



## On the genus *Berosus* Leach (Coleoptera: Hydrophilidae) in the State of Roraima, Brazil: description of three new species and new records

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### Abstract

As a contribution to knowledge of the aquatic beetles of the Neotropical Region, the genus *Berosus* Leach is recorded for the first time from Roraima State in northern Brazil. Three new species are described and illustrated: *Berosus illuviosus* sp. n., *B. parvus* sp. n., and *B. andreazzei* sp. n. In addition, we present a checklist of the *Berosus* species collected in 26 ponds in the savanna area of the State of Roraima, with 12 new species records for the state, five of which are also new country records for Brazil.

**Key words:** Aquatic insects, Hydrophilinae, Berosini, Taxonomy, Brazilian Amazon, Savanna, Neotropical Region

### Resumo

Como contribuição ao conhecimento dos besouros aquáticos da Região Neotropical, o gênero *Berosus* é registrado pela primeira vez no Estado de Roraima, no norte do Brasil. Três novas espécies são descritas e ilustradas: *Berosus illuviosus* sp. n., *B. parvus* sp. n. e *B. andreazzei* sp. n. Além disso, apresentamos uma lista de espécies coletadas em 26 lagos na área de savana do Estado de Roraima, com 12 novos registros de espécies para o Estado, cinco dos quais também são novos registros para o Brasil.

**Palavras-chave:** Insetos aquáticos, Hydrophilinae, Berosini, Taxonomia, Amazônia brasileira, Savana, região Neotropical

### Introduction

*Berosus* Leach, 1817 is the most diverse genus of water scavenger beetles in the family Hydrophilidae, with ca. 290 described species and a worldwide distribution (Hansen 1999; Short & Fikáček 2011; Oliva & Short 2012). Currently, 85 species have been recorded in South America, of which 59 are known from Brazil (Hansen 1999; Short & Hebauer 2006; Queney 2006, 2010; Oliva & Short 2012).

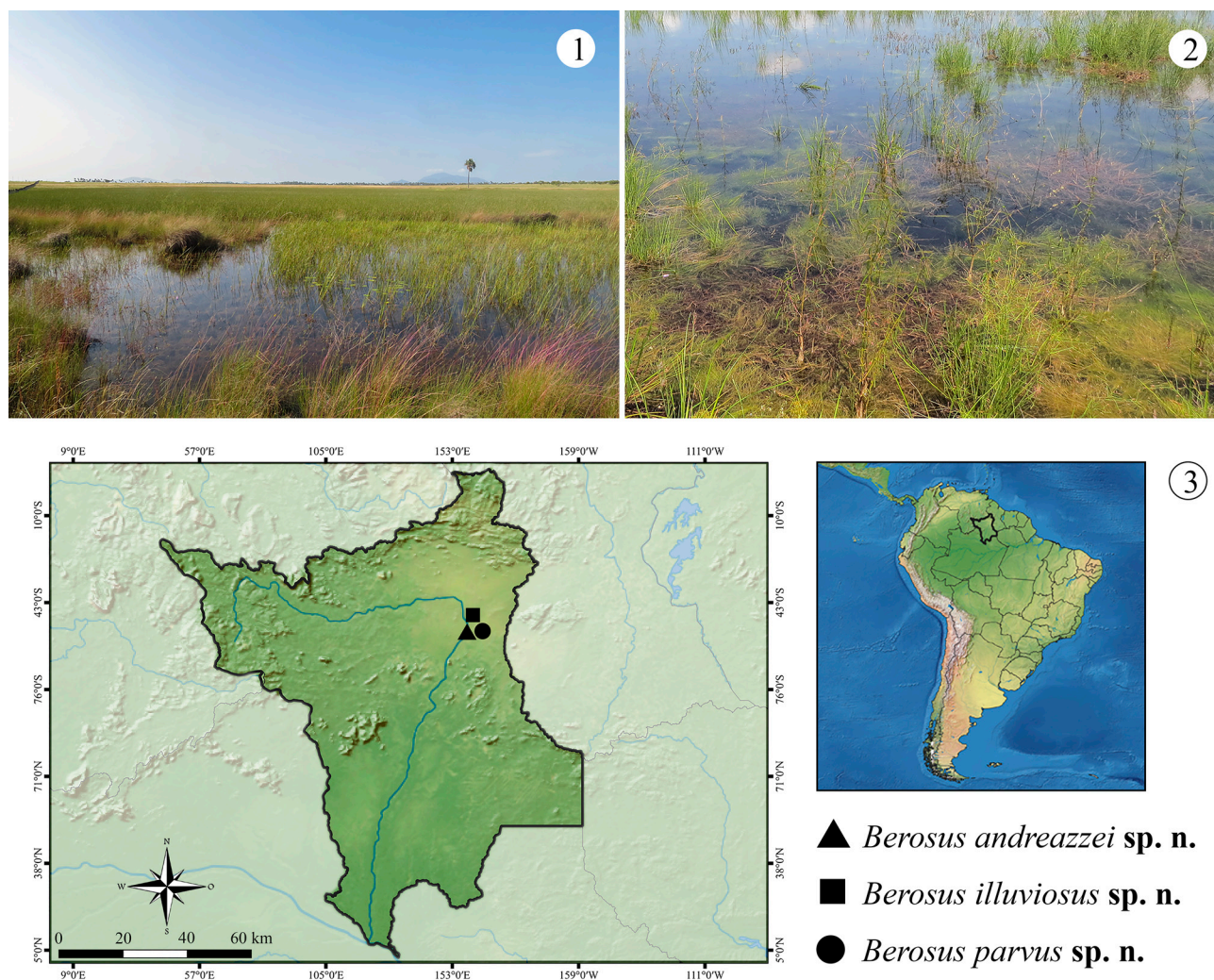
Following the current classification (Short & Fikáček 2013), the genus belongs to the tribe Berosini of the subfamily Hydrophilinae. The Neotropical species of *Berosus* are very small to medium sized beetles (ca. 2.0–7.0 mm) that can be recognized by the following combination of characters: elongate oval in dorsal view, convex in lateral view; head with protruding eyes and antennae with seven antennomeres; median region of the mesoventrite showing a high longitudinal carina, usually laminar in shape; elytral apex entire or produced into one or two spines; meso- and metatibiae bearing a fringe of long natatory setae on the dorsal surface; protarsus with five tarsomeres in females and four in males; fifth abdominal ventrite with posterior emargination (Oliva 1989; Hansen 1991). *Berosus* is traditionally subdivided into three subgenera based on the morphology of the pronotum, hind femoral pubescence and elytral apex (Knish 1924; Orchymont 1943): *B.* (s. str.) Leach and *B.* (*Enoplurus*) Hope are cosmopolitan, and

*B. (Phelerosus)* Sharp is endemic to New Zealand. However, many authors recognize a complex morphological diversity that hardly suits the current subgenera definitions and have presented alternative classifications, clustering species groups by morphological similarity and distribution (Watts 1987; Oliva 1989; Schödl 1991, 1992, 1993, 1994a, 1994b, 1995a, 1995b;). On Neotropical *Berosus*, Oliva (1989) proposed the division of the genus into 13 species complexes, mainly by the morphology of the male genitalia.

As a contribution to increase the knowledge about the genus *Berosus* of the Neotropical region, we here record the genus for the first time for the State of Roraima, northern Brazil, by presenting a checklist with 12 species collected in 26 ponds of a savanna area. We also describe and illustrate three new species and record five species for the first time for Brazil, bringing to 67 the number of known species from the country.

## Materials and methods

Specimens were collected in 26 ponds in the savanna (lavrado) of Roraima State, Brazil, in June and August of 2015 (see Figs. 1–2). Lavrado is part of the “Savannas of Guyana” ecoregion of the Amazonian Biome. Specimens were sampled with an entomological net and stored in 80% alcohol. A total of 955 specimens were studied, 465 males and 490 females. The identification of the species and description of the new species are based on external morphology and male genitalia. The male genitalia were dissected, cleared in warm KOH solution, placed in acetic acid and mounted on temporary slides for observation and photographs, then were stored in microvials with glycerin and stored with the specimen from which it was extracted.



**FIGURES 1–3.** Habitat and type locality of the *Berosus* new species: **1)** Brazil: Roraima State: Boa Vista County, pond near the RR-205 road, **2)** detail of the habitat. **3)** Type locality of *Berosus andreazzei* sp. n. (triangle), *Berosus illuviosus* sp. n. (square) and *Berosus parvus* sp. n. (circle).

The specimens were examined using Leica M165C stereomicroscope and Olympus DX51 optical microscope. Multi-layer photographs were generated using Leica M165C stereomicroscope with attached Leica DFC420 camera and the digital photographs combined using Digital Leica Application Suite v. 3.7 software. To generate a greater uniformity and lighting effect a geodesic dome was used, in accordance with Kawada & Buffington (2016). The photographs were edited using Adobe® Lightroom CC2018 and Adobe® Photoshop CC2018 software. The distribution map was generated using QGIS software, version 3.4.

