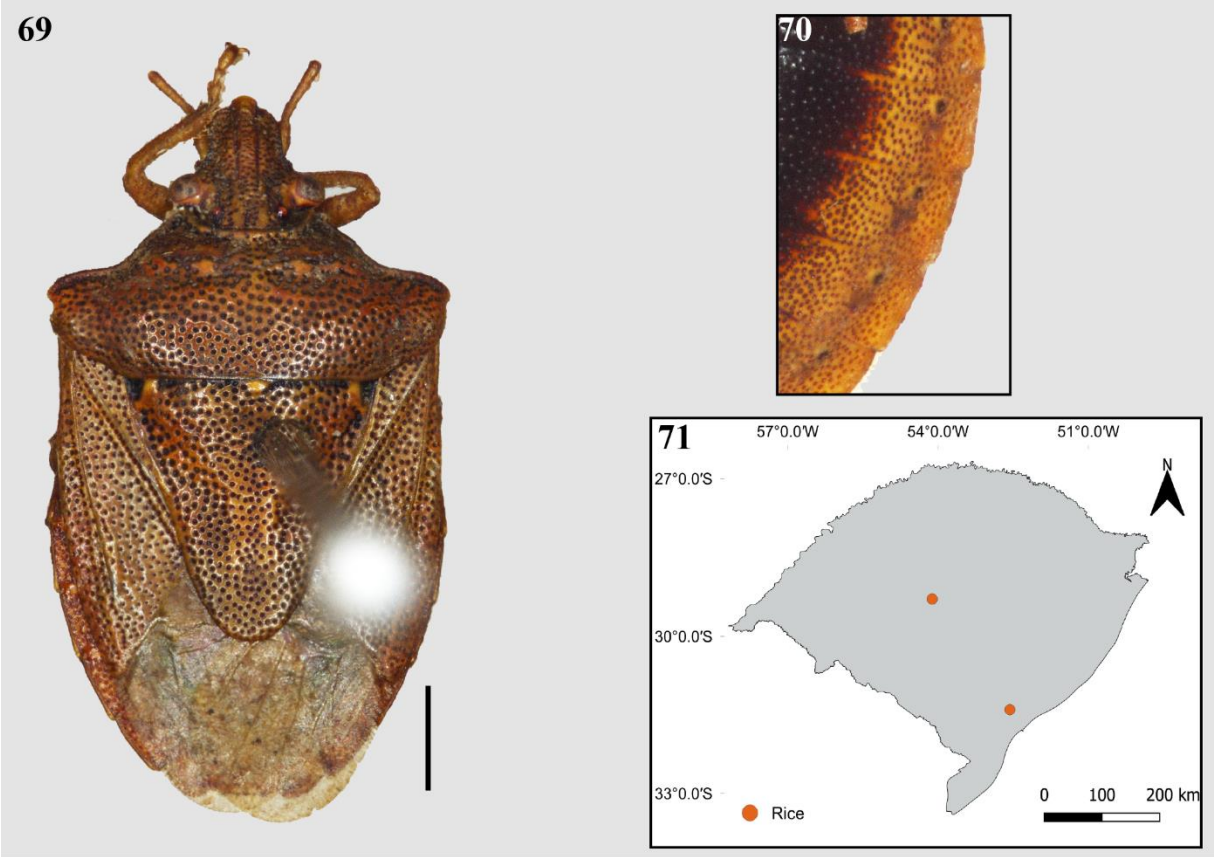
FIGURES 59–62. *Euschistus (Lycipta) picticornis.* 59: Dorsal view, scale bar = 1.0 mm. 60: Membranous portion of hemelytra, with reticulate veins (arrow). 61: Head and pronotum. 62: Distribution within Rio Grande do Sul.



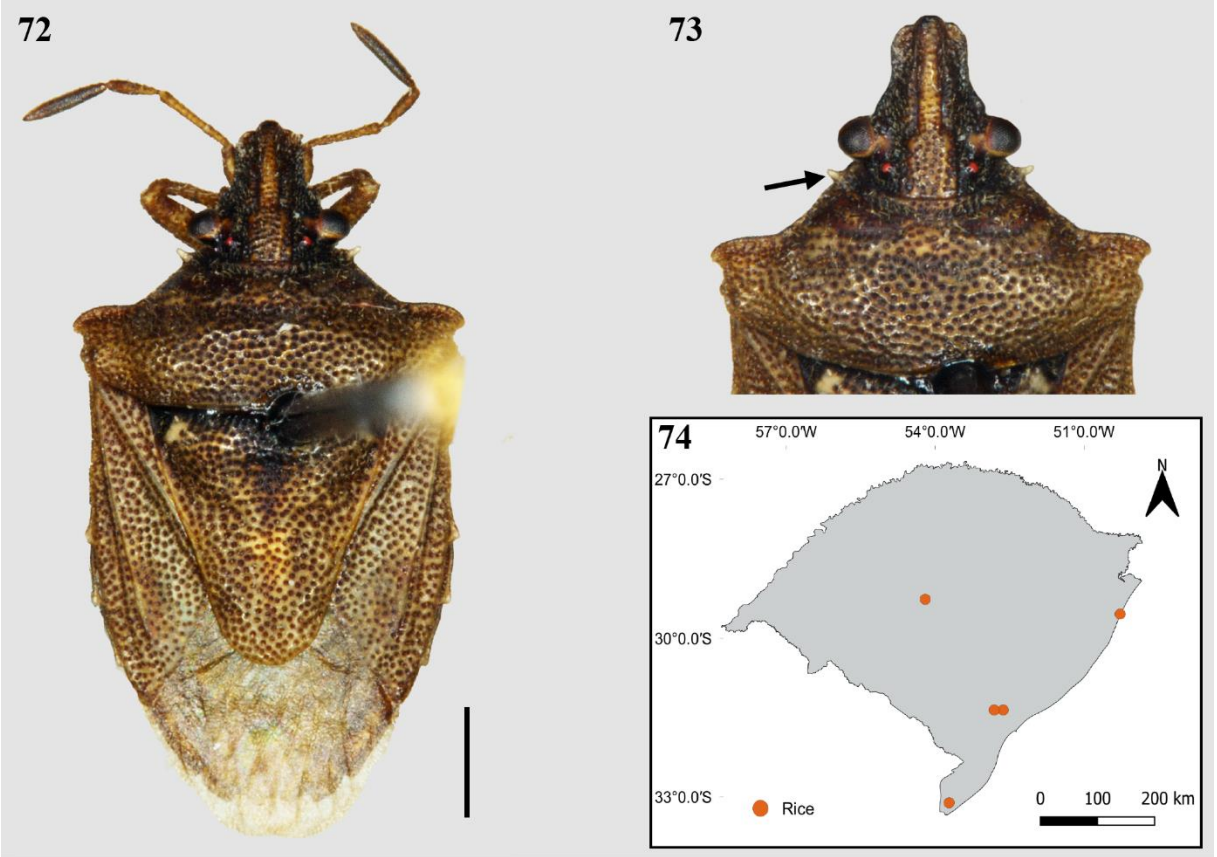
FIGURES 63–64. *Euschistus (Lycipta) trinagulator*. 63: Dorsal view, scale bar = 1.0 mm. 64: Distribution within Rio Grande do Sul.



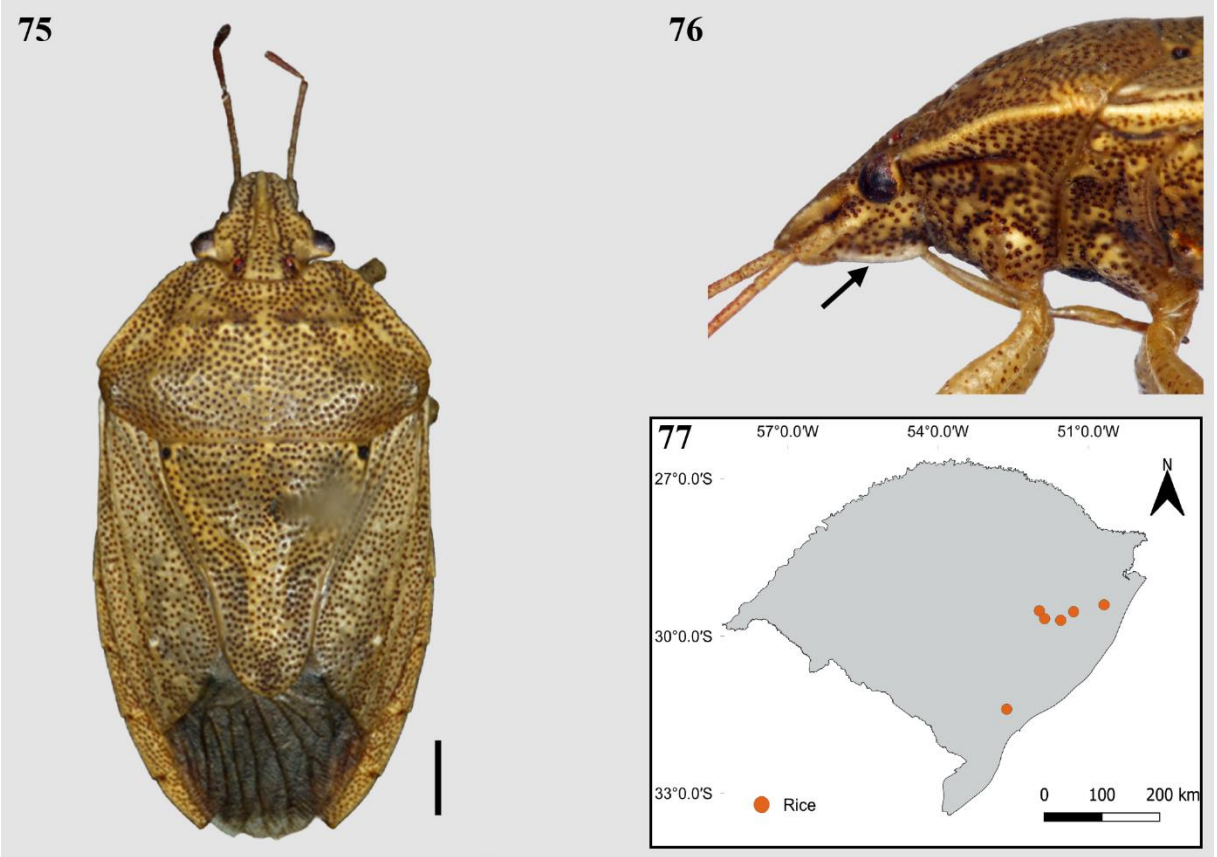
FIGURES 65–68. *Glyphepomis adroguensis.* 65: Dorsal view, scale bar = 1.0 mm. 66: Head and pronotum, arrow indicates antennomere 4. 67: Abdominal sternites. 68: Distribution within Rio Grande do Sul.



