UNIVERSIDADE FEDERAL DO PARANÁ

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REVISÃO TAXONÔMICA DAS ESPÉCIES BRASILEIRAS DE *ALEOCHARA* (*ALEOCHARA*) GRAVENHORST, 1802 (COLEOPTERA: STAPHYLINIDAE: ALEOCHARINAE)

Dissertação apresentada ao Programa de Pós-graduação em Ciências Biológicas, Área de Concentração em Entomologia, Setor de Ciências Biológicas, Departamento de Zoologia, Universidade Federal do Paraná como requisito parcial à obtenção do grau de Mestre em Ciências Biológicas.

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MARCELO BRITO MOUSSALLEM DE ANDRADE

"REVISÃO TAXONÔMICA DAS ESPÉCIES BRASILEIRAS DE *ALEOCHARA* (*ALEOCHARA*) GRAVENHORST, 1802 (COLEOPTERA: STAPHYLINIDAE: ALEOCHARINAE)"

Dissertação aprovada como requisito parcial para obtenção do grau de "Mestre em Ciências Biológicas", no Programa de Pós-graduação em Ciências Biológicas, Área de Concentração em Entomologia, da Universidade Federal do Paraná, pela Comissão formada pelos professores:

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Curitiba, 24 de fevereiro de 2015.

Ad Astra per Aspera

To all those who helped me
pass through the difficulties
and reach my stars.

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TAXONOMIC REVISION OF BRAZILIAN SPECIES OF *ALEOCHARA* (*ALEOCHARA*) GRAVENHORST, 1802 (COLEOPTERA: STAPHYLINIDAE: ALEOCHARINAE)

ABSTRACT

Aleochara Gravenhorst, 1802 is a widespread genus of Staphylinidae, with near 500 species. In the *Aleochara* (*Aleochara*) subgenus there are species known for ectoparasitic behavior and association with decaying animal material. Despite the potential for biological control, ecological, and forensic areas many studies hamper in taxonomic limitations, as lack of group specialists or identification keys. In Brazil few works approach *Aleochara* (*Aleochara*) species in specific level due this limitation. The objective of this work is to facilitate the identification of Brazilian *Aleochara* (*Aleochara*) species as a base for further works. In this work we redescribe and illustrate *A. auricoma, A. mundana* and *A. prisca*, all described by Sharp in 1876 and not yet reviewed; revise *A. bonariensis* Lynch-Arribálzaga*, A. chrysorrhoa* Erichson*, A. curtula* (Goeze)*, A. lustrica* Say and *A. pseudochrysorrhoa* Caron, Mise & Klimaszewski, with recent redescriptions; elaborate two dichotomous keys: one for the Brazilian *Aleochara* subgenus, and other for the species of *Aleochara* s. str. known to Brazil; and create a new group of species composed by *A. auricoma* Sharp*, A. mundana* Sharp and *A. prisca* Sharp named mundana group. Furthermore *A. verecunda* Sharp is considered *species inquirenda*.

Keywords: Biodiversity, Identification key, mundana group, Neotropical fauna, Sharp.

RESUMO

Aleochara Gravenhorst, 1802 é um gênero de Staphylinidae amplamente distribuído, com cerca de 500 espécies. No subgênero *Aleochara* (*Aleochara*) há espécies conhecidas pelo comportamento ectoparasítico e associadas à matéria animal em decomposição. Apesar do potencial para áreas de controle biológico, ecológico e forense, muitos estudos tem como empecilho as limitações taxonômicas, como a falta de especialistas em vários grupos e falta de chaves para identificação. No Brasil poucos trabalhos abordam *Aleochara* (*Aleochara*) em nível específico devido a esta limitação. O objetivo deste trabalho é facilitar a identificação das espécies brasileiras de *Aleochara* (*Aleochara*) como base para trabalhos posteriores. Neste trabalho redescrevemos e ilustramos *A. auricoma, A. mundana* e *A. prisca*, descritos por Sharp em 1876 e ainda não revisados; revisamos *A. bonariensis* Lynch-Arribálzaga*, A. chrysorrhoa* Erichson*, A. curtula* (Goeze)*, A. lustrica* Say e *A. pseudochrysorrhoa* Caron, Mise & Klimaszewski, espécies com redescrição recente; elaboramos duas chaves de identificação: uma para subgêneros brasileiros de *Aleochara* e outra para as espécies de *Aleochara* s. str. conhecidas para o Brasil; e criamos um novo grupo de espécies com A. *auricoma* Sharp*, A. mundana* Sharp e *A. prisca* Sharp denominado grupo mundana. Em adição *A. verecunda* Sharp é considerada como *species inquirenda*.

Palavras-chave: Biodiversidade, Chave de identificação, Fauna Neotropical, Grupo mundana, Sharp.

INTRODUCTION

Staphylinidae Latreille, 1802 is the largest group of Coleoptera comprising nearly 58.000 species (Grebennikov & Newton 2012), more than 3.400 genera and 32 subfamilies (Newton *et al.* 2005). Among the Staphylinidae subfamilies, Aleocharinae Fleming, 1821 is no doubt the most numerous, with more than 13.000 species (Song & Ahn 2014) grouped in more than 1.700 described genera, numerous subtribes and 51 tribes (Ashe 2002). Within Aleocharinae subfamily, the genus *Aleochara* Gravenhorst, 1802 is one of the most specious genera, composed by 500 species (Alfred Newton, FMNH, personal information), divided among 19 subgenera (Yamamoto & Maruyama 2013) distributed around the world, with exception of Antarctica (Klimaszewski 1984). Through molecular phylogeny studies Maus *et al.* (2001) considered *Aleochara* as a monophyletic group and Song & Ahn (2013) also stand for the monophyly of the group through the molecular study of coastal *Aleochara.*

Aleochara can be identified by the tarsal formula 5-5-5 and the last joint of maxillary and labial palpi with apical pseudoarticule combined (Ashe 2002). In Neotropical region, 81 species of *Aleochara* are recognized and grouped in six distinct subgenera (Caron *et al.* 2008), in Brazil 22 species are registered in three subgenus: *Aleochara* s. str. Gravenhorst, 1802; *Coprochara* Mulsant & Rey, 1884 and *Xenochara* Mulsant & Rey, 1884 (Caron *et al*. 2008). Of the Brazilian species, *Aleochara* s. str. represents 41% of Brazilian richness, and is often associated to decaying material such as animal carcasses. This association is underexplored to forensic matters especially by the difficult of species identification. *Aleochara* s. str. can be identified by the antennomeres 1–3 longer than wide, 4–10 transverse; pronotum evenly pubescent; mesosternite not carinate and posterior margin of male abdominal tergite VIII with many short setae (Klimaszewski 1984; Park & Ahn, 2010). Although the diagnostic characters of the subgenus, the study at the specific level is particularly difficult due the external likeliness among species, being necessary a careful study of both male and female terminalia.

The lack of proper taxonomic works, as widely known, hampers the development of several areas of science. Therefore revisional studies are necessary to identify correctly a group of species, making us able to congregate information about these species and to compare new collected specimens and associate them with one of the known species or to recognize them as belonging to a new species not yet described. In this path taxonomic works can be done more easily.

OBJECTIVES:

GENERAL OBJECTIVES:

- Revision of Brazilian *Aleochara* (*Aleochara*) species.

SPECIFIC OBJECTIVES:

- Redescribe and illustrate species with obsolete description;
- Revision of species with recent description/redescription;
- Comparison of all species to investigate possible synonyms;
- Register new geographical records for *Aleochara* (*Aleochara*) in Brazil;
- Elaborate identification keys for the Brazilian *Aleochara* subgenus and for *Aleochara* (*Aleochara*) species.

MATERIAL AND METHODS

In this work 204 specimens were studied, provided from seven different museums: 3 were obtained from BMNH (Natural History Museum, London, United Kingdom - Curator: Roger G. Booth), 10 from DZUP (Coleção Entomologica Pe. Jesus Santiago Moure, Curitiba, Paraná, Brazil – Curators: Luciane Marinoni and Cibele S. Ribeiro-Costa), 47 from FMNH (Field Museum, Chicago, Illinois, U.S.A. - Curators: Alfred Newton and James Boone), 23 from INPA (Instituto Nacional de Pesquisas da Amazônia, Colecão Sistemática da Entomologia, Manaus, Amazonas, Brazil – Curators: Márcio Luiz de Oliveira and Célio Augusto Henriques), 65 were obtained from IRSNB (Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium - Curators: Yvonnick

Gerard and Wouter Dekoninck), 46 from MPEG (Museu Paraense Emílio Goeldi, Belém, Pará, Brazil – Curator: Orlando Tobias) and 13 from MZSP (Museu de Zoologia da Universidade de São Paulo, São Paulo, São Paulo, Brazil – Curators: Sônia Aparecida Casari and Carlos Camponer). Museum acronyms and name of the institutions follow Evenhuis (2014). List of additional material is divided by museum than by Country. Label descriptions from type and additional materials follow Caron *et al.* (2012), with modification: backslash instead of slash and comments about the label are not in italic. The labels are organized in sequence from top to bottom, where the data from each label are enclosed within double quotes (“”), a backslash (\) separates lines, and information added, label details and comments enclosed by square brackets ([]). All information from labels is listed as found, doubtful information due interpretation of stained labels will be followed by (?).

The terminology adopted in this study follows Klimaszewski (1984), Caron *et al.* (2008) and Moussallem *et al.* (2014). Diagnoses follow the definition of ICZN (1999).

For dissection, some specimens were boiled in hot water for five minutes until the intersegmentar membrane got softer, the segments VIII-X were extracted and diaphanized with a heated 10% KOH solution for two minutes. All dissected specimens had the genitalia disposed in an acrylic slide fixed with Canada balsam. The dissection was made under a Nikon SMZ 1000 stereoscopic microscope. Non-dissected specimens were morphologically compared with the studied species to assure correct identification.

The drawings were made with an attached drawing tube in Nikon SMZ 1000 stereoscope microscope with India ink, digitalized in a HP Deskjet F4480 and edited with GIMP – Gnu Image Manipulation Program, free software v. 2.8.4. All drawings were made in anatomical position. The photos were taken in Taxonline (Rede Paranaense de Coleções Biológicas, UFPR) with a Leica MZ16 stereomicroscope, Leica DFC 500 camera and using the software Combine ZP. Then the photos were adjusted using GIMP.

Measurements were done with software AxioVision, AxioVs40 v. 4.8.2.0 2006-2010 Carl Zeiss Micro Imaging GmbH, always using the major measurement. Abbreviations used: BL: Body length;

EL: Elytra length.

TAXONOMY

Aleochara Gravenhorst, 1802

Aleochara Gravenhorst, 1802: 67. Type species: *Staphylinus curtulus* Goeze, 1777 (= *Aleochara fuscipes* sensu Gravenhorst, 1802 nec Linné, 1758). Note 1: To see complete list of references, see Klimaszewski (1984). Note 2: For a complete discussion about *Aleochara* type species see Smetana (2004: 30)

Mecorhopalus Solier, 1849: 347 (not page 348 as in Moussallem *et al*. 2014). Type species: *Mecorhopalus elongatu*s Solier, 1849, now regarded as a synonym of *Aleochara solieri.* Subsequent designation by Chenu & Desmarest 1857: 18. Fairmaire & Germain, 1861: 413 (as subjective synonym of genus *Aleochara*). Fauvel 1866: 285 (as subjective synonym of genus *Aleochara*). Bernhauer & Scheerpeltz, 1926: 775 (as subjective synonym of *Aleochara*). Blackwelder 1952: 232 (as subjective synonym of *Aleochara*). Moore & Legner 1975: 327 (as subjective synonym of *Aleochara*). Klimaszewski, 1984: 8 (as subjective synonym of *Aleochara*). Moussallem *et al*., 2014: 541 (as subjective synonym of *Aleochara*). Note: to complete list of references and discussion, see Moussallem *et al*. (2014).

Copiata de Gozis, 1886: 12. Type species: *Staphylinus fuscipes* Goeze, 1777. Fenyes 1918: 21 (as a valid genus). Tottenham 1949: 403 (as subgenus of *Aleochara*), Blackwelder 1952: 105 (as subjective synonym of *Aleochara*). Moore & Legner 1975: 327 (as subjective synonym of *Aleochara*). Klimaszewski, 1984: 8 (revision; subjective synonym of *Aleochara*). Smetana 2004: 353 (as subjective synonym of *Aleochara*).

Ophiochara Bernhauer, 1901: 439. Type species: *Aleochara breiti* Ganglbauer, 1895 (fixed by Feynes 1918: 24 by subsequent designation). Blackwelder 1952: 276 (as subjective synonym of *Aleochara*). Moore & Legner 1975: 327 (as subjective synonym of *Aleochara*). Klimaszewski, 1984:8 (revision; subjective synonym of *Aleochara*).

Diagnosis. Body robust with abdomen subparallel and size rarely smaller than 1mm, which differs from genus like *Atheta* Thomson and other diminute genera, usually smaller than 1mm; maxillary and labial palpi with apical pseudosegment, differing from Oxypodini group, in which the apical pseudosegment is absent; hypomeron not or slightly visible in lateral view, differing from *Ocyota*,Sharp in which the hypomeron is broadly visible in lateral view; tarsal formula 5-5-5, differing from *Adinopsis* Cameron in which the tarsal formula is 2-2-2, and many different tribus (Hoplandrini, Falangriini, Crematoxenini, Lomechusini, Sceptobini, Athetini).

Distribution: Widespread.

1. IDENTIFICATION KEYS

1.1. Identification key to Brazilian subgenus:

1- Pronotum evenly pubescent (Fig. 16, 18) 2
Pronotum with pubescence restricted to two longitudinal, subparallel rows; pronotum glabrous (Fig 17). Mesoventrite completely carinate (Fig. 20) .....
..... ***Coprochara*** Mulsant & Rey, 1874

2- Mesoventrite completely or almost completely carinate (Fig. 19) .....
..... ***Xenochara*** Mulsant & Rey, 1874
Mesoventrite not carinate (Fig. 21) ..... ***Aleochara* s. str**. Gravenhorst, 1802

Aleochara (*Aleochara*) Gravenhorst, 1802

Subgenus *Aleochara* Gravenhorst, 1802: 67. Type species: *Staphylinus curtulus* Goeze, 1777, ICZN (1999) art. 44.1. Note: for complete reference list and synonymies see Klimaszewski (1984).

Diagnosis: *Aleochara* s. str. Gravenhorst can be differentiate from *A*. (*Coprochara*) Mulsant & Rey by the pattern of setae on pronotum, evenly pubescent in *Aleochara* s. str. and in a subparallel pattern in *A*. (*Coprochara*). *Aleochara* s. str. can be easily differentiate from *A*. (*Calochara*) Casey and *A*. (*Xenochara*) Mulsant & Rey by the absent medial carina in mesoventrite, partially present in *A*. (*Calochara*) and completely carinated in *A*. (*Xenochara*). *Aleochara* s. str. can also be differentiate from *A*.(*Echochara*) Casey and *A*. (*Maseochara*) Sharp by the hexagonal pattern of microsculture, absent in *Aleochara* s. str.

Note: a recent list of *Aleochara* s. str. characteristics was exhibited in Park & Ahn (2010), which we confirm.

1.2. Identification key to Brazilian species

1- Male 2
Female 6

2- Posterior margin of tergite VIII serrate (Fig. 67) 3
Posterior margin of tergite VIII not serrate (Fig. 1) 4

3- Posterior margin of tergite VIII strongly serrate (Fig. 67); median lobe with a subapical teeth prominent but not hooked (Fig.74b).....
..... ***A.* (*A.*) *bonariensis*** Lynch, 1884
Posterior margin of tergite VIII with a smaller serration (Fig. 83); median lobe (Fig. 10) straight, toothless (Figs. 89a; 89b) .....
..... ***A.* (*A*) *pseudochrysorrhoa*** Caron, Mise & Klimaszewski, 2008

4- Median lobe with apical teeth absent 5
Median lobe with two apical teeth, one rounded and prominent ventrally, other hooklike positioned dorsally (Figs. 53a; 53b) .....
..... ***A.* (*A.*) *mundana*** Sharp, 1876

5- Tergite VIII wider than long and medially narrower (Fig. 57); sternite VIII longer than wide,

apex strongly arcuate, with many thin setae in the inner part of sternite apex (Fig. 58); tergite IX with asymmetric ventral struts (Fig.59); median lobe bulbuls rounded but not ventrally expanded (Fig. 63a) .....
..... ***A.* (*A.*) *prisca*** Sharp, 1876

Tergite VIII wider than long but not medially narrower (Fig. 36); sternite VIII slightly wider than long, apex rounded, with setae restricted to posterior border (Fig. 37); tergite IX with semiparallel ventral struts (Fig. 38); median lobe bulbuls ventrally expanded (Fig. 42a) .....
..... ***A.* (*A.*) *auricoma*** Sharp, 1876

6- Posterior margin of tergite X strongly emarginated (Fig. 45); tergite VIII wider than long (Fig. 44) 7

Posterior margin of tergite X emarginated (Fig. 77) to slightly emarginated (Fig 56); tergite VIII longer than wide (Fig. 58) or transverse (Fig. 76) 8

7- Anterior margin of tergite IX with a less sclerotized area in a triangular shape in ventral view (fig. 66); Median angle of tergite IX anterior margin rounded; posterior margin of tergite X emarginated (Fig. 66) but not as strong as in Figure 45 .....
..... ***A.* (*A.*) *prisca*** Sharp, 1876

Anterior margin of tergite IX with a less sclerotized area absent (Fig. 45); Median angle of tergite IX anterior margin acute (Fig. 45); posterior margin of tergite X strongly emarginated (Fig. 45) .....***A.* (*A.*) *auricoma*** Sharp, 1876

8- Spermatheca absent; Median angle of tergite IX anterior margin pointy (Fig. 56); Posterior margin of tergite X slightly emarginate, almost truncate .....
.....***A.* (*A.*) *mundana*** Sharp, 1876

Spermatheca present; Median angle of tergite IX variable (Figs77; 81; 92) but not pointy (Fig. 56); Posterior margin of Tergite X emarginated 9

9- Spermatheca with capsule about 1/3 the size of the chamber, slightly narrower; chamber slightly constricted transversally; duct narrower than the chamber; curvature of spermatheca sinuous (Fig. 78) .....
.....***A.* (*A.*) *bonariensis*** Lynch, 1884

Spermatheca, with capsule rounded or elongated, longer than 1/3 the size of the chamber; chamber not constricted transversally 10

10- Spermatheca L-shaped with capsule elongated (Fig. 14), about as wide as chamber (Fig. 82). ..... ***A.* (*A.*) *chrysorrhoa*** Erichson, 1839

Spermatheca C-shaped with capsule rounded, wider than chamber (Fig. 93) .... ***A.* (*A*) *pseudochrysorrhoa*** Caron, Mise & Klimaszewski, 2008

mundana group: **n. group**

Species included: *A. auricoma*; *A. mundana*; *A. prisca*

Diagnosis: male with posterior margin of tergite VIII straight or slightly emarginate, male and female morphologically identical. Female with spermatheca not found after diaphanized with a heated 10% KOH solution until two minutes, possibly extremely translucid or fragile (Note: none was found in dissections, even when made in fresh material, examining the full abdominal cavity and without using KOH solution). Male with basis of median lobe, not as bulbous as in lustrica group Klimaszewski; parameres elongate, not compact as in lustrica group; medial margin of the medial phragma strongly emarginate. Probably more related to gracilicornis group Klimaszewski, but differs from it by the apex of parameres, wider and more rounded in gracilicornis group and elongate in mundana group, also the shape of median lobe appears to be narrower in gracilicornis group than in mundana group.

