

Faunistical notes on aquatic Heteroptera of Minas Gerais (Brazil): an annotated list of Gerromorpha and Nepomorpha collected near Januária, MG.

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Abstract

A list of water bugs from a collecting trip to Januária (MG) is presented. Identified were 59 species of which one new to science and 11 new state records, in addition 3 apparently undescribed species remain for further study. Notes on distribution, habitat and, for the new state records, on identification have been added.

Keywords: Aquatic Heteroptera, Faunistical notes, Gerromorpha, Nepomorpha, New state records.

Introduction

The vast majority of aquatic and semi aquatic insects is confined to freshwaters and records about their geographic distribution and biological habit are scarce in the literature.

In November 1997 In order to obtain basic knowledge of distribution of the aquatic Heteroptera in Minas Gerais, we had an opportunity to make a short collecting trip to Januária in the North of Minas Gerais. As there are, as far as we know, no previous records of water bugs from this area we present the results in this paper.

Study Area

The present work was conducted in several sites near the Januária (15° 4' S, 44° 4' W). This region, essentially an agro industrial and tourist pole, is located about 455 meters above the sea level at the left side of São Francisco River, with 11.610Km² in extension. It presents a tropical climate with mean annual temperature 26°C and transition for the semi arid vegetation composed mainly of grassland (cerrado). The county presents an area with several archaeological sites with the largest and more important caves of the state known as Peruaçu valley (<http://www.ibge.gov.br>).

Localities sampled (all 1997):

N9741 (ALM97034). Brejo de Amparo, 21.XI. Córrego da Quinta.

N9741A. Stream and overflow path in agricultural fields: sugar cane, corn (maize) cattle, and shrubs. Mostly exposed to sunshine.

N9741B. Pothole and shaded stream at end of village, swimming pool for children and washing place (probably infrequent), bottom sandy with silt. *Brachymetra* also in pothole, *Rhagovelia*, *Stridulivelia*, *Cylindrostethus* in the more rapid flowing shaded part.

N9742 (ALM97036). Januária, Córrego dos Cochos, 22.XI.

Pool at edge of marsh at bridge, stream (due to draught not flowing much) in the marsh overgrown with thick high poids, *Equisetum*, shrubs, etc. Turbid pool 30x10m up to 1m deep, exposed to sun, floating plant debris at edges, drinking place for cattle (droppings, also of horses). Bottom soft mud on sand. Most *Microvelia* from side puddle 5x1m shallow, partly shaded.

N9742A (ALM97035). Januária, Mina d' água (real source), 22.XI.

Small origin of otherwise dry stream, tributary of Córrego dos Cochos.

N9743 (ALM97037). Itacarambi, Cachoeira de Itacarambi, 22.XI.

The «Cachoeira» is an artificial construction for bathing in Rio Peruaçu. Sample taken upstream in large marshy pond in caused by the dam of the «cachoeira». Pond in marsh, at sampled edge *Azolla*, *Salvinia*, ? *Ceratopteris deltoidea*, *Vallisneria*-like plant in the water, emergent vegetation of poids mixed with weeds. Water initially nearly hyaline, during and after sampling turbid due to silt on bottom, stagnant, sampled area up to 1 m deep.

N9744 (ALM97038). Januária - Pandeiros, Rio Pandeiros downstream of CEMIG-plant, 23.XI.

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30-50m wide river with moderate current, bottom stones, pebbles, sand quite a lot of silt, depth mostly 0.5-0.7 but at places (much) deeper and at edges shallower.

N9744A. Quiet edge in shade of tree (*Metrobates*, *Rhagovelia*).
N9744B (ALM97039). Stagnant pool in dry side-stream (Córrego dos Mandis), turbid water, some shade from trees, depth up to 0.5m, bottom sand and silt on pebbles, floating plant debris and leaf litter at steep edge, some unidentified plants growing in the water.

N9744C Puddle on banks of river 1.5x0.7m depth up to 0.2m, exposed to sun, some *Mimosa* growing into it, nearly filled with *Ceratophyllum*.

N9745 (ALM97040). Rio Pandeiros, at Pandeiros, upstream of CEMIG-works, marshy edges of small barrage lake, 23.XI.

N9746 (ALM97041). Januária - Riachinho, "Córrego Grande", 23.XI.

N9746A. Pothole in stream used as swimming pool. Sample from edge with aquatic and emergent vegetation, bottom with a (at places quite thick) layer of silt on pebbles, virtually stagnant.