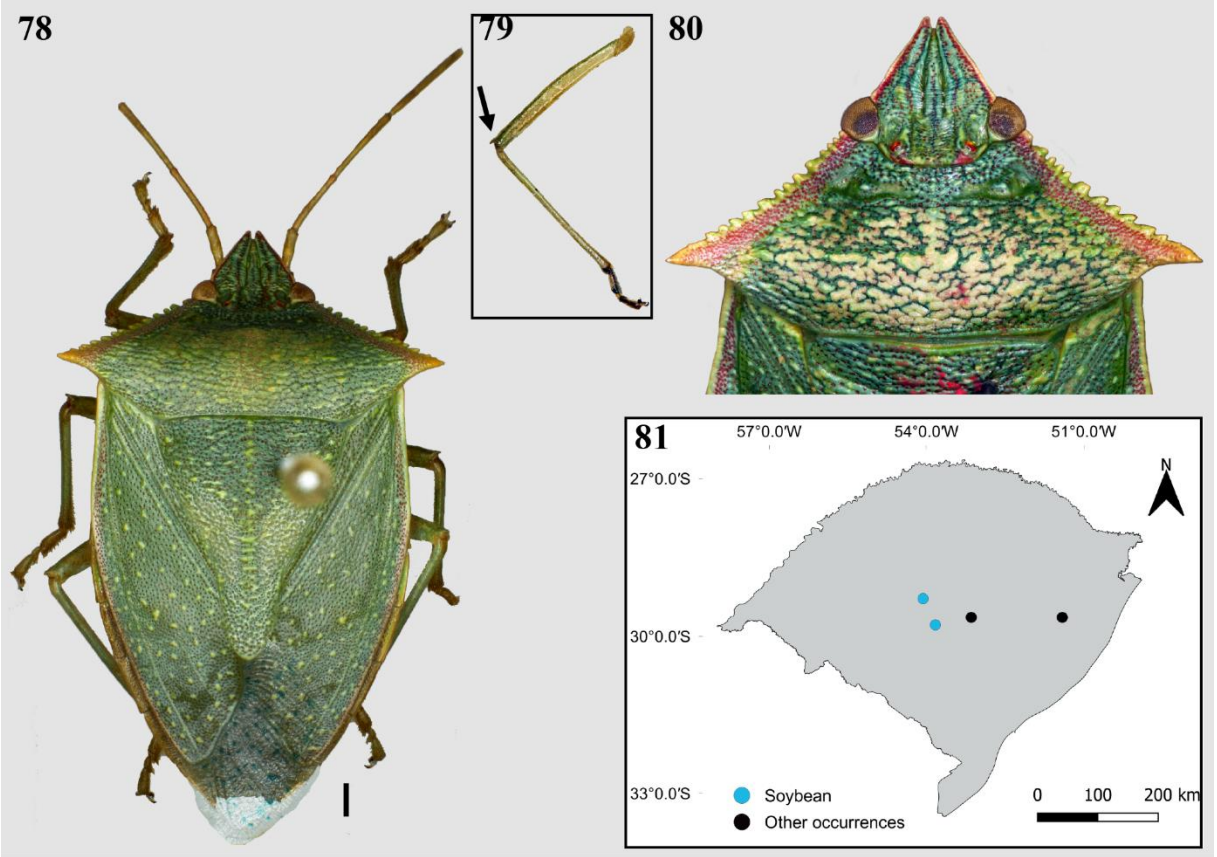
FIGURES 69–71. *Glyphepomis pelotensis.* 69: Dorsal view, scale bar = 1.0 mm. 70: Abdominal sternites. 71: Distribution within Rio Grande do Sul.



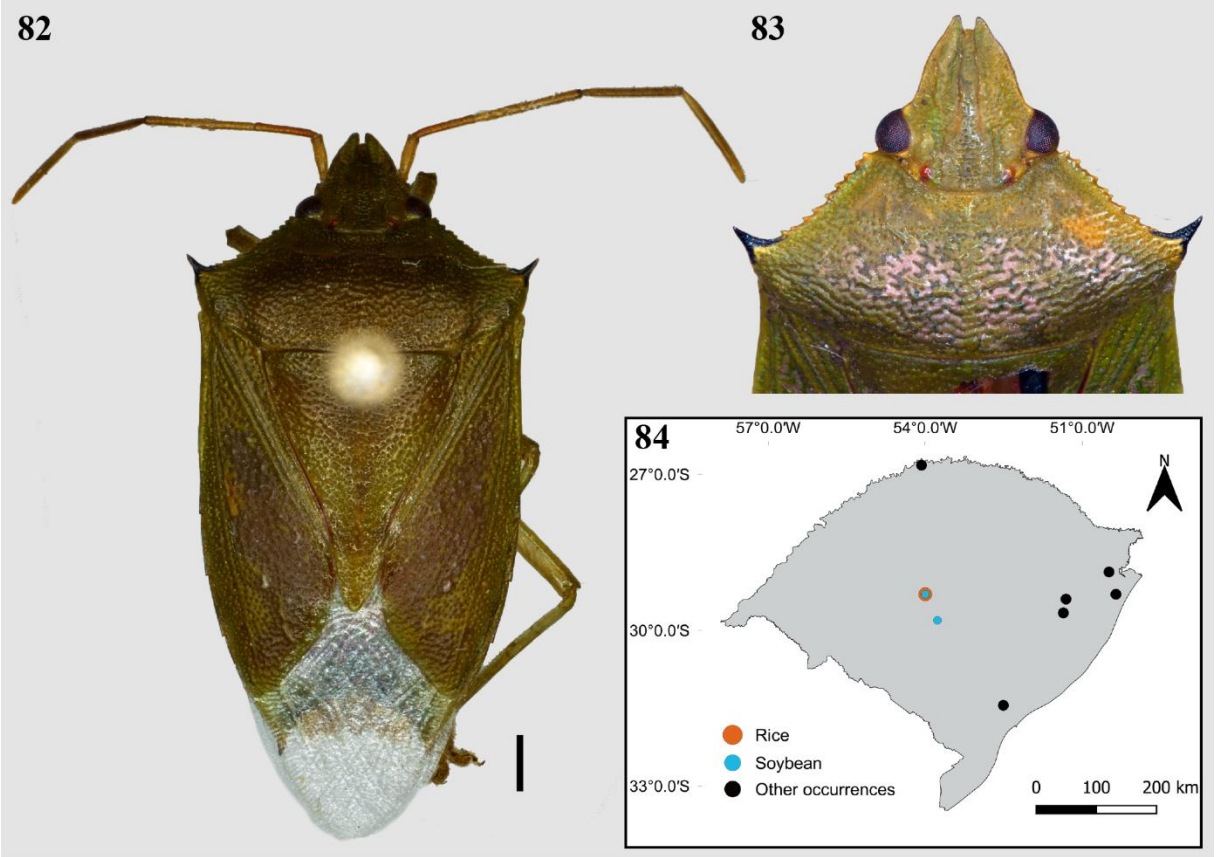
FIGURES 72–74. *Glyphepomis setigera.* 72: Dorsal view, scale bar = 0.5 mm. 73: Head and pronotum, arrow indicates anterior angle of pronotum. 74: Distribution within Rio Grande do Sul.



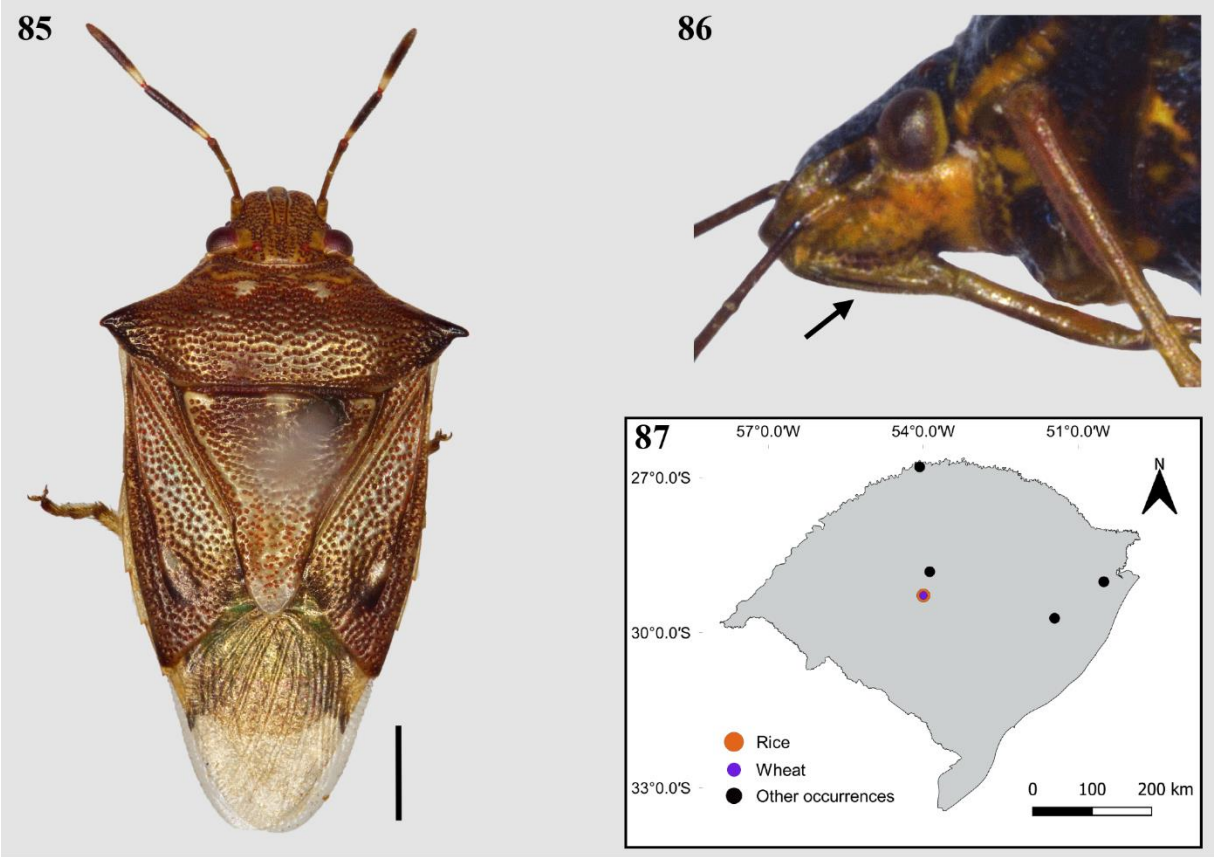
FIGURES 75–77. *Hypatropis inermis.* 75: Dorsal view, scale bar = 1.0 mm. 76: Head and prothorax lateral view, arrow indicates the buccula. 77: Distribution within Rio Grande do Sul.



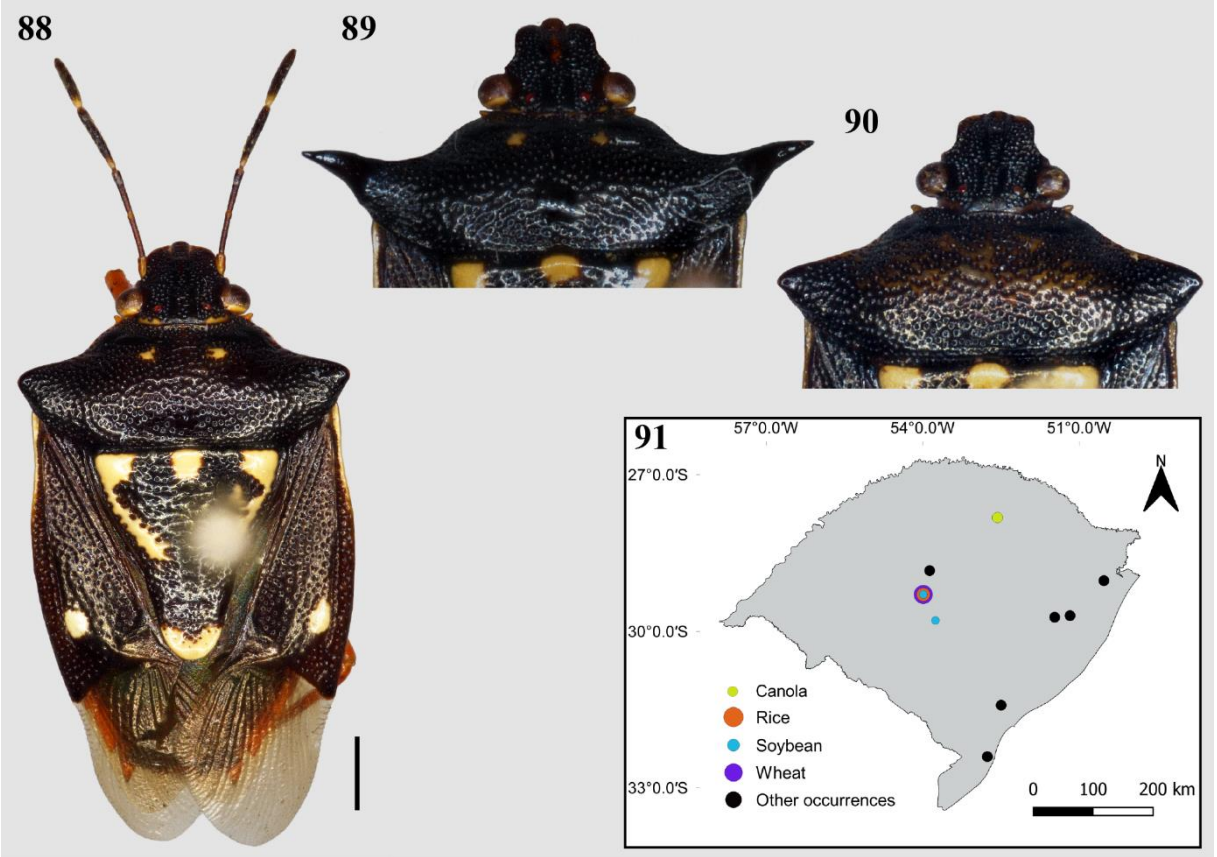
FIGURES 78–81. *Loxa deducta*. 78: Dorsal view, scale bar = 1.0 mm. 79: Leg, arrow indicates the spine at the apex of femur. 80: Head and pronotum. 81: Distribution within Rio Grande do Sul.