Note: All the species in gracilicornis group (*A. gracilicornis* Bernhauer; *A.tahoe*nsis Casey; *A. thoracica* Casey; *A. rufobrunnea* Klimaszewski; *A. rufonigra* Klimaszewski and *A. unicolor* Klimaszewski), proposed by Klimaszewski (1984), have a Nearctic distribution. Therefore despite the comparison with the new group mundana the species of gracilicornis group will not be included in this work.

Aleochara auricoma Sharp, 1876

(Figs. 22; 29; 36; 37; 38; 39; 40; 41; 42a; 42b; 43; 44; 45)

Aleochara auricoma Sharp 1876:70. (Description, type locality: "Ega"). Note: Ega is currently known as Tefé, municipality in Amazonas, Brazil. Duvivier 1883:99 (catalogue). Feynes

1921:416 (catalogue, as "species of doubtful systematic position"). Bernhauer & Scheerpeltz 1926:776 (catalogue). Blackwelder 1944:167 (checklist). Caron *et al*., 2008:831 (checklist). Fery 2013:81 (checklist).

Type material:

Aleochara auricoma:

Syntype: One male specimen, deposited in **BMNH**: (1) "*Aleochara*\ *auricoma* Type\ amazons.\ D.S." [White label, together with the specimen, handwritten. Note: D. S. stands for David Sharp]. (2) "Type" [Circular label, white with red boards, typed in black ink]. (3) "Ega." [Circular label, green, handwritten]. (4) "S. America:\ Brazil" [White label, typed in graph paper]. (5) "Sharp Coll\1905-313." [White label, typed in black ink]. Note: Sharp described the species based on two specimens, which none was mentioned as holotype, following article 72.1.1 of the ICZN (1999) we suggest that this specimen should be considered as a syntype.

Additional material: **DZUP**: **Brazil**: One specimen: (1) "BRASIL, ACRE, PORTO\ ACRE, RESERVA\ HUMAITA, 8-X-2006\ MIELKE & CASA-\GRANDE LEG." [White label, printed in black ink]. (2) "Em isca de peixe\ em decomposição" [White label, printed in black ink]. One specimen: (1) "BRASIL, ACRE, SENADOR\ GUIOMARD, REVERVA\ CATUABA, 6-7 – X – 2006\ MIELKE & CASA-GRANDE\ LEG." [White label, printed in black ink]. (2) "Em isca de peixe\ em decomposição" [White label, printed in black ink].

Diagnosis: This species can be distinguished from *A. prisca* by the coloration pattern, in *A. auricoma* the pronotum and elytra are bright orange. *A. mundana* is a close species and may be misidentified as *A. auricoma*, but those can be separate by the follow characteristics of *A. auricoma*: antennae black, elytra with darker longitudinal stain in the apical third; hind wing black. Male: Tergite VIII wider than long, ventral struts of tergite IX semiparallel. Female: Tergite VIII wider

than long, posterior margin of tergite X strongly emarginated in medial position.

Redescription:

BL: 7.1 mm. EW: 2.1 mm

Coloration (Figs. 22; 29): Head black; pronotum bright orange to yellow; elytra yellow; abdomen black until tergite VI, tergites VII – X orange; antennae black, with exception of last antennomere, yellowish brown; legs light brown to yellow; labial and maxillary palpus black with last palpomeres light brown to yellow.

Dorsal surface glossy and covered with thin golden yellowish setae with setigerous pores impressed. Head coarsely punctuated and with gold yellowish setae, pubescence semi-erected directed mediad and anterad; posterior margin of the head widely rounded. Antennae with antennomere II smaller and narrower than the first, antennomere III slightly longer than II, antennomere IV transverse, antennomeres V – X gradually widening, antennomere XI twice longer than the precedent in a semi triangular shape, antennomeres III – XI combined fusiform. Antennomeres II – X with robust and darker setae present in the apical border forming a line of sparse dark points, in antennomere XI setae positioned in a transversal line in the middle of the antennomere. Maxilla with a minute pseudopalpomere in the apex of the last palpomere. Pronotum transverse with thin punctuation and homogenous small lateral and posterior setae; posterior margin arcuate. Mesoventrite narrow with truncate apex, without carina. Elytra transverse, pubescent, with numerous small setae, posterior margin truncate. Hind wings dark and full developed. Abdomen slightly narrowing posteriorly in tergite III – VII, almost subparallel, tergite VIII – X narrower, with tergite X about half of tergite VII wide; glossy, densely pubescent with setae directed posterad.

Male: scutellum wider than female. **Tergite VIII** (Fig. 36) wider than longer, pubescent with straight setae and some marked darker setae; posterior margin slightly emarginated to truncate, not serrate. Many small setae restricted to posterior margin but absent near posterior angles. **Sternite**

VIII (Fig. 37) pubescent with small and numerous setae; posterior margin rounded, lateral margins somewhat convex. **Tergite IX** (Fig. 38) divided and not contiguous, each side with asymmetrical ventral struts. Ventral struts long and almost parallel, with sub-equal shape, varies at apex. Lateral margins pubescent with many macrosetae, few dark and longer than others. **Sterntite IX** (Fig. 39) translucent; two macrosetae in posterior edge, truncate with posterior angles round. Posterior edge and angles covered with many thin and long setae. **Tergite X** (Fig. 38) with margin emarginate; postero-medial area pubescent with many small setae, posterior margin with many macrosetae, only absent in the medial area. **Aedeagus: Median lobe** elongate with base bulbous, ventrally expanded (Figs. 41; 42a); apical lobe narrowed without apical teeth. **Parameres** well developed, robust and longer than median lobe (when attached); apical lobe with four apical setae (Fig. 40); medial margin of medial phragma strongly emarginate.

Female: **Tergite VIII** (fig.43) transverse, pubescent with straight setae, row of smaller setae in posterior margin; posterior margin without serration, truncate. **Sternite VIII** (fig.44) in a semi triangular shape; pubescent with straight setae, row of smaller setae in posterior margin, restricted to the apex; posterior margin rounded. **Tergite IX** (fig. 45) divided and not contiguous, without ventral struts; some macrosetae positioned in postero-lateral margin and darker longer setae sparsely distributed. **Tergite X** (fig. 45) covered with straight setae, some macrostaea near posterior margin and scattered dark setae. Posterior margin strongly emarginated with 2-3 rows of stout setae. **Spermatheca** not found.

Geographical records: Brazil (Acre: Porto Acre – **new record**, Senador Guiomard – **new record**; Amazonas: Tefé).

Natural history: from labels; associated with decayed fish bait.

Aleochara mundana Sharp, 1876

(Figs. 26; 33; 46; 47; 48; 49; 50; 51; 52; 53a; 53b; 54; 55; 56)

Aleochara mundana Sharp 1876:71 (description, type locality: "Pará, Tapajós and Ega"). Note: Ega is currently known as Tefé, municipality in Amazonas, Brazil. Duvivier 1883:100 (catalogue). Feynes 1921:416 (catalogue, as "species of doubtful systematic position"). Bernhauer & Sheerpeltz 1926:778 (catalogue). Blackwelder 1944:167 (checklist). Caron *et al*. 2008:833 (checklist). Fery 2013:81 (checklist).

Type material.

Aleochara mundana:

Syntype: One male specimen, deposited in **BMNH**: (1) "*Aleochara*\ *mundana*\ Amazons Type\ D.S." [White label, together with the specimen, handwritten]. (2) "Type" [Circular label, white with red boards, typed in black ink]. (3) "Amazons\ Tapajós" [Circular label, green, handwritten]. (4) "S. America:\ Brazil" [White label, typed in graph paper]. (5) "Sharp Coll.\1905-313." [White label, typed in black ink]. One female specimen, deposited in **FMNH**: (1) "*Aleochara*\ *mundana*\ Amazons 2nd type\ D.S." [White label, together with the specimen, handwritten]. (2) "S. America:\ Brazil" [White label, typed in graph paper]. (3) "Sharp Coll.\1905-313." [White label, typed in black ink]. (4) "Chicago Nat. Hist. Mus.\ (ex. D. Sharp Colln\ by exchange with\ Brit. Mus. Nat. Hist.)" [White label, printed in black ink]. (5) "FMNHINS\ 2840591\ FIELD MUSEUM\ Pinned" [White Label, printed in black ink, QR Barcode printed in the left of the label]. Note: Sharp described the species based on five specimens, and none was mentioned as type. Following article 72.1.1 of the ICZN (1999) we suggest that these specimens should be considered as a syntypes.

Additional material.

FMNH: **Bolivia**: One specimen: (1) [Small square green label. There is no writing in this label]. (2) "Mapiri\ Bolivia" [White label, handwritten with India ink]. (3) "*mundana* Shp.\ Bang Haay(?)\ det.

Bernhauer" [White label, 'det. Bernhauer' printed in black ink, other information handwritten with India ink. 'Bang Haay' is stained and difficult to read. This is an approximation by interpretation]. (4) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (5) "FMNHINS\ 2840588\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. **Brazil:** One specimen: (1) "*mundana* Shrp\ Para von\ Slaudinger" (2) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (3) "FMNHINS\ 2840589\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. One specimen: (1) "*mundana*\ Shrp. Para\ von Slaudger" [White label handwritten with India ink]. (2) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (3) "FMNHINS\ 2840590\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. One specimen: (1) "12.893" [White label, handwritten with India ink]. (2) "Brasil.S.Paulo\ Ypiranga\ Dr. Ihering" [White label, typed in black ink]. (3) "*lateralis* Er.\ det. Bernh" [White label, 'det. Bernh' typed in black ink, other information handwritten with India ink]. (4) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (5) "FMNHINS\ 2840583\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. One specimen: (1) "Maná\ os" [White label, typed in black ink]. (2) "Amazon\ Roman" [White label, typed in black ink]. (3) "mars" [White label, typed in black ink]. (4) "*mundana* Shp\ det. Bernhauer\ Schwed R. Mus." [White label, 'det. Bernhauer' typed in black ink, other information handwritten with India ink]. (5) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (6) "FMNHINS\ 2840587\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. **British Guiana**: One specimen: (1) "British Guiana:\ Essequibo R.,\ Moraballi Creek." [White label, typed in graph paper]. (2) "29.viii.1929\ Oxf. Univ. Expedn\ B.M. 1929-485." [White label, typed in black ink, '29' handwritten with India ink]. (3) "*Aleochara*\ *mundana*\ Shrp." [White label, handwritten with India ink]. (4) "FMNHINS\ 2840586\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. **MPEG: Brazil**: Five specimens:

(1) “Brazil Pará\ Serra Norte\ NI FLORESTA\ 2-XI-1985” [White label, printed in black ink, ‘NI FLORESTA’; ‘2-XI-’ and ‘5’ handwritten]. (2) “Brasil Pará\ J. Dias” [White label, printed in black ink]. (3) “MPEG” [Pink label, printed in black ink].

Diagnosis: This species can be distinguished from *A. prisca* by the color pattern. *A. mundana* has the pronotum and elytra are uniformly orange. *A. mundana* is a close species and may be misidentified as *A. auricoma*, but those can be separate by the follow characteristics in *A. mundana*: antennae brown to dark brown; the elytra with a darker longitudinal stain in the lateral boarder restricted to the posterior third; hind wing translucid. Male: Tergite VIII transverse, two teeth in apical lobe of median lobe. Female: Tergite VIII almost truncate, posterior margin of tergite X truncate.

Redescription:

BL: 5.8 mm. EW: 1.7 mm

Coloration (Figs. 26; 33): Head piceous to dark brown; pronotum light brown to honey yellow, with a medial darker area; elytra light brown to honey yellow, slightly darker on the lateral-posterior angles; abdomen brown to dark red form tergite III until middle of VIII, posterior half of tergite VIII to tergite X light brown to honey yellow; legs, antennae and mouth parts light brown to honey yellow.

Body similar to *A. auricoma*: dorsal surface glossy and covered with thin golden yellowish setae with setigerous pores impressed. Head coarsely punctuated with gold yellowish setae, pubescence semi-erected directed mediad and anterad. Antennae with antennomere II smaller and narrower than the first, antennomere III slightly longer than II, antennomere IV slightly wider than longer, antennomeres V – X gradually widening, antennomere XI twice longer than the precedent in a semi triangular shape, antennomeres III – XI combined presenting a fusiform shape. Antennomeres II – X forming a line of sparse dark points, in antennomere XI these setae are positioned in a transversal

line in the middle of the antennomere. Maxilla with palpus 4-articulated with a minute pseudopalpomere in the apex of the last palpomere. Pronotum with thin punctuation and homogenous small setae positioned latero and posterad, posterior margin arcuated. Mesoventrite without carina. Elytra wider than long, pubescent, with numerous small setae, posterior margin truncated; hind wings well developed. Abdomen slightly narrowing posteriorly in tergite III – VII almost subparallel, tergite VIII – X narrower, with tergite X about half of tergite VII wide; glossy, densely pubescent with setae directed posterad.

Male: **Tergite VIII** (Fig.46) transverse, pubescent with straight setae; posterior margin truncate, without serration. Many small setae restricted to the posterior margin but absent near the posterior angles. **Sternite VIII** (Fig. 47) pubescent with small and numerous setae; posterior margin rounded with many small setae, lateral margins somewhat convex. **Tergite IX** (Fig. 48) divided and not contiguous, each side with asymmetrical ventral struts. Lateral margin pubescent with some macrosetae. **Sterntite IX** (Fig. 49) translucent; pubescence very thin, posterior boarder wide, truncate with two macrosetae at apex; Posterior margin and angles covered with many thin setae. **Tergite X** (Fig. 48) with the margin emarginate; postero-medial area pubescent with many small setae, posterior margin with many macrosetae. **Aedeagus: Median lobe** elongate with base bulbous, laterally robust (Fig. 53a); apical lobe narrowed with two apical teeth, one rounded and prominent ventrally, other hooklike positioned dorsally. **Parameres** well developed, robust and longer than the medial lobe (when attached); apical lobe with four setae in the apex (Fig. 51); medial margin of the medial phragma strongly emarginate.

Female: **Tergite VIII** (Fig. 54) pubescent with straight setae; posterior margin without serration, slightly emarginated, almost truncate. **Sternite VIII** (Fig.55) pubescent with straight setae; posterior margin rounded. **Tergite IX** (Fig. 56) divided and not contiguous, without ventral struts but with a small projection in the anterior margin, ventro-medial positioned; some macrosetae positioned in postero-lateral margin. **Tergite X** (Fig. 56) Covered with straight setae, some

macrostaea near posterior margin, posterior margim trucate. **Spermatheca** not found.

Geographical records: Bolivia (Mapiri – **new record**), Brazil (Amazonas: Tefé, Pará and Tapajós) and British Guiana (Essequibo – **new record**).

Natural history: Following literature: Found in dung; probably a very common species in the Amazon district (Sharp 1876:71).

Aleochara prisca Sharp, 1876

(Figs. 27; 34; 57; 58; 59; 60; 61; 62; 63a; 63b; 64; 65; 66)

Aleochara prisca Sharp 1876:69 (Description, type locality: "Ega"). Note: Ega is currently known as Tefé, municipality in Amazonas, Brazil. Duvivier 1883:100 (catalogue). Bernhauer & Sheerpeltz 1926:778 (catalogue). Blackwelder 1944:167 (checklist). Caron *et al*. 2008:833 (checklist). Fery 2013:81 (checklist).

Type material.

Aleochara prisca:

Holotype: One specimen, female, deposited in **BMNH**: (1) "*Aleochara*\ *prisca* Type\ Amazons.\ D.S." [White label, together with the specimen, handwritten]. (2) "Holo\Type" [Circular label, white with red boards, 'Holo' handwritten]. (3) "Ega." [Circular label, green, handwritten]. (4) "S. America:\ Brazil" [White label, typed in graph paper]. (5) "Sharp Coll.\1905-313." [White label, typed in black ink]. (6) "*A. prisca*\ type. D. S." [White label, handwritten]. (7) "Holotype\ *Aleochara*\ *prisca* Sharp\ det. R.G. Booth 2014" [White label, handwritten]. Note: Sharp described the species based on this only specimen, following article 73.1.2 of the ICZN (1999) we suggest that this specimens should be considered as a holotype fixed by monotypy.

Additional material.

FMNH: **Brazil**: female. <u>One specimen</u>: (1) “S. America:\Brazil” [White label, typed in graph paper]. (2) “Sharp Coll.\ 1905-313.” [White label printed in black ink]. (3) “Compared with\ type:\ *Aleochara*\ *prisca*\ Shp.” [White label “compared with type” printed in red ink, other information handwritten with India ink]. (4) “Chicago Nat. Hist. Mus.\ (ex. D. Sharp Colln\ by exchange with\ Brit. Mus. Nat. Hist.)” [White label, printed in black ink]. (5) “FMNHINS\ 2840579\ FIELD MUSEUM\ Pinned” [White Label, printed in black ink, QR Barcode printed in the left of the label].

