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**ANÁLISE CLADÍSTICA E REVISÃO DE *Ochlerus* SPINOLA,
1837 (HEMIPTERA, PENTATOMIDAE, DISCOCEPHALINAE,
OCHLERINI)**

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

Área de concentração: Biologia Comparada

Orientador: Prof. Dr. Luiz Alexandre Campos

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**"Análise Cladística e Revisão de *Ochlerus* Spinola, 1837 (Hemiptera,
Pentatomidae, Discocephalinae, Ochlerini)"**

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Dissertação apresentada como parte dos requisitos para obtenção do grau de Mestre
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"E, no entanto, são as contribuições de fora do domínio estreito de um cientista que muitas vezes se mostram decisivas para um avanço conceitual."

Mayr, Isto é Biologia

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RESUMO GERAL

Ochlerus Spinola, 1837 possui 15 espécies válidas, distribuídas da América Central ao norte da América do Sul. Sua monofilia foi questionada recentemente, o que só somou ao já complicado histórico do gênero, pois desde 1910 não há trabalhos taxonômicos e/ou filogenéticos sobre o grupo. A redescoberta dos espécimes-tipo da maioria das espécies de *Ochlerus*, permitiu a revalidação de duas espécies antes sinonimizadas e a identificação de inúmeros espécimes até então identificados apenas pelo gênero. Esta ampliação no material reconhecido para *Ochlerus* permitiu a realização de uma análise cladística com 43 táxons e 87 caracteres. As análises foram conduzidas através de comparação com grupo externo, buscas heurísticas com o algoritmo TBR, cálculo de consenso estrito, e índices de consistência e de retenção, feitas sob pesagens iguais e pesagem implícita. Como resultado, foi corroborada a hipótese de polifilia de *Ochlerus*, resultando na descrição de dois novos gêneros, uma sinonímia, uma espécie retirada de sinonímia com revalidação de um gênero, e na descrição de sete novas espécies de *Ochlerus*.

PALAVRAS-CHAVE. Heteroptera, Discocephalinae, filogenia, taxonomia

INTRODUÇÃO

Popularmente conhecidos como percevejo, percevejo do mato, fede-fede ou maria-fedida, os insetos hemípteros da família Pentatomidae estão distribuídos mundialmente, não ocorrendo apenas na Antártica e outros ambientes mais extremos (Grazia et al., 2012). Os pentatomídeos são em grande maioria fitófagos, à exceção de Asopinae que são predadores, inclusive com várias espécies sendo reconhecidas pragas de importantes culturas (Panizzi et al., 2000). As mais de 4700 espécies de Pentatomidae, distribuídas em quase 900 gêneros (Schuh & Slater, 1995; Rider, 2014), dividem-se em seis subfamílias, das quais três possuem distribuição exclusivamente Neotropical: Cyrtocorinae, Discocephalinae e Edessinae (Hasan & Kitching, 1993; Grazia & Schwertner, 2008; Grazia & Fernandes, 2012).

Discocephalinae se caracteriza pela coloração que varia do castanho-claro ao castanho-escuro (Discocephalini) ou de castanho ao negro opaco (Ochlerini), salpicada de ocre ou amarelada, pelo rostro geralmente originando-se posteriormente a uma linha imaginária transversal que une os olhos anteriormente, tarsos trímeros e a posição dos tricobótrios mesiais do urosternito VII em relação à linha dos espiráculos dos urosternitos VI e VII. Apesar da falta de estudos cladísticos ao nível de família, a subfamília possui limites bem estabelecidos e compreende 303 espécies divididas em duas tribos: Discocephalini e Ochlerini (Rolston & McDonald, 1979; Rolston, 1981; Rider, 2014). Embora ambas ainda careçam de análises, as relações em Ochlerini começaram a ser elucidadas através de estudos cladísticos recentes (Campos & Grazia, 2006; Garbelotto et al., 2013).

Ochlerini está distribuída do México até a Argentina e foi proposta por Rolston (1981), se caracterizando pela coloração mencionada acima e, principalmente, pela superfície dorsal do terceiro tarsômero das pernas posteriores geralmente aplainada ou escavada nas fêmeas. Compreende 109 espécies dentro de 32 gêneros (Garbelotto et al., 2013), que são relativamente pouco amostrados. Rolston (1992) sugere que um dos motivos para esta baixa quantidade espécimes de Ochlerini em museus e outras coleções se deve ao hábito de suas espécies, as quais viveriam, segundo o autor, no dossel de florestas, com alguns poucos gêneros encontrados em vegetação herbácea. Entretanto os hábitos de vida de ochleríneos são praticamente desconhecidos, havendo relatos de associação com folhíço ou troncos caídos para ao

menos dois gêneros (Arismendi & Thomas, 2003, Sgrillo et al., 2005). Três gêneros de Ochlerini (*Lincus* Stål, 1867, *Macropygium* Spinola, 1837 e *Ochlerus* Spinola, 1837) incluem espécies que agem como vetores de tripanossomatídeos flagelados do gênero *Phytomonas* Donovan em palmeiras e coqueiros (causador das doenças Marchitez e Hartrot, respectivamente) na América do Sul (Parthasarathy et al., 1976; Dollet, 1984; Dolling, 1984; Desmier-de-Chenon, 1984; Couturier & Kahn, 1989; Llosa et al., 1990; Dollet et al., 1993). Apesar de *Ochlerus* ter sido confirmado como vetor em coqueiros, não foi feita a identificação específica dos espécimes (Dollet et al., 1993; Souza et al., 1999) e seu potencial epidemiológico foi hipotetizado como sendo maior que de *Lincus* (Dollet et al., 2001).

Breve Histórico de Ochlerus

Massimiliano Spinola (1837) descreveu *Ochlerus cinctus* baseando-se em machos e fêmeas enviados do Brasil por Buquet e Dupont. Em nenhum momento o autor mencionou quantos espécimes havia analisado, mas Grazia & Campos (2010) localizaram na coleção do Museo Regionale de Scienze Natural em Turim, Itália (Coleção Massimiliano Spinola), 4 fêmeas de *O. cinctus*, porém nenhum macho.

Desde Spinola, poucos trabalhos de cunho taxonômico foram realizados sobre o gênero. Herrich-Schäffer (1839) descreveu *Cimex flavocinctus* e *Cimex incisus*, as quais ele mesmo veio a sinonimizar a *Ochlerus* (Herrich-Schäffer, 1844) junto com as descrições de *O. coriaceus*, *O. lutosus* e *O. sordidus*. Stål (1860) descreveu *O. circumcinctus* e *O. circummaculatus* e reduziu o gênero a duas espécies em seus trabalhos posteriores (Stål, 1868, 1872), inclusive sinonimizando *O. cinctus* a *O. marginatus* (Fabricius, 1775). Entretanto, Kirkaldy (1909) corrigiu essa última sinonímia pois *Cimex marginatus* Fabricius, 1775 estava pré-ocupado. Walker (1867) relacionou diversas espécies de *Ochlerus*, muitas das quais não aparecem anteriormente na literatura, porém todas acabaram por ser sinonimizadas.

Bredden (1910), em uma publicação póstuma, realizou o trabalho mais extenso até hoje sobre *Ochlerus*, no qual foram descritas 13 espécies com ilustrações de genitália externa. Entretanto, devido ao falecimento do autor, parte do material utilizado no estudo ficou sem devida identificação, sem designação de holótipos e seu destino era, na maior parte, incerto. Assim, *Ochlerus* passou a totalizar 15 espécies nominais: *O. bergrothi* Bredden, 1910; *O. bistillatus* Bredden, 1910; *O. cinctus*; *O.*

circummaculatus; *O. communis* Breddin, 1910; *O. cotylophorus* Breddin, 1910; *O. dentijugis* Breddin, 1910; *O. handlirschi* Breddin, 1910; *O. incisulus* Breddin, 1910; *O. notatulus* Breddin, 1910; *O. profanus* Breddin, 1910; *O. rusticus* Breddin, 1910; *O. signoreti* Breddin, 1910; *O. stylulatus* Breddin, 1910; e *O. tenuicornis* Breddin, 1910.

Além dos estudos envolvendo a taxonomia e o potencial epidemiológico de *Ochlerus* pouco mais se sabe sobre o grupo. Se conhece apenas sua distribuição, a qual vai do México até o norte do Brasil, e que este é um de apenas cinco gêneros de Ochlerini que possui o escutelo relativamente longo e largo subapicalmente. Recentemente, Campos & Grazia (2006) contando apenas com uma pequena amostra das espécies de *Ochlerus*, concluíram que se trata de um gênero polifilético, dividido em três grupos incluídos no clado *Coranda*⁺: *Ochlerus* “a”, *Ochlerus* “b” e *Ochlerus handlirschi*, este último sendo grupo-irmão de *Moncus* Stål, 1867. Nesta análise (Fig. 1, retirada de Campos & Grazia, 2006), *Ochlerus* (*sensu lato*) aparece como gênero próximo à *Moncus*, *Schraderiellus* Rider, 1999, *Stalius* Rolston, 1992 e *Parastalius* Matesco, Grazia & Campos, 2007 (representado por *Stalius trisinuatus* Rolston, 1992). Estes gêneros possuem morfologia externa muito similar a *Ochlerus*, mas variam em tamanho e principalmente na morfologia de genitálias. Um complicador para a compreensão destes relacionamentos é a falta de análises filogenéticas conduzidas com esses gêneros como grupo de interesse, fato que se deve principalmente à falta de revisões genéricas e chaves para espécies.

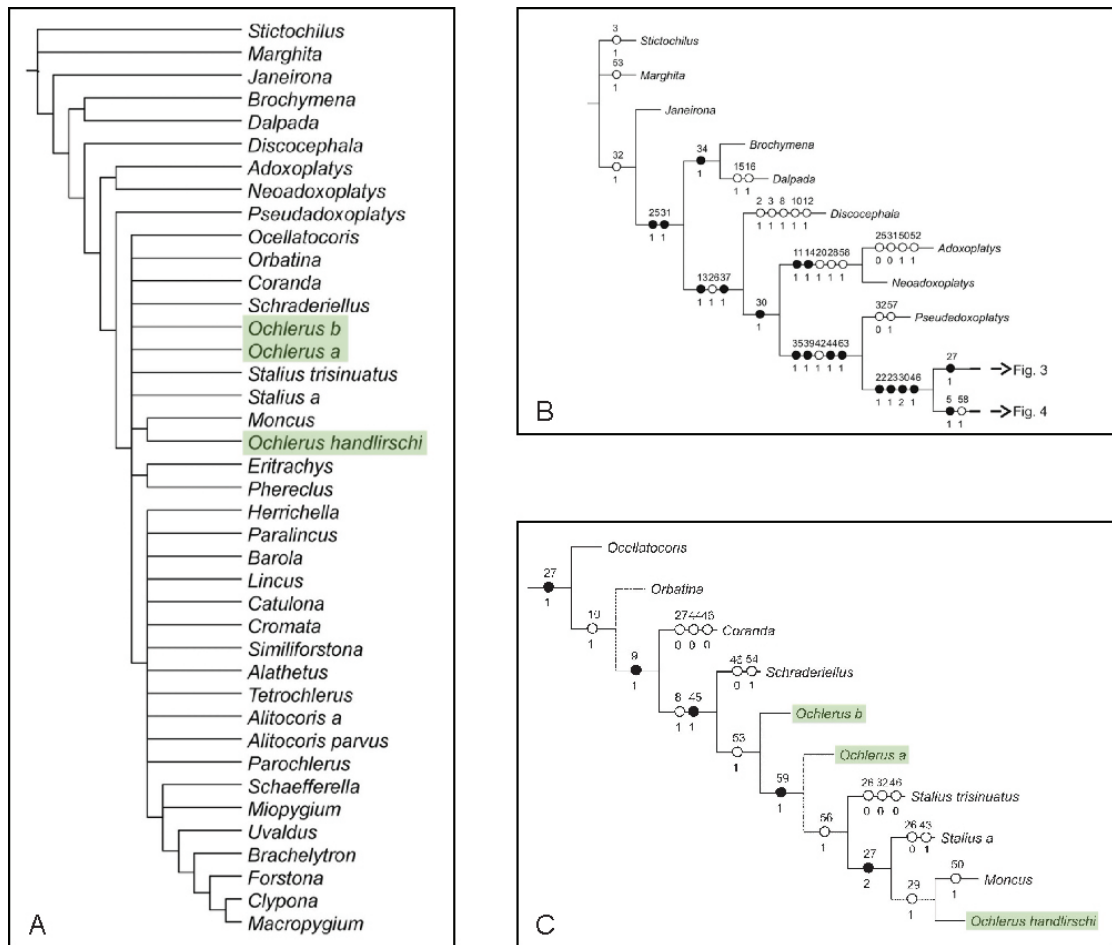


Figura 1. Relações filogenéticas de Ochlerini (retirado de Campos & Grazia, 2006): **A**, Cladograma de consenso estrito; **B**, Base do cladograma de consenso estrito; **C**, Cladograma referente a Fig. 4 de Campos & Grazia (2006), representando o clado *Ocellatocoris*⁺.

Consideradas essas informações, esta dissertação tem como objetivo geral a revisão de *Ochlerus*, de modo a definir sua composição e seus limites dentro de Ochlerini, testar a hipótese de polifilia (Campos & Grazia, 2006), ampliar o conhecimento como um todo a cerca deste grupo de espécies e, por consequência, permitir futuros estudos taxonômicos e de biologia sobre o grupo.

Organização da Dissertação

Esta dissertação é composta por: uma introdução geral, a qual faz uma breve revisão da literatura e que compreende os objetivos gerais do trabalho; 4 capítulos em formato de artigo constituindo o corpo principal do texto; e uma conclusão geral, abarcando os resultados e discussões expostos nos capítulos acima mencionados. A

formatação dos capítulos segue as normas das revistas científicas às quais foram ou serão respectivamente submetidos; tais normas se encontram nos Anexos I a III. O capítulo 1, já publicado na revista Zootaxa, está exposto como no original.

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CAPÍTULO 1

**Título: Taxonomic notes on Ochlerus: revisiting Herrich-Schäffer's species
(Hemiptera: Pentatomidae: Discocephalinae: Ochlerini)**

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Taxonomic notes on *Ochlerus*: revisiting Herrich-Schäffer's species (Hemiptera: Pentatomidae: Discocephalinae: Ochlerini)

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Abstract

The status of the three species of *Ochlerus* Spinola, 1837, described by Herrich-Schäffer in 1844 is reviewed. *Ochlerus coriaceus* and *O. lutosus* are removed from the synonymy of *O. cinctus* Spinola, 1837, while *O. sordidus* is transferred to *Paralincus sordidus*. Lectotypes are designated, and photos for each type and new records for *O. coriaceus* are provided.

Key words: Heteroptera, stink bug, *Phytomonas*

More than a century after Breddin (1910) described 13 species of *Ochlerus* Spinola, 1837 (bringing the total to 15 valid species) the type genus of Ochlerini is revisited. While species of the genus are known (Dollet et al. 1993, Campos & Grazia 2006, Gitau et al. 2009) as possible vectors of *Phytomonas* spp. (trypanosomatids that cause necrosis on palm and coconut trees) the genus hasn't received any taxonomic attention since Breddin (the exception being a synonymy proposed by Rolston 1992), thus making the identification of specimens an issue yet to be resolved. Also, the monophyly of the genus still needs testing, since the phylogeny proposed by Campos & Grazia (2006) divided it into three groups, resulting in a polyphyletic *Ochlerus*.

Recently, we located the syntypes of *Ochlerus coriaceus*, *O. lutosus* and *O. sordidus*, all described by Herrich-Schäffer (1844) based on females, deposited in the Germar collection at the Benedict Dybowski Zoological Museum (Lviv, Ukraine), and which are placed in the collection as *Menipha* and *Oxyrhinus*. Although *O. sordidus* was considered a valid species, *O. coriaceus* (Fig. 1A and 1B) and *O. lutosus* (Figs. 2A and 2B) were synonymized with *Ochlerus marginatus* (Fabricius 1803) by Stål (1872) and then with *Ochlerus cinctus* Spinola, 1837 by Kirkaldy (1909). However, by comparing the lectotype of *O. cinctus* (images available in Grazia & Campos 2010) and few other specimens (Fig. 2F and 2G) to the types of Herrich-Schäffer's species, as well as additional specimens from the D. A. Rider Collection at North Dakota University (NDSU), Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" collection (MACN), and the entomological collection of the Universidade Federal do Rio Grande do Sul (UFRG), we can ascertain that *Ochlerus coriaceus* and *Ochlerus lutosus* are in fact valid species. As for *O. sordidus*, it actually belongs to *Paralincus*, although *Paralincus sordidus* remains a *nomen dubium* since the specimen lacks its abdomen. Also, Herrich-Schäffer (1844) transferred *Cimex flavocinctus* Herrich-Schäffer, 1839 and *Cimex incisus* Herrich-Schäffer, 1839 to *Ochlerus*, but the specimens were not found, although they may be misidentified in the collection.

Diagnosis of *O. coriaceus* and *O. lutosus* was done mainly through the genitalia (Figs. 1C, 1D, 2C and 2D). Even though genital characteristics were absent in all but Breddin's *Ochlerus* descriptions, they are the only known morphological means of safely identifying species of *Ochlerus*, especially the shape and size of the gonocoxites 8 (gc8). Although the gc8 of *O. lutosus* are similar to that of *O. cinctus*, the posterior margin in *O. lutosus* is sinuate and the sutural margins are not completely juxtaposed, being basally separated, whereas in *O. cinctus* the posterior margin is angular and the sutural margins juxtaposed in all extension. In contrast, the shape of the gc8 of *O. coriaceus* is unique in the genus, with a strongly concave posterior margin, which leaves the gonapophyses 9 exposed while also extending posteriorly, thus covering part of the laterotergites 8 (la8). Furthermore, the spiracles on the la8 are completely visible in *O. lutosus*, whereas in *O. cinctus* and *O. coriaceus* they are partially hidden beneath the 7th urosternite.

Ochlerus coriaceus Herrich-Schäffer, 1844, removed from synonymy

(Fig. 1)

Ochlerus coriaceus Herrich-Schäffer, 1844: 64, Pl. 236, Fig. 734; Walker, 1867: 194 (list).

Ochlerus marginatus: Stål, 1872: 13 (synonymy)

Ochlerus cinctus: Kirkaldy, 1909: 185 (synonymy)

Distribution. Colombia, Venezuela (*Aragua*, *Tachira*) (new record)

Type material (photographs examined). Female, here designated as lectotype (Fig. 1E). Colombia [unknown locality], "*coriaceus*" hl. "*Ochlerus coriac.*" H.S. 734., Columbia. Deposited in the Benedict Dybowski Zoological Museum (Lviv, Ukraine).

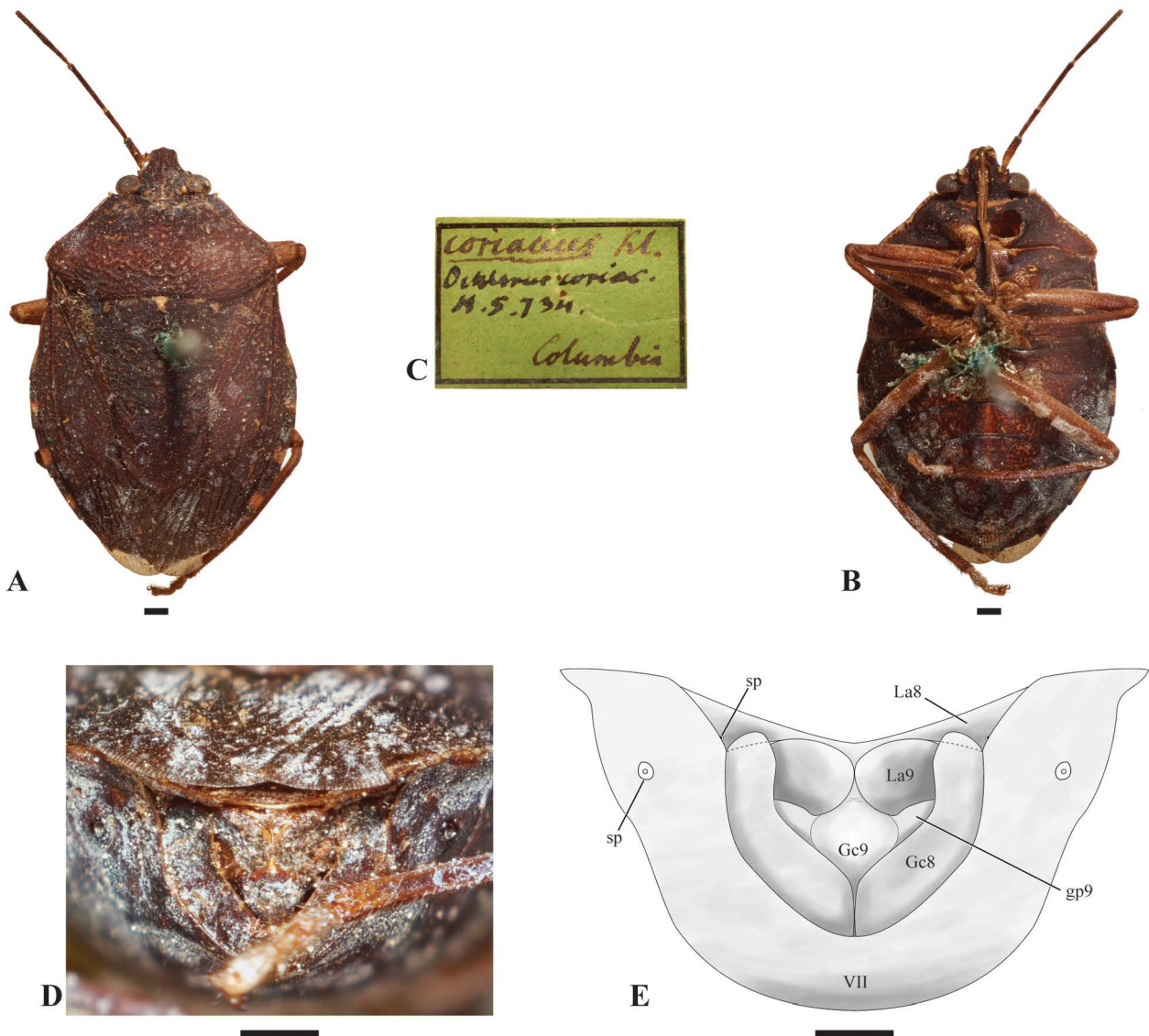


FIGURE 1. Lectotype of *Ochlerus coriaceus* Herrich-Schäffer, 1844: (A) dorsal view; (B) ventral view; (C) label; (D, E) genital plates, posterior view. (Gc8 = gonocoxites 8; Gc9 = Gonocoxites 9; gp9 = gonapophyses 9; La8 = laterotergites 8; La9 = laterotergites 9; sp = spiracle; VII = 7th urosternite) (scale = 1mm)

Material examined. VENEZUELA, *Aragua*: 1 female, El Limón 450m, 4.VII.1983, [9.8500; -66.9000], Luz negra, F. Fernandez Y. col. (UFRG); 1 female, El Limón, 30.VII.1983, [9.8500; -66.9000], Luz negra, F. Fernandez Y. col., MACN (MACN); 1 female, Cata, 19.V.1983, A. Fernandez B. & C. Andara cols. [10.4667; -67.7333], MACN (MACN); *Tachira*: 1 female, Chucuri, San Cristobal, 24.IV.1980 [7.7669; -72.2250], Donacion I. U. T., MACN (MACN); 1 female,

Buerio Sucre, San Cristobal, 16.[illegible].1980, Rut [illegible] col. [7.7669; -72.2250], Donacion I. U. T., Arbol 3: [illegible]M, MACN (MACN); TRINIDAD & TOBAGO, *Aripo*: 1 female, Asa Wright Nature Ctr. 7.5mi N of Arima on Blachisseuse Road, 28.VI.1985, P. J. Clausen col. [10.7177; -61.2983], W. I., D. A. Rider Collection (NDSU); 1 female, St. George Co. Aripo Valley, Rapsey Est., 9-16.X.1978, R. M. Baranowski [10.7177; -61.2983], Malaise trap, D. A. Rider Collection (NDSU).

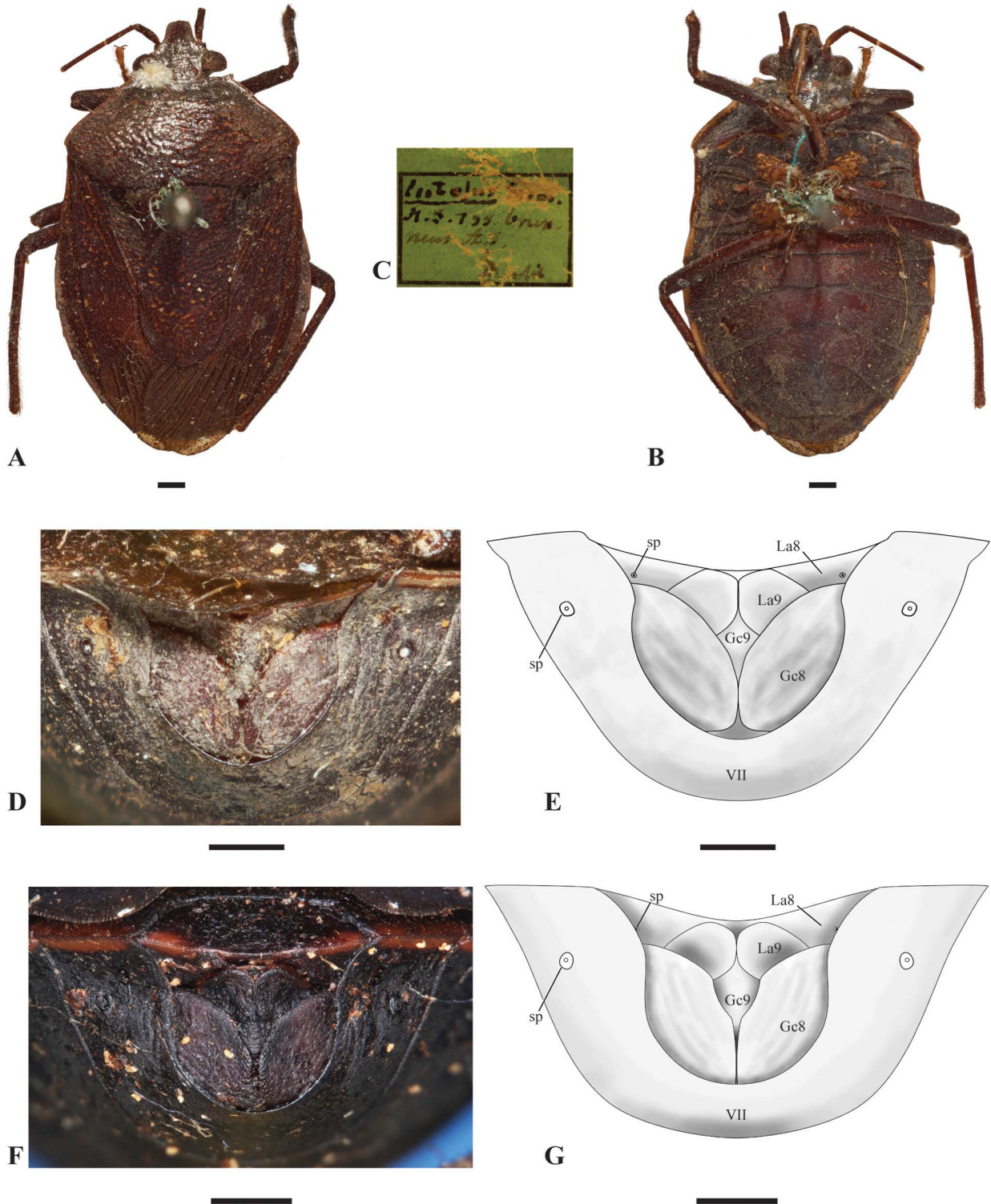


FIGURE 2. Lectotype of *Ochlerus lutosus* Herrich-Schäffer, 1844 (A–E) and *Ochlerus cinctus* Spinola, 1837 (F–G): (A) dorsal view; (B) ventral view; (C) label; (D–G) genital plates, posterior view. (Gc8 = gonocoxites 8; Gc9 = Gonocoxites 9; La8 = laterotergites 8; La9 = laterotergites 9; sp = spiracle; VII = 7th urosternite) (scale = 1mm).

Comments. Rusty brown species, with a small yellow spot at the base of the scutellum and 1+1 smaller yellow spots close to the fovea. Legs and ventral surface yellow with brown spots. Antero-lateral angles slightly produced laterad. Connexivum partially emarginate, with yellow spots in the middle of each segment. Shape of gonocoxites 8 (gc8) unique for the genus with a strongly concave posterior margin (in a u-shaped pattern if the gc8 are combined).

***Ochlerus lutosus* Herrich-Schäffer, 1844, removed from synonymy**
(Fig. 2A–2E)

Ochlerus lutosus Herrich-Schäffer, 1844: 65, Pl. 236, Fig. 735; Walker, 1867: 194 (list).

Ochlerus marginatus: Stål, 1872: 13 (synonymy)

Ochlerus cinctus: Kirkaldy, 1909: 185 (synonymy)

Distribution. Brazil

Type material (photographs examined). Female, here designated as lectotype (Fig. 2E). Brazil [unknown locality], "*lutulus*", [illegible], H.S. 735. brun. nus. A.S., Brasil. Deposited in the Benedict Dybowski Zoological Museum (Lviv, Ukraine).

Comments. Rusty brown species. Possibly with a small yellow spot at the base of the scutellum, but the specimen is pinned right through it. Antero-lateral angles produced laterad, truncate. Connexivum concolor to body. Gonocoxites 8 similar to that of the type species, differing mainly in the shape of the posterior margin and of the external angle.

Paralincus sordidus* (Herrich-Schäffer, 1844), new combination, *nomen dubium
(Fig. 3)

Ochlerus sordidus Herrich-Schäffer, 1844: 65, Pl. 236, Fig. 736; Dallas, 1851: 156 (list); Walker, 1867: 193 (list); Stål, 1872: 13; Kirkaldy 1909, 185.

Ochlerus cerdo Erichson, 1848; Walker 1867, 194; Kirkaldy 1909, 185 (synonymy)

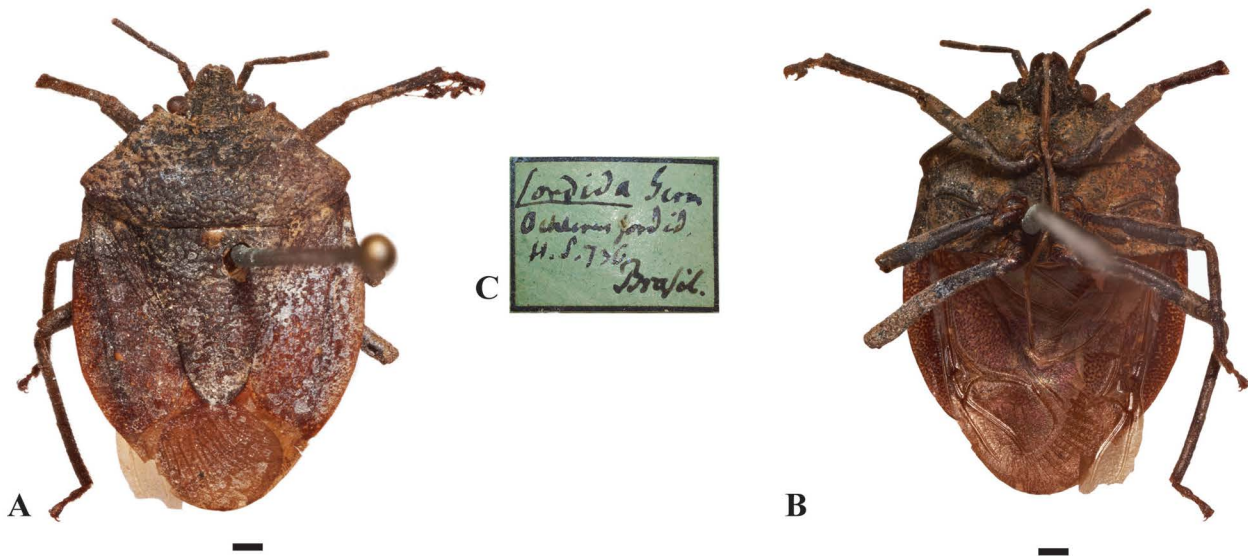


FIGURE 3. Lectotype of *Paralincus sordidus* (Herrich-Schäffer, 1844): (A) dorsal view; (B) ventral view; (C) label. (scale = 1mm)

Distribution. Brazil

Type material (photographs examined). Gender unknown, here designated as lectotype (Fig. 3C). Brazil [locality unknown]. Deposited in the Benedict Dybowski Zoological Museum (Lviv, Ukraine).

Comments. Rusty brown species. Apparently not closely related to the type species *Paralincus terminalis* (Walker,

1867) and badly conserved, lacking the abdomen. However, some characters allow us to place the species within *Paralincus*, such as the shape of the head, the distance between the eyes and pronotum, the shape of the pronotum, and the anteriorly produced antero-lateral angles. The scutellum is similar to all other species of *Paralincus* in both shape and color, with a yellow middle spot at the base. Closer examination of the specimen is necessary for further considerations about its relation to the other species in the genus.

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CAPÍTULO 2

Normas editoriais: Arthropod Systematics and Phylogeny (Anexo I)

Bredden's types of *Ochlerus* at the Senckenberg and Naturhistorisches Wien Museums (Hemiptera, Pentatomidae, Discocephalinae)

INTRODUCTION

Ochlerus Spinola, 1837 has a record of unresolved taxonomy and classification matters, having its monophyly recently disputed (CAMPOS & GRAZIA, 2006). Being the type genus for the tribe Ochlerini, surprisingly it has not received significant attention from taxonomists and systematists alike, besides the diagnosis by ROLSTON (1992). While the last description of a new species dates back to Breddin's (1910) 13 species (Table 1), only the recent unveiling of Herrich-Schäffer's (1844) *Ochlerus* types have somewhat dealt with the confusing history of the genus (SIMÕES & CAMPOS, 2014) and brought the total number to 17 species (Tab. 1). Solving taxonomic issues such as the identity of the species of *Ochlerus* is also of interest to crop protection, since the genus has been known for its possible role as vector of the parasitic *Phytomonas* spp. trypanosomatids (DOLLET ET AL. 1993, CAMPOS & GRAZIA 2006, GITAU ET AL. 2009).

TABLE 1: List of valid species of *Ochlerus* in alphabetical order.

Species	Author	Year
<i>Ochlerus bergrothi</i>	Breddin	1910
<i>Ochlerus bistillatus</i>	Breddin	1910
<i>Ochlerus cinctus</i>	Spinola	1837
<i>Ochlerus circummaculatus</i>	Stål	1860
<i>Ochlerus communis</i>	Breddin	1910
<i>Ochlerus coriaceus</i>	Herrich-Schäffer	1844
<i>Ochlerus cotylophorus</i>	Breddin	1910
<i>Ochlerus dentijugis</i>	Breddin	1910
<i>Ochlerus handlirschi</i>	Breddin	1910
<i>Ochlerus incisulus</i>	Breddin	1910
<i>Ochlerus lutosus</i>	Herrich-Schäffer	1844
<i>Ochlerus notatulus</i>	Breddin	1910
<i>Ochlerus profanus</i>	Breddin	1910
<i>Ochlerus rusticus</i>	Breddin	1910
<i>Ochlerus signoreti</i>	Breddin	1910
<i>Ochlerus stylulatus</i>	Breddin	1910
<i>Ochlerus tenuicornis</i>	Breddin	1910

Arguably the longest and most detailed paper to date on *Ochlerus*, Gustav Breddin's work was a posthumous publication due to his untimely passing away while finishing the descriptions. The death of the author resulted in specimens without

proper identification of holotypes and species names. Even though the designation of holotypes was not common practice at that time, Breddin would have probably made a better identification of the species in their respective labels. However, Breddin had already finished most of the descriptions and drawings of genitalia, and mentioned what collections the specimens should be deposited. Despite having found out that the institutions to where each specimen was sent do not exactly match what Breddin indicated, we discovered that most of the specimens were deposited at the Natural History Museum in Vienna, Austria, and mainly at the Senckenberg Deutsches Entomologisches Institut at Müncheberg, Germany, which hosts most of Breddin's own collection.

Through careful examination of the specimens and by matching label information, drawings and descriptions, we managed to define several of the type specimens from the species Breddin described, albeit not managing to find all males and females types. Thus, a review of the specimens which Breddin used as basis for his paper is given, followed by a brief discussion on the reasons for type designation. Also, we found out that the male and female of *Ochlerus tenuicornis* Breddin, 1910 are not conspecific. This last issue should be addressed at a future review of the genus.

MATERIALS AND METHODS

Specimens belong to the Naturhistorisches Museum Wien, Vienna, Austria (NMW) and the Senckenberg Deutsches Entomologisches Institut at Müncheberg, Germany (SDEI); acronyms, in brackets, according to EVENHUIS (2014). We only had photographic access to the male syntypes of *Ochlerus communis* Breddin, 1910 and of *Ochlerus signoreti* Breddin, 1910 deposited at the NMW. The whereabouts of the female types of these two species and the male of *Ochlerus stylulatus* Breddin, 1910 was not discovered, and information suggests that the one male syntype of *O. communis* was lost in the bombardment of the Hamburg Museum during World War II (STEPHAN M. BLANK & FRANK WIELAND *pers. comm.*). The other missing syntypes may be deposited at the Forschungsinstitut und Naturmuseum Senckenberg at Frankfurt-am-Main (SMF), however we could not access the material due to logistical issues. Photographs of loaned specimens were made with Nikon AZ100M.

RESULTS AND DISCUSSION

Review of the syntypes

***Ochlerus bergrothi* Breddin, 1910**

(Figs. 1A, 2A)

Only one male was used in the original description. The specimen is in a fairly good condition, but its wings are extended.

Type material (examined). Male, here designated as holotype by monotypy, deposited at the SDEI; 'San Esteban | E. Simon [col.] | III.88 | coll. Breddin | Barber revid. 1933 | DEI Münchenberg HEMI-00022'.

Type locality. San Esteban, State unknown, Venezuela.

Comments. The decision to designate the specimen as a holotype, rather than a lectotype, is based on article 73.1.2 of the International Code of Zoological Nomenclature (ICZN, 1999). Also, we cannot be sure of the exact year that the specimen was collected, although it is probably from 1888.

***Ochlerus bistillatus* Breddin, 1910**

(Figs. 1B, 2B)

Two females were found in the SDEI collection, as described by Breddin.

Type material (examined). Lectotype ♀, designated by GAEDIKE (1971), deposited at the SDEI; '*Ochlerus bistillatus* | coll. Breddin | Lectotypus | des. M. Gaedike 1968 | DEI Münchenberg Hemi - 00030'; 1 paralectotype ♀, designated by Gaedike; '*Ochlerus bistillatus* | coll. Breddin, Paralectotypus | des. M. Gaedike 1968 | DEI Münchenberg; Hemi - 00031' (SDEI).

Type locality. Bolivia

Comments. Gaedike's type designations seem to be in accordance to Breddin's descriptions. The lectotype is in a better state of preservation.

***Ochlerus communis* Breddin, 1910**

(Figs. 1C, 2C)

BREDDIN (1910) based his description in 6 specimens: 5 males, deposited at the NMW (4 specimens) and the Hamburg Museum (one specimen); and 1 female deposited at the NMW. We were only able to find 1 male deposited at the NMW.

Type material (photograph examined). 1 male, here designated as lectotype, deposited at the NMW; '*marginatus* F. det Mayr. | *Shtt*'.

Type locality. Unknown

Comments. The original description and, mainly, the drawing of the female genitalia of *O. communis*, point to a synonymy to *Ochlerus cinctus* Spinola, 1837. In fact, Breddin himself stated that: "[It is] A common type in the old collections, perhaps identical to '*O. marginatus*' Fab.". However, despite being correct about the species being similar to *O. cinctus* (*Cimex marginatus* was a preoccupied name, this issue was resolved by KIRKALDY, 1909), we cannot be sure if they are coespecific, as *O. cinctus* is only known from females and we could not find the female syntype of *O. communis*.

***Ochlerus cotylophorus* Breddin, 1910**

(Figs. 1D, 2D)

Breddin based his description on two females from Peru, we cannot be sure if they are in the SDEI collection. However, three specimens from other localities were found and they match the illustration of genitalia and the description of *O. cotylophorus*.

Material examined. 1 female, here designated as a voucher, deposited at the SDEI; 'Coca (Ecuad.) R. Haensch S. | coll. Breddin | DEI Münchenberg HEMI-00025'. 1 female, here designated as a voucher, **COLOMBIA**, *Province unknown*: Esmeralda,

'Columbia Esmeralda | coll. Breddin | *Ochlerus cinctus* Spin. | det. HG Barber = *marginatus* Fab. | DEI Münchenberg HEMI-00020' (SDEI); 1 female, here designated as as voucher, **COLOMBIA**, 'Columbien, coll. Breddin | Barber revid. 1933 | DEI Münchenberg HEMI-00021' (SDEI)

Type locality. Peru

Comments. Throughout the *Ochlerus* types described by Breddin, there are indications to poorly matched and/or erroneous labels for some species. That may have been the case for *O. cotylophorus* as well. There is a fourth specimen from Peru which was found next to these other three and may be one of the syntypes. It has a matching general morphology, despite the fact that it lacks the abdomen.

***Ochlerus dentijugis* Breddin, 1910**

(Figs. 1E, 2E)

One male was used in the original description, matching what was found in the SDEI collection.

Type material (examined). Male, here designated as holotype by monotypy, deposited at the SDEI; 'Peru Amaz. | *Ochlerus profanus* | coll. Breddin | DEI Münchenberg HEMI-00027'.

Type locality. Peru

Comments. Breddin states the specimen on which he based his description comes from Colombia. However, the label pinned with the syntype states otherwise, again leading to the possibility that most labels are mixed and/or misplaced. Furthermore, the diagnostic feature of the lateral projection on the mandibular plates and the shape of the pygophore, much different from the other species, leads us to the designation of the specimen as holotype.

***Ochlerus handlirschi* Breddin, 1910**

(Figs. 1F, 2F)

Although it should have been deposited in the NMW (Breddin, 1910: 623) the sole syntype of *O. handlirschi* is deposited in the SDEI.

Type material (examined). Female, holotype by monotypy, deposited in the SDEI; 'Cozumel Yucatan 1882 | coll. Breddin | DEI Münchenberg HEMI-00019'.

Type locality. Cozumel, Yucatán, Mexico.

Comments. This easily diagnosable species, due to the shape of the posterior margin of the gonocoxites 8, has had its position in *Ochlerus* questioned by CAMPOS & GRAZIA (2006).

***Ochlerus incisulus* Breddin, 1910**

(Figs. 1G–H, 2G–H)

Breddin described the species based on a male and a female. The syntypes are deposited in the SDEI collection, although the female should have gone to the NMW (Breddin, 1910: 629).

Type material (examined). Lectotype ♀, designated by Gaedike (1971), deposited at the SDEI; 'Mérida Venez. | ♀ | Typus | *Ochlerus incisulus* ♀ Type Bredd[in] | coll. Breddin | Lectotypus | Des. H. Gaedike 1968 | DEI Münchenberg HEMI-00033". 1 female | here designated as paralectotype; 'Mérida | Venezuela 1884 | ♀ | Typus | *Ochlerus incisulus* ♀ Type Bredd | Paralectotypus | Des. H. Gaedike 1968 | DEI Münchenberg HEMI-00034' (SDEI).

Type locality. Mérida, Mérida, Venezuela.

Comments. Again, Gaedike's type designations are in accordance to Breddin's descriptions.

***Ochlerus notatulus* Breddin, 1910**

(Figs. 1I, 2I)

According to Breddin, two specimens were used and should have been deposited at the NMW (BREDDIN, 1910: 628). Apparently only one of these was sent to the museum while two others are deposited in the SDEI.

