

# DESCRIPTION OF THREE NEW SPECIES OF THE GENUS *RHINUMIARUS* CALDARA, 2001 (COLEOPTERA: CURCULIONIDAE: CURCULIONINAE)

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## ABSTRACT

**Description of three new species of the genus *Rhinumiarus* Caldara, 2001 (Coleoptera: Curculionidae: Curculioninae).**

Three new species of the genus *Rhinumiarus* Caldara, 2001 are described: *R. karasyovi* **sp. n.** (from Southern Brazil), *R. obrienorum* **sp. n.** (from Northern and Central Argentine) and *R. schneiderianus* **sp. n.** (from Suriname). A more detailed description of this previously monobasic genus and a key to the species are given.

**Key words:** Coleoptera, Curculionidae, South America, *Rhinumiarus*, new species.

## INTRODUCTION

The genus *Rhinumiarus* Caldara, 2001 was recently described based on the only species *R. lyali* Caldara, 2001 from Argentine and was included in the tribe Mecinini of the subfamily Curculioninae on the basis of a phylogenetic analysis (CALDARA, 2001).

Recently I had the occasion to study other specimens of this genus, belonging to three new species here described. Due to these new knowledge it is now possible to complete the description of *Rhinumiarus*. The four known species of this genus are grouped into two groups, the *R. lyali* group and the *R. schneiderianus* group.

## Acronyms used

- CWOB Charles W. O'Brien collection, private, Entomology-Biological Control, Florida A. & M. University, Tallahassee, Florida, USA.  
MLUH Institut für Zoologie, Martin-Luther-Universität, Halle, Germany (Karla Schneider).  
BMNH The Natural History Museum, London, England (Christopher H. C. Lyal).  
RCCM Roberto Caldara collection, private, Milan, Italy.  
VKCM Vladimir Karasyov collection, private, Byelorussian Academy of Sciences, Minsk, Byelorussia.

***Rhinumiarus*** Caldara, 2001

Caldara, 2001: 186.

Type species: *Rhinumiarus lyali* Caldara, 2001.

## Description

Male. Length of pronotum and elytra mm 1.5-2.3.

Body short-oval, mainly reddish, covered with moderately dense seta-like scales.

Rostrum short, more or less subconical, with basal portion of scrobes slightly visible in dorsal view. Frons slightly narrower than rostrum at base. Eyes large, wider than half width of head. Gula between eyes narrower than half width of rostrum. Antennae short, inserted near middle of rostrum; funicle 5-segmented, segments 2-5 distinctly transverse.

Pronotum transverse, not abruptly constricted at apex. Prosternum with anterior margin moderately to distinctly emarginate at middle, with weak to moderately deep longitudinal sulcus medially.

Elytra short, broad, subquadrate, with basal margin more or less concave, with striae 3 and 6 joined at apex, with apical margin moderately directed inwards.

Legs short; forecoxae contiguous; femora unarmed; tibiae ventrally with outer margin more or less distinctly directed outwards at apex, with distinct unci; tarsi with claws joined at base and symmetrical.

Mesosternal process convex, half as wide as coxa. Median portion of metasternum flat to moderately concave. Abdomen with ventrites 1 and 2 medially flat to concave, posterior margin of ventrites 3 and 4 straight, ventrites 1 and 2 2.4-2.8X longer than ventrites 3 and 4, pygidium largely uncovered.

Median lobe with ejaculatory duct sclerotized in apical portion.

Female. Same as male except rostrum very slightly longer, abdomen with ventrites 1 and 2 distinctly convex, unci of hind tibiae lacking.

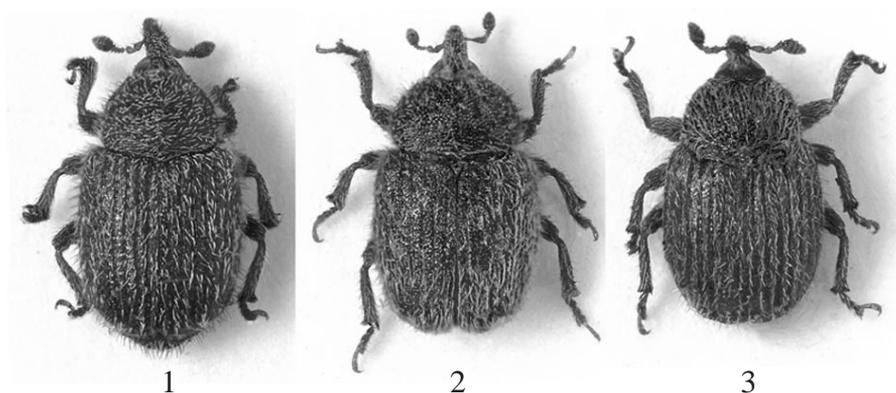
## Discussion and differential diagnosis