The terminology used follows mainly Hansen (1991), Oliva (1989) and Oliva & Short (2012). Type specimens are deposited in the following collections: Coleção de Invertebrados do Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas, Brazil; Museu de Zoologia da Universidade de São Paulo (MZSP), São Paulo, Brazil; Museu Nacional do Rio de Janeiro (MNRJ), Rio de Janeiro, Brazil; Coleção Entomológica Pe. Jesus Santiago Moure (DZUP), Universidade Federal do Paraná, Curitiba, Paraná, Brazil and Snow Entomological Museum Collection (SEMC), University of Kansas, Lawrence, KS, United States.

## Results

### Checklist of the *Berosus* species in Roraima State, Brazil

(\*) indicates new country record for Brazil

#### Hydrophilinae Latreille, 1802

##### Berosini Mulsant, 1844

##### *Berosus* Leach, 1817

##### *Berosus ambogynus* Mouchamps, 1963

(Figs. 7a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°54'24.7"N / 60°57'38.3"W), 31.v.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°47'15.4"N / 60°46'37.3"W), 12.viii.2015, leg. K. Dias, L. Santana [5 males and 14 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'23.8"N / 60°45'41.8"W), 01.vi.2015, leg. K. Dias, C. Benetti [3 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'06.4"N / 60°51'57.9"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°57'35.4"N / 61°04'39.9"W), 04.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°58'04.1"N / 61°04'46.2"W), 10.viii.2015, leg. K. Dias, L. Santana [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'29.7"N / 60°51'48.9"W), 05.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°51'46.3"N / 60°47'30.6"W), 07.vi.2015, leg. K. Dias, C. Benetti [2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°02'20.3"N / 60°46'51.7"W), 13.viii.2015, leg. K. Dias, L. Santana [8 males and 19 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°50'51.2"N / 60°50'25.0"W), 02.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]. Alto Alegre County (02°51'13.7"N / 60°50'32.8"W), 02.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [42 males and 44 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [8 males and 3 females stored in 80% ethanol, deposited at INPA].

**Known distribution.** Bolivia (Tarija), Brazil (Amazonas, Pará, Roraima), Guyana (Rupununi District), Venezuela (Amazonas, Apure, Bolívar, Guárico).



***Berosus andreazzei* sp. n.**

(Figs. 4a–h)

**Type locality.** BRAZIL: Roraima State, Boa Vista County (municipality), pond near the “Estrada do Contorno” road (02°47′15.4″N / 60°46′37.3″W) (Fig. 3).

**Type material. Holotype male. BRAZIL: Roraima State:** Boa Vista County (02°47′15.4″N / 60°46′37.3″W), 01.vi.2015, leg. K. Dias, C. Benetti. Condition of holotype: stored in 80% ethanol with the dissected male genitalia stored in microvials with glycerin, deposited at INPA. **Paratypes (62). BRAZIL: Roraima State:** Same data as holotype, except [1 female stored in 80% ethanol, deposited at INPA]; same data as holotype, except (02°47′29.8″N / 60°47′08.4″W) [1 male and 1 female stored in 80% ethanol, deposited at MZSP]; same data as holotype, except (02°46′23.8″N / 60°45′41.8″W) [4 females stored in 80% ethanol, deposited at INPA]; same data as holotype, except (02°49′02.7″N / 60°48′18.3″W), 02.vi.2015 [1 male and 2 females stored in 80% ethanol, deposited at SEMC]; same data as holotype, except (02°52′06.4″N / 60°51′57.9″W), 03.vi.2015 [1 male and 2 females stored in 80% ethanol, deposited at INPA]; same data as holotype, except (02°54′36.5″N / 60°57′30.9″W), 03.vi.2015 [4 females stored in 80% ethanol, deposited at INPA]; same data as holotype, except (02°53′03.5″N / 60°52′45.5″W), 03.vi.2015 [1 male and 1 female stored in 80% ethanol, deposited at INPA]; same data as holotype, except (02°57′35.4″N / 61°04′39.9″W), 04.vi.2015 [3 females stored in 80% ethanol, deposited at INPA]; same data as holotype, except (02°49′17.4″N / 60°48′10.6″W), 06.vi.2015 [2 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°50′51.2″N / 60°50′25.0″W), 02.vi.2015 [2 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°51′13.7″N / 60°50′32.8″W), 02.vi.2015 [3 males and 3 females stored in 80% ethanol, deposited at MNRJ]; Alto Alegre County (02°59′48.7″N / 61°07′48.7″W), 05.vi.2015 [14 males and 10 females stored in 80% ethanol, deposited at DZUP]; Alto Alegre County (02°59′39.8″N / 61°06′46.2″W), 05.vi.2015 [6 females stored in 80% ethanol, deposited at INPA].

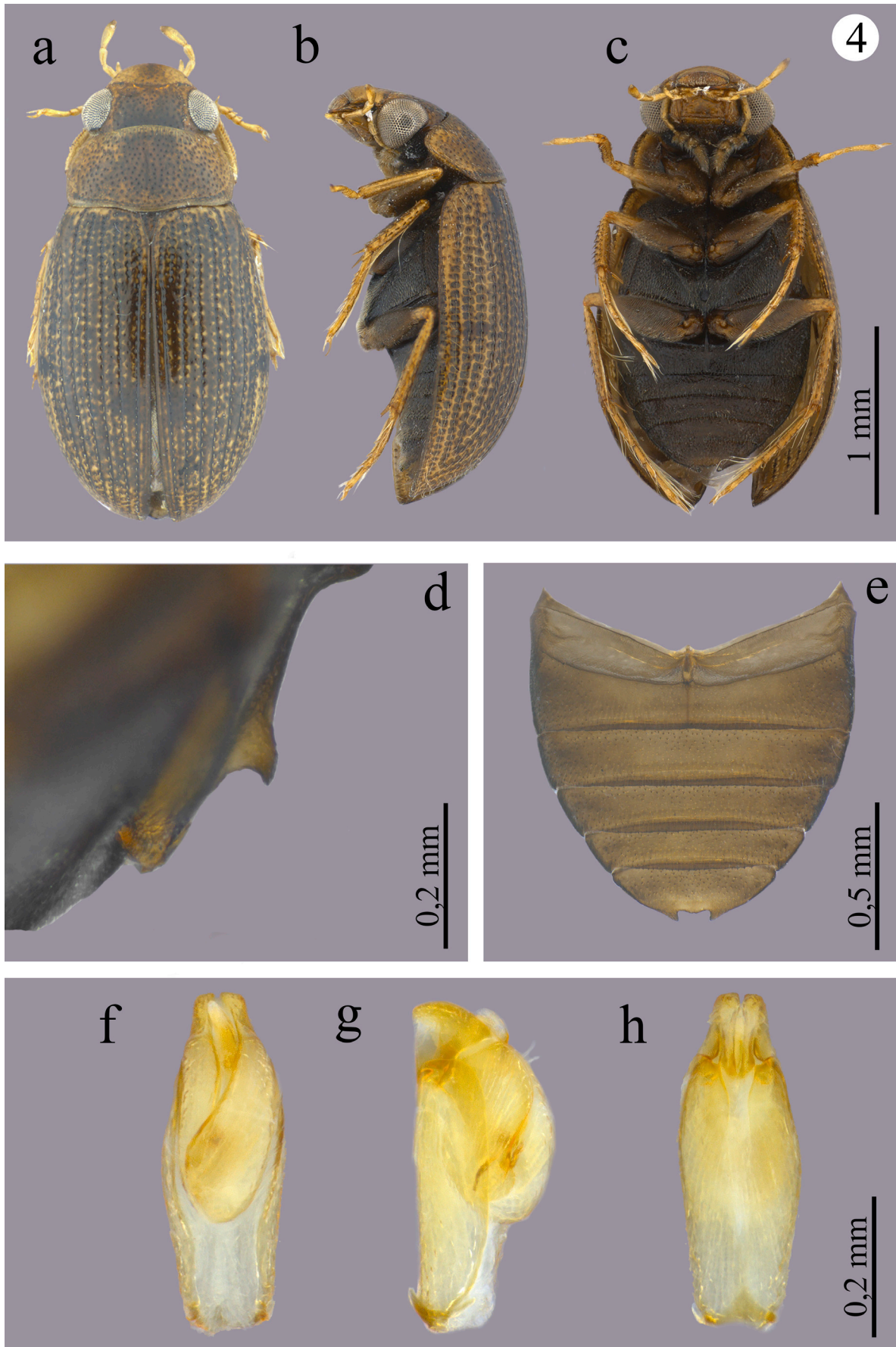
**Diagnosis.** *Berosus andreazzei* sp. n. can be distinguished from other Neotropical species of *Berosus* by the following combination of characteristics: small size (2.57–2.59 mm); clypeus yellow with small dark-brown area on the middle, frons yellow with dark-brown lateral area; pronotum yellow with small discal dark-brown spot; elytra with small dark-brown spots, without dorsal metallic luster, with small dark-brown spots (Fig. 4a); pronotum with fine round punctures (Fig. 4a); elytral striae well-impressed with round punctures ca. 2× larger than those on the pronotum (Fig. 4a); mesoventral process laminar with short curved anterior tooth, directed downwards and backwards with smooth margins (Fig. 4d); abdominal ventrites not crenulate along lateral and posterior margins; first ventrite medially carinate along its whole length; fifth ventrite with apical notch ca. one-quarter the total length, bearing two median short teeth (Fig. 4e).