Type material (examined). Female, here designated as lectotype, deposited at the NMW; '*Ochlerus notatulus* Type Bredd. | Brasilien'. 1 female, here designated as paralectotype, 'Brasilien | coll. Breddin | DEI Münchenberg HEMI-00024' (SDEI); 1 female, here designated as paralectotype, labels: 'Brasil | Coll. Signoret | *sordidus* det. Signoret coll. Breddin | DEI Münchenberg HEMI-00032' (SDEI).

Type locality. Brazil.

Comments. The NMW syntype was chosen as lectotype due to better preservation and having more complete appendices.

***Ochlerus profanus* Breddin, 1910**

(Figs. 1J, 2J)

The author described this species based on two specimens, which were found at the SDEI collection.

Type material (examined). Female, here designated as lectotype, deposited at the SDEI; 'Peru Amaz. | coll. Breddin | DEI Müncheberg HEMI-00029'. 1 female, here designated as paralectotype, 'Bahia Felder 853 | *marginatus* det. Stal | coll. Breddin | DEI Müncheberg HEMI-00016'.

Type locality. Marcapata, Department unknown, Peru

Comments. The paralectotype most likely had its labels changed with the holotype of *O. rusticus*. We can ascertain that based on the descriptions, illustration of the genital plates, and type locality mentioned by Breddin in his paper. However, we decided on

keeping the labels in the same specimens and simply added new labels with the correct information.

***Ochlerus rusticus* Breddin, 1910**

(Figs. 1K, 2K)

Breddin based his description on one specimen, which we found at the SDEI collection.

Type material (examined). Female, here designated as holotype by monotypy, deposited at the SDEI; 'Peru Amaz. | *Ochlerus profanus* | coll. Breddin | Typus | Syntypus | DEI Müncheberg HEMI-00023'.

Type locality. Bahia, Brazil.

Comments. As mentioned for *O. profanus*, the labels have been misplaced. This information can be confirmed in the original description, which shows that *O. rusticus* is provenient from Bahia, Brazil. GAEDIKE (1971) mistakenly labeled it as a syntype of *O. profanus*. New labels with the correct information were added to the holotype.

***Ochlerus signoreti* Breddin, 1910**

(Figs. 1L, 2L)

For *O. signoreti*, Breddin described male and female, based on single specimens. Both should be deposited at the NMW, but only the former was retrieved.

Type material (photograph examined). Male, here designated as lectotype, deposited at the NMW; 'Cayenne Coll. Signoret | *coriaceus* det. Signoret | *Ochlerus signoreti* \$ Type Bredd.[in]"

Type locality. Cayenne, Cayenne, French Guiana

Comments. We cannot discard the possibility that the female syntype is in the same collection as it may be mislabeled and/or misplaced.

***Ochlerus stylulatus* Breddin, 1910**

(Figs. 1M, 2M)

Only the one female syntype was found at the SDEI. The male should have been deposited in Breddin's own collection.

Type material (examined). Female, here designated as lectotype, deposited at the SDEI, Müncheberg, Germany; 'Peru Amaz. | coll. Breddin | DEI Münchenberg HEMI-00028'.

Type locality. Marcapata, Department unknown, Peru.

Comments. As drawn by Breddin, the right plate of the gonocoxites 8 is absent (probably extracted by the author himself). The male syntype may be deposited at the Senckenberg Museum at Frankfurt (SMF).

***Ochlerus tenuicornis* Breddin, 1910**

(Figs. 1N, 2N)

Although one male syntype should have been deposited at the Hamburg Museum (BREDDIN, 1910: 627), the two syntypes (one male and one female) are housed at the SDEI. These specimens happen to be not conspecific.

Type material (examined). Female, here designated as lectotype, deposited at the SDEI; 'Venezuela | coll. Breddin | Barber revid. 1933 | Holotypus | DEI Müncheberg HEMI-00035'.

Type locality. Venezuela

Comments. Barber possibly labeled the specimen as a holotype, although we cannot be sure of such fact. Thus, the female was chosen as lectotype in accordance to its respective label and species description. Breddin himself questioned the validity of the coupling, since they are from distant localities and bear only general similarities,

such as the shape of the pronotum. Thus, the male (Figs. 1O and 2O) is left as a possible new species to be treated in a future paper and has the following labels: 'Tipuani (Bolivia) A. v. Limihardt [illegible] leg. ded. I.X.91 | coll. Breddin | *Ochlerus tenuicornis* det Bredd. | HG Barber | DEI Müncheberg HEMI-00036'.

FINAL CONSIDERATIONS

Despite the uncertainty to respective whereabouts, most of the missing specimens may still be found in the aforementioned collections should a hemipterologist examine them. We also conclude that the death of Breddin left a few gaps in the type specimen organization, but in the big picture there were not as many mistakes as we could expect from an incomplete labeling process. The decision on where the misdeposited specimens should be sent will be left for the respective curators and may be addressed in the near future. Finally, we hope that this study can help in the identification of specimens of *Ochlerus*, as well as in other studies delving into Breddin's posthumous works.

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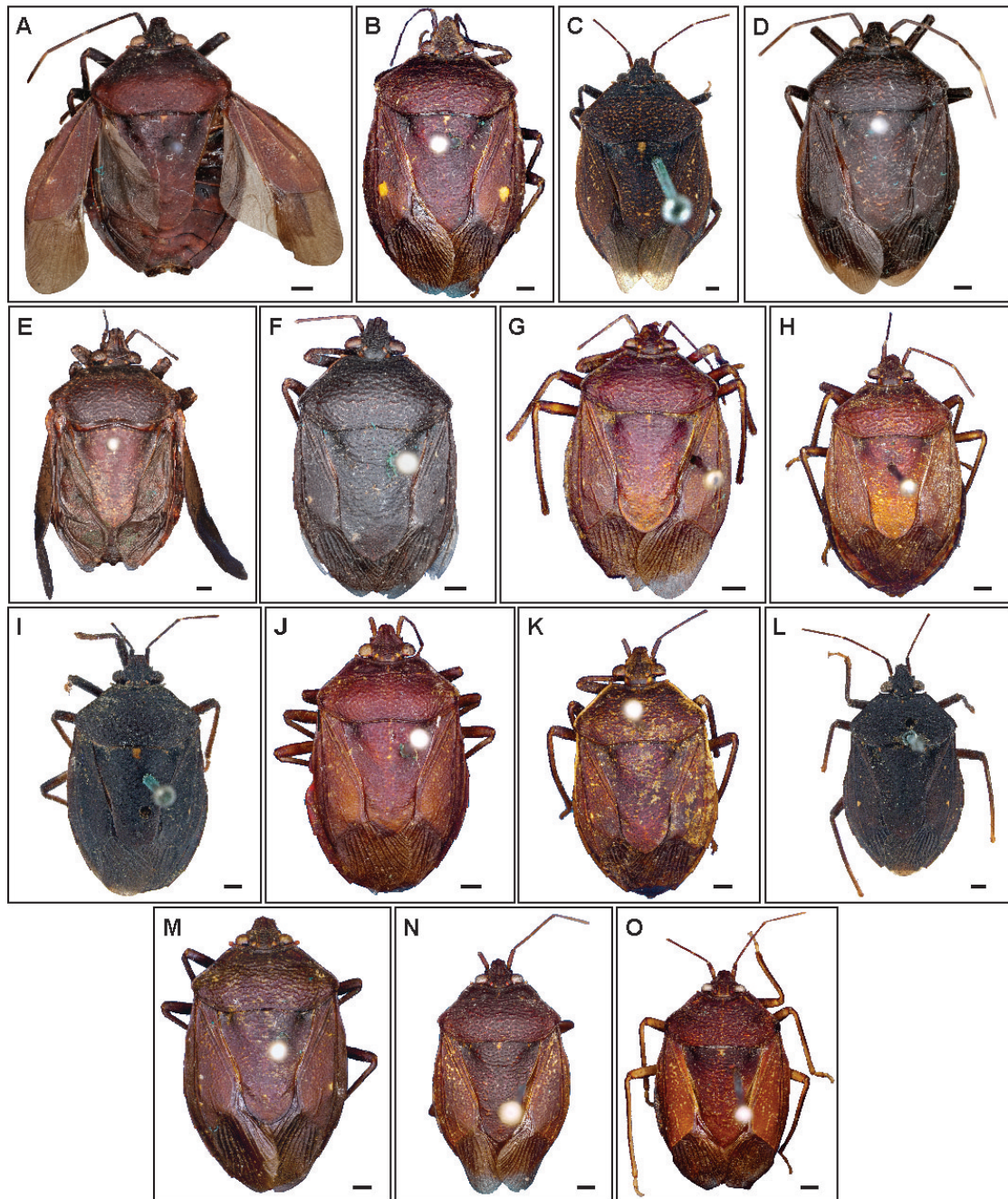


Figure 1. Type material of the species of *Ochlerus* described by Breddin, dorsal view. **A:** *O. bergrothi*, §; **B:** *O. bistillatus*, §; **C:** *O. communis*, §; **D:** *O. cotylophorus*, § (voucher); **E:** *O. dentijugis*, §; **F:** *O. handlirschi*, §; **G:** *O. incisulus*, §; **H:** *O. incisulus*, §; **I:** *O. notatulus*, §; **J:** *O. profanus*, §; **K:** *O. rusticus*, §; **L:** *O. signoreti*, §; **M:** *O. stylulatus*, §; **N:** *O. tenuicornis*, §; **O:** *O. tenuicornis*, § (this one is probably a different species). Scale bars: 1 mm

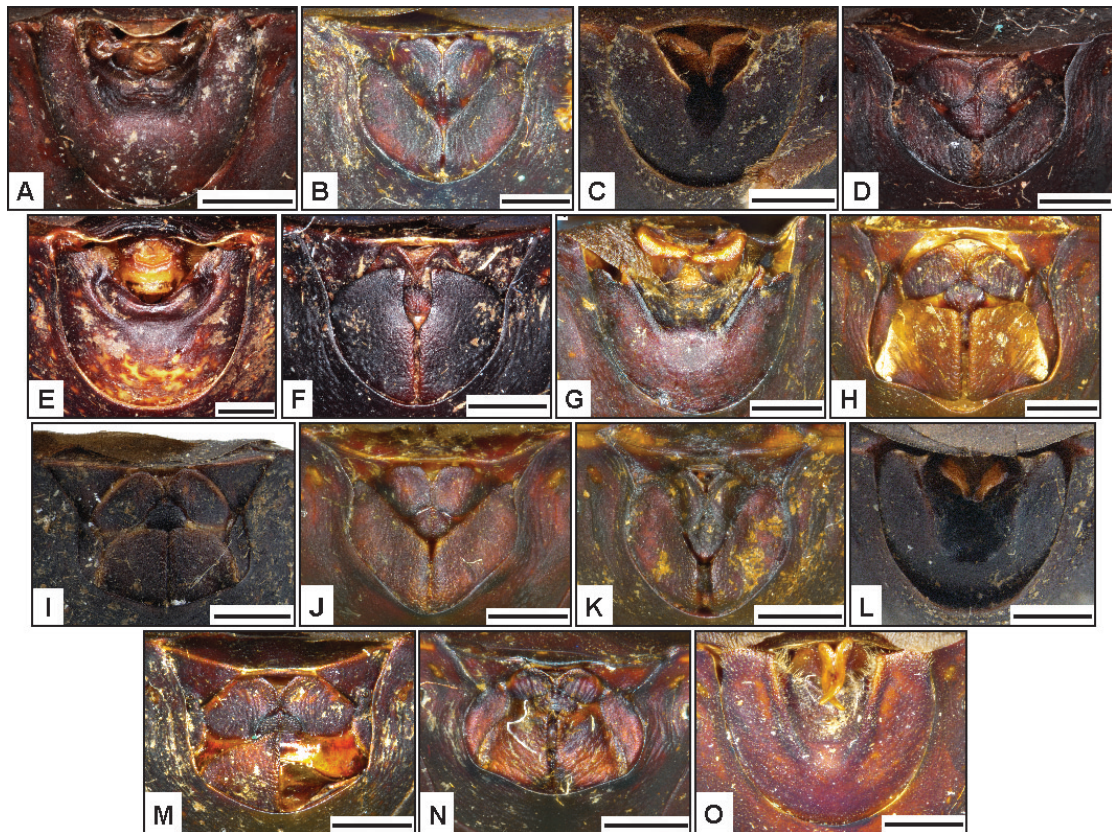


Figure 2. Type material of the species of *Ochlerus* described by Breddin, external genitalia, posterior view: **A:** *O. bergrothi*, §; **B:** *O. bistillatus*, §; **C:** *O. communis*, §; **D:** *O. cotylophorus*, § (voucher); **E:** *O. dentijugis*, §; **F:** *O. handlirschi*, §; **G:** *O. incisulus*, §; **H:** *O. incisulus*, §; **I:** *O. notatulus*, §; **J:** *O. profanus*, §; **K:** *O. rusticus*, §; **L:** *O. signoreti*, §; **M:** *O. stylulatus*, §; **N:** *O. tenuicornis*, §; **O:** *O. tenuicornis*, § (this one is probably a different species). Scale bars: 1 mm

CAPÍTULO 3

Normas editoriais: Systematic Entomology (Anexo II)

Cladistic Analysis and Revision of *Ochlerus* Spinola, 1837 (Heteroptera, Pentatomidae, Discocephalinae)

INTRODUCTION

The Discocephalinae are a Neotropical-exclusive subfamily of Pentatomidae known for its light brown to pitch black coloration and the presence of some species of economic importance. The group was eventually divided into two tribes (Discocephalini and Ochlerini) by Rolston (1981), and has since received increased attention from taxonomists and systematists alike.

After two decades of a near drought of papers on Ochlerini (Rolston, 1981; 1992; Rider, 1998), the group started to receive increased attention only after the work of Arismendi & Thomas (2003). The tribe has seen a fold of recent taxonomical (Matesco, Grazia & Campos, 2007; Ortega-Leon & Thomas, 2010; Garbelotto, Campos & Grazia, 2011) and phylogenetic works (Campos & Grazia, 2006; Garbelotto, Campos & Grazia, 2013) that have expanded the all-around knowledge of the tribe and brought its original 23 genera to at least 32, comprising 109+ species (Garbelotto, Campos & Grazia, 2013). However, despite having its monophyly recognized (Campos & Grazia, 2006), most of its genera, such as *Schraderiellus* Rider, 1998 and *Moncus* Stål, 1867, still require major reviews, specially the "older" genera that are in a significant higher number in museums and entomological collections than they were 30 or 50 years ago. Nonetheless, a lot of work still needs to be done in order to better understand the composition of the group.

The type genus of Ochlerini, *Ochlerus* Spinola, 1837, described for only one species, *Ochlerus cinctus* Spinola, 1837, has one of the most confusing history among the tribe's genera. This is mainly due to a lack of uniformity and communication across the first descriptions (Spinola, 1837; Herrich-Schäffer, 1839, 1844; Stål, 1860, 1872; Walker, 1867). Although Kirkaldy (1909) managed to somewhat enlighten what exactly had happened to the genus, he was still missing some information. Around the same time of Kirkaldy's catalog (1909) publication, Breddin (1910) was finishing his descriptions of 13 species of *Ochlerus* when he sadly passed away, leaving a few gaps in his unfinished work. It was only recently that the taxonomy of the genus started to be somewhat resolved, as we retraced the type specimens from Herrich-Schäffer (1844) and Breddin. This findings (Simões & Campos, 2014; *in prep.*) have brought the total species of *Ochlerus* to 17, and made a revision of the genus possible. This revision was indeed needed since Campos & Grazia (2006) questioned the monophyly of the genus, separating it into three groups, resulting in a polyphyletic *Ochlerus*.

Another point of interest in the genus is its acknowledged (Dollet et al. 1993, Campos & Grazia 2006, Gitau et al. 2009) possible role as vector of the *Phytomonas* spp. trypanosomatid, which causes necrosis in palm and coconut trees (also known as the Hartrot and Marchitez diseases). Some few studies (Dollet et al., 1993; Souza et al., 1999) report the occurrence of *Ochlerus* in diseased plants, but none can ascertain the respective species, since there is no easy-access means to species identification (be it an identification key or a taxonomist), thus hampering any attempts on biological studies.

Hence, here we start by evaluating the relationship of *Ochlerus*, including seven new species, with a proposition of a cladistic classification based on the recovered monophyletic groups. Then we provide a revision of the genus.

MATERIALS AND METHODS

The cladistic analysis includes 43 taxa (19 for the outgroup, 17 species already described for *Ochlerus* and seven new species, here named as sp. 01 through 07). The outgroup is comprised of genera pertaining to Discocephalini (*Discocephala* and *Antiteuchus*) and Ochlerini (five genera belonging in the group *Ocellatocoris*, seven belonging in its sister-group *Herrichella*, as well as the two groups comprised by only two species, *Eritrachys* and *Phereclus*, and *Adoxoplatys* and *Neodoxoplatys*). The cladograms are rooted in *Discocephala* (represented by the type species, *D. marmorea* Laporte, 1833).

Taxon Sampling

The specimens examined belong to the following collections: American Museum of Natural History (AMNH); the Benedict Dybowski Zoological Museum (BDZM); the Natural History Museum (BMNH); the Bernice Pauahi Bishop Museum (BPBM); the Carnegie Museum of Natural History (CMNH); Museu de Entomologia Pe. Jesus Santiago Moure (DZUP); John E. Eger Collection (JEE); Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN); Museu de Ciências Naturais da Fundação Zoobotânica do Rio Grande do Sul (MCNZ); Museo Regionale di Scienze Naturali (MRSN); D. A. Rider Collection at North Dakota University (NDSU); Naturhistoriska Riksmuseet (NHRS); Naturhistorisches Museum Wien (NMW); Senckenberg Deutsches Entomologisches Institut (SDEI); Snow

Entomological Museum (SEMC); the Entomological Collection of the Universidade Federal do Maranhão (UFMA); and the Entomological Collection of the Universidade Federal do Rio Grande do Sul (UFRG); acronyms, except for JEE, DZM and UFMA, according to Evenhuis (2014).

We had only photographic access to the type material of *Ochlerus cinctus* Spinola, 1837 (available in Grazia & Campos, 2010), *O. lutosus* Herrich-Schäffer, 1844, *O. circummaculatus* Stål, 1860, and *O. communis* Breddin, 1910 (provided by the BDZM, the NHRS, and the NMW, respectively); thus, there are several missing data for these species. Also, we could not obtain the type material for *O. circumcinctus* Stål, 1860 (the species was synonymized to *O. cinctus* by Kirkaldy, 1909), and the specimen is probably deposited at the NHRS as indicated by low quality photos available at http://www2.nrm.se/en/het_nrm/c/ochlerus_circumcinctus.html.

Measurements

Measurements (mean \pm standard deviation, minimum, and maximum) are given in millimetres and were made through stereomicroscope and the software ImageJ for the photograph-only species. Photographs of loaned specimens, including external and internal genitalia, were acquired and mounted with a Nikon AZ100M stereomicroscope and the Nikon NIS-Elements Ar Microscope Imaging Software. Phallus and female ectodermal genital ducts were boiled in 10% KOH aqueous solution for clarification and, when needed, stained in Congo red. The terminologies follow Schuh & Slater (1995) for general morphology characters, Kment & Vilímová (2010) for cuticular structures of the external scent efferent system, and Dupuis (1970) and Campos & Grazia (2006) for genital structures.

Cladistic Analysis

The matrix is comprised of 87 morphological characters, 20 for the head, 18 for the thorax, 8 for the abdomen, 17 for male genitalia, 24 for female genitalia. Among these characters, 45 are reinterpretations from the not autapomorphic characters (for our taxon set) of Campos & Grazia (2006), and 9 from Garbelotto et al. (2013). Seventy five characters are binary, and 12 are multistate; 33 are neomorphic and 54 transformational (Serenó, 2007). Characters were treated as discrete, unordered, and with initial fit calculated as proposed by Miranda (2009). The symbols '?' and '-' were

used for unobserved and noncomparable data, respectively. The data matrix can be found in Appendix S1, while a fully illustrated character list is available in Appendix S2.

Trees for relationship hypothesizing were made with TNT (Goloboff, Farris & Nixon, 2003) through heuristic searches and the outgroup method (Nixon & Carpenter, 1993). Searches were conducted with equal and implied weights, the latter following Mirande (2009); further searches were run with 3 alternate data sets, whereupon we excluded taxa that we only had photographs examined or that we had access to a single specimen. In order to define the best fit for K-values, each analysis underwent Mirande's process with 15 K-values for an average character fit ranging from 50 to 90% of perfectly hierarchical character. The strict consensus of the trees for each K-value was then calculated, and a similarity matrix of Subtree Pruning Regrafting (SPR distances of the 15 consensus trees was constructed. The highest sums of SPR distances indicate more stable, or robust, K-values; however, Mirande (2009) does not indicate how one should choose the exact K-value in the final analysis, thus we opted on choosing the average of the fittest K-values. Visualization and plotting of cladograms, as well as computation of descriptive indices (steps, retention index, and consistency index) were performed in WinClada 1.00.08 (Nixon, 2002).

RESULTS AND DISCUSSION

Cladistic Analyses

The analysis under equal weights (EW) with the full data set resulted in 1120 most parsimonious trees (MPTs) with 380 steps (L, for length), consistency index (Ci) of 26 and a retention index (Ri) of 41. The resulting strict consensus (Fig. 1A), recovered clades similar to those found by Campos & Grazia (2006), such as the grouping of *Adoxoplatys* Breddin, 1903 + *Neodoxoplatys* Kormilev, 1956 and the *Orbatina* group (comprising *Orbatina* Ruckes, 1961, *Ochlerus*, *Moncus* Stål, 1867, *Parastalius* Matesco, Grazia & Campos, 2007 and *Schraderiellus* Rider, 1998). However, both the ingroup and part of the outgroup are divided into two polytomies, one of these grouping the *Orbatina* group minus *Orbatina* and *Oc. circummaculatus*; the latter's position indicates that it may belong to another genus. Inside said

polytomy, only two dicotomic relationships are retrieved: *Oc. sp. 04* + *Oc. sp.07* and *Oc. tenuicornis* + a polytomy of *Oc. bergrothi*, *Oc. incisulus* and *Oc. notatulus*; the latter, recovers in part the results of Campos & Grazia, as these are species with bilobed gonocoxites 8 (gc8), albeit without the presence of *Oc. stylulatus*.

As the first analysis had many unresolved internal relationships, we decided on running a new analysis under implied weights (IW). The resulting consensus cladogram is shown in Fig. 1B, and was retrieved from 71 MPTs with L=313, Ci=31, Ri=55 and K=5.8792. The new result solved the relationships of the outgroup and a part of the inner group, retrieving the two main genus groups that had been recovered by Campos & Grazia (2006). In the ingroup, *Oc. circummaculatus* is once more recovered as non-congeneric with *Ochlerus*, while *Oc. dentijugis* is grouped to the species of *Schraderiellus*, and *Oc. handlirschi* to *Parastalius* and *Stalius*. The remaining species of *Ochlerus* again fall into a polytomy with *Moncus*, which could indicate the latter as congeneric, and with the seven new species. Additionally, the *Oc. tenuicornis* group once more appears as monophyletic, but with the addition of *Oc. stylulatus* at its base.

In order to delve deeper into the ingroup relationships we ran three new pairs of analysis, with alternate data sets (ADS), which excluded some taxa that had more missing data (for further discussion on the impact of missing data see Wilkinson, 2003), that is, those species that we only had photographic access and/or were represented by a single specimen. These new successive analyses were conducted with EW and IW, and are divided as follows: a) ADS1: excluding species to which we only had photographic access (*Oc. circummaculatus*, *Oc. communis*, and *Oc. lutosus*); c) ADS2: excluding the same species as ADS1, but re-including *Oc. circummaculatus* in order to test its specific impact on the cladogram; and c) ADS3: excluding species represented by single specimens (the three species from ADS1 + *Oc. dentijugis* and sp. 03). The results for the ADS analyses are given in Tab. 1.

Every alternate data set analysis recovers the *Orbatina* group as monophyletic, further corroborating the hypothesis of Campos & Grazia (2006). However, what is made clear is that every analysis under EW fails to recognize subgroups in the ingroup, always recovering one or more polytomies; the high presence of homoplastic characters seems to be the cause for such. From our understanding, analyses under EW end up "overlooking" the possible errors made by the researcher while establishing hypotheses of homology. Meanwhile, analyses under IW can manage to

diminish the effects of such errors by weighting down these homoplastic characters and providing a more consistent phylogenetic result (Goloboff et al. 2008; Schuh & Brower, 2009: 130). So, henceforth, we will be dealing uniquely with the IW analyses in this paper; this will allow a more clear view of the relationships of the ingroup.

Table 1. Results of the cladistic analyses with alternate data sets (ADS). (EW = equal weights; IW = implied weights) (all values represent the consensus for each analysis)

Analysis	# of trees	L	Ci	Ri	Average K
ADS1 EW	54	302	32	56	-
ADS1 IW	2	289	34	59	3.9134
ADS2 EW	830	377	26	41	-
ADS2 IW	2	290	34	59	5.0074
ADS3 EW	100	297	33	57	-
ADS3 IW	1	278	35	61	4.2223

In all of the alternate data sets under IW (Figs 2–4), groups from B through J are recovered with the same characters supporting them. ADS3 IW (Fig. 4) could not recover clade A, as *Oc. dentijugis* was excluded from this data set. Nevertheless, Clade A groups *Oc. dentijugis* to *Schraderiellus* through character 6(1). Clade B groups *Oc. handlirschi* to *Stalius* and *Parastalius*, which results in the former being a new genus, as previously hypothesized. Clade C still groups *Ochlerus sensu lato* with *Moncus*. Clade D also corroborates the hypothesis of Campos & Grazia (2006) that considered the bilobed *Ochlerus* species as a different genus; *Oc. bergrothi*, which is also grouped in Clade D, is represented only by males, however it shares many similarities of male genitalia morphology with *Oc. notatulus*. Clade E groups *Moncus* to *Ochlerus sensu stricto* base on a synapomorphy on character 67(1), which is the presence of lateral projections on the vesica. It would be plausible to synonymize *Moncus* to *Ochlerus*, resulting in a monophyletic genus; however, we opted to keep *Moncus* as a valid genus since it still needs a major revision, we could only include one of its two species due to lack of material, and general morphology strongly indicates its monophyly. Among the inner relationships of clade F, we can point out those of clade K, which reflects the posteriorly projected posterior margin of urosternite VII in *Oc. cotylophorus* and *Oc. profanus*, and clade M, which groups the two species with the gonocoxites 8 strongly angled with small sutural margins. Although we excluded *Oc. circummaculatus* from ADS1, its re-inclusion in ADS2 IW

made no major changes to the other clade relationships and the species was positioned at the same macula from the full data set analysis.

With these results we can conclude the following: a) *Ochlerus* comprises 14 species, including the seven described in this paper; b) those species represented in Clade D constitute a new genus; c) *Ochlerus handlirschi* also constitutes a new genus; d) *Ochlerus dentijugis* is synonymized to *Schraderiellus dentijugis*; and e) *Ochlerus circummaculatus* is revalidated as *Melanodermus circummaculatus*. The description of the new genera shall be made in a future paper. The definition of *Oc. handlirschi* and *Oc. circummaculatus* as part of monotypic genera is based on the assumption that they cannot be paired to another single genus, because its sister group is unknown (Platnick, 1976; 1977; Wiley, 1977).

The elucidation of the relationships exposed above may finally allow the realization of studies on the biology of *Ochlerus*, which have been hampered for the last century, as well as biogeographical and molecular endeavors into the taxon's history.

Revision of *Ochlerus*

Key to the genera of the *Ochlerus* group

1. Mandibular plates without lateral tooth-like projection; parameres directed ventrally to proctiger.....**2**
- 1' Mandibular plates with lateral tooth-like projection; parameres directed laterally to proctiger***Schraderiellus* Rider, 1998 (Figs 6I, 8L)**
2. Apex of scutellum surpassing imaginary line transversal to apex of coria.....**3**
- 2'. Apex of scutellum subequal to imaginary line transversal to apex of coria**4**
3. Apex of scutellum round, reaching apex of body; gonoxites 8 not projected over laterotergites 9; projection on dorsal rim of pygophore absent***Moncus* Stål, 1867**
- 3'. Apex of scutellum acute, not reaching apex of body; gonocoxites 8 strongly projected over laterotergites 9; projection on dorsal rim of pygophore present, acute **Gen. nov. 1**
4. Antero-lateral angles of the pronotum directed laterad, apex behind the eyes.....**5**
- 4'. Antero-lateral angles directed anteriorly, apex laterad to eyes
.....***Melanodermus* Stål, 1867 (Figs 6H, 8K)**

5. Gonocoxites 8 with one lobe; lateral projections on vesica present ***Ochlerus Spinola, 1837***

5'. Gonocoxites 8 bilobed; lateral projections on vesica absent **Gen. nov. 2**

Key to the species of *Ochlerus* (females)

1. Sutural margins of gonocoxites 8 (gc8) shorter than exposed part of gonocoxites 9 (gc9); the latter with ventral bristles **2**
- 1'. Sutural margins of gc8 as long as exposed part of gc9; the latter without ventral bristles **3**
- 2(1). Segments of connexivum mesially outlined; gc8 concave, u-shaped (if considered as one)..... ***Ochlerus coriaceus* Herrich-Schäffer, 1844 (Figs 5D, 7D)**
- 2'. Segments of connexivum concolor or completely outlined; gc8 subrectilinear, v-shaped (if considered as one)..... ***Ochlerus* sp. 02 (Figs 6B, 8C)**
- 3(1'). Sutural margins of gc8 angled to posterior margin..... **4**
- 3'. Sutural margins of gc8 contiguous to posterior margin **7**
- 4(3). Sutural margins of gc8 without a tooth-like projection..... **5**
- 4'. Sutural margins of gc8 with a tooth-like projection.....
..... ***Ochlerus* sp. 01 (Figs 6A, 8A)**
- 5(4). 1+1 conspicuous maculae close to basal angles of scutellum; spiracles on laterotergites 8 partially covered by urosternite VII; gonapophyses 9 (g9) covered by gc8..... **6**
- 5'. 1+1 inconspicuous maculae close to basal angles of scutellum; spiracles on laterotergites 8 completely exposed; g9 exposed..... ***Ochlerus* sp. 03 (Figs 6C, 8E)**
- 6(5). Posterior margins of gc8 convex, not projecting over laterotergites 9 (la9); gc9 losangular ***Ochlerus cinctus* Spinola, 1837 (Figs 5B, 7B)**
- 6'. Posterior margins of gc8 with a marked angle before sutural margins, slightly projected over (la9); gc9 triangular.....
..... ***Ochlerus signoreti* Breddin, 1910 (Figs 5I, 7J)**
- 7(3'). Median carina on gc9 present **8**
- 7'. Median carina on gc9 absent..... **11**
- 8(7). Metapleural evaporatorium half the length of ostiolar plate; two relatively small maculae laterad to apex of radial vein; *capsula seminalis* with apical projections **9**

8'. Metapleural evaporatorium length subequal to ostiolar plate; two relatively big maculae laterad to apex of radial vein; <i>capsula seminalis</i> without apical projections	<i>Ochlerus bistillatus</i> Breddin, 1910 (Figs 5A, 7A)
9(8). Projection on antero-lateral angles of pronotum rounded or slightly acute; external angles of gc8 slightly projected over la8, round; gc9 longer than wide	10
9'. Projection on antero-lateral angles of pronotum slightly truncate; external angles of gc8 contiguous, not projected over la8; gc9 as wide as long
.....	<i>Ochlerus cotylophorus</i> Breddin, 1910 (Figs 5E, 7E)
10(9). Projection on antero-lateral margins of the pronotum projected, acute apex; posterior margin of gc8 subrectilinear; la9 laterally directed
.....	<i>Ochlerus profanus</i> Breddin, 1910 (Figs 5G, 7G)
10'. Projection on antero-lateral margins of the pronotum projected, round apex; posterior margin of gc8 concave; la9 dorsally directed
.....	<i>Ochlerus rusticus</i> Breddin, 1910 (Figs 5H, 7H)
11(7'). Posterior margins of gc8 concave	12
11'. Posterior margins of gc8 convex
.....	<i>Ochlerus lutosus</i> Herrich-Schäffer, 1844 (Figs 5F, 7F)
12(11). Apex of external angles of gc8 ventrally to spiracles of la8	13
12'. Apex of external angles of gc8 laterally to spiracles of la8
.....	<i>Ochlerus</i> sp. 04 (Figs 6D, 8F)
13(12). Antero-lateral angles of pronotum truncate, chisel-like; gc9 flattened
.....	<i>Ochlerus</i> sp. 05 (Figs 6E, 8H)
13'. Antero-lateral angles of pronotum truncate, hook-like; gc9 convex
.....	<i>Ochlerus</i> sp. 07 (Figs 6G, 8J)

Key to the species of *Ochlerus* (males)

1. Inner margins of the postero-lateral projections of the pygophore without median constriction	2
1'. Inner margins of the postero-lateral projections of the pygophore with median constriction	3
2(1). Head of parameres not excavated, robust
.....	<i>Ochlerus rusticus</i> Breddin, 1910 (Figs 5H, 7I)
2'. Head of parameres excavated, apex hook-like	<i>Ochlerus</i> sp. 04 (Figs 6D, 8G)
3(1'). Excavation on inferior layer of ventral rim wider than proctiger	4

- 3'. Excavation on inferior layer of ventral rim narrower or as wide as proctiger5
- 4(3). Head of parameres excavated; excavation on inferior layer of ventral rim narrower than width of proctiger .. ***Ochlerus communis* Breddin, 1910 (Figs 5C, 7C)**
- 4'. Head of parameres not excavated, robust; excavation on inferior layer of ventral rim as wide as proctiger ***Ochlerus* sp. 02 (Figs 6B, 8D)**
- 5(3'). Basal projections on dorsal rim of pygophore acute; region anterior to dorsal rim as long as posterior region.....6
- 5'. Basal projections on dorsal rim of pygophore lobular; region anterior to dorsal rim longer than posterior region..... ***Ochlerus* sp. 06 (Figs 6F, 8I)**
- 6(5). Dorsal projection on postero-lateral angles present
..... ***Ochlerus signoreti* Breddin, 1910 (Figs 5I, 7K)**
- 6'. Dorsal projection on postero-lateral angles absent
..... ***Ochlerus* sp. 01 (Figs 6A, 8B)**

***Ochlerus* Spinola, 1837**

Ochlerus Spinola, 1837: 294; Herrich-Schäffer, 1844: 63; Dallas, 1851: 156; Stål, 1860: 17; Stål, 1867: 524; Stål, 1872: 13; Kirkaldy, 1909: 185; Breddin, 1910: 615; Rolston, 1992: 10; Campos & Grazia, 2006: 148.

Menipha Amyot & Serville, 1843: 112.

Type species. *Ochlerus cinctus* Spinola, by original designation.

Description. Medium sized (around 14.5 mm); body dark brown to black. Head longer than wide, matching inclination of pronotum; dorsal surface wrinkled with 1+1 evanescent yellow lines parallel to eyes and reaching anterior margin of pronotum. Clypeus ending before anterior margin of eyes. Apex of mandibular plates acute sometimes ventrally declivous, subequal to or slightly surpassing apex of clypeus; lateral margins subrectilinear slightly elevated. Eyes yellow with black maculae. Ocelli small behind eyes, colored yellow, brown or red. Antennifer tubercle without lateral processes. Antenna five-segmented, segment I slightly wider than following segments. Bucculae subparallel, elevated, with acute tooth-like anterior angle; evanescent posteriorly. Rostrum long and slender, segment II longest, segment IV sometimes reaching urosternite VII.

Pronotum punctured, about twice as wide as long, declivous before humeral angles. Anterior margin shallowly concave, anterolateral margins subrectilinear, sometimes outlined. Anterolateral angles produced laterad, acute or truncate, base laterad of eyes. Cicatrices ovoidal, placed close to anterior pronotal margin. Scutellum relatively big, as long as wide at the base; basal angles strongly depressed, depression evanescent after first fifth; lateral margins of posterior half (after frena) subparallel, convergent at rounded apex; reaching imaginary line of apex of corium. Hemelytra slightly exceeding abdominal apex; corium concolor with small irregular yellow maculae; radial vein with yellow macula apically laterad; membrane with 13 subparallel veins evanescent at apex. Prosternum and metasternum flat, mesosternum and metasternum with longitudinal carina. Metapleural evaporatorium concolor; ostiolar plate reaching half the width of metapleural evaporatorium; peritreme, in spout, reaching 1/2 of ostiolar plate. Legs concolor except for lighter tarsi; tibia dorsally sulcated; dorsal surface of female posterior tarsi plain or sulcate.

Urosternites II to VI subequal; urosternite VII longer medially. Spiracles black, present at urosternites II to VII, partially covered by metasternum on urosternite II. Tricobothria posterior and ectad to spiracles; base brown or black.

Male. Pygophore trapezoidal. Dorsal rim mesially concave; ventral rim excavated. Postero-lateral angles produced, spatular. Apex of parameres directed endad. Phalloteca as long or longer than vesica; presence of a thickening in the median third of the vesica with lateral spatular projections; opening of ductus seminis distalis gutter-like.

Female. Gonocoxites 8 (gc8) as wide as long, sutural margins juxtaposed; posterior margins subrectilinear or sinuous. Laterotergites 8 (la8) triangular, spiracles at basal angles. Gonocoxites 9 (gc9) subtriangular, exposed. Laterotergites 9 (la9) convex, covering proctiger, apices contiguous. Ductus receptaculi at least three times thinner than vesicular area; region anterior to *pars intermedialis* wrinkled. *Pars intermedialis* pylon-like. *Capsula seminalis* globoid; teeth at apex, thin.

Comments. Diagnosing of species of *Ochlerus* can be tricky, as the overall morphology is very conserved, specially in dealing with the main structures such as

the pronotum, the scutellum, the head and the wings. Thus, the best diagnosis characters still are the genital structures.

***Ochlerus cinctus* Spinola, 1837**

(Figs 5B, 7B)

|| *Cimex marginatus* Fabricius, 1803: 171

Ochlerus cinctus Spinola, 1837: 295; Dallas, 1851: 156; Walker, 1867: 193; Kirkaldy, 1909: 185; Campos & Grazia, 2006: 154; Grazia & Campos, 2010: 417

Cimex flavocinctus Herrich-Schäffer, 1839: Fig. 435

Ochlerus flavocinctus Herrich-Schäffer, 1844: 63

Ochlerus flavicinctus (*sic*): Walker 1867: 194

Menipha brunnea Amyot & Serville, 1843: op. cit. 113, Pl. 12, Fig. 1

Ochlerus circumcinctus Stål, 1860: 17; Walker, 1867: 194

Ochlerus brunneus Walker, 1867: 194

Ochlerus marginatus: Stål, 1868: 23; Stål, 1872: 13; Breddin, 1910: 615

Type material. Lectotype, ♀, BRAZIL, "*Ochlerus cinctus* var., D. Buquet Brasilia" (MRSN, photograph examined).

Type locality. Brazil

Distribution. **BRAZIL** (*Rio de Janeiro* [***new record***])

Material examined. **BRAZIL**, *Rio de Janeiro*: 1 ♀, Represa Rio Grande, Guanabara, [coordinates unknown], 30.IV.1967, DZPR, *Ochlerus* spp., DZUP 212292, F. Oliveira col., (DZUP); 2 ♀, Rio de Janeiro [-22.9000; -43.2333], I.1977, M. Alvarenga col. (UFRG).

Diagnosis. Body dark brown. Inner margins of mandibular plates slightly covering clypeum. Base of antennal segment V faintly yellow, contrasting to other *Ochlerus* species, that have this coloration at least reaching the basal fifth of the segment. Antero-lateral angles of pronotum with slightly acute rounded lateral projections; antero-lateral margins of pronotum outlined in red or yellow; has a faint longitudinal

red line at the base that ends with the pronotal scars. Scutellum with an yellow and diffuse yellowish maculae at the medial base. Peritreme short, 1/4 of metapleural evaporatorium. The yellow macula laterad to the apex of the radial vein of the corium almost evanescent, diffuse. Connexivum completely outlined in red or yellow. Spiracles on urosternite II partially covered by metasternum.

Female. Gonocoxites 8 (gc8) lobular with sutural margins completely juxtaposed; posterior sutural margins angular. Spiracles on laterotergites 8 (la8) partially covered by the posterior margin of urosternite VII. Gonocoxites 9 (gc9) losangular, depressed laterally. Laterotergites 9 (la9) lobular. Thickening of gonapophyses 9 (g9) square-like, reaching 1/2 or less than total length of g9.

Measurements: (n = 3) Total length 1.54 ± 0.04 (1.51–1.59); head length 0.28 ± 0.01 (0.28–0.29), anteocular length 0.14 (0.13–0.15), width 0.34 ± 0.01 (0.34–0.35), interocular distance 0.16 ± 0.01 (0.15–0.16); length of antennal segments: I 0.12 ± 0.01 (0.11–0.13), II 0.12 ± 0.01 (0.11–0.13), III 0.21 ± 0.01 (0.19–0.21), IV 0.27 ± 0.01 (0.26–0.28), V 0.3; length of rostral segments: I 0.16 ± 0.01 (0.15–0.18), II 0.28 ± 0.01 (0.28–0.29), III 0.24, IV 0.24; pronotal length 0.49 ± 0.08 (0.44–0.58), width 0.84 ± 0.01 (0.83–0.85); scutellar length 0.7 ± 0.01 (0.69–0.71), width 0.55 ± 0.04 (0.5–0.58), width at end of frenum 0.35 ± 0.01 (0.34–0.35); abdominal width 0.95 ± 0.01 (0.94–0.96).

Comments. The type species is very short on specimens and consequently has a small known distribution. We only had access to the type material through the photographs of the lectotype present in Grazia & Campos (2010). The folding of the *ductus seminis distalis* is short when compared to other species of the genus. The cladistic analysis groups *Oc. cinctus* with sp. 06, and further into the basal polytomy of the genus.

***Ochlerus bistillatus* Breddin, 1910**

(Figs 5A, 7A)

Ochlerus bistillatus Breddin, 1910: 618; Simões & Campos, in prep.

Type material (examined). Lectotype ♀, "*Ochlerus bistillatus*, coll. Breddin, Lectotypus, des. M. Gaedike 1968, DEI Münchenberg Hemi - 00030" (SDEI).

Paralectotype ♀, "*Ochlerus bistillatus*, coll. Breddin, Paralectotypus, des. M. Gaedike 1968, DEI Münchenberg; Hemi - 00031" (SDEI).

Type locality. Bolivia

Distribution. **BOLIVIA**

Diagnosis. Body dark brown. Lateral margins of mandibular plates yellow. Rostrum not surpassing anterior margin of urosternite VI. Antero-lateral angles of the pronotum with small rounded projections directed antero-laterally. Ostiolar plate almost as wide as metapleural evaporatorium. Base of scutellum with a very small, diffuse, and median yellow macula. Yellow maculae laterad to the apex of radial veins large, very conspicuous. Urosternite VII medially longer than other abdominal segments.

Female. Sutural margins of gc8 completely juxtaposed; posterior sutural margins contiguous; posterior margins angled, rectilinear. Spiracles on totally exposed; la8 declivate in relation to longitudinal axis of the body. Gc9 triangular, with median carina. Laterotergites 9 (la9) lobular and somewhat projected posteriorly. Thickening of g9 lobular, reaching 1/4 of total length of g9. *Capsula seminalis* without projections.

Measurements: (n = 2) Total length 1.55 ± 0.03 (1.53–1.58); head length 0.27 ± 0.01 (0.26–0.28), anteocular length 0.15, width 0.32 ± 0.01 (0.31–0.33), interocular distance 0.16 ± 0.01 (0.15–0.16); length of antennal segments: I 0.13 ± 0.01 (0.13–0.14), II 0.11, III 0.21 ± 0.02 (0.2–0.23), IV 0.29, V 0.31 ± 0.02 (0.3–0.33); length of rostral segments: I 0.17 ± 0.01 (0.16–0.18), II 0.29 ± 0.01 (0.29–0.3), III 0.26, IV 0.24; pronotal length 0.44 ± 0.02 (0.43–0.45), width 0.83 ± 0.01 (0.83–0.84); scutellar length 0.74 ± 0.01 (0.74–0.75), width 0.58 ± 0.01 (0.58–0.59), width at end of frenum 0.29 ± 0.03 (0.28–0.31); abdominal width 0.96 ± 0.04 (0.94–0.99).