INPA: **Brazil**: <u>fourteen specimen</u>: (1) “Brasil – AM, Manaus\ Reserva Adolpho Ducke\ 16/VII/2008\ K.M.Mise (*Leg*.)” [White label printed in black ink]. (2) “Coleta manual\ Isca carcaça suína” [White label printed in black ink]. (3) “*Aleochara prisca*\ Sharp #m\ Det., Moussallem, 2014” [White label “Det., Moussallem, 2014 ” printed in black ink, other information handwritten with India ink].

Diagnosis: This species can be distinguished from *A. auricoma* and *A.mundana* by the coloration pattern. *A. prisca* have pronotum and elytra black with some yellow spots. Despite the color *A. prisca* can also be differentiated by the follow characteristics: male – tergite VIII, wider than long and medially narrower; Sternite VIII longer than wide, apex strongly arcuate, with many thin setae in the inner part of sternite apex. Tergite IX with ventral struts narrow but not parallel. Female: Tergite X emarginated.

Redescription:

BL: 5.4 mm. EW: 1.9 mm

Coloration (Figs. 27; 34): Head piceous to dark brown; pronotum brown; elytra light brown; abdomen brown, posterior half of tergite VIII to tergite X light brown, legs, antennae and mouth parts brown.

Body similar to *A. auricoma*: Dorsal surface glossy and covered with thin golden yellowish setae

with setigerous pores impressed. Head coarsely punctuated with gold yellowish setae, pubescence semi-erected directed mediad and anterad; posterior margin of the head very rounded. Antennae with antennomere I robust, antennomere II smaller and narrower than the first, antennomere III slightly longer than II, antennomere IV transverse, antennomeres V – X gradually widening, antennomere XI twice longer than the precedent in a semi triangular shape, antennomeres III – XI combined presenting a fusiform shape. Antennomeres II – X with robust and darker setae present in the apical border forming a line of sparse dark points, in antennomere XI setae positioned in a transversal line in the middle of the antennomere Maxilla with palpus 4-articulated with a minute pseudopalpomere in the apex of the last palpomere. Pronotum with thin punctuation and homogenous small setae positioned latero and posterad, posterior margin arcuated. Mesoventrite slightly emarginated, without carina. Elytra wider than long, pubescent, with numerous small setae, posterior margin truncated; hind wings well developed. Abdomen narrowing slightly posteriorly in tergite III – VII, almost subparallel, tergite VIII – X narrower, with tergite X about half of tergite VII wide; glossy, densely pubescent with setae directed posterad.

Male: **Tergite VIII** (fig. 57) wider than long, width about two times the length, pubescent with straight setae; posterior margin emarginate, not serrate. **Sternite VIII** (fig. 58) elongate, pubescent with small and numerous setae; posterior margin rounded with many small setae. Posterior margin internally with many small setae, which externally appears like a distinct punctuation. **Tergite IX** (fig. 59) divided and not contiguous, each side with long and asymmetrical ventral struts. Lateral margin pubescent with some macrosetae. **Sterntite IX** (fig. 60) translucent; pubescence very thin, posterior boarder rounded with two macrosetae at apex; Posterior margin and angles covered with many thin setae. **Tergite X** (fig. 59) wider than long with posterior margin emarginate; postero-medial area pubescent with many small setae, posterior margin with many setae and some macrosetae. **Aedeagus: Median lobe** elongate with base bulbous (figs. 62; 63a); apical lobe narrowed without apical teeth, internal structure appears to have a sclerotized and serrate complex

medially. **Parameres** well developed, robust and longer than the median lobe (when attached); apical lobe with four setae in the apex as in fig 61; medial margin of the medial phragma strongly emarginate.

Female: **Tergite VIII** (fig.64) pubescent with straight setae, row of smaller setae in posterior margin; posterior margin without serration, truncate. **Sternite VIII** (fig.65) in a semi triangular shape; pubescent with straight setae, row of smaller setae in posterior margin, restricted to the apex; posterior margin rounded. **Tergite IX** (fig. 66) divided and not contiguous, without ventral struts; anterior margin in ventral view with a less sclerotized area in a triangular shape; some macrosetae positioned in postero-lateral margin. **Tergite X** (fig.66) covered with straight setae with some darker larger setae scattered distributed; posterior margin with two rows of macrosetae, absent only in the medial area, emarginate. **Spermatheca** not found.

Geographical records: Material examined: Brazil (Amazonas: Manaus **– new record**, Tefé).

Natural history: from labels; associated with decayed pig bait.

lustrica group: by Klimaszewski (1984)

Species included in Brazil: *Aleochara bonariensis*; *Aleochara chrysorrhoa*; *Aleochara curtula*; *Aleochara lustrica*; *Aleochara pseudochrysorrhoa*.

Diagnosis: eyes expanded, males with distinguishable serration in the posterior margin of tergite VIII (except in *A. curtula*), basis of median lobe bulbous, parameres compact. Female with visible spermatheca. Differs from mundana group **n. group** in which the posterior margin of tergite VIII is not serrate, basis of median lobe not bulbous as in lustrica group, paramere elongate with medial margin of the marginal phragma strongly emarginate. Differs from gracilicornis group which has the eye less expanded, male with basis of median lobe less bulbous. Female spermatheca with capsule, chamber and duct clearly separated.

Aleochara bonariensis Lynch, 1884

(Figs. 21; 23; 30; 67; 68; 69; 70; 71; 72; 73 74a; 74b; 75; 76; 77; 78)

Aleochara bonariensis Lynch 1884:70 (description, type locality: "Chacabuco" [Argentina]). Fauvel 1887:230 (revision). Feynes 1921:416 (catalogue, as "species of doubtful systematic position"). Bernhauer & Scheerpeltz 1926: 778 (catalogue, as junior subjective synonym of *A. lateralis*). Blackwelder 1943:560 (catalogue, as junior subjective synonym of *A. lateralis*). Blackwelder 1944:167 (catalogue, as junior subjective synonym of *A. lateralis*). Ashe 2002: 165 (catalogue, as junior subjective synonym of *A. lateralis*). Newton *et al.*, 2005: 64 (checklist, as junior subjective synonym of *A. lateralis*). Caron *et al.*, 2008: 831 (checklist, as valid species).

Aleochara lateralis Erichson, 1839:161 (description, type locality: "Columbia, Dom. Moritz"). Chevrolat & Fauvel 1863:428 (checklist, as valid species; description). Solsky 1872: 290 (checklist). Feynes 1918:400 (catalogue). Bernhauer & Scheerpeltz 1926:778 (catalogue, as senior subjective synonym of *A. bonariensis*). Blackwelder 1943:560 (catalogue, as senior subjective synonym of *A. bonariensis*). Blackwelder 1944:167 (catalogue). Klimaszewski *et al.*1987:250 (checklist; lectotype designation). Klimaszewski *et al.*,1987:255 (redescription). Ashe 2002:165 (catalogue, as senior subjective synonym of *A. bonariensis*). Newton *et al.* 2005:22; 64 (checklist, as valid species; as senior subjective synonym of *A. bonariensis*). Caron *et al.*, 2008 (checklist, as junior subjective synonym of *A. bonariensis*). Almeida & Mise, 2009:239 (checklist of forensic fauna; geographic distribution; cited as valid species).

Type material:

Aleochara bonariensis: type sex not determined, <u>two specimen</u>, syntype, deposited in **IRSNB**: (1) "Chacabuco" [White label, handwritten]. (2) "Types" [White label, handwritten]. (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Note 1: According to ICZN (1999) article 72.4.1.1, "For a nominal species or subspecies established before 2000, any evidence,

published or unpublished, may be taken into account to determine what specimens constitute the type series". So, we assume this is the type material of *A. bonariensis* by the information of label (2) and the specimen locality, which coincides with the type material location. Note 2: Lynch did not mention the number of collected specimens in the type series, as a conservative approach (and following article 72.1.1 of the ICZN 1999) we suggest that these specimens should be considered as syntype.

Additional material: **IRSNB**: **Argentina.** One specimen: (1) "I.(?) Pablo 1200 m\ Rep. Argentine". [White label, handwritten]. (2) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. One specimen: (1) "Ru Argentina\ Prov. Buenos Aires\ 1897\C. Bruch" [White label, typed in black ink, '7' in '1897' handwritten] (2) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. **Brazil.** One specimen: (1) "Rio Janeiro" [White label, handwritten]. (2) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. **Paraguay.** One specimen: (1) "Paraguay\ Dr. Bohls." [White label, typed in black ink]. (2) "*bonariensis*\ Lynch" (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Two specimens: (1) "Paraguay\ Dr. Bohls." [White label, typed in black ink]. (2) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. **Peru**. One specimen: (1) "Guajango\ H. Amazons Pérou\Roril (?)" [White label, handwritten. *Guajango may be a variant spelling to Huajango village, in Peru*]. (2) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. **Uruguay.** One specimen: (1) "Montevideo" [White label, handwritten]. (2) "Buenos Ayres" [White label, handwritten]. (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. **MZSP**: **Brazil**. One specimen: (1) "6392\ YPI-\RANGA" [White label, printed in black ink. '6392' handwritten with India ink]. (2) "Bernh.\ det." [White label, handwritten with India ink] and "*Aleochara*\ *lateralis* Er." [Handwritten with India ink. Wrote in the back of the label]. (3) "3.832" [White label, typed in red ink]. One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink] and "Bernh.\ det." [Handwritten with India ink. Wrote in the back of the label]. (2) "*Aleoch.*\ *lateralis*\ Brh. det." [White label, handwritten with India ink]. (3) "3.833"

[White label, typed in red ink]. One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink] and "Bernh.\ det." [Handwritten with India ink. Wrote in the back of the label]. (2) "*Aleoch.*\ *lateralis*\ Brh. det." [White label, handwritten with India ink]. (3) "3.834" [White label, typed in red ink]. One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink] and "Bernh.\ det." [Handwritten with India ink. Wrote in the back of the label]. (2) "*Aleoch.*\ *lateralis*\ Brh. det." [White label, handwritten with India ink]. (3) "3.835" [White label, typed in red ink]. One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink] and "Bernh.\ det." [Handwritten with India ink. Wrote in the back of the label]. (2) "*Aleoch.*\ *lateralis*\ Brh. det." [White label, handwritten with India ink]. (3) "3.836" [White label, typed in red ink]. One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink]. (2) "Bernhauer\ det.\ 9670" [Handwritten with India ink] and "*Aleochara*\ *lateralis* Er." [White label, handwritten with India ink. Wrote in the back of the label. Label [stained]. (3) "3.837" [White label, typed in red ink]. One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink] and "Bernh.\ det." [Handwritten with India ink. Wrote in the back of the label]. (2) "*Aleoch.*\ *lateralis*\ Brh. det." [White label, handwritten with India ink]. (3) "3.838" [White label, typed in red ink]. One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink] and "Bernh.\ det." [Handwritten with India ink. Wrote in the back of the label]. (2) "*Aleoch.*\ *lateralis*\ Brh. det." [White label, handwritten with India ink]. (3) "3.839 One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink] and "Bernh.\ det." [Handwritten with India ink. Wrote in the back of the label]. (2) "*Aleoch.*\ *lateralis*\ Brh. det." [White label, handwritten with India ink]. (3) "3.840" [White label, typed in red ink]." [White label, typed in red ink]. One specimen: (1) "9670\ YPI-\RANGA" [White label, printed in black ink. '9670' handwritten with India ink] and "Bernh.\ det." [Handwritten with India ink. Wrote in the back of the label]. (2) "*Aleoch.*\ *lateralis*\ Brh. det." [White label, handwritten

with India ink]. (3) "3.842" [White label, typed in red ink]. **FMNH**: **Brazil**: One specimen: (1) "Maná-\os" [White label, printed in black ink]. (2) "Sv. Amaz-\ Exp. Roman" [White label, typed in black ink]. (3) "20 nov." [White label, "nov." printed in black ink, other information handwritten with India ink]. (4) "*verecunda*\ det. Bernhauer\ Scholoed R. Mus." [White label, "det. Bernhauer" typed in black ink, other information handwritten with India ink]. (5) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, typed in black ink]. (6) "FMNHINS\ 2840578\ FIELD MUSEUM\ Pinned" [White Label, printed in black ink, QR Barcode printed in the left of the label]. **Bolivia**: One specimen: (1) [Small square green label. There is no writing in this label]. (2) "Mapiri\ Bolivia" [White label, handwritten with India ink]. (3) "lateralis Shp.\ Bang Haay(?)\ determ. Bernh" [White label, 'determ. Bernh' printed in black ink, other information handwritten with India ink. 'Bang Haay' is difficult to read. This is an approximation by interpretation]. (4) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (5) "FMNHINS\ 2840582\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. **MPEG**: **Brazil**: Thirty one specimens: (1) "Belem P Museu\18-II-1977" [White label, printed in black ink. '18-II-' and '77' handwritten with India ink]. (2) "Brasil Pará\ P Waldir" [White label, printed in black ink]. (3) "MPEG" [Pink label, printed in black ink].

Diagnosis: *A. bonariensis* can be distinguished from *A. chrysorrhoa* and *A. pseudochryssorhoa* by the color pattern. In *A. bonariensis* the pronotum are dark brown and elytra are dark brown with a paler spot near the medial angle of each elytron. In adition, *A. bonariensis* can be differentiated by the follow characteristics: male – posterior margin of tergite VIII strongly serrated and teeth prominent but not hooked ventrally positionate in the median lobe of aedeagus. Apex of median lobe is arcuate and slightly directed dorsally (in lateral view). Female – spermatheca L-shaped, with the capsule slightly narrower than the chamber; chamber constricted transversely forming a sinuous contour (fig. 78).

Redescription: see Klimaszewski *et al*. (1987) as *A. lateralis* Erichson, 1839.

Geographical records: Material examined: Argentina (Chacabuco), Brazil (Rio de Janeiro, São Paulo), Paraguay, Peru and Uruguay. Literature: Argentina, Brazil, Colombia, Cuba, Mexico (Veracruz), Paraguay, Surinam and Venezuela. (Ashe 2002)

Natural history: unknown.

Aleochara chrysorrhoa Erichson, 1839

(Figs. 24; 31; 79; 80; 81; 82)

Aleochara chrysorrhoa Erichson 1839:160 (Description, type locality: "Brasilia, Dom. Virmond"). Feynes 1918:400 (Catalogue, as valid species). Bernhauer & Scheerpeltz 1926:776 (Catalogue, as valid species). Blackwelder 1944:167 (Checklist, as valid species). Klimaszewski *et al.,*1987:250 (Checklist; redescription; lectotype designation). Caron *et al.*, 2008:832 (Checklist, as valid species).

Type material:

Aleochara chrysorrhoa: type not seen. Note: lectotype deposited in **ZMHB** (Klimaszewski *et al*., 1987)

Additional material: **IRSNB**: <u>One specimen</u>: (1) "Coll. R. I. Sc. N. B." [White label, printed in black ink].

Diagnosis: This species can be distinguished from *A. bonariensis* by the color pattern. *A. chrysorrhoa* is uniformly black, with exception of the abdomen apex. *A. chrysorrhoa* may be misidentified with *A. pseudochrysorrhoa* but can be differentiate by the shape of spermatheca which is more elongate in *A. chrysorrhoa*. Male currently unknown.

Redescription: see Klimaszewski *et al*. (1987).

Geographical records: Literature: Brazil (Erichson, 1839).

Natural history: Unknown.

Aleochara pseudochrysorrhoa Caron, Mise & Klimaszewski, 2008

(Figs. 28; 35; 83; 84; 85; 86; 87; 88; 89a; 89b; 90; 91; 92; 93)

Aleochara pseudochrysorrhoa Caron *et al.* 2008:828 (description, type location: "Curitiba – PR – Brazil\ Centro Politécnico"). Almeida & Mise 2009:239 (checklist of forensic fauna, geographic distribution).

Type material:

Holotype: One male specimen, deposited in **DZUP**: (1) HOLOTYPE \ *Aleochara*\ *pseudochrysorroa*\ Caron, Mise & Klimaszewski, 2008" [Red label, printed in black ink]. (2) "#m" [White label, printed in black ink]. (3) "Pig carcass\ modified Shannon\ Trap" [White label, printed in black ink]. (4) "Curitiba – PR – Brazil\ Centro Politécnico\ 25°26'45"S 49°13'58"W \ 919 meters 15/XII/2005\ Mise, K. M." [White label, printed in black ink].

Paratype: DZUP: Six specimens: (1) "Curitiba – PR – Brazil\ Centro Politécnico\ 25°26'45"S 49°13'58"W \ 919 meters 16/XII/2005\ Mise, K. M." [White label, printed in black ink]. (2) "Pig carcass\ modified Shannon\ Trap" [White label, printed in black ink]. (3) "#m" [White label, printed in black ink]. (4) PARATYPE \ *Aleochara* pseudochrysorrhoa\ Caron, Mise & Klimaszewski, 2008" [Yellow label, printed in black ink]. Four specimens: (1) "Curitiba – PR – Brazil\ Centro Politécnico\ 25°26'45"S 49°13'58"W \ 919 meters 16/XII/2005\ Mise, K. M." [White label, printed in black ink]. (2) "Pig carcass\ modified Shannon\ Trap" [White label, printed in black ink]. (3) "#f" [White label, printed in black ink]. (4) PARATYPE \ *Aleochara* pseudochrysorrhoa\ Caron, Mise & Klimaszewski, 2008" [Yellow

label, printed in black ink]. **INPA**: Three specimens: (1) “Curitiba – PR – Brazil\ Centro Politécnico\ 25º26’45”S 49º13’58”W \ 919 meters 16/XII/2005\ Mise, K. M.” [White label, printed in black ink]. (2) “Pig carcass\ modified Shannon\ Trap” [White label, printed in black ink]. (3) “#m” [White label, printed in black ink]. (4) PARATYPE \ *Aleochara* pseudochrysorrhoa\ Caron, Mise & Klimaszewski, 2008” [Yellow label, printed in black ink]. Six specimens: (1) “Curitiba – PR – Brazil\ Centro Politécnico\ 25º26’45”S 49º13’58”W \ 919 meters 16/XII/2005\ Mise, K. M.” [White label, printed in black ink]. (2) “Pig carcass\ modified Shannon\ Trap” [White label, printed in black ink]. (3) “#f” [White label, printed in black ink]. (4) PARATYPE \ *Aleochara* pseudochrysorrhoa\ Caron, Mise & Klimaszewski, 2008” [Yellow label, printed in black ink]. **FMNH:** Sixteen specimens: (1) “Curitiba – PR – Brazil\ Centro Politécnico\ 25º26’45”S 49º13’58”W \ 919 meters 16/XII/2005\ Mise, K. M.” [White label, printed in black ink]. (2) “Pig carcass\ modified Shannon\ Trap” [White label, printed in black ink]. (3) “#m” [White label, printed in black ink]. (4) PARATYPE \ *Aleochara pseudochrysorroa*\ Caron, Mise & Klimaszewski, 2008” [Yellow label, printed in black ink]. Fifteen specimens: (1) “Curitiba – PR – Brazil\ Centro Politécnico\ 25º26’45”S 49º13’58”W \ 919 meters 16/XII/2005\ Mise, K. M.” [White label, printed in black ink]. (2) “Pig carcass\ modified Shannon\ Trap” [White label, printed in black ink]. (3) “#f” [White label, printed in black ink]. (4) PARATYPE \ *Aleochara* pseudochrysorrhoa\ Caron, Mise & Klimaszewski, 2008” [Yellow label, printed in black ink]. **MPEG**: Four specimens: (1) “Curitiba – PR – Brazil\ Centro Politécnico\ 25º26’45”S 49º13’58”W \ 919 meters 16/XII/2005\ Mise, K. M.” [White label, printed in black ink]. (2) “Pig carcass\ modified Shannon\ Trap” [White label, printed in black ink]. (3) “#m” [White label, printed in black ink]. (4) PARATYPE \ *Aleochara* pseudochrysorrhoa\ Caron, Mise & Klimaszewski, 2008” [Yellow label, printed in black ink]. Eleven specimens: (1) “Curitiba – PR – Brazil\ Centro Politécnico\ 25º26’45”S 49º13’58”W \ 919 meters 16/XII/2005\ Mise, K. M.” [White label, printed in black ink]. (2) “Pig carcass\ modified Shannon\ Trap”

[White label, printed in black ink]. (3) "#f" [White label, printed in black ink]. (4) PARATYPE \ *Aleochara* pseudochrysorrhoa\ Caron, Mise & Klimaszewski, 2008" [Yellow label, printed in black ink].