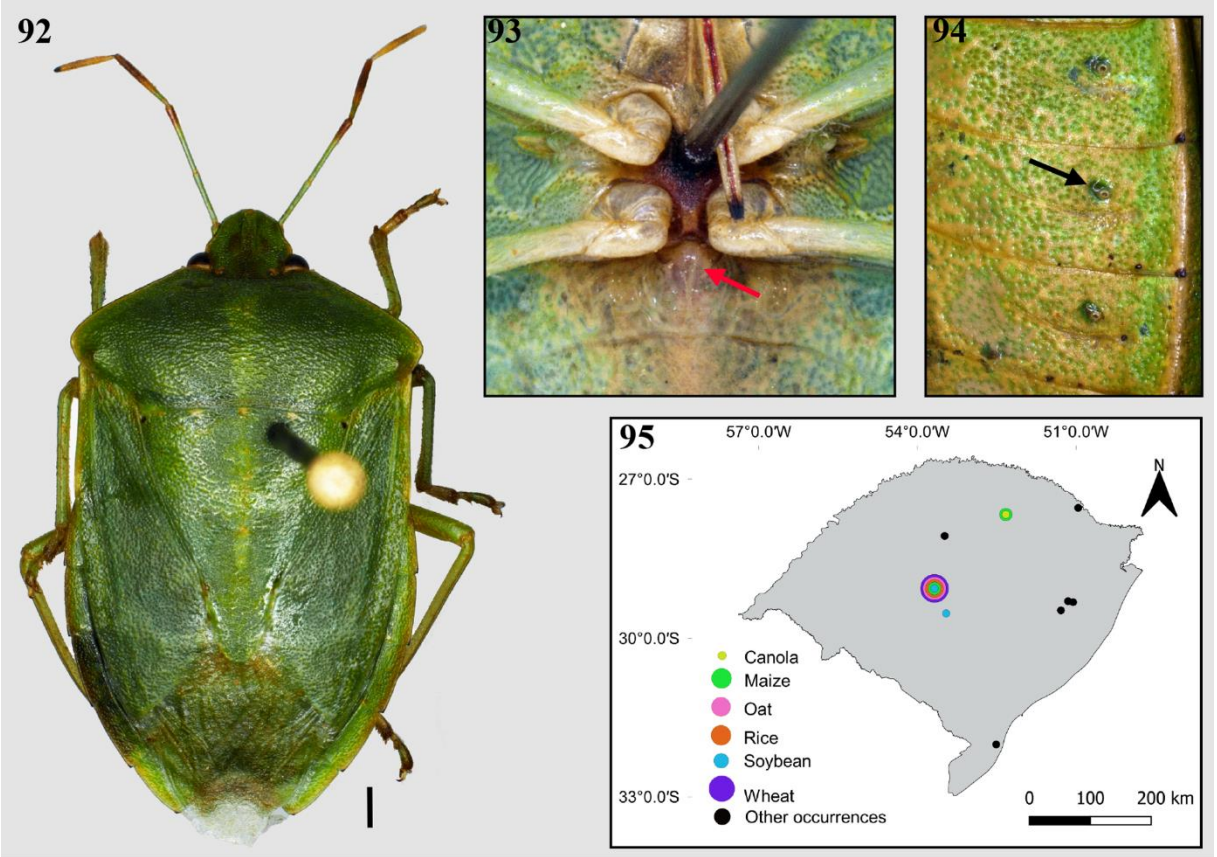
FIGURES 82–84. *Mayrinia curvidens*. 82: Dorsal view, scale bar = 1.0 mm. 83: Head and pronotum. 84: Distribution within Rio Grande do Sul.



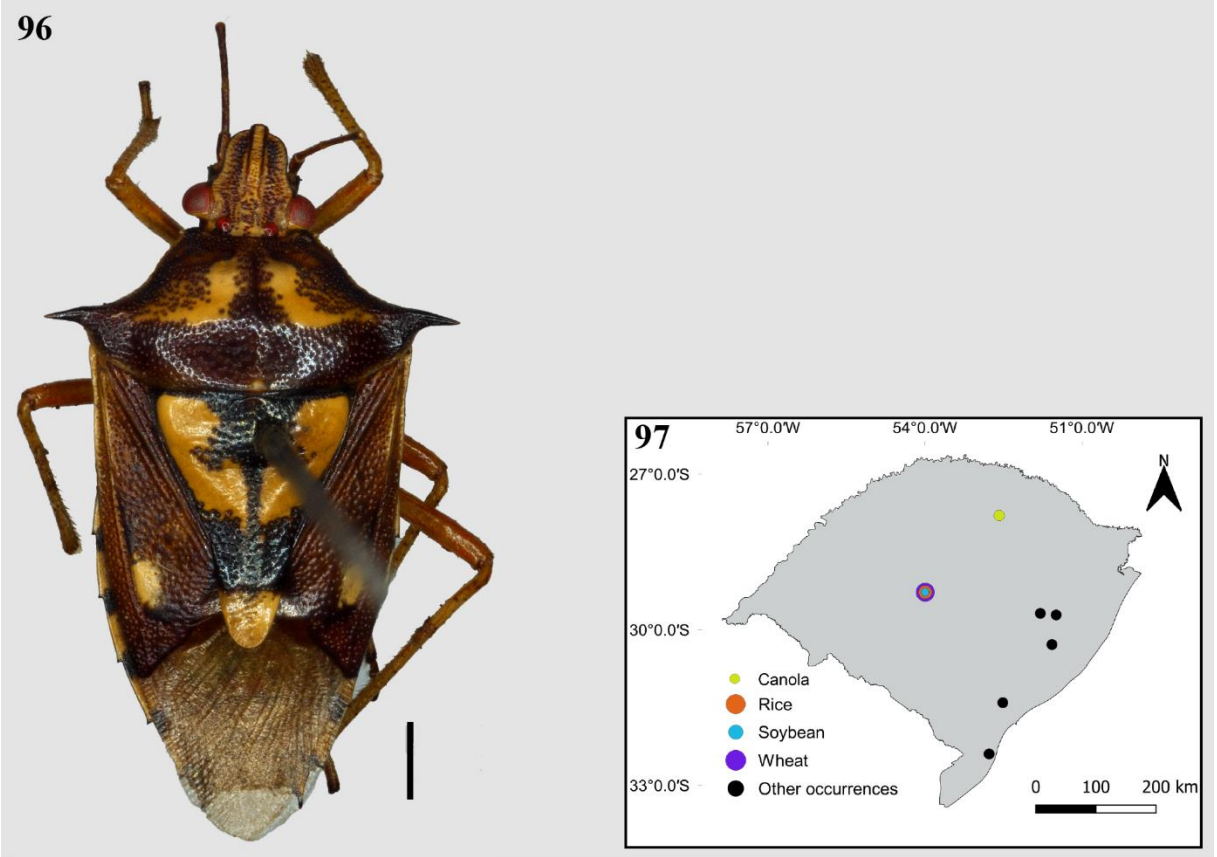
FIGURES 85–87. *Mormidea notulifera.* 85: Dorsal view, scale bar = 1.0 mm. 86: Head and pronotum. 87: Distribution within Rio Grande do Sul.



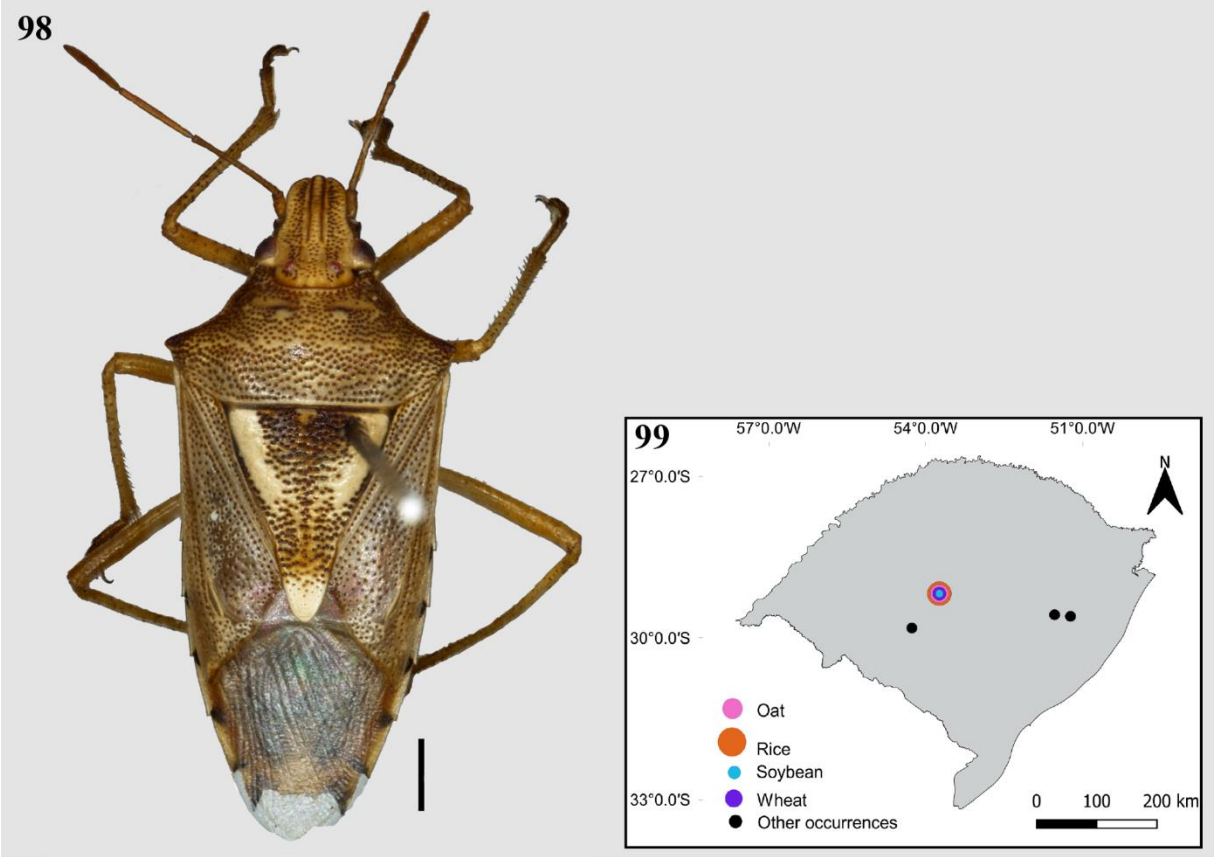
FIGURES 88–91. *Mormidea v-luteum.* 88: Dorsal view, scale bar = 1.0 mm. 89–90: Head and pronotum, showing variation in the development of humeral angles. 91: Distribution within Rio Grande do Sul.