N9746B (ALM97041). Downstream of outlet of pothole.

N9747 (ALM97042). Rio Peruaçu at bridge in the road Januária - Itacarambi, 24.XI.

N9747A. Bottom samples just downstream bridge, exposed to sunshine, pebbles and a few larger stones, silt: *Cryphocricos*, *Limnocoris*.

N9747B. Wet mud with some algae in sunshine: *Ochterus*, *Gelastocoris*.

N9747C. Quiet bay, soft mud, some aquatic plants, exposed to sun.
N9747D. Quiet parts of stream downstream of bridge, sampled at edges, shade.

N9747E (ALM97042). Upstream of bridge, stream.

N9748 (ALM97043). Januária - Riacho da Cruz, Riacho da Cruz, 24.XI.

At bridge, stream nearly dried up but some (probably rather recently dug) trenches filled with water and ruderal plants, stagnant, water only slightly turbid, bottom a little mud on pebbles, some plant debris at edges, and depth up to 0.5m.

The insects were collected with entomological hand nets sweeping the water column, edges and bottom of the water sources. The collected material was emptied into a plastic tray and the insects were sorted from organic matter, picked out and transferred to vials containing 80% ethanol.

The species identification was performed basically according to Nieser & Melo (1997) and sampled material was deposited in the entomological collection of the Department of Parasitology, Federal University of Minas Gerais (DPIC) and the Nieser Collection, Tiel, The Netherlands (NCTN).

Codes and abbreviations:

\$ male, # female, £ larva (roman numeral indicates instar)

apt. = apterous, wings totally absent

brach. = brachypterous, with reduced wings

deal. = dealate, macropter with apical part of wings torn off along structurally weak area.

macr. = macropterous with wings intact or larva with well-developed wing pads in species where the apterous form lacks wing pads.

micr. = micropterous, only small vestiges of wings present.

List of species:

(Those marked with a * will be discussed under comments. Indications like common or rare in this list refer to the distribution in MG).

NEPOMORPHA

Ochteridae

Ochterus perbosci (Guérin)

N9747B 4\$, 2#.

Second record for MG.

Gelastocoridae

Gelastocoris flavus flavus (Guérin)

N9747B 1#, 1£V.

Common on wet margins of water bodies.

Nerthra ranina (Herrich-Schäffer)

N9742 1\$, 1£V.

Common in similar places as the preceding but due to nocturnal habits often overlooked.

Naucoridae

**Ambrysus teutonius* La Rivers

N9744E 1\$.

**Cryphocricos vianai* De Carlo

N9747A 1#, 2£V.

**Ctenipocoris spinipes* (Montandon)

N9747C 1\$, 1#.

**Limnocoris pusillus* Montandon

N9744D 2\$, 1£V; N9746B 1\$; N9747A 2\$, 2#, 1£V.

Pelocoris bipunctulus (Herrich-Schäffer)

N9744E 2\$, 4#.

Not rare in ponds and small lakes with rich aquatic vegetation.

**Pelocoris binotulatus nigrliculus* Berg

N9747C 1\$; N9748 1\$.

Pelocoris subflavus Montandon

N9743 1\$, 1#, 1£IV, 1£V; N9747E 1\$.

Not rare in ponds and small lakes with rich aquatic vegetation, sometimes together with *P. bipunctulus*.

Belostomatidae

Belostoma anurum (Herrich-Schäffer)

N9743 3\$, 1#; N9747C 1\$, 1#.

Common in ponds and small lakes with rich vegetation, distributed from N. Argentina to eastern Brazil.

Belostoma costalimai De Carlo

N9742 1£III; N9743 1£V.

Southern Brazil, in MG common in stagnant waters with rich vegetation.

Belostoma dentatum (Mayr)

N9743 1#, 1£III; N9744B 1\$.

Widely distributed in S. America, in MG recorded from marsh ponds and quiet edges of streams.

**Belostoma micantulum* (Stål)

N9742 3\$; N9743 5\$, 3#

**Belostoma plebejum* (Stål)

N9741A 2#

Lethocerus annulipes (Herrich-Schäffer)
(ALM97036) 1\$

Nepidae

**Curicta granulosa* De Carlo

N9743 1#; N9748 1\$

Ranatra costalimai De Carlo

N9742 1\$, 2#; N9744B 1\$; N9747D, E 8\$, 9#.

Not rare, so far only recorded from MG.