**Description. Size and form.** Total length: 2.57–2.59 mm. Body short, nearly 2× longer than wide in dorsal view (Fig. 4a), moderately convex in lateral view (Fig. 4b).

**Color.** Labrum and clypeus yellow with small dark brown area on the middle, frons yellow with dark brown lateral area, without metallic luster (Fig. 4a); maxillary palpi yellow with apical palpomere dark brown at apex (Figs. 4a–c); pronotum yellow with small discal dark brown spot without metallic luster; scutellar shield yellow (Fig. 4a); elytra yellow with small dark brown spots (Fig. 4a); venter of thorax and abdomen dark brown (Fig. 4c); femora with pubescent portion darkened, glabrous portion yellow; tibiae and tarsus yellow (Figs. 4a–c).

**Head.** Clypeus and frons sparsely and finely punctate, punctures ca. 2× as large as ommatidia, round in shape (Fig. 4a). Frontal carina absent. Eyes slightly prominent (Fig. 4a). Maxillary palpi short, nearly half as long as width of the head, and thick (Figs. 4a–c).

**Thorax.** Posterior margin of pronotum as wide as basal margin of elytra, with fine, round, and moderately dense punctures, similar in size as those on head (Fig. 4a). Scutellar shield densely punctate with punctures similar in size to those on the elytra. Elytral striae well-impressed with round punctures ca. 2× larger than those on the pronotum; interstriae flat on elytral disc, ca. 2× as wide as striae, sparsely and finely punctate (punctures smaller than those on pronotum); humeral hump not prominent (Fig. 4a); elytral apices rounded (Figs. 4a–c); spine-like hairs absent (Fig. 4a). Mesoventral process laminar with short and curved anterior tooth, directed downwards and backwards, with smooth margins; posterior angle of the mesoventral process weakly raised in lateral view, not prominent (Fig. 4d). Metaventral process wide, carinate before median depression, posterolateral angles produced into rounded laminae, posterior angle not raised (Fig. 4c). Basal pubescence on two-thirds of mesofemora and three-quarters of metafemora, limit oblique (Fig. 4c). Protarsus of male with adhesive soles in tarsomeres 1–2, first tarsomere ca.



**FIGURE 4.** *Berosus andreazzei* sp. n. (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; D) Mesoventral process, ventral view, E) Abdomen, ventral view; (F–H) Aedeagus, F) dorsal view; G) lateral view; H) ventral view.

1.5× longer than second, fourth tarsomere elongate, almost as long as tarsomeres 1–3 combined (Figs. 4a, c). Claws weakly arched (Figs. 4a–c).

**Abdomen.** First ventrite medially carinate in its whole length, without lateral depressions; abdominal ventrites 2–4 without central carina or teeth-like projection, not crenulate along lateral and posterior margins; fifth ventrite with apical notch ca. one-quarter the total length, bearing two short median teeth (Fig. 4e). Aedeagus somewhat compressed laterally, with basal piece ca. four-fifths of total length, 2.2× longer than its greatest width (Figs. 4f–h); parameres asymmetrical, slightly longer than median lobe in dorsal view (Fig. 4f); right paramere overlapping transversely the left paramere in dorsal view (with apex of aedeagus pointing upwards as in Fig. 4f); apical portion of parameres in lateral view evenly curved towards ventral face (Figs. 4g); ventral face of parameres bearing a row of short hairs along subapical portion (Figs. 4f); bearing a row of hairs in the subapical concave portion (Figs. 4g, h); most part of the median lobe hidden by parameres in dorsal view, in lateral view apex strongly acuminate, directed towards ventral face (Figs. 4g, h).

**Etymology.** The new species was named in memory of Dr. Ricardo Andreazze who presented us with his friendship, contributions, and encouragement to the knowledge of the insects, especially for his passion for the Amazon.

**Distribution.** Brazil (Roraima).

**Biology.** The specimens were collected in ponds with abundant macrophyte cover (Figs. 1, 2).

**Taxonomic comments.** *B. andreazzei* sp. n. can be placed in the *sticticus*-complex (Oliva 1989; Oliva & Short 2012) based on the following characteristics: dorsal sculpture fine (varying from coarse to fine in the complex); elytra with humeral humps not prominent and without spine-like hairs; abdominal ventrites medially carinate behind metacoxae without lateral depressions in the first ventrite; protarsus of males with soles on the two basal tarsomeres, which are weakly swollen (weakly to moderately swollen in the complex); and male genitalia on which parameres are acuminate, and median lobe weakly curved (strongly or weakly curved in the complex). The new species is similar to *Berosus llanensis* Oliva & Short, 2012 and *Berosus guyanensis* Queney, 2006 in the combination of the following characters: body length, shape of first abdominal ventrite and notch in the fifth abdominal ventrite. *B. andreazzei* sp. n. differs from *B. llanensis* especially by the shape of the meso- and metaventral processes. *B. andreazzei* sp. n. has a laminar mesoventral process with short anterior tooth directed downward and backward (Fig. 4d), and a wide metaventral process with posterolateral angles produced into rounded laminae and posterior angle not raised (Fig. 4c), while in *B. llanensis* the mesoventral process having a large and straight anterior tooth, directed downwards and metaventral process small with posterolateral angles produced into small triangular laminae and posterior angle raised into a rounded lamina, convex in lateral view. In addition, *B. andreazzei* sp. n. differs from *B. guyanensis* and all other species of the *sticticus*-complex by having the male genitalia with asymmetric parameres, the right paramere being positioned transversally over the left paramere (Fig. 4f).

### ***Berosus brevibasis* Oliva, 1989**

(Figs. 8a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°47'15.4"N / 60°46'37.3"W), 01.vi.2015, leg. K. Dias, C. Benetti [6 males and 3 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°54'24.7"N / 60°57'38.3"W), 11.viii.2015, leg. K. Dias, L. Santana [8 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'00.4"N / 60°45'38.0"W), 08.viii.2015, leg. K. Dias, L. Santana [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'23.8"N / 60°45'41.8"W), 13.viii.2015, leg. K. Dias, L. Santana [4 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°48'21.2"N / 60°47'40.8"W), 12.viii.2015, leg. K. Dias, L. Santana [5 males and 5 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'06.4"N / 60°51'57.9"W), 12.viii.2015, leg. K. Dias, L. Santana [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'36.6"N / 27 60°55'40.1"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [3 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°57'35.4"N / 61°04'39.9"W), 04.vi.2015, leg. K. Dias, C. Benetti [3 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'29.7"N / 60°51'48.9"W), 12.viii.2015, leg. K. Dias, L. Santana [10 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'17.4"N / 60°48'10.6"W), 09.viii.2015, leg. K. Dias, L. Santana [8 males and 1



female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°50'51.2"N / 60°50'25.0"W), 09.viii.2015, leg. K. Dias, L. Santana [2 males and 6 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [12 males and 12 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'39.8"N / 61°06'46.2"W), 10.viii.2015, leg. K. Dias, L. Santana [2 males and 3 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°49'17.4"N / 60°48'10.6"W), 13.viii.2015, leg. K. Dias, L. Santana [5 males and 1 female stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Mato Grosso, Roraima), Guyana (Rupununi District), Venezuela (Apure, Bolívar, Guárico).

### ***Berosus castaneus* Oliva & Short, 2012 \***

(Figs. 9a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°47'15.4"N / 60°46'37.3"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°02'20.3"N / 60°46'51.7"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015, leg. K. Dias, C. Benetti 1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [5 males and 3 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'37.1"N / 61°07'38.9"W), 06.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Roraima), Venezuela (Bolívar).

### ***Berosus consobrinus* Knisch, 1921**

(Figs. 10a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Mato Grosso, Roraima), Venezuela (Bolívar, Guárico).

### ***Berosus ebaninus* Oliva & Short, 2012 \***

(Figs. 11a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (03°02'20.3"N / 60°46'51.7"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°47'15.4"N / 60°46'37.3"W); 01.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'23.8"N / 60°45'41.8"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W) 05.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Roraima), Venezuela (Apure, Bolívar).