Additional material:

Aleochara pseudochrysorrhoa: **FMNH**: **Argentina**: One specimen: (1) "Ru ARGENTINA\ Prov. Cordoba\ IX. 1810\ C. Bruch" [White label, printed in black ink, worn out, 'IX.' And '10' in 1810 handwritten with India ink. The writing in the label is worn out, making reading difficult. This is an approximation by interpretation]. (2) "Spegazzini\ legit." [White label, printed in black ink]. (3) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (4) "FMNHINS\ 2840580\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. One specimen: (1) "Alta Gracia La Granja\ Sierras de Córdoba\ 29.XII.92? C. Bruch leg." [White label printed in black ink. '29.XII.92?' handwritten with India ink]. (2) "*bonariensis* Lch\ det. Bernhauer" [White label, 'det. Bernhauer' typed in black ink, other information handwritten with India ink]. (3) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (4) "FMNHINS\ 2840584\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label]. Three specimens (in the same pin): (1) "Ru (?) ARGENTINA\ Prov. Buenos Aires\ 4 1896\ C. Bruch" [White label, typed in black ink, '4'and '6' in 1896 handwritten]. (2) "*Aleschara*\ *bonariensis*\ Lynch" [White label handwritten with India ink. Note: misspelling for Aleochara]. (3) "Chicago NHMus\ M.Bernhauer\ Collection" [White label, printed in black ink]. (4) "FMNHINS\ 2840585\ FIELD MUSEUM\ Pinned" [White label, printed in black ink, QR Barcode printed in the left of the label].

Diagnosis: This species can be distinguished from *A. bonariensis* by the coloration pattern. *A. pseudochrysorrhoa* is uniformly black, with exception of the apex of the abdomen. *A. pseudochrysorrhoa* may be misidentified with *A. chrysorrhoa* but can be differentiate by the shape

of spermatheca and the capsule rounded. Note: the male of *A. chrysorrhoa* is currently unknown.

Description: see Caron *et al*. (2008)

Geographical records: Material examined: Argentina (Buenos Aires – **new record**; Córdoba – **new record**); Brazil (Curitiba).

Natural history: Associated with decomposing pig carcass (Caron *et al.* 2008:831; Almeida & Mise 2009:239), found from "fresh" to "butyric fermentation" decompositional stages (Caron *et al.* 2008:831).

Species of doubtful distribution to Brazil

Aleochara curtula (Goeze, 1777)

(Figs. 1; 2; 3; 4; 5; 6; 7; 8a; 8b; 9; 10; 11; 12; 13; 14; 15; 18; 25; 32)

Staphylinus curtulus Goeze 1777:730 (description, without type locality).

Aleochara curtula Fauvel 1886:286 (revision, as valid species). Ganglbauer 1895:29 (checklist, as valid species). Bernhauer 1901:448 (checklist, as valid species). Fauvel 1901:90 (checklist, as valid species). Feynes 1918: 399 (catalogue, as valid species). Bernhauer & Scheerpeltz 1926:776 (catalogue, as valid species). Blackwelder 1944:167 (catalogue, as valid species). Moore & Legner 1975:331 (catalogue, as valid species). Klimaszewski 1984:76 (review, as valid species). Newton *et al*., 2005:22; 64 (checklist, with distribution; as senior subjective synonym of *A. bugnioni*). Caron *et al*., 2008:832. (checklist, as valid species). Luo & Zhou, 2012:193 (revision, as valid species).

Staphylinus brachypterus Fourcroy 1785:167 (description, without type locality; [Probably in France (Klimaszewski 1984)]). Lynch 1884:68 (checklist, as junior subjective synonym of *A. fuscipes*). Bernhauer 1901:448 (checklist, as junior subjective synonym of *A. curtula*). Feynes 1918:399 (catalogue, as junior subjective synonym of *A. curtula*). Bernhauer & Scheerpeltz 1926:776 (catalogue, as junior subjective synonym of *A. curtula*). Klimaszewski

1984:77 (review, as junior subjective synonym of *A. curtula*). Caron *et al.* 2008:832 (checklist, as junior subjective synonym of *A.* curtula). Luo & Zhou 2012:193 (revision, as junior subjective synonym of *A. curtula*).

Aleochara fuscipes Gravenhorst 1802:92 (description, without type locality). Heer 1839:314 (checklist, as valid species). Thompson 1860:247 (catalogue, as valid species; redescription; list of variation). Fauvel 1886:286 (revision, as junior subjective synonym of *A. curtula*). Lynch 1884:67 (checklist, as valid species). Bernhauer 1901:448 (checklist, as junior subjective synonym of *A. curtula*). Fauvel 1901:90 (checklist, as junior subjective synonym of *A. curtula*). Feynes 1918:399 (catalogue, as junior subjective synonym of *A. curtula*). Bernhauer & Scheerpeltz 1926:776 (catalogue, as junior subjective synonym of *A. curtula*). Klimaszewski 1984:76 (review, as junior subjective synonym of *A. curtula*). Caron *et al.* 2008:832 (checklist, as junior subjective synonym of *A. curtula*). Luo & Zhou 2012:194 (revision, as junior subjective synonym of *A. curtula*).

Aleochara brevis Heer 1839:315 (description, without type locality). Note: type locality Switzerland, Aigle (Klimaszewski 1984). Bernhauer 1901:448 (checklist, as junior subjective synonym of *A. curtula*). Feynes 1918:399 (catalogue, as junior subjective synonym of *A. curtula*). Bernhauer & Scheerpeltz 1926:776 (catalogue, as junior subjective synonym of *A. curtula*). Klimaszewski 1984:77 (review, as junior subjective synonym of *A. curtula*). Caron *et al.* 2008:832 (checklist, as junior subjective synonym of *A. curtula*). Luo & Zhou 2012:194 (revision, as junior subjective synonym of *A. curtula*).

Aleochara discoidea Sharp 1874:7 (description, type locality: Japan). Fauvel 1901:90 (checklist, as junior subjective synonym of *A. curtula*). Feynes 1918:399 (catalogue, as junior subjective synonym of *A. curtula*). Bernhauer & Scheerpeltz 1926:776 (catalogue, as junior subjective synonym of *A. curtula*). Klimaszewski 1984:77 (review, as junior subjective synonym of *A. curtula*). Caron *et al.* 2008:832 (checklist, as junior subjective synonym of *A. curtula*). Luo & Zhou 2012:194 (revision, as junior subjective synonym of *A. curtula*). Fery 2013:81

(checklist, as junior subjective synonym of *A. curtula*).

Aleochara discordia Duvivier 1883:99 (misspelling error). Bernhauer & Scheerpeltz 1926:776 (catalogue, as junior subjective synonym of *A. curtula*). Klimaszewski 1984:77 (review, as junior subjective synonym of *A. curtula*). Luo & Zhou 2012:194 (revision, as junior subjective synonym of *A. curtula*).

Aleochara limbata Fabricius 1801:600 (description, type locality: "Germany. Dom. Karftens"). Feynes 1918:399 (catalogue, cited as "? *limbata*"; junior subjective synonym of *A. curtula*). Bernhauer & Scheerpeltz 1926:776 (catalogue, as junior subjective synonym of *A. curtula*). Note: Probably misspelling of *A. limbatus*.

Aleochara limbatus Fabricius 1801:600 (description, type locality: "Germany. Dom. Karftens"). Klimaszewski 1984:77 (review, as junior subjective synonym of *A. curtula*). Caron *et al.* 2008:832 (checklist, as junior subjective synonym of *A. curtula*). Luo & Zhou 2012:194 (revision, as junior subjective synonym of *A. curtula*).

Aleochara puncticeps Thompson 1860:248 (description, type locality: "Götheborg af Apothekare Ekebergh."). Note: cited as a rare species ('Sällsynt'). Bernhauer 1901:448 (checklist, as junior subjective synonym of *A. curtula*). Feynes 1918:399 (catalogue, as junior subjective synonym of *A. curtula*). Bernhauer & Scheerpeltz 1926:776 (catalogue, as junior subjective synonym of *A. curtula*). Klimaszewski 1984:77 (review; junior subjective synonym of *A. curtula*). Caron *et al.* 2008:832 (checklist, as junior subjective synonym of *A. curtula*). Luo & Zhou 2012:194 (revision, as junior subjective synonym of *A. curtula*).

Aleochara curtula bugnioni Fauvel 1901:90 (description of variation, type locality: "Colombie: Sierra Nevada"). Note: following the article 45.6.4 of the ICZN (1999): "it is subspecific if first published before 1961 and its author expressly used one of the terms "variety" or "form" (including use of the terms "var.", "forma", "v." and "f.")", we will consider *Aleochara bugnioni* var., published by Fauvel (1901), as a subespecies of *A. curtula.* Feynes 1918:399 (catalogue, as junior subjective synonym of *A. curtula*). Bernhauer & Scheerpeltz

1926:776 (catalogue, as a variation of *A. curtula*). Blackwelder 1944:167 (catalogue, as variation of *A. curtula*). Klimaszewski 1984:77 (review, as subspecies of *A. curtula*). Newton *et al.* 2005:64 (checklist, as junior subjective synonym of *A. curtula*). Caron *et al.* 2008:832 (checklist, as subspecies of *A. curtula*). Luo & Zhou 2012:194 (revision, as subspecies of *A. curtula*).

Type species:

Aleochara curtula: not seen. Note: type material not located. Type locality unspecified, probably France (Klimaszewski 1984)

Aleochara curtula bugnioni: **Syntype**, One specimen: (1) "S.ª Nevada 1600 m\ au Jessus(?) de San\ Antonio (Colombie,\ 3 loudes(?)" [White label, handwritten in India ink. 'Jessus' and 'loudes' are interpretation of the handwritten]. (2) "V. *Bugnioni* Fvl." [White label, handwritten in India ink]. (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Note: Fauvel did not mention the number of specimens in the type series of *A. curtula* Var. *bugnioni*, as a conservative approach (and following article 72.1.1 of the ICZN 1999) we suggest that this specimen should be considered as a syntype.

Additional material:

Aleochara curtula: **IRSNB**: **Belgium.** One specimen: (1) "Auderghem 20.5.77" [White label, typed in black ink]. (2) "H. Donckier" [White label, typed in black ink] (3) "M. R. Belg." [White label, typed in black ink]. (4) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Two specimen: (1) "Ridderborn 20 à 25.4.74" [White label, printed in black ink]. (2) "O. de Heusch" [White label, typed in black ink]. (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Two specimen: (1) "Ridderborn 4.74" [White label, printed in black ink]. (2) "O. de Heusch" [White label, typed in black ink]. (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Two specimens: (1) "Bruxelles 5.6.72" [White label, printed in black ink]. (2)

"De Kempeneer" [White label, printed in black ink]. (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Two specimen: (1) "Embourg 12.5.78" [White label, printed in black ink]. (2) "E. Donckier" [White label, printed in black ink]. (3) "M. R. Belg." [White label, printed in black ink]. (4) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. One specimen: (1) "Izel 15.8.79" [White label, printed in black ink]. (2) "M. R. Belg." [White label, printed in black ink]. (3) "A. Mertens" [White label, printed in black ink]. (4) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. One specimen: (1) "Cambre\15-7-03" [White label, handwritten]. (2) "Collection\ L. Burgeon" [White label, typed in black ink]. (3) "*Aleochara*\ *curtula*\ Belgique" [White label, handwritten]. (4) "*Aleochara*\ *curtula* Goeze\ L. Burgeon det." [White label, 'L. Burgeon det.' Typed in black ink, other information handwritten]. (5) "Coll. R. I. Sc. N. B." [White label, printed in black ink].

France. One specimen: (1) "Saintes 9.69". [White label, printed in black ink]. (2) "Coll. deBorre" [White label, printed in black ink]. (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Five specimens (in the same pin): (1) "Castres" [White label, handwritten]. (2) "Castres" [White label, handwritten]. (3) "Castres" [White label, handwritten]. (4) "Castres" [White label, handwritten]. (5) "*Aleochara*\ *lata* v *fuscipes*" [White label, handwritten]. (6) "Ex coll. Bettinger" [White label, printed in black ink]. (7) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. One specimen: (1) "LORRAINE\ Region sarroise\ Env. Sarreguemines\ D. Seiler" [White label, printed in black ink]. (2) "Mai 1950" [White label, printed in black ink]. (3) "*Aleochara*\ *curtula*" [White label, printed in black ink]. (4) "Coll. I.R.Sc.N.B." [White label, printed in black ink]. One specimen: (1) "*ALEOCHARA*\ *curtula*" [White label, handwritten]. (2) "Pont du gard\ 19.v.36" [White/blue label, handwritten]. (3) "Coll. I.R.Sc.N.B." [White label, printed in black ink]. Seven specimens: (1) "*ALEOCHARA*\ *curtula*" [White label, handwritten]. (2) "Pt du gard\ 19.v.36" [White/blue label, handwritten]. (3) "Coll. I.R.Sc.N.B." [White label, printed in black ink]. One specimen: "*ALEOCHARA*\ *curtula*" [White label, handwritten]. (2) "Charlevilla (?)\ v.36"

[White/blue label, handwritten. I believe it stands for Chalesville, in France]. (3) “Coll. I.R.Sc.N.B.” [White label, printed in black ink]. One specimen: (1) “Marseille” [White label, printed in black ink]. (2) “*Aleochara*\ *curtula* \ Goeze” [White label, handwritten]. (3) “Coll. I.R.Sc.N.B.” [White label, printed in black ink]. Three specimen (on the same pin): (1) “Montdidier\ (Somme)\ 27 Juin 1934” [White label, handwritten]. (2) “*Aleochara*\ *curtula* \ Goeze” [White label, handwritten]. (3) “Coll. I.R.Sc.N.B.” [White label, printed in black ink]. Two specimens (on the same pin): (1) “*Aleochara*\ *fuscipes*\ Deux Sevres” [White label, handwritten]. (2) “coll. Desbrochers\ (Le Moult vendit)” [White label, printed in black ink]. (3) “Coll. R. I. Sc. N. B.” [White label, printed in black ink].**United Kingdom.** Three specimen: (1) “Wimbledon.\ 1889” [White label, typed in black ink]. (2) “*Aleochara*\ *fuscipes*” [White label, handritten]. (3) “coll. Desbrochers\ (Le Moult vendit” [White label, typed in black ink]. (4) “Coll. I.R.Sc.N.B.” [White label, printed in black ink]. **Without specific location**. five specimens: (1) “Coll. Wesmael” [White label, printed in black ink]. (2) “Coll. R. I. Sc. N. B.” [White label, printed in black ink]. One specimen: (1) “61.Gz\L (?)” [White label, printed in black ink]. (2) “Coll. Wesmael” [White label, printed in black ink]. (3) “Coll. R. I. Sc. N. B.” [White label, printed in black ink]. One specimen: (1) “61.Gz\ B” [White label, printed in black ink]. (2) “Coll. Wesmael” [White label, printed in black ink]. (3) “Coll. R. I. Sc. N. B.” [White label, printed in black ink]. One specimen: (1) “56.Gz.\B (?)” [White label, printed in black ink]. (2) “Coll. Wesmael” [White label, printed in black ink]. (3) “Coll. R. I. Sc. N. B.” [White label, printed in black ink]. Note: Although these specimens lack precise locality information, they may be prevenient from Belgium, where Constantin Wesmael lived. Four specimens (in the same pin): (1) “font. (?)” [White label, handwritten]. (2) “Ex coll. Bettinger” [White label, printed in black ink]. (3) “Coll. R. I. Sc. N. B.” [White label, printed in black ink]. Two specimens (in the same pin): (1) “font. (?)” [White label, handwritten]. (2) “*Aleochara*\ *fuscipes*” [White label, handwritten]. (3) “Ex coll. Bettinger” [White label, printed in black ink]. (4) “Coll. R. I. Sc.