Ranatra heydeni Montandon

N9742 1\$, 3#; N9743 3\$, 4#; N9744B, D, E 10\$, 14#.

Not rare usually at the edge of lowland-type streams, also in small reservoirs, distributed from N. Argentina through Paraguay to MG.

Ranatra lenti De Carlo

N9747D 1#.

Known from MG and ES, a few isolated specimens have been collected, the habitat preference is not clear.

**Ranatra macrophthalma* Herrich-Schäffer

N9741A 1#

Pleidae

**Neoplea maculosa* (Berg)

N9742 1\$; N9743 1#

**Neoplea semipicta* (Horváth)

N9743 1#

Notonectidae

Buenoa konta Nieser & Pelli

N9742 7\$, 11# brach., 5 £V.; N9743 1\$, 4# brach.

So far only recorded from MG where it is quite common, usually in ponds and small lakes between marginal vegetation at the edge.

Buenoa mutabilis Truxal

N9742 12\$, 3#; N9743 3\$, 3#

Widespread, from Antilles (Haiti) to Paraguay, in Brazil so far only known from Go and MG where it is not common.

Buenoa paranensis Jaczewski

N9742 1#

Described from PR, common in GO and MG, the preferred habitat seems to be marshy areas associated with streams.

Buenoa salutis Kirkaldy

N9743 1\$ macr.; N9747D 1# brach.

Widespread in S. America, from Venezuela and the Guyanas to Argentina (Buenos Aires). In MG not uncommon but distinctly rarer than *B. konta* with which it has been found together several times.

Buenoa tarsalis Truxal

N9742 2\$, 6#

Essentially a species from the Atlantic area of Brazil. In MG only known previously from Belo Horizonte. The MG records are the most inland occurrences of this species.

Buenoa unguis Truxal

N9742 15\$, 47#; N9748 2\$, 6#

Widespread in S. America especially NE Brazil. Common in MG, apparently with a preference to somewhat disturbed habitats.

**Martarega membranacea* White

N9744A 22\$, 17# brach., 15\$, 11# macr., 11£; N9745 1\$

brach., 2# macr.

Martarega uruguayensis Berg

N9744A 3\$ brach.; N9747D 1\$, 2# macr.

Common and widespread usually in nearly stagnant parts of streams.

**Notonecta disturbata* Hungerford

N9742 1#

Notonecta pulchra Hungerford

N9743 1#; N9748 1\$

Common, mostly in low numbers in somewhat disturbed stagnant waters.

Corixidae

**Centrocorisa kollarii* (Fieber)

N9748 1#.

Heterocorixa nigra Hungerford

N9742 1#

Common, usually in stagnant waters with rich emergent vegetation.

**Sigara (Tropocorixa) platensis* Bachmann

N9742 1\$.

Micronectidae

Tenagobia incerta Lundblad

N9744C 2#.

Very common usually in shallow parts of stagnant waters with little vegetation

Tenagobia schadei Lundblad

N9742 1#.

Not common, known from four localities in three counts.

GERROMORPHA

Mesoveliidae

Mesovelia amoena Uhler

N9744A 1# macr.; N9744C 2# deal.; N9745 2# apt.

Common, due to its small size often overlooked or considered a larva of *M. mulsanti*.

Mesovelia mulsanti White

N9741A 1\$ deal.; N9742 1\$ deal., 2# macr.; N9743 1#, 2£V apt., 1\$ macr.; N9744A 1\$ macr.; N9744B 2\$, 3# apt., 1\$, 2# deal.; N9745 2\$, 2# macr.; N9746A 1\$, 1# apt., 1\$ deal., 8\$, 8# macr.; N9747D 1\$, 1# macr.; N9748 4# deal.

Very common, like the preceding usually at the wet margins of waters but also on floating aquatic vegetation.

Hebridae

**Lipogomphus lacuniferus* Berg

N9743 19\$, 22#, 1 £V macr. (Andersen 1981a).

Hydrometridae

Hydrometra argentina Berg

N9744C 1\$ macr.; N9745 2\$, 2# brach., 1# macr.

Distributed in nearly the whole of S. America, not common in MG.

Veliidae

Microvelia longipes Uhler

N9742 1\$, 1# apt.

Widely distributed in S. America and the Antilles, second record for MG.

Microvelia mimula White

N9743 1\$, 2# apt., 1\$ macr.

Panama and southern Antilles to Argentina, apparently not rare in MG.