### ***Berosus elegans* Knisch, 1921**

(Figs. 12a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°47'29.8"N / 60°47'08.4"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at

INPA]; Boa Vista County (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [2 males and 1 female stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Mato Grosso, Roraima), Venezuela (Bolívar, Guárico).

***Berosus illuviosus* sp. n.**

(Figs. 5a–h)

**Type locality.** BRAZIL: Roraima State, Boa Vista County (municipality), pond near the “Estrada do Contorno” road (02°46'00.4"N / 60°45'38.0"W) (Fig. 3)

**Type material.** **Holotype** male. **BRAZIL: Roraima State**, Boa Vista County (02°46'00.4"N / 60°45'38.0"W), 01.vi.2015, leg. K. Dias, C. Benetti. Condition of holotype: stored in 80% ethanol with the dissected male genitalia stored in microvials with glycerin, deposited at INPA. **Paratypes** (211). **BRAZIL: Roraima State:** Same data as holotype except [3 males and 15 females stored in 80% ethanol, deposited at INPA]; same data as holotype except (02°47'29.8"N / 60°47'08.4"W) [17 males and 13 females stored in 80% ethanol, deposited at MZSP]; same data as holotype except (02°46'23.8"N / 60°45'41.8"W) [12 males and 35 females stored in 80% ethanol, deposited at MNRJ]; same data as holotype except (02°48'21.2"N / 60°47'40.8"W), 02.vi.2015 [11 males and 9 females stored in 80% ethanol, deposited at SEMC]; same data as holotype except (02°52'06.4"N / 60°51'57.9"W), 03.vi.2015 [20 males and 33 females stored in 80% ethanol, deposited at DZUP]; except same data as holotype (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015 [2 males and 2 females stored in 80% ethanol, deposited at INPA]; same data as holotype except (02°51'46.3"N / 60°47'30.6"W), 07.vi.2015 [1 male and 16 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [5 males and 9 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'37.1"N / 61°07'38.9"W), 06.vi.2015 leg. K. Dias, C. Benetti [2 males and 6 females stored in 80% ethanol, deposited at INPA].

**Diagnosis.** *Berosus illuviosus* sp. n. can be distinguished from other Neotropical species of *Berosus* by the following combination of characteristics: moderate size (4.30–4.40 mm); head, pronotum and elytra dark brown to black, without metallic luster (Fig. 5a); pronotum with coarse, round or polygonal punctures (Fig. 5a); elytral striae well-impressed with deep, rectangular punctures ca. 2–3× as large as those on the pronotum (Fig. 5a); mesoventral process strongly raised, with straight and hood-like anterior tooth, excavated in the center, with serrated margins (Fig. 5d); abdominal ventrites crenulate along lateral and posterior margins; first ventrite with a median longitudinal carina on anterior two-thirds; fifth ventrite with apical notch ca. one-fifth the total length, bearing two medial acute teeth (Fig. 5e).

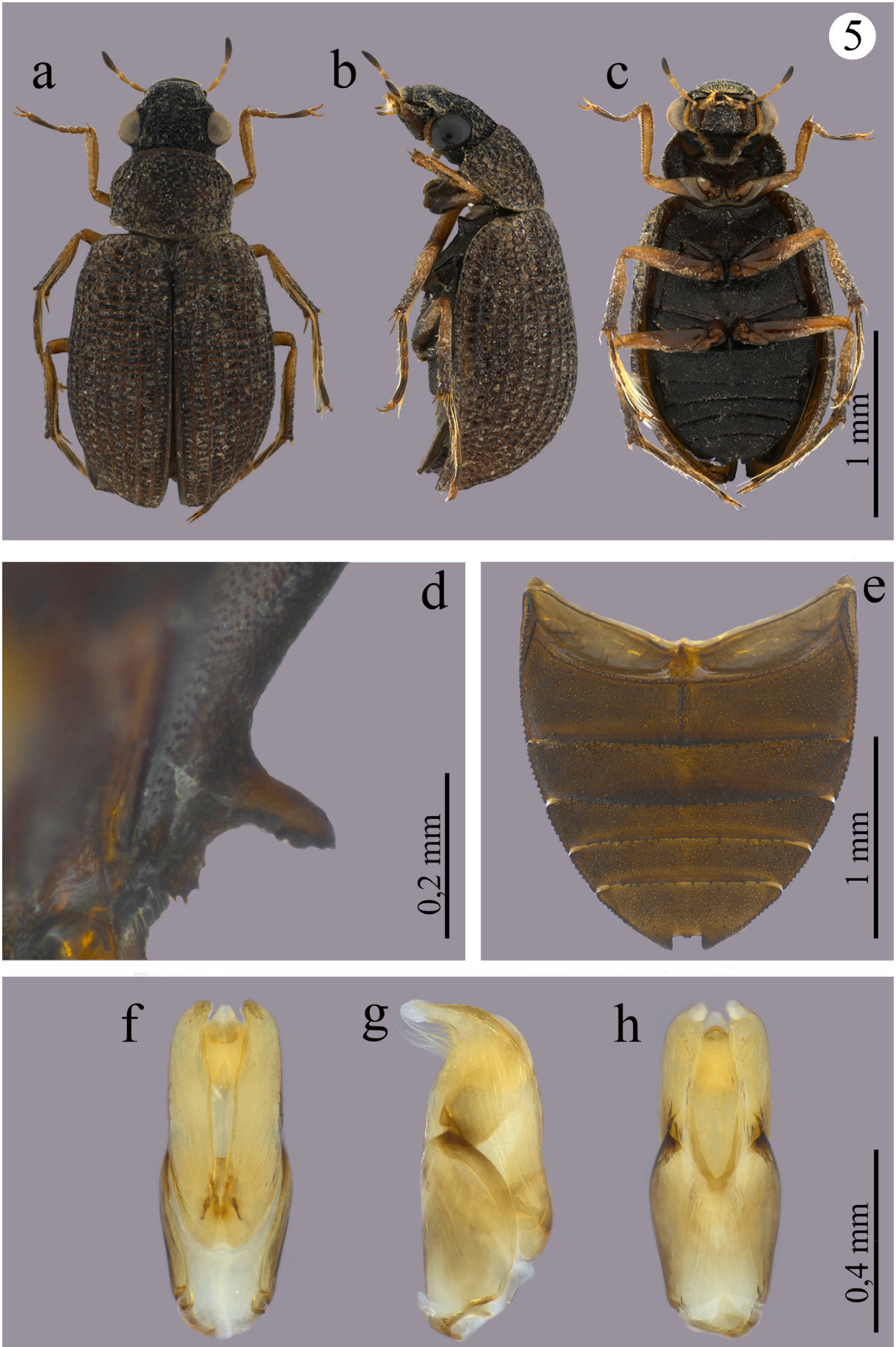
**Description.** *Size and form.* Total length: 4.34–4.36 mm. Body short, nearly 2× longer than wide in dorsal view (Fig. 5a), strongly convex in lateral view (Fig. 5b).

*Color.* Labrum, clypeus and frons dark brown to black without metallic luster (Fig. 5a); maxillary palpi yellow with fourth palpomere dark brown, yellow at base (Figs. 5a–c); pronotum dark brown without metallic luster; scutellar shield dark brown (Fig. 5a); elytra completely dark brown (Fig. 5a); venter of thorax and abdomen dark brown to nearly black (Fig. 5c); femora with pubescent portion dark brown, glabrous portion yellow; tibiae yellow at base, posterior half dark brown; tarsus dark brown with apex and distal region yellow. (Figs. 5a–c).

*Head.* Clypeus and frons densely and coarsely punctate, punctures ca. 6–7× as large as ommatidia, round or polygonal in shape (Fig. 5a). Frontal carina absent. Eyes strongly prominent (Fig. 5a). Maxillary palpi short, nearly half as long as width of the head, and thick (Figs. 5a–c).

*Thorax.* Pronotum distinctly narrower than elytra, with coarse and dense punctures, at the same size as those on head, round or polygonal in shape (Fig. 5a). Scutellar shield coarsely punctate with punctures similar in size to those on pronotum. Elytral striae well-impressed with deep, rectangular punctures ca. 2–3× as larger as those on the pronotum; interstriae reduced to thin edges on elytral disc; humeral hump prominent (Fig. 5a); elytral apices rounded (Figs. 5a–c); spine-like hairs absent (Fig. 5a). Mesoventral process strongly raised, with straight and hood-like anterior tooth, excavated in the center with serrated margin; posterior angle of the mesoventral process rounded in lateral view, very shortly prominent, serrated (Fig. 5d). Metaventral process narrow; posterolateral angles not produced; posterior angle not raised (Fig. 5c). Basal pubescence on femora reduced, obliquely limited to the base (Fig. 5c).