Comments. The conspicuous and unique, for the genus, maculae at the apex of the lateral veins give name to this species and are, thus, a good diagnostic character. Also, the folding of the *ductus receptaculi* is the longest for *Ochlerus*. The cladistic analyses group *Oc. bistillatus* to the other species with an angled posterior margin of the gc8.

***Ochlerus communis* Breddin, 1910**

(Figs 5C, 7C)

Ochlerus communis Breddin, 1910: 616; Simões & Campos, in prep.

Type material (photograph examined). Lectotype ♂, "*marginatus* F. det Mayr., *Shtt*" (NMW).

Type locality. Unknown.

Distribution. Unknown.

Diagnosis. Body light to dark brown, with many disperse yellow maculae. Relatively large body (around 15.5mm) and pronotum. Rostrum reaching anterior margin of urosternite V. Antero-lateral angles of the pronotum with small truncate projection laterally directed. Longitudinal yellow macula at the base of scutellum. Hemelytra surpassing length of the body by more than 1 mm. Spiracle of urosternite II completely covered by metasternum. Urosternite VII medially longer than other abdominal segments.

Male. Pygophore with a narrow gap between the base of the postero-lateral angles with a sudden posterior widening. Also the head of the parameres appears to be distinct from other species, with a shallow dorsal excavation.

Measurements. (n = 1) Total length 1.55; head length 0.21, anteocular length 0.11, width 0.35, interocular distance 0.16; length of antennal segments: I 0.12, II 0.11, III 0.23, IV 0.16, V [missing]; length of rostral segments: I 0.17, II 0.25, III 0.24, IV

0.22; pronotal length 0.44, width 0.89; scutellar length 0.7, width 0.57, width at end of frenum 0.35; abdominal width 0.98.

Comments. The markedly sinuous ventral rim of the pygophore is unique for *Oc. communis*. As mentioned in Simões & Campos, in prep, this a species similar to *Oc. cinctus*, but there are no sufficient evidences to ascertain if they are conspecific. The position of *Oc. communis* in *Ochlerus* is uncertain, mainly due to the amount of missing data for the species.

***Ochlerus coriaceus* Herrich-Schäffer, 1844**

(Figs 5D, 7D)

Ochlerus coriaceus Herrich-Schäffer, 1844: 64, Pl. 236, Fig. 734; Walker, 1867: 194 (list).

Ochlerus marginatus: Stål, 1872: 13 (synonymy)

Ochlerus cinctus: Kirkaldy, 1909: 185 (synonymy)

Type material (photographs examined). Lectotype, ♀, (Fig. 1E). COLOMBIA: [unknown locality], "coriaceus" hl. "Ochlerus coriac." H.S. 734., Columbia. Deposited in the Benedict Dybowski Zoological Museum (Lviv, Ukraine).

Type locality. Colombia

Distribution. **COLOMBIA, VENEZUELA** (*Aragua, Tachira*) (new record)

Material examined. VENEZUELA, Aragua: 1 ♀, El Limón 450m, 4.VII.1983, [9.8500; -66.9000], Luz negra, F. Fernandez Y. col. (UFRG); 1 ♀, El Limón, 30.VII.1983, [9.8500; -66.9000], Luz negra, F. Fernandez Y. col., MACN (MACN); 1 ♀, Cata, 19.V.1983, A. Fernandez B. & C. Andara cols. [10.4667; -67.7333], MACN (MACN); Tachira: 1 ♀, Chucuri, San Cristobal, 24.IV.1980 [7.7669; -72.2250], Donacion I. U. T., MACN (MACN); 1 ♀, Buerio Sucre, San Cristobal, 16.[illegible].1980, Rut [illegible] col. [7.7669; -72.2250], Donacion I. U. T., Arbol 3: [illegible]M, MACN (MACN); TRINIDAD & TOBAGO, Aripo: 1 ♀, Asa Wright Nature Ctr. 7.5mi N of Arima on Blachisseuse Road, 28.VI.1985, P. J. Clausen col.

[10.7177; -61.2983], W. I., D. A. Rider Collection (NDSU); 1 ♀, St. George Co. Aripo Valley, Rapsey Est., 9-16.X.1978, R. M. Baranowski [10.7177; -61.2983], Malaise trap, D. A. Rider Collection (NDSU).

Diagnosis. Rusty brown species, with a small yellow macula at the base of the scutellum and 1+1 smaller yellow maculae close to the basal angles. Antero-lateral angles slightly produced laterad. Legs and ventral surface yellow with brown maculae. Connexivum partially outlined, with yellow squares in the middle of each segment.

Female. Shape of gc8 unique for the genus with a strongly concave posterior margin (in a u-shaped pattern if the gc8 are combined). Spiracles on la8 almost completely covered by the posterior margin of the urosternite VII. Gc9 robust, longer than sutural margins of gc8. La9 spatular, enlarging towards apex. Thickening of g9 reaching half the total length, arched.

Measurements: (n=7) Total length 1.29 ± 0.04 (1.25–1.36); head length 0.23 ± 0.01 (0.23–0.25), anteocular length 0.11 ± 0.01 (0.1–0.13), width 0.3 ± 0.01 (0.29–0.31), interocular distance 0.14 ± 0.01 (0.14–0.15); length of antennal segments: I 0.11 ± 0.01 (0.1–0.11), II 0.11 ± 0.01 (0.1–0.11), III 0.19 ± 0.02 (0.18–0.21), IV 0.24 ± 0.02 (0.23–0.28), V 0.23 ± 0.01 (0.23–0.25); length of rostral segments: I 0.15 ± 0.01 (0.14–0.16), II 0.26 ± 0.02 (0.24–0.29), III 0.21 ± 0.01 (0.19–0.23), IV 0.2 ± 0.02 (0.18–0.23); pronotal length 0.38 ± 0.02 (0.35–0.41), width 0.72 ± 0.03 (0.69–0.76); scutellar length 0.62 ± 0.04 (0.58–0.69), width 0.49 ± 0.02 (0.48–0.54), width at end of frenum 0.29 ± 0.03 (0.25–0.34); abdominal width 0.83 ± 0.04 (0.79–0.89).

Comments. This is one of two species that possess a series of bristles in the ventral margin of the robust gc9.

***Ochlerus cotylophorus* Breddin, 1910**

(Figs 5E, 7E)

Ochlerus cotylophorus Breddin, 1910: 621; Simões & Campos, *in prep*

Type material. Unknown.

Type locality. Unknown.

Distribution. **BRAZIL** (*Amazonas*) [new record], **COLOMBIA**, **ECUADOR** (*Napo*, *Sucumbios* [new record]), **PERU** (*Loreto* [new record])

Material examined. **BRAZIL**, *Amazonas*: 1 ♀, Benjamin Constant, Rio Javary, [-4.3744; -70.0297], 1-15.III.1942, AMNH, August Rabaut col. (AMNH). **COLOMBIA**, *Province unknown*: Voucher ♀, Esmeralda, Columbia Esmeralda, coll. Breddin, *Ochlerus cinctus* Spin. det. HG Barber = *marginatus* Fab., DEI Münchenberg HEMI-00020 (SDEI); voucher ♀, Columbien, coll. Breddin, Barber revid. 1933, DEI Münchenberg HEMI-00021 (SDEI). **ECUADOR**, *Napo*: Voucher ♀, Coca [-0.5037; -76.3730], Coca (Ecuad.) R. Haensch S., coll. Breddin, DEI Münchenberg HEMI-00025 (SDEI); 1 ♀, Tena, 18 km S Tena [0.9833; -77.8167], 28.IV.1978, D. A. Rider Collection, *Ochlerus* sp. 5, C. W. & L. B. O'Brien & Marshall cols. (NDSU); 1 ♀, Coca, Garzacochoa 68 air km E Coca ca. 210 m, 13-17.III.1986, S. H. McKamey col. [-0.5037; -76.3730], *Ochlerus* sp. #18 det. J. E. Eger 2013 (JEE); 1 ♀, Puerto Misahuali, vic. Puerto Misahuali 1650-1900 ft., 06-19.IX.1998, J. E. Eger col. [-1.0345; -77.6514], 1°2'4.2"S lat. 77°39'49.2"W lon, Mercury vapor & Ultraviolet lights, *Ochlerus* sp. #16 det. J. E. Eger 2013 (JEE). *Sucumbios*: 1 ♀, Shushufindi, 29.IX.1982, R. Desmier de Chenon col. [-0.1833; -76.6500], venulumiére casa, 3276 (UFRG). **PERU**, *Loreto*: 6 ♀, Iquitos, Quebrada Orán ca 5 km N Rio Amazonas, 85 km NE Iquitos el. 110 m, VI.1984, L. J. Barkley col. [-3.7480; -73.2472] (CMNH); 2 ♀, Iquitos, Quebrada Orán ca 5 km N Rio Amazonas, 85 km NE Iquitos el. 110 m, VI.1984, L. J. Barkley col. [-3.7480; -73.2472], D. A. Rider Collection (NDSU).

Diagnosis. Body dark brown. Antennal segment V yellow at basal fourth. Antero-lateral angles of the pronotum projected laterad, with a rounded and robust apex; antero-lateral margins of the pronotum concolor. A median yellow macula and 1+1 yellow maculae close to the fovea at the base of the scutellum. Yellow maculae laterad to the apex of the radial vein of the corium slender. Hemelytra slightly surpassing length of the body. Connexivum fully outlined in light brown (a few

specimens have only median outlinings, but these are considered a rare variation). Spiracles on urosternite II partially covered by metasternum. Posterior margin of urosternite VII convex, projected posteriorly.

Female. Gc8 wider than long; sutural margins completely juxtaposed; sutural angles contiguous; posterior margins angled, subrectilinear. Spiracles on la8 partially covered by posterior margin of urosternite VII. Gc9 discoid, with median carina. La9 somewhat projected posteriorly, longitudinally angled (almost 90°). Thickening of g9 reaching almost 3/4 of total length.

Measurements: (n=8) Total length 1.52 ± 0.03 (1.47–1.56); head length 0.28 ± 0.02 (0.25–0.3), anteocular length 0.14 ± 0.01 (0.13–0.15), width 0.33 ± 0.01 (0.31–0.34), interocular distance 0.15 ± 0.01 (0.14–0.16); length of antennal segments: I 0.13 ± 0.01 (0.11–0.15), II 0.14 ± 0.01 (0.13–0.15), III 0.23 ± 0.02 (0.21–0.25), IV 0.3 ± 0.02 (0.28–0.33), V 0.32 ± 0.01 (0.31–0.33); length of rostral segments: I 0.18 ± 0.02 (0.16–0.21), II 0.29 ± 0.02 (0.26–0.31), III 0.25 ± 0.01 (0.24–0.26), IV 0.23 ± 0.04 (0.15–0.26); pronotal length 0.43 ± 0.01 (0.41–0.45), width 0.83 ± 0.02 (0.81–0.86); scutellar length 0.71 ± 0.02 (0.69–0.74), width 0.57 ± 0.02 (0.55–0.59), width at end of frenum 0.35 ± 0.01 (0.34–0.36); abdominal width 0.94 ± 0.04 (0.88–0.99).

Comments. The shape of the posterior margin of urosternite VII mentioned above is restricted to *Oc. cotylophorus* and *Oc. profanus*.

***Ochlerus lutosus* Herrich-Schäffer, 1844**

(Figs 5F, 7F)

Ochlerus lutosus Herrich-Schäffer, 1844: 65, Pl. 236, Fig. 735; Walker, 1867: 194 (list).

Ochlerus marginatus: Stål, 1872: 13 (synonymy)

Ochlerus cinctus: Kirkaldy, 1909: 185 (synonymy)

Distribution. **BRAZIL**

Type material (photographs examined). Lectotype, ♀, (Fig. 2E). **BRAZIL**: [unknown

locality], "lutulus", [illegible], H.S. 735. brun. nus. A.S., Brasil. Deposited in the Benedict Dybowski Zoological Museum (Lviv, Ukraine).

Diagnosis. Rusty brown species. Antero-lateral angles produced laterad, truncate. Gonocoxites 8 similar to that of the type species, but with a more angled posterior margin and sutural margins not completely juxtaposed.

Measurements. (n = 1) Total length 1.35; head length 0.19, antecular length 0.09, width 0.28, interocular distance 0.10; length of antennal segments: I 0.08, II 0.08, III 0.15, IV [missing], V [missing]; length of rostral segments: [missing]; pronotal length 0.37, width 0.74; scutellar length 0.58, width 0.45, width at end of frenum 0.27; abdominal width 0.80.

Comments. Possibly with a small yellow macula at the base of the scutellum, but the single specimen is pinned right through it. This species is quite similar to the type species, with small differences on the shape of the gc8 and la8. More specimens are needed for a better comparison, specially of the internal genitalia.

***Ochlerus profanus* Breddin, 1910**

(Figs 5G, 7G)

Ochlerus profanus Breddin, 1910: 619; Simões & Campos, in prep.

Type material. Lectotype, ♀, "Peru Amaz., coll. Breddin, DEI Müncheberg HEMI-00029" (SDEI).

Type locality. Marcapata, Department Unknown, Peru

Distribution. **PERU** (*Loreto* [new record])

Material examined. 1 female paralectotype, "Bahia Felder 853, *marginatus* det. Stal, coll. Breddin, DEI Müncheberg HEMI-00016" (SDEI). **PERU**, *Loreto*: 1 ♀, Iquitos, Rio Momón, 17.II.1984, W. E. Clark col. [-3.6906; -73.2656], D. A. Rider Collection (NDSU).

Diagnosis. A relatively small species. Body brown. Mandibular plates strongly rugose. Antennal segment V yellow at basal fourth. Rostrum not surpassing anterior margin of urosternite VI. Pronotum posteriorly to anterior margin with a faint longitudinal short and thin yellow line. Antero-lateral angles of the pronotum with very small rounded projections directed laterad. Antero-lateral margins of the pronotum and connexivum concolorous. Scutellum with 1+1 very small yellow maculae close to the basal angles.

Female. Gc8 wider than long; sutural margins juxtaposed until the sutural angle, which is slightly angled; posterior margin angled, subrectilinear. Spiracles on la8 partially covered by posterior margin of urosternite VII. Gc9 triangular without median carina; exposed portion as long as sutural margins of gc8. La9 somewhat projected posteriorly, longitudinally angled (almost 90°). Thickening of g9 very thin an extending to about 1/3 of total length.

Measurements: (n=2) Total length 1.3 ± 0.12 (1.22–1.39); head length 0.23, anteocular length 0.1, width 0.29 ± 0.02 (0.28–0.3), interocular distance 0.14 ± 0.01 (0.14–0.15); length of antennal segments: I 0.1, II 0.1, III 0.17 ± 0.01 (0.17–0.18), IV 0.24, V 0.25; length of rostral segments: I 0.13 ± 0.01 (0.13–0.14), II 0.23, III 0.19 ± 0.02 (0.18–0.2), IV 0.18; pronotal length 0.38 ± 0.03 (0.36–0.4), width 0.72 ± 0.03 (0.7–0.74); scutellar length 0.59 ± 0.02 (0.58–0.6), width 0.49 ± 0.02 (0.48–0.5), width at end of frenum 0.28 ± 0.01 (0.28–0.29); abdominal width 0.78 ± 0.04 (0.75–0.81).

Comments. The labels on the paralectotype were probably misplaced. This was discussed in Simões & Campos, in prep.

***Ochlerus rusticus* Breddin, 1910**

(Figs 5H, 7H–I)

Ochlerus rusticus Breddin, 1910: 620; Simões & Campos, in prep

Type material (examined). Holotype, ♀, "Peru Amaz., *Ochlerus profanus*, coll. Breddin, Typus, Syntypus, DEI Müncheberg HEMI-00023" (SDEI).

Type locality. Bahia, Brazil.

Distribution. **BOLIVIA** (*Cochabamba*) [new record], **BRAZIL** (*Acre* [new record], *Alagoas* [new record], *Amazonas* [new record], *Bahia*, *Espírito Santo* [new record], *Maranhão* [new record], *Mato Grosso* [new record], *Pará* [new record], *Rondônia* [new record]), **COLOMBIA** (*Amazonas*) [new record], **ECUADOR** (*Napo*) [new record], **PERU** (*Loreto*, *Madre de Dios*) [new record]

Material examined. **BOLIVIA**, *Cochabamba*: 1 ♀, Cochabamba, Rio Cristal Mavu 50 mi NE Cochabamba, 12.XI.1949, L. Pena col. [-17.3833; -66.1500], *Ochlerus sp.* #1, LHR 79 (CMNH); Cochabamba, Villa Tunari [-16.9167; -65.3667] (JEE x2). *La Paz*: 2x Uyapi [-15.4167; -67.7667] (JEE). *Province unknown*: 1 ♂ and 1 ♀, locality unknown, 28.VII.1996, C. F. Schwertner col. , 11862 (MACN); 1 ♂, locality unknown, 1904-311., J. Steinbach. col., *cinctus* (BMNH); 1 ♀, locality unknown, 1904-311., J. Steinbach. col. (BMNH). **BRAZIL**, *Acre*: 1 ♀, Senador Guiomard, Iquiri, IX.1951 [-10.1667; -67.8333], Exp. Dept. Zool., *Ochlerus cinctus* (F.) det A. Pirán/ 8 (UFRG). *Alagoas*: 2 ♂ and 2 ♀, Maceió, XII.1995, Rebouças [-9.6667; -35.7167] (CMNH). *Amazonas*: 1 ♀, Borba, Rio Madeira, VI.1943, Dirings col. [-4.3921; -59.5919] S. Paulo, o89., col. MCN, 45438 (MCNZ). *Espírito Santo*: 1 ♂, Conceição da Barra, 22-28.X.1968, C. & C. T. Elias col. [-18.5833; -39.7500], Dptº Zool. UF-Paraná, DZPR, *Ochlerus spp.*, 212295 (DZUP); 1 ♀, Linhares, III.1975, C. Elias col. [-19.4167; -40.0667], DZPR, *Ochlerus spp.*, 212773; 1 ♀, Linhares, 24-29.IV.1972, C. Elias col. [-19.4167; -40.0667], DZPR, *Ochlerus spp.*, 212297 (DZUP); 1 ♀, Linhares, 24-29.IV.1972, C. Elias col. [-19.4167; -40.0667], DZPR, *Ochlerus spp.*, 212298 (DZUP). *Maranhão*: 2 ♂ and 2 ♀, RESBIO-Gurupi, Bom Jardim, 05-15.VI.2010, J. C. Silva, J. A. Silva, A. A. Santos & T. T. A. Silva cols. [-5.0804; -45.6007], Armad. Luminosa Base (UFMA); 1 ♂, RESBIO-Gurupi, Bom Jardim, 01-06.VI.2010, M. M. Abreu, J. A. Silva, G. A. Reis & E. A. S. Barbosa cols. [-5.0804; -45.6007], Armad. Luminosa (UFMA); 1 ♀, RESBIO-Gurupi, Bom Jardim, 02-11.IX.2010, F. Limeira-de-Oliveira, J. C. Silva, J. A. Silva & M. M. Abreu cols. [-5.0804; -45.6007], Armad. Luminosa Base (UFMA). *Mato Grosso*: 1 ♂, Aripuanã,

300m, 17-22.III.1977, D. Engleman col. [-10.4166; -59.4666], 10°25'S 59°28'W, D. A. Rider Collection, *Ochlerus marginatus* (F.) det. H. D. Engleman 1982 (NDSU); 1 ♀, Aripuanã, 300m, 17-22.III.1977, D. Engleman col. [-10.4166; -59.4666], 10°25'S 59°28'W, D. A. Rider Collection (NDSU). *Pará*: 1 ♀, Bragança, 10km NE Bragança, 08.VII.1981, G. B. Fairchild [-1.0519; -46.7701], UV lightrap, *Ochlerus spp.* LHR'84 (JEE); 2 ♀, Mojú, 01.XII.1995, P. Lins col. [-1.8863; -48.7668], Mata em contorno ao coqueiral/3 (UFRG); 1 ♀, Mojú, 01.XII.1995, P. Lins col. [-1.8863; -48.7668], Mata em contorno ao coqueiral/1 (UFRG); 1 ♂, Mojú, 01.XII.1995, P. Lins col. [-1.8863; -48.7668], Mata em contorno ao coqueiral/2 (UFRG); 2 ♀, Mojú, Fazenda Socôco, 1995, [-1.8863; -48.7668], SÓCÔCO D (UFRG); 1 ♂ and 2 ♀ Mojú, Fazenda Socôco, 1995, [-1.8863; -48.7668], UFAL E (UFRG); 1 ♂, Tucuruí, Rio Tocantins, Xiqueirão, 02.IV.1984, M. Direita col. [-3.7000; -49.7000] (UFRG); 1 ♀, Tucuruí, Rio Tocantins, Xiqueirão, 29.III.1984, M. F. Torres col. [-3.7000; -49.7000] (UFRG); 1 ♀, Tucuruí, Rio Tocantins, Canoal, 29.III.1984, M. F. Torres col. [-3.7000; -49.7000] (UFRG); 3 ♀, Tucuruí, I.1979, M. Alvarenga col. [-3.7000; -49.7000] (UFRG); 1 ♀, Tucuruí, 04.VIII.1980, Nunes-de-Mello col. [-3.7000; -49.7000] 5612, bagagem (UFRG). *Rondônia*: 2 ♀, Ariquemes, 62 km SE Ariquemes, 13-25.IV.1992, W. J. Hanson [-9.9333; -63.0667] (CMNH); 1 ♀, Ariquemes, 62 km SE Ariquemes, 180m, 17-24.III.1989, W. J. Hanson [-9.9333; -63.0667] (CMNH); 1 ♂, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 08-20.XI.1994, J. E. Eger, L. B. O'Brien & C. W. O'Brien cols. [-9.9333; -63.0667], At night on freshly fallen trees, *Ochlerus* sp #2 det. J. E. Eger 2013 (JEE); 8 ♂ and 2 ♀, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 08-20.XI.1994, J. E. Eger, L. B. O'Brien & C. W. O'Brien cols. [-9.9333; -63.0667], At night on freshly fallen trees (JEE); 4 ♂ and 8 ♀, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 04-16.XI.1997, J. E. Eger col. [-9.9333; -63.0667] (JEE); 8 ♂ and 8 ♀, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 03-15.XII.1996, J. E. Eger col. [-9.9333; -63.0667], At night on freshly fallen trees (JEE); 3 ♂ and 7 ♀, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 05-17.X.1993, J. E. Eger L. B. O'Brien & C. W. O'Brien cols. [-9.9333; -63.0667] (JEE); 1 ♀, Ariquemes, 62 km SE Ariquemes, 22-31.X.1997, W. J. Hanson [-9.9333; -63.0667] (JEE); 1 ♀, Ariquemes, 62 km SE Ariquemes, Fazenda Rancho Grande near Cacaullandia, 3.XI.1989, R. W. Flowers [-9.9333; -63.0667] (JEE); 1 ♂, Forte Príncipe da Beira, 19.XI-3.XII.1967, G. R. Kloss col. [-12.4167; -64.4167] *Ochlerus* sp. Rolston (UFRG); 1 ♂, Forte

Príncipe da Beira, 19.XI-3.XII.1967, G. R. Kloss col. [-12.4167; -64.4167] *Ochlerus* sp. Rolston (UFRG). *State Unknown*: 1 ♂, locality unknown, 1943, A. C. Hart col., retain ucs, D. A. Rider Collection (NDSU). **COLOMBIA**, *Amazonas*: 1 ♀, Amacayacu National Park, Mata, Mata Station, Tierra Firme, 08-12.III.2000, M. Sharkey [-3.4833; -70.2000], Malaise Trap (JEE). **ECUADOR**, *Napo*: 1 ♀, Puerto Misahuali, vic. Puerto Misahuali 1650-1900 ft., 6-19.IX.1998, J. E. Eger col. [-1.0345; -77.6514], 1°2'4.2"S lat. 77°39'49.2"W lon, Mercury vapor & Ultraviolet lights, *Ochlerus* sp. #17 det. J. E. Eger 2013 (JEE); 1 ♂, Yasuni National Park, Yasuni Res. Sta. 250m, 19-30.X.1998, W. J. Hanson [-1.0833; -75.9166]. **PERU**, *Loreto*: 1 ♂ and 2 ♀, Iquitos, Explorama Inn 40 km NE Iquitos on Amazon R., 22-24.VIII.1992, J. Castner, P. Skelley et al. cols. [-3.7481; -73.2472], at night (JEE). *Madre de Dios*: 1 ♀, Puerto Maldonado, Rio Tambopata 30 km (air) SW Puerto Maldonado 290m, 1-14.XI.1982, R. Wilkerson col. [-12.6000; -69.1833] (JEE); 1 ♀, Puerto Maldonado, Tambopata Prov. 15 km NE Pto. Maldonado 200m, 19.VI.1989, J. Ashe & R. Leschen cols. [-12.6000; -69.1833] (SEMC).

Diagnosis. Head with three parallel yellow lines behind the base of the clypeus. Mandibular plates strongly rugose. Apex of rostrum not surpassing the anterior margin of urosternite VI. Antennal segment V yellow on the basal fifth. Antero-lateral angles of pronotum with small rounded projections laterally directed. Antero-lateral margins of pronotum and connexivum outlined. Pronotum with a yellow, diffuse macula between the pronotal scars. A median and 1+1 close to the basal angles conspicuous yellow maculae on the scutellum. Triangular yellow maculae laterad to apex of radial vein. Hemelytra surpassing length of body. Spiracles on urosternite II completely covered by metasternum.

Male. Dorsal rim of pygophore with lobular basal projections. Parameres sculptured, robust; apices almost touching inferior layer of dorsal rim of pygophore forming an u-shaped excavation with the inner rim of the postero-lateral projections. Vesica with spatulate lateral projections and a conical ventral projection.

Female. Gc8 wider than long; sutural margins juxtaposed, although the sutural angles are slightly angled; posterior margins angled and slightly sinuous; external angles laterad to spiracles of la8. Laterotergites 8 flat; spiracles exposed. Gc9 losangular,

with a median carina. La9 somewhat posteriorly projected; apices touching. Thickening of g9 extends to its full length.

Measurements: (n=8) Total length 1.41 ± 0.03 (1.37–1.47); head length 0.27 ± 0.01 (0.25–0.29), anteocular length 0.1 ± 0 (0.1–0.1), width 0.32 ± 0.01 (0.3–0.34), interocular distance 0.14 ± 0.01 (0.14–0.15); length of antennal segments: I 0.12 ± 0.01 (0.1–0.14), II 0.12 ± 0.01 (0.1–0.13), III 0.2 ± 0.04 (0.13–0.25), IV 0.29 ± 0.03 (0.24–0.31), V 0.29 ± 0.03 (0.25–0.33); length of rostral segments: I 0.16 ± 0.02 (0.14–0.18), II 0.27 ± 0.01 (0.25–0.29), III 0.22 ± 0.02 (0.19–0.24), IV 0.21 ± 0.01 (0.2–0.23); pronotal length 0.4 ± 0.01 (0.38–0.43), width 0.78 ± 0.02 (0.74–0.8); scutellar length 0.65 ± 0.02 (0.63–0.68), width 0.53 ± 0.02 (0.49–0.55), width at end of frenum 0.31 ± 0.01 (0.3–0.34); abdominal width 0.87 ± 0.03 (0.83–0.93).

Comments. This species seems to have a small variation on the shape of the gc8 and gc9. As in some specimens the gc8 are notably more angled, and the gc9 may have a more trapezoidal form. However, the remaining morphological features, including internal genitalia, do not vary. Thus we opted on keeping the two specimens groups as a single species.

***Ochlerus signoreti* Breddin, 1910**

(Figs 5I, 7J–K)

Ochlerus signoreti Breddin, 1910: 617; Simões & Campos, *in prep*

Type material (photograph examined). Lectotype, ♂, "Cayenne Coll. Signoret, *coriaceus* det. Signoret, *Ochlerus signoreti* (m) Type Bredd." (NMW)

Type locality. Cayenne, Cayenne, French Guiana

Distribution. **BRAZIL** (*Amazonas, Rondonia*) [new record], **COSTA RICA** (*Heredia*) [new record], **FRENCH GUIANA** (*Cayenne*), **GUYANA** (*East Berbice-Corentyne*) [new record], **SURINAME** (*Brokopondo*) [new record], **VENEZUELA** (*Bolivar*) [new record]

Material examined. **BRAZIL**, *Amazonas*: 1 ♂, Manaus, 04.III.1959, Elias & Roppa cols. [-3.1133; -60.0252], D.Z.9, 959, M. Nac. (UFRG); 1 ♂, Manaus, VII.1959, C. Elias col. [-3.1133; -60.0252], DZPR, *Ochlerus spp.*, DZUP 212769 (DZUP); 1 ♂, Manaus, VII.1959, C. Elias col. [-3.1133; -60.0252], DZPR, *Ochlerus spp.*, DZUP 212770 (DZUP); 1 ♂, Manaus, VII.1959, C. Elias col. [-3.1133; -60.0252], DZPR, *Ochlerus spp.*, DZUP 212771 (DZUP); 1 ♀, Manaus, VII.1959, C. Elias col. [-3.1133; -60.0252], DZPR, *Ochlerus spp.*, DZUP 212772 (DZUP); 1 ♀, Manaus, VII.1959, C. Elias col. [-3.1133; -60.0252], DZPR, *Ochlerus spp.*, DZUP 212293 (DZUP); 1 ♂, Manaus, VII.1959, C. Elias col. [-3.1133; -60.0252], DZPR, *Ochlerus spp.*, DZUP 212294 (DZUP); 1 ♂, Manaus, VII.1959, C. Elias col. [-3.1133; -60.0252], DZPR, *Ochlerus spp.*, DZUP 212296 (DZUP); 1 ♀, Manaus, 04.III.1958, Elias e Roppa cols. [-3.1133; -60.0252], D.Z.9/959, M. Nac., col. 45.434 (MCNZ); 1 ♂, Manaus, 04.III.1958, Elias e Roppa cols. [-3.1133; -60.0252], D.Z.9/959, M. Nac., col. 45.435 (MCNZ); 1 ♂, Manaus, 04.III.1958, Elias e Roppa cols. [-3.1133; -60.0252], D.Z.9/959, M. Nac., col. 45.437 (MCNZ); 1 ♀, Manaus, Estr. AM-1 Km 64, 24.VIII.1970, A. Faustino col. [-3.1133; -60.0252], D. A. Rider Collection (NDSU); 1 ♂, Reserva Ducke, AM-010 Km 26, 11.X.1977, J. Arias col. [3.0833; -60.0000], Malaise trap, D. A. Rider Collection, *Ochlerus sp.* 3 (NDSU); 1 ♀, Reserva Ducke, 24.XI.1976, Ratcliffe col. [3.0833; -60.0000], D. A. Rider Collection (NDSU); 1 ♂, Reserva Ducke, V.1968, E. V. Silva & A. Faustino cols. [3.0833; -60.0000], D. A. Rider Collection, *Ochlerus sp.* 3 (NDSU). *Rondônia*: 1 ♀, Ahrenholz Trail, off B-65 3 km N linea C-20, 21.III.1991, B. C. Kondratieff & J. L. Welch cols. (CMNH); 1 ♂, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 08-20.XI.1994, J. E. Eger, L. B. O'Brien & C. W. O'Brien cols. [-9.9333; -63.0667], at night freshly fallen trees, *Ochlerus sp.*# 1 det. J. E. Eger 2013 (JEE); 7 ♂, 19 ♀ and 1 unknown, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 08-20.XI.1994, J. E. Eger, L. B. O'Brien & C. W. O'Brien cols. [-9.9333; -63.0667], at night on freshly fallen trees (JEE); 1 ♂, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 05-17.X.1993, J. E. Eger L. B. O'Brien & C. W. O'Brien cols. [-9.9333; -63.0667] (JEE); 5 ♂, 6 ♀ and 1 unknown, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 03-15.XII.1996, J. E. Eger col. [-9.9333; -63.0667], At night on freshly fallen trees (JEE); 2 ♀, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, 04-16.XI.1997, J. E. Eger col. [-9.9333; -63.0667] (JEE); 1 ♀, Ariquemes, 62 km SE Ariquemes near Fazenda Rancho Grande, XII.1996, K.

Vulinec & D. Mellow cols. [-9.9333; -63.0667] (JEE). **COSTA RICA**, *Heredia*: 1 ♀, Puerto Viejo, Finca La Selva 3 km S Puerto Viejo, 27.III.1984, H. A. Hespenheide [10.4333; -84.0166], 10°26'N 84°01'W, *Ochlerus* sp. 8 (NDSU). **FRENCH GUIANA**, *Province unknown*: 1 ♂, 38 km SE Roura on Kaw Rd., 11.XII.2002, J. E. Eger col. [4.5672; -52.1513], N04°34.214' 256m W052°09.556', at night on recently fallen tree, *Ochlerus* sp. #10 det. J. E. Eger 2013 (JEE); 2 ♀, Entomotech Lodge 30 km SE Roura on Kaw Rd., 17.XI.2004, F. Goubert col. [4.5513; -52.2011], N04°33.570' W052°12.433' 300m MV light (JEE); 1 ♀, locality unknown, 04.III.1981, [illegible] col., [illegible labels], D. A. Rider Collection, *Ochlerus* sp. det. D. A. Rider 1989 (NDSU). **GUYANA**, *East Berbice-Corentyne*: 1 ♂, New River, 750 ft., 25.I-20.III.1938, C. A. Hudson col. [3.2026; -57.6301], Brit. Mus. 1939-370, *signoreti* (BMNH); 1 ♀, New River, 750 ft., 25.I-20.III.1938, C. A. Hudson col. [3.2026; -57.6301], Brit. Mus. 1939-370 (BMNH). **SURINAME**, *Brokopondo*: 1 ♂, Brokopondo, Stoneiland, 10-13.II.2010, W. B. Warner col. [5.0667; -54.9667], *Ochlerus* sp. #14 det. J. E. Eger 2013 (JEE); 1 ♀, locality unknown, Van Brussel, 45, Mus. Leiden Verz. Fokker, D. A. Rider Collection, *Ochlerus signoreti* Breddin LHR 79 (NDSU); 1 ♂, locality unknown, p.40--19, P. H. v. Doesburg Jr. col., D. A. Rider Collection, *Ochlerus signoreti* (M) Bred. det. P. H. v. Doesburg Jr. 1964 (NDSU). **VENEZUELA**, *Bolivar*: 1 ♀, Bolivar, Rio Supamo 50 km SE El Manteco, 18-19.XII.1987, B. D. Gill [7.3500; -62.5333] (CMNH).

Diagnosis. Head in front of the eyes slightly longer and thinner than other species of *Ochlerus*; mandibular plates rugose. Antero-lateral angles of the pronotum projected laterad, small with a truncate apex. Antero-lateral margins of the pronotum and connexivum completely outlined in brown. Three rusty brown maculae at the base of the scutellum, one small median and 1+1 close to the basal angles.

Male. Dorsal rim of pygophore with acute basal projections. Segment X thin. Inferior layer of ventral rim of the pygophore excavated medially with a wide gap between the postero-lateral angles; this gap further widens after a small angle midway across the internal margin of the postero-lateral angles. Parameres with median tooth-like projection. Head of parameres thin and slightly curved ventrally and endad. Vesica with butterfly-like lateral projections, dented laterally; presence of conical ventral projection.

Female. Gc8 as long as wide; posterior margins angled, slightly projected above la9. Spiracles on la8 covered by posterior margin of urosternite VII. Gc9 losangular, without a median carina. La9 lobular, plain. Thickening of g9 square-like reaching about a third of full length of g9.

Measurements: (n = 8) Total length 1.45 ± 0.06 (1.37–1.54); head length 0.29 ± 0.01 (0.28–0.3), anteocular length 0.13 ± 0.01 (0.13–0.15), width 0.33 ± 0.01 (0.33–0.35), interocular distance 0.15 ± 0.01 (0.14–0.16); length of antennal segments: I 0.12 ± 0.01 (0.11–0.14), II 0.12 ± 0.02 (0.1–0.15), III 0.24 ± 0.01 (0.23–0.25), IV 0.31 ± 0.01 (0.29–0.33), V 0.32 ± 0.02 (0.3–0.34); length of rostral segments: I 0.18 ± 0.01 (0.18–0.19), II 0.3 ± 0.02 (0.29–0.34), III 0.25 ± 0.01 (0.24–0.28), IV 0.24 ± 0.01 (0.23–0.25); pronotal length 0.42 ± 0.02 (0.4–0.45), width 0.79 ± 0.03 (0.76–0.85); scutellar length 0.68 ± 0.03 (0.64–0.73), width 0.54 ± 0.02 (0.5–0.58), width at end of frenum 0.34 ± 0.01 (0.31–0.36); abdominal width 0.87 ± 0.03 (0.84–0.95).

Comments. This species has some minor resemblances to the the type species in the shape of the gonocoxites 8.

***Ochlerus* sp. 01**

(Figs 6A, 8A–B)

Type material. Holotype, ♀, Iquitos, Quebrada Orán ca 5 km N Rio Amazonas, 85 km NE Iquitos el. 110 m, VI.1984, L. J. Barkley col. [-3.7480; -73.2472] (CMNH).

Paratypes. **BRAZIL**, *Roraima*: 1 ♀, Uraricoera, Rio Uraricoera, Ilha de Maraca, 21-30.XI.1987, J. A. Rafael and team cols. [3.4500; -60.9833], Inseticida (fogging), INPA (UFRG). **PERU**, *Loreto*: 1 ♂ e 2 ♀, Iquitos, Quebrada Orán ca 5 km N Rio Amazonas, 85 km NE Iquitos el. 110 m, VI.1984, L. J. Barkley col. [-3.7480; -73.2472] (CMNH).

Type locality. Iquitos, Loreto, Peru.

Distribution. **BRAZIL** (*Roraima*), **PERU** (*Loreto*)

Diagnosis. Body dark brown. Antero-lateral angles projected laterad with rounded apex. Apex of rostrum reaching anterior margin of urosternite VII. Base of scutellum close to basal angles with 1+1 relatively big light brown maculae.

Male. Dorsal rim of pygophore with acute basal projections. Parameres robust, apices directed ventrally. Inferior layer of ventral rim excavated. Internal margins of postero-lateral projections strongly sinuate, forming two straight angles.

Female. Gc8 as wide as long; sutural margins completely juxtaposed; sutural angles as tooth-like projections, laterally angled. Spiracles of la8 partially covered by the posterior margin of urosternite VII. Gc9 losangular, without median carina. La9 lobular. Thickening of g9 trapezoidal reaching almost half of total length. Folding of the *ductus receptaculi* proximal to the *pars intermedialis*, seems to be twisted.

Measurements. Measurements: (n = 5) Total length 1.48 ± 0.01 (1.47–1.5); head length 0.29 ± 0.01 (0.28–0.31), anteocular length 0.14 ± 0.01 (0.13–0.15), width 0.33 ± 0.01 (0.33–0.34), interocular distance 0.15 ± 0.01 (0.14–0.15); length of antennal segments: I 0.13 ± 0.01 (0.13–0.14), II 0.12 ± 0.01 (0.11–0.13), III 0.24 ± 0.01 (0.23–0.25), IV 0.3, V 0.33; length of rostral segments: I 0.18 ± 0.01 (0.16–0.19), II 0.29 ± 0.02 (0.28–0.31), III 0.26 ± 0.02 (0.24–0.28), IV 0.26 ± 0.02 (0.24–0.28); pronotal length 0.44 ± 0.01 (0.43–0.45), width 0.82 ± 0.02 (0.8–0.85); scutellar length 0.68 ± 0.01 (0.66–0.69), width 0.55 ± 0.01 (0.54–0.56), width at end of frenum 0.34 ± 0.03 (0.29–0.36); abdominal width 0.87 ± 0.01 (0.86–0.88).

Comments. The maculae on the scutellum and the shape of the gc8 are easily distinguishable from other species. The dissected specimen had no *capsula seminalis*.

***Ochlerus* sp. 02**

(Figs 6B, 8C–D)

Type material. Holotype, ♀, Fort Sherman, Old Ft. San Lorenzo Rd., 25.VII.1995, C. W. & L. B. O'Brien cols [9.3650; -79.9586] (JEE).