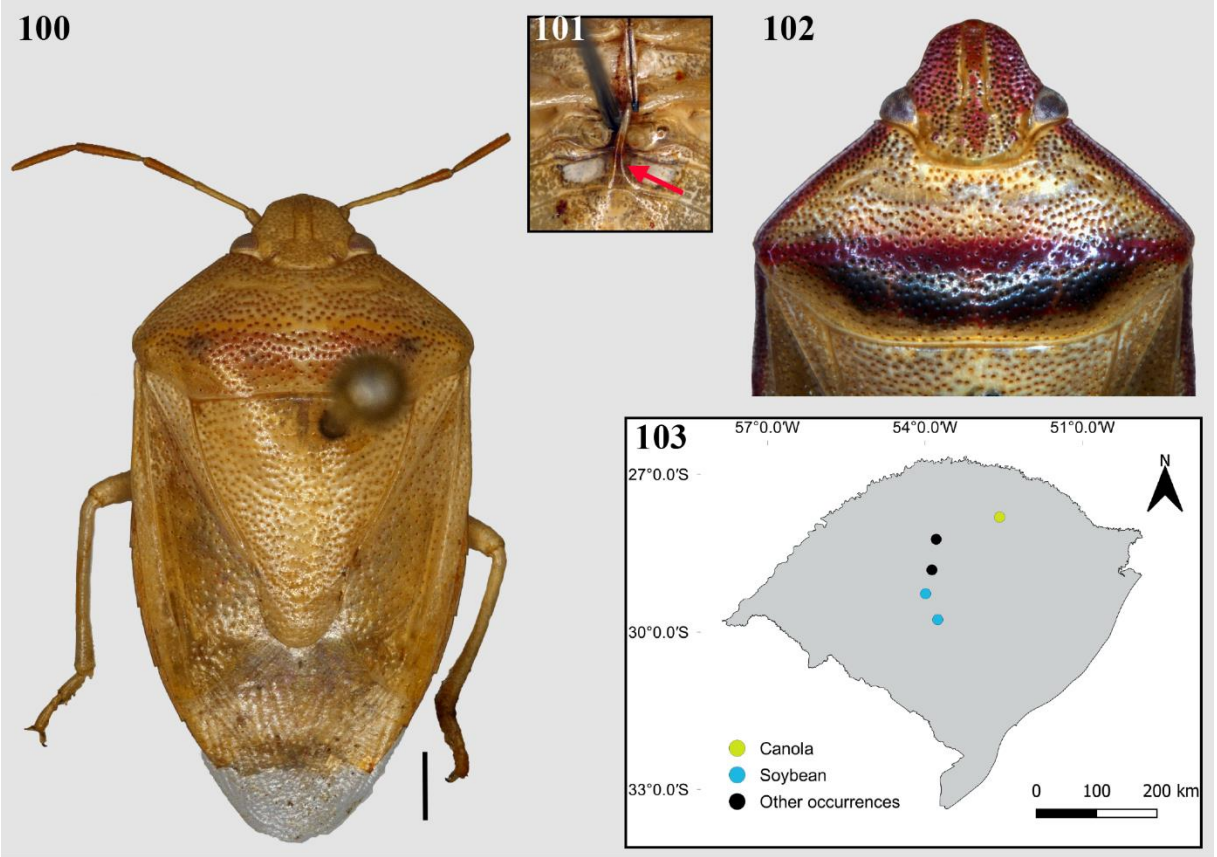
FIGURES 92–95. *Nezara viridula*. 92: Dorsal view, scale bar = 1.0 mm. 93: Ventral view, showing abdominal spine (arrow). 94: Ventral view of lateral area of abdominal sternites, showing spiracles. 95: Distribution within Rio Grande do Sul.



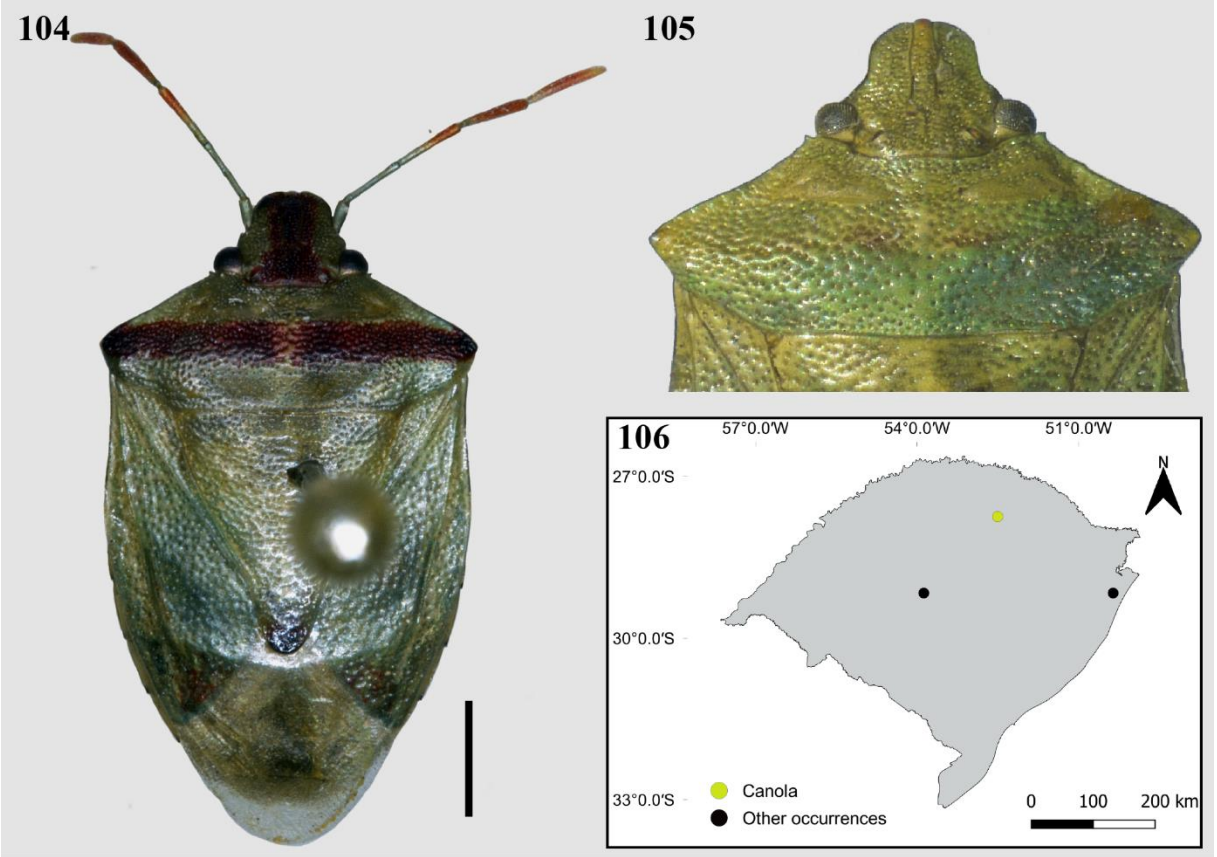
FIGURES 96–97. *Oebalus poecillus.* 96: Dorsal view, scale bar = 1.0 mm. 97: Distribution within Rio Grande do Sul.



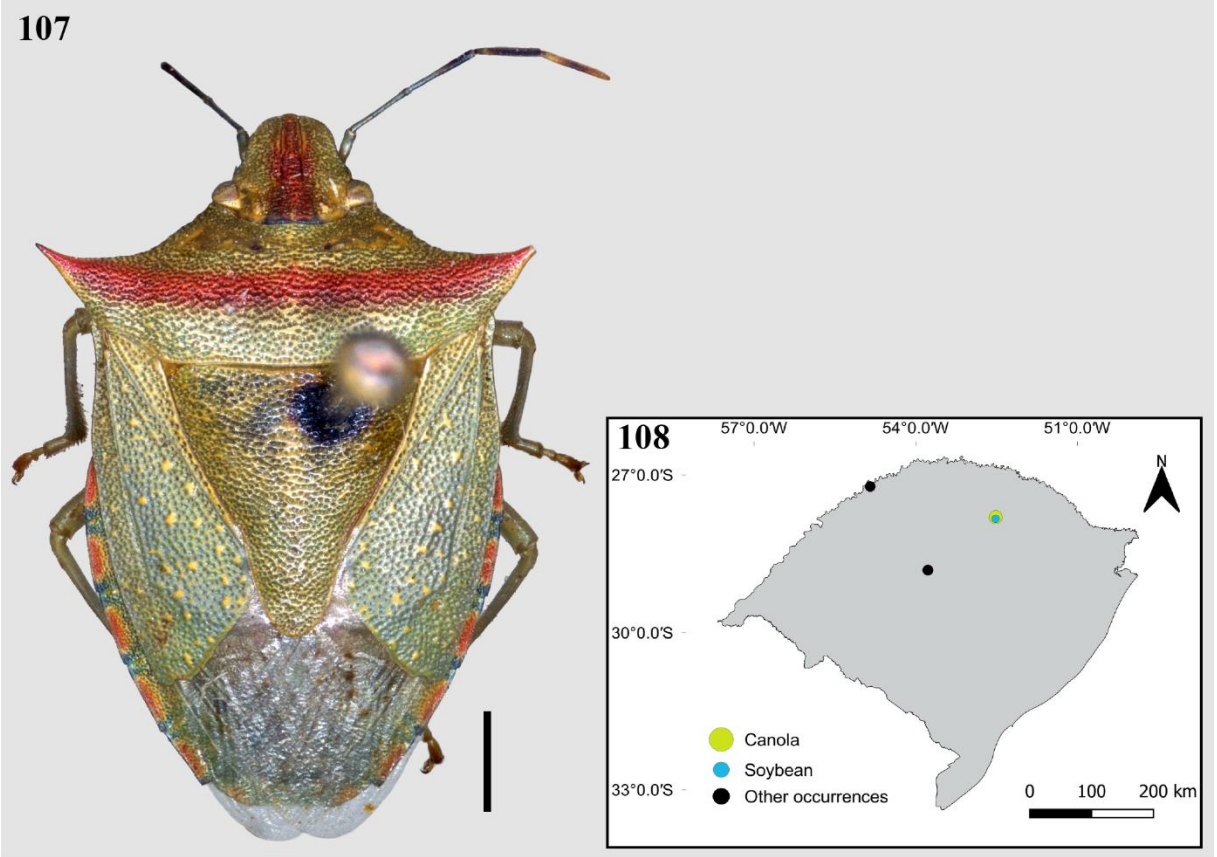
FIGURES 98–99. *Oebalus ypsilongriseus*. 98: Dorsal view, scale bar = 1.0 mm. 99: Distribution within Rio Grande do Sul.



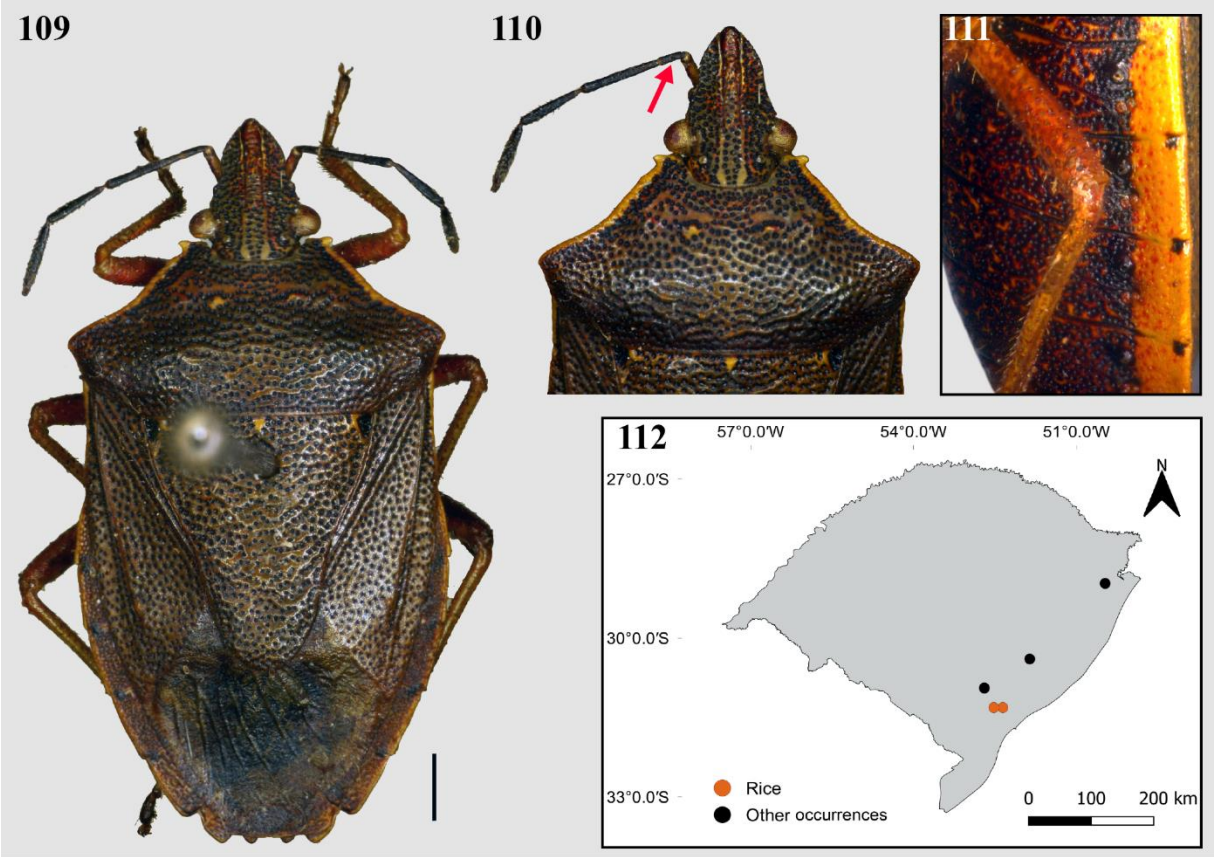
FIGURES 100–103. *Piezodorus guildinii.* 100: Dorsal view, scale bar = 1.0 mm. 101: Ventral view, showing abdominal spine (arrow). 102: Head and pronotum. 103: Distribution within Rio Grande do Sul.