**FIGURE 5.** *Berosus illuviosus* sp. n. (A–C) Habitus, (A) dorsal view; (B) lateral view; (C) ventral view; (D) Mesoventral process, ventral view; (E) Abdomen, ventral view; (F–H) Aedeagus, (F) dorsal view; (G) lateral view; (H) ventral view.

Protarsus of male without adhesive soles; first tarsomere ca. 1.5× longer than the second, fourth tarsomere elongate, almost as long as tarsomeres 1–3 combined (Figs. 5a, c). Claws weakly arched (Figs. 5a–c).

**Abdomen.** First ventrite with a median longitudinal carina along anterior two-thirds, without lateral depressions; abdominal ventrites 2–4 without central carina or teeth-like projection, crenulate along lateral and posterior margins; fifth ventrite with apical notch ca. one-fifth the total length, bearing two medial acute teeth (Fig. 5e). Aedeagus with basal piece ca. half of total length, 1.5× longer than its greatest width (Figs. 5f–h); parameres symmetrical, slightly longer than median lobe in dorsal view (Fig. 5f), gradually acuminate at apex; apical portion of parameres strongly curved towards ventral face, forming a nearly right angle with dorsal outline of aedeagus in lateral view (Fig. 5g), bearing a row of long hairs in the subapical concave portion (Figs. 5g, h); median lobe abruptly swollen subapically in dorsal view, apex strongly acuminate in lateral view, directed towards ventral face (Figs. 5g, h).

**Etymology.** The specific epithet, *illuviosus*, refers to the “dirty” appearance of the specimens of this species (From Latin “which cannot be washed”).

**Distribution.** Brazil (Roraima).

**Biology.** The specimens were collected in ponds with abundant macrophyte cover (Figs. 1, 2).

**Taxonomic comments.** *Berosus illuviosus* **sp. n.** can be placed in the *holdhausi*-complex (Oliva 1989; Oliva & Short 2012), based on the following characteristics: very coarse dorsal sculpture; elytra with humeral humps prominent and without spine-like hairs; abdominal ventrites medially carinate on most of first ventrite length, without lateral depressions; apical notch of fifth ventrite produced at the bottom into a pair of sharp teeth with lateral and posterior margins strongly crenulate; protarsus of males not strongly swollen at base and without soles of specialized adhesive hairs; male genitalia with aedeagus weakly compressed laterally, parameres parallel and acuminate, median lobe strongly curved and strongly swollen at apex. The species is similar to *B. rectangulus* Mouchamps, 1960 by the dorsal sculpture, size and shape of femoral pubescence and appearance of abdominal ventrites, but it is distinguished by the dorsal coloration, shape of the mesoventral process and male genitalia. *Berosus illuviosus* **sp. n.** has a dark brown to black dorsal coloration, without spots (Fig. 5a), while *B. rectangulus* has a yellow dorsal coloration with dark brown spots. In addition, these species can be differentiated by the anterior tooth of the mesoventral process which is stronger and straight with serrated margins in *B. illuviosus* **sp. n.** (Fig. 5d), while in *B. rectangulus* the anterior tooth is of laminar form with smooth margins, and by the shape of the parameres. In *B. illuviosus* **sp. n.** they have a more pronounced preapical curvature, forming a nearly right angle with dorsal outline of aedeagus in lateral view (Fig. 5g) while in *B. rectangulus* the parameres curl gradually, exhibiting a more discrete curve.

### ***Berosus marquardtii* Kni, 1921**

(Figs. 13a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°47'29.8"N / 60°47'08.4"W, 01.vi.2015, leg. K. Dias, C. Benetti [2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'00.4"N / 60°45'38.0"W), 08.viii.2015, leg. K. Dias, L. Santana [2 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°47'15.4"N / 60°46'37.3"W), 12.viii.2015, leg. K. Dias, L. Santana [5 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'23.8"N / 60°45'41.8"W), 01.vi.2015, leg. K. Dias, C. Benetti [3 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista county, (02°48'21.2"N / 60°47'40.8"W), 02.vi.2015, leg. K. Dias, C. Benetti [3 males and 4 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'02.7"N / 60°48'18.3"W), 02.vi.2015, leg. K. Dias, C. Benetti [2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'06.4"N / 60°51'57.9"W), 03.vi.2015, leg. K. Dias, C. Benetti [3 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°54'36.5"N / 60°57'30.9"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [2 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°57'35.4"N / 61°04'39.9"W), 04.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°59'46.20"N / 61°6'44.07"W), 04.vi.2015, leg. K. Dias, C. Benetti [4 males and 3 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'29.7"N / 60°51'48.9"W), 05.vi.2015, leg. K. Dias, C. Benetti [6 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [8 males and 3 females stored in 80% ethanol, deposited at INPA]; Boa Vista County

(02°51'46.3"N / 60°47'30.6"W), 07.vi.2015, leg. K. Dias, C. Benetti [4 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°02'20.3"N / 60°46'51.7"W), 07.vi.2015, leg. K. Dias, C. Benetti [2 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'02.1"N / 60°51'00.0"W), 07.vi.2015, leg. K. Dias, C. Benetti [2 males and 1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°50'51.2"N / 60°50'25.0"W), 02.vi.2015, leg. K. Dias, C. Benetti [5 males and 4 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [5 males and 3 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'39.8"N / 61°06'46.2"W), 05.vi.2015, leg. K. Dias, C. Benetti [3 males stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [2 males and 3 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'37.1"N / 61°07'38.9"W), 10.viii.2015, leg. K. Dias, L. Santana [2 males and 2 females stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Mato Grosso, Roraima), Venezuela (Apure).

### *Berosus megaphallus* Oliva & Short, 2012 \*

(Figs. 14a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°46'00.4"N / 60°45'38.0"W), 08.viii.2015, leg. K. Dias, L. Santana [2 males and 3 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'36.6"N / 60°55'40.1"W), 11.viii.2015, leg. K. Dias, L. Santana [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°54'36.5"N / 60°57'30.9"W), 11.viii.2015, leg. K. Dias, L. Santana [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°54'24.7"N / 60°57'38.3"W), 31.v.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'39.8"N / 61°06'46.2"W), 10.viii.2015, leg. K. Dias, L. Santana [1 female stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Roraima), Guyana (Rupununi District), Venezuela (Apure, Bolívar, Delta Amacuro, Monagas).

### *Berosus olivae* Queney, 2006 \*

(Figs. 15a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°54'24.7"N / 60°57'38.3"W), 31.v.2015, K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'00.4"N / 60°45'38.0"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°47'29.8"N / 60°47'08.4"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°48'21.2"N / 60°47'40.8"W), 02.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'02.7"N / 60°48'18.3"W), 02.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'06.4"N / 60°51'57.9"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°54'36.5"N / 60°57'30.9"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°57'35.4"N / 61°04'39.9"W), 04.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°58'04.1"N / 61°04'46.2"W), 04.vi.2015, leg. K. Dias, C. Benetti [2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'29.7"N / 60°51'48.9"W), 05.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°51'46.3"N / 60°47'30.6"W), 07.vi.2015, leg. K. Dias, C. Benetti [2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°02'20.3"N / 60°46'51.7"W), 07.vi.2015, leg. K. Dias, C. Benetti [3 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'02.1"N / 60°51'00.0"W), 07.vi.2015, leg. K. Dias, C. Benetti [3 females stored in 80% ethanol,



deposited at INPA]; Alto Alegre County (02°50'51.2"N / 60°50'25.0"W), 02.vi.2015, leg. K. Dias, C. Benetti [2 males and 1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°51'13.7"N / 60°50'32.8"W), 02.vi.2015, leg. K. Dias, C. Benetti [2 females (stored in 80% ethanol, deposited at INPA)]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [2 females stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Roraima), French Guiana, Venezuela (Bolívar).

### *Berosus parvus* sp. n.

(Figs. 6a–h)

**Type locality.** BRAZIL: Roraima State, Boa Vista municipality, pond near the “Estrada do Contorno” road (02°47'15.4" N / 60°46'37.3"W) (Fig. 3).

**Type material.** **Holotype** male. **BRAZIL: Roraima State:** Boa Vista County (02°47'15.4"N / 60°46'37.3"W), 01.vi.2015, leg. K. Dias, C. Benetti. Condition of holotype: stored in 80% ethanol with the dissected male genitalia stored in microvials with glycerin, deposited at INPA. **Paratypes** (6). **BRAZIL: Roraima State:** Same data as holotype, except (02°54'36.5"N / 60°57'30.9"W), 03.vi.2015 [2 males stored in 80% ethanol, deposited at INPA]; same data as holotype, except (02°52'29.7"N / 60°51'48.9"W), 05.vi.2015 [1 male stored in 80% ethanol, deposited at MZSP]; same data as holotype, except (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015 [1 male stored in 80% ethanol, deposited at MNRJ]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015 [1 male stored in 80% ethanol, deposited at SEMC]; Alto Alegre County (02°51'13.7"N / 60°50'32.8"W), 02.vi.2015 [1 male stored in 80% ethanol, deposited at DZUP].