N. B." [White label, printed in black ink]. Two specimens (on the same pin): (1) "*Aleochara**fuscipes*\ (?)" [White label, handwritten. Third line is not understandable]. (2) "Ex coll. Bettinger" [White label, printed in black ink]. (3) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Two specimens (on the same pin): (1) "font (?)" [White label, handwritten]. (2) "*Erythroptera* (?)\ Gravenhorst" [White label, handwritten]. (3) "(?) exemplaire de\ *Al. curtula* Goeze\ = *fuscipes* " [White label , handwritten in blue ink. First word of first line is not understandable]. (4) "Ex coll. Bettinger" [White label, printed in black ink]. (5) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. One specimen: (1) "Spienedalhjvy (?)/ 20.VI.20" [White label, handwritten]. (2) "*A. fuscipes*" [White label, handwritten]. (3) "Ex coll. Bettinger" [White label, printed in black ink]. (4) "Coll. I.R.Sc.N.B." [White label, printed in black ink]. Seven specimens: (1) "coll. Desbrochers\ (Le Moult vendit)" [White label, printed in black ink]. (2) "Coll. R. I. Sc. N. B." [White label, printed in black ink]. Two specimens (on the same pin): (1) "Ferenzaweiais (?)\ 20.v.28" [White label, handwritten]. (2) "*Aleochara*\ *curtula*" [White label, handwritten] . (3) "Ex coll. Bettinger" [White label, printed in black ink]. (4) "Coll. I.R.Sc.N.B." [White label, printed in black ink]. One specimen: (1) "Meran (?)" [White label, handwritten]. (2) "coll. Desbrochers \ (Le Moult vendit)" [White label, typed in black ink]. (3) "Coll. I.R.Sc.N.B." [White label, printed in black ink]. One specimen: (1) [Square yellow label, nothing written]. (2) "*Al. curtula*" [White label, handwritten]. (3) [White label, handwritten. Written is not understandable]. (4) "Coll. P. Boppe\ Le Moult vendit" [White label, printed in black ink]. (5) "Coll. I.R.Sc.N.B." [White label, printed in black ink]. One specimen: (1) "Aspeigh (?) 16.8/08" [White label, handwritten]. (2) "188\ Db" [Square green label, typed in black ink]. (3) "*Aleachara*\ *fucipes*" [White label, handwritten]. (4) "coll. Desbrochers \ (Le Moult vendit)" [White label, typed in black ink]. (5) "Coll. I.R.Sc.N.B." [White label, printed in black ink].

Diagnosis: *A. curtula* can be distinguished from *A. chrysorrhoa* and *A. pseudochryssorhoa* by the color pattern. In *A. curtula* the pronotum are dark brown and elytra are dark brown with a paler spot near the medial angle of each elytron. *A. curtula* can be misidentified with *A. bonariensis* and *A. lustrica* by the color pattern but can be differentiated by the follow characteristics: male – posterior margin of tergite VIII is not serrated, the teeth in aedeagos' median lobe has a hooklike shape and is dorsally positionate. Female – spermatheca u-shaped, broadly curved, with capsule elongate.

Redescription: see Luo & Zhou (2012)

Geographical records: Material examined: Belgium, France and United Kingdom.

Literature: Asia (Fauvel 1901; Feynes 1918), Bolivia (Fauvel 1901; Caron *et al*. 2008), Brazil (Fauvel 1901; Caron *et al*. 2008), Chile (Blackwelder 1944; Caron *et al*. 2008), Colombia (Fauvel 1901; Blackwelder 1944; Caron *et al*. 2008), Europe (Fauvel 1901; Feynes 1918), Grenada (Caron *et al*. 2008), Guyana (Fauvel 1901), Japan (Fauvel 1901), North America (Fauvel 1901), Peru (Fauvel 1901; Caron *et al*. 2008), Saint Vincent Island (Caron *et al*. 2008), Siberia (Fauvel 1901), Turkestan (Fauvel 1901) and West Indies (Blackwelder 1944).

Note: although no Brazilian specimen was studied, many previous works attributes this species to Brazil and other surrounding countries. Through this study we considered *A. curtula* as a species of doubtful distribution to Brazil and surrounding countries, since the geographic records related to these countries are based in old previous works (*e.g.* as in Fauvel 1901) and by similarity *A. bonariensis* may be misidentified as *A. curtula*.

Natural history: Found 1600m high.

Aleochara lustrica Say, 1832

(Figs. in Klimaszewski 1984:142– Figs. 138; 139; 140. Klimaszewski 1984:144 – Figs. 148; 150; 151; Klimaszewski *et al*. 1987: 251 – Fig. 7)

Aleochara lustrica Say 1832:55 (description, type locality: "Pennsylvania"). Say 1834:468 (redescription). Casey 1906:139 (description in identification key). Blatchley 1910:365 (catalogue). Note: Blatchley attributes *A. lustrica* to Say, 1834:468, actually was described in Say 1832:55. Feynes 1918:400 (catalogue). Bernhauer & Scheerpeltz 126:778 (catalogue). Moore & Legner 1975:332 (catalogue). Klimaszewski 1984:72 (review; neotype designation). Klimaszewski *et al.* 1987:256 (redescription as externally identical to *A. lateralis*). Klimaszewski *et al.*, 1990 (distribution). Pace 1999:137 (checklist). Note: Pace attributes *A. lustrica* to Say, 1836:468, probably mistaken with Say 1834, also incorrect. *A. lustrica* was actually described in Say 1832:55. Ashe 2002:165 (catalogue). *Caron et al.*, 2008:832 (checklist). Pace 2008:374 (checklist). Note 1: Same error in Pace 1999. Pace 2009:170 (checklist, as valid species). Note 2: Same error in Pace 1999. Note 3: Brazil as new distribution locality.

Aleochara pauper Sharp 1883:147 (description, type locality: "Mexico, Jalapa (Höge)"). Duvivier 1883:100 (catalogue, as valid species). Casey 1906: 139 (description in identification key; as valid species). Feynes 1918:400 (catalogue, as junior subjective synonym of *A. lustrica*). Bernhauer & Scheerpeltz 126:778 (catalogue, as valid species). Blackwelder 1944:167 (checklist, as valid species). Klimaszewski 1984:72 (review; as junior subjective synonym of *A. lustrica*). Ashe 2002:165 (catalogue, as junior subjective synonym of *A. lustrica*). Caron *et al.*, 2008:832 (checklist, as subjective junior synonym of *A. lustrica).* Fery 2013:81 (checklist, as junior subjective synonym of *A. lustrica*).

Aleochara serrata Sharp 1883:147 (description, type locality: "Mexico, Tehuantepec (Sumichrast, coll. Sallé). – South America, Bahia"). Duvivier 1883:100 (catalogue, as valid species). Feynes 1918:400 (catalogue, as junior subjective synonym of *A. lustrica*). Bernhauer &

Scheerpeltz 126:778 (catalogue, as valid species). Blackwelder 1944:167 (checklist, as valid species). Klimaszewski 1984:72 (review, cited as junior subjective synonym of *A. lustrica*). Ashe 2002:165 (catalogue, as junior subjective synonym of *A. lustrica*). Caron *et al.*, 2008:832 (checklist, as junior subjective synonym of *A. lustrica*). Fery 2013:81 (checklist, as junior subjective synonym of *A. lustrica*).

Aleochara algonquina Casey 1906:138 (description, type locality: "Ohio (Cincinnati)"). Feynes 1918:400 (catalogue, as junior subjective synonym of *A. lustrica*). Bernhauer & Scheerpeltz 126:776 (catalogue, as valid species). Moore & Legner 1975:330 (checklist, as valid species). Klimaszewski 1984:73 (review; as junior subjective synonym of *A. lustrica*; lectotype designation). Ashe 2002:165 (catalogue, as junior subjective synonym of *A. lustrica*). Caron *et al.*, 2008:833 (checklist, as subjective junior synonym of *A. lustrica*).

Aleochara fusicornis Casey, 1906:138 (description, type locality: "Northeastern States of America"). Feynes, 1918:400 (catalogue, as junior subjective synonym of *A. lustrica*). Bernhauer & Scheerpeltz, 126:777 (catalogue, as valid species). Moore & Legner, 1975:331 (checklist, as valid species). Klimaszewski 1984:72 (review; as junior subjective synonym of *A. lustrica*; lectotype designation). Ashe 2002:166 (catalogue, as junior subjective synonym of *A. lustrica*). Caron *et al.*, 2008:832 (checklist, as subjective junior synonym of *A. lustrica*).

Aleochara medialis Casey 1906:138 (description, type locality: "New York (Catskill Mts.) – H. H. Smith"). Feynes 1918:400 (catalogue, as junior subjective synonym of *A. lustrica*). Bernhauer & Scheerpeltz 126:778 (catalogue, as valid species). Moore & Legner 1975:333 (checklist, as valid species). Klimaszewski 1984:73 (review; as junior subjective synonym of *A. lustrica*; lectotype designation). Ashe 2002:166 (catalogue, as junior subjective synonym of *A. lustrica*). Caron *et al.*, 2008:833 (checklist, as subjective junior synonym of *A. lustrica*).

Aleochara sternalis Casey 1906:138 (description, type locality: "New York (Catskills Mts. and

Ithaca) H.H. Smith"). Feynes 1918:400 (catalogue, as junior subjective synonym of *A. lustrica*). Bernhauer & Scheerpeltz 126:779 (catalogue, as valid species). Klimaszewski 1984:73 (review; as junior subjective synonym of *A. lustrica*; lectotype designation). Ashe 2002:166 (catalogue, as junior subjective synonym of *A. lustrica*). Caron *et al.*, 2008:832 (checklist, as subjective junior synonym of *A. lustrica*).

Aleochara texana Casey 1906:138 (description, type locality: "Texas"). Feynes, 1918:400 (catalogue, as junior subjective synonym of). Bernhauer & Scheerpeltz, 126:779 (catalogue, as valid species). Moore & Legner, 1975:335 (checklist, as valid species). Klimaszewski, 1984:72 (review, cited as junior subjective synonym of *A. lustrica*, lectotype designation. Ashe, 2002:166 (catalogue, as junior subjective synonym of *A. lustrica*). Caron *et al.*, 2008:832 (checklist, as subjective junior synonym of *A. lustrica*).

Type material: not seen. Note: Type material of *A. lustrica* was presumably destroyed (Klimaszewski 1984:72)

Additional Material: not seen

Diagnosis (based on Klimaszewski 1984:73; Klimaszewski *et al*. 1987: 255): This species can be distinguished from *A. chrysorrhoa* and *A. pseudochryssorhoa* by the color pattern. In *A. lustrica* the pronotum are dark brown and elytra are dark brown with a paler spot near the medial angle of each elytron. *A. lustrica* can be misidentified with *A. bonariensis* and *A. curtula* by the color pattern but can be differentiated by the follow characteristics: male – by the posterior margin serrated and the shape of the teeth in the median lobe of male, which is hookliked in *A. lustrica* (Klimaszewski 1984:142 - Figs. 138; 139; Klimaszewski *et al*. 1987:251 - Fig. 7). Female – differs by the shape of spermatheca, which is broadly curved, with capsule elongate, the same length of the chamber (Klimaszewski 1984:142 - Fig. 140).

Note: Klimaszewski *et al.* (1987) Considered this species as extremely similar to *A. lateralis* (now regarded as *A. bonariensis*) from which only differs by the genitalic characters.

Description: for neotype description see Klimaszewski (1984), for redescription see Klimaszewski *et al.* (1987), described together with *A. lateralis* Erichson, 1839.

Geographical records: Literature: Brazil: Bahia (Sharp 1883:147; Pace 2009:170); Chile (Caron *et al*. 2008:833); Ecuador (Pace 2008:374); Mexico: Jalapa (Sharp 1883:147; Duvivier 1883:100; Klimaszewski 1984:72; Caron *et al*. 2008:832), Tehuantepec (Sharp 1883:147; Klimaszewski 1984:72; Caron *et al*. 2008:832), Chiapas (Ashe 2002:165), Hidalgo (Ashe 2002:165), Oaxaca (Ashe 2002:165), Veracruz (Ashe 2002:165); USA: Arizona (Klimaszewski 1984:73), Cincinnati (Casey 1906:139; Klimaszewski 1984:73; Caron *et al*. 2008:833), Florida (Klimaszewski *et al*. 1990:182), Illinois (Klimaszewski *et al*. 1990:182), Indiana (Casey 1906:139), Louisiana (Casey 1906:139), Miami (Klimaszewski *et al*. 1990:182), Michigan (Klimaszewski *et al*. 1990:182), New York (Casey 1906:138/139/140; Klimaszewski 1984:73; Klimaszewski *et al*. 1990:182; Caron *et al*. 2008:832/833); Ohio (Casey 1906:139; Klimaszewski 1984:73; Caron *et al*. 2008:833), Pennsylvania (Say 1832:56; Bernhauer & Scheerpeltz 1926:778; Klimaszewski 1984:72; Caron *et al*. 2008:832), Texas (Casey 1906:137; Klimaszewski 1984:72; Klimaszewski *et al*. 1990:182; Caron *et al*. 2008:832), Virginia (Casey 1906:139).

Note: Klimaszewski *et al*. (1987:257) list Mato Grosso, Brazil, Chile, Peru as distribution of *A. lustrica*. It is not clear if the distribution belongs to *A. lustrica*, since in this paper the authors attribute this distribution to six specimens "congeneric with *A. lustrica*". As a conservative position we will suggest this distribution as doubtfull, since no specimen of *A. lustrica* was identified in this study and by the similarity with *A. bonariensis* (Klimaszewski *et al*. 1987).

Note 2: to verify the geographical record of *A. lustrica* in Bahia (Brazil), we suggest to study the specimens deposited in Museo Regionale di Scienze Naturali of Torino, Italy (MRSNT) cited in Pace (2009).

Natural history: Literature: Adults found in human feces and pig dung, as associated with animal carcasses. Collected at altitudes up to 1578m. Collecting period: January to September. Host species: unknown (Klimaszewski 1984:73); collected with Malaise trap (Klimaszewski *et al.* 1990:182)

Species Inquirenda (uncertain status)

Aleochara verecunda Sharp, 1876

Aleochara verecunda Sharp 1876:69 (description, type locality: "Tapajós"). Duvivier 1883:101(catalogue). Bernhauer & Sheerpeltz 1926:779 (catalogue). Blackwelder 1944:167 (checklist). Caron *et al*. 2008:833 (checklist). Fery 2013:81 (checklist).

Type material: not seen.

Additional material: not seen.

Remarks: We received one specimen from FMNH identified from Bernhauer as *Aleochara verecunda* Sharp. After the dissection and study of the terminalia, this specimen was identified as *Aleochara bonariensis* Lynch. We suggest a careful study of both type species in future works. Note: *A. bonariensis* Lectotype is deposited in Museum für Naturkunde der Humboldt-Universität in Berlin, Germany (ZMHB) (Klimaszewski *et al*.1987); *A. verecunda* type material we believe to be deposited in Natural History Museum, London (BMNH) along with other David Sharp type material.

CONCLUSION

Through this work, three Brazilian species of *Aleochara* (*Aleochara*) had their terminalia described and illustrated for the first time. After a comparative study of the terminalia, a new group of species named mundana group was compounded by these three species. Five species with recent description/redescription were revised and had their information updated and terminalia (with exception of *A. lustrica*) illustrated. Two identification keys were made, one for the known subgenera of *Aleochara* of Brazil, and other for the known species of *Aleochara* (*Aleochara*) of Brazil. *Aleochara verecunda* Sharp was considered as *species inquirenda*, therefore was not included in the identification key. The geographical records and natural history data of each species were obtained by both literature and specimens labels. New geographic records to *A. auricoma*: Brazil – Acre (Porto Acre and Senador Guiomard); *A. mundana*: Bolívia – Mapiri and British Guiana – Essequibo; *A. prisca*: Brazil – Manaus; *A. pseudochrysorrhoa*: Argentina – Buenos Aires and Córdoba. A. *curtula* and *A. lustrica*, have doubtful records to Brazil since we did not have access to Brazilian specimens of none during this study. Both, *A. curtula* and *A. lustrica*, can be misidentified with *A. bonariensis*. Through this paper we hope to give the necessary base and encourage further works with *Aleochara* in Brazil to increase the knowledge of the Brazilian fauna. In order to facilitate future revisions here we provide an updated checklist of Brazilian *Aleochara* (*Aleochara*) species with our six confirmed species, two species of doubtful distribution to Brazil and one species considered as *species inquirenda.*

Updated checklist of Brazilian *Aleochara* (*Aleochara*):

mundana group **n. group:**

Aleochara auricoma Sharp, 1876:70;

Aleochara mundana Sharp, 1876:71;

Aleochara prisca Sharp, 1876:69.

lustrica group: by Klimaszewski (1984)

Aleochara bonariensis Lynch, 1884:70;

Aleochara chrysorrhoa Erichson, 1839:160;

Aleochara pseudochrysorrhoa Caron *et al*., 2008:828

Species of doubtful distribution to Brazil

Aleochara curtula (Goeze, 1777):730;

Aleochara lustrica Say, 1832:55;

Species inquirenda

Aleochara verecunda Sharp, 1876:69.