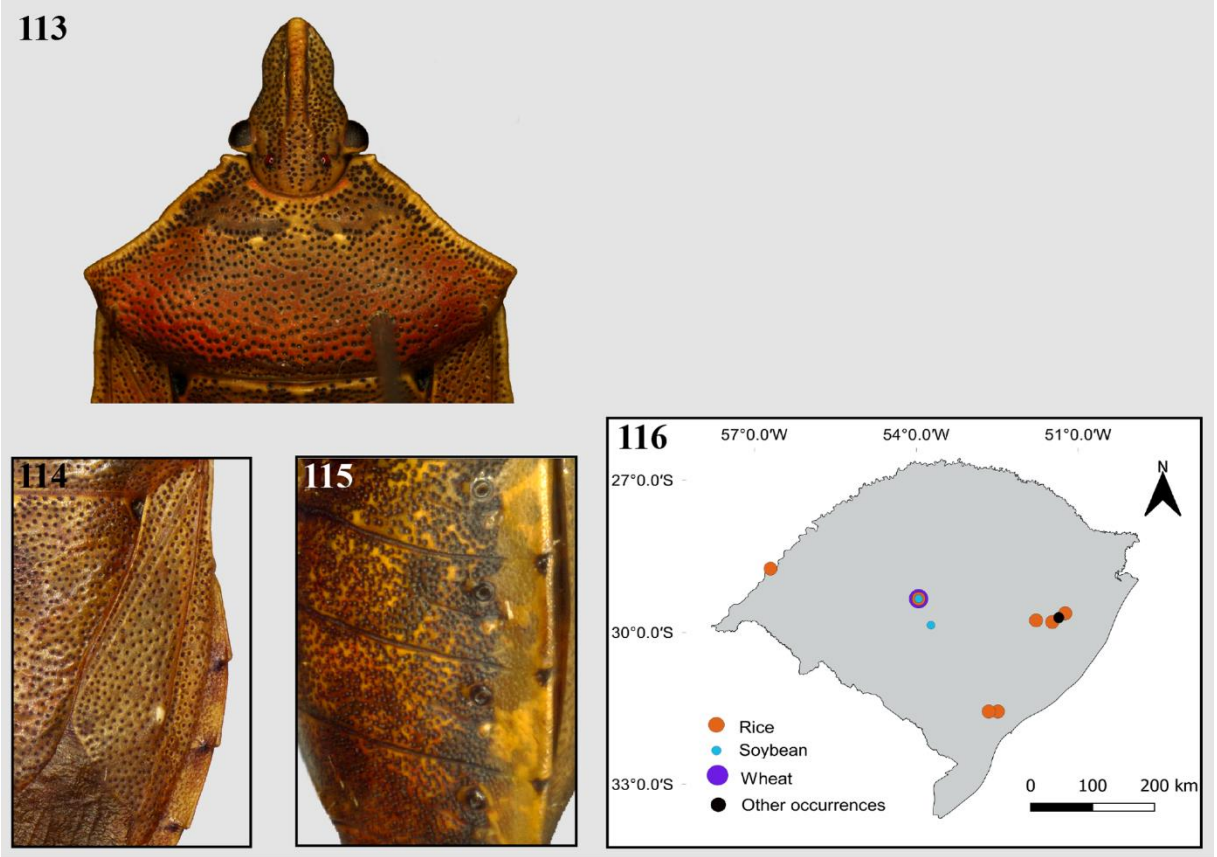
FIGURES 104–106. *Thyanta (Argosoma) humilis.* 104: Dorsal view, scale bar = 1.0 mm. 105: Head and pronotum. 106: Distribution within Rio Grande do Sul.



FIGURES 107–108. *Thyanta (Thyanta) perditor*. 107: Dorsal view, scale bar = 1.0 mm. 108: Distribution within Rio Grande do Sul.



FIGURES 109–112. *Tibraca exigua.* 109: Dorsal view, scale bar = 1.0 mm. 110: Head and pronotum, arrow indicates antennomere 2. 111: Abdomen, lateral view. 112: Distribution within Rio Grande do Sul.



FIGURES 113–116. *Tibraca limbativentris.* 113: Head and pronotum, pronotal anterolateral margin impunctate. 114: Corium, radial vein with yellow callosity at apex. 115: Abdomen lateral view, yellow and impunctate aub lateral margin. 116: Distribution within Rio Grande do Sul.

Table 1. List of species included in this work, and on which plant crops they are recorded.

Species	Canola	Maize	Rice	Soybean	Wheat	Other
Acledra bonariensis				x		–
Acledra fraterna				x		–
Adustonotus irroratus	x					–
Agroecus griseus		x				–
Arvelius albopunctatus				x		–
Chinavia armigera				x	x	*Lupinus* sp.
Chinavia aseada	x			x		*Lupinus* sp., common beans, sunflower
Chinavia erythrocnemis	x			x		–
Chinavia herbida	x					–
Chinavia impicticornis	x			x		
Chinavia nigrodorsata	x			x	x	*Brassica napus* and *Ziziphus joazeiro*
Chinavia obstinata	x			x		–
Chinavia pengue	x			x		–
Diceraeus furcatus	x	x		x	x	Barley, oat, rye
Diceraeus melacanthus	x	x		x	x	Barley, oat, rye
Euschistus heros	x	x		x		*Amaranthus retroflexus*, *Solanum megalochiton*, *S. mauritianum* and *Vassobia breviflora*
Euschistus picticornis	x		x	x		–
Euschistus triangulator	x					–
Glyphepomis adroguensis			x			–
Glyphepomis pelotensis			x			–
Glyphepomis setigera			x			–

Hypatropis inermis			x			–
Loxa deducta				x		–
Mayrinia curvidens			x	x		–
Mormidea notulifera			x		x	–
Mormidea v-luteum	x		x	x	x	–
Nezara viridula	x	x	x	x	x	–
Oebalus poecilus	x		x	x	x	–
Oebalus ypsilongriseus			x	x	x	Oat, sorghum, some grasses
Piezodorus guildinii	x			x		–
Thyanta humilis	x					–
Thyanta perditor	x	x	x	x	x	Oat
Tibraca exigua			x			–
Tibraca limbativentris		x*	x	x	x	Some grasses

* Uncommon occurrence

Appendix 1.

List of occurrence points within Rio Grande do Sul and geographical coordinates used.

Locality	Latitude	Longitude	Locality	Latitude	Longitude
Albatroz beach (Imbé)	-29.90	-50.09	Eldorado do Sul	-30.08	-51.62
Alecrim	-27.65	-54.77	Encruzilhada do Sul	-30.53	-52.52
Augusto Pestana - IRDER (Medeiros & Megier 2009)	-28.51	-53.98	Esmeralda (Servino & Schwertner, 2020)	-30.08	-51.12
Bagé	-31.33	-54.10	Estrela	-28.10	-50.98
Barra do Quaraí	-30.12	-57.33	Farroupilha	-29.23	-51.35
Barra do Ribeiro	-30.30	-51.30	Flores da Cunha	-29.03	-51.18
Bom Jesus	-28.70	-50.40	Gramado	-29.38	-50.87
Butiá	-30.12	-51.97	Gravataí	-29.94	-50.99
Cacequi	-29.88	-54.81	Guaíba	-30.11	-51.32
Caçapava do Sul	-30.50	-53.50	Imbé	-29.96	-50.12
Cachoeira do Sul	-30.03	-52.90	Itaara	-29.58	-53.78
Cachoeirinha	-29.95	-51.08	Itaqui (Botta *et al.* 2014)	-29.12	-56.55
Camaquã	-30.85	-51.82	Itaúba	-29.20	-53.18
Canguçu	-31.40	-52.68	Jóia	-28.65	-54.13
Canoas	-29.93	-51.18	Júlio de Castilhos	-29.23	-53.68
Capão do Leão	-31.77	-52.50	Lajeado	-29.45	-51.97
Carazinho	-28.30	-52.80	Maquiné	-29.68	-50.21
Catuípe	-28.25	-54.02	Marau	-28.45	-52.20
Caxias do Sul	-29.17	-51.18	Marcelino Ramos	-27.46	-51.90
Charqueadas (Farias *et al.* 2012)	-29.98	-51.51	Nova Prata	-28.78	-51.60
Cruz Alta	-28.65	-53.60	Osório	-29.89	-50.27
Derrubadas (Parque Estadual do Turvo)	-27.23	-53.85	Palmares do Sul	-30.26	-50.52
Derrubadas	-27.25	-53.87	Passo Fundo (Scopel *et al.* 2016)	-28.21	-52.40
Eldorado do Sul (Farias *et al.* 2012)	-30.03	-51.38	Passo Fundo (Bianchi *et al.* 2019)	-28.23	-52.40

List of occurrence points within Rio Grande do Sul and geographical coordinates used.

Locality	Latitude	Longitude	Locality	Latitude	Longitude
Passo Fundo (Chevarria *et al.* 2013)	-28.26	-52.40	São Gabriel	-30.33	-54.32
Passo Fundo (Tomacheski & Panizzi 2018)	-28.26	-52.40	São Francisco de Paula	-29.26	-50.34
Pelotas	-31.77	-52.33	São Leopoldo	-29.77	-51.15
Planalto	-27.47	-54.18	São Sepé	-30.17	-53.57
Porto Alegre	-30.03	-51.20	Sobradinho	-29.40	-53.05
Quaraí	-30.23	-56.27	Tapes	-30.67	-51.38
Rio Grande (Estação Ecológica do Taim)	-32.74	-52.59	Taquara	-29.65	-50.78
Rio Pardo	-29.98	-52.37	Torres	-29.33	-49.73
Santa Maria	-29.68	-53.80	Três de Maio (Medeiros & Megier 2009)	-27.75	-54.24
Santa Rosa (Chevarria *et al.* 2013)	-27.87	-54.48	Três Passos	-27.45	-53.93
Santa Vitória do Palmar	-33.52	-53.35	Triunfo	-29.93	-51.72
Santo Antônio da Patrulha	-29.82	-50.51	Tupandi	-29.47	-51.42
Santo Augusto	-27.85	-53.78	Uruguaiana	-29.75	-57.08
São Domingos do Sul	-28.53	-51.90	Vacaria	-28.51	-50.93
São Francisco de Paula - FLONA (Weiler *et al.* 2012)	-29.42	-50.39	Viamão	-30.08	-51.03

The coordinates of localities with a reference were taken from the cited article. For the remaining localities, coordinates given by the Online Gazetteer Falling Rain (http://www.fallingrain.com/world/) were used, and corrected through Google Maps (https://www.google.com.br/maps) when needed.