Paratypes. **BRAZIL**, *Roraima*: 1 ♂, Serra Grande, 11-20.X.1992, D. W. Davis col. [2.6039; -60.5991] (CMNH). **COSTA RICA**, *Heredia*: 1 ♂, Puerto Viejo, Finca la Selva (*sic*) Verde 12 km S Puerto Viejo 500 ft., 23-26.IX.1986, J. E. Eger col. [10.4333; -84.0166], *Ochlerus* sp. det L. H. Rolston '87 (JEE); 1 ♀, Puerto Viejo, F. La Selva 3 km S Pto. Viejo, 08.IV.1985, N. A. Hespeneheide col. [10.4333; -84.0166], 10°26'N 84°01'W, D. A. Rider Collection (NDSU). *Limon*: 1 ♂, Siquirres, 22 km S. Siquirres, 9-12.I.1984, R. L. Penrose, F. T. Hovore & P. H. Sullivan cols. [10.1000; -83.5167] (CMNH). **PANAMA**, *Colon*: 3 ♂ and 12 ♀, Fort Davis, Atl., 26.IV.1981, D. Engleman col. [9.2915; -79.9076], night, D. A. Rider Collection (NDSU); 5 ♀, Fort Sherman, Ft. Sherman area, 19.V.1999, Morris & Wappes cols. [9.3650; -79.9586] (JEE); 1 ♀, Fort Sherman, Ft. Sherman area, 19.V.1999, Morris & Wappes cols. [9.3650; -79.9586] (SEMC); 1 ♂, Fort Sherman, 06.IX.1986, D. Engleman col. [9.3650; -79.9586], D. A. Rider Collection (NDSU); 1 ♂, Gatun Tank, N Shore Gatun Lake, 02.VI.1984, E. Giesbert col. [9.3000; -79.8833], illustrated, D. A. Rider Collection (NDSU); 2 ♂ and 2 ♀, Gatun Tank, N Shore Gatun Lake, 02.VI.1984, E. Giesbert col. [9.3000; -79.8833], D. A. Rider Collection (NDSU); 1 ♂, Parque Nacional Soberania, Pipeline Rd. km 0-4.6, 19.V.1995, J. Jolly, G. Kidd, C. Chaboo & B. Hayford cols. [9.1166; -79.7500], 09°07'N 79°45'W (SEMC); 1 ♀, Pina Road S1, Atlantic Canal Zone, 28.IV.1981, H. D. Engleman col. [9.2826; -79.9448], night, D. A. Rider Collection (NDSU). *Panama*: 1 ♂, Altos de Maje, 17.V.1975, Stockwell & Engleman col. [9.1387; -78.8360], at lights, *Ochlerus* sp. det H. D. Engleman 1980 (JEE); 2 ♂ and 8 ♀, Altos de Maje, 17.V.1975, Stockwell & Engleman col. [9.1387; -78.8360], at lights, D. A. Rider Collection (NDSU); 2 ♂ and 1 ♀, Altos de Maje, Chepo, 14-15.V.1976, D. Engleman col. [9.1387; -78.8360], D. A. Rider Collection (NDSU); 1 ♀, Altos de Maje, 17.V.1975, Stockwell & Engleman col. [9.1387; -78.8360], at lights, illustrated, D. A. Rider Collection (NDSU); 1 ♂, Barro Colorado Island, Canal Zone R. P., 20.VI.1962, H. Ruckes col. [9.1636; -79.8378], AMNH (AMNH); 1 ♀, Barro Colorado Island, Canal Zone R. P., 25.IV.1962, Grant G. col. [9.1636; -79.8378], Collected on NSF, 9830, AMNH (AMNH); 1 ♀, Barro Colorado Island, 13.VII.1995, C. W. & L. B. O'Brien [9.1636; -79.8378], Armour Tr. (JEE); 1 ♂, Barro Colorado Island, Canal Zone, 3.XI.1977, H. Wolda col. [9.1636; -79.8378], Lights: Weir/SM-I, D. A. Rider Collection, *Ochlerus* sp./a (NDSU); 1 ♂, Barro Colorado Island, Canal Zone, 24.II.1975, T. Erwin col. [9.1636; -79.8378], Under a

log in daytime, D. A. Rider Collection (NDSU); 1 ♂, Barro Colorado Island, Canal Zone, 29.XI.1978, H. Wolda col. [9.1636; -79.8378], Lights: Weir/SM-I, D. A. Rider Collection, *Ochlerus* sp/a (NDSU); 1 ♂, Barro Colorado Island, Canal Zone, 29.XI.1978, H. Wolda col. [9.1636; -79.8378], Lights: Weir/SM-I, D. A. Rider Collection (NDSU); 1 ♀, Barro Colorado Island, Canal Zone, 26.XI.1978, H. Wolda col. [9.1636; -79.8378], Lights: Weir/SM-I, D. A. Rider Collection (NDSU); 1 ♀, Barro Colorado Island, Canal Zone, 01.X.1978, H. Wolda col. [9.1636; -79.8378], Lights: Weir/SM-I, D. A. Rider Collection (NDSU); 1 ♀, Barro Colorado Island, Canal Zone, 27.V.1972, T. Erwin col. [9.1636; -79.8378], D. A. Rider Collection, *Ochlerus* sp /a det. H. D. Engleman 1973 (NDSU); 1 ♂, Barro Colorado Island, Canal Zone, 01.VI.1974, D. Engleman col. [9.1636; -79.8378], Nite light - Treefall, D. A. Rider Collection (NDSU); 1 ♀, Cerro Campana, 2700', 3-4.V.1981, E. Giesbert col. [8.7167; -79.9000], D. A. Rider Collection (NDSU); 1 ♂, Coco Solo Hospital, Canal Zone, 08.VII.1974, Engleman col. [9.3500; -79.8500], 9°21'N 79°51'W, night beating (CMNH); 1 ♀, Coco Solo Hospital, Canal Zone, 11.V.1972, Engleman col. [9.3500; -79.8500], L. T., 9°21'N 79°51'W, D. A. Rider Collection (NDSU); 1 ♀, Coco Solo Hospital, Canal Zone L. T., 08.VII.1974, Engleman col. [9.3500; -79.8500], 9°21'N 79°51'W, night beating, D. A. Rider Collection (NDSU); 1 ♂, Coco Solo Hospital, Canal Zone, 20.V.1975, Engleman col. [9.3500; -79.8500], Light Trap, D. A. Rider Collection (NDSU); 2 ♂ and 2 ♀, Fort Clayton, Canal Zone, 20.VI.1976, A. I. Thurman col. [9.0000; -79.7500], Collection of H. D. Engleman, D. A. Rider Collection (NDSU); 1 ♀, Fort Sherman, Canal Zone, 19.I.1980, D. Engleman col. [9.3333; -79.9666], 9°20'N 79°58'W, On old +- 4mo. Tree fall but recent rains, D. A. Rider Collection (NDSU); 1 ♀, Gatun Tank Farm, Canal Zone, VII.1975, S. Modestin col. [9.3000; -79.8833], Ex. UVLamp L. T., D. A. Rider Collection (NDSU); 1 ♂ and 1 ♀, Gatun Tank Farm, Canal Zone, 1.III.1976, J. T. Whitlaw Jr. col. [9.3000; -79.8833], D. A. Rider Collection (NDSU); 1 ♂, Las Cumbres, 22.II.1976, Hank Wolda col. [9.1000; -79.5333], 9°06'N 79°32'W, Lt. Trap, D. A. Rider Collection (NDSU); 1 ♀, Las Cumbres, 06.X.1975, Hank Wolda col. [9.1000; -79.5333], 9°06'N 79°32'W, Lt. Trap, D. A. Rider Collection (NDSU); 1 ♀, Las Cumbres, 06.II.1976, Hank Wolda col. [9.1000; -79.5333], 9°06'N 79°32'W, Lt. Trap, D. A. Rider Collection (NDSU); 1 ♀, Las Cumbres, 25.XII.1973, Hank Wolda col. [9.1000; -79.5333], D. A. Rider Collection (NDSU); 1 ♀, Las Cumbres, 13.V.1974, Hank Wolda col. [9.1000; -79.5333], 9°06'N 79°32'W, Lt. Trap, D. A. Rider Collection

(NDSU); 1 ♂, Las Cumbres, 30.X.1975, Hank Wolda col. [9.1000; -79.5333], 9°06'N 79°32'W, Lt. Trap, D. A. Rider Collection (NDSU); 2 ♂ and 5 ♀, Madden Forest, Canal Zone, 02.VIII.1978, H. A. Hespenheide col. [9.0833; -79.5833], 9°05'N 79°35'W, D. A. Rider Collection (NDSU); 2 ♀, Madden Forest, Canal Zone, 07.VIII.1978, H. A. Hespenheide col. [9.0833; -79.5833], 9°05'N 79°35'W, D. A. Rider Collection (NDSU); 1 ♂ and 1 ♀, Pipeline Road km 1-12, 08-09.VII.1997, Morris & Wappes cols. [9.1281; -79.7153] (JEE); 1 ♀, Pipeline Road km 1-12, 30.VI.1997, Morris & Wappes cols. [9.1281; -79.7153] (JEE).

Type locality. Fort Sherman, Colon, Canal Zone, Panama.

Distribution. **BRAZIL** (*Roraima*), **COSTA RICA** (*Heredia*), **PANAMA** (*Canal Zone, Colon, Panama*)

Diagnosis. Body black. Rostrum not surpassing anterior margin of urosternite V. Antero-lateral angles of the pronotum produced laterad in slightly acute apex. Antero-lateral margins of the pronotum and connexivum outlined in red. A median yellow maculae on the scutellum. Small yellow maculae laterad to apex of radial vein.

Male. Dorsal rim of pygophore with lobular projections. Parameres robust with median tooth-like projection ventrally directed. Inner margins of the postero lateral angles sinuous. Lateral projections of the vesica sculptured; midway through the projection, there is an anterior projection. Presence of a dorsal ax-like projection close to the *ductus seminis distalis*.

Female. Sutural margins of gc8 completely juxtaposed. Posterior margins strongly angled in relation to sutural angle. Spiracles on la8 covered by posterior margin of urosternite VII. Gc9 square-like, with a median carina. La9 spatulate, apices touching. Thickening of g9 triangular, and reaching 1/2 of total length.

Measurements: (n = 8) Total length 1.37 ± 0.05 (1.31–1.45); head length 0.25 ± 0.01 (0.24–0.28), anteocular length 0.12 ± 0.01 (0.11–0.13), width 0.31 ± 0.01 (0.3–0.33), interocular distance 0.14 ± 0.01 (0.14–0.15); length of antennal segments: I 0.1 ± 0.01 (0.1–0.11), II 0.11 ± 0.01 (0.11–0.13), III 0.19 ± 0.01 (0.18–0.21), IV 0.25 ± 0.01

(0.24–0.26), V 0.27 ± 0.01 (0.25–0.29); length of rostral segments: I 0.16 ± 0.01 (0.15–0.18), II 0.26 ± 0.02 (0.24–0.29), III 0.22 ± 0.01 (0.2–0.24), IV 0.21 ± 0.01 (0.19–0.23); pronotal length 0.39 ± 0.02 (0.36–0.43), width 0.75 ± 0.03 (0.71–0.79); scutellar length 0.62 ± 0.02 (0.59–0.66), width 0.51 ± 0.02 (0.49–0.54), width at end of frenum 0.32 ± 0.01 (0.29–0.34); abdominal width 0.85 ± 0.02 (0.81–0.88).

Comments. The shape of the gc8 resembles that of *Oc. coriaceus*; however, in sp. 02, the sutural margins are even shorter, the posterior margins are subrectilinear and the gc9 is not so rounded. The shape of the *phallus* is also unique, with sub-projections on the spatular projections, and a thin and longitudinal ax-like dorsal projection.

***Ochlerus* sp. 03**

(Figs 6C, 8E)

Type material. **BRAZIL**, *Rondonia*: 1 ♀, Ariquemes, 62 km SW Ariquemes near Fazenda Rancho Grande, 08-20.XI.1994, J. E. Eger, L. B. O'Brien & C. W. O'Brien [-9.9333; -63.0667], at night on freshly fallen trees, *Ochlerus* sp. #8 det. J. E. Eger 2013 (JEE).

Type locality. Ariquemes, Rondonia, Brazil.

Distribution. **BRAZIL** (*Rondonia*)

Diagnosis. Body brown, speckled in yellow all across the pronotum and scutellum. Very small rounded lateral projections on the antero-lateral angles of the pronotum. Conexivum medially outlined in yellow.

Female. Gc8 as long as wide; inner posterior margin angled. Spiracles on la8 completely exposed. Gc9 losangular, thin. La9 small, less than half of length of gc8.

Measurements: (n = 1) Total length 1.28; head length 0.24, anteocular length 0.11, width 0.3, interocular distance 0.14; length of antennal segments: I 0.11, II 0.13, III 0.2, IV 0.28, V 0.28; length of rostral segments: I 0.16, II 0.26, III 0.23, IV 0.2;

pronotal length 0.39, width 0.75; scutellar length 0.6, width 0.5, width at end of frenum 0.29; abdominal width 0.83.

Comments. The shape of the gc9 strikes out as a very particular feature. More specimens are needed to further the knowledge on the species.

***Ochlerus* sp. 04**

(Figss 6D, 8F–G)

Type locality. Tipuani, La Paz, Bolivia.

Type material (examined). Holotype, ♀, **BOLIVIA**, *Santa Cruz*: 5km SSE of Buena Vista, Hotel Flora & Fauna 440m, 10-22.X.2004, J. E. Eger col. [-17.4525; -63.6502], W63°39.128' S17°29.925', Coll. at UV, MV and Incandescent Lights. (JEE)

Distribution. **BOLIVIA** (*Cochabamba* [new record], *La Paz*, *Santa Cruz* [new record])

Paratypes. **BOLIVIA**, *Cochabamba*: 3 ♀, Carrasco (El Sacta) 220m, 26.X.02, Morris & Wappes cols. [-17.3833; -63.1500] (JEE). *La Paz*: 1 ♂, paralectotype of *Ochlerus tenuicornis* Breddin, 1910, Tipuani, 01.X.1991, A. V. Limihardt col. ded. [-15.5500; -68.0000]. 1 ♂ and 1 ♀, Uyapi (Guanay) G. Arriagada col., X.1993 [-15.4167; -67.7667] (JEE). *Santa Cruz*: 1 ♀, Buena Vista, Prov. Ichilo, 400m, III.1960 [-17.4500; -63.6667], 66 spec. (CMNH); 1 ♂, 3–5km SSE of Buena Vista ±440m, 12.V.2000, W. B. Warner col. [-17.4525; -63.6502], 17°29'96"S, 63°39'13"W, *Ochlerus* sp. #3 det. J. E. Eger, 2013 (JEE); 2 ♂ and 4 ♀, 3-5km SSE of Buena Vista ±440m, 12.V.2000, W. B. Warner col. [-17.4525; -63.6502], 17°29'96"S, 63°39'13"W (JEE); 1 ♂, 5km SSE of Buena Vista, Hotel Flora & Fauna 440m, 18-22.X.2004, J. E. Eger, R. F. Morris & J. E. Wappes cols. [-17.8000; -63.1667], W63°39.128' S17°29.925', Coll. at UV, MV and Incandescent Lights (JEE); 3 ♀, Buena Vista, vic. Flora & Fauna Hotel, 22-26.X.2002, Morris & Wappes cols. [-17.8000; -63.1667] (JEE); 1 ♀, Buena Vista, Flora & Fauna Hotel, 14-26.XI.2003, Morris, Nearn & Wappes cols. [-17.4525; -63.6502] (JEE); 1 ♂ and 1 ♀, El Refugio de Los Volcanes 3400-4200ft, 16-20.IX.2012, P. Skelley, J. Wappes & T. Bonaso cols. [-18.1000; -

63.6000], S 18°06' W 063°36' (JEE); 1 ♀, Potrerillos de Guendá, 40 km NW of Santa Cruz de la Sierra 350-400m, P. Skelley, J. Wappes & T. Bonaso cols. [-17.6666; -63.4500] (JEE); 1 ♀, Potrerillos del Guendá, 40 km NW of Santa Cruz de La Sierra, 22-XI to 12.XII.2005, B. K. Dozier col. [-17.6666; -63.4500], 17°40.3"S 063°27.4"W (JEE).

Diagnosis. Body light to dark brown, ventral *facies* yellow speckled. Rostrum no surpassing urosternite V. Antero-lateral angles of the pronotum slightly produced laterad with a rounded apex. Small yellow maculae laterad to apex of radial veins.

Male. Dorsal rim of pygophore excavated; with lobular basal projections. Head of parameres laminar, excavated and convergent. Inner margins of postero-lateral projections v-shaped. Proctiger wide across whole length. Vesica with ax-like ventral projection.

Female. Sutural margins of gc8 completely juxtaposed; posterior margins angled, subrectilinear; external angles positioned laterad to spiracles of la8. Spiracles on la 8 completely exposed. Gc9 trapezoidal, with median carina. La9 lobular, projected posteriorly. Thickening of g9 club-like, reaching half of total length of g9.

Measurements. (n = 8) Total length 1.44 ± 0.06 (1.31–1.51); head length 0.26 ± 0.01 (0.24–0.28), anteocular length 0.12 ± 0.01 (0.11–0.13), width 0.31 ± 0.01 (0.29–0.33), interocular distance 0.15 ± 0 (0.14–0.15); length of antennal segments: I 0.1 ± 0.01 (0.09–0.11), II 0.11 ± 0.01 (0.1–0.11), III 0.2 ± 0.02 (0.16–0.24), IV 0.27 ± 0.01 (0.25–0.29), V 0.27 ± 0.01 (0.25–0.28); length of rostral segments: I 0.15 ± 0.02 (0.13–0.19), II 0.26 ± 0.02 (0.23–0.29), III 0.22 ± 0.01 (0.2–0.24), IV 0.2 ± 0.02 (0.15–0.21); pronotal length 0.4 ± 0.02 (0.36–0.43), width 0.79 ± 0.04 (0.74–0.85); scutellar length 0.66 ± 0.02 (0.63–0.69), width 0.53 ± 0.02 (0.51–0.56), width at end of frenum 0.3 ± 0.02 (0.28–0.33); abdominal width 0.9 ± 0.04 (0.84–0.96).

Comments. The female genitalia resembles that of *O. profanus*, albeit much larger. In some specimens, the parameres overlap.

***Ochlerus* sp. 05**

(Figs 6E, 8H)

Type material. Holotype, ♀, **ECUADOR**, *Pichincha*: Tinalandia, 17 km SE Santo Domingo de Los Colorados 3,000', 20.X.1988, J. S. Miller col. [-0.2500; -79.1500], AMNH (UFRG).

Paratype. **PANAMA**, *Colon*: 1 ♀, Colon, Sierra Llorona Lodge, 17-21.II.2012, J. B. Heppner col. [9.3592; -79.9014], FSCA (JEE).

Type locality. Colon, Colon, Panama.

Distribution. **ECUADOR** (*Pichincha*), **PANAMA** (*Colon*)

Diagnosis. Body black. Ocelli red. Antero-lateral angles of the pronotum truncate, chisel-like, projected laterally. Antero-lateral margins and connexivum outlined by red. Scutellum with a big bright yellow macula at median base. Tarsi bright yellow.

Female. Sutural margins of gc8 not completely juxtaposed; posterior margins slightly angled. Spiracles on la8 partially covered by posterior margin of urosternite VII. Gc9 flat, wide, and without a complete median carina (it has a small carina-like elevation at the dorsal apex). La9 lobular, flat. Thickening of g9 wide, reaching about a third of total length. *Ductus receptaculi* proximal to *pars intermedialis* plain, without a folding.

Measurements: (n = 1) Total length 1.47; head length 0.28, anteocular length 0.14, width 0.33, interocular distance 0.15; length of antennal segments: I 0.14, II 0.14, III 0.23, IV 0.28, V 0.29; length of rostral segments: I 0.18, II 0.28, III 0.24, IV 0.23; pronotal length 0.46, width 0.84; scutellar length 0.7, width 0.56, width at end of frenum 0.36; abdominal width 0.9.

Comments. This species is easily distinguished by the shape of the antero-lateral angles of the pronotum and by the flatness of the gonocoxites 9.

***Ochlerus* sp. 06**

(Figs 6F, 8I)

Type material. Holotype, ♂, **ECUADOR**, *Napo*: Puerto Misahuali, vic. Puerto Misahuali 1650-1900 ft., 06-19.IX.1998, J. E. Eger col. [-1.0345; -77.6514], 1°2'4.2"S lat 77°39'49.2"W lon, Mercury vapor & Ultraviolet lights, *Ochlerus* sp. #15 det. J. E. Eger 2013 (JEE).

Paratypes. **ECUADOR**, *Sucumbios*: 1 ♂, Shushufindi, 25.IX.1982, R. Desmier de Chenon col. [-0.1833; -76.6500], venulumiere casa [illegible], 3275 (UFRG). **PERU**, *Huanuco*: 1 ♂, Tingo Maria, vic. Tingo Maria, 01-05.VI.1999, W. Hanson & S. Keller cols. [-9.2895; -76.0088], *Ochlerus* sp. #13 det. J. E. Eger 2013 (JEE). *Loreto*: 1 ♂, Iquitos, Quebrada Orán ca 5 km N Rio Amazonas, 85 km NE Iquitos, el. 110 m, VI.1984, L. J. Barkley [-3.7480; -73.2472] (CMNH).

Type locality. Puerto Misahuali, Napo, Ecuador.

Distribution. **ECUADOR** (*Napo*, *Sucumbios*), **PERU** (*Huanuco*, *Loreto*)

Diagnosis. Relatively large species (around 1.55 cm); body light brown. Mandibular plates slightly over clypeus. Apex of rostrum extending up to the anterior margin of urosternite VII (the latter much longer mesially than other segments). Antero-lateral angles with a small rounded projection. Antero-lateral margins and connexivum outlined in red.

Male. Relatively large pygophore (>5 mm). Dorsal rim with basal lobular projections. Head of parameres excavated, arched, medially convergent. Inferior layer of ventral rim excavated. Internal margins of postero-lateral projections strongly sinuate. Proctiger wider than long. Lateral projections of vesica with a small folding at the apex; ventral projection ax-like.

Measurements. (n = 4) Total length 1.55 ± 0.06 (1.47–1.59); head length 0.29 ± 0.02 (0.26–0.31), anteocular length 0.14 ± 0.0 (0.14–0.14), width 0.33 ± 0.02 (0.31–0.35), interocular distance 0.15 ± 0.01 (0.14–0.15); length of antennal segments: I 0.13 ± 0.02 (0.11–0.15), II 0.13 ± 0.03 (0.1–0.16), III 0.24 ± 0.02 (0.23–0.26), IV 0.33 ± 0.04

(0.3–0.36), V 0.29; length of rostral segments: I 0.17 ± 0.02 (0.15–0.19), II 0.31 ± 0.05 (0.28–0.35), III 0.26 ± 0.03 (0.24–0.28), IV 0.24 ± 0.04 (0.21–0.28); pronotal length 0.43 ± 0.02 (0.4–0.45), width 0.84 ± 0.04 (0.79–0.88); scutellar length 0.76 ± 0.04 (0.71–0.8), width 0.57 ± 0.02 (0.54–0.59), width at end of frenum 0.36 ± 0.03 (0.31–0.38); abdominal width 0.97 ± 0.06 (0.89–1.03).

Comments. The strikingly bigger size of this species is reflected on the pygophore, but not on other genital structures, such as the parameres and *phallus*, which conserve the sizes seen in other species.

***Ochlerus* sp. 07**

(Figs 6G, 8J)

Type material. Holotype, ♀, Rancho Grande, 18 km NW Maracay, 23.III.1992, Michalski col. [10.2469; -67.5958], at light, AMNH (AMNH);

Paratypes. **VENEZUELA**, *Aragua*: 1 ♀, Rancho Grande, 1100 m, 26-30.VI.1981, J. Heppner col. [10.2469; -67.5958], cloud forest, *Ochlerus* sp. #11 det. J. E. Eger 2013 (JEE); 1 ♀, Rancho Grande, 23.VIII.1986, R. S. Miller col. [10.2469; -67.5958] (JEE). *Falcon*: 1 ♀, Soledad, 2980 La Soledad, 15.VIII.1975, M. Murtauah col. [11.0503; -70.2367] (JEE).

Type locality. Rancho Grande, Aragua, Venezuela.

Distribution. **VENEZUELA** (*Aragua*, *Falcon*)

Diagnosis. Body dark brown. Antero-lateral angles of the pronotum projected laterally with a curved apex, almost hook-like. Scutellum mostly immaculate, but with a very small and evanescent macula at median base. Small yellow maculae laterad of apex of radial veins.

Female. Gc8 wider than long; sutural margins not completely juxtaposed; posterior margin angled. Spiracles on la8 partially covered by urosternite VII. Gc9 discoid, without median carina. La9 lobular. Thickening of g9 trapezoidal, reaching half the

total distance of the gonapophyses. *Ductus receptaculi* proximal to the *pars intermedialis* plain, without a folding.

Measurements. (n = 4) Total length 1.45 ± 0.05 (1.42–1.5); head length 0.26 ± 0.01 (0.25–0.28), anteocular length 0.12 ± 0.01 (0.11–0.13), width 0.31 ± 0.01 (0.29–0.33), interocular distance 0.15 ± 0.01 (0.14–0.15); length of antennal segments: I 0.11 ± 0.01 (0.1–0.11), II 0.11, III 0.19 ± 0.01 (0.18–0.2), IV 0.12 ± 0.01 (0.19–0.35), V 0.26 ± 0.04 (0.24–0.33); length of rostral segments: I 0.15 ± 0.01 (0.14–0.16), II 0.27 ± 0.01 (0.26–0.29), III 0.22 ± 0.02 (0.19–0.24), IV 0.22 ± 0.02 (0.19–0.24); pronotal length 0.43 ± 0.01 (0.41–0.44), width 0.79 ± 0.03 (0.74–0.83); scutellar length 0.66 ± 0.03 (0.61–0.69), width 0.53 ± 0.02 (0.49–0.55), width at end of frenum 0.34 ± 0.03 (0.31–0.38); abdominal width 0.88 ± 0.01 (0.88–0.89).

Comments. The species bears some similarities to *O. cotylophorus* and *O. sp. 05*, especially the shape of the gc8.

***Melanodermus circummaculatus* (Stål, 1860), removed from synonymy
(Figs 6H, 8K)**

Ochlerus circummaculatus Stål, 1860: 17; Rolston, 1992: 10

Melanodermus circummaculatus Stål, 1867: 524; Stål, 1872: 13; Kirkaldy, 1909: 185

Type material (photographs examined). Holotype, ♀, BRAZIL, "F. Sahlb., Type, Typus, 298 80, NHRS-GULI 000003335" (NHRS).

Type locality. Brazil.

Measurements. (n = 1) Total length 1.3; head length 0.25, anteocular length 0.11, width 0.29, interocular distance 0.13; length of antennal segments: I 0.08, II 0.08, III 0.13, IV 0.15, V 0.15; length of rostral segments: [unknown]; pronotal length 0.4, width 0.74; scutellar length 0.59, width 0.46, width at end of frenum 0.34; abdominal width 0.85.

Comments. This genus can be distinguished from *Ochlerus* by the shape of the antero-lateral angles of the pronotum and of the female genitalia, especially the gonocoxites 8. A revision of the genus and the species shall be made elsewhere.

***Schraderiellus dentijugis* (Breddin, 1910) comb. nov.**

(Figs 6I, 8L)

Ochlerus dentijugis Breddin, 1910: 623; Simões & Campos, in prep.

Type material (examined). Holotype, ♂, "Peru Amaz., *Ochlerus profanus*, coll. Breddin, DEI Münchenberg HEMI-00027". (SDEI)

Type locality. Peru.

Distribution. **PERU.**

Diagnosis. Body light brown. Mandibular plates very rugose, with a lateral tooth-like projection on the external margin. Antero-lateral angles projected laterad, small and with acute apex.

Male. Dorsal rim of pygophore without basal projections. Ventral rim deeply and widely excavated. Parameres thin, directed exad. Apex of proctiger does not surpass imaginary transversal line of the ventral rim.

Measurements: (n = 1) Total length 1.53; head length 0.3, anteocular length 0.16, width 0.34, interocular distance 0.16; length of antennal segments: I 0.14, II 0.12, III 0.2, IV [unknown], V [unknown]; length of rostral segments: I 0.12, II 0.31, III 0.28, IV 0.3; pronotal length 0.44, width 0.84; scutellar length 0.67, width 0.55, width at end of frenum 0.31; abdominal width 0.92.

Comments. Although the general morphology of the pygophore resembles more that of *Stalius* or *Parastalius*, the cladograms retrieved *Ochlerus dentijugis* as a sister-group to *Schraderiellus*, supported by the lateral projections on the mandibular plates.

SUPPORTING INFORMATION

Appendix S1. List of the 87 characters of the cladistic analyzes and respective states.

Appendix S2. Illustrations of the 87 characters and respective states.

Appendix S3. Matrix of the 43 taxa, 87 characters and respective states

ACKNOWLEDGMENTS

The authors thank the curators of the scientific collections for material loaned and/or photographs provided; Renato A. Teixeira for contributions to early discussions on the cladistic analysis; and Talita R. Heinecke for the help on specimen preparation for photographs. We also thank the funding from CAPES (FLS) and CNPq [305367/2012-9] (LAC) as fellowship grants.

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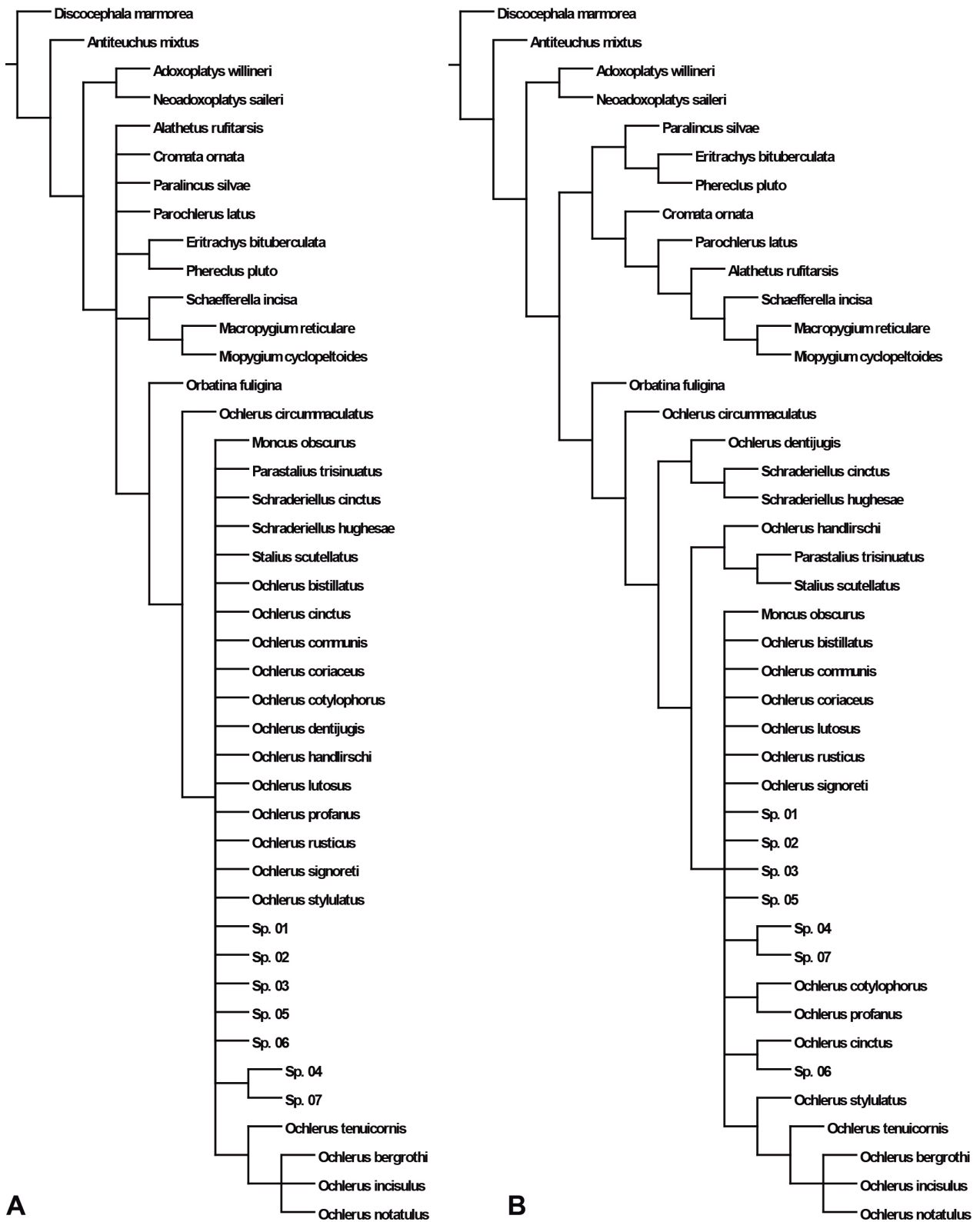


Figure 1. Cladistic analysis of *Ochlerus*. Strict consensus trees under: **A**, equal weights, 1120 trees (length = 380 steps; Ci = 26; Ri = 41); **B**, implied weights, 71 trees (length = 313 steps; Ci = 31; Ri = 55; K= 5.8792).

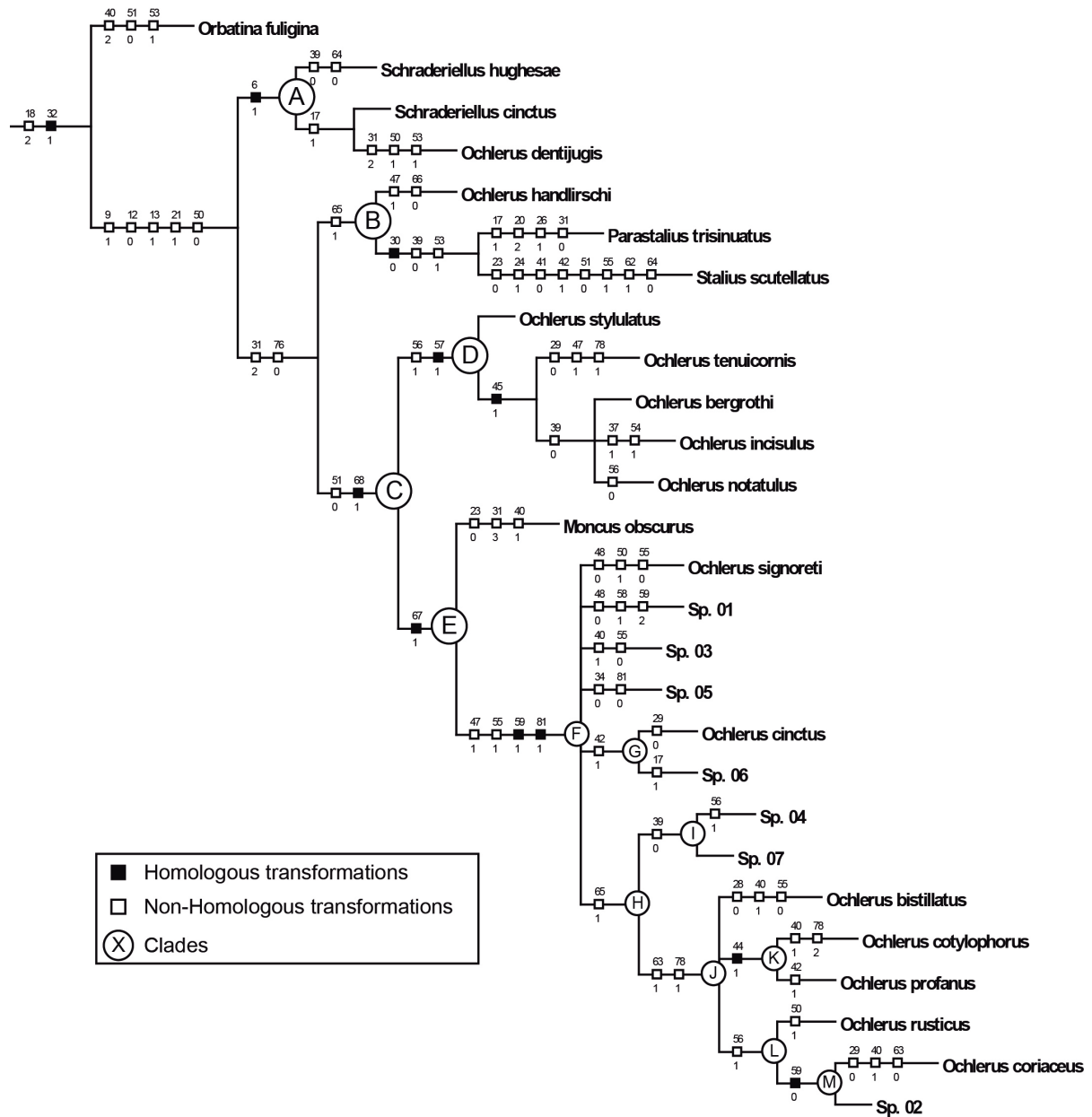


Figure 2. Cladistic analysis of *Ochlerus* with alternate data sets under implied weights (ADS1 IW). Strict consensus tree of 2 trees (length = 289 steps; Ci = 34; Ri = 59; K= 3.9134).



Figure 3. Cladistic analysis of *Ochlerus* with alternate data sets under implied weights (ADS2 IW). Strict consensus tree of 2 trees (length = 290 steps; Ci = 34; Ri = 59; K= 5.0074).



Figure 4. Cladistic analysis of *Ochlerus* with alternate data sets under implied weights (ADS3 IW). Single tree (length = 278 steps; Ci = 35; Ri = 61; K= 4.22)

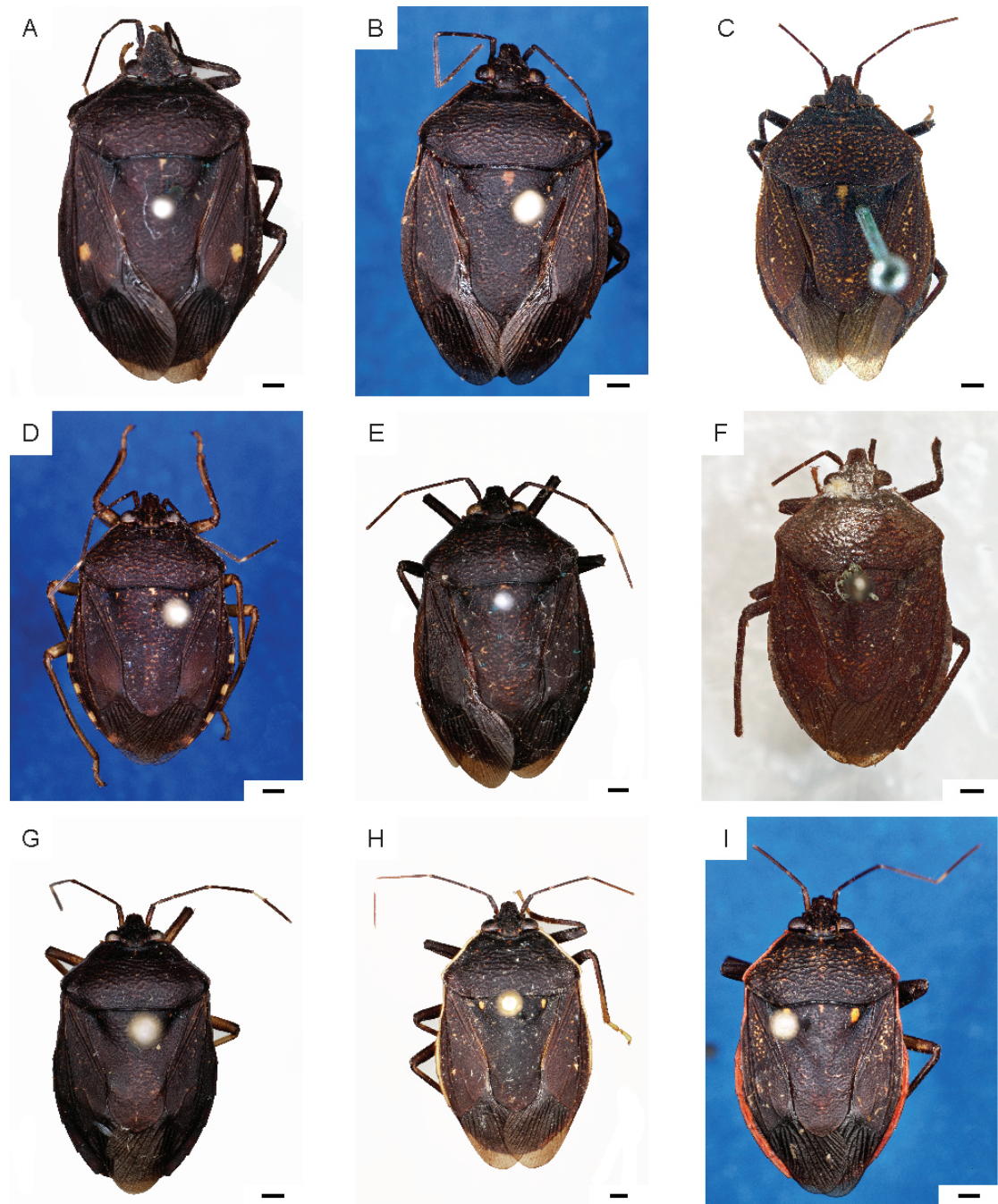


Figure 5. Dorsal view of *Ochlerus* species: **A**, *Ochlerus bistillatus* Breddin, 1910; **B**, *O. cinctus* Spinola, 1837; **C**, *O. communis* Breddin, 1910; **D**, *O. coriaceus* Herrich-Schäffer, 1844; **E**, *O. cotylophorus* Breddin, 1910; **F**, *O. lutosus* Herrich-Schäffer, 1844; **G**, *O. profanus* Breddin, 1910; **H**, *O. rusticus* Breddin, 1910; **I**, *O. signoreti* Breddin, 1910. (scale = 1mm)

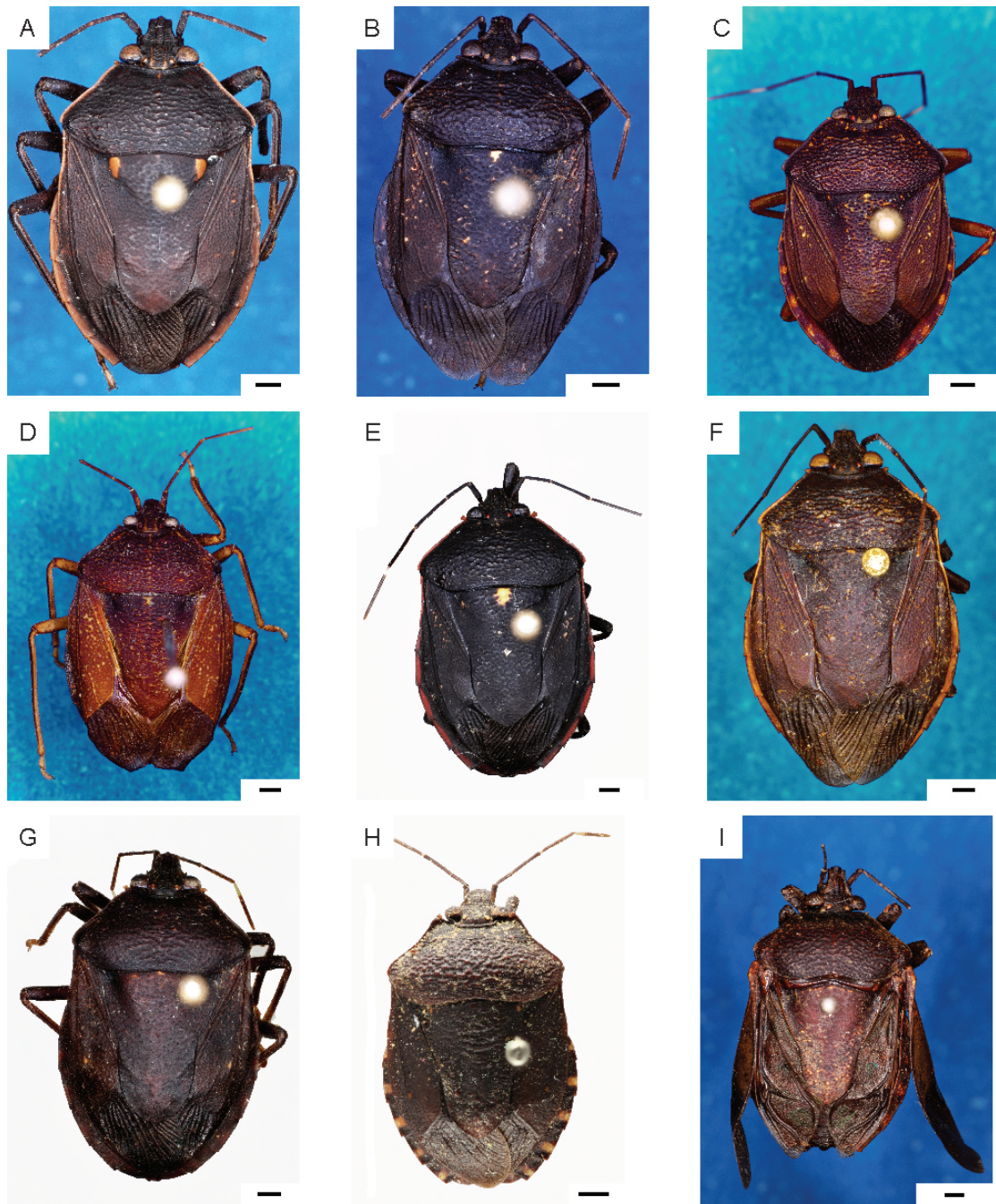


Figure 6. Dorsal view of new species of *Ochlerus* (**A**, sp. 01; **B**, sp. 02; **C**, sp. 03; **D**, sp. 04; **E**, sp. 05; **F**, sp. 06; **G**, sp. 07); **H**, *Melanodermus circummaculatus* (Stål, 1867); **I**, *Schraderiellus dentijugis* (Breddin, 1910). (scale = 1mm)



Figure 7. Posterior view of the genitalia (male, C, I and K; female, A, B, D–H, J) of species of *Ochlerus*: **A**, *Ochlerus bistillatus* Breddin, 1910; **B**, *O. cinctus* Spinola, 1837; **C**, *O. communis* Breddin, 1910; **D**, *O. coriaceus* Herrich-Schäffer, 1844; **E**, *O. cotylophorus* Breddin, 1910; **F**, *O. lutosus* Herrich-Schäffer, 1844; **G**, *O. profanus* Breddin, 1910; **H–I**, *O. rusticus* Breddin, 1910; **J–K**, *O. signoreti* Breddin, 1910. (scale = 1mm)



Figure 8. Posterior view of the genitalia (male, B, D, G, I, L; female, A, C, E, F, H, J, K) of new species of *Ochlerus* (A–B, sp. 01; C–D, sp. 02; E, sp. 03; F–G, sp. 04; H, sp. 05; I, sp. 06; J, sp. 07); K, *Melanodermus circummaculatus* (Stål, 1867); L, *Schraderiellus dentijugis* (Breddin, 1910). (scale = 1mm)