The discovery of three new species of *Rhinumiarus* has modified the original description of this genus only marginally and confirmed its systematic position and hypothesized relationships with the other genera (*Mecinus* Germar, 1821, *Gymnetron* Schönherr, 1825, *Rhinusa* Stephens, 1829, *Cleopomiarus* Pierce, 1919, and *Miarus* Schönherr, 1826) in the tribe Mecinini (CALDARA, 2001). Only some characters, mainly in the genitalia, open interesting phylogenetic remarks, which need comment:

1. Base of elytra distinctly concave and distinctly sinuate at level of interstria 5: this character is possessed by the *R. schneiderianus* group, and generally by *Rhinusa*, *Cleopomiarus* and *Miarus*, whereas in the *R. lyali* group and other Mecinini the base of the elytra is regularly convex. Therefore the elytra sinuate at base might be another apomorphic condition common to the lineage *Rhinusa* + *Rhinumiarus* + *Cleopomiarus* + *Miarus* previously hypothesized (CALDARA, 2001) with a reversal in the *R. lyali* group.

2. Internal sac of the median lobe of the aedeagus with subtriangular, moderately elongate, thin, dorsal median sclerite in apical half: this character, which is possessed by both species of the *R. lyali* group, was considered apomorphic in the lineage *Rhinumiarus* + *Cleopomiarus* + *Miarus* (CALDARA, 2001), supposing a reversal in *Cleopomiarus* where this sclerite lacks. However, also the species of the *R. schneiderianus* group do not possess this character. Therefore one may also suppose an independent rising (parallelism) of this character in the *R. lyali* group and *Miarus*.

3. Internal sac of the median lobe with small sclerite posteriorly to the sclerotized portion of the ejaculatory duct: this structure, which is possessed only by the species of the *R. schneiderianus* group, might be similar to that observed in



Figs. 1-3: *Rhinumiarus lyali* Caldara, 2001 (1); *R. obrienorum* n. sp. (2); *R. karasyovi* n. sp. (3). Not in scale.

some *Cleopomiarus*. If so, one could hypothesize that a reversal happened in the *R. lyali* group and *Miarus*.

4. Shape of the spermatheca: the different and unusual shape of the spermatheca is one of the most distinctive characters, which permits to differentiate the two groups of *Rhinumiarus*. However, whereas the spermatheca of the *R. lyali* group shows no similarities with others in Mecinini, that of the *R. schneiderianus* group seems apparently more related to that of other genera such as *Cleopomiarus* and *Miarus* (CALDARA, 2001); consequently, one can hypothesize that the shape of this latter spermatheca represents the plesiomorphic condition in *Rhinumiarus*.

#### Distribution

Eastern South America.

#### *Rhinumiarus lyali* group

##### Autapomorphies

Prosternum with anterior margin strongly emarginate medially, with moderately deep median sulcus; outer margin of ventral face of tibiae at apex distinctly directed outwards; spermatheca with body nearly of same width from base to apex, with small sclerotized portion near point of origin of spermathecal gland (Figs. 33 and 34).

To this group belong *R. lyali* Caldara and *R. obrienorum* sp. n.

#### *Rhinumiarus obrienorum* sp. n. (Figs. 2, 6-7, 10-11, 17, 24-25, 30, 34)

##### Type locality

Argentine, Formosa, Tatape environs.

##### Type material

Holotype: male, Argentina, For., 32 km. SW Tatape, 1-25-1989, CW&L. O'Brien & G. Wibmer / C.W. O'Brien Collection" (CWOB). Paratypes: 1 male and 1 female, same data as holotype (RCCM); 1 female, Argentina, For., 47 km. NW Formosa, 1-27-1989 / CW&L. O'Brien & G. Wibmer / C.W. O'Brien Collection (CWOB); 1 female, Argentina, Cha., 2 km. N. Jcn. to I. Cerrito, 1-24-1989 / CW&L.

O'Brien & G. Wibmer / C.W. O'Brien Collection (CWOB); 1 female, Argentina, Corr., Laguna Brava, 7 km. E. Corrientes, Hwy. 5, Jan. 18, 1989 / beaten *Cyperus giganteus*, C.W. O'Brien & G. Wibmer (CWOB); 1 female, Argentine: Villa Ana, 16-31.x.-1-7.xi.1933. K.J. Hayward. B.M. 1934-519 (BMNH).