**Diagnosis.** *Berosus parvus* sp. n. can be distinguished from other Neotropical species of *Berosus* by the following combination of characteristics: small size (2.40–2.50 mm); clypeus yellow with small dark brown triangle on the middle of posterior margin, frons entirely dark brown or with large dark-brown spot on the median area; pronotum yellow with one discal dark-brown spot and elytra yellow with small dark-brown spots, without metallic luster (Fig. 6a); pronotum with fine, round punctures (Fig. 6a); elytral, striae well-impressed with round punctures ca. 2× as large as those on the pronotum (Fig. 6a); mesoventral process laminar with very short curved anterior tooth, directed downwards and backwards, with smooth margins (Fig. 6d); abdominal ventrites not crenulate along lateral margins, posterior margins crenulate; first ventrite medially carinate along its whole length; fifth ventrite with apical notch ca. one-quarter the total length, bearing a single short median tooth (Fig. 6e).

**Description.** *Size and form.* Total length: 2.44–2.47 mm. Body short, nearly 2.2× longer than wide in dorsal view (Fig. 6a), moderately convex in lateral view (Fig. 6b).

*Color.* Labrum slightly yellow; clypeus yellow with small dark-brown triangle on the middle of posterior margin; frons entirely dark brown or with a large dark-brown spot on median area, without metallic luster (Figs. 6a); maxillary palpi yellow with fourth palpomere dark brown at apex (Figs. 6a–c); pronotum yellow, with one discal dark-brown spot without metallic luster; scutellar shield slightly darkened (Fig. 6a); elytra yellow with small dark brown spots (Fig. 6a); venter of thorax and abdomen dark brown (Fig. 6c); femora, tibiae and tarsus entirely yellow (Figs. 6a–c).

*Head.* Clypeus and frons sparsely and finely punctate, punctures ca. 2× as large as ommatidia, round in shape (Fig. 6a). Frontal carina absent. Eyes slightly prominent (Fig. 6a). Maxillary palpi short, nearly half as long as width of the head, and thick (Figs. 6a–c).

*Thorax.* Posterior margin of pronotum about as wide as basal margin of elytra, with fine, round, and moderately dense punctures, the same size as those on head, slightly coarser along sides (Fig. 6a). Scutellar shield densely punctate with punctures similar in size to those on elytra. Elytral striae well-impressed with round punctures ca. 2× larger than those on pronotum; interstriae flat on elytral disc, ca. 2× as wide as striae, sparsely and finely punctate (punctures smaller than those on pronotum); humeral hump not prominent (Fig. 6a); elytral apices rounded (Figs. 6a–c); spine-like hairs absent (Fig. 6a). Mesoventral process laminar with very short, curved anterior tooth, directed downwards and backwards with smooth margins; posterior angle of the mesoventral process weakly raised in lateral view, not prominent (Fig. 6d). Metaventral process narrow, carinate before median depression, posterolateral angles produced into small rounded laminae; posterior angle not raised (Fig. 6c). Basal pubescence on two-thirds

of mesofemora and three-fourths of metafemora, limit oblique (Fig. 6c). Protarsus of male with adhesive soles in tarsomeres 1–2, first tarsomere ca. 1.5× longer than second, fourth tarsomere elongate, almost as long as tarsomeres 1–3 combined (Figs. 6a, c). Claws weakly arched (Figs. 6a–c).

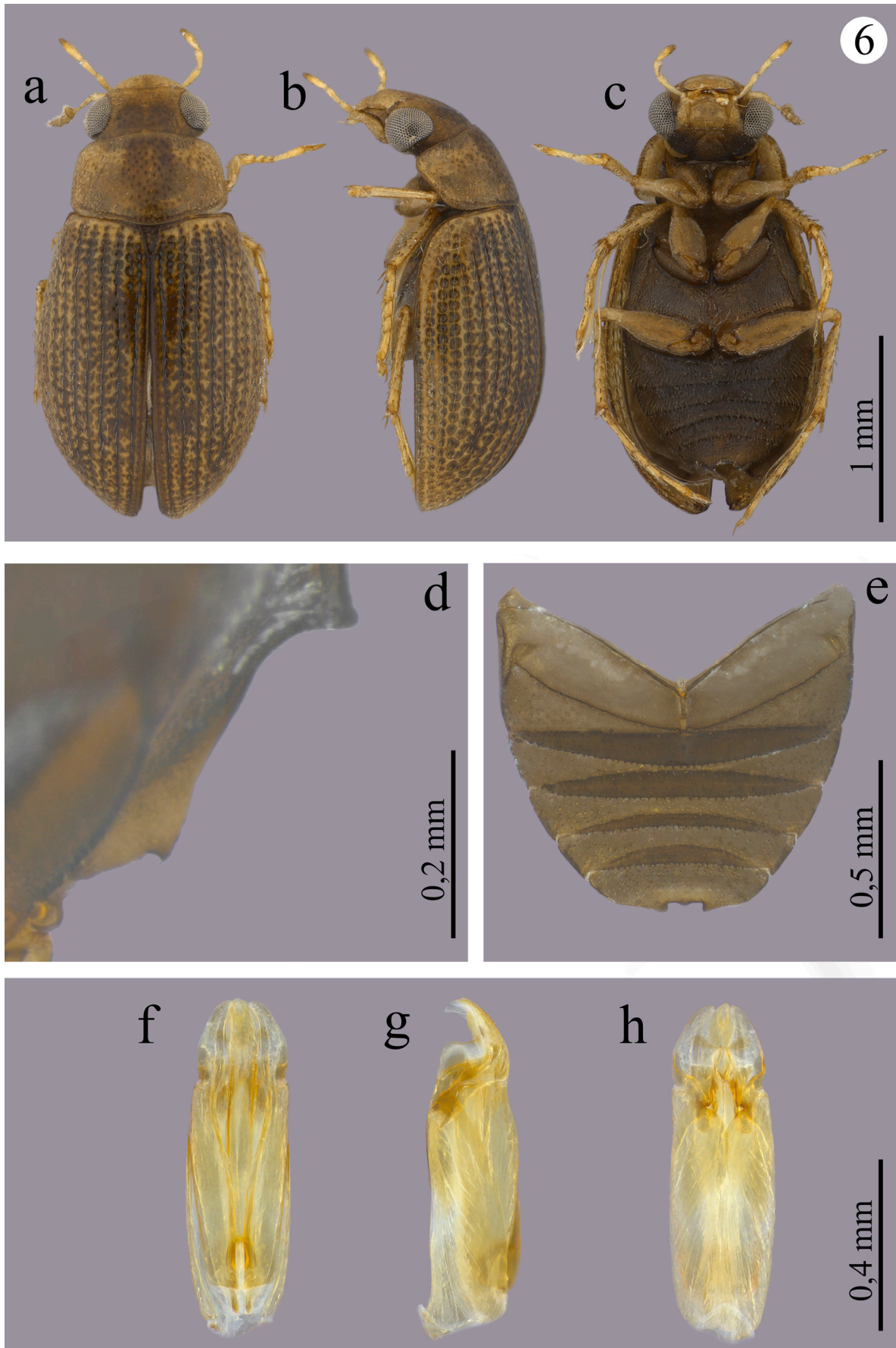
**Abdomen.** First ventrite medially carinate its whole length, without lateral depressions; abdominal ventrites 2–4 without central carina or tooth-like projection, not crenulate along lateral margins; posterior margins crenulate; fifth ventrite with apical notch ca. one-quarter the total length, bearing a single short median tooth (Fig. 6e). Aedeagus compressed laterally with basal piece ca. three-quarters of total length, 2.4× longer than its greatest width (Figs. 6f–h); parameres symmetrical, as long as median lobe in dorsal view, subcylindrical (Fig. 6f); apical portion of parameres curved towards ventral face, obliquely directed regarding dorsal outline of aedeagus in lateral view, bearing a ventral row of short hairs along subapical portion (Figs. 6g, h); median lobe cylindrical, not swollen subapically, apex with small hole in the median region in dorsal view (Fig. 6f).

**Etymology.** The specific epithet, *parvus*, refers to the very small size of specimens (From Latin “*parvus*”, little, small).