SUPPORTING INFORMATION

APPENDIX SI

1. Head, slant relative to pronotum (Campos & Grazia 2006, char. 1): 0. contiguous;
1. downward slope
2. Head, length before the eyes relative to interocular distance (Campos & Grazia 2006, char. 2): 0. subequal; 1. at least 2/3 longer
3. Head, antecular processes (Campos & Grazia 2006, char. 4): 0. absent; 1. present
4. Mandibular plates, apex, length anterior to apex of clypeum relative to width of clypeum (Campos & Grazia 2006, char. 3–mod): 0. shorter; 1. subequal
5. Mandibular plates, apex, orientation (Campos & Grazia 2006, char. 3): 0. convergent; 1. sub-parallel
6. Mandibular plates, lateral process: 0. absent; 1. present
7. Eyes, posterior peduncle (Campos & Grazia 2006, char. 5): 0. absent; 1. present
8. Eyes, posterior longitudinal carena (Campos & Grazia 2006, char. 6): 0. absent; 1. present
9. Interocular distance, relative to width of eyes (Campos & Grazia 2006, char. 9): 0. >2x longer; 1. 1.5x longer
10. Eyes, posterior margin, distance from head base relative to length of the eyes (Campos & Grazia 2006, char. 10): 0. subequal; 1. no longer than 1/2
11. Eyes, position relative to transversal dorsal plane of head (Campos & Grazia 2006, char. 11): 0. lower; 1. subequal; 2. higher
12. Ocelli, distance to posterior margin of eyes relative to diameter of ocellus (Campos & Grazia 2006, char. 8): 0. shorter; 1. equal to or longer
13. Bucculae, anterior apex, projection: 0. absent; 1 present
14. Rostrum, labium insertion relative to the anterior margin of the eyes (Campos & Grazia 2006, char. 12): 0. posteriorly; 1. anteriorly
15. Rostrum, pseudosegment between segments I and II (Campos & Grazia 2006, char. 14): 0. absent; 1. present
16. Rostrum, apex of segment II relative to coxae (Campos & Grazia 2006, char. 15): 0. at least reaching mesocoxae; 1. between procoxae and mesocoxae
17. Rostrum, apex of segment IV relative to urosternite VII (Campos & Grazia 2006, char. 16–mod): 0. does not reach anterior margin; 1. surpasses anterior margin

18. Antennae, segment I, width relative to length (Campos & Grazia 2006, char. 18):
0. 1/3; 1. 1/5; 2. 1/2
19. Antennae, segments II and III, small tubercles (Campos & Grazia 2006, char. 19):
0. absent; 1. present
20. Antennae, V segment, color relative to segments I-IV: 0. concolorous; 1. base yellow; 2. concolorous to apex of segment IV
21. Pronotum, width relative to length: 0. >2x wider than long; 1. <2x wider than long
22. Pronotum, antero-lateral angle, projection: 0. absent; 1. present
23. Pronotum, antero-lateral angle, projection, direction: 0. anteriorly; 1. laterad
24. Pronotum, antero-lateral angle, position of apex relative to center of the eyes: 0. behind; 1. subparallel
25. Pronotum, scars, tubercles (Campos & Grazia 2006, char. 21): 0. absent; 1. present
26. Pronotum, antero-lateral margins, shape (Garbellotto & Campos 2013, char. 19):
0. subrectilinear; 1. sinuous
27. Mesopleural evaporatorium, relative to mesopleura (Campos & Grazia 2006, char. 22–mod): 0. almost reaches the upper half of mesopleura; 1. straight line close to the limit of mesopleura
28. Metapleural evaporatorium, length relative to ostiolar plate (Campos & Grazia 2006, char. 22–mod): 0. subequal; 1. 1/2; 2. 1/3
29. Peritreme, length relative to ostiolar plate: 0. 2/3; 1. 1/4
30. Metasternum, median carina (Campos & Grazia 2006, char. 26): 0. absent; 1. present
31. Scutellum, post-frenal length relative to whole length: 0. 2/3 shorter; 1. 1/2 shorter; 2. equal; 3. 1.5x longer
32. Scutellum, length relative to transversal imaginary line connecting apex of coria (Campos & Grazia 2006, char. 27): 0. shorter; 1. subequal or longer
33. Corium, length relative to segment VI of connexivum: 0. reaches middle of segment VI; 1. surpasses segment VI
34. Corium, yellow macula laterad to radial vein: 0. absent; 1. present
35. Anterior femora, spines (Campos & Grazia 2006, char. 28): 0. absent; 1. present
36. Hind tarsi, dorsum of segment III in males, shape (Campos & Grazia 2006, char. 29): 0. convex; 1. flattened; 2. sulcate

37. Hind tarsi, dorsum of segment III in females, shape (Campos & Grazia 2006, char. 30): 0. convex; 1. flattened; 2. sulcate
38. Pronotum, pre-humeral angles half, slant relative to post-humeral angles half (Campos & Grazia 2006, char. 20): 0. contiguous; 1. downward slope
39. Connexivum, contrasting color: 0. absent; 1. present
40. Connexivum, contrasting color, extension: 0. totally colored; 1. median macula; 2. anterior and posterior maculae
41. Abdomen, ventral median sulcus (Campos & Grazia 2006, char. 32): 0. absent; 1. present
42. Abdominal sternite II, spiracles, position relative to posterior margin of metapleura: 0. completely covered; 1. partially exposed; 2. completely exposed
43. Abdominal sternite VII in males, anterior median margin, constriction: 0. absent; 1. present
44. Abdominal sternite VII in females, anterior median margin: 0. subrectilinear; 1. convex
45. Abdominal sternite VII in females, posterior margin in posterior view: 0. subrectilinear; 1. sinuous
46. Tricobothria of abdominal segments IV e V, distance relative to diameter of respective spiracles (Campos & Grazia 2006, char. 33): 0. equal; 1. at least 2x longer
47. Dorsal rim of pygophore, basal projection (Garbellotto & Campos 2013, char. 35–mod): 0. absent; 1. present
48. Dorsal rim of pygophore, basal projection, shape (Garbellotto & Campos 2013, char. 35–mod): 0. anteriorly directed spines; 1. lobular
49. Ventral rim of pygophore, conical projection (Campos & Grazia 2006, char. 36): 0. absent; 1. present
50. Postero-lateral angles of pygophore, projection on dorsal surface (Campos & Grazia 2006, char. 35–mod): 0. absent; 1. present
51. Head of parameres, position relative to proctiger (Garbellotto & Campos 2013, char. 47): 0. ventrally; 1. laterad
52. Proctiger, postanal projection (Campos & Grazia 2006, char. 38): 0. absent; 1. present
53. Proctiger, anal opening, position relative to inferior layer of ventral rim (Garbellotto & Campos 2013, char. 43): 0. surpassing; 1. not surpassing
54. Laterotergites 8, angle relative to antero-posterior axis of body: 0. <45°; 1. >45°

55. Laterotergites 8, spiracles relative to posterior margin of abdominal segment VII: 0. completely visible; 1. partially covered
56. Laterotergites 8, spiracles, placement relative to external angle of gonocoxites 8 (Garbellotto & Campos 2013, char. 53): 0. posteriorly; 1. laterad
57. Gonocoxites 8, shape, accessory plate: 0. absent; 1. present
58. Gonocoxites 8, interior angle of posterior rim, small tooth-like projection: 0. absent; 1. present
59. Gonocoxites 8, sutural margin, length relative to length of exposed part of gonocoxites 9: 0. not longer than 0.5x; 1. subequal; 2. at least 1.5x longer
60. Gonocoxites 8, posterior rim, projection over laterotergites 9 (Garbellotto & Campos 2013, char. 49): 0. absent; 1. present
61. Laterotergites 9, apices (Campos & Grazia 2006, char. 44–mod): 0. separate; 1. contiguous
62. Gonocoxites 9, exposure relative to apex of gonocoxites 8 (Campos & Grazia 2006, char. 43): 0. exposed; 1. covered
63. Gonocoxites 9, median carina (Campos & Grazia 2006, char. 42): 0. absent; 1. present
64. Segment X, exposure relative to laterotergites 9 (Campos & Grazia 2006, char. 46): 0. exposed; 1. covered
65. Vesica, basal projections: 0. absent; 1. present
66. Vesica, median third, width relative to apical third: 0. subequal; 1. almost 2x wider
67. Vesica, lateral projections: 0. absent; 1. present
68. Vesica, ventral projection: 0. absent; 1. present
69. Vesica, dorsal tooth-like projections: 0. absent; 1. present
70. Vesica, bending (Campos & Grazia 2006, char. 60): 0. absent; 1. present
71. *Ductus seminis distalis*, length relative to length of phallosome (Campos & Grazia 2006, char. 58): 0. subequal; 1. 1.5x longer
72. *Ductus seminis distalis*, longitudinal axis, position (Campos & Grazia 2006, char. 61): 0. parallel to longitudinal plane; 1. helicoid
73. *Ductus seminis distalis*, apical opening, shape (Campos & Grazia 2006, char. 63): 0. circular; 1. gutter-like
74. Phallosome, lateral spatular projections (Garbellotto & Campos 2013, char. 79): 0. absent; 1. present

75. Laterotergites 9, fusion with gonocoxites 9 (Campos & Grazia 2006, char. 45–mod): 0. absent; 1. present
76. Gonocoxites 8, infolding: 0. absent; 1. present
77. Gonapophyses 9, thickening (Garbellotto & Campos 2013, char. 66): 0. absent; 1. present
78. Gonapophyses 9, thickening, extension relative to total extension (Garbellotto & Campos 2013, char. 67–mod): 0. 1/3; 1. 1/2; 2. >1/2
79. *Ductus receptaculi*, diameter anterior to vesicular area relative to external wall of vesicular area (Campos & Grazia 2006, char. 49): 0. 3x thinner; 1. subequal
80. *Ductus receptaculi*, diameter anterior to pars intermedialis: 0. widening; 1. equal
81. *Ductus receptaculi*, proximal to pars intermedialis, folding: 0. absent; 1. present
82. Vesicular area, basal fourth of median duct, diameter relative to median duct (Campos & Grazia 2006, char. 50): 0. subequal; 1. 2x wider
83. Vesicular area, length relative to combined length of pars intermedialis and capsula seminalis (Campos & Grazia 2006, char. 52): 0. 3x longer; 1. 2x longer
84. Pars intermedialis, shape (Campos & Grazia 2006, char. 53): 0. barrel-like; 1. cylindrical
85. Capsula seminalis, shape (Campos & Grazia 2006, char. 55–mod): 0. hemispherical; 1. pylon-like
86. Capsula seminalis, projections, insertion (Campos & Grazia 2006, char. 56): 0. basal; 1. apical
87. Capsula seminalis, projections, width relative to width of capsula seminalis (Campos & Grazia 2006, char. 57): 0. subequal; 1. 1/3

APPENDIX S2

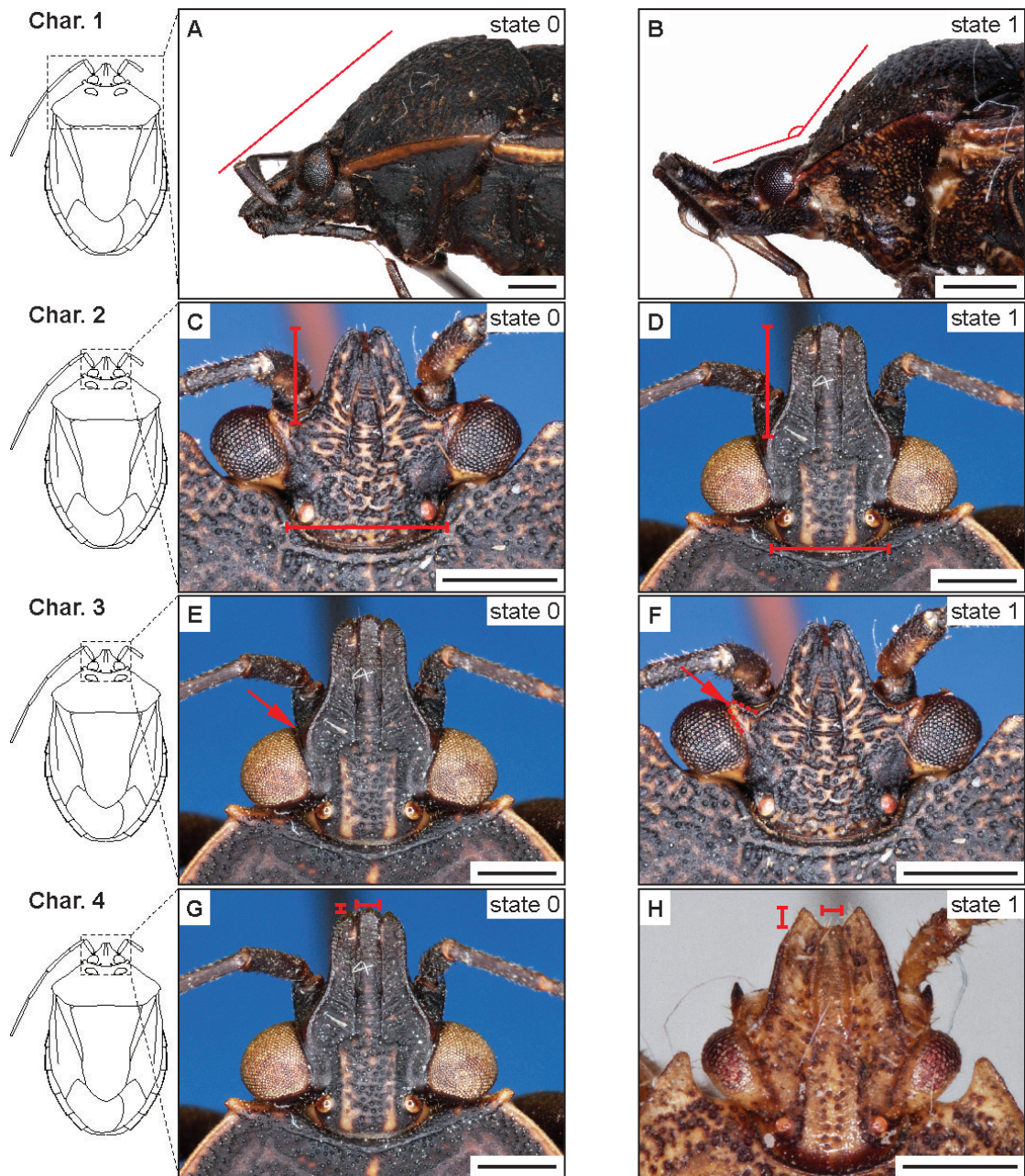


Fig S1. Characters 1–4: **A**, *Ochlerus cinctus*; **B**, *Phereclus pluto*; **C**, **F**, *Macropygium reticulare*; **D**, **E**, **G**, sp. 01; **H**, *Adoxoplatys willineri*. Scale bars: 1 mm

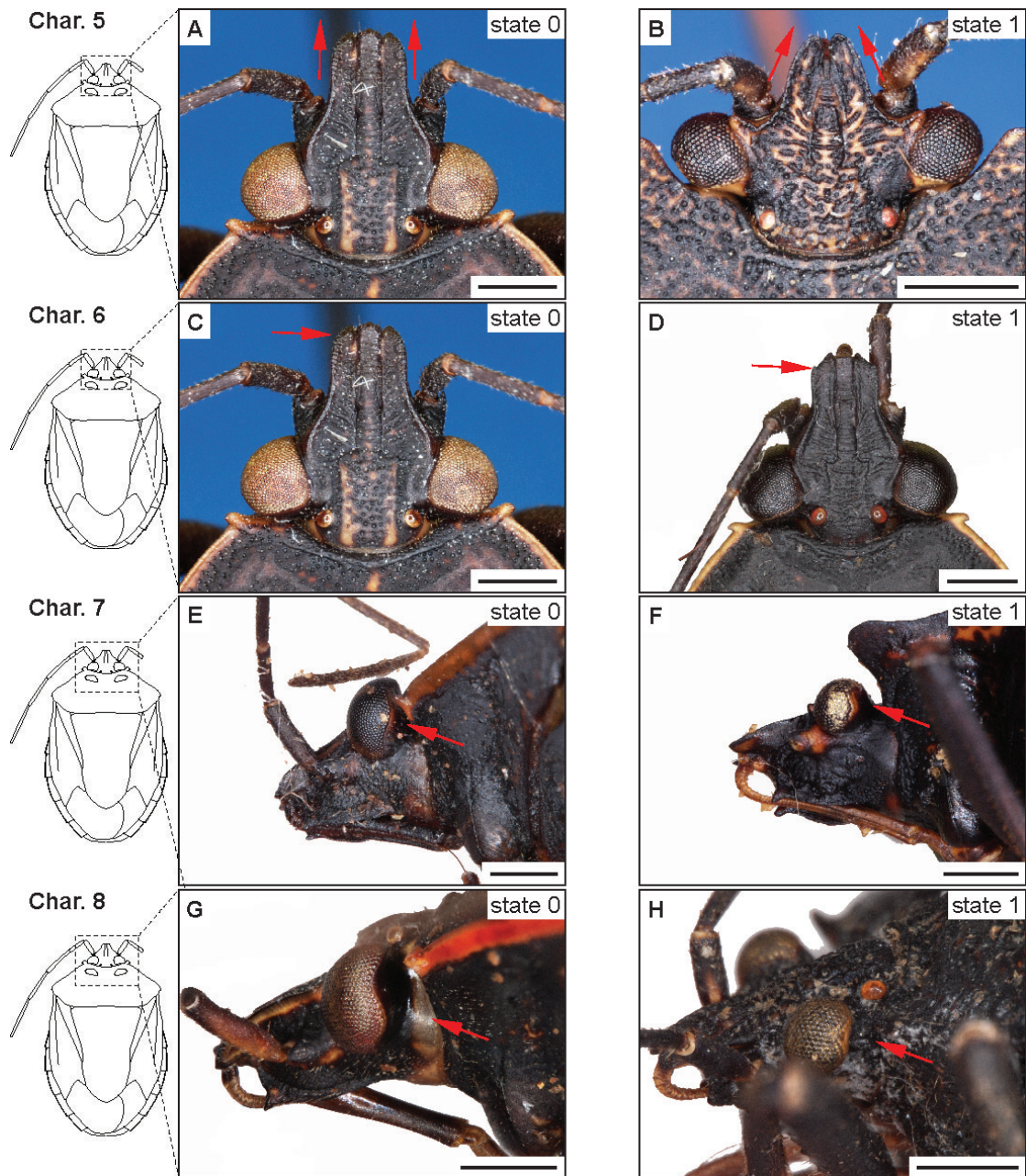


Fig S2. Characters 5–8: **A**, **C**, sp. 01; **B**, *Macropygium reticulare*; **D**, *Schraderiellus hughesae*; **E**, **G**, *Ochlerus signoreti*; **F**, *Alatethus rufitarsis*; **H**, *Paralincus silvae*. Scale bars: 1 mm

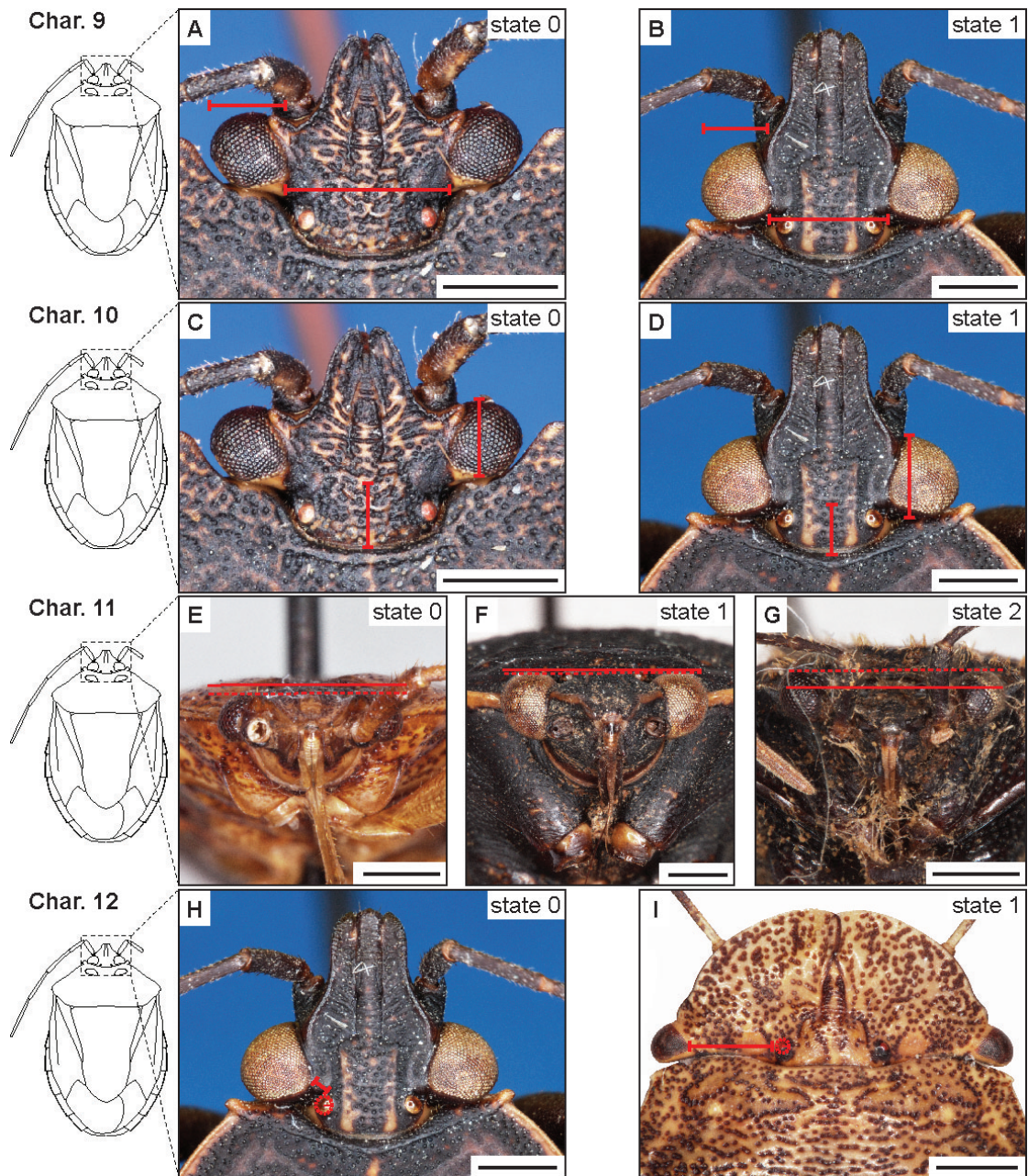


Fig S3. Characters 9–12: **A, C**, *Macropygium reticulare*; **B, D, H**, sp. 01; **E**, *Adoxoplatys willineri*; **F**, *Ochlerus cotylophorus*; **G**, *Eritrachys bituberculata*; **I**, *Discocephala marmorea*. Scale bars: 1 mm

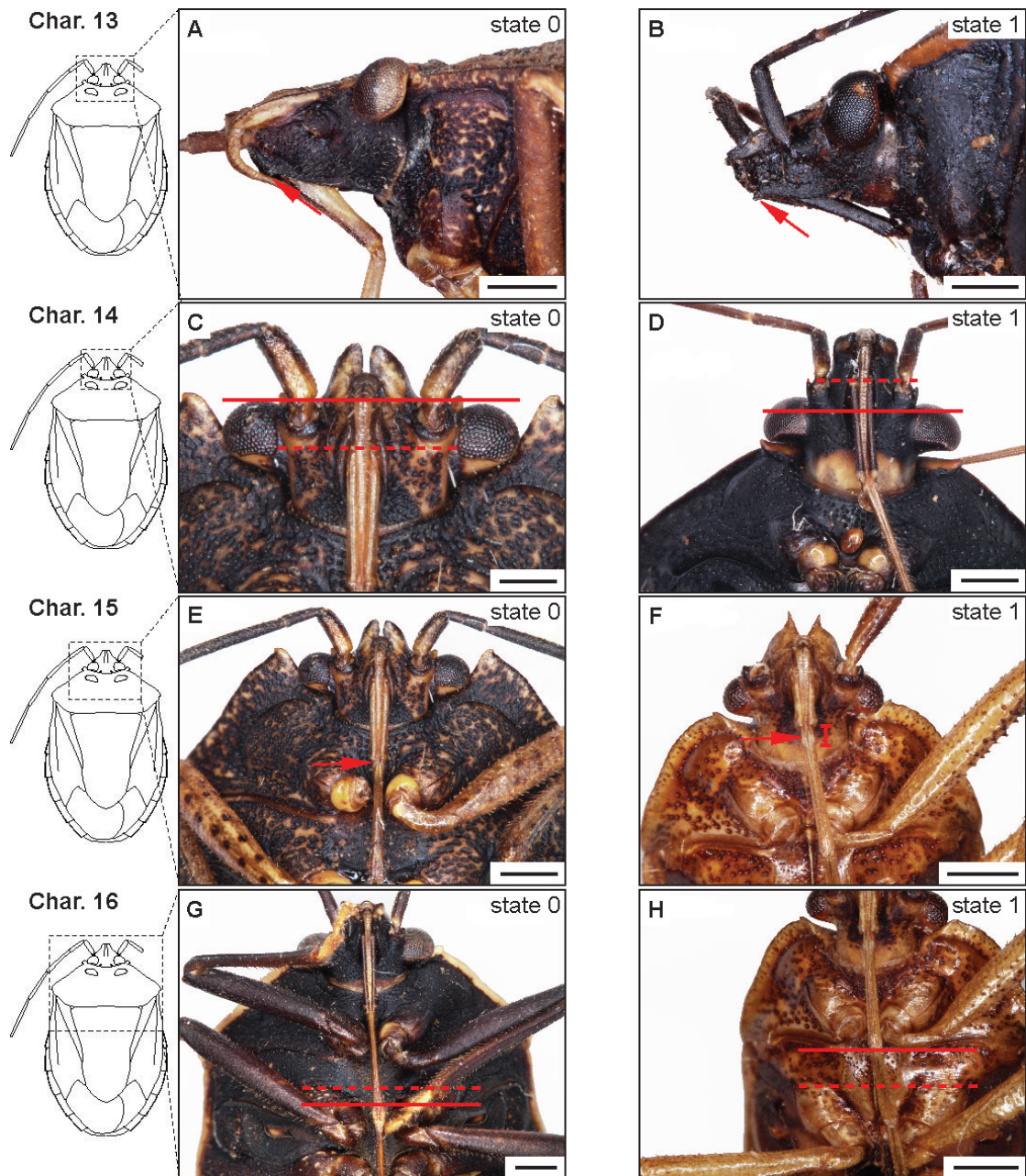


Fig S4. Characters 13–16: **A**, *Orbatina fuligina*; **B**, *Ochlerus cinctus*; **C**, **E**, *Macropygium reticulare*; **D**, *Ochlerus handlirschi*; **F**, **H**, *Adoxoplatys willineri*; **G**, *Ochlerus rusticus*. Scale bars: 1 mm

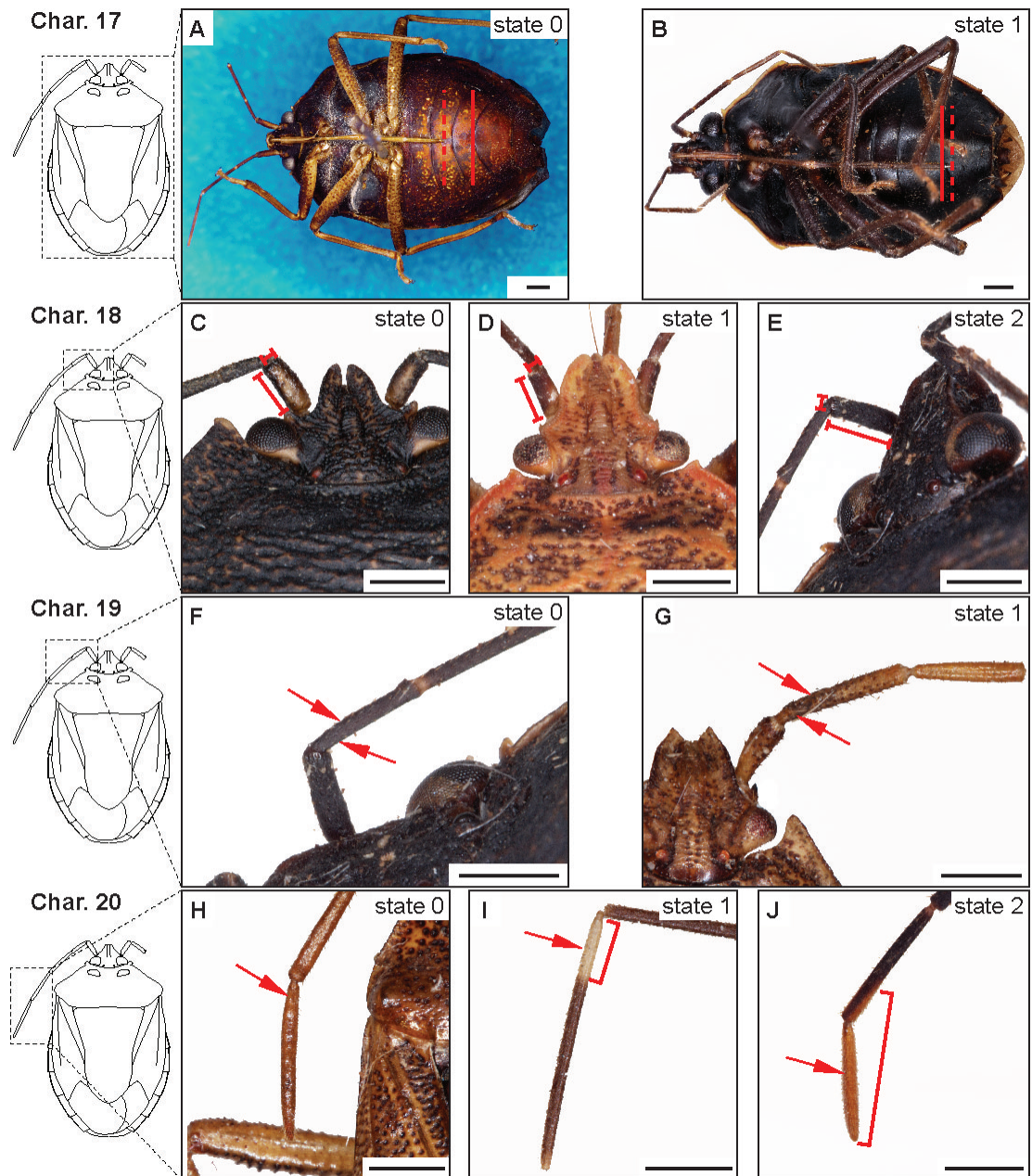


Fig S5. Characters 17–20: **A**, sp. 04; **B**, *Schraderiellus cinctus*; **C**, *Macropygium reticulare*; **D**, *Cromata pensa*; **E**, **F**, *Ochlerus cinctus*; **G**, **H**, *Adoxoplatys willineri*; **I**, *Ochlerus rusticus*; **J**, *Paralincus silvae*. Scale bars: 1 mm

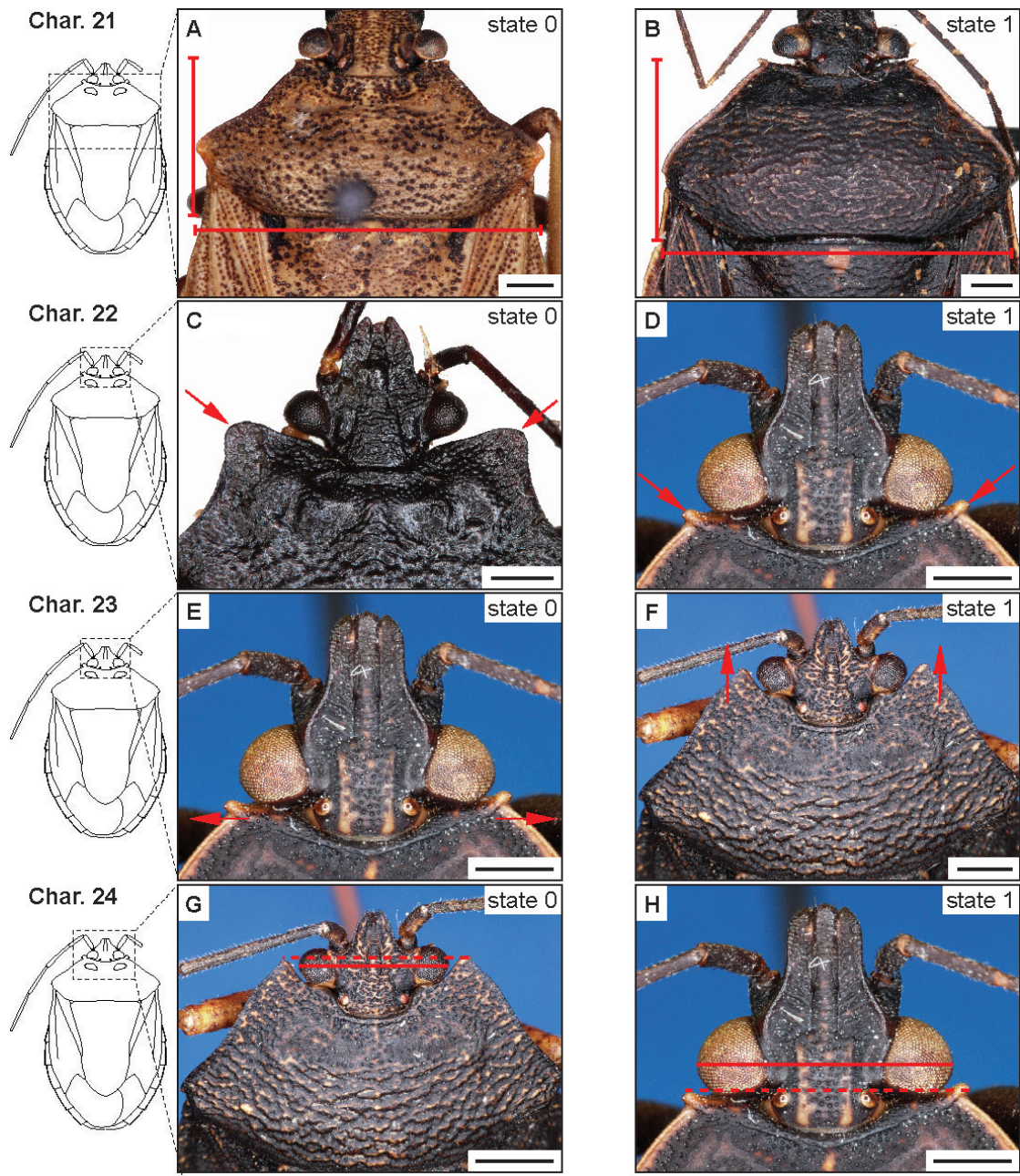


Fig S6. Characters 21–24: **A**, *Orbatina fuligina*; **B**, *Ochlerus cinctus*; **C**, *Alatethus rufitarsis*; **D**, **E**, **H**, sp. 01; **F**, **G**, *Macropygium reticulare*. Scale bars: 1 mm

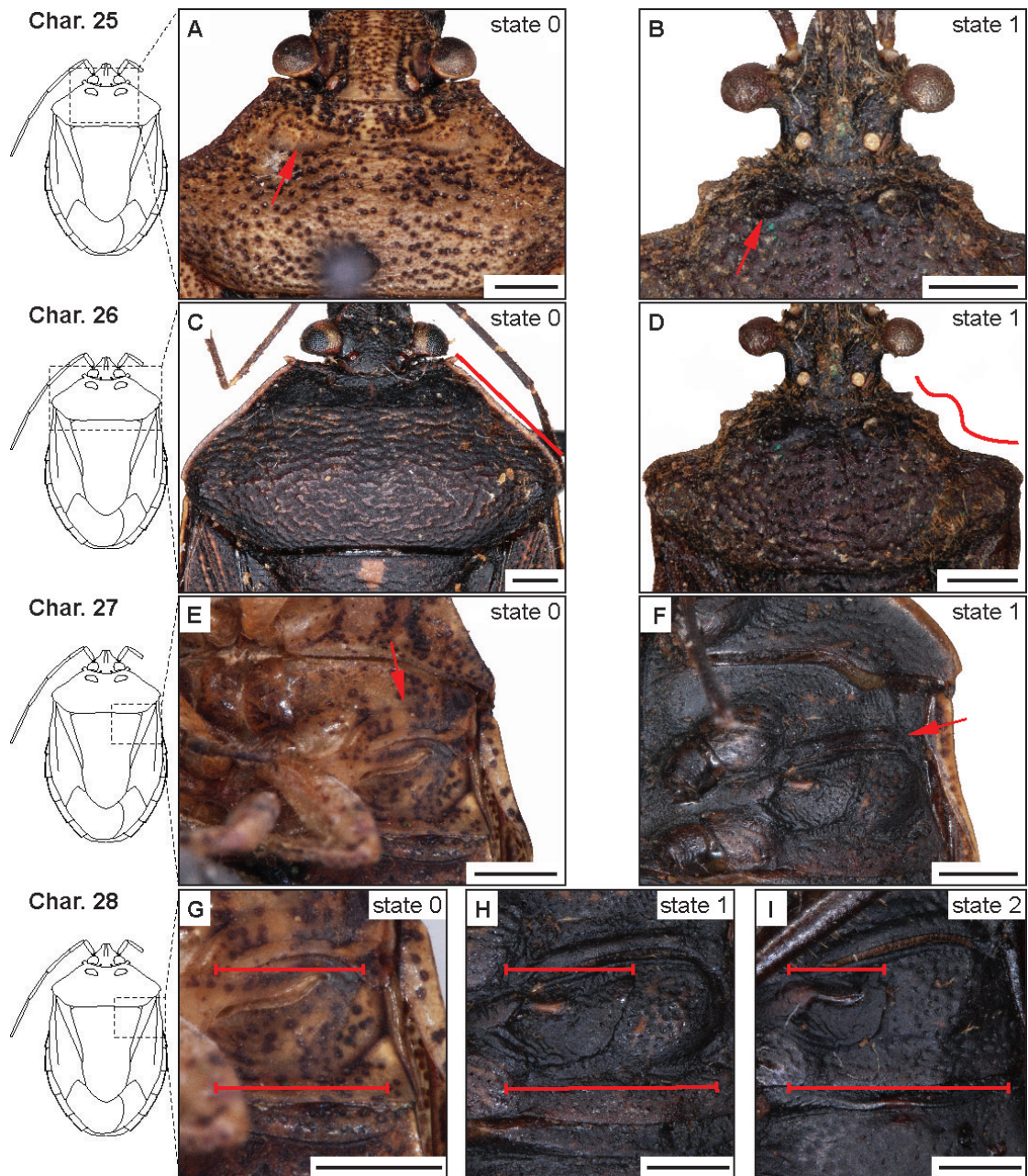


Fig S7. Characters 25–28: **A**, *Orbatina fuligina*; **B**, **D**, *Eritrachys bituberculata*; **C**, **F**, **H**, *Ochlerus cinctus*; **E**, **G**, *Discocephala marmorea*; **I**, *Ochlerus handlirschi*. Scale bars: 1 mm

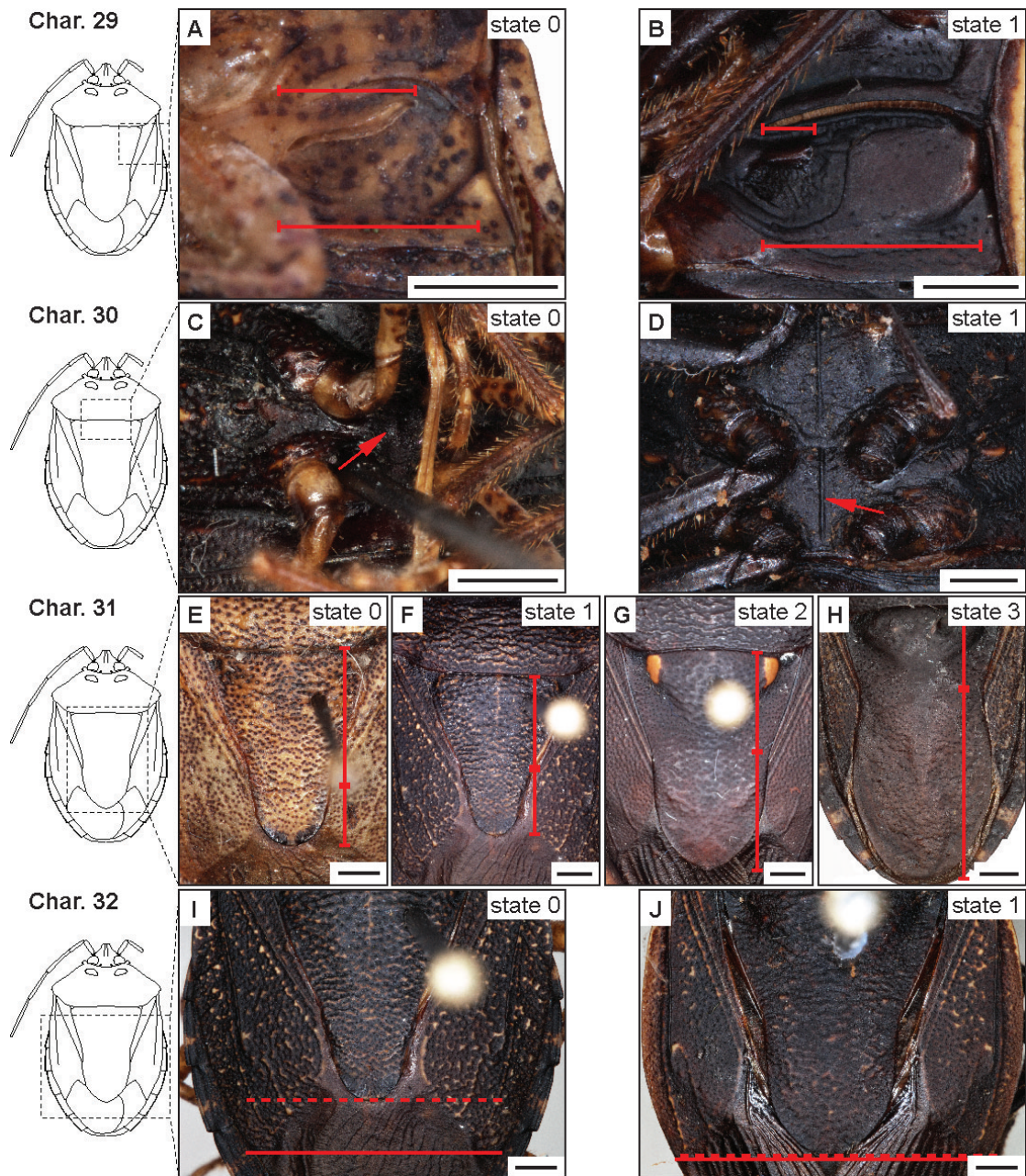


Fig S8. Characters 29–32: **A**, *Schraderiellus hughesae*; **B**, *Ochlerus bergrothi*; **C**, *Stalius scutellatus*; **D**, **J**, *Ochlerus cinctus*; **E**, *Discocephala marmorea*; **F**, **I**, *Macropygium reticulare*; **G**, sp. 01; **H**, *Moncus obscurus*. Scale bars: 1 mm