#### Description

Male (holotype). Length of pronotum and elytra 2.0 mm.

Body short, oval, completely reddish, covered with moderately dense seta-like whitish scales.

Rostrum (Figs. 6 and 10) short, 0.60X as long as pronotum, subconical, in lateral view straight, weakly narrowed from base to half, more evidently and slightly more abruptly narrowed, especially along dorsal margin, in apical half; in dorsal view with sides gradually convergent from base to apex, with sculpture composed of punctures and longitudinal striae, one of which wider and clearly visible along midline at middle third, with recumbent to suberect scales in basal half. Frons slightly narrower than rostrum at base. Eyes nearly flat. Antennae inserted just behind middle of rostrum; scape short, 3X as long as wide, funicle with segment 1 distinctly more robust and 2.5X longer than segment 2, segments 2-5 transverse and equal in width, club globose, short, oval.

Pronotum distinctly transverse, 1.31X as wide as long, with sides moderately rounded, widest at middle, weakly convex on disc; densely punctate, intervals between punctures smooth and shining and clearly visible between subrecumbent to erect scales. Prosternum with anterior margin strongly and acutely emarginate medially, with moderately deep median sulcus.

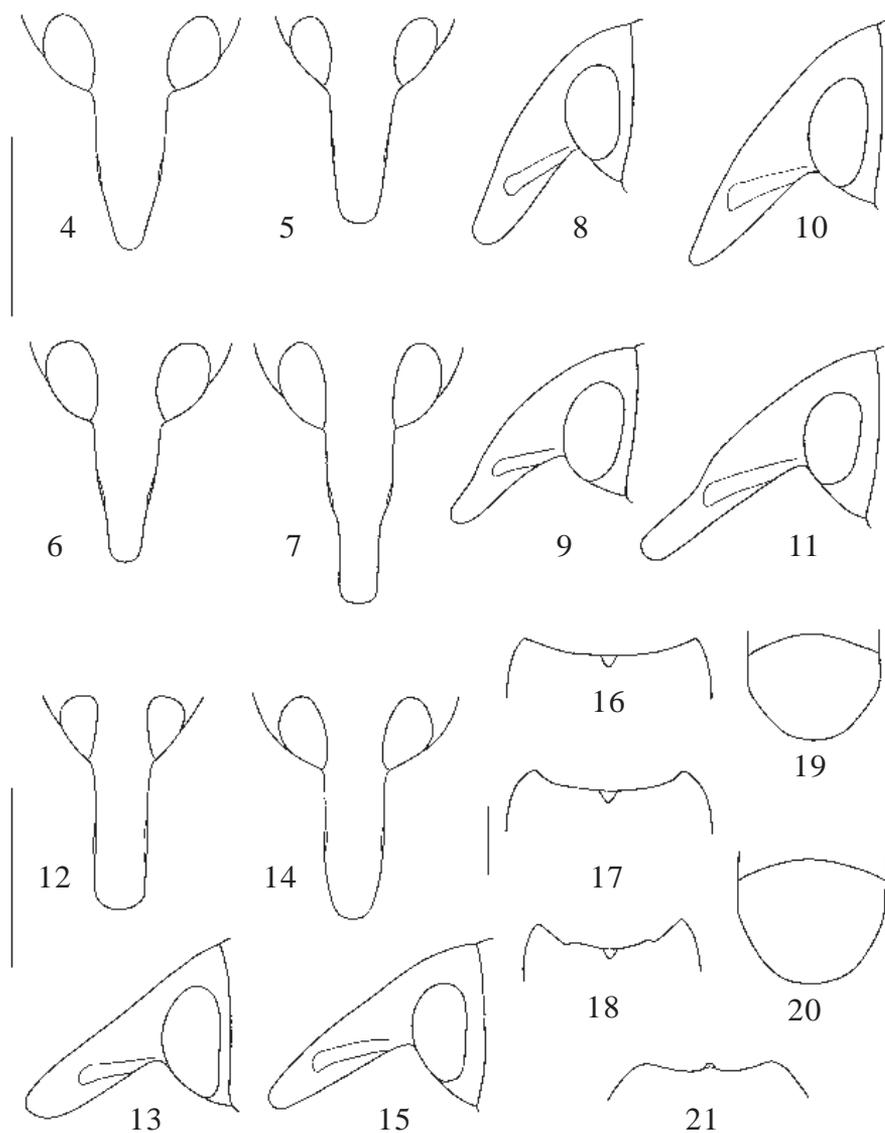
Elytra short, subquadrate, 1.15X as long as wide, 1.35X as wide as pronotum; sides weakly rounded, widest at middle; base weakly concave, weakly sinuate at level of interstria 5 (Fig. 17); nearly flattened on disc, interstriae clearly visible between subrecumbent to erect scales, which are arranged in 2-3 irregular rows on each interstria; striae clearly visible, as wide as one third of interstria, with scarcely evident scales smaller than those of interstriae.