Microvelia pulchella Westwood

N9741B 2# macr.; N9742 1\$, 1# apt., 37\$, 14#, 35 £III/V macr.; N9743 1\$ apt.; N9744C 1\$, 1# macr.; N9745 1\$ apt.; N9748 1\$, 1# macr.

Southern U.S.A. to Argentina, common in MG.

Microvelia venustatis Drake & Harris

N9743 2\$ apt., 1# macr.

Southern S. America, not rare in MG)

**Paravelia* sp. indet "brunnea"

N9743 1\$, 2# apt.

**Paravelia* sp. indet "hirsuta"

N9742 1\$ macr.

Platyvelia brachialis (Stål)

N9743 1# apt., 1£V macr.

The commonest species of Veliinae in MG, at edge of water between emergent vegetation.

Rhagovelia tenuipes Champion

N9744A ±250\$, ±100# apt., 12\$, 14# macr., 10\$, 3# deal. ±100£V, 40£IV apt., 15£V/IV macr.; N9747D 3\$, 6# apt., 1\$ deal., 2 £V

Apparently more common in the N. part of MG than in the South.

**Rhagovelia* sp. indet. near *R. ochroischion* Nieser & Polhemus N9741B 17\$, 16# apt.; N9746B 9\$, 2#, 2£V apt.; N9747D 16\$, 45# apt.

Rhagovelia sp. indet. crassipes-group

N9741B 7\$, 5# apt., N9742A 1\$, 1# apt., 4£IV/V; N9746B 4\$, 2#, 4£IV/V apt. The material may contain more than one species.

**Stridulivelia ayacucho* Polhemus & Spangler

N9741B 5# micr., 2 £V

**Stridulivelia tersa* Drake & Harris

N9746B 1\$ macr., 1# micr.

Gerridae

Brachymetra furva Drake

N9741A, B 4\$, 3# apt., 2# macr., 5 £V; N9742A 4# apt., 4£ IV/V; N9744A 4# apt., 1# macr.; N9747D 1\$, 5# apt., 1£V .

Southern Brazil, common in MG, on quiet parts of streams in shade.

Cylindrostethus palmaris Drake & Harris

N9741B 1£III, 2£V; N9742A 4\$, 4# apt., 20£IV; N9746A 1£II; N9747D 2£III, 1£V.

Northern part of S. America, widely distributed in MG, similar places as *B. furva* but with somewhat stronger current.

**Halobatopsis chrysocastanis* Nieser & Melo

N9744A 3\$, 3# apt.; N9744B 3\$, 3# apt.

Limnogonus aduncus Drake & Harris

N9741A 1\$ apt., 3\$, 1# macr.; N9742 1\$ apt., 8\$, 11# macr.; N9743 1# apt.; N9743 3# macr., 1# apt., 1£1; N9744B 5\$, 4# macr.; N9744C 2# macr.; N9746A 3\$, 6# macr.; N9747C 2\$, 3#, 2£IV, 2£V macr.; N9747D 1\$, 2# macr.; N9748 2\$ macr.

Very common on stagnant and nearly stagnant waters.

Limnogonus ignotus Drake & Harris

N9744B 1\$, 1# macr.

Not rare, stagnant waters.

Metrobates vigilis Drake & Harris

N9744A 27\$, 14#, 17£V apt., 26\$, 34#, 29£V macr. (many adults teneral).

Not rare, may occur on places with quite strong current.

Neogerris lubricus (White)

N9742 1\$ macr.; N9743 2# apt., 1£V; N9744B 2# macr.; N9745 1\$ macr.; N9746A 1\$ apt., 1# macr.; N9748 5\$, 3# macr.

Northern part of S. America, quite common in MG.

**Rheumatobates minutus flavidus* Drake & Harris

N9742 1\$, 1# apt.

Comments

Ambrysus teutonium La Rivers

The Ambryinae of Minas Gerais has been discussed in a paper by Nieser et al. (1999). *A. teutonium* was described from SC and has also been collected in MT and in MG in the Serra da Canastra area.

Cryphocricos vianai De Carlo

Common in the appropriate habitat: mountain streams at places with fair to strong current over a bottom with pebbles or stones. This species was referred to by Nieser & Melo (1997) as *C. barozzi*. Comparison with material identified by De Carlo showed that the material is most similar to *C. vianai*. However, the status of several *Cryphocricos* species has still to be evaluated. *C. vianai* has been recorded from Argentina, Misiones and Brazil: «Escaramuça» (Lopez Ruf, 1991).