APÊNDICE I

Material suplementar ao Capítulo II

S1. Electronic Supplement: Additional material examined.

***Agroecus griseus* Dallas, 1851**

VENEZUELA, ***Aragua***, ♂, 'Tiara | 7.viii.[19]64 | F Fernandes & CJ Rosales' (UFRG). **BRAZIL**, ***Amazonas***, 1♂ 1♀, 'Uaupés | 7–12.vii.1956 | M Alvarenga leg.' (UFRG); ♂, 'Uaupés | [?].vi.1949 | JCM Carvalho leg.' (UFRG). ***Mato Grosso***, ♂, 'Utiariti | [?].viii.1961 | K lenko leg.' (MNRJ). ***Rio de Janeiro***, 2♀, 'Tijuca | 1954 | <D Zajciw>' (UFRG). ***São Paulo***, ♀, 'Barueri | 22.i.1961 | K. Lenko leg.' (UFRG). ***Paraná***, ♂, 'Arapongas | [?].ii.1952 | A Mallep leg.' (UFRG); 2♂ 2♀, 'Londrina| [?].vi.2010 | MM Rodrigues leg.' (UFRG). ***Rio Grande do Sul***, ♂, 'Porto Alegre | 26.xi.1991 | JAM Fernandes leg.' (UFRG). **PERU**, ***Junin***, 1♂ 1♀, 'Satipo| [?].i.1937 | P Paprzyck leg.' (UFRG); ♂, 'Satipo | [?].1937'<no collector data> (UFRG). No date, 2♂ | '8.iv.1938 | W Zikán leg.' (UFRG); ♀| '25.xi.1952 | <D Zajciw>' (UFRG).

***Agroecus scabricornis* (Herrich-Schäffer, 1844)**

BRAZIL, ***Rio Grande do sul***, ♀, 'Cotiporã | 22.ix.1986 | P Marson leg.' (UFRG); ♂, 'Torres | 3.i.1989 | R Hildebrand leg.' (UFRG). ***Santa Catarina***, 2♀, 'Florianopólis | 28.i.1986 | BP Mohe leg.'(UFRG). ***São Paulo***, ♀, 'Caraguatatuba | 2.iv.1962 | M Reichardt & Silva leg.' (UFRG); ♂, 'Caraguatatuba | 22.v-1.vi.1962' <no collector data> (UFRG); 2♀, 'Ilha dos Búzios | 16.x–04.xi.1963' <no collector data> (UFRG); ♀, 'Itanhaem | 1–5.v.1961 | U Martins leg.' (UFRG); ♂, 'Salesópolis | 12.ii.1963 | L Silva & H Reichardt leg.'(UFRG); ♂, 'Santo André | 20.ii.1962 | L Stowbunenko leg.' (UFRG); ♂, 'Santos | 17.x.2000' <no collector data>; ♀, 'São Sebastião | [?].ii.1992 | F Silveira leg.'(UFRG).

***Berecynthus hastator* (Fabricius, 1798)**

HONDURAS, ***Olancho***, ♀, 'Catacamas | 13.vi.1974 | CW & L O'Brien & Marshall leg.' (UFRG). **PANAMA**, ***Panama***, ♂, 'Coco | 25.iv.1975 | D Engleman leg.' (UFRG); ♀, Fort Kobbe | 20.vi.1976' <no collector data> (UFRG); ♂, 'Las Cumbres | 2.vi.1975 | H Wolda leg.' (UFRG); ***Veraguas***, Santiago, '6.x.1973 | D Engleman leg.' (UFRG). **SURINAME**, ***Paramaribo***, ♂, '16–18.vii.1975 | D Engleman leg.' (UFRG); 2♀, '22–30.vii.1975 | D Engleman leg.' (UFRG). **VENEZUELA**, ***Trujillo***, ♀, 'Agua Viva | 19.iv.1952 | L Rey & J Araujo leg.' (UFRG); ♂, 'Escuque | 7.xii.1969 | R Casares & JB Teran leg.' (UFRG). **COLOMBIA**, ***Amazonas***, 2♂ 1♀, 'Leticia | 2–7.iv.1975 | D Engleman leg.' (UFRG). **BRAZIL**, ***Mato Grosso***, 3♂ 4♀, '17–22.iii.1977 | D Engleman leg.' (UFRG).

***Carpocoris purpureipennis* (De Geer, 1773)**

POLAND, ***Warsaw***, ♀, '20–30.v.1988 | MA Ivie leg.' (DARC). **KAZAKHSTAN**, ♂, '15.v.1992' <no collector data> (DARC). **UKRAINE**, ***Donets'ka Oblast'***, ♂, 'Novotroistskoye | 14.iii.1995' <no collector data> (DARC). **AUSTRIA**, ***Niederosterreich***, ♀, '26.vi.1988 | Stella & Tatro leg.' (DARC). **INDIA**, 1♂ 1♀, 'MM Carleton leg.' (AMNH).

***Diceraeus melacanthus* Dallas, 1851**

COLOMBIA, **Cundinamarca**, 3♂, 'Tolemaida | Quebra La Naranjola | 18.v.1968 | E Ramirez leg.' (MHNM). **VENEZUELA**, ***Zulia***, 1♂ 1♀, 'Maracaibo | [?].viii.1971 | J Maldonado leg.' (DARC). **BRAZIL**, ***Amapá***, ♀, 'Porto Platon | [?].ii.1964 | JCM Carvalho leg.' (MNRJ). ***Rio Grande do Sul***, 3♀, 'Santa Maria | [?].xii.1981 | D Link' (UFRG); 1♂ 2♀, 'São Sepé | [?.1981] | Costa & Link' (UFRG). **PERU**, ***Cusco***, ♂, 'Limatambo | 30.iv.1968' (UFRG). **BOLIVIA**, ***Santa Cruz***, ♀, '8 mi, S Santa Cruz de la Sierra | 18.iv.1978 | O'Brien & G Wibmer leg.' (DARC). **PARAGUAY**, ***Central***, ♀, 'Asunción | 5.ii.1983 | EG Riley leg.' (DARC). **ARGENTINA**, ***Catamarca***, ♂, 'Adalgada | 7.xii.1971 | DJ Brothers leg.' (DARC). ***Corrientes***, 1♂ 3♀, '7km, S Bella Vista | 16.i.1989 | CW & L O'Brien & G Wibmer leg.' (DARC).

***Dichelops* (*Dichelops*) *leucostigmus* (Dallas, 1851)**

COLOMBIA, ***Meta***, ♂, 'Puerto Lopez | [?].ix.1991 | Martinez Guerra leg.' (MPUJ). **BRAZIL**, ***Amazonas***, 1♂ 3♀, 'Aleixo | 6.vii.1941 | Parko leg.' (FIOC); 1♂ 2♀, 'Manaus | 6.vii.1941 | Parko leg.' (UFRG); ♂, 'Manaus | 25.v.1982 | LR Loterre leg.' (UFRG); ♂, 'Manaus | 24.iii.1986 | R Sampaio leg.' (UFRG); ♀, 'Serra dos Porcos | [?].viii.1977 | M Franklin leg.' (UFRG). ***Acre***, ♀, 'Rio Branco | 6–10.v.1981 | J Arias leg.' (UFRG). ***Maranhão***, ♂, 'Bom Jardim | Reserva Biológica Gurupi | 17–27.i.2010 | F Limeira-de-Oliveira, RO Souza & MB Aguiar Neto leg.' (UEMA); 6♂ 9♀, 'Carolina| Fazenda Cincurá | 17–22.x.2009 | F Limeira-de-Oliveira, RO Souza & MB Aguiar Neto leg.' (UEMA). ***Rondônia***, ♀, 'Porto velho | 15.iii.1979 | J Campbell leg.' (UFRG); ♀, '62km SW Ariquemes | 30.iii–10.iv.1922 | J Eger leg.' (DARC); ♂, '62km SW Ariquemes | 25.x.1993 | U Schmitz leg.' (DARC); 1♂ 1♀, '62km SW Ariquemes | 8–20.xi.1994 | J Eger, LB & CW O'Brien leg.' (DARC). ***Mato Grosso***, 2♂ 1♀, 'Aripuanã | 10°25'S 59°28'E | 300m | 17–22.iii.1977 | D Engleman leg. (DARC); ♀ (1), Jaçanã, P[arque] N[acional] Xingu | [?]xi.1960| W Alvarenga leg.' (DZUP). ***Distrito Federal***, ♀, 'Planaltina | 23.iii.1977 | VO Becker leg.' (UFRG). ***Goiás***, ♂, 'Goiânia | 13.i.1975 | E Ferreira leg.' (DARC).

***Euschistus* (*Euschistus*) *heros* (Fabricius, 1794)**

BRAZIL, ***Rondônia***, ♂, 'Porto Velho | 30.xii.1964 | RT Lima leg.' (MZSP). ***São Paulo***, ♂, 'Teodoro Sampaio | [?].xi.1977 | M Alvarenga leg.' (UFRG); ♂, 'Campinas | 4.ii.[?]' <no collector data> (UFRG); ♂, 'São Sebastião | 7–16.i.1992 | JAM Fernandes leg.' (UFRG). ***Santa Catarina***, ♂, 'Guatambú | 27.xi.2004' <no collector data> (UFRG). ***Rio Grande do Sul***, ♀, 'Derrubadas | 13.iv.1983 | SL Bonatto leg.' (UFRG); 2♂ 1♀, 'Derrubadas | 26–30.ix.1983 | SL Bonatto leg.' (UFRG); 2♂ 2♀, 'Cruz Alta | 24.v.2006 | MTB da Silva leg.' (UFRG); 1♂ 1♀, 'Santa Maria | [?].x.1980 | D link leg.' (UFRG).

***Glyphepomis adroguensis* Berg, 1891**

BRAZIL, ***Tocantins***, ♂, 'Gurupi | 1.vi.1988 | K Kishing leg.' (UFRG). ***Rio Grande do Sul***, ♀, 'Gramado | 9.xii.1990 | J Grazia leg.' (UFRG); ♂, 'Taquara | 3.ix.1989' <no collector data> (UFRG); 1♂ 1♀, 'Santa Maria | 8.iii.1986 | D Link leg.' (UFRG); ♀, 'Santo Antônio da Patrulha | 24.vii.1985| Becker leg.' (UFRG); ♀, 'Cachoeirinha | 17.vii.1985 | Albuquerque leg.' (UFRG); ♀, 'Porto Alegre | 2.i.1994 | LA Campos leg.' (UFRG); ♂, 'Porto Alegre | 19.vi.1992 | JAM Fernandes leg.' (UFRG); 2♂ 1♀, 'Porto Alegre | 31.i.1969 | Soffel leg.' (UFRG); ♀, 'Guaíba | 4.vii.1985 | Albuquerque leg.' (UFRG); ♀, 'Guaíba | 21.ix.1982 | GRP Moreira leg.' (UFRG); ♂, 'Pelotas | 1.v.1963' <no collector data> (UFRG); ♂, 'Rio Grande | Estação Ecológica do Taim | 23.iii–4.iv.1981 | J Grazia leg.' (UFRG); ♀, 'Capão do Leão | [?].ii.1988 | LC Belarmino

leg.' (UFRG). **ARGENTINA**, ***Corrientes***, ♀, 'San Tome | [?].ii.1927' <no collector data> (UFRG).

***Glyphepomis setigera* Kormilev & Pirán, 1952**

BRAZIL, *Mato Grosso*, ♀, 'Salobra | [?].i.1955' <no collector data> (MZUSP). ***Rio Grande do Sul***, 6♂ 9♀, 'Capão do leão | [?].ii.1988 | LC Belarmino leg.' | 'Light trap near rice paddy.' (UFRG); ♀, 'Imbé | [?].ii.1961 | E & L Buckup leg.' (UFRG). No data, ♂, '10.iii.1986 | '*Glyphepomis setigera* Campos det. 1994' (UFRG); ♂ ♀, '7.iii.1972 | '*Glyphepomis setigera* Campos det. 1994' (UFRG).