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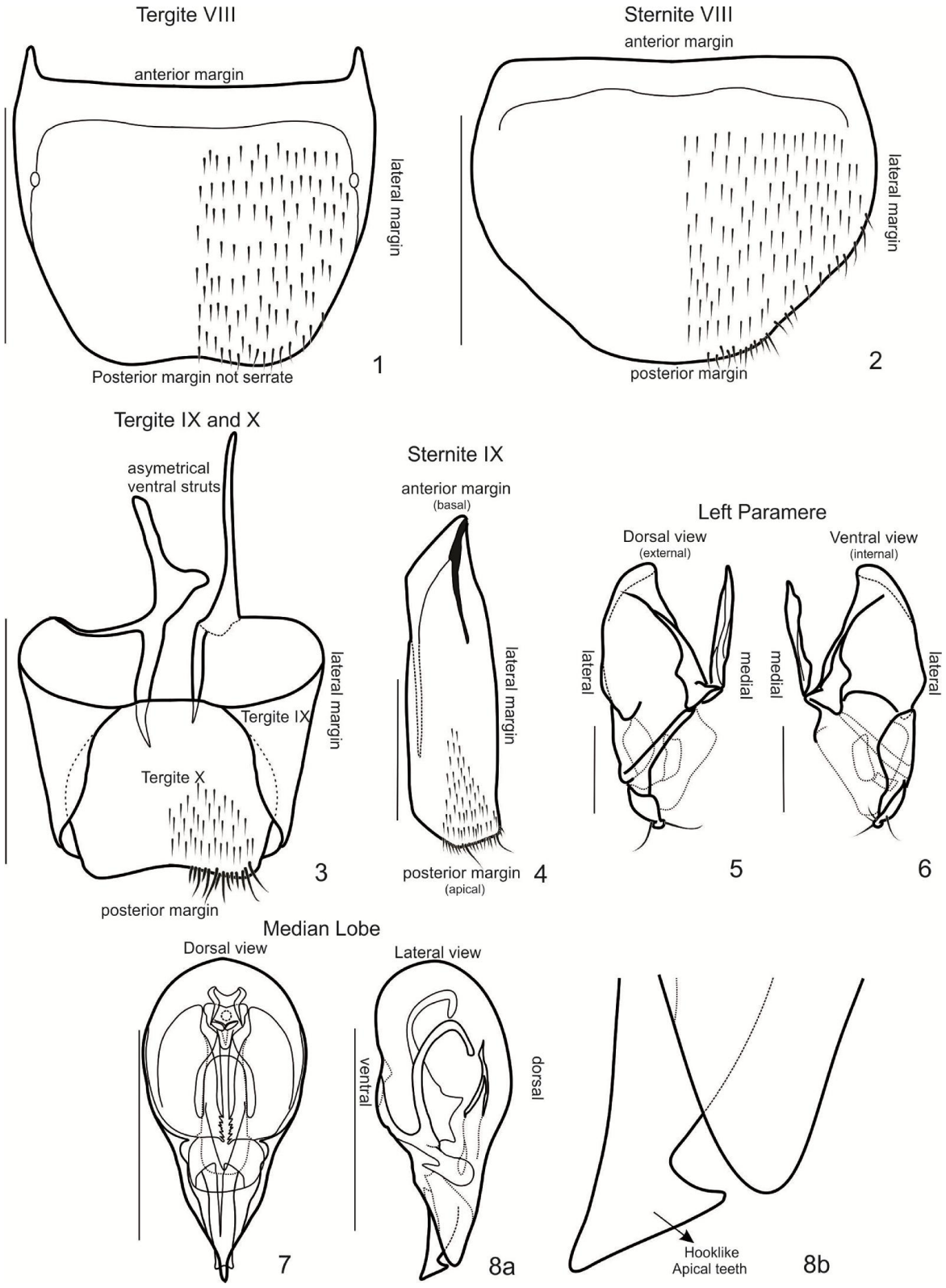
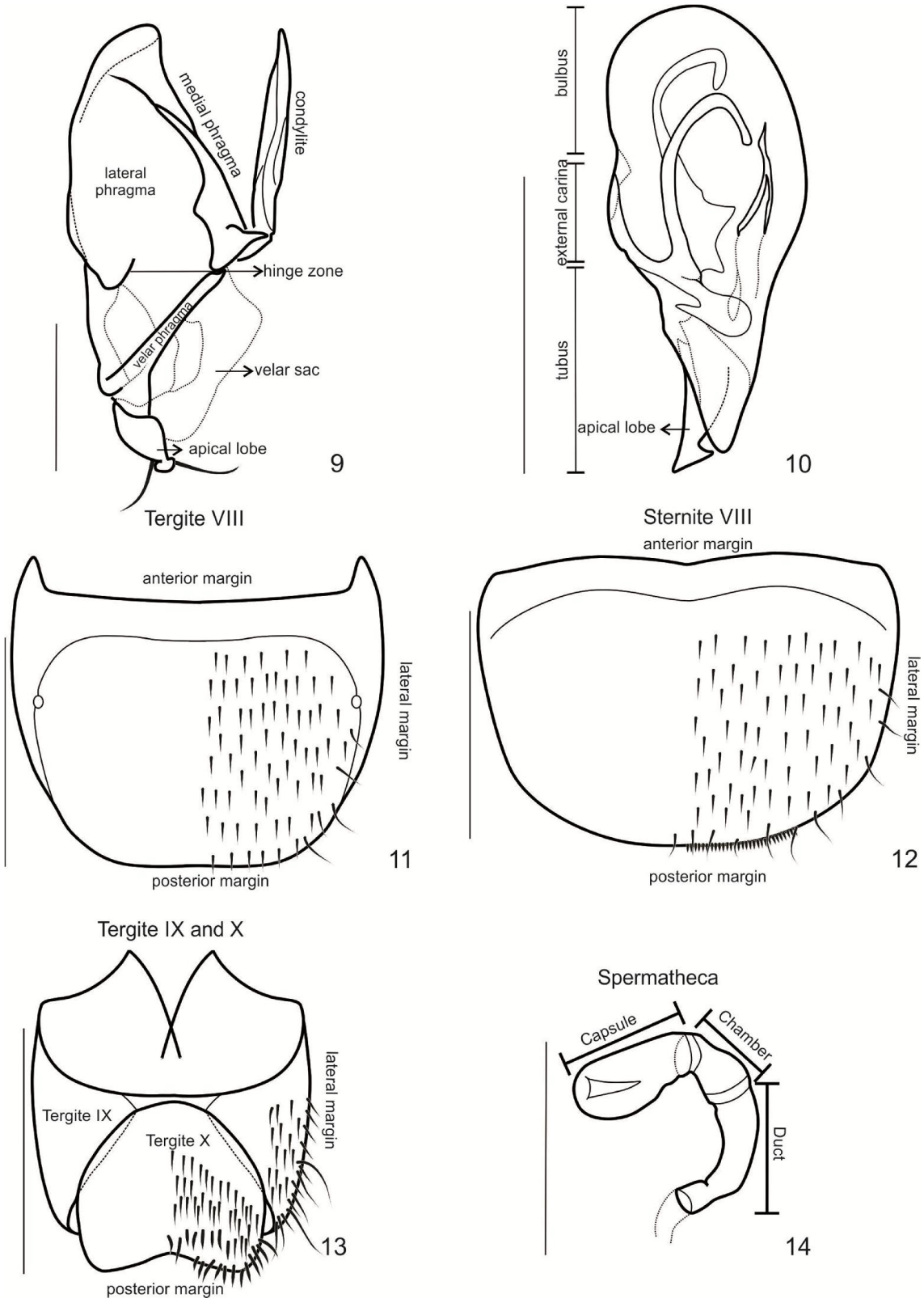
ILLUSTRATIONS

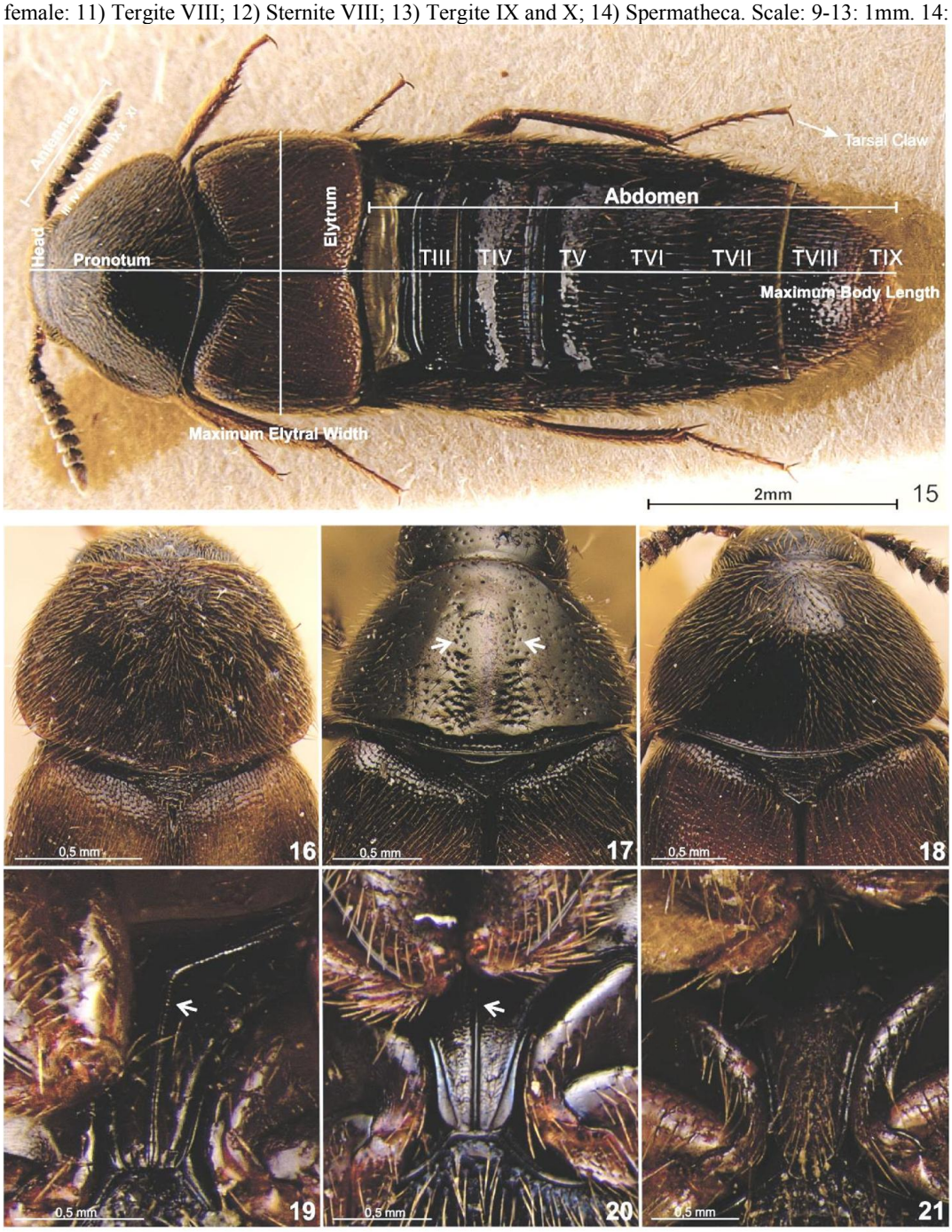


Figures 1-8b. Structures with taxonomical importance. *Aleochara curtula* male: 1) Tergite VIII; 2) Sternite VIII; 3) Tergite IX and X; 4) Sternite IX. Paramere: 5) Left paramerum, dorsal view; 6) Left paramerum ventral view. Median Lobe: 7) Median lobe, dorsal view; 8a) Median lobe, lateral view; 8b) Detail of median lobe. Scale: 1; 2; 3; 7; 8a: 1mm. 4-6: 0,5 mm. 8b without scale.

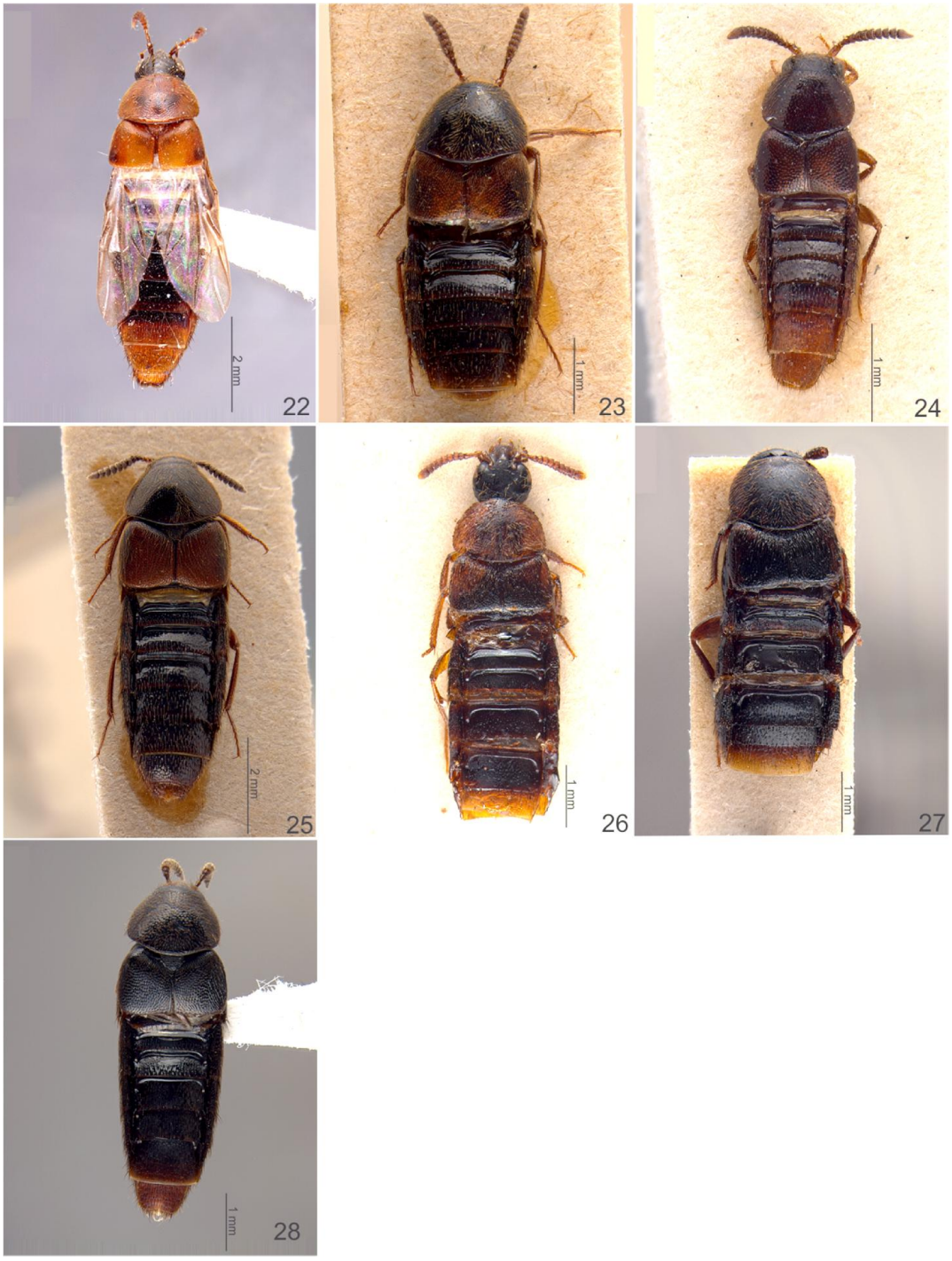


Figures 9-14. Structures with taxonomical importance. *Aleochara curtula* 9-10 male. 9) Left paramerum with structures of taxonomical importance; 10) median lobe with structures of taxonomical importance. *Aleochara curtula* 11-14

female: 11) Tergite VIII; 12) Sternite VIII; 13) Tergite IX and X; 14) Spermatheca. Scale: 9-13: 1mm. 14: 0,5 mm.

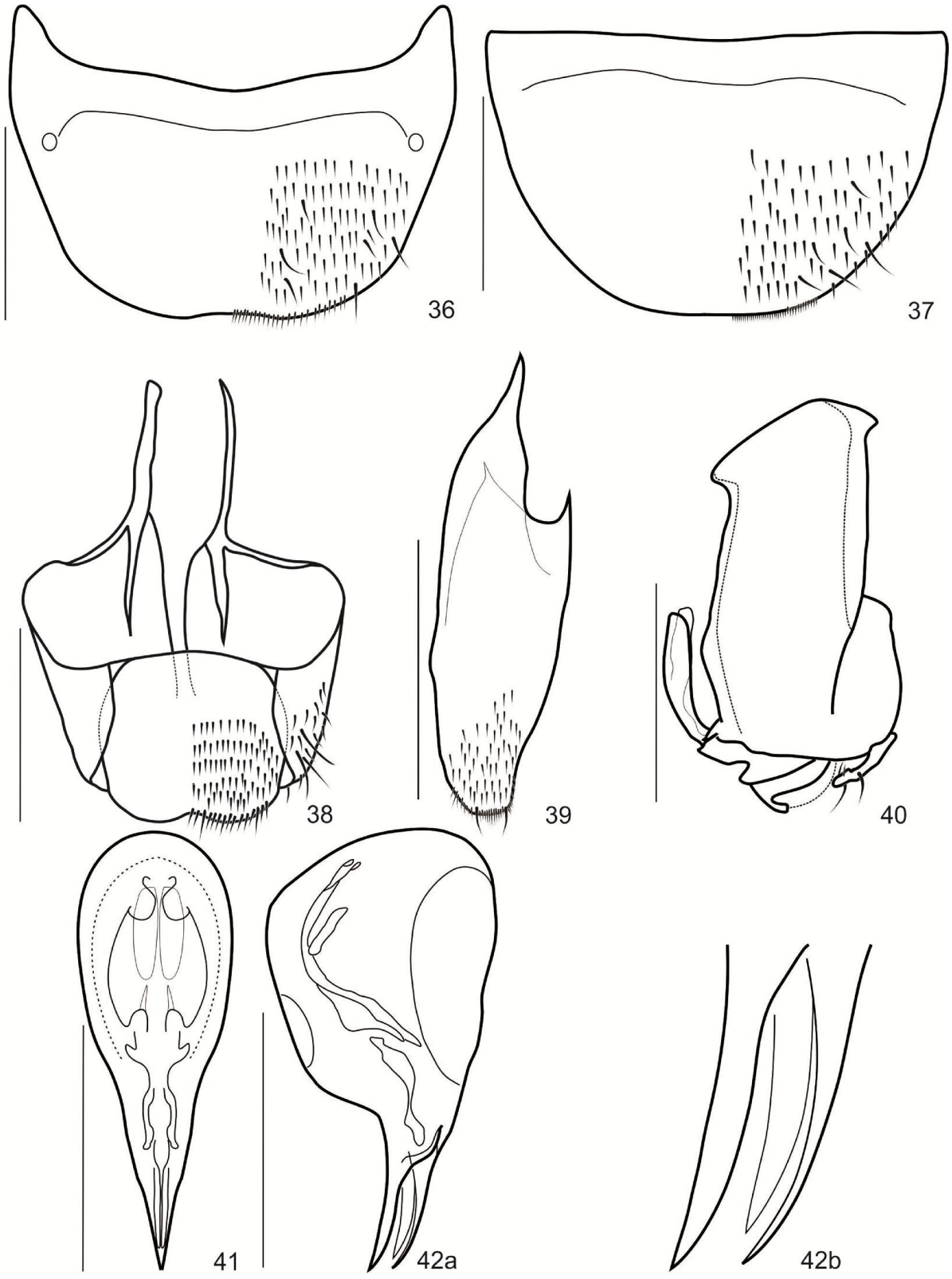


Figures 15-21. *Aleochara curtula*: 15) Dorsal view with structures of taxonomical importance. Pronotum: 16-18. 16) *Aleochara* (*Xenochara*) *taeniata* Erichson, 1839; 17) *Aleochara* (*Coprochara*) *bimaculata* Gravenhorst, 1802; 18) *Aleochara* (*Aleochara*) *curtula* Goeze, 1777. Mesoventrito: 19-21. 19) *A*. (*X*.) *verberans* Erichson, 1839, white arrow indicate mesoventrite; 20) *A*. (*C*.) *bimaculata* Gravenhorst, 1802, white arrow indicate mesoventrite; 21) *A*. (*A*.) *bonariensis* Lynch, 1884. Scale: 15: 2 mm. 16-21: 0,5mm.