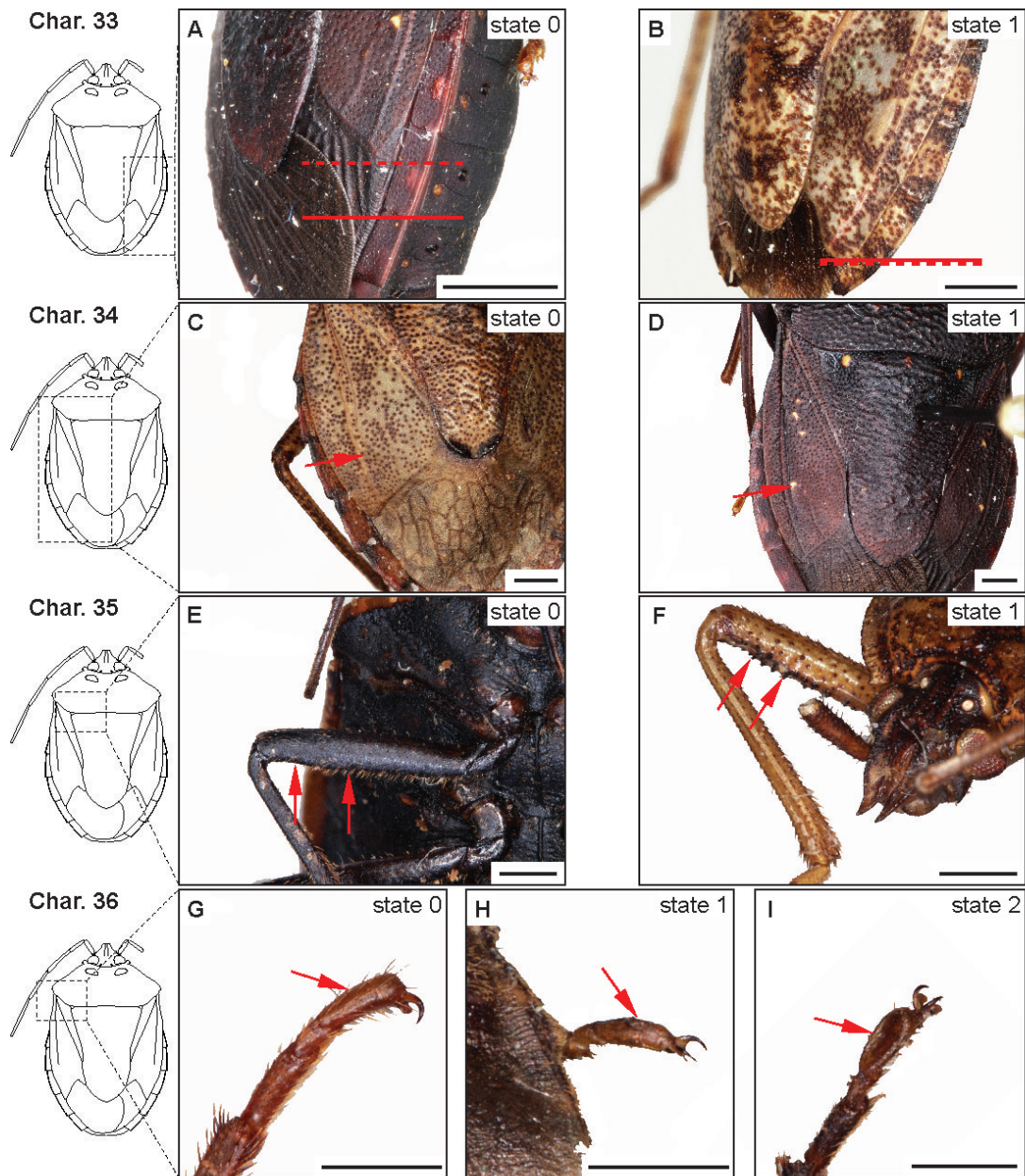


Fig S9. Characters 33–36: **A, D**, *Ochlerus tenuicornis*; **B**, *Discocephala marmorea*; **C**, *Antiteuchus mixtus*; **E, I**, *Ochlerus cinctus*; **F**, *Adoxoplatys willineri*; **G**, *Ochlerus signoreti*; **H**, *Eritrachys bituberculata*. Scale bars: 1 mm

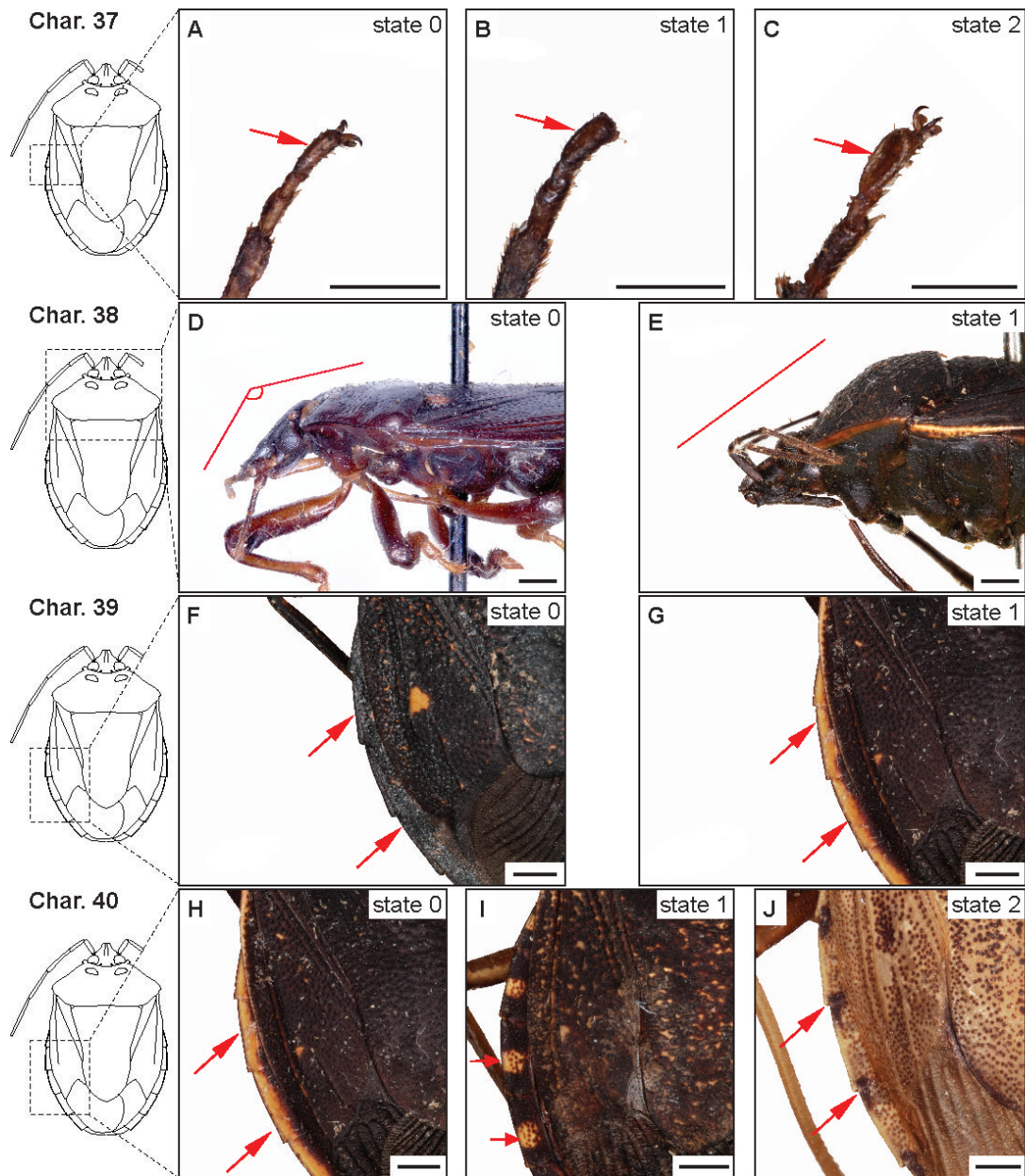


Fig S10. Characters 37–40: **A**, *Discocephala marmorea*; **B**, *Schaefferella incisa*; **C**, **E**, *Ochlerus cinctus* (female); **D**, *Neadoxoplatys saileri*; **F**, *Paralincus silvae*; **G**, **H**, sp. 01; **I**, *Ochlerus coriaceus*; **J**, *Orbatina fuligina*. Scale bars: 1 mm

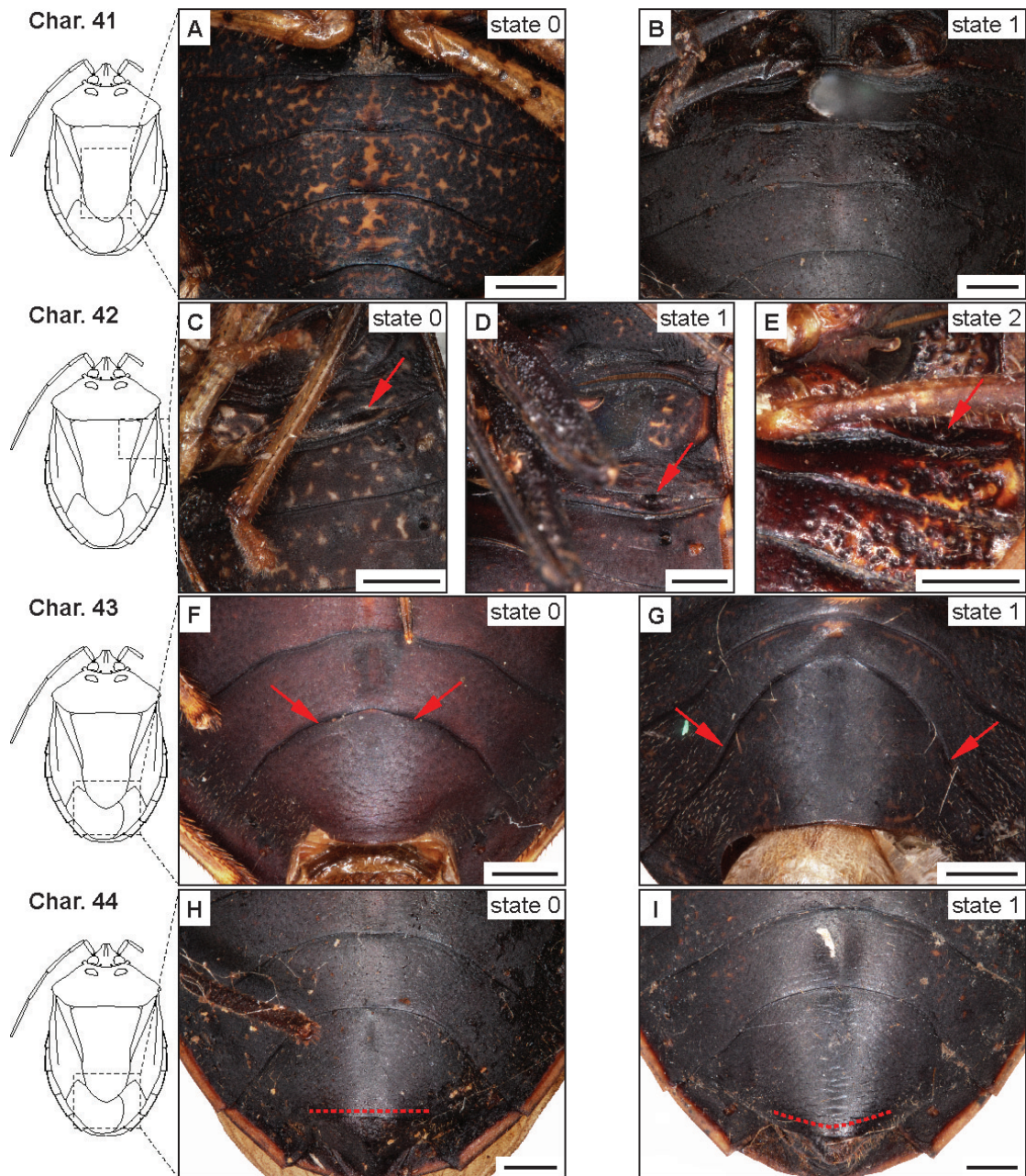


Fig S11. Characters 41–44: **A, G**, *Macropygium reticulare*; **B, H**, *Ochlerus cinctus*; **C**, *Ochlerus bergrothi*; **D**, sp. 06; **E**, *Eritrachys bituberculata*; **F**, *Ochlerus rusticus*; **I**, *Ochlerus cotylophorus*. Scale bars: 1 mm

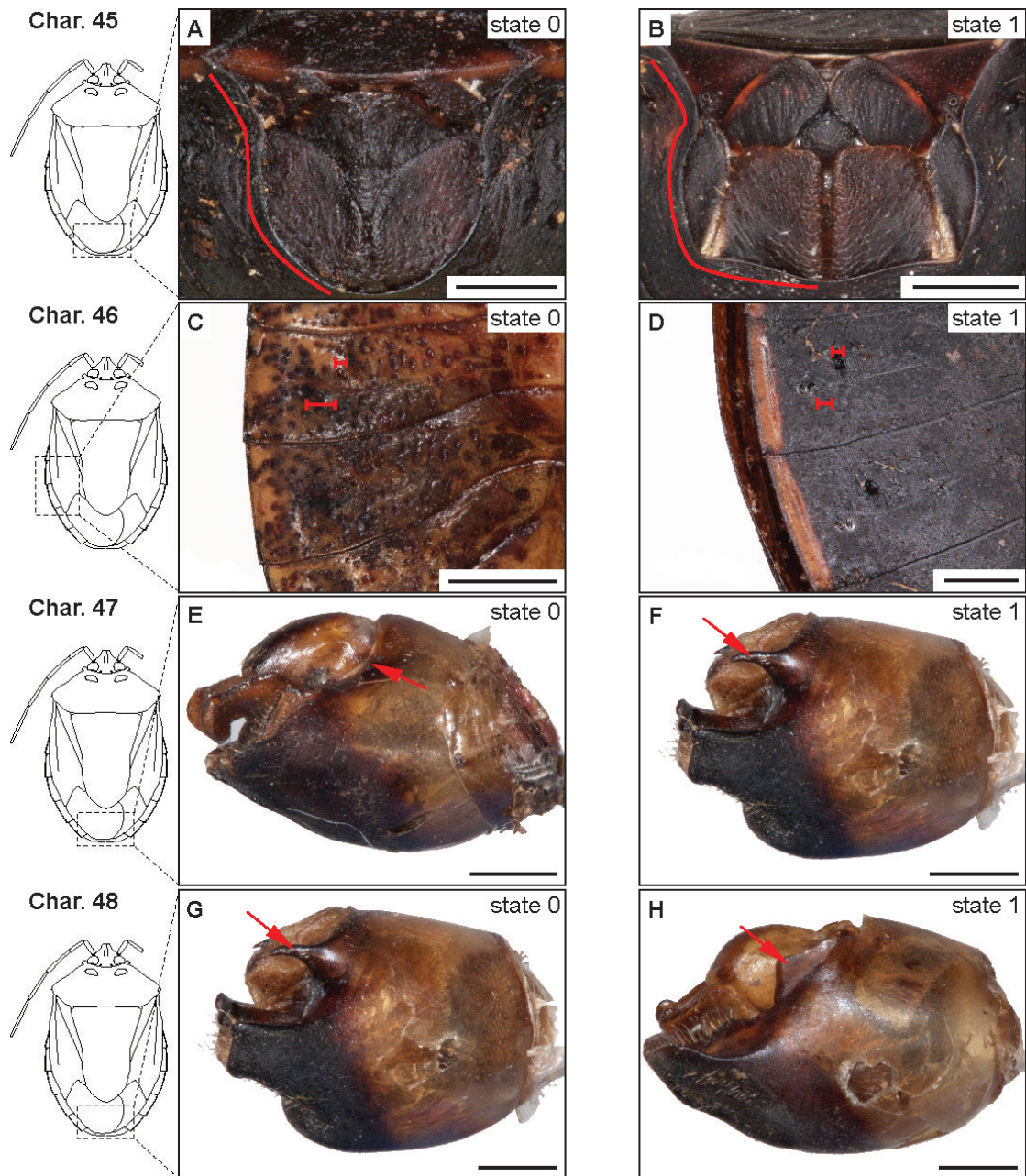


Fig S12. Characters 45–48: **A, D**, *Ochlerus cinctus*; **B**, *Ochlerus notatulus*; **C**, *Discocephala marmorea*; **E**, *Ochlerus incisulus*; **F, G**, *Ochlerus handlirschi*; **H**, *Ochlerus rusticus*. Scale bars: 1 mm

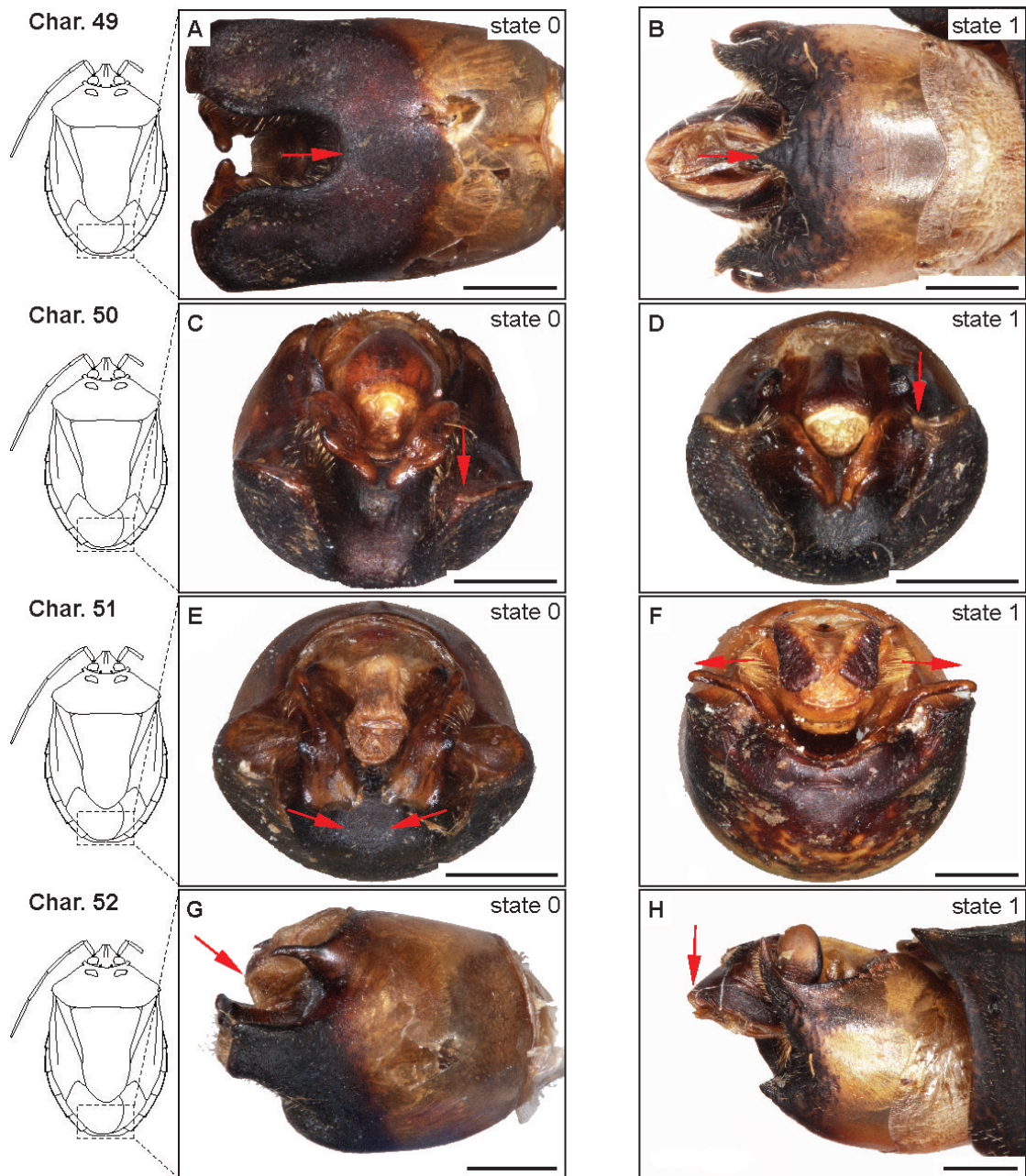


Fig S13. Characters 49–52: A, C, *sp. 02*; B, H, *Macropygium reticulare*; D, G, *Ochlerus signoreti*; E, *Ochlerus bergrothi*; F, *Ochlerus dentijugis willineri*; H, *Eritrachys bituberculata*. Scale bars: 1 mm

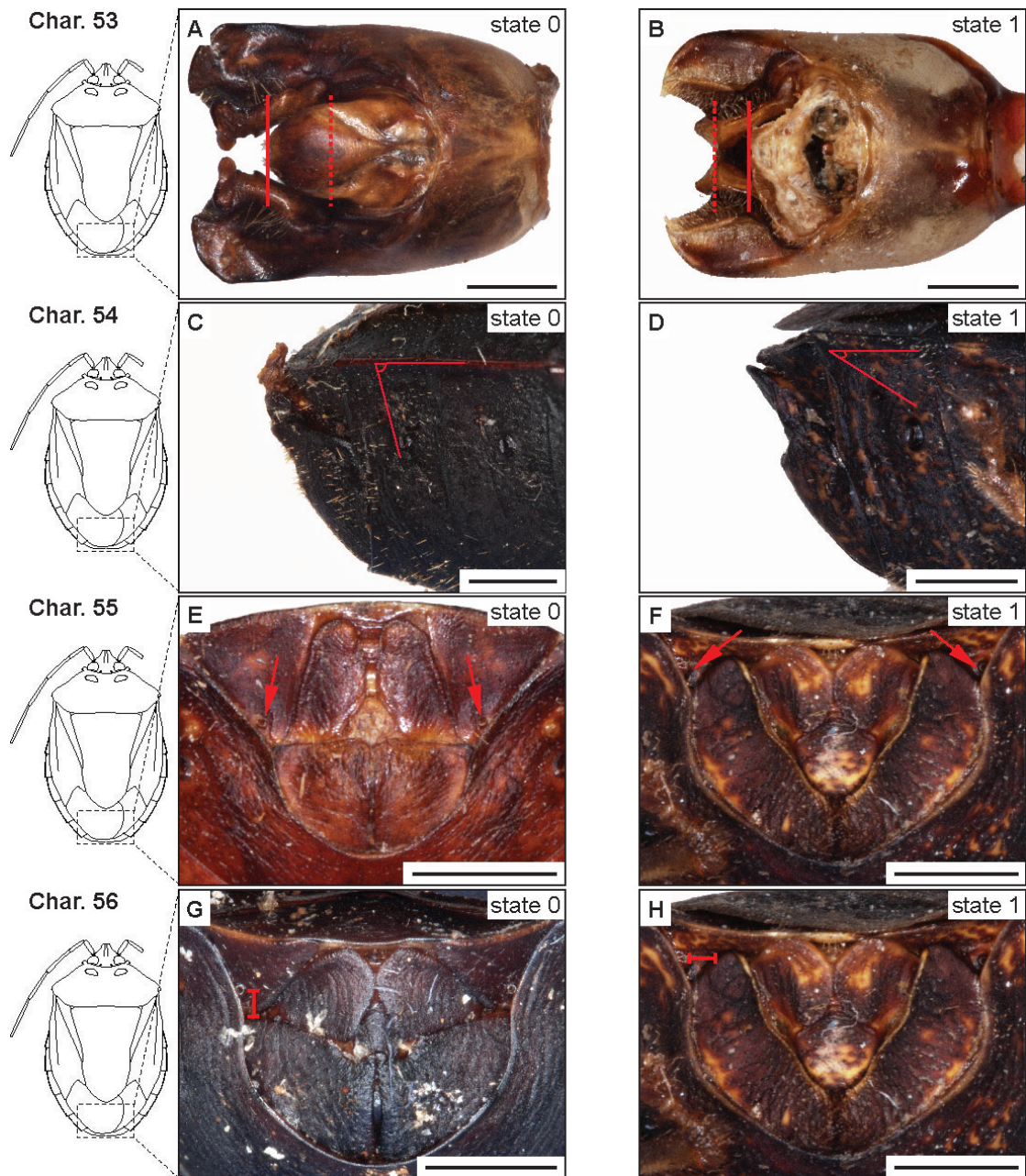


Fig S14. Characters 53–56: **A**, *Ochlerus bergrothi*; **B**, *Orbatina fuligina*; **C**, *Ochlerus handlirschi*; **D**, *Macropygium reticulare*; **E**, *Adoxoplatys willineri*; **F**, **H**, *Ochlerus coriaceus*; **G**, sp. 01. Scale bars: 1 mm

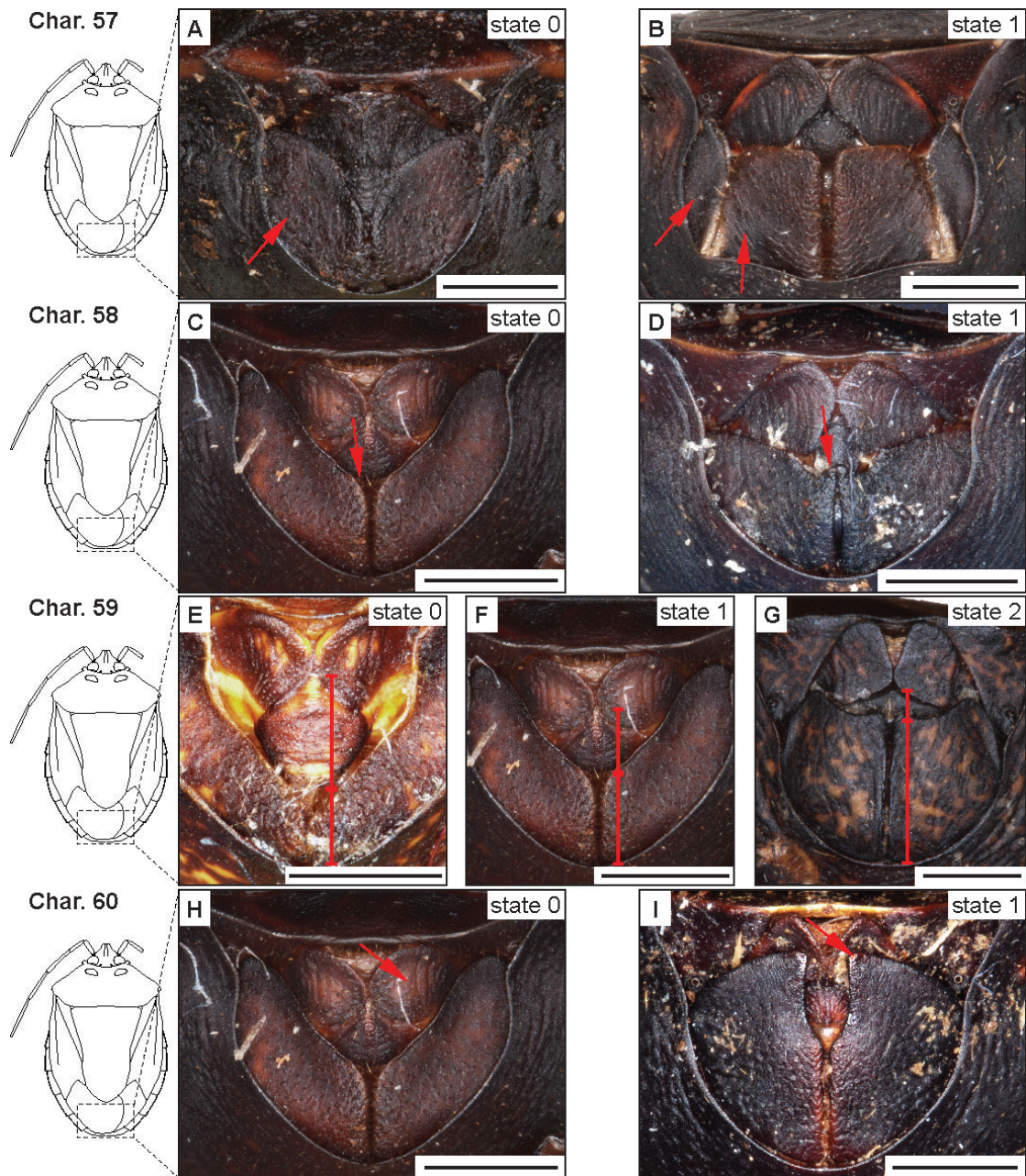


Fig S15. Characters 57–60: **A, D**, *Ochlerus cinctus*; **B**, *Ochlerus notatulus*; **C, F, H**, *Ochlerus profanus*; **E**, *Ochlerus coriaceus*; **F, H**, *Ochlerus coriaceus*; **G**, *Macropygium reticulare*; **I**, *Ochlerus handlirschi*. Scale bars: 1 mm

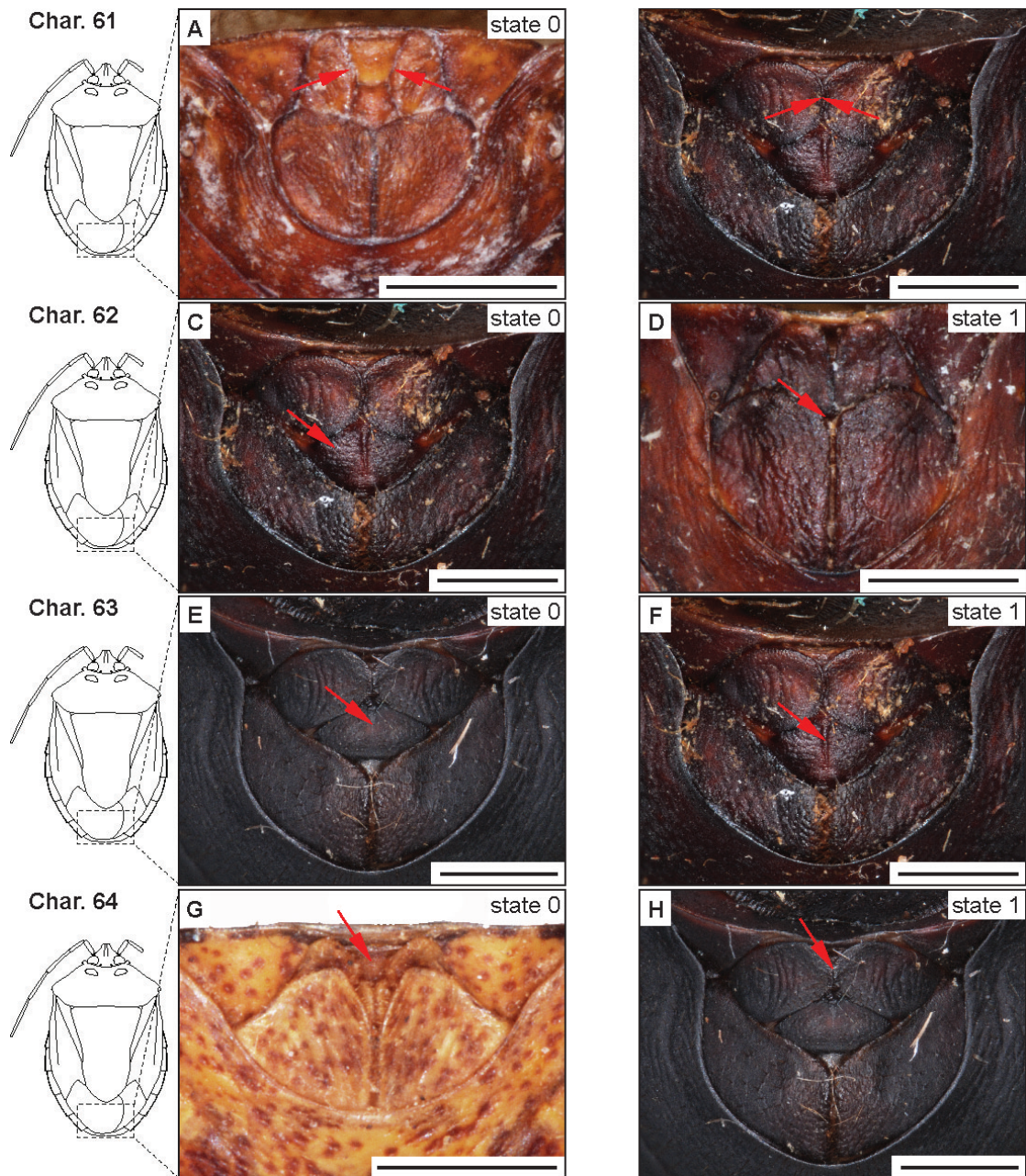


Fig S16. Characters 61–64: **A**, *Adoxoplatys willineri*; **B, C, F**, *Ochlerus cotylophorus*; **D**, *Phereclis pluto*; **E, H**, sp. 05; **G**, *Discocephala marmorea*. Scale bars: 1 mm

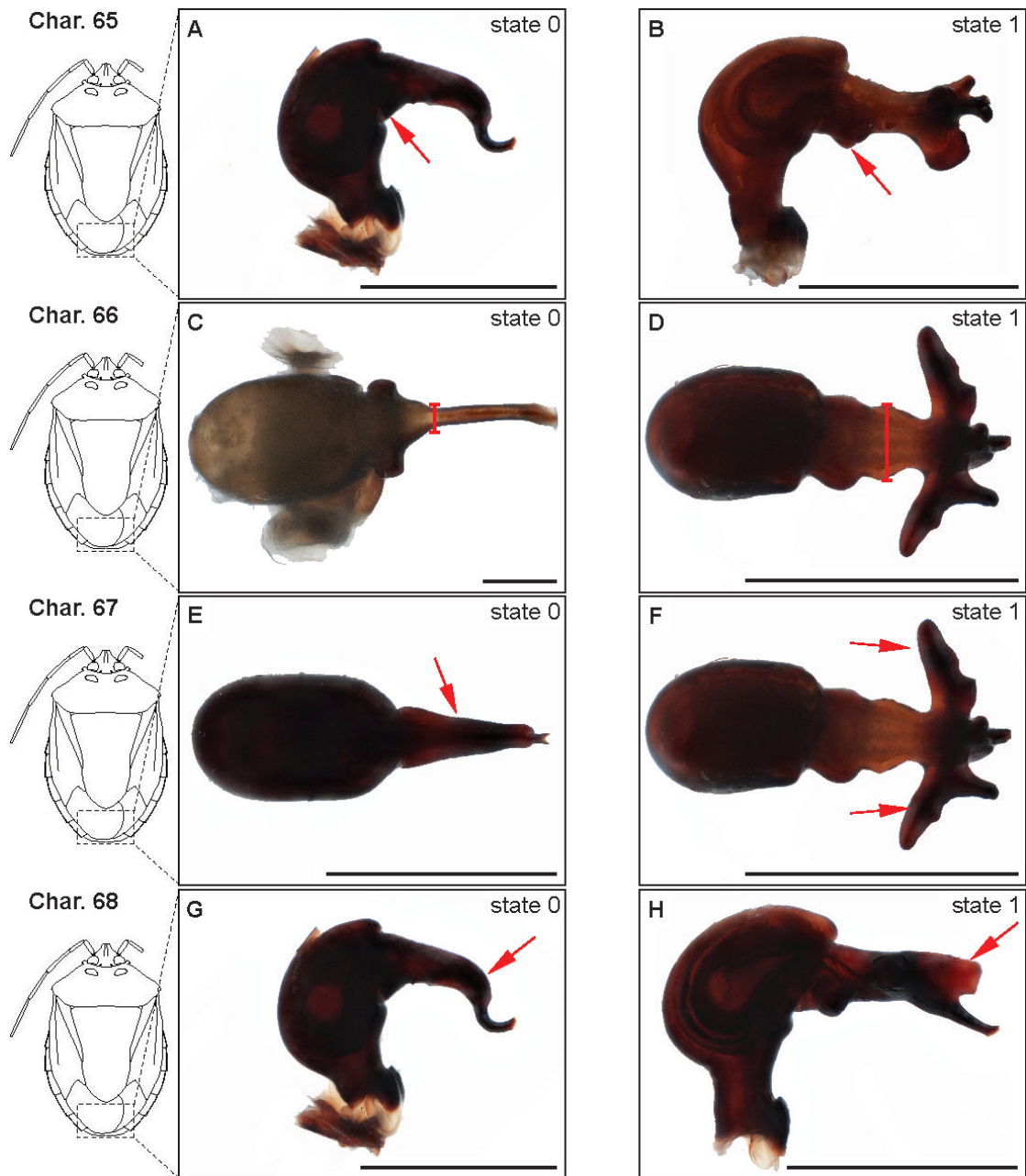


Fig S17. Characters 65–68: **A, E, G**, *Ochlerus tenuicornis*; **B, D, F**, sp. 02; **C**, *Ochlerus handlirschi*; **H**, sp. 04. Scale bars: 1 mm

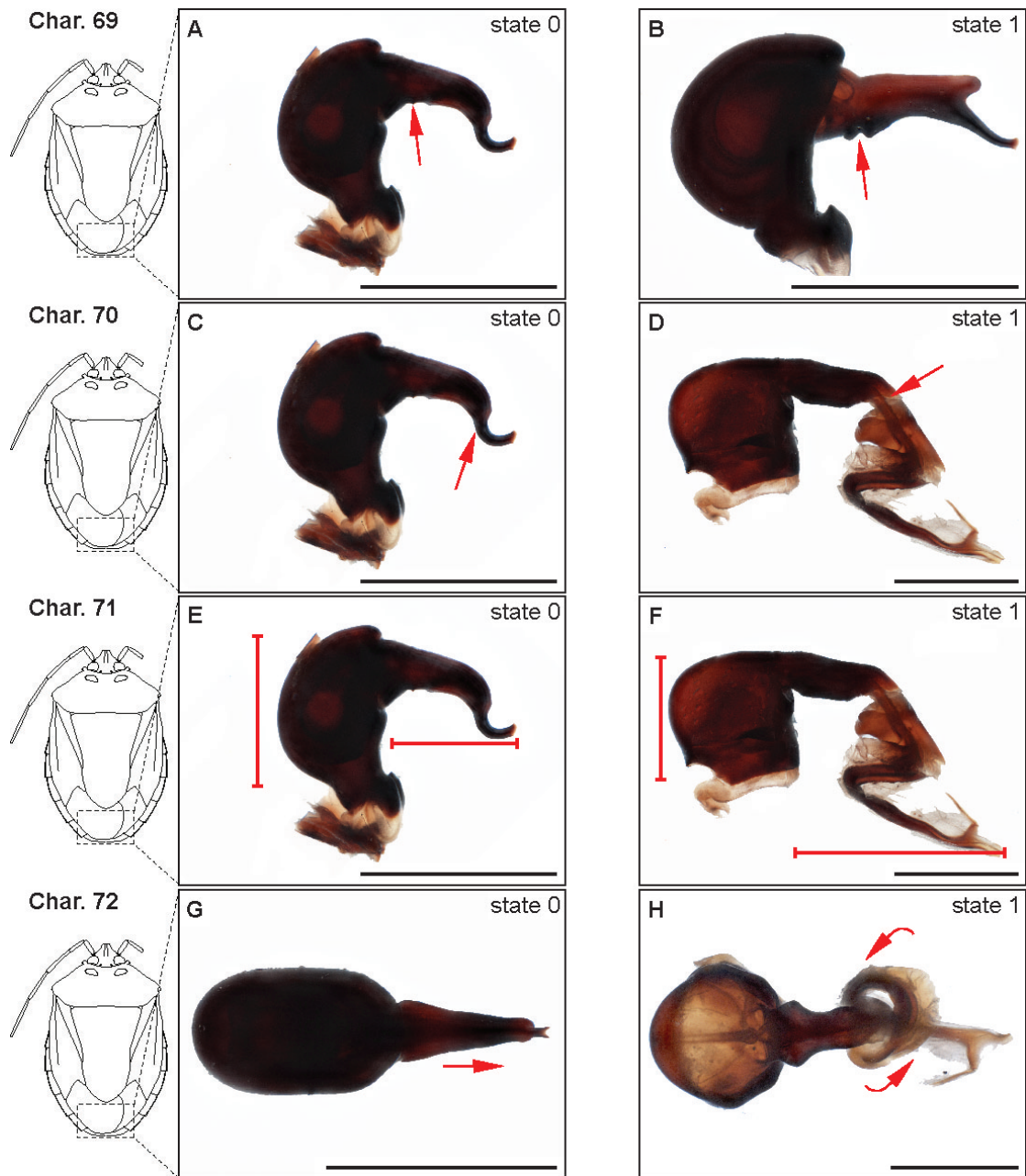


Fig S18. Characters 69–72: **A, C, E, G**, *Ochlerus tenuicornis*; **B**, *Ochlerus bergrothi*; **D, F, H**, *Macropygium reticulare*. Scale bars: 1 mm

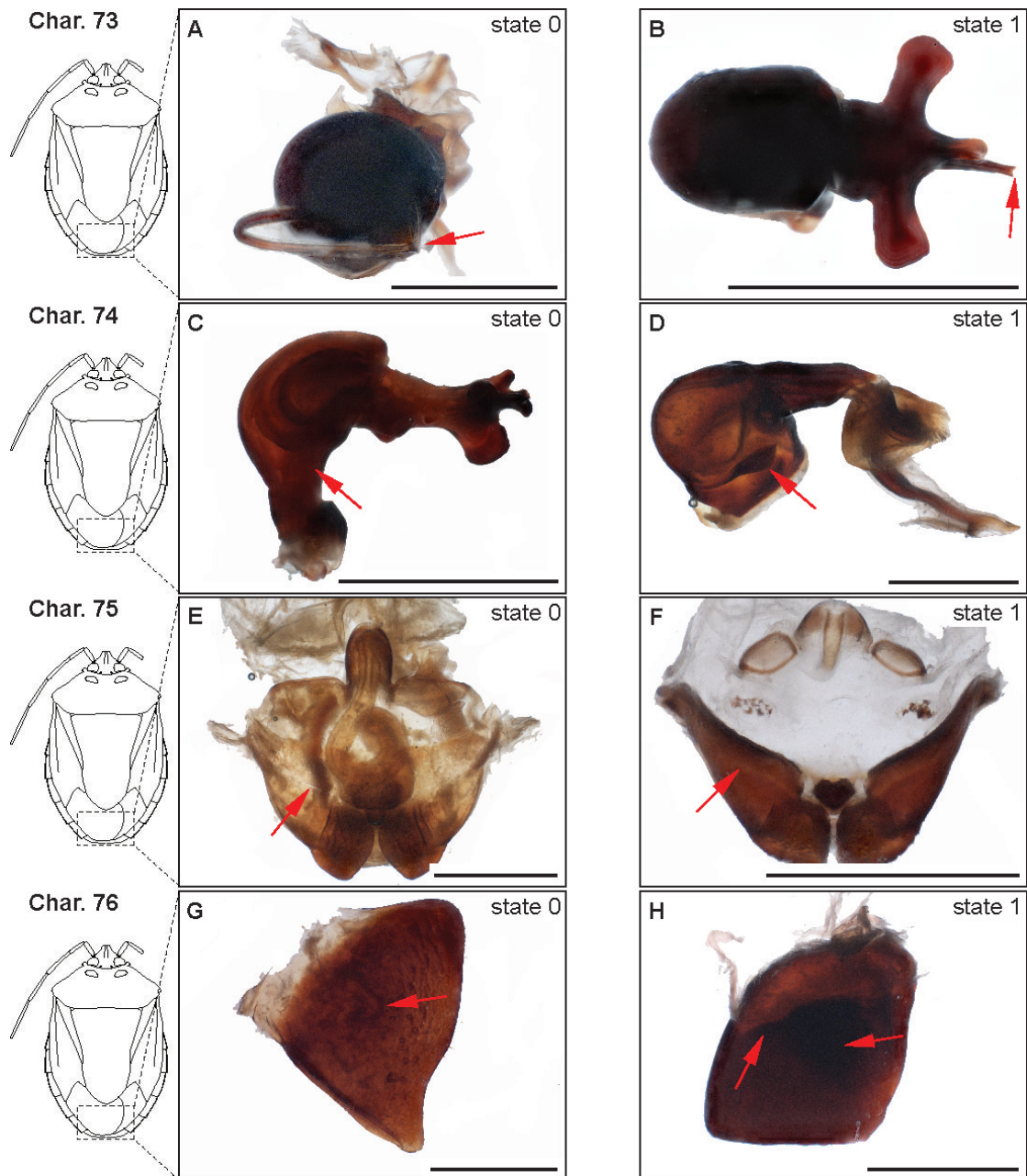


Fig S19. Characters 73–76: **A**, *Antiteuchus mixtus*; **B**, *Ochlerus rusticus*; **C**, sp. 02; **D**, *Macropygium reticulare*; **E**, **G**, *Ochlerus handlirschi*; **F**, *Stalius scutellatus*; **H**, *Schraderiellus hughesae*. Scale bars: 1 mm