***Hypanthracos meridionalis* Grazia & Campos, 1996**

Paratypes ♀, **BRAZIL**, ***Rio Grande do Sul***, 'Osório | Capão Alto | 13.ii.1965 | L. Buckup leg.' (MCNZ-2854). ♂, **URUGUAY**, ***Artigas***, 'Potrero Sucio-Arroyo Tres Cruces | 17.ii.1955 | FHYC leg.' (UFRG).

***Hypatropis inermis* (Stål, 1872)**

BRAZIL, ***Pará***, ♀, 'Belém | 14.iii.1929 | Bonifácio leg.' (UFRG); ♀, 'Belém | 29.i.1964 | A Souza leg.' (UFRG); 2♀, 'Belém | [?].i.1997' <no collector data> (UFRG). ***São Paulo***, ♀, 'Paulínia | 21.v.1982 | C Paiva leg.' (UFRG); ♂, 'Ubatuba | 16–27.iii.1964' <no collector data> (UFRG). ***Santa Catarina***, ♀, 'Morro das Pedras | 19.i.1957' <no collector data> (UFRG). ***Rio Grande do Sul***, 2♀, 'Cachoeirinha | 17.vii.1985 | Albuquerque leg.' (UFRG); ♂, 'Eldorado do Sul | 16.vii.1983 | V Aner leg.' (UFRG); ♀, 'Triunfo | 25.v.1990 | L Moura leg.' (MCNZ); ♂, 'Pelotas | 10.x.1967' <no collector data> (UFRG); ♀, 'Pelotas | 8.v.1978 | Elói leg.' (UFRG). **URUGUAY**, ***Montevideo***, ♂, 'Santiago Vasquez | 21.x.1960' <no collector data> (UFRG).

***Hypatropis sternalis* (Stål, 1869)**

BRAZIL, ***Rio Grande do Sul***, ♀, 'Pelotas | 20.x.1975 | Glória leg.' (UFRG); ♂, 'Imbé | [?].ii.1961 | E & L Buckup' (UFRG).

***Lattinellica decora* (Walker, 1867)**

COLOMBIA, ***Amazonas***, ♀, 'Leticia | Tarapacá – Km6 – Escuela Sabio Caldas Vereda San Jose | 31.v.1992 | A Saonz leg.' (UFRG). **BRAZIL**, ***Amazonas***, ♀, 'Manaus | [?].vi.[19]55 | Elias & Roppa leg.' <DZ 9/959> (UFRG).

***Mecocephala acuminata* Dallas, 1851**

ARGENTINA, ***Buenos Aires***, ♂, 'Mar del Plata | 22.xii.1919 | A Frers leg.' (UFRG); ♀, 'G[eneral] Alvarado | 18.xi.1946 | Miramar & Bachmann leg.' (MACN). No data, ♂ (UFRG).

***Mecocephala bonariensis* Schwertner, Grazia & Fernandes, 2002**

Holotype ♀, **BRAZIL**, ***Paraná***, 'Ponta Grossa | Olaria | [?].ix.1942' (DZUP). – **Paratypes** ♀, **BRAZIL**, ***Minas Gerais***, 'Alto Itatiaia – 2.200m | 10.xi.1953 | coll. J F Zikan' (FIOC). ***Rio de Janeiro***, 1♂ 2♀, 'Itatiaia | [?].vi.1902 | coll. Carlos Moreira' (MCNZ-2797-2799); ♀, 'Itatiaia| [?].vi.1902| coll. Carlos Moreira' (MNRJ). ***Paraná***, ♀, 'Curitiba | 27.xii.1937 | C Westerman

leg.' (FIOC). ♂, **ARGENTINA**, ***Buenos Aires***, '[Buenos Aires] | Capital | 10.x.1949 | M Fritz leg.' (MACN); 1♂ 1♀, Buenos Aires, 'Belgrano | 28.iii.1917' (UFRG); ♂, Buenos Aires, 'Tigre' <no data> (UFRG); ♂, Buenos Aires, '14.x.1896 | S Venturini leg.' (MACN-5659); ♂, Buenos Aires, '09.x.1896 | S Venturini leg.' (MACN-5653); ♀, Buenos Aires, '20.i.1899 | S Venturini leg.' (MACN); ♀, Buenos Aires, '22.i.1899 | S Venturini leg.' (MACN); ♀, Buenos Aires, '23.i.1899 | S Venturini leg.' (MACN); ♀, Buenos Aires, '24.vi.1899 | S Venturini leg.' (MACN); ♀, Buenos Aires, '04.xi.1899 | S Venturini leg.' (MACN). 1♂ 3♀, **URUGUAY**, ***Montevideo***, 'Pajas Blancas | 21.x.1956' (UYIC; UFRG); ♀, 'Santiago Vasques | 21.x.1960 | <em caraguatá>' (UYIC).

***Mecocephala magna* Schwertner, Grazia & Fernandes, 2002**

Holotype ♂, **BRAZIL**, ***Rio Grande do Sul,*** 'Capão do Leão | 28.x.1984| AT Barbosa leg.' (MECB). – **Paratypes** ♀, **BRAZIL**, ***Rio Grande do Sul***, 'Viamão' (MCNZ-2800); 2♀, 'São Leopoldo | Pe. Buck leg.'(MCNZ-2801<without abdomen>; 2802); ♀, 'Pelotas | [?].ix.1995 | L Krüger leg.' (MECB-P151); ♂, 'Pelotas | [?].xi.1990 | J Freitas leg.' (MECB); ♂, 'Pelotas | [?].iii.1986 | R Brancher leg.' (MECB); ♀, 'Pelotas | 25.ix.1975' (MECB). ♀, **URUGUAY**, ***Cerro Largo***, 'Santa Clara de Olimar | T[reinta] y T[res] | 19.xi.1958 | LC De Zolessi leg.' (UYIC). No data, ♀ (UFRG).

***Mormidea cornicollis* Stål, 1860**

BRAZIL, ***Minas Gerais***, 1♂ 2♀, 'Belo Horizonte | 22.i.1963 | N Papavero leg.' (MNRJ, UFRG); ♂, 'Caxambu | [?].ii.1971 | J Juberg & AL Peracchi leg.' (FIOC); ♂, 'Pouso Alegre | [?].xii.1953 | P Pereira leg.' (MNRJ). ***Rio de Janeiro***, ♀, 'Teresópolis | [?].ii.1969 | J Jurberg leg.' (FIOC); ♂, 'Itatiaia | [?].i.1978 | Carvalho & Schaffner leg.' (MNRJ); ♀, 'Petrópolis | 3.vii.1941 | Parko leg.' (MNRJ). ***São Paulo***, ♀, 'Mairiporã | 4–13.i.1967 | C Costa leg.' (MNRJ); ♂, 'Salesópolis | 15.iii.1963 | EX Rabello leg.' (MNRJ); 1♂ 1♀, 'Barueri | [?].xi.1965 | K Lenko leg.' (MNRJ); ♀, 'São Paulo | 13.iv.1962 | Lenko & Reichardt leg.' (MNRJ); ♂, 'São Paulo | 18.i.1962 | J Halik leg.' (MNRJ). ***Rio Grande do Sul***, ♀, 'Esmeralda | 18–19.iii.1981 | J Grazia leg.' (UFRG); ♀, 'São Francisco de Paula | 20.xii.1959 | Pereira, Ditadi, Petersen, Meyrer & Volkmer leg.' (MNRJ); 2♂ 1♀, 'São Francisco de Paula | 28.iii.1959 | Pereira, Ditadi, Petersen, Meyrer & Volkmer leg.' (MNRJ). ♂, 'Pelotas | 11.iii.1982 | J Grazia leg.' (UFRG);

***Paratibraca infuscata* Campos & Grazia, 1995**

Paratypes ♀, **TRINIDAD-TOBAGO**, ***Curepe***, '18.vii.1984 | S Johnson leg.' | 'L H Rolton Collection' (DARC). ♀, **SURINAME**, ***Clevia***, '12.v.1960 | PHv Doesburg Jr. leg.' | '<on rice>' (UFRG). ***Paramaribo***, ♀, '15.i.1958 | PHv Doesburg Jr. leg.' (UFRG); ♂, '20.x.1963 | TW Renenga leg.' (UFRG). 2♂, **COLOMBIA**, ***Valle del Cauca***, 'Jamundí | 27.vi.1989 | A Baena leg,' | 'EA-9.89 | Ex. Oryza sativa' (DARC). ♀, ***Tolima***, 'Espinal | 24.i.1960 | M Revelo leg.' | 'on rice' (DARC). ♂, **BRAZIL**, ***Pará***, 'Belém | 19.iii.1979 | Bonifácio leg.' | 'rice leaf' (UFRG). ♂ ♀, ***Amazonas***, 'Manaus | 21.iii.1988 | MV Garcia leg.' | 'CNPSD/LMRAIA' | '13' | 'CNPS' (UFRG).

***Pedinonotus catarinensis* Fernandes & Grazia, 2002**

Holotype ♂, **BRAZIL**, ***Santa Catarina***, 'Nova Teutônia | [?].xii.1939 | F Plaumann leg.' (AMNH). – **Paratypes** ♀, **BRAZIL**, ***Santa Catarina***, 'Corupá | [?].x.1953 | A Maller leg.' (UFRG); 1♂ 1♀, 'Nova Teutônia | [?].ix.1939 | F Plaumann leg.' (AMNH, UFRG). 2♂ 1♀,

‘Nova Teutônia | [?].ix.1939 | F Plaumann leg.’ (AMNH); ♀, ‘Nova Teutônia | [?]. xii.1939 | F Plaumann leg.’ (AMNH); ♀, ‘Nova Teutônia | 29.iv.1966 | F Plaumann leg.’ (AMNH); 1♂ 1♀, ‘Nova Teutônia | [?].v.1967 | F Plaumann leg.’ (AMNH); ♀, ‘Nova Teutônia | [?].x.1969 | F Plaumann leg.’ (AMNH); ♂, ‘Nova Teutônia | [?].x.1974 | F Plaumann leg.’ (AMNH); ♂, ‘Nova Teutônia | [?].xi.1975 | F Plaumann’ (AMNH).

***Tibraca limbativentris* Stål, 1860**

GUADALUPE, 2♀, ‘Estación de Rujol | <on rice> | [?].xi.1984 | 4441| Deschaner leg.’ (DARC). **COSTA RICA**, ***Heredia,*** ♀, ‘Sarapiqui | 24.vi.1963 | TR Everett leg.’ <coll[ected] on rice> (DARC). **COLOMBIA**, ***Valle del Cauca,*** 1♂ 1♀, ‘Palmira | <on rice>| | 10.x.1989 | A Baena leg.’ (DARC). **VENEZUELA**, **Portuguesa**, 2♂ 1♀, ‘Payara | 14.viii.1957 | M Angeles leg.’ (MIZA). **BRAZIL**, ***Pará***, ♂, ‘Almerim | São Raimundo | 28.iv.1981 | E Vogel leg.’ (DARC). ***Tocantins***, 4♂ 1♀, ‘Gurupi | 24.v.1989 | K Kishino K leg.’ (UFRG). ***Bahia***, 1♂ 1♀, ‘Jequié | 15.xi.1964 | C Elias leg.’ (DZUP). ***Goiás***, ♂, Goiânia | 11.xi.1976 | E Vogel leg.’ (DARC). ***Mato Grosso***, 1♂ 1♀, ‘Sinop | 14.v.2011 | MR Barreto leg.’ (UFRG). ***Mato Grosso do Sul***, 2♂ 2♀, ‘Rio Brilhante | [?]. ii–iii.1995 | <on rice>’ (UFRG). ***Espírito Santo***, 1♂ 1♀, ‘Santa Tereza | 7.xiii.1964 | C Elias leg.’ (DZUP). ***Santa Catarina***, 2♂ 2♀, ‘Lages | [?].viii.1988 | H Kalvelage leg.’ (UFRG). ***Rio Grande do Sul***, 10♂ 8♀, ‘Cachoeirinha | IRGA [Instituto Rio Grandense do Arroz] | 5.iv.2000 | J Oliveira leg.’ (UFRG); 2♂ 2♀, ‘Eldorado do Sul | 17.ix.1992 | JAM Fernandes leg.’ (UFRG); ♀, ‘Porto Alegre | 21.07.1993 | J Grazia leg.’ (UFRG); ♂, ‘Porto Alegre | 27.08.1974 | Dalmolin leg.’ (UFRG). **PERU**, ***Bagua***, 1♂ 1♀, ‘Cajamarca | 10–15.i.1954 | E Walter leg.’ (DARC). **BOLIVIA**, ***La Paz***, 3♂ 2♀, ‘Sapecho | Alto Beni | <on rice> | E Padilha leg.’ (UFRG).