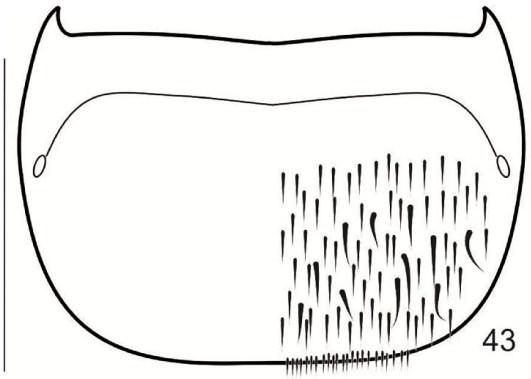


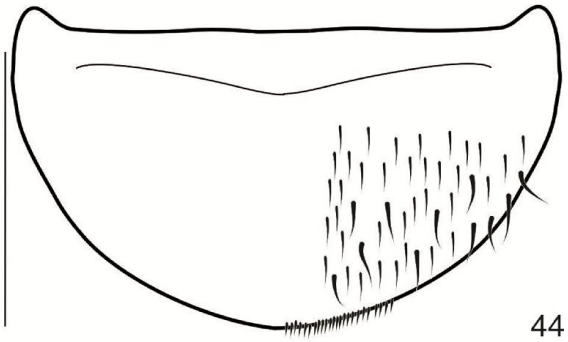
Figures 22-28. Habitus dorsal: 22) *Aleochara auricoma*; 23) *A. bonariensis*; 24) *A. chrysorrhoa*; 25) *A.curtula;* 26) *A. mundana* (sintype); 27) *A. prisca*; 28) *A. pseudochrysorrhoa* (holotype).

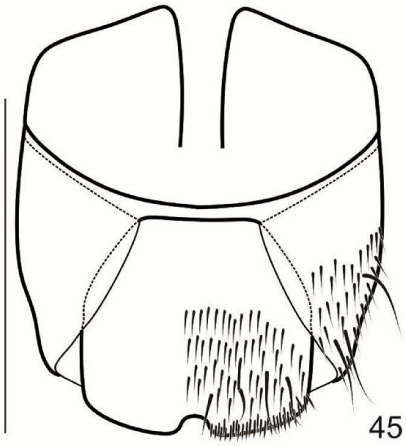
Figures 29-35. Habitus lateral: 29) Aleochara auricoma; 30) A. bonariensis; 31) A. chrysorrhoa; 32) A.curtula; 33) A. mundana; 34) A. prisca; 35) A. pseudochrysorrhoa (holotype)



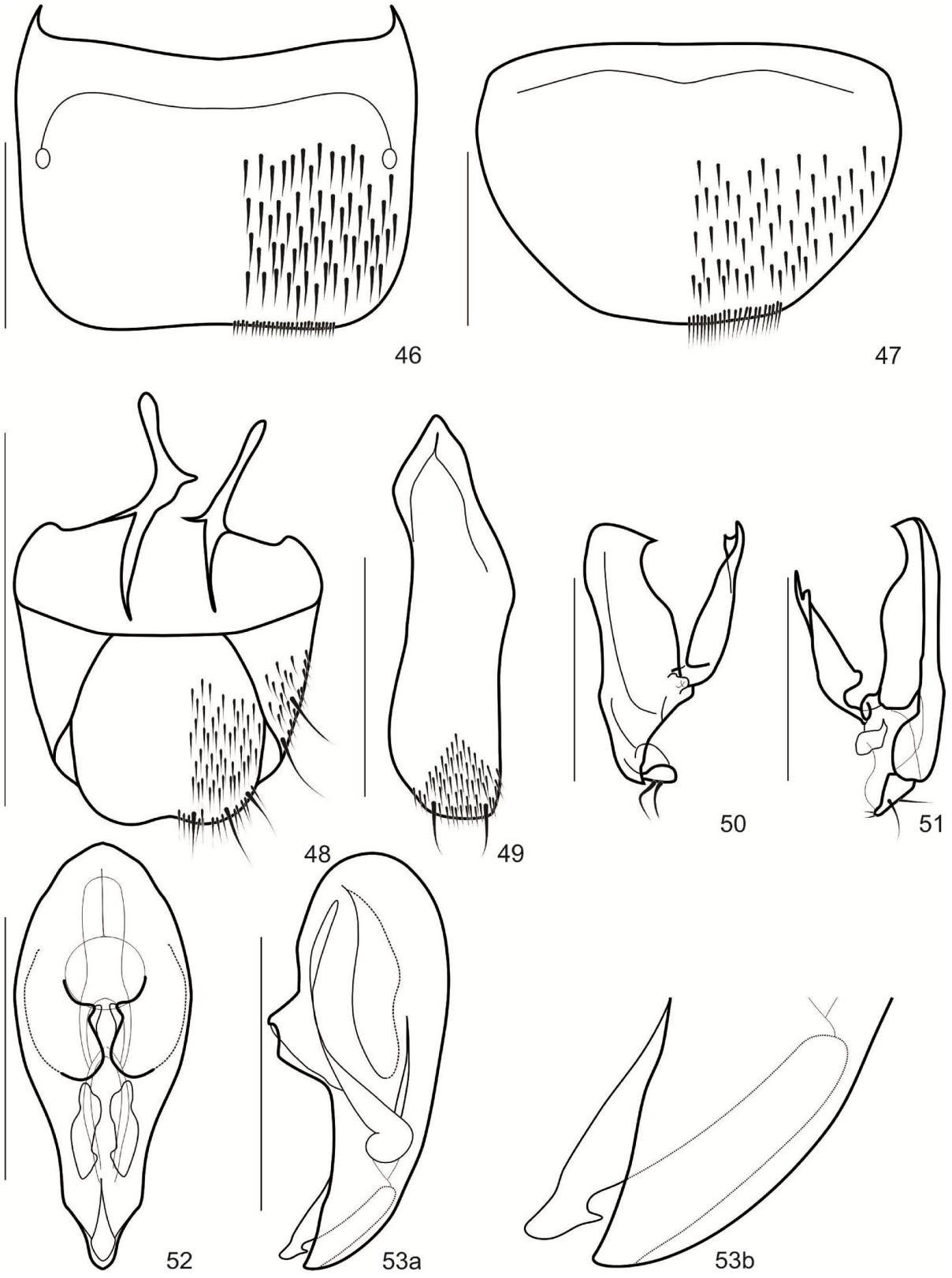
Figures 36-42b. *Aleochara auricoma* male. 36) Tergite VIII; 37) Sternite VIII; 38) Tergite IX and X; 39) Sternite IX. Paramere: 40) Right paramere, dorsal view. Median Lobe: 41) Median lobe, dorsal view; 42a) Median lobe, lateral view; 42b) Detail of median lobe. Scale: 36-42a: 1mm; 42b without scale.



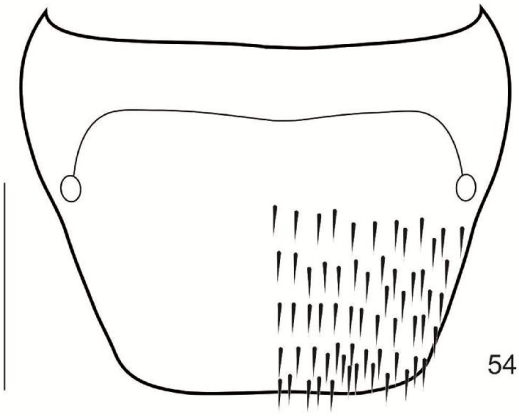


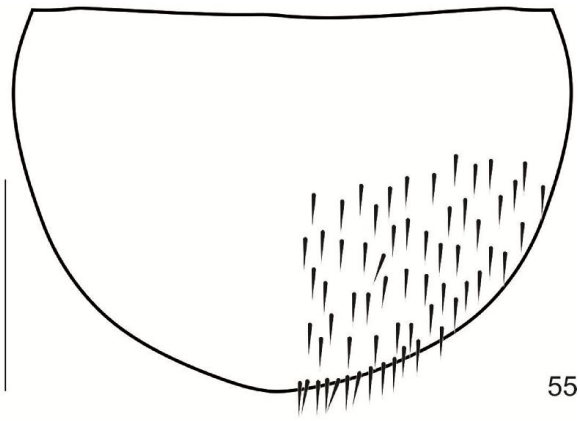


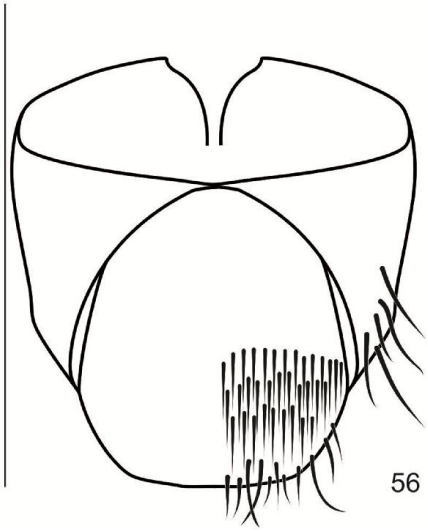
Figures 43-45. *Aleochara auricoma* female: 43) Tergite VIII; 44) Sternite VIII; 45) Tergite IX and X. Scale: 43-35: 1mm.



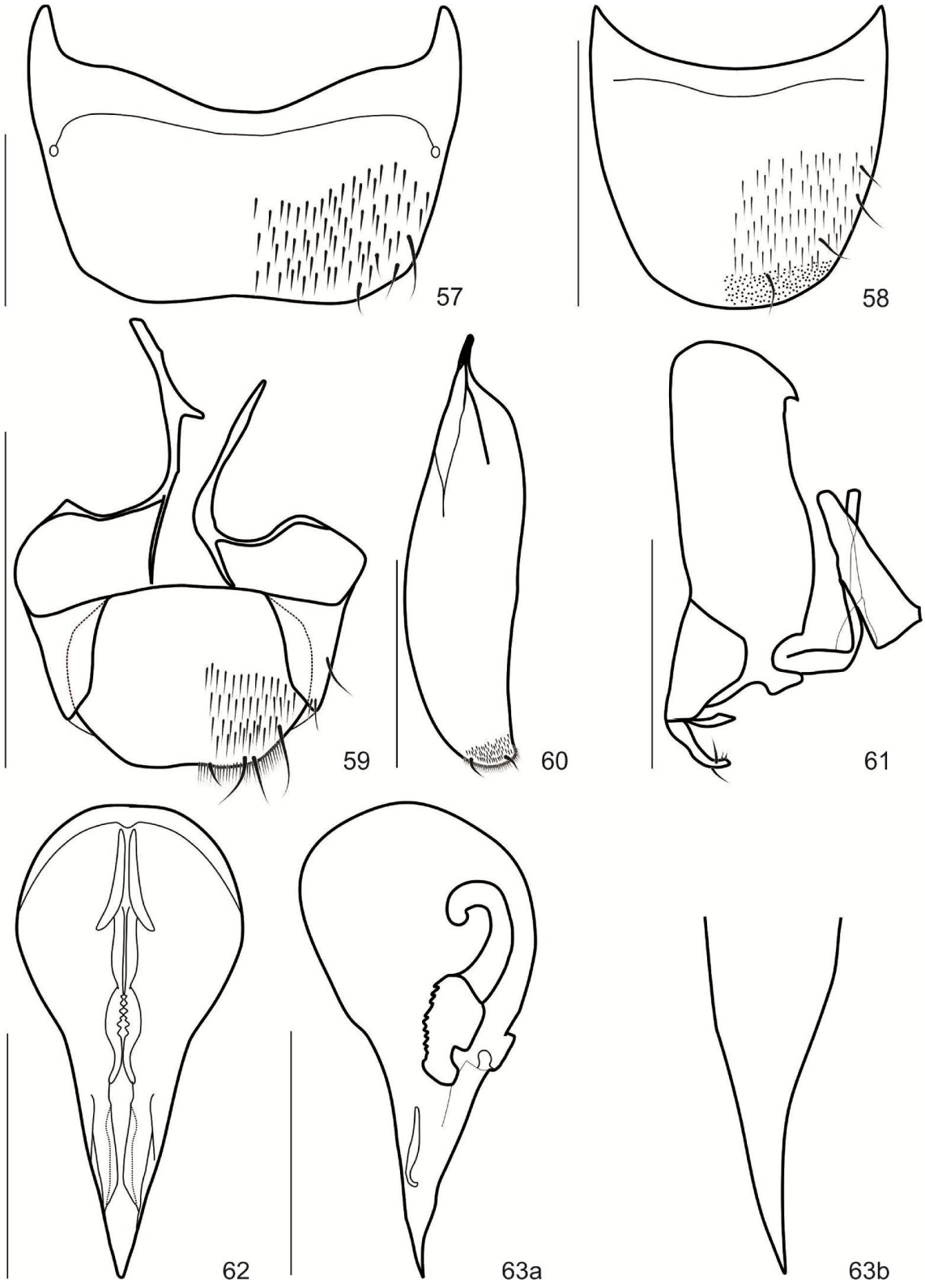
Figures 46-53b. *Aleochara mundana* male: 46) Tergite VIII; 47) Sternite VIII; 48) Tergite IX and X; 49) Sternite IX. Paramere: 50) Left paramere, dorsal view; 51) Left paramerum, lateral view. Median Lobe: 52) Median lobe, dorsal view; 53a) Median lobe, lateral view; 53b) Detail of median lobe. Scale: 48: 1mm. 46; 47; 49-53a: 0,5 mm. 53b without scale.



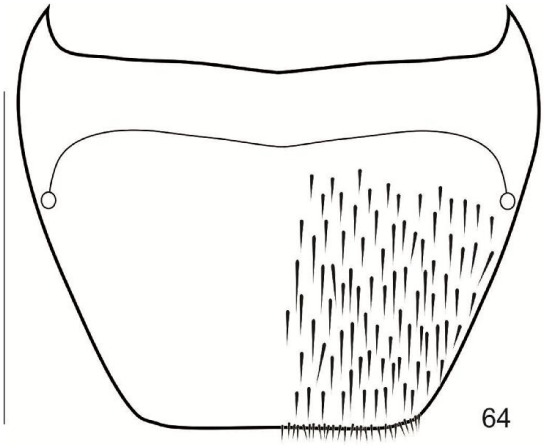


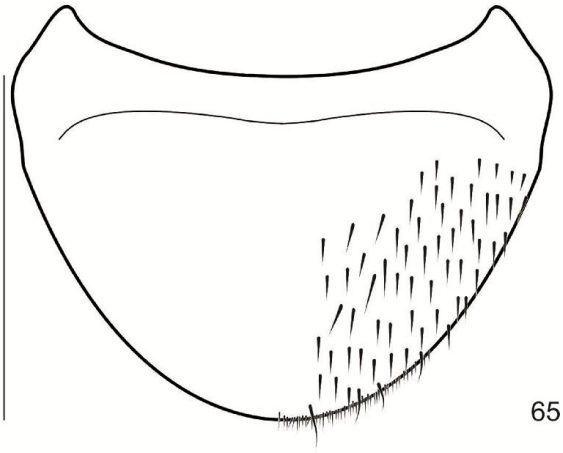


Figures 54-56 *Aleochara mundana* female: 54) Tergite VIII; 55) Sternite VIII; 56) Tergite IX and X. Scale: 54;55: 0.5 mm; 56: 1mm.



Figures 57-63b. *Aleochara prisca* male: 57) Tergite VIII; 58) Sternite VIII; 59) Tergite IX and X; 60) Sternite IX. Paramere: 61) Left paramere, dorsal view. Median Lobe: 62) Median lobe, dorsal view; 63a) Median lobe, lateral view; 63b) Detail of median lobe. Scale: 58-59: 1mm. 57; 60-63a: 0,5 mm. 63b without scale.