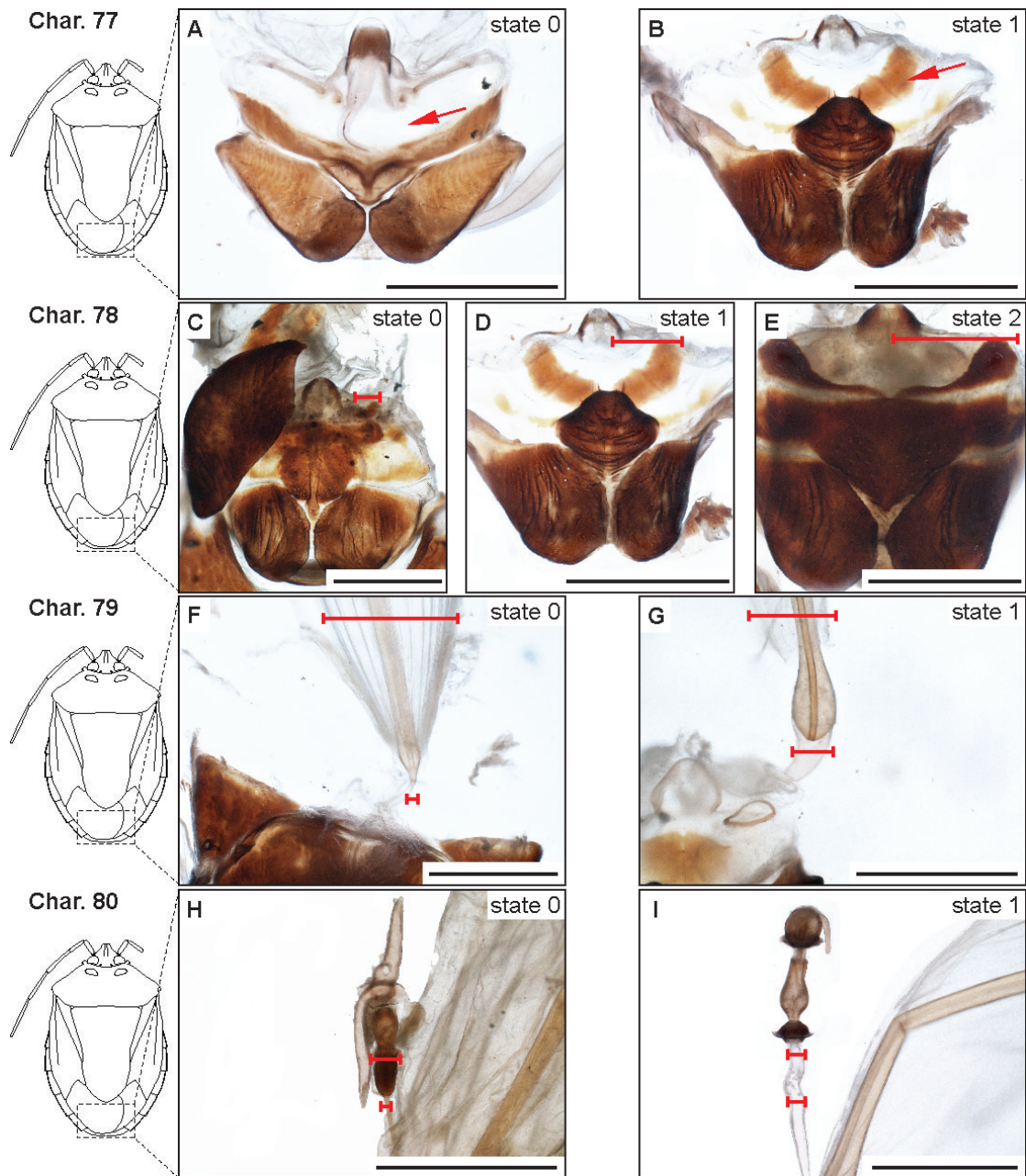


Fig S20. Characters 77–80: **A**, *Schraderiellus hughesae*; **B**, **D**, *Ochlerus coriaceus*; **C**, *Ochlerus cinctus*; **E**, *Ochlerus cotylophorus*; **F**, *Ochlerus stylulatus*; **G**, *Alatethus rufitarsis*; **H**, *Discocephala marmorea*; **I**, *Ochlerus notatulus*. Scale bars: 1 mm

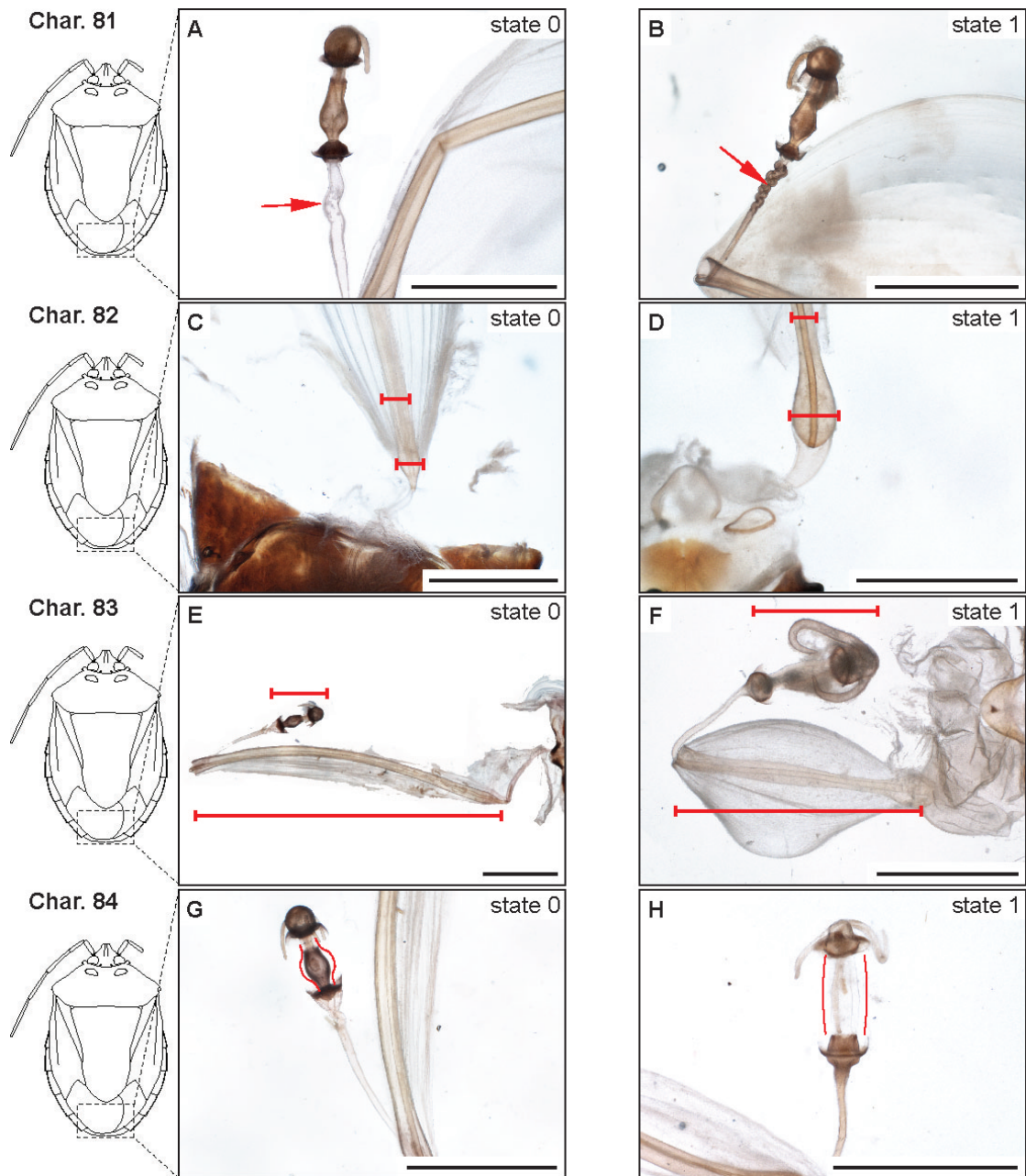


Fig S21. Characters 81–84: **A**, *Ochlerus notatulus*; **B**, sp. 02; **C**, *Ochlerus stylulatus*; **D**, *Alatethus rufitarsis*; **E**, **G**, *Ochlerus tenuicornis*; **F**, *Schaefferella incisa*; **H**, *Alatethus rufitarsis*. Scale bars: 1 mm

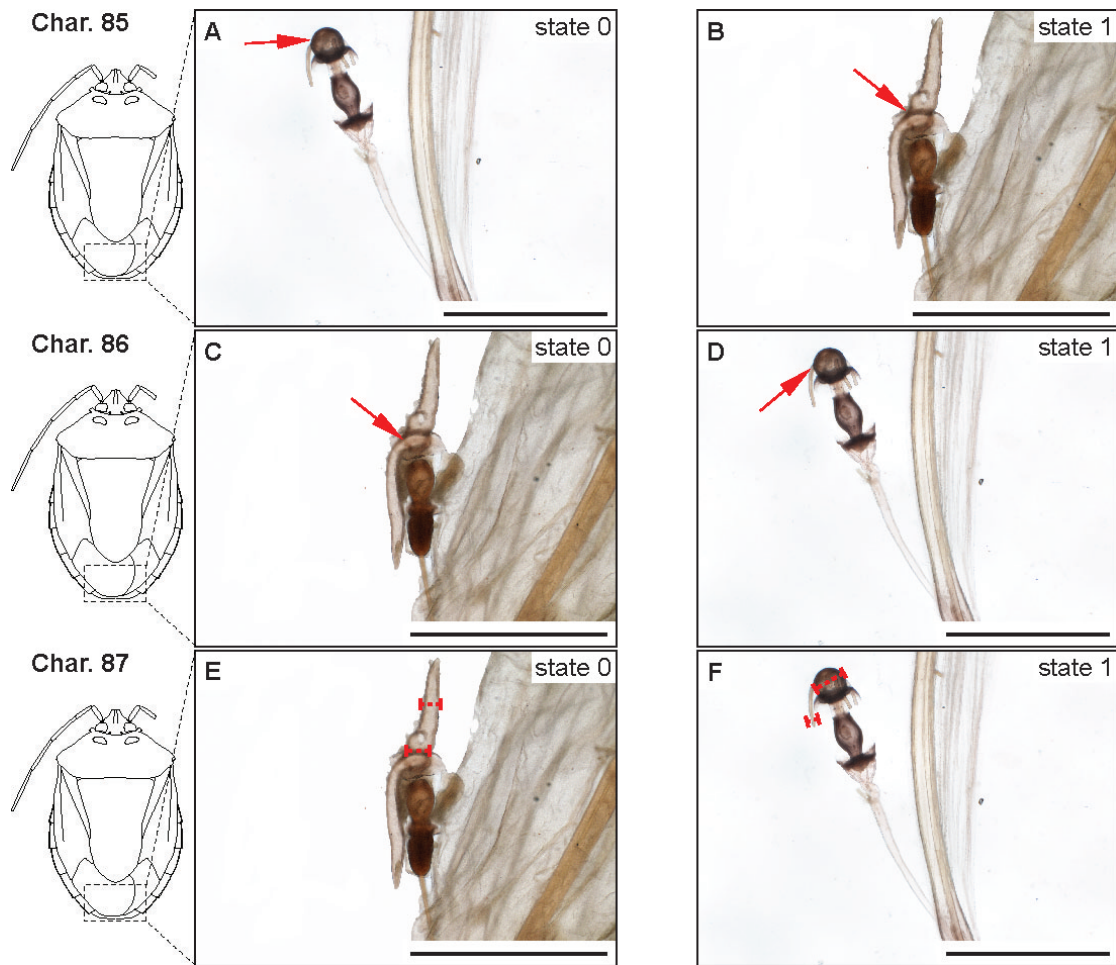


Fig S22. Characters 85–87: **A, D, F**, *Ochlerus tenuicornis*; **B, C, E**, *Discocephala marmorea*. Scale bars: 1 mm.

APPENDIX S3

Table S1. Character matrix (1–18) from the cladistic analysis of *Ochlerus* Spinola, 1837. Code "-" stands for inapplicable data, and "?" for data not evaluated.

	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8
<i>Discocephala marmorea</i>	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1
<i>Adoxoplatys willineri</i>	0	1	0	1	1	0	0	0	0	0	1	0	1	1	1	0	1	
<i>Alathetus rufitarsis</i>	0	1	1	0	1	0	1	1	0	0	1	1	1	0	0	0	0	2
<i>Antiteuchus mixtus</i>	0	1	0	1	0	0	0	0	1	1	1	1	0	0	1	0	1	1
<i>Cromata ornata</i>	0	1	0	0	1	0	1	1	0	0	1	1	0	1	0	0	?	1
<i>Eritrachys bituberculata</i>	1	0	0	0	1	0	1	0	0	0	2	1	1	0	0	0	1	2
<i>Macropygium reticulare</i>	0	0	1	1	0	0	1	1	0	0	1	1	0	0	0	1	0	0
<i>Miopygium cyclopeltoides</i>	0	0	1	1	0	0	1	1	0	0	1	1	0	0	0	1	0	1
<i>Moncus obscurus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Neodoxoplatys saileri</i>	0	1	0	0	1	0	0	0	0	0	1	0	1	1	0	0	1	
<i>Orbatina fuligina</i>	0	1	0	0	1	0	0	0	0	1	1	1	0	1	0	0	0	2
<i>Paralincus silvae</i>	0	1	0	0	1	0	1	1	0	0	1	1	1	0	0	0	0	1
<i>Parochlerus latus</i>	0	1	1	0	1	0	1	1	0	0	1	1	0	1	0	?	?	1
<i>Parastalius trisinuatus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	1	2

<i>Phereclus pluto</i>	1	1	0	0	1	0	1	0	0	0	2	1	1	1	0	0	0	2
<i>Schaefferella incisa</i>	0	1	1	1	0	0	1	1	0	0	1	1	0	0	0	0	0	1
<i>Schraderiellus cinctus</i>	0	1	0	0	1	1	0	0	1	1	1	0	1	1	0	0	1	2
<i>Schraderiellus hughesae</i>	0	1	0	0	1	1	0	0	1	1	1	0	1	1	0	0	0	2
<i>Stalius scutellatus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus bergrothi</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus bistillatus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus cinctus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus circummaculatus</i>	0	1	0	0	1	0	0	0	1	1	1	0	0	1	0	?	?	2
<i>Ochlerus communis</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus coriaceus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus cotylophorus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus dentijugis</i>	0	1	0	0	1	1	0	0	1	1	1	0	1	1	0	0	1	2
<i>Ochlerus handlirschi</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus incisulus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus lutosus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus notatulus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus profanus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus rusticus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus signoreti</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus stylulatus</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
<i>Ochlerus tenuicornis</i>	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
sp. 01	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
sp. 02	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
sp. 03	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
sp. 04	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
sp. 05	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	0	2
sp. 06	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	1	2
sp. 07	0	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	?	2

Table S2. Character matrix (19–36) from the cladistic analysis of *Ochlerus* Spinola, 1837. Code "-" stands for inapplicable data, and "?" for data not evaluated.

	1	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
<i>Discocephala marmorea</i>	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	1	0	0
<i>Adoxoplatys willineri</i>	1	0	1	1	1	0	0	0	0	0	0	1	1	0	0	1	1	0
<i>Alathetus rufitarsis</i>	0	?	1	0	-	0	0	1	1	2	1	1	2	0	0	1	0	1
<i>Antiteuchus mixtus</i>	0	-	0	1	1	0	0	0	0	0	1	1	0	0	1	0	0	0
<i>Cromata ornata</i>	0	?	1	1	1	0	0	0	1	2	1	1	1	0	1	1	0	1
<i>Eritrachys bituberculata</i>	1	0	0	0	-	0	1	1	1	2	1	1	1	0	1	0	0	1
<i>Macropygium reticulare</i>	0	1	1	1	0	1	0	0	1	2	1	1	1	0	0	1	0	0
<i>Miopygium cyclopeltoides</i>	0	-	1	1	1	0	0	0	1	2	1	1	0	0	0	1	0	?
<i>Moncus obscurus</i>	0	1	1	1	0	0	0	0	1	1	1	1	3	1	0	1	0	0
<i>Neoadoxoplatys saileri</i>	1	0	0	1	1	0	0	0	0	0	0	1	2	0	0	1	1	0
<i>Orbatina fuligina</i>	0	?	0	1	1	0	0	0	1	1	1	1	0	1	0	1	0	0
<i>Paralincus silvae</i>	1	2	0	1	1	0	1	0	1	2	1	1	1	0	0	1	0	0
<i>Parochlerus latus</i>	0	1	1	1	0	0	0	0	1	1	1	1	1	0	?	1	0	?
<i>Parastalius trisinuatus</i>	0	2	1	1	1	0	0	1	1	2	1	0	0	1	?	1	0	0
<i>Phereclus pluto</i>	1	1	0	1	1	0	1	1	1	2	1	1	2	0	0	1	0	?
<i>Schaefferella incisa</i>	0	1	0	1	1	0	0	0	1	2	1	1	1	0	0	0	0	2

<i>Schraderiellus cinctus</i>	0	1	1	1	1	0	0	0	1	2	0	1	0	1	0	1	0	0
<i>Schraderiellus hughesae</i>	0	1	1	1	1	0	0	0	1	2	0	1	0	1	0	1	0	0
<i>Stalius scutellatus</i>	0	1	1	1	0	1	0	0	1	2	1	0	3	1	0	1	0	?
<i>Ochlerus bergrothi</i>	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	0
<i>Ochlerus bistillatus</i>	0	1	1	1	1	0	0	0	1	0	1	1	2	1	0	1	0	?
<i>Ochlerus cinctus</i>	0	1	1	1	1	0	0	0	1	1	0	1	2	1	0	1	0	?
<i>Ochlerus circummaculatus</i>	0	1	1	1	0	1	0	0	1	2	1	1	2	1	0	1	0	?
<i>Ochlerus communis</i>	0	?	0	1	1	0	0	0	1	1	1	?	2	1	0	1	0	?
<i>Ochlerus coriaceus</i>	0	1	1	1	1	0	0	0	1	1	0	1	2	1	0	1	0	?
<i>Ochlerus cotylophorus</i>	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	?
<i>Ochlerus dentijugis</i>	0	?	1	1	1	0	0	0	1	1	1	1	2	1	?	1	0	?
<i>Ochlerus handlirschi</i>	0	1	1	1	1	0	0	0	1	2	1	1	3	1	0	1	0	0
<i>Ochlerus incisulus</i>	0	?	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	?
<i>Ochlerus lutosus</i>	0	?	1	1	1	0	0	0	1	1	0	1	2	1	0	1	0	?
<i>Ochlerus notatulus</i>	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	0
<i>Ochlerus profanus</i>	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	?
<i>Ochlerus rusticus</i>	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	0
<i>Ochlerus signoreti</i>	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	0
<i>Ochlerus stylulatus</i>	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	?
<i>Ochlerus tenuicornis</i>	0	1	1	1	1	0	0	0	1	1	0	1	2	1	0	1	0	0
sp. 01	0	?	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	0
sp. 02	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	0
sp. 03	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	?
sp. 04	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	0
sp. 05	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	0	0	?
sp. 06	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	0
sp. 07	0	1	1	1	1	0	0	0	1	1	1	1	2	1	0	1	0	?

Table S3. Character matrix (37–54) from the cladistic analysis of *Ochlerus* Spinola, 1837. Code "-" stands for inapplicable data, and "?" for data not evaluated.

	3	3	3	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5
	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
<i>Discocephala marmorea</i>	0	1	1	2	1	1	1	0	0	0	0	-	0	1	0	0	0	0
<i>Adoxoplatys willineri</i>	1	0	0	-	1	2	0	0	0	1	1	1	0	1	1	0	0	0
<i>Alathetus rufitarsis</i>	2	0	1	1	1	1	?	0	0	1	?	?	?	?	?	?	?	1
<i>Antiteuchus mixtus</i>	0	1	1	1	1	0	1	0	0	1	0	-	1	0	1	0	1	0
<i>Cromata ornata</i>	2	1	1	2	1	1	?	0	0	1	?	?	?	?	?	?	?	0
<i>Eritrachys bituberculata</i>	2	1	1	1	1	2	0	0	0	1	0	-	0	0	1	0	1	0
<i>Macropygium reticulare</i>	1	1	1	1	0	1	1	0	0	1	1	1	1	1	0	1	0	1
<i>Miopygium cyclopeltoides</i>	1	1	0	-	0	1	?	0	0	1	?	?	?	?	?	?	?	1
<i>Moncus obscurus</i>	2	1	1	1	1	0	0	0	0	1	0	-	0	0	0	0	0	0
<i>Neodoxoplatys saileri</i>	2	0	0	-	1	1	1	0	?	0	0	-	0	0	1	0	?	?
<i>Orbatina fuligina</i>	?	1	1	2	1	1	0	?	?	1	0	-	0	1	0	0	1	?
<i>Paralincus silvae</i>	1	1	0	-	1	1	0	0	0	1	1	0	0	1	1	0	0	0
<i>Parochlerus latus</i>	2	1	?	?	1	?	?	?	?	?	1	?	?	?	?	?	1	?
<i>Parastalius trisinuatus</i>	2	1	0	-	1	0	0	0	0	1	0	-	0	0	1	0	1	0
<i>Phereclus pluto</i>	2	1	1	1	1	1	0	0	0	1	?	?	?	?	?	1	?	0
<i>Schaefferella incisa</i>	1	1	1	2	0	1	0	0	0	1	0	-	1	1	0	1	1	0
<i>Schraderiellus cinctus</i>	2	1	1	0	1	0	0	0	0	1	0	-	0	0	1	0	0	0

<i>Schraderiellus hughesae</i>	2	1	0	-	1	1	0	0	0	1	0	-	0	0	1	0	0	0
<i>Stalius scutellatus</i>	2	1	0	-	0	1	0	0	0	1	0	-	0	0	0	0	1	1
<i>Ochlerus bergrothi</i>	2	1	0	-	1	0	0	?	?	1	0	-	0	1	0	0	0	?
<i>Ochlerus bistillatus</i>	2	1	1	1	1	0	?	0	0	1	?	?	?	?	?	?	?	0
<i>Ochlerus cinctus</i>	2	1	1	0	1	1	?	0	0	1	?	?	?	?	?	?	?	0
<i>Ochlerus circummaculatus</i>	2	1	1	1	1	1	0	0	0	1	?	?	?	?	?	?	?	0
<i>Ochlerus communis</i>	?	1	1	1	1	0	0	0	?	1	?	?	0	?	0	?	?	?
<i>Ochlerus coriaceus</i>	2	1	1	1	1	0	?	0	0	1	?	?	?	?	?	?	?	0
<i>Ochlerus cotylophorus</i>	?	1	1	1	1	0	?	1	0	1	?	?	?	?	?	?	?	0
<i>Ochlerus dentijugis</i>	?	1	1	1	1	0	0	?	?	1	0	-	0	1	1	0	1	?
<i>Ochlerus handlirschi</i>	2	1	1	0	1	0	0	0	0	1	1	0	0	0	1	0	0	1
<i>Ochlerus incisulus</i>	1	1	0	-	1	0	0	0	1	1	0	-	0	1	0	0	0	1
<i>Ochlerus lutosus</i>	?	1	1	0	1	0	0	0	0	1	?	?	?	?	?	?	?	?
<i>Ochlerus notatulus</i>	2	1	0	-	1	0	0	0	1	1	0	-	0	1	0	0	0	0
<i>Ochlerus profanus</i>	2	1	1	0	1	1	?	1	0	1	?	?	?	?	?	?	?	0
<i>Ochlerus rusticus</i>	2	1	1	0	1	0	0	0	0	1	1	1	0	1	0	0	0	0
<i>Ochlerus signoreti</i>	2	1	1	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0
<i>Ochlerus stylulatus</i>	2	1	1	0	1	0	?	0	0	1	?	?	?	?	?	?	?	0
<i>Ochlerus tenuicornis</i>	2	1	1	0	1	0	0	0	1	1	1	1	0	-	0	0	0	0
sp. 01	2	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
sp. 02	2	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0
sp. 03	2	1	1	1	1	0	?	0	0	1	?	?	?	?	?	?	?	0
sp. 04	2	1	0	-	1	0	0	0	0	1	1	1	0	0	0	0	0	0
sp. 05	2	1	1	0	1	0	?	0	0	1	?	?	?	?	?	?	?	0
sp. 06	?	1	1	0	1	1	0	?	?	1	1	1	0	1	0	0	0	?
sp. 07	2	1	0	-	1	0	?	0	0	1	?	?	?	?	?	?	?	0

Table S4. Character matrix (55–72) from the cladistic analysis of *Ochlerus* Spinola, 1837. Code "-" stands for inapplicable data, and "?" for data not evaluated.

	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7	7	7	
	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2
<i>Discocephala marmorea</i>	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
<i>Adoxoplatys willineri</i>	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	1
<i>Alathetus rufitarsis</i>	0	0	0	0	2	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Antiteuchus mixtus</i>	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	1	0
<i>Cromata ornata</i>	0	0	0	0	2	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Eritrachys bituberculata</i>	0	0	0	0	2	0	1	0	1	1	0	0	0	0	0	0	1	0
<i>Macropygium reticulare</i>	0	0	0	1	2	0	1	0	0	0	0	1	0	0	0	1	1	1
<i>Miopygium cyclopeltoides</i>	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	1	1	1
<i>Moncus obscurus</i>	0	0	0	0	2	0	1	0	0	1	0	1	1	1	0	0	0	0
<i>Neoadoxoplatys saileri</i>	?	?	?	?	?	?	0	?	0	0	0	0	0	0	0	0	0	0
<i>Orbatina fuligina</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Paralincus silvae</i>	0	0	0	1	2	1	1	1	0	0	0	1	0	0	0	0	0	0
<i>Parochlerus latus</i>	?	?	?	?	?	?	1	?	0	0	?	?	?	?	?	?	?	?
<i>Parastalius trisinuatus</i>	0	0	0	0	2	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Pherechus pluto</i>	0	0	0	0	2	1	1	1	0	1	?	?	?	?	?	?	?	?
<i>Schaefferella incisa</i>	0	0	0	0	2	1	1	0	1	1	?	?	?	?	?	?	?	?
<i>Schraderiellus cinctus</i>	0	0	0	0	2	0	1	0	0	1	0	1	0	0	0	0	1	0
<i>Schraderiellus hughesae</i>	0	0	0	0	2	0	1	0	0	0	0	1	0	0	0	0	0	0

<i>Stalius scutellatus</i>	1	0	0	0	2	1	1	1	0	0	1	1	0	0	0	0	0	0
<i>Ochlerus bergrothi</i>	?	?	?	?	?	?	?	?	?	?	0	1	0	1	1	0	0	0
<i>Ochlerus bistillatus</i>	0	0	0	0	1	0	1	0	1	1	?	?	?	?	?	?	?	?
<i>Ochlerus cinctus</i>	1	0	0	0	1	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Ochlerus circummaculatus</i>	0	0	0	0	2	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Ochlerus communis</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Ochlerus coriaceus</i>	1	1	0	0	0	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Ochlerus cotylophorus</i>	1	0	0	0	1	0	1	0	1	1	?	?	?	?	?	?	?	?
<i>Ochlerus dentijugis</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Ochlerus handlirschi</i>	0	0	0	0	2	1	1	0	0	1	1	0	0	0	0	0	0	0
<i>Ochlerus incisulus</i>	0	1	1	0	2	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Ochlerus lutosus</i>	0	0	0	?	?	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Ochlerus notatulus</i>	0	0	1	0	2	0	1	0	0	1	0	1	0	1	1	0	0	0
<i>Ochlerus profanus</i>	1	0	0	0	1	0	1	0	1	1	?	?	?	?	?	?	?	?
<i>Ochlerus rusticus</i>	1	1	0	0	1	0	1	0	1	1	1	1	1	1	0	0	0	0
<i>Ochlerus signoreti</i>	0	0	0	0	1	0	1	0	0	1	0	1	1	1	0	0	0	0
<i>Ochlerus stylulatus</i>	0	1	1	0	2	0	1	0	0	1	?	?	?	?	?	?	?	?
<i>Ochlerus tenuicornis</i>	0	1	1	0	2	0	1	0	0	1	0	1	0	1	1	0	0	0
sp. 01	1	0	0	1	2	0	1	0	0	1	?	?	?	?	?	?	?	?
sp. 02	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0
sp. 03	0	0	0	0	1	0	1	0	0	1	?	?	?	?	?	?	?	?
sp. 04	1	1	0	0	1	0	1	0	0	1	1	1	1	1	0	0	0	0
sp. 05	1	0	0	0	1	0	1	0	0	1	?	?	?	?	?	?	?	?
sp. 06	?	?	?	?	?	?	?	?	?	?	0	1	1	1	0	0	0	0
sp. 07	1	0	0	0	1	0	1	0	0	1	?	?	?	?	?	?	?	?

Table S5. Character matrix (73–87) from the cladistic analysis of *Ochlerus* Spinola, 1837. Code "-" stands for inapplicable data, and "?" for data not evaluated.

	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8
	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7
<i>Discocephala marmorea</i>	0	0	1	1	0	-	0	0	0	0	0	0	1	0	0
<i>Adoxoplatys willineri</i>	0	0	0	0	?	?	0	1	0	1	1	1	0	0	1
<i>Alathetus rufitarsis</i>	?	?	0	1	1	0	1	1	0	1	0	1	0	1	1
<i>Antiteuchus mixtus</i>	0	0	0	1	0	-	0	0	0	0	0	0	0	?	?
<i>Cromata ornata</i>	?	?	0	1	0	-	0	1	0	0	0	0	0	1	0
<i>Eritrachys bituberculata</i>	1	0	0	0	0	-	0	1	0	0	0	0	0	1	1
<i>Macropygium reticulare</i>	1	1	0	0	1	0	1	1	0	1	0	1	0	0	1
<i>Miopygium cyclopeltoides</i>	1	1	0	1	1	0	1	1	0	1	0	1	0	0	1
<i>Moncus obscurus</i>	1	0	0	0	0	-	0	1	0	0	0	0	0	1	1
<i>Neodoxoplatys saileri</i>	0	0	0	0	0	-	0	1	0	0	0	1	1	0	1
<i>Orbatina fuligina</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Paralincus silvae</i>	1	0	0	1	0	-	0	1	0	0	0	1	0	1	1
<i>Parochlerus latus</i>	?	?	0	1	1	0	0	1	0	1	0	1	0	1	1
<i>Parastalius trisinuatus</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Phereclus pluto</i>	?	?	0	1	1	0	0	1	0	1	0	0	0	1	0
<i>Schaefferella incisa</i>	?	?	0	0	1	0	0	1	0	1	1	1	1	1	0
<i>Schraderiellus cinctus</i>	1	0	0	1	1	2	0	1	0	0	0	0	0	1	1
<i>Schraderiellus hughesae</i>	1	0	0	1	0	-	0	1	0	0	0	0	0	1	1
<i>Stalius scutellatus</i>	1	0	1	0	0	-	0	1	0	0	0	0	0	0	1
<i>Ochlerus bergrothi</i>	1	0	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Ochlerus bistillatus</i>	?	?	0	0	1	1	0	1	1	0	0	0	0	?	?
<i>Ochlerus cinctus</i>	?	?	0	0	1	0	0	1	1	0	0	0	0	1	1
<i>Ochlerus circummaculatus</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Ochlerus communis</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Ochlerus coriaceus</i>	?	?	0	0	1	1	0	1	1	0	0	0	0	1	1
<i>Ochlerus cotylophorus</i>	?	?	0	0	1	2	0	1	1	0	0	0	0	1	1
<i>Ochlerus dentijugis</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Ochlerus handlirschi</i>	1	0	0	0	0	-	0	1	0	0	0	0	0	1	1
<i>Ochlerus incisulus</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Ochlerus lutosus</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Ochlerus notatulus</i>	1	0	0	0	1	0	0	1	0	0	0	0	0	1	1
<i>Ochlerus profanus</i>	?	?	0	0	1	1	0	1	1	0	0	0	0	1	1
<i>Ochlerus rusticus</i>	1	0	0	0	1	1	0	1	1	0	0	0	0	1	1
<i>Ochlerus signoreti</i>	1	0	0	0	1	0	0	1	1	0	0	0	0	1	1
<i>Ochlerus stylulatus</i>	?	?	0	0	1	0	0	1	0	0	0	0	0	1	1
<i>Ochlerus tenuicornis</i>	1	0	0	0	1	1	0	1	0	0	0	0	0	1	1
sp. 01	?	?	0	0	1	0	?	1	1	0	?	0	?	?	?
sp. 02	1	0	0	0	1	1	0	1	1	0	0	0	0	1	1
sp. 03	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
sp. 04	1	0	0	0	1	0	0	1	1	0	0	0	0	1	1
sp. 05	?	?	0	0	1	0	0	1	0	0	0	0	0	1	1
sp. 06	1	0	?	?	?	?	?	?	?	?	?	?	?	?	?
sp. 07	?	?	0	0	1	0	0	?	?	0	?	?	?	?	?

Capítulo 4

Normas editoriais: Neotropical Entomology (Anexo III)

Gen. nov. 1 and Gen. nov. 2: two new Ochlerini genera (Heteroptera, Pentatomidae, Discocephalinae)

INTRODUCTION

Ochlerini, one of two tribes of the Neotropical exclusive Discocephalinae, has seen a recent rise in taxonomical and systematic studies (Matesco, Grazia & Campos, 2007; Ortega-Leon & Thomas, 2010; Garbelotto, Campos & Grazia, 2013), which have led to several changes in its composition and to the enlightenment of species relationships. Although, a lot of effort still needs to be done in that regard, the diffuse information on the tribe has been somewhat stabilized.

Two of such studies are the investigations of Campos & Grazia (2006) and Simões & Campos (in prep.), which led, among other conclusions, to finding the polyphyly of *Ochlerus*, the type genus of Ochlerini. Out of the, then, 17 valid species (plus new species) tested by Simões & Campos (in prep), seven were excluded from the genus: *Melanodermus circummaculatus* (Stål, 1860) was removed from its synonymy to *Ochlerus*, *O. dentijugis* was synonymized to *Schraderiellus dentijugis* (Breddin, 1910), while *O. handlirschi* Breddin, 1910 was found to constitute a new genus, the same happening to the four species with gonocoxites 8 bilobed plus *O. bergrothi*, all described by Breddin (1910). Hence, we here describe Gen. nov. 1 to accommodate *O. handlirschi*, and Gen. nov. 2 for the other five species.

MATERIALS AND METHODS

The specimens examined belong to the following collections: the Natural History Museum (BMNH); the Bernice Pauhai Bishop Museum (BPBM); the Carnegie Museum of Natural History (CMNH); Museu de Entomologia Pe. Jesus Santiago Moure (DZUP); John E. Eger Collection (JEE); D. A. Rider Collection at North Dakota University (NDSU); Naturistorisches Museum Wien (NMW); Senckenberg Deutsches Entomologisches Institut (SDEI); the Entomological Collection of the Universidade Federal do Maranhão (UFMA); and the Entomological Collection of the Universidade Federal do Rio Grande do Sul (UFRG); acronyms, except for JEE and UFMA, according to Evenhuis (2014).

Measurements (mean \pm standard deviation, minimum, and maximum) are given in millimetres and were made through stereomicroscope. Photographs of loaned specimens, including external and internal genitalia, were acquired and mounted with

a Nikon AZ100M stereomicroscope and the Nikon NIS-Elements Ar Microscope Imaging Software. Phallus and female ectodermal genital ducts were boiled in 10% KOH aqueous solution for clarification and, when needed, stained in Congo red. The terminologies follow Schuh & Slater (1995) for general morphology characters, Kment & Vilímová (2010) for cuticular structures of the external scent efferent system, and Dupuis (1970) and Campos & Grazia (2006) for genital structures.

RESULTS

Gen. nov. 1 gen. nov.

Type species. *Ochlerus handlirschi* Breddin, 1910.

Description. Medium sized (around 15.5 mm); body black. Head longer than wide, matching inclination of pronotum; dorsal surface wrinkled. Clypeum ending before anterior margin of eyes. Apex of mandibular plates acute sometimes ventrally declivous, subequal to the apex of clypeus; lateral margins subrectilinear. Eyes brown. Ocelli large and brown. Antennifer tubercle without lateral processes. Antenna five-segmented, segment I slightly wider than following segments. Bucculae subparalell, elevated, with acute tooth-like anterior angle; evanescent posteriorly. Rostrum long and slender, segment II longest, apex of segment IV reaching urosternite VII.

Pronotum punctured, about twice as wide as long, declivous before humeral angles. Anterior margin shallowly concave, anterolateral margins subrectilinear, outlined. Anterolateral angles produced laterad, acute, base laterad of eyes. Cicatrices ovoidal, placed close to anterior pronotal margin. Scutellum relatively big, longer than wide at the base, apex surpassing imaginary transversal line of apex of the corium; basal angles strongly depressed, depression evanescent after first fifth; lateral margins of posterior half (after frena) subparalell, convergent at rounded apex. Hemelytra slightly exceeding abdominal apex; corium concolor with small irregular yellow maculae; radial vein with yellow macula apically laterad; membrane with 13 subparalell veins evanescent at apex. Prosternum and metasternum flat, mesosternum and metasternum with longitudinal carina. Metapleural evaporatorium concolor; ostiolar plate reaching a third of the width of metapleural evaporatorium; peritreme, in

spout, reaching 1/2 of ostiolar plate. Legs concolor except for lighter tarsi; tibia dorsally sulcated; dorsal surface of female posterior tarsi sulcate.

Urosternites II to VI subequal; urosternite VII longer medially. Spiracles black, present at urosternites II to VII, completely covered by metasternum on urosternite II. Tricobothria posterior and ectad to spiracles; base brown or black.

Male. Pygophore trapezoidal. Dorsal rim mesially concave, with basal very acute posterior projections; ventral rim excavated. Postero-lateral projections small and spatular. Parameres laminated, sinuous; apices directed exad. Phalloteca longer than vesica; presence of 1+1 dorsal projections at the base of vesica; opening of *ductus seminis distalis* gutter-like.

Female. Gonocoxites 8 (gc8) long, shield-like; sutural margins juxtaposed, posterior margins projected over laterotergites 9 (la9). Laterotergites 8 (la8) triangular, spiracles at basal angles, exposed. Gonocoxites 9 (gc9) discoid, exposed. La9 convex, covering proctiger, apices contiguous. Thickening of gonapophyses 9 (g9) absent. *Ductus receptaculi* at least three times thinner than vesicular area, as wide as *pars intermedialis* in the distal end. *Pars intermedialis* pylon-like. *Capsula seminalis* globoid; teeth at apex, thin.

***Gen. nov. 1 handlirschi* (Breddin, 1910)**

(Figs. 1A, 2A)

Ochlerus handlirschi Breddin, 1910: 622; Simões & Campos, *in prep.*

Type material. Female holotype; labels: "Cozumel Yukatan 1882, coll. Breddin, DEI Münchenberg HEMI-00019". (SDEI)

Type locality. Cozumel, Yucatan, Mexico [20.5010; -86.9459]

Material examined. **BELIZE**, *Cayo*: 1 male, Blue Hole Camp, 12 mi S Belmopan, 16.VIII.1977, C. O'Brien & L. O'Brien cols. [16.7833; -88.9333], D. A. Rider Collection, *Ochlerus sp.* 4 (NDSU); 2 females, Blue Hole Camp, 12 mi S Belmopan, 16.VIII.1977, C. O'Brien & L. O'Brien cols. [16.7833; -88.9333], D. A. Rider

Collection (NDSU); 1 female, Blue Hole Camp, Mile 28 Hummingbird Hwy., 20.VIII.1977, C. W. O'Brien, L. O'Brien & Marshall cols. [16.7833; -88.9333], D. A. Rider Collection (NDSU). *Orange Walk*: 2 males, Orange Walk, La Milpa Archeological Site, Rio Bravo Cons. Area Site env., 13.VII.1996, P. Kovarik col. [17.8382; -89.0103], taken at night (JEE); 1 female, Orange Walk, Rio Bravo Cons. Area, Well Trail, 18.VII.1996, C. W. O'Brien & L. B. O'Brien [17.8382; -89.0103] (JEE). **COSTA RICA**, *Heredia*: 1 male, Estacion Biologica La Selva, 11-13.I.1995, E. G. Riely col. [10.4333; -84.0166], *Ochlerus* sp. #6 det. J. E. Eger 2013 (JEE); 1 male and 2 females, Estacion Biologica La Selva, 11-13.I.1995, E. G. Riley col. [10.4333; -84.0166](JEE); 1 male, Estacion Biologica La Selva, 16.III.1999 [10.4333; -84.0166], L/08/592, 10-26°N 84°01'W, Mol. Gen. Project D. A. Rider 0247, D. A. Rider Collection (NDSU); 2 males and 1 female, Puerto Viejo, Finca La Selva, 30.I.1974, F. W. Fisk col. [10.4333; -84.0166], D. A. Rider Collection (NDSU). *Limon*: 2 males and 6 females, Siquirres 100-200m, 14.VIII.1970, J. Sedlacek & M. Sedlacek cols. [10.1000; -83.5167], Bishop Museum (BPBM). **GUATEMALA**, *El Peten*: 2 females, Tika, 20-22.VII.1970, J. Sedlacek & M. Sedlacek cols. [17.2250; -89.6133] (BPBM); 1 male, Poptun, 11.V.1979 [16.3311; -89.4169] (JEE). *Izabal*: Montanas del Mico, Green Bay Resort, Ramoncita, Sierra del Mico, 23-26.IX.2008, J. B. Heppner col. [15.4986; -88.9163], 3-5m, FSCA (JEE). **HONDURAS**, *Santa Barbara*: 1 male, El Mochito, 13 km SE El Mochito, 22.VII.1977, C. W. O'Brien, L. O'Brien & Marshall cols. [14.8667; -88.0833], D. A. Rider Collection, *Ochlerus* sp. 4 (NDSU); 1 male and 3 females, El Mochito, 13 km SE El Mochito, 22.VII.1977, C. W. O'Brien, L. O'Brien & Marshall cols. [14.8667; -88.0833], D. A. Rider Collection (NDSU). **MEXICO**, *Chiapas*: 1 male and 1 female, La Caverna, Arroyo Santa Maria, 700' on ground, 1-10.VI.1972 [16.4050; -91.4050], slope Sieera de Colmena, near "La Caverna" 16°24'18"N 91°24'16", D. A. Collection (NDSU); 1 female, San Quintin, Sierra de la Colmena ca. 399'-700', 15-16.II.1966, G. E. Ball & D. R. Whitehead cols. [16.4000; -91.3333], D. A. Rider Collection, *Ochlerus handlirschi* Breddin LHR72 (NDSU). *Veracruz-Llave*: 1 male and 2 females, Fortin de Las Flores, 24.XII.1963, C. W. O'Brien & L. O'Brien [18.9000; -97.0000], *Ochlerus handlirschi* LHR72 Breddin, Donation from J. A. Slater Collection, AMNH (UFRG). *Unknown State*: Unknown locality, 48 11, *a/ cinctus* identified by Dallas, *Ochlerus handlirschi* Breddin LHR 81 (BMNH). **NICARAGUA**, *Unknown Department*: Unknown locality, Niza: Zelya,

Sulum, I.1996, Maes & Hernandez cols. [14.2500; -84.6000], 84°36'W / 14°15'N, Nicaragua (UFRG)

Measurements: (n = 8) Total length 1.46 ± 0.1 (1.31–1.59); head length 0.29 ± 0.02 (0.25–0.31), anteocular length 0.1 ± 0 (0.1–0.2), width 0.33 ± 0.02 (0.31–0.36), interocular distance 0.15 ± 0.01 (0.14–0.15); length of antennal segments: I 0.11 ± 0.01 (0.1–0.13), II 0.11 ± 0.01 (0.1–0.13), III 0.24 ± 0.02 (0.2–0.26), IV 0.29 ± 0.02 (0.25–0.31), V 0.3 ± 0.02 (0.26–0.33); length of rostral segments: I 0.17 ± 0.01 (0.16–0.19), II 0.31 ± 0.01 (0.3–0.33), III 0.27 ± 0.02 (0.24–0.3), IV 0.3 ± 0.02 (0.26–0.33); pronotal length 0.44 ± 0.03 (0.4–0.48), width 0.83 ± 0.05 (0.74–0.89); scutellar length 0.73 ± 0.06 (0.64–0.79), width 0.57 ± 0.03 (0.51–0.59), width at end of frenum 0.39 ± 0.02 (0.36–0.41); abdominal width 0.88 ± 0.04 (0.83–0.94).