**Distribution.** Brazil (Roraima).

**Biology.** The specimens were collected in ponds with abundant macrophyte cover (Figs. 1, 2).

**Taxonomic comments.** *B. parvus* **sp. n.** can be placed in the *sticticus*-complex (Oliva 1989; Oliva & Short 2012), based on the following characteristics: dorsal sculpture fine (varying from coarse to fine in the complex); elytra with humeral humps not prominent and without spine-like hairs; abdominal ventrites medially carinate behind metacoxae without lateral depressions in first ventrite; protarsus of males with soles on the two basal tarsomeres, which are weakly swollen (weakly to moderately swollen in the complex); and male genitalia on which the aedeagus is somewhat compressed laterally, with parameres parallel and acuminate, with median lobe weakly curved (strongly or weakly curved in the complex). The new species is similar to *B. olivae* Queney, 2006 by the body length, dorsal coloration and shape of the apical emargination of the fifth ventrite, but they can be differentiated by the shape of male genitalia. In *B. parvus* **sp. n.** the aedeagus is subcylindrical in dorsal view (Fig. 6f) and sigmoidal in lateral view (Fig. 6g); the basal piece corresponds to ca. three-quarters of the total length (Figs. 6g, h); the median lobe is cylindrical and has a hole at apex (Fig. 6f); in *B. olivae*, the aedeagus gradually narrows along its distal third; the basal piece corresponds to a little more than half the total genitalia length. *B. parvus* **sp. n.** is also similar to *B. subandinus* Oliva, 1989 by the shape of the male genitalia in lateral view and length of the basal piece, but *B. parvus* **sp. n.** has wide parameres in the distal three-quarters of its length (Figs. 6f–h), while in *B. subandinus* the parameres are narrow and have a marked notch in the distal 4/5 of its length. In addition, *B. parvus* **sp. n.** has a narrow metaventral process, which is carinate before the median depression with posterolateral angles produced into small rounded laminae (Fig. 6c) and the apical emargination of the fifth abdominal ventrite bears a single medial tooth (Fig. 6e), while *B. subandinus* has a wide metaventral process with posterolateral angles not produced and apical emargination of the fifth abdominal ventrite with two teeth in the medial region. The new species is similar to *B. guyanensis* in dorsal coloration, punctuation of the head, pronotum, elytra and shape of mesoventral process. However, *B. parvus* **sp. n.** has the first abdominal ventrite carinate along its entire length medially and apical emargination of the fifth abdominal ventrite with a single medial tooth (Fig. 6e), while *B. guyanensis* has the first abdominal ventrite carinate on anterior one-third and apical emargination of the fifth abdominal ventrite with two medial teeth. In addition, *B. parvus* **sp. n.** has a subcylindrical aedeagus with the same thickness from base to apex (Figs. 6f, h), basal piece reaching three-quarter of the total length (Figs. 6g–h) and parameres with the same length as the median lobe (Fig. 6f, h), while in *B. guyanensis* the male genitalia narrows abruptly at four-fifths of total length, the basal piece reaches four-fifths of total length and the parameres are larger than the median lobe. The species also similar to *B. sticticus* Boheman, 1859, but differs from this species by the shape of the mesoventral process, carina of first ventrite and apical notch of fifth abdominal ventrite. *B. parvus* **sp. n.** has the mesoventral process with very short, curved anterior tooth, directed downwards and backwards, posterior angle weakly raised in lateral view, not prominent (Fig. 6d), while *B. sticticus* has a mesoventral process with a large and wide tooth, directed downwards and prominent posterior angle in lateral view. In addition, *B. parvus* **sp. n.** has the first ventrite medially carinate in its whole length and the fifth ventrite has apical notch with single short median tooth (Fig. 6e), while *B. sticticus* the first ventrite is carinated in the anterior third and the apical notch of the fifth ventrite has two adjacent teeth. These species also differ in the shape of the male genitalia, in *B. parvus* **sp. n.** the length of the basal piece is three-quarters of the total length (Figs. 6g, h) and the median lobe is as long as the parameres (Figs. 6f, h), while in *B. sticticus* the basal piece is about half of total length and median lobe shorter than the parameres.



**FIGURE 6.** *Berosus parvus* sp. n. (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; D) Mesoventral process, ventral view, E) Abdomen, ventral view; (F–H) Aedeagus, F) dorsal view; G) lateral view; H) ventral view.



***Berosus patruelis* Berg, 1885**

(Figs. 16a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°47'29.8"N / 60°47'08.4"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°57'35.4"N / 61°04'39.9"W), 04.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°02'20.3"N / 60°46'51.7"W), 13.viii.2015, leg. K. Dias, L. Santana [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'39.8"N / 61°06'46.2"W), 10.viii.2015, leg. K. Dias, L. Santana [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'37.1"N / 61°07'38.9"W), 06.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA].

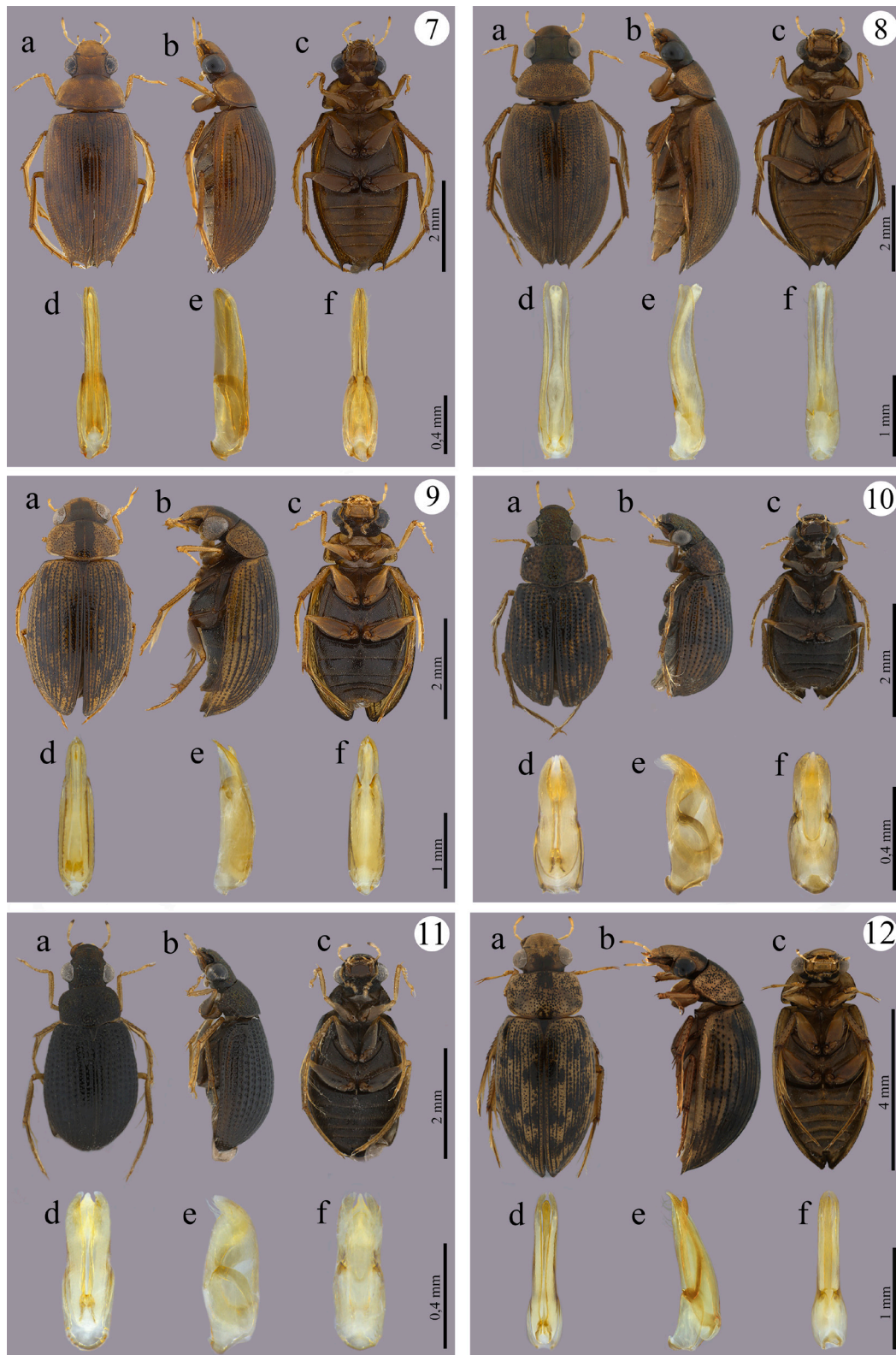
**Known distribution.** Argentina (Buenos Aires), Bolivia (Santa Cruz), Brazil (Mato Grosso, Roraima), Guyana (Rupununi District), Paraguay (São Pedro, Concepción), Venezuela (Anzoátegui, Apure, Aragua, Barinas, Cojedes, Falcón, Guárico, Tachira, Trujillo, Zulia).