***Tibraca similima* Barber, 1941**

Paratypes 1♂ 2♀, **ECUADOR**, ‘<attacking rice> | 1940 | Paratype no. 53160 USNM’ (USNM). – ***Other material***: **ECUADOR**, ***Manabi***, 1♂ 4♀, ‘Portoviejo | F Campos leg.’ (FIOC). 7♂ 5♀, ***Azuay***, ‘Cuenca | 1–10.iii.1963 | J Davis leg.’ (AMNH). ***Guayas***, ♂, ‘Guayaquil | 13.vii.1949 | E Von-Buchenwald leg.’ | 10691 (AMNH).

***Tibraca exigua* Fernandes & Grazia, 1998**

Paratypes ♂, **ARGENTINA**, ***Buenos Aires***, ‘Berisso | 04.xi.1973 | OS Flint leg.’ (USNM). ♂, **BRAZIL**, ***Santa Catarina***, ‘Joinville | coll. Dirings’ (MZUSP); ♀, ‘coll. Dirings-060’ (MZUSP). ***Rio Grande do Sul***, ♂, ‘Pelotas | [?].v.1990 | Shoens leg.’ (UFRG); ♂, ‘10.vi.1990 | MN Miranda leg.’ (UFRG); ♂, ‘[?].vi.1990 | Costa leg.’ (UFRG); ♀, ‘28.iv.1991 | von Laer leg.’ (UFRG); ♀, ‘[?].v.1991 | Zepka leg.’ (UFRG); ♀, ‘[?].vi.1991 | Marcolin leg’. (UFRG). ♀, **URUGUAY**, ***Montevideo***, ‘Sayago | 1942’ | | ‘*Tibraca limbativentris* Pirán det.’ (URMU); ♂, Santiago Vásquez, ‘5.xi.1961 | CS Morey leg.’ | ‘*Tibraca limbativentris* Pirán det.’ (URMU); ♂, Santiago Vásquez, ‘21.ix.1960 | <on caraguatá>’ (URMU).

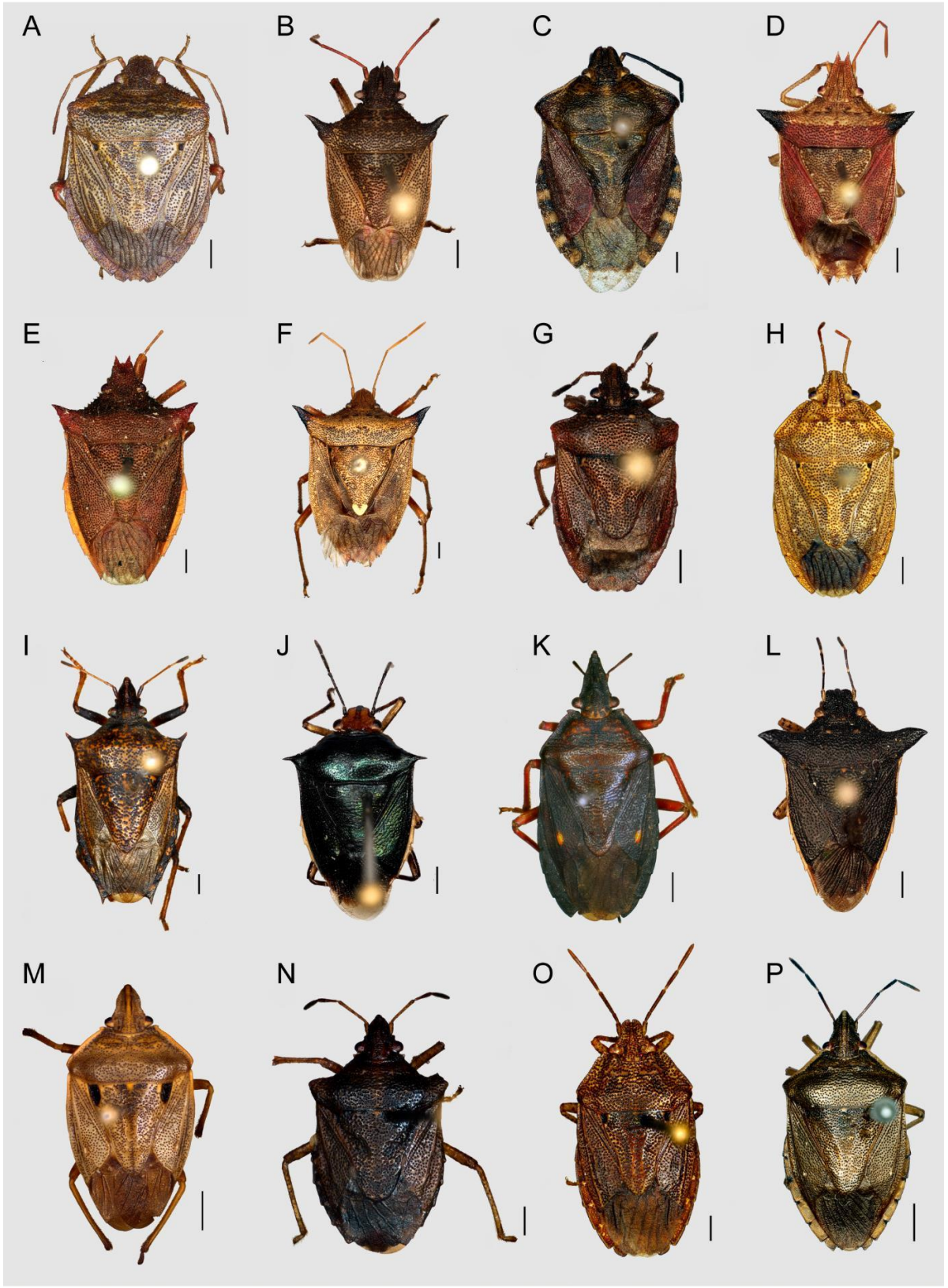

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Fig. S1. Representative species of genera and subgenera included in the analysis. **A**: *Agroecus griseus* Dallas, 1851; **B**: *Berecynthus hastator* (Fabricius, 1798); **C**: *Carpocoris purpureipennis* (DeGeer, 1783); **D**: *Diceraeus melacanthus* Dallas, 1851; **E**: *Dichelops* (*Dichelops*) *leucostigmus* (Dallas, 1851); **F**: *Euschistus* (*Euschistus*) *heros* (Fabricius, 1794); **G**: *Glyphepomis adroguensis* Berg, 1891; **H**: *Hypatropis inermis* (Jensen-Haarup, 1928); **I**: *Hypanthracos meridionalis* Grazia & Campos 1996; **J**: *Lattinellica decora* (Walker, 1867); **K**: *Mecocephala magna* Schwertner, Grazia & Fernandes, 2002, holotype; **L**: *Mormidea cornicollis* (Stål, 1860); **M**: *Paramecocephala foveata* Benvegnú, 1968, holotype; **N**: *Paratibraca infuscata* Campos & Grazia, 1995; **O**: *Pedinonotus catarinensis* Fernandes & Grazia, 2002, holotype; **P**: *Tibraca limbativentris* Stål, 1860. Scale bars: A-H, J, L, N, O = 1.0 mm; I, K, M, P = 2.0 mm.pdf

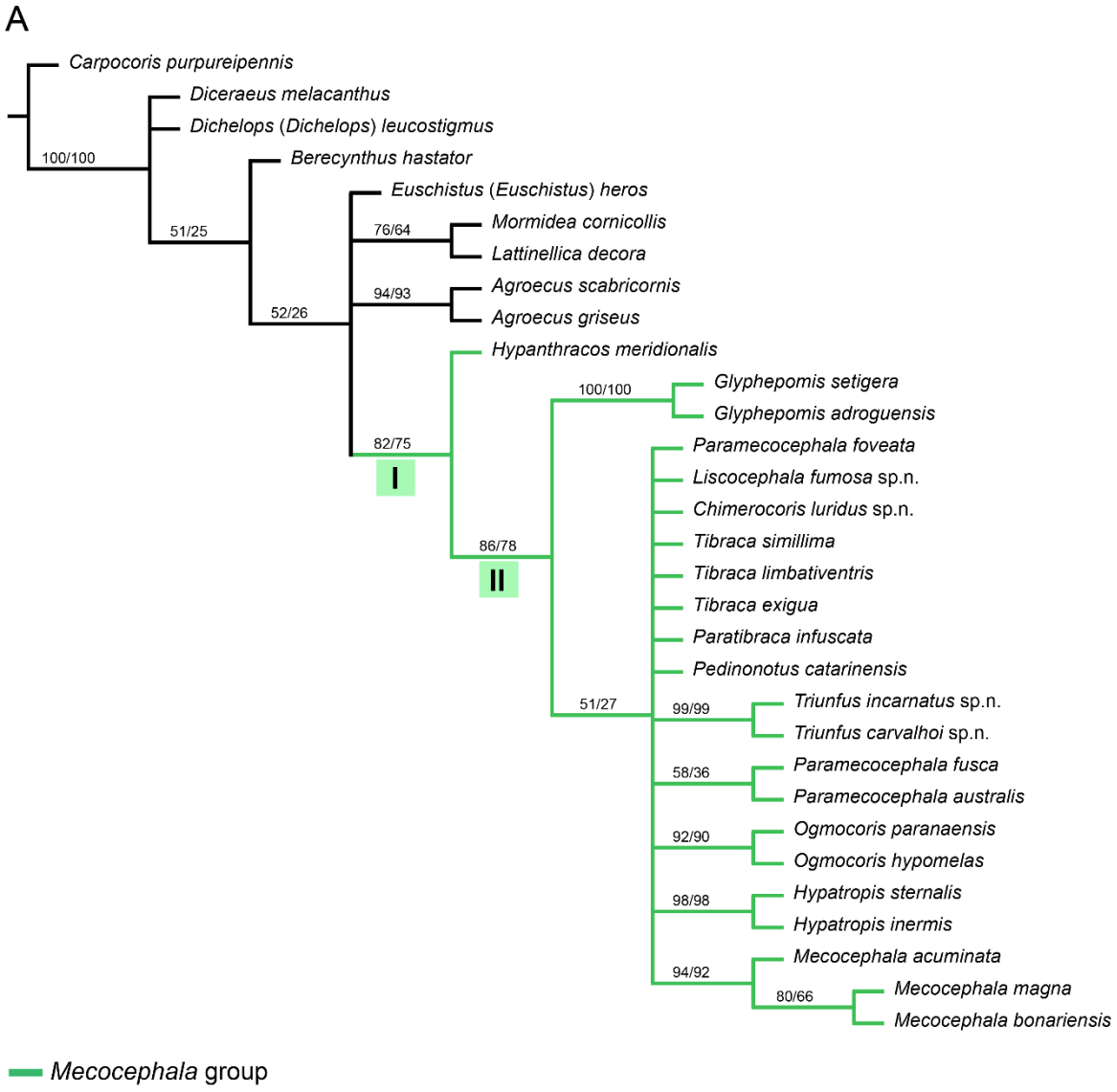

Fig. S2. Phylogenetic relations of genera of *Mecocephala* group. **A**: strict consensus tree resulting from equal weighting scheme. Jackknife support values mapped above the clade represent absolute frequencies and GC values, respectively. Number in capital letters indicate the target clades.