Ctenipocoris spinipes (Montandon)

Widely distributed in Brazil, one earlier record from MG: Lagoa Santa (Nieser & Melo, 1997). The present specimens were burrowing in very soft mud at the edge of the water. It is not clear whether this is common behaviour for this species or if these specimens were trying to escape capture.

Limnocoris pusillus Montandon

Widely distributed in Brazil from MG southward, just reaching Argentina and through the Pantanal up to Colombia. Synonymy and specific locality records will be found in a recent revision of the southern South American *Limnocoris* by Nieser & Lopez Ruf (1999). In MG common in streams with sandy to gravelly bottom.

Pelocoris binotulatus nigriculus Berg

First record for MG, the single female *P. politus* recorded by Nieser & Melo (1997) may belong to this species. In MG only few isolated specimens have been collected at the edges of stream and in a small lake with rich vegetation. Widely distributed in the northern part of Argentina (Lopez Ruf, 1994).

Belostoma micantulum (Stål) and *B. plebejum* (Stål)

Both common in more or less stagnant waters with rich vegetation. *B. plebejum* is apparently restricted to the southern part of S. America whereas *B. micantulum* occurs from N. Argentina Suriname, Trinidad and Venezuela.

Nieser & Melo (1997) separate these species on size only but this is not always reliable. Estévez in a not dated thesis gave some morphological differences of which the width of the

aedeagus and the position of the dorsal arms relative to the diverticulum seem to be the most reliable (figs 1, 2).

Curicta granulosa De Carlo

A widespread species in the northern and central part of S. America (Keffer, 1996), first record for MG.

Ranatra macrophthalma Herrich-Schäffer

Widespread in S. America from Paraguay to the Guyanas and Trinidad. New record for MG. In the key by Nieser & Melo it runs to *R. heydeni* Montandon. Females of *R. heydeni* have a short operculum, only slightly projecting beyond the apex of abdomen, whereas in *R. macrophthalma* females the operculum projects distinctly caudally of apex of abdomen (figs. 3,4). Males are more difficult to separate, the respiratory siphon in *R. heydeni* is usually distinctly longer than body whereas in *M. macrophthalma* it is about as long. The hind femur reaches to apex of operculum, the middle and hind legs are more distinctly banded in *R. heydeni*. Finally the ratio basal part of fore femur/apical part (measured with the distal margin of tooth as dividing point) is 1.73 on average in *R. macrophthalma* with 0.05 confidence limits of 1.67-1.77, whereas the average is 2.09 with 0.05 confidence limits 1.90-2.28. *R. macrophthalma* seems to have a similar habitat preference as *R. heydeni*, edges of low-land type streams (Nieser, 1975).

Neoplea maculosa (Berg) and *Neoplea semipicta* (Horváth)

Both first records for MG. *N. maculosa* is widespread: Argentina from Buenos Aires upward, Paraguay, Bolivia, Peru, Surinam and Brazil: PA, MG. *N. semipicta* likewise is widespread: N. of Argentina, Paraguay, eastern Bolivia and Colombia. This seems to be the first record of *N. semipicta* for Brazil as a whole. The species likely to occur in MG can be identified with Bachmann & Lopez Ruf (1994).

Martarega membranacea White

Widespread in S. America, first record from MG. The males are distinguished from the very similar *M. chinai* Hynes by a nodule on the mesotrochanter of the male, present in *M. chinai*, absent in *M. membranacea* (Fig. 5).

Notonecta disturbata Hungerford

Known from the southern part of S. America, in Brazil: MT, GO, RJ (Nieser, 1970). First record from MG. The single female has been compared with identified specimens from both *N. disturbata* and the very similar *N. pulchra* Hungerford and fits better with *N. disturbata*.

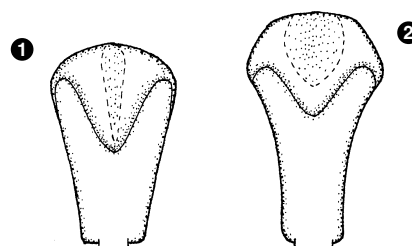
Centrocorisa kollarii (Fieber)

Mexico to Paraguay, Antilles only the Netherlands Antilles off the coast of Venezuela. New record from MG.

Sigara (Tropocorixa) platensis Bachmann

Known from northern half of Argentina, Paraguay, Uruguay, S. Bolivia and S. Brazil, new record for MG. Previously not recorded north of Paraná so this is a considerable extension of the distributional area (Bachmann, 1981, Hungerford, 1948).