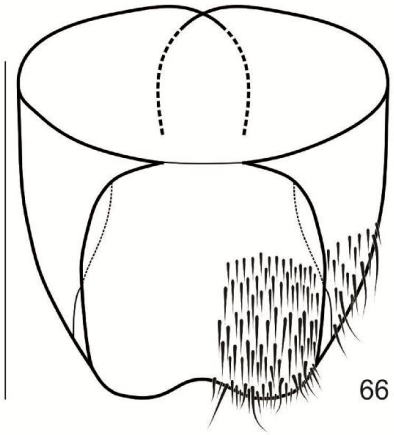
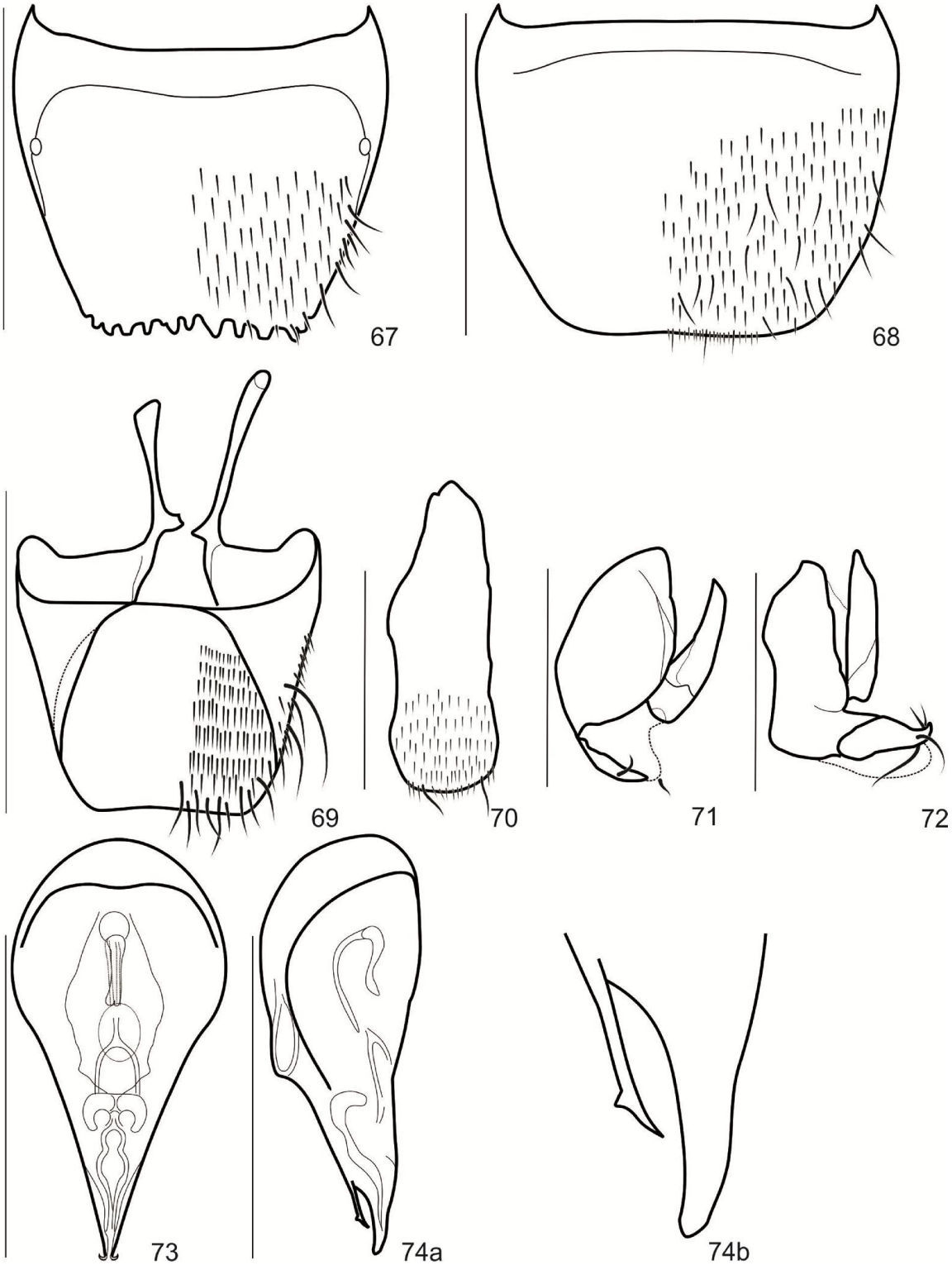
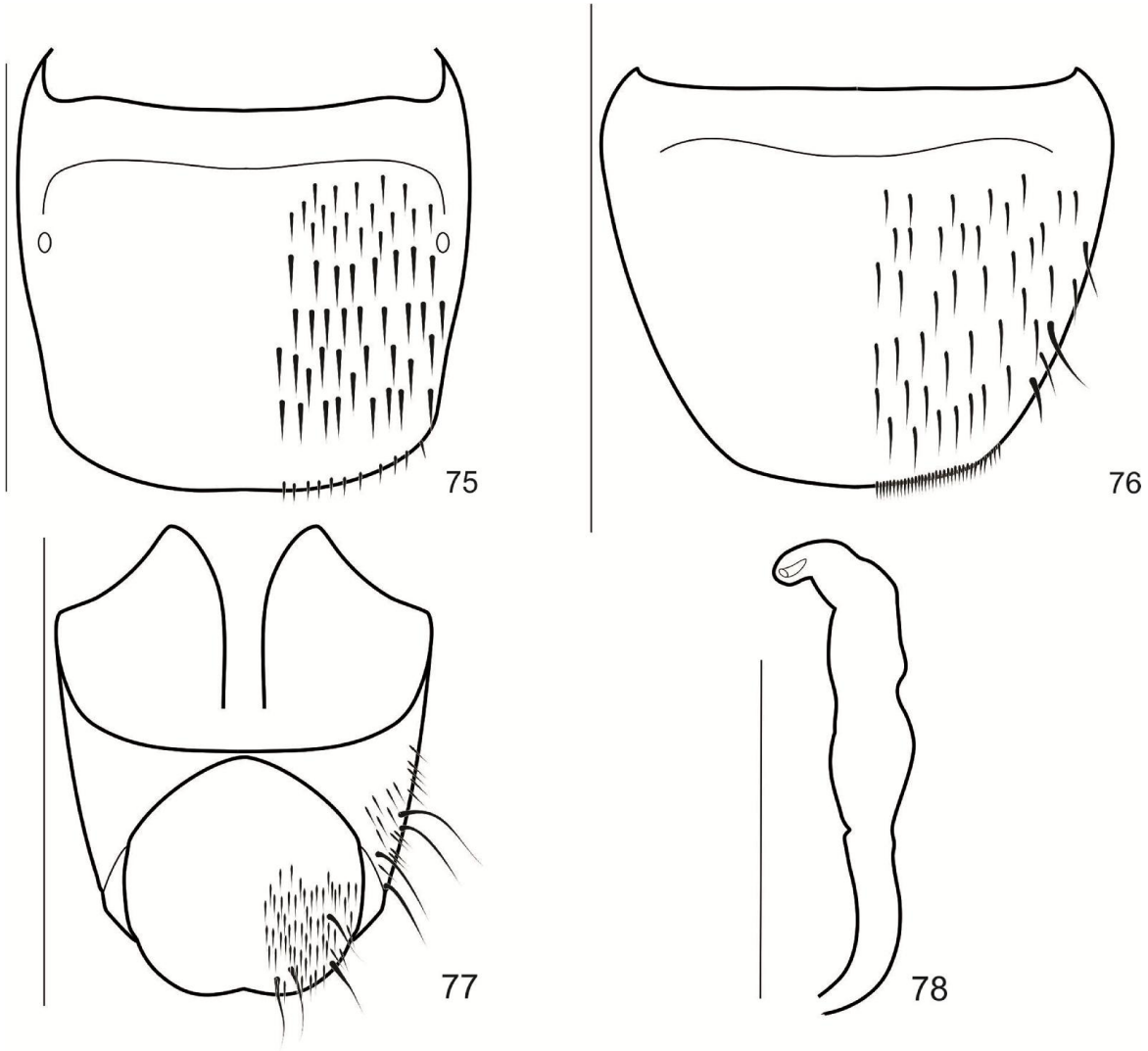


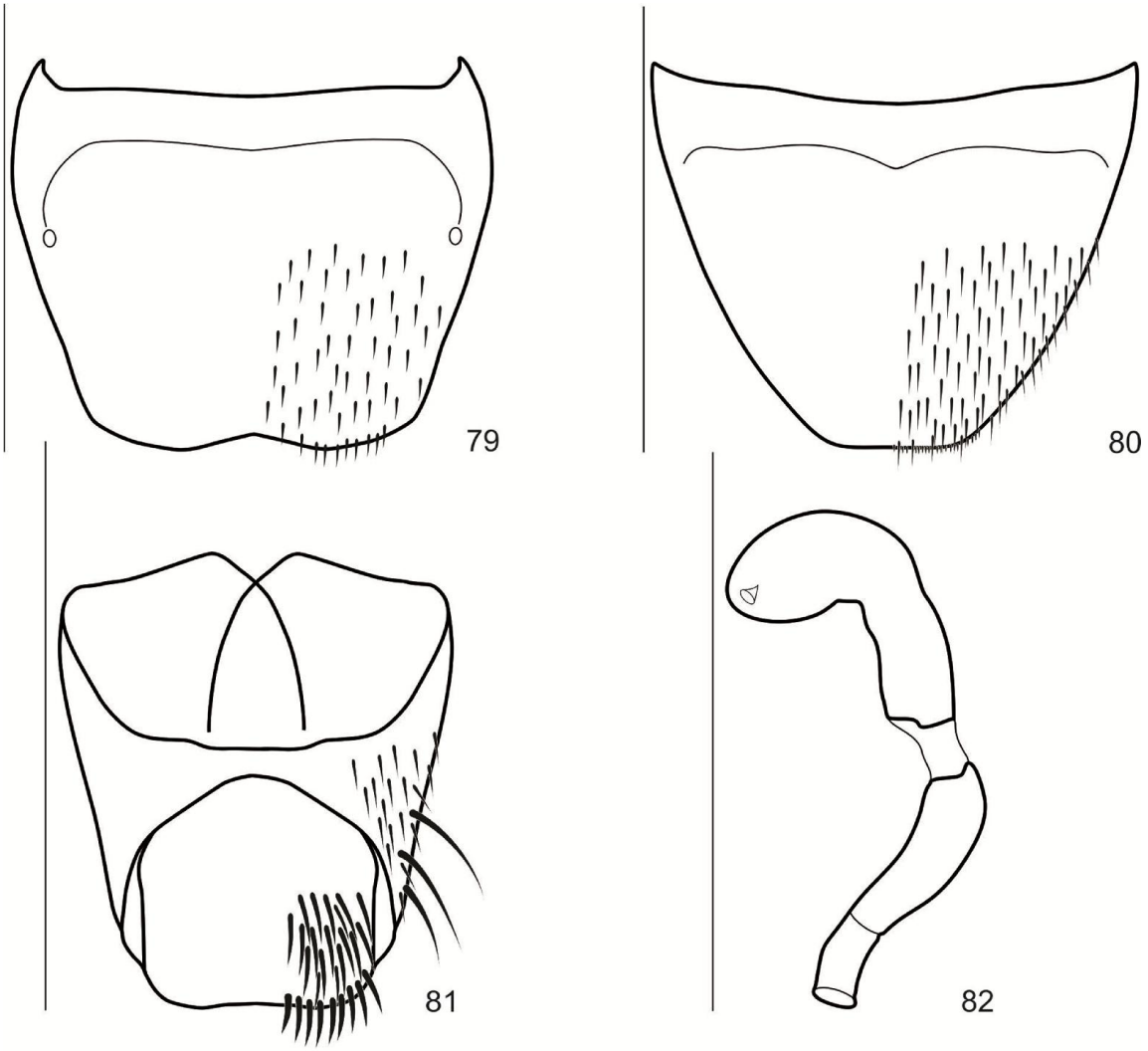
Figure 64-66. *Aleochara prisca* female: 64) Tergite VIII; 65) Sternite VIII; 66) Tergite IX and X. Scale: 64-66: 1mm.



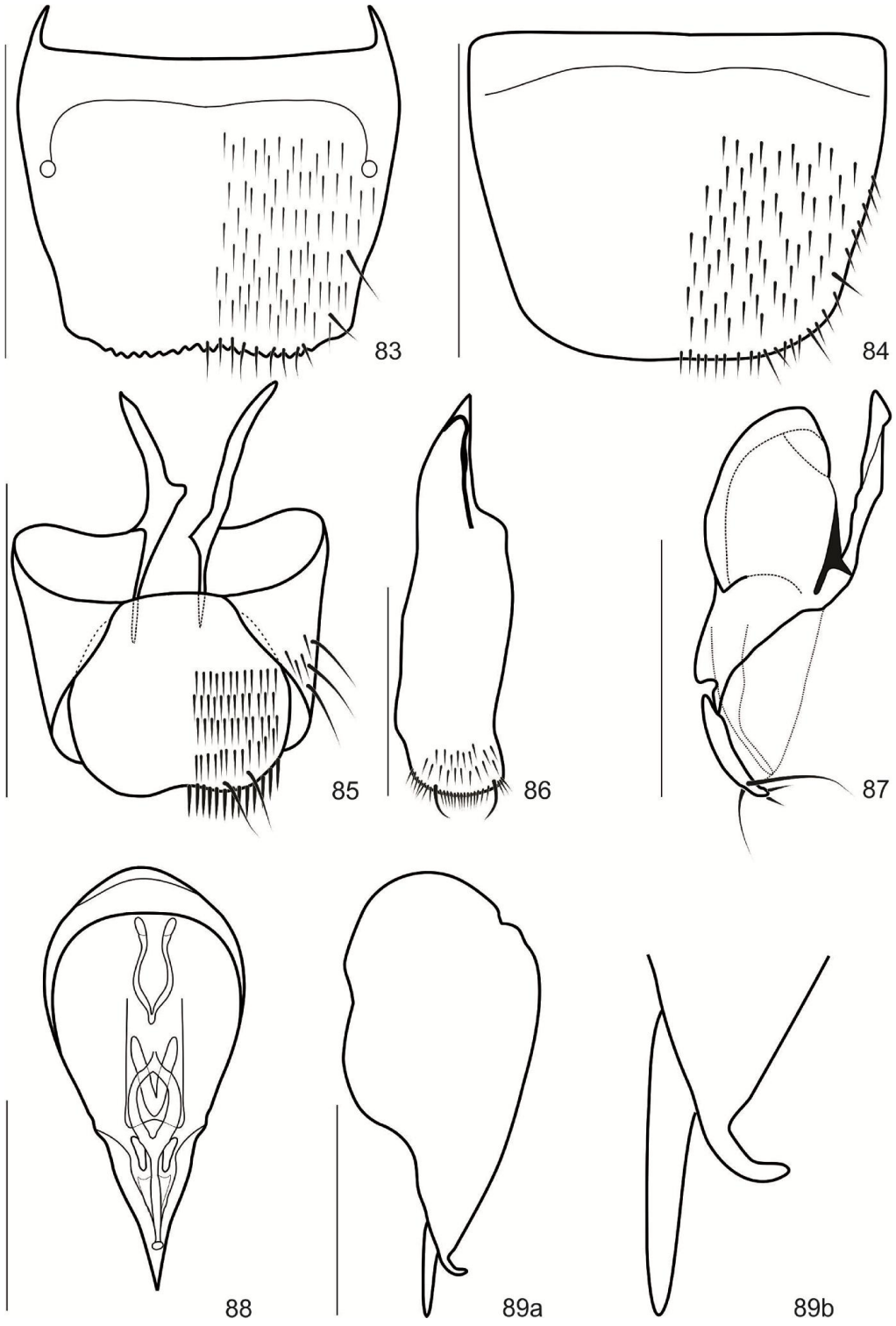
Figures 67-74b. *Aleochara bonariensis* male: 67) Tergite VIII; 68) Sternite VIII; 69) Tergite IX and X; 70) Sternite IX. Paramere: 71) Left paramerum, dorsal view; 72) Left paramere, lateral view. Median Lobe: 73) Median lobe, dorsal view; 74a) Median lobe, lateral view; 74b) Detail of median lobe. Scale: 67;69;73;74a: 1mm. 70-72: 0,5 mm. 74b without scale



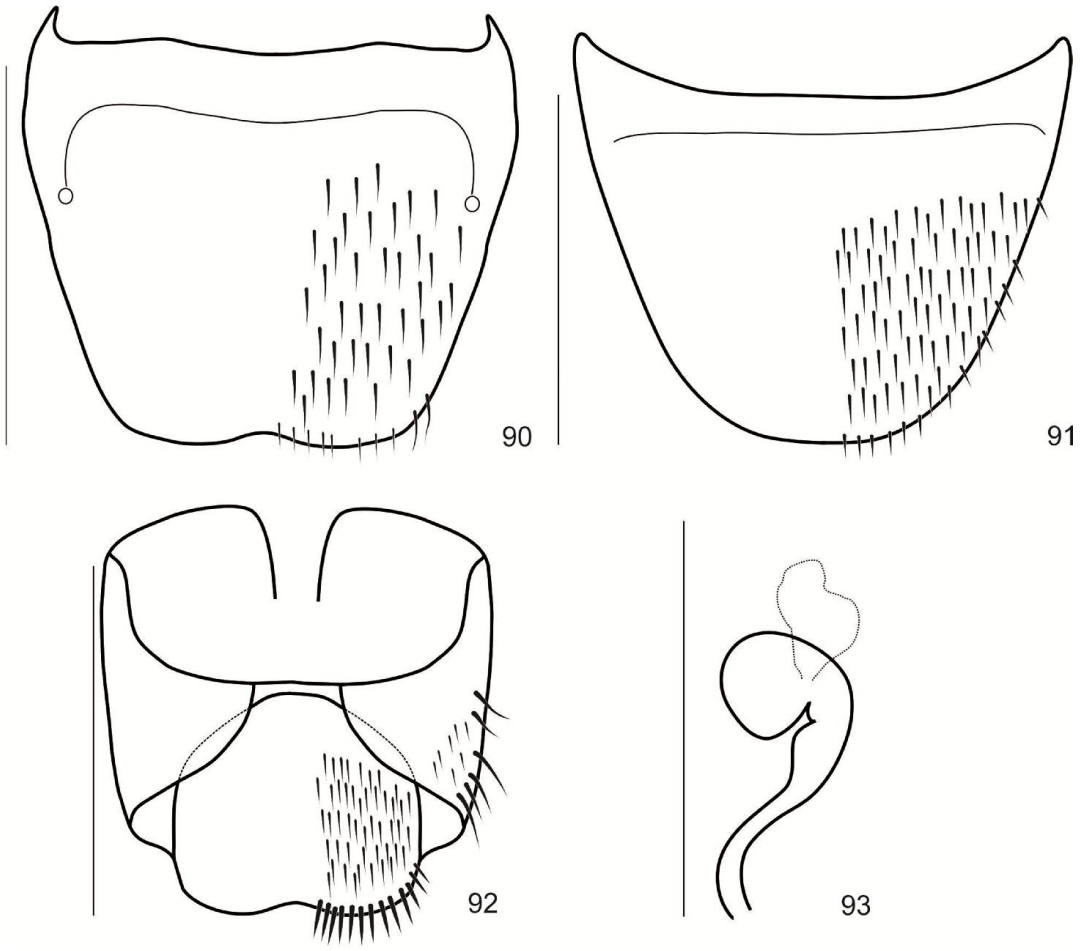
Figures 75-78. *Aleochara bonariensis* female: 75) Tergite VIII; 76) Sternite VIII; 77) Tergite IX and X; 78) Spermatheca. Scale: 75-77: 1mm. 78: 0,5 mm.



Figures 79-82. *Aleochara chrysorrhoa* female: 79) Tergite VIII; 80) Sternite VIII; 81) Tergite IX and X; 82) Spermatheca. Scale: 79-81: 1mm. 82: 0,5 mm.



Figures 83-89b. *Aleochara pseudochrysorrhoa* male: 83) Tergite VIII; 84) Sternite VIII; 85) Tergite IX and X; 86) Sternite IX. Paramere: 87) Left paramere, dorsal view. Median Lobe: 88) Median lobe, dorsal view; 89a) Median lobe, lateral view; 89b) Detail of median lobe. Scale: 83-85: 1mm. 86-89a: 0,5 mm. 89b without scale.



Figures 90-93. *Aleochara pseudochrysorrhoa* female: 90) Tergite VIII; 91) Sternite VIII; 92) Tergite IX and X; 93) Spermatheca. Scale: 90-92: 1mm. 93: 0,25 mm.