Gen. nov. 2 gen. nov.

Type species. *Ochlerus notatulus* Breddin, 1910.

Medium sized (around 14 mm); body dark brown to black. Head longer than wide, matching inclination of pronotum. Clypeus ending before anterior margin of eyes. Apex of mandibular plates acute sometimes ventrally declivous, subequal to or slightly surpassing apex of clypeus; lateral margins subrectilinear slightly elevated. Eyes yellow with black maculae. Ocelli small behind eyes, colored yellow or light brown. Antennifer tubercle without lateral processes. Antenna five-segmented, segment I slightly wider than other segments. Bucculae subparallell, elevated, with acute tooth-like anterior angle; evanescent posteriorly. Rostrum long and slender, segment II longest, apex of segment IV rarely surpassing urosternite V.

Pronotum punctured, about twice as wide as long, declivous before humeral angles. Anterior margin shallowly concave, anterolateral margins subrectilinear. Anterolateral angles produced laterad, rounded or truncate, sometimes sculptured; base of the angles laterad of eyes. Cicatrices ovoidal, placed close to anterior pronotal margin. Scutellum relatively long, as long as wide at the base; basal angles strongly depressed, depression evanescent after first fifth; lateral margins of posterior half (after frena) subparallell, convergent at rounded apex; reaching an imaginary line transversal to the apex of corium. Hemelytra slightly exceeding abdominal apex;

corium concolor with small irregular yellow maculae; radial vein with yellow macula apically laterad; membrane with 13 subparallel veins evanescent at apex. Prosternum and metasternum flat, mesosternum and metasternum with longitudinal carina. Metapleural evaporatorium concolor; ostiolar plate reaching half the width of metapleural evaporatorium; peritreme, in spout, reaching 1/2 of ostiolar plate. Legs concolor except for lighter tarsi; tibia dorsally sulcated; dorsal surface of female posterior tarsi plain or sulcate.

Urosternites II to VI subequal; urosternite VII longer medially. Spiracles black, present at urosternites II to VII, partially covered by metasternum on urosternite II. Tricobothria posterior and ectad to spiracles; base brown or black.

Male. Pygophore trapezoidal. Dorsal rim mesially concave; ventral rim excavated. Postero-lateral angles produced, spatular. Apex of parameres directed endad. Phalloteca as long or longer than vesica; presence of a thickening in the median third; opening of ductus seminis distalis gutter-like.

Female. Gonocoxites 8 (gc8) bilobed, sutural margins juxtaposed; posterior margins ventrally angled; external lobe longer than wide, apex laterad of spiracles on laterotergites 8(la8). La8 triangular, spiracles at basal angles. Gonocoxites 9 (gc9) subtriangular, exposed. Laterotergites 9 (la9) convex, covering proctiger, apices contiguous. *Ductus receptaculi* at least three times thinner than vesicular area. *Pars intermedialis* pylon-like. *Capsula seminalis* globoid; teeth at apex, thin.

Comments. Diagnosing of species of *Gen. nov. 1* can be made specially through the shape of the two lobes on the gc8 and the wide excavation on the inferior layer of ventral rim of pygophore. As the overall morphology is very conserved, general morphology characters do not present significant diagnostical characters.

Key to the species of *Gen. nov. 2*

1. Projection on antero-lateral angles of the pronotum truncate, apex sculptured..... **2**
- 1'. Projection on antero-lateral angles of the pronotum truncate or acute, apex round or acute **3**
2. Projection on antero-lateral angles of the pronotum chisel-like; posterior margin of gonoxites 8 (gc8) forming a straight angle with sutural margin; connection between

the two lobes of the gc8 conspicuous
 **Gen. nov. 2 notatulus (Breddin, 1910) (Figs. 1D, 2F–G)**
 2'. Projection on antero-lateral angles of the pronotum spoon-like; posterior margin of gc8 forming an acute angle with sutural margin; connection between the two lobes of the gc8 not conspicuous **Gen. nov. 2 stylulatus (Breddin, 1910) (Figs. 1E, 2H)**
 3. Projection on antero-lateral angles of the pronotum small, round apex **4**
 3'. Projection on antero-lateral angles of the pronotum truncate, acute apex; parameres internally projected with a rough and uneven dorsal surface
 **Gen. nov. 2 bergrothi (Breddin, 1910) (Figs. 1B, 2C)**
 4. Postero-lateral projections of pygophore spatular with a hook-like projection on the inner margin; posterior margin of urosternite VII on females mesially sinuous, ventrally projected; gonocoxites 9 (gc9) longer than wide.....
 **Gen. nov. 2 incisulus (Breddin, 1910) (Figs. 1C, 2D–E)**
 4'. Postero-lateral projections of pygophore trapezoidal, with apical tooth-like projections; parameres relatively big, scythe-like, surpassing imaginary line of ventral rim; posterior margin of urosternite VII on females without ventral projection; gc9 as long as wide **Gen. nov. 2 tenuicornis (Breddin, 1910) (Figs. 1F, 2I–J)**

Gen. nov. 2 notatulus (Breddin, 1910) comb. nov.
(Figs. 1D, 2F–G)

Ochlerus notatulus Breddin, 1910: 627; Simões & Campos, in prep.

Type material (examined). Female lectotype, "*Ochlerus notatulus* Type Bredd., Brasilien" (NMW); 1 female paralectotype, "Brasilien, coll. Breddin, DEI Münchenberg HEMI-00024" (SDEI); 1 female paralectotype, "Brasil, Coll. Signoret, *sordidus* det. Signoret coll. Breddin, DEI Münchenberg HEMI-00032" (SDEI).

Type locality. Brazil.

Diagnosis. Antero-lateral angles of the pronotum projected laterad, truncate, chisel-like. Single yellowish macula at the median base of the scutellum. Inner lobe of gonocoxites 8 (gc8) square-like, with posterior margins straight; outer lobe longer, apex acute. Postero-lateral projections of the pygophore with a distinct dorsal

projection on the inner rim. Head of parameres convergent and excavated. Thickening of the gonapophyses 9 (g9) trapezoidal, reaching half the total length of g9. Vesica with 2 small dorsal tooth-like projections and a postero-ventral rounded projection.

Material examined. **COLOMBIA**, *Province unknown*: 3004 (BMNH). **ECUADOR**, *Cotopaxi*: Santa Inez [-0.8333; -78.7333]. **PERU**, *Amazonas*: 1 male, Huembo Lodge, Km 315 on N5, 2078m, 18-21.X.2012, J. E. Eger col. [-5.8577; -77.9844], S 05°51'28.1" W077°59'04.8", at night on trees, *Ochlerus* sp. #7 det. J. E. Eger 2013 (JEE); 3 males and 7 females, Huembo Lodge, Km 315 on N5, 2078m, 18-21.X.2012, J. E. Eger col. [-5.8577; -77.9844], S 05°51'28.1" W077°59'04.8", at night on trees (JEE).

Measurements: (n = 6) Total length 1.34 ± 0.06 (1.23–1.39); head length 0.24 ± 0.01 (0.23–0.27), anteocular length 0.1 ± 0 , width 0.29 ± 0.01 (0.28–0.3), interocular distance 0.14 ± 0.01 (0.13–0.14); length of antennal segments: I 0.11 ± 0.1 (0.1–0.13), II 0.10 ± 0.01 (0.08–0.11), III 0.18 ± 0.01 (0.16–0.19), IV 0.22 ± 0.01 (0.21–0.23), V 0.26 ± 0.01 (0.25–0.28); length of rostral segments: I 0.14 ± 0.02 (0.11–0.16), II 0.23 ± 0.02 (0.19–0.24), III 0.21 ± 0.02 (0.19–0.24), IV 0.20 ± 0.01 (0.19–0.21); pronotal length 0.37 ± 0.02 (0.35–0.39), width 0.71 ± 0.03 (0.65–0.74); scutellar length 0.58 ± 0.02 (0.55–0.61), width 0.48 ± 0.03 (0.44–0.51), width at end of frenum 0.28 ± 0.02 (0.25–0.29); abdominal width 0.83 ± 0.04 (0.75–0.86).

Gen. nov. 2 bergrothi* (Breddin, 1910) *comb. nov.

(Figs. 1B, 2C)

Ochlerus bergrothi Breddin, 1910: 624; Simões & Campos, *in prep.*

Type material (examined). Male, here designated as holotype by monotypy, deposited at the SDEI; 'San Esteban | E. Simon [col.] | III.88 | coll. Breddin | Barber revid. 1933 | DEI Münchenberg HEMI-00022'.

Type locality. San Esteban, State unknown, Venezuela.

Diagnosis. Antero-lateral angles of the pronotum chisel-like. Scutellum base with a median small yellow macula. Urosternite VII slightly thinner longitudinally. Inferior layer of ventral rim of the pygophore excavated medially with a very wide gap between the postero-lateral angles gradually widening until the apex of the angles. Head of the parameres wide and robust, hook-like, internally projected with a rough and uneven dorsal surface. Vesica with two robust, albeit small, dorsal tooth-like projections, and a postero-ventral rounded projection.

Material examined. **COSTA RICA**, *Heredia*: 1 male, La Selva, 13-16.VI.1986, F. T. Hovore & P. H. Sullivan cols. [10.4333; -84.0166] (CMNH). **PANAMA**, *Panama*: 1 male, Cerro Campana, 2700', 2.V.1981, E. Giesbert col. [8.7167; -79.9000], D. A. Rider Collection, *Ochlerus* 9 (NDSU).

Measurements: (n = 2) Total length 1.35 ± 0.08 (1.29–1.4); head length 0.25 ± 0.02 (0.24–0.26), anteocular length 0.1 ± 0 , width 0.31 ± 0.02 (0.3–0.33), interocular distance 0.14 ± 0.01 (0.14–0.15); length of antennal segments: I 0.13 ± 0 , II 0.11 ± 0 , III 0.19 ± 0.01 (0.19–0.2), IV 0.24 ± 0.04 (0.21–0.28), V 0.26 ± 0.04 (0.24–0.29); length of rostral segments: I 0.15 ± 0 , II 0.27 ± 0.03 (0.25–0.29), III 0.16, IV 0.16; pronotal length 0.41 ± 0.03 (0.39–0.43), width 0.74 ± 0.06 (0.7–0.79); scutellar length 0.63 ± 0.05 (0.59–0.66), width 0.54 ± 0 , width at end of frenum 0.34 ± 0.04 (0.31–0.36); abdominal width 0.85 ± 0.04 (0.83–0.88).

Comments. This species is very similar to the type species. The main disparities are the shape of the parameres, longer in *Gen. nov. 2 bergrothi* and the vesica, which is more robust in *Gen. nov. 2 bergrothi*. Also the antero-lateral angles are a bit smaller than in *Gen. nov. 2 notatulus* and more acute posteriorly. The differences of the *phalloteca* and the vesica are minor.

***Gen. nov. 2 incisulus* (Breddin, 1910) comb. nov.**

(Figs. 1C, 2D–E)

Ochlerus incisulus Breddin, 1910: 628; Simões & Campos, in prep.

Type material (examined). Male lectotype, "Mérida Venez., ♂, Typus, *Ochlerus incisulus* ♂ Type Bredd, coll. Breddin, Lectotypus, Des. H. Gaedike 1968, DEI Münchenberg HEMI-00033" (SDEI). 1 female paralectotype; "Mérida, Venezuela 1884, ♂, Typus, *Ochlerus incisulus* ♀ Type Bredd, Paralectotypus, Des. H. Gaedike 1968, DEI Münchenberg HEMI-00034" (SDEI).

Type locality. Mérida, Mérida, Venezuela.

Diagnosis. Antero-lateral angles of the pronotum laterally projected, acute. Scutellum base with a median very small yellow macula. Inferior layer of dorsal rim of the pygophore excavated medially with a very wide gap between the postero-lateral angles gradually widening until the apex, where a tooth-like projection the same color as the parameres. Head of the parameres wide and robust, convergent.

Measurements: (n = 2) Total length 1.39 ± 0.07 (1.34–1.44); head length 0.25, anteocular length 0.1, width 0.28 ± 0.01 (0.28–0.29), interocular distance 0.14; length of antennal segments: I 0.13, II 0.11 ± 0.01 (0.1–0.11), III 0.22 ± 0.01 (0.21–0.23), IV 0.24, V [unknown]; length of rostral segments: I 0.14 ± 0.03 (0.13–0.16), II 0.24 ± 0.01 (0.24–0.25), III 0.22 ± 0.01 (0.21–0.23), IV 0.21 ± 0.01 (0.2–0.21); pronotal length 0.38 ± 0.01 (0.38–0.39), width 0.73; scutellar length 0.63 ± 0.02 (0.61–0.64), width 0.51 ± 0.03 (0.49–0.53), width at end of frenum 0.3 ± 0.02 (0.29–0.31); abdominal width 0.88 ± 0.01 (0.88–0.89).

Comments. No specimen was dissected, due to limited availability.

Gen. nov. 2 stylulatus* (Breddin, 1910) *comb. nov.

(Figs. 1E, 2H)

Ochlerus stylulatus Breddin, 1910: 629; Simões & Campos, *in prep*

Type material (examined). Female lectotype, "Peru Amaz., coll. Breddin, DEI Münchenberg HEMI-00028". (SDEI)

Type locality. Marcapata, Department unknown, Peru.

Material examined. **BOLIVIA**, *Santa Cruz*: 1 female, Refugio Los Volcanes, 1350m, 9-12.XII.2011, Morris & Wappes cols. [-18.1000; -63.6000], *Ochlerus* sp. #9 det. J. E. Eger 2013 (JEE); 1 female, Refugio Los Volcanes, 3400-4200ft, 16-20.IX.2012, P. Skelley, J. Hamel, J. Wappes & T. Bonaso cols. [-18.1000; -63.6000], S 18°06' W064°36', MV and UV lights (JEE).

Measurements: (n = 3) Total length 1.4 ± 0.04 (1.36–1.44); head length 0.24 ± 0.02 (0.23–0.26), anteocular length 0.12 ± 0.01 (0.11–0.13), width 0.31 ± 0.04 (0.29–0.35), interocular distance 0.15 ± 0.01 (0.15–0.16); length of antennal segments: I 0.1, II 0.09 ± 0.01 (0.09–0.1), III 0.18 ± 0.01 (0.18–0.19), IV 0.24 ± 0.01 (0.23–0.25), V 0.27 ± 0.01 (0.26–0.28); length of rostral segments: I 0.15 ± 0.03 (0.13–0.18), II 0.25 ± 0.01 (0.24–0.26), III 0.23, IV 0.2 ± 0.04 (0.18–0.23); pronotal length 0.42 ± 0.03 (0.39–0.44), width 0.77 ± 0.04 (0.73–0.8); scutellar length 0.6 ± 0.04 (0.55–0.63), width 0.52 ± 0.02 (0.5–0.54), width at end of frenum 0.28 ± 0.03 (0.26–0.31); abdominal width 0.85 ± 0.01 (0.85–0.86).

Diagnosis. Antero-lateral angles of the pronotum laterally projected, sculptured, spoon-like. Scutellum base with a median small yellow macula. Lobes of gonocoxites 8 completely almost completely separated (connection can only be seen if dissected); posterior margins forming an acute angle with sutural margins, the latter slightly projected over gonocoxites 9; exterior lobe small, apex touching spiracle on laterotergites 8. Spiracles on laterotergites 8 exposed. Thickening of gonapophyses 9 trapezoidal, reaching half of total length.

Comments. Head slightly shorter in front of the eyes than other species. The gonapophyses 9 can be easily seen without dissection due to the shape of the gonocoxites 8.

***Gen. nov. 2 tenuicornis* (Breddin, 1910) comb. nov.**

(Figs. 1F, 2I–J)

Ochlerus tenuicornis Breddin, 1910: 626; Campos & Grazia, 2006: 154; Simões & Campos, *in prep*

Type material (examined). Female holotype, "Venezuela, coll. Breddin, Barber revid. 1933, Holotypus, DEI-Münchenberg Hemi-00035". (SDEI)

Type locality. Venezuela.

Distribution. **Brazil** (*Alagoas, Amazonas, Maranhão, Pará*), **French Guiana** (*Cayenne*), **Suriname**, **Venezuela** (*Apure, Bolívar*)

Material examined. **BRAZIL**, *Alagoas*: 1 male and 3 females, Maceió, XII.1995, Rebouças & Santana cols. [-9.6667; -35.7167] (CMNH). *Amazonas*: 1 male and 2 females, Manaus, BR-174 Km 45, 08.IV.1982, E. L. Oliveira col. [-3.1133; -60.0252] (UFRG); 1 male, Manaus, v182 BR-174 Km 45, E. Oliveira col. [-3.1133; -60.0252] (UFRG); 1 male, Manaus, FUA, 25.[illegible].1982, J. W. Morais col. [-3.1133; -60.0252] (UFRG); 1 female, Manaus, INPA-Aleixo, 04.IV.1988, F. B. Apolinário col. [-3.1133; -60.0252], Pentatomidae 63 (UFRG); 1 female, Manaus, FUA, 28.II.1982, J. W. Morais col. [-3.1133; -60.0252] (UFRG); 2 females, Manaus, conj. Petro, 28.V.1982, L. R. Latorre col. [-3.1133; -60.0252] (UFRG); 1 male, Manaus, Estr. BR-17 Km 38, 09.VIII.1969, E. V. Silva col. [-3.1133; -60.0252], 2913, D. A. Rider Collection, *Ochlerus* sp. B-7 (NDSU); 1 male, Manaus, 20.II.1978, B. Ratcliffe [-3.1133; -60.0252], D. A. Rider Collection (NDSU); 1 male, Manaus, INPA-Aleixo, 24.IX.1977, A. Castellon col. [-3.1133; -60.0252], D. A. Rider Collection, *Ochlerus* B-7 (NDSU); 1 female, Manaus, INPA [-3.1133; -60.0252], Pentatomidae (UFRG); 1 female, CEPLAC, Am. 01 [illegible], 12.VI.1996, C. Gondim col. [coordinates unknown], D. A. Rider Collection (NDSU). *Maranhão*: 4 males, RESBIO-Gurupi, 05-15.VI.2010, J. C. Silva, J. A. Silva, A. A. Santos & T. T. A. Silva cols. [-5.0804; -45.6007], Bom Jardim, Armad. Luminosa Base (UFMA); 1 male, RESBIO-Gurupi, 02-11.IX.2010, F. Limeira-de-Oliveira, J. C. Silva, J. A. Silva & M. M. Abreu cols. [-5.0804; -45.6007], Bom Jardim, Armad. Luminosa Base (UFMA); 1 male, RESBIO-Gurupi, 07-15.I.2011, F. Limeira-de-Oliveira & M. M. Abreu cols. [-3.2347; -46.6858], 03°14'05"S 46°41'83 W, Arm. Luminosa Móvel (UFMA); 1 male, RESBIO-Gurupi, 05-15.VI.2010, F. Limeira-de-Oliveira, J. C. Silva & D. W. A. Marques cols [-5.0804; -45.6007], Bom Jardim, Coleta Incidental (UFMA); 1 female, RESBIO-Gurupi, 17-27.I.2010, F. Limeira-de-Oliveira, J. T. Câmara & M. B. Aguiar Neto

cols. [-5.0804; -45.6007], Bom Jardim, Armad. Luminosa Móvel (UFMA). **Pará:** 1 male, Mojú, II.1985, Ch. Louvet col. [-1.8833; -48.7666] (CMNH); 1 female, Belém, 25.I.1969, L. & C. W. O'Brien cols. [-1.4558; -48.5038], night, *Ochlerus* sp. II 2, LHR74 (CMNH); 1 male and 2 females, Mojú, II.1985, Ch. Louvet col. [-1.8833; -48.7666] (UFRG); 6 males and 24 females, Mojú, Faz. Socôco, V.1987 [-1.8833; -48.7666] (UFRG); 1 male and 1 female, Mojú, Faz. Socôco, 01.XII.1995, P. Lins col. [-1.8833; -48.7666], Mata em contorno ao coqueiral /1 (UFRG); 3 females, Mojú, Faz. Socôco, 01.XII.1995, P. Lins col. [-1.8833; -48.7666], Mata em contorno ao coqueiral /5 (UFRG); 3 males (?), Mojú, Faz. Socôco, 01.XII.1995, P. Lins col. [-1.8833; -48.7666], Mata em contorno ao coqueiral /6, [one of the specimens lacks pygophore, which probably is the one pinned next to the specimen] (UFRG); 3 females, Mojú, Faz. Socôco, 01.XII.1995, P. Lins col. [-1.8833; -48.7666], Mata em contorno ao coqueiral /7 (UFRG); 3 females, Mojú, Faz. Socôco, 01.XII.1995, P. Lins col. [-1.8833; -48.7666], UFAL F (UFRG); 2 females, Mojú, Faz. Socôco, 1995 [-1.8833; -48.7666], Socôco F (UFRG); 2 females, Mojú, Faz. Socôco, 1995 [-1.8833; -48.7666], Socôco I (UFRG); 1 male (?) and 1 female, Tucuruí, I.1979, M. Alvarenga col. [-3.7000; -49.7000] [lacks pygophore, which probably is the one pinned next to the specimen] (UFRG); 1 female, Tucuruí, Rio Tocantins, 29.III.1984, M. F. Torres col. [-3.7000; -49.7000], Xiqueirão (UFRG); 1 female, Tucuruí, 04.VIII.1980, eq. Nunes de Mello col. [-3.7000; -49.7000], Bagagem. **FRENCH GUIANA, Cayenne:** 1 female, Cayenne, 13.XI.1987, G. Couturier col., Rec., sur *Astrocaryum murumuru*, Palmal, *Ochlerus*. **Province unknown:** 1 male, [illegible locality], I.1981, Cabassou col., Collection [illegible], D. A. Rider Collection (NDSU). **SURINAME, Sipaliwini:** 1 female, Raleigh Falls, 27.VII.1975, D. Engleman col. [2.4166; -56.9166], D. A. Rider Collection, *Ochlerus* sp. 2 LHR75 (NDSU). **VENEZUELA, Apure:** 1 female, Lara, 1981, J. M. Osorio col. [7.2667; -68.4000], FSCA (NDSU). **Bolívar:** 1 female, Rio Supamo, 50 Km SE El Manteco, 18-19.XII.1987, B. D. Gill col. [7.3500; -62.5333] (CMNH); 1 female, Gran Sabana, Road to Kavanayeh 9 Km Chivato 1310 m, 28.VI.1987, M. A. Ivie col. [5.4867; -61.8961], at light (CMNH).

Measurements. (n = 8) Total length 1.32 ± 0.05 (1.28–1.39); head length 0.25 ± 0.02 (0.21–0.26), anteocular length 0.12 ± 0.01 (0.11–0.13), width 0.3 ± 0.02 (0.26–0.33), interocular distance 0.14 ± 0.01 (0.13–0.15); length of antennal segments: I 0.11 ± 0.01 (0.1–0.13), II 0.13 ± 0.01 (0.11–0.14), III 0.2 ± 0.02 (0.18–0.23), IV 0.27 ± 0.01

(0.25–0.29), V 0.28 ± 0.01 (0.26–0.3); length of rostral segments: I 0.14 ± 0.02 (0.11–0.16), II 0.24 ± 0.01 (0.21–0.25), III 0.2 ± 0.01 (0.18–0.21), IV 0.18 ± 0.01 (0.16–0.19); pronotal length 0.39 ± 0.02 (0.36–0.4), width 0.75 ± 0.03 (0.71–0.79); scutellar length 0.61 ± 0.02 (0.59–0.64), width 0.5 ± 0.02 (0.48–0.53), width at end of frenum 0.3 ± 0.01 (0.28–0.31); abdominal width 0.82 ± 0.03 (0.76–0.85).

Diagnosis. Antero-lateral angles of the pronotum laterally projected, small and acute. Scutellum base with 1+1 small yellow maculae laterad to basal angles and one median evanescent basal macula. Postero-lateral projections of the pygophore small, trapezoidal; apex with three tooth-like projections. Parameres scythe-like, surpassing imaginary line of the ventral rim. Outer lobe of gonocoxites 8 projected over the base of laterotergites 8 (la8), apparently constricted by posterior margin of urosternite VII. Spiracles on la8 exposed. Laterotergites 9 small, deeply wrinkled. Thickening of gonapophyses 9 (g9) triangular, reaching almost the full length of g9.

Comments. The shape of the pygophore is unique for Gen. nov. 2 and other genera among the *Ochlerus* group. Parameres and proctiger heavily bristled on lateral walls. The internal male genitalia is simple, with no evident projections on it.

Acknowledgments

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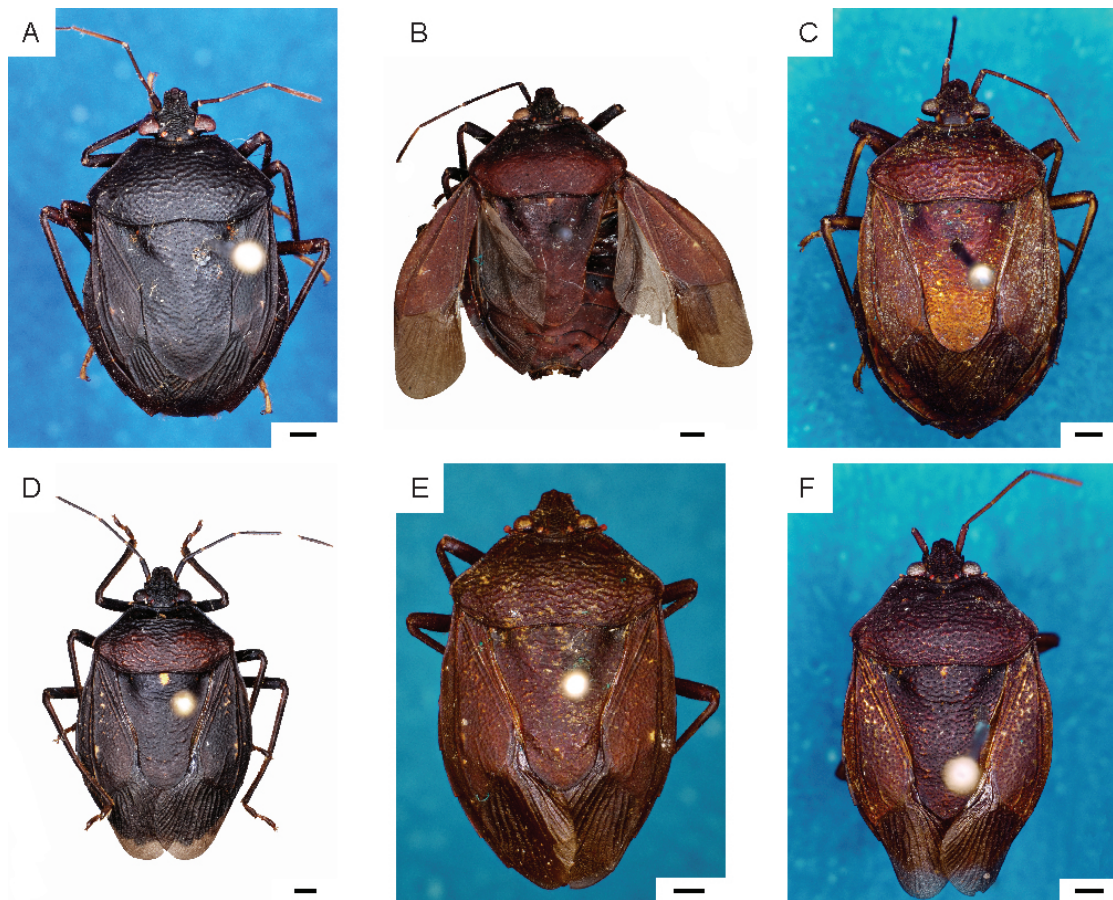


Figure 1. Dorsal view of species of *Gen. nov. 1* and *Gen. nov. 2*: **A**, *Gen. nov. 1 handlirschi* (Breddin, 1910); **B**, *Gen. nov. 2 bergrothi* (Breddin, 1910); **C**, *Gen. nov. 2 incisulus* (Breddin, 1910); **D**, *Gen. nov. 2 notatulus* (Breddin, 1910); **E**, *Gen. nov. 2 stylulatus* (Breddin, 1910); **F**, *Gen. nov. 2 tenuicornis* (Breddin, 1910). (Scale bars = 1mm)

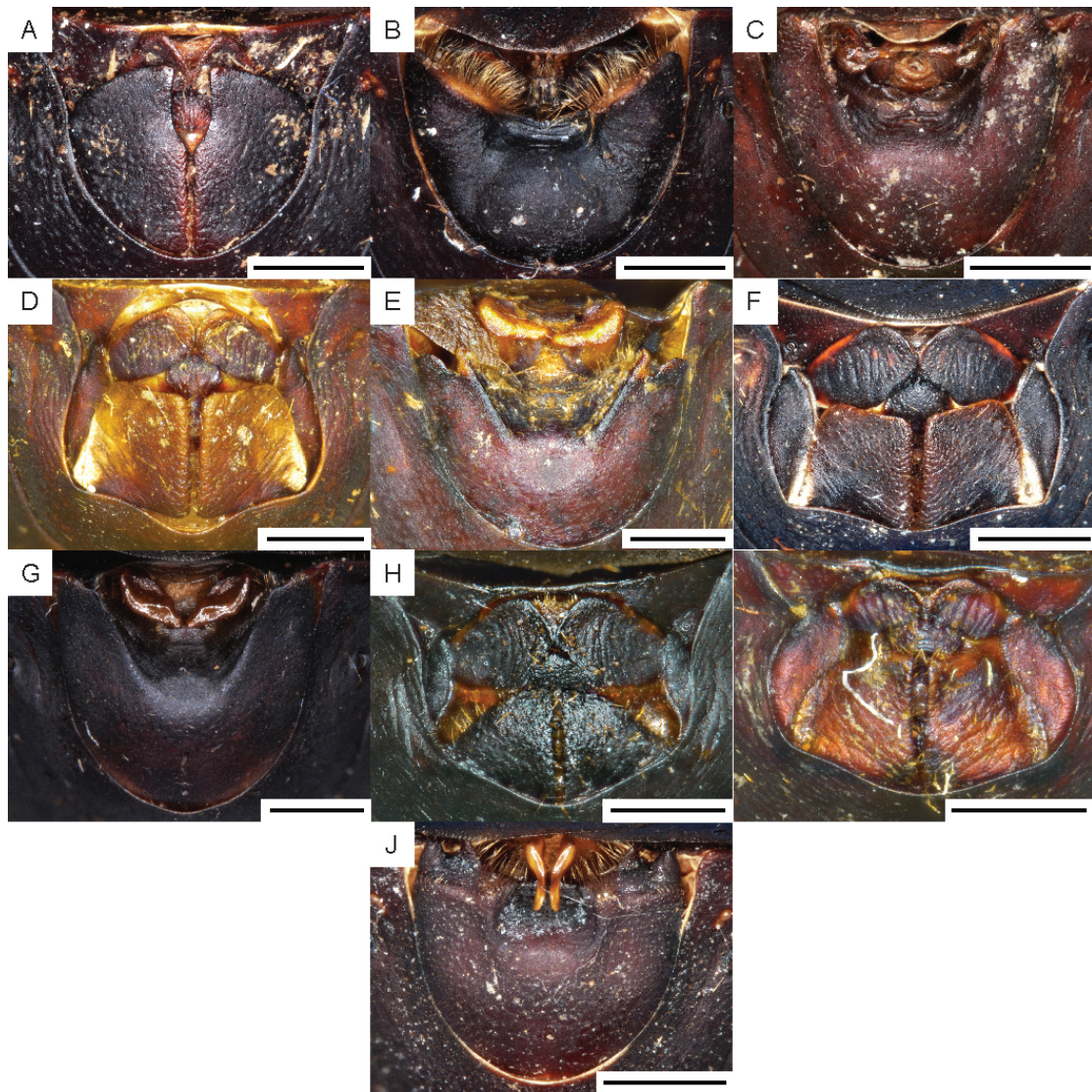


Figure 2. Posterior view of the genitalia (male, A, D, F, H, I); female, B, C, E, G, J) of species of *Gen. nov. 1* and *Gen. nov. 2*: **A–B**, *Gen. nov. 1 handlirschi* (Breddin, 1910); **C**, *Gen. nov. 2 bergrothi* (Breddin, 1910); **D–E**, *Gen. nov. 2 incisulus* (Breddin, 1910); **F–G**, *Gen. nov. 2 notatulus* (Breddin, 1910); **H**, *Gen. nov. 2 stylulatus* (Breddin, 1910); **I–J**, *Gen. nov. 2 tenuicornis* (Breddin, 1910). (Scale bars = 1mm)

CONCLUSÕES GERAIS

A elucidação histórica, taxonômica e sistemática de *Ochlerus*, resultando diretamente na descrição de sete novas espécies, dois novos gêneros e outras definições pontuais, constitui um ponto importante para o conhecimento sobre os pentatomídeos da tribo Ochlerini.

O fato de *Ochlerus* ter continuado por tantos anos como um gênero obscuro, levou à profusão de informações conflitantes disponíveis nas coleções científicas. Outra consequência são os trabalhos referentes à biologia de transmissores de *Phytomonas* spp. os quais acabam sem definições conclusivas sobre o papel de *Ochlerus* nestes processos biológicos.

Embora o número de filogenias para Pentatomidae tenha recebido um incremento recente, há ainda muito a se fazer. A adição da análise cladística de *Ochlerus* poderá servir como base para outros estudos de grupos próximos em um futuro próximo.

Por fim, cabe ressaltar a grande possibilidade científica que o gênero aqui estudado proporcionará se considerarmos sua distribuição geográfica. Trabalhos sobre bio- ou filogeografia de Ochlerini, ou ainda de Pentatomidae são raríssimos e, se realizados, poderão abrir uma nova gama de fronteiras para o conhecimento desse grupo de insetos.

ANEXO I

Normas aos autores:

Capítulo 2

Arthropod Systematics and Phylogeny

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Klaus-Dieter Klass (klaus.klass@senckenberg.de), **editor-chefe**

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Structure and contents. For the main body of the text, four grades of headings are available. Please number the headings (1., 1.1., 1.1.1. etc.) to make the structure of the text clear.

The text should be very clearly structured should usually consist of: **Introduction**, **Material and Methods** (only Methods in taxonomic papers, and optional for these); list(s) of **Abbreviations**; **Results**, or species/genus (re-) **Descriptions** in taxonomic papers, **Discussion** and/or **Conclusions**, **Acknowledgements** (if desired); list of **References**; **Appendix** (optional). For these main sections of the text, headings of the highest grade should be used.

The Introduction should make the article accessible to a broad range of zoologists, i.e., the subject of the contribution should be put in some wider context.

Furthermore, the state-of-the-art regarding the subject of the submitted manuscript should be fully explained. The list of Abbreviations should include all abbreviations used in the illustrations (e.g., anatomical structures) and used only in the text (e.g., natural history museums from which material has been loaned) in alphabetical resp. numerical order and with numbers preceding letters. Abbreviations used in the illustrations can alternatively altogether be explained in the figure legends if they are usually not repeated on several plates. Lists of taxa, locations, characters etc. that might disturb the fluency of the text might be accommodated in one or several appendices. Altogether, authors should strictly follow provisions of the current edition of the International Code of Zoological Nomenclature (ICZN). See below for additional directives concerning manuscripts with taxonomic contents.

Style and format. Generally keep formatting at a minimum. Please do not use indentations (e.g., for the first line of a paragraph), and do not hyphenate the text.

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HIGGINS, L.G. 1950. A descriptive catalogue of the Palaearctic Euphydryas (Lepidoptera: Rhopalocera). – Transactions of the Royal Entomological Society of London 101: 435–489.

ROBINSON, G.S. & K.R. TUCK 1996. Describing and comparing high invertebrate diversity in tropical forest – a case study of small moths in Borneo. Pp. 29–42 in: D.S. EDWARDS, W.E. BOOTH & S.C. CHOY (eds.), Tropical Rainforest Research. – Kluwer Academic Publishers, Dordrecht.

HIGGINS, L.G. & N.D. RILEY 1980. A Field Guide to the Butterflies of Britain and Europe. 4th edn. – Collins, London. 384 pp.

BRADLER, S., M.F. WHITING & R. KLUG 2003. Basal diversification and the evolution of wings within stick insects (Phasmatodea). In: KLASS, K.-D. (ed.), Proceedings of the 1st Dresden meeting on insect phylogeny: “Phylogenetic Relationships within the Insect Orders” (Dresden, September 19–21, 2003). – Entomologische Abhandlungen 61: 132–133.

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Nomenclature. Authors should strictly follow provisions of the current edition of the International Code of Zoological Nomenclature (ICZN). Otherwise, the nomenclature used should follow a recent list or other suitable work (if available), and this should be cited. The abbreviations gen.n., sp.n., syn.n., comb.n. or similar have to be used to explicitly indicate all nomenclatural/taxonomic innovations. In establishing new genus-group taxa, the nominal type species must be designated in its original combination and with reference to the original description immediately after the new name. New genus-group names or higher taxa are only accepted if their proposal is accompanied by explicit phylogenetic reasoning. In establishing new species-group taxa, one single specimen must be designated as the holotype; other specimens mentioned in the original description and included into the type series are to be designated as paratypes.

Depository of specimens. The editors urge, in line with the recent edition of the ICZN, all authors of newly described species-group taxa to deposit primary types in publicly accessible collections. A clear statement about type depositions within the original description is mandatory.

Specification of material. In the Material section of species descriptions, type material should be listed in advance to the remaining material, with the latter set off by a long dash. For type specimens the complete label data should be quoted in the original description, using ‘...’ for starting and terminating the quotation (separately for each of the labels, which should be given in the sequence top to bottom in case of a pinned specimen), a vertical line | for separating different lines of the label, angled brackets <...> for including comments into the quotation (e.g., <sic>), and square brackets [...] for expansions of abbreviations (e.g., Bras.[il]) and for the conversion of measurements; dates and geographical coordinates may be modified according to the above standards, and the name of countries may be written in capitals (see example below). For primary types, labels added by the author (e.g., type labels) should be included in the quotation. For non-type specimens localities should be given in order of increasing precision and using the standards given in the preceding paragraphs, as shown in the example below. Please use ‘E of’, ‘W of’, ‘S of’, ‘N of’, ‘NW of’ in order to abbreviate ‘East of’, ‘West of’, ‘Northwest of’, etc. The location of the material should be given in brackets at the end of the collecting data, e.g., (MTD; coll. Meier). For certain procedures applied to specimens please use the abbreviations leg. (collected), det. (determined), and des. (designated), placed behind the name of the person.

Material. Holotype ♂, ‘TURKEY, Hakk.[ari], 8 km östlich Uludere | 1200 m | 10.vi.1984’, ‘Meier leg.’, ‘coll. MTD Drsden <sic>’, ‘Holotype | Aus beus sp. n. ♂ | det A. Müller’ (MTD). – Paratypes 4♂, 4♀. 1♂, 3♀, ‘TURKEY | Achalzich Chambobel’, ‘1910 Korb’ (1♂, 1♀ NHMW; 2♀ coll. Müller); 2♂, 1♀, ‘IRAQ | Kurdistan, Sersang, 1500 m | L. Schmidt leg.’ (NHM); 1♂, IRAQ, ‘Shaqlawā, 1640 ft [500 m] | Kurd.[istan] | 15.–24.v.[19]57, A. Huber leg.’ (MTD). – TURKEY: 2♂, 1♀, Hakkari, 8 km E of Uludere, 1000 m, 05.vii.1989, Baumann leg., Müller det. (1♂ ITZA; 1♂, 1♀ coll. Obermeier); 1♂, Hakkari, 3 km NW of Uludere, 800 m, 10.vii.1993, Heinz leg., Müller det. (ITZA). GREECE: ...

ANEXO II

Normas aos autores:

Capítulo 3

Systematic Entomology

ISSN (online) 1864-8312; ISSN (print) 1863-7221

Dr. Shaun L. Winterton (wintertonshaun@gmail.com) , **editor de área**

California Department of Food & Agriculture, Sacramento, USA

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Papers submitted to Systematic Entomology should be original contributions to insect taxonomy and systematics, although descriptive morphology and other subjects bearing on taxonomy may be considered. Emphasis is placed on the selection of comprehensive or revisionary studies, and on work with a biological or zoogeographical relevance. Papers submitted must not have been published or accepted for publication elsewhere.

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Figures should be of publishable quality and about twice their published size, labelled large enough to allow reduction and numbered consecutively in the sequence referred to in the text. Drawings and photographs that make up separate parts of the same figure must be mounted together and labelled consecutively (preferably left to right, top to bottom) with capital letters. Reference in the text should be: Fig. 1, Figs 2, 3 and Figs 1; 2A,C. Figure legends should be grouped together on a separate sheet. The format for figure legends is: Fig. 1. Genus species. A, Habitus; B,C, male genitalia; D-F, head (D), thorax (E) and abdomen (F). In the full-text online edition of the journal, figure legends may be truncated in abbreviated links to the full screen version. Therefore the first 100 characters of any legend should inform the reader of key aspects of the figure.

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Papers must conform to the articles and recommendations of the International Code of Zoological Nomenclature. New taxa must be clearly differentiated from existing taxa. Holotypes, lectotypes and neotypes must be deposited in a recognized scientific or educational institution that maintains a research collection, with proper facilities for preserving name-bearing types, and makes the accessible for study. New distributional and other noteworthy records should be documented by voucher specimens deposited in a museum or similar institution. The abbreviations gen.n., sp.n., syn.n. and comb.n. should be used to distinguish all new taxa, synonymies or new combinations. An author's name must follow the name of a taxon without any intervening punctuation, and a comma must be inserted between the name of the author and the date of publication. If a species is transferred from its original genus, the author's name must then be placed in parentheses. The name of a subsequent user of a scientific name must be separated from that of the original author by a semicolon or the word 'of'.

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and paratypes, and the institutions in which they are deposited, must be recorded in the original description, e.g.:

Holotype, ♂, GREAT BRITAIN: Essex, Rainham, Warwick Wood, 22.vi.1977 (*Morris*) (BMNH).

Paratypes, NEPAL: 1 ♂, 1 ♀, Chautara Dist., Choche Ridge, 2500 m, ex Quercus, 17.vii.1983 (*Brendell*) (BMNH); 1 ♂, 2 ♀, Katmandu, 1350 m, 6.vii.1982 (*Allen*) (BMNH; NMNH).

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ANEXO III

Normas aos autores:

Capítulo 4

Neotropical Entomology

ISSN (online) 1678-8052; ISSN (online) 1519-566X (print)

Prof. Fernando L. Cônsoli (editor.ne@seb.org.br), **editor-chefe**

Department of Entomology & Acarology of the University of São Paulo.

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Negotiation research spans many disciplines (Panizzi 1990).

This result was later contradicted by Parra & Zucchi (2006).

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o Journal article

Warner KD (2012) Fighting pathophobia: how to construct constructive public engagement with biocontrol for nature without augmenting public fears. *BioControl* 57:307–317

o ArticlebyDOI

Grosman AH, Janssen A, Brito EF, Cordeiro EG, Colares F, Fonseca JO, Lima ER, Pallini A, Sabelis MW (2008) Parasitoid increases survival of its pupae by inducing hosts to fight predators. *PLoS ONE* 3(6):e2276. doi:10.1371/journal.pone.0002276

o Book

Carey JR (1993) *Applied demography for biologists with special emphasis on insects*. Oxford University Press, New York, p 206

o Bookchapter

Datnoff LE, Seebold KW, Correa FJ (2001) The use of silicon for integrated disease management reducing fungicide applications and enhancing host plant resistance. In: Datnoff LE, Snyder GH, Korndorfer GH (eds) Silicon in agriculture. Elsevier Science, Amsterdam, pp 209–219

o Online document

Monteiro RC, Lima EFB (2011) Thysanoptera of Brazil. <http://www.lea.esalq.usp.br/thysanoptera/> Accessed 25 Nov 2011

o Dissertation

Nihei SS (2004) Sistemática e biogeografia de Muscini (Diptera, Muscidae). PhD. Thesis, Universidade Federal do Paraná, Curitiba, Brasil, p 203

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