In the key for *Sigara* by Nieser & Melo (1997) it will pose some difficulties in couplet 1, as although the



Figures 1, 2 - Aedeagus of *Belostoma*, dorsal view: 1 *B. micantulum*, 2 *B. plebejum*.



Figures 3, 4 - Apex of abdomen of female *Ranatra*, lateral view: 3 *R. macrophthalma*, 4 *R. heydeni*.

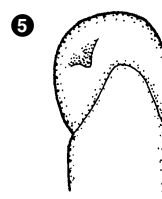
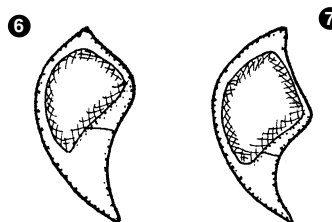


Figure 5 - Mesotrochanter of male *Martarega chinai*, illustrating nodule.



Figures 6, 7 - Head of female *Sigara (Tropocorixa)* in lateral view: 6 *S. platensis*, 7 *S. denseconscriptoidea* Hungerford.



Figure 8 - Apical part of paramere of *Sigara (Tropocorixa) platensis*.

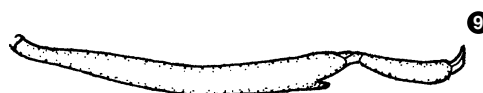


Figure 9 - Hind leg of male *Lipogomphus lacuniferus* Berg.

metaxiphus is distinctly shorter than its width at base, the vertex of male is slightly produced in dorsal view. It differs from other species known from MG by having the strip of the head beneath the eyes at the level of the suture which is present there broader than the width of the middle femur. In other species this part of the head is at most as wide as middle femur (Fig. 6,7,8).

Lipogomphus lacuniferus Berg

Nieser & Melo (1997) treated *Lipogomphus* as a synonym of *Hebrus*. However, Andersen (1981) gives reasons to re-evaluate it as a separate genus. The key to genera in Nieser & Melo (1997) could be rewritten as follows (adapted from Andersen, 1981):

1. Fourth antennal segment with a constriction and false joint structure in the middle, thus antennae apparently 5-segmented *Hebrus*
- Fourth antennal segment without a false joint structure, antennae clearly 4-segmented 2
2. Antennae distinctly shorter than the greatest width of pronotum; antennal segments stout, fourth segment subequal in length to first segment *Merragata*
- Antennae at least subequal in length to greatest width of pronotum; fourth segment distinctly longer than first segment *Lipogomphus*

Lipogomphus lacuniferus is at once recognized by the spur on male hind tibia (fig. 9)

Paravelia indet "brunnea" & "hirsuta" two apparently undescribed species.

Rhagovelia sp. indet. near *R. ochroischion* Nieser & Polhemus

An undescribed species similar to *R. ochroischion* with which it has in common that all the coxae are pale. This species will be described in a paper in preparation.

Stridulivelia ayacucho Polhemus & Spangler and *S. tersa* Drake & Harris.

First definitive records of *Stridulivelia* species for MG. The specimen referred to in Nieser & Melo belongs to *S. tersa*. South American species of the genus have been recently revised by Polhemus & Spangler (1995). *Stridulivelia* species have glabrous transverse stripes laterally on the abdominal sternites (not to be confused with segmental sutures). The species known from MG can be separated as follows:

1. First four or five abdominal sternites with transverse glabrous grooves; four in female and the one on segment 4 may be a small spot, in male those on segments 4 and 5 are short *S. tersa* known from Venezuela, Suriname, Peru, Guyana, Bolivia and Brazil: AM, TO.
- First two abdominal sternites with transverse glabrous grooves *S. ayacucho* recorded from Venezuela, Peru, Paraguay, Guyana and Brazil: PA.

Halobatopsis chrysocastanis Nieser & Melo

Described by Nieser & Melo (1999). Only known from its

type locality Rio Pandeiros and Brumadinho (Vianna & Melo, 2003)

Rheumatobates minutus flavidus Drake & Harris.

Previously recorded from Peru and the upper part of the Amazon Basin. First record from MG, a considerable extension of its distributional area. Due to its size (1.9-2.2 mm in apterous form) it will run to *R. bonariensis* (Berg) in the key by Nieser & Melo (1997). *R. bonariensis* is a generally dark species whereas *R. minutus flavidus* has a striking lemon yellow to orange thorax in apterous form.

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