***Berosus repertus* Oliva & Short, 2012 \***

(Figs. 17a–f)

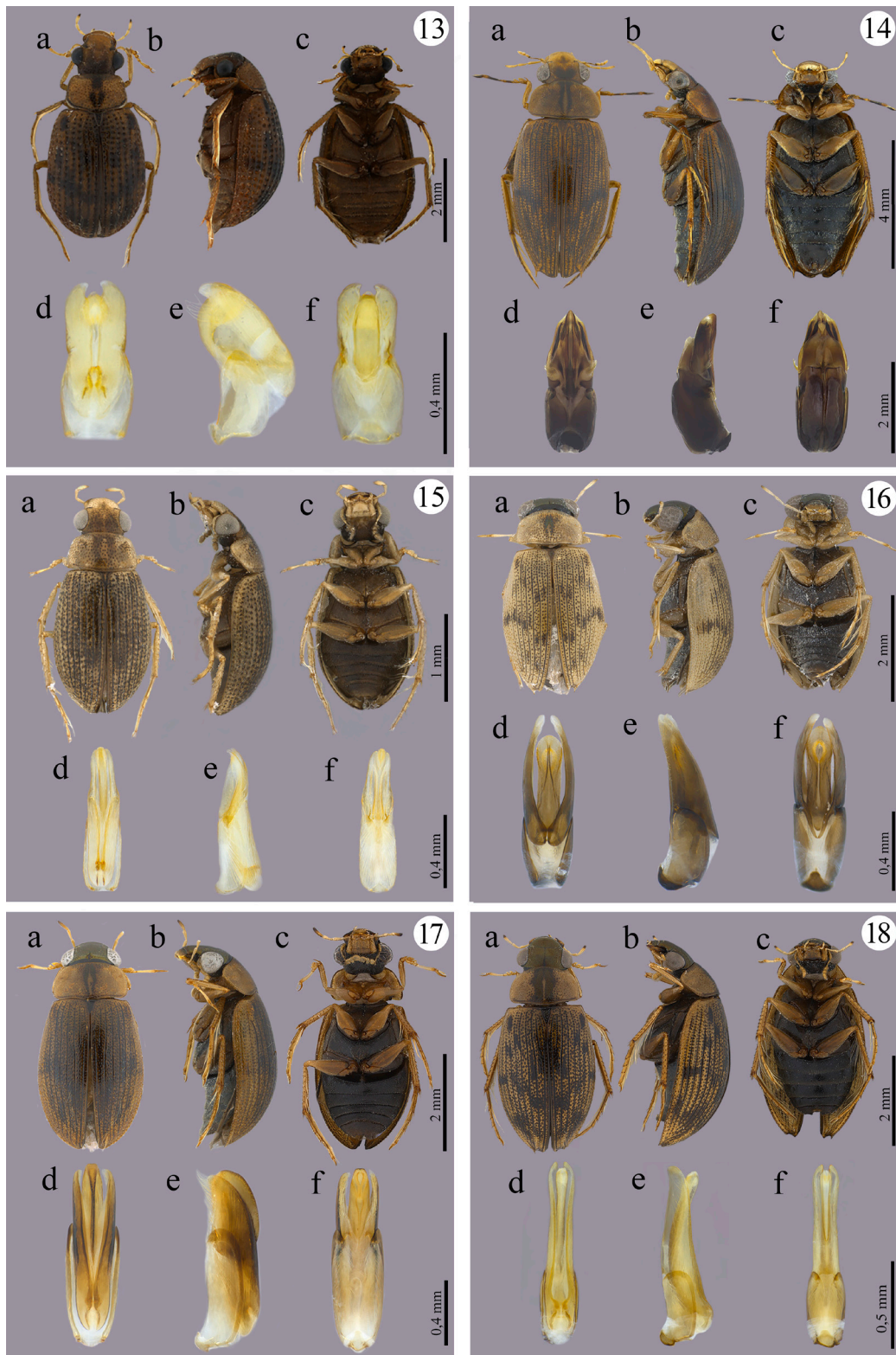
**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°54'24.7"N / 60°57'38.3"W), 31.v.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'00.4"N / 60°45'38.0"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°47'15.4"N / 60°46'37.3"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'23.8"N / 60°45'41.8"W), 01.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°48'21.2"N / 60°47'40.8"W), 02.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'02.7"N / 60°48'18.3"W), 02.vi.2015, leg. K. Dias, C. Benetti [2 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'06.4"N / 60°51'57.9"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'36.6"N / 60°55'40.1"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°54'36.5"N / 60°57'30.9"W), 03.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [2 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°57'35.4"N / 61°04'39.9"W), 04.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°59'46.20"N / 61°06'44.07"W), 04.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'29.7"N, 60°51'48.9"W), 05.vi.2015, leg. K. Dias, C. Benetti [3 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [1 male and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°02'20.3"N / 60°46'51.7"W), 07.vi.2015, leg. K. Dias, C. Benetti [7 males and 1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015, leg. K. Dias, C. Benetti [7 males and 1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°50'51.2"N / 60°50'25.0"W), 02.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°51'13.7"N / 60°50'32.8"W), 02.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [25 males and 21 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA].

**Known distribution.** Brazil (Roraima), Venezuela (Apure, Barinas, Guárico).



**FIGURES 7–12.** *Berosus* spp. **7) *B. ambogynus*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **8) *B. brevbasis*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **9) *B. castaneus*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **10) *B. consobrinus*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **11) *B. ebaninus*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **12) *B. elegans*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view.





**FIGURES 13–18.** *Berosus* spp. **13) *B. marquardtii*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **14) *B. megaphallus*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **15) *B. olivae*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **16) *B. patruelis*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **17) *B. repertus*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view. **18) *B. reticulatus*** (A–C) Habitus, A) dorsal view; B) lateral view; C) ventral view; (D–F) Aedeagus, D) dorsal view; E) lateral view; F) dorsal view.



## *Berosus reticulatus* Knisch, 1921

(Figs. 18a–f)

**Material examined. BRAZIL: Roraima State:** Boa Vista County (02°47'15.4"N / 60°46'37.3"W), 01.vi.2015, leg. K. Dias, C. Benetti [2 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°47'29.8"N / 60°47'08.4"W), 09.viii.2015, leg. K. Dias, L. Santana [1 female stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°46'23.8"N / 60°45'41.8"W), 01.vi.2015, leg. K. Dias, C. Benetti [6 males and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°48'21.2"N / 60°47'40.8"W), 02.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°53'03.5"N / 60°52'45.5"W), 03.vi.2015, leg. K. Dias, C. Benetti [2 males stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'29.7"N / 60°51'48.9"W), 12.viii.2015, leg. K. Dias, L. Santana [1 male stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°49'17.4"N / 60°48'10.6"W), 06.vi.2015, leg. K. Dias, C. Benetti [8 males and 5 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°51'46.3"N / 60°47'30.6"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 male and 2 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°02'20.3"N / 60°46'51.7"W), 13.viii.2015, leg. K. Dias, L. Santana [25 males and 14 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (03°10'53.9"N / 60°50'00.8"W), 07.vi.2015, leg. K. Dias, C. Benetti [7 males and 6 females stored in 80% ethanol, deposited at INPA]; Boa Vista County (02°52'02.1"N / 60°51'00.0"W), 07.vi.2015, leg. K. Dias, C. Benetti [1 male stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°50'51.2"N / 60°50'25.0"W), 02.vi.2015, leg. K. Dias, C. Benetti [2 males and 2 females stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°51'13.7"N / 60°50'32.8"W), 02.vi.2015, leg. K. Dias, C. Benetti [3 males and 1 female stored in 80% ethanol, deposited at INPA]; Alto Alegre County (02°59'48.7"N / 61°07'48.7"W), 05.vi.2015, leg. K. Dias, C. Benetti [8 males and 4 females stored in 80% ethanol, deposited at INPA].

**Known distribution.** Argentina (Buenos Aires, Santa Fé), Brazil (Mato Grosso, Roraima), Paraguay (Concepción), Venezuela (Anzoátegui, Barinas, Bolívar, Falcón, Guárico).

## Acknowledgments

LS thanks CAPES for an M.Sc fellowship. CJB thanks CNPq and FAPEAM for a post-doctoral fellowship (processes 151461/2014-7 and 302031/2015-4). AMP thanks FAPEAM for a post-doctoral fellowship (FIXAM/FAPEAM-AM). INPA/MCTIC and CNPq provided financial support for field activities and laboratory infrastructure (PRO-TAX/ CNPq—440616/2015-8). BC thanks CAPES for a post-doctoral fellowship granted by PPG em Entomologia (UFPR). Collections were done under SISBIO license number 49055. We thank Karina Dias Silva, Jeferson Oliveira da Silva and Emily Olive for helping in the fieldwork and Philip M. Fearnside for reviewing the English text.

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