Legs short; femora subclavate; tibiae short, gradually widening from base to apex, ventrally with outer margin distinctly directed outwards at apex, protibiae dorsally with lateral margin obtusely restricted at apex; unci moderately robust, that of metatibiae smaller than others; tarsi short, segment 1 1.5X longer than wide, segment 2 1.2X longer than wide, segment 3 bilobed, distinctly wider than segment 2, claw segment slightly shorter than segments 1-3 together.

Metasternum moderately concave along middle. Abdomen moderately convex, with punctures moderately dense and moderately regular, intervals between punctures partly wider than width of punctures and well visible between subrecumbent to suberect scales; ventrites 1 and 2 medially nearly flat; ventrites 1 and 2 2.8X longer than ventrites 3 and 4, posterior margin of ventrite 5 subrectilinear. Pygidium distinctly convex.

Median lobe (Figs. 24-25) moderately elongate, weakly narrowing from base to apex; internal sac armature composed of subtriangular, moderately elongate, thin, dorsal median sclerite in apical half and spicules.

Female (paratype). As male except rostrum very slightly longer (Figs. 7 and 11), 0.67X as long as pronotum, and in dorsal view more abruptly restricted at antennal insertion, with parallel sides from antennal insertion to apex. Spermatheca with two small sclerites near point of origin of spermathecal gland (Fig. 34). Spiculum ventrale with apical portion very weakly and uniformly sclerotized and with apodeme robust and moderately elongate (Fig. 30).



Figs. 4-21: Rostrum in dorsal and lateral view of *Rhinumiarus lyali*, male (4 and 8) and female (5 and 9); *R. obrienorum*, male (6 and 10) and female (7 and 11); *R. schneiderianus*, male (12 and 13); *R. karasyovi*, male (14 and 15). Base of elytra of *R. lyali* (16); *R. obrienorum* (17); *R. karasyovi* (18). Male pygidium of *R. schneiderianus* (19); *R. karasyovi* (20). Posterior margin of ventrite 5 of *R. karasyovi* (21). Scales 0.5 mm.

**Variability.** In one specimen collected at the type locality the pronotum is weakly rounded at sides and widest at basal third, and the elytra are as wide as long. In two other paratypes the pronotum is moderately convex. Size range 1.7-2.3 mm.

**Discussion and differential diagnosis**

As above reported one specimen collected at Laguna Brava was collected on *Cyperus giganteus*. Presently this is the only ecological datum available for *Rhinumiarus*, and it needs to be confirmed before discussion since no other species of Mecinini has been collected on Cyperaceae.

This species appears closely related to *R. lyali* (Figs. 4-5, 8-9, 16, 22-23, 33), with which it shares the basal margin of elytra weakly concave at level of interstria 5, the rostrum of male in dorsal view with sides gradually narrowing from its base to its apex, the prosternum with anterior margin strongly emarginate medially and with moderately deep median sulcus, the tibiae ventrally at apex distinctly directed outwards, the male pygidium moderately convex, the posterior margin of ventrite 5 regularly concave, and the spermatheca with a small sclerotized portion near the point of origin of the spermathecal gland, which however in *R. obrienorum* is formed by two small sclerites whereas in *R. lyali* is formed by a horse-shoe sclerite.

#### Distribution

Northern and Central Argentine (Provinces of Formosa, Chaco, Corrientes and Santa Fe).

#### Etymology

This taxon is named in honour of my friends and colleagues, Loise and Charles W. O'Brien, who collected specimens of the type series.

### *Rhinumiarus schneiderianus* group

#### Apomorphies

Base of elytra distinctly concave and distinctly sinuate at level of interstria 5 (Fig. 18); posterior margin of ventrite 5 with weak to moderate convexity medially bearing small ventral triangular prominence (Fig. 21); male pygidium flattened; internal sac of median lobe with small sclerite posteriorly to sclerotized portion of ejaculatory duct. *R. schneiderianus* sp. n. and *R. karasyovi* sp. n. belong to this group.

### *Rhinumiarus schneiderianus* sp. n. (Figs. 12-13, 19, 26-27, 31-32)

#### Type locality

Suriname.

#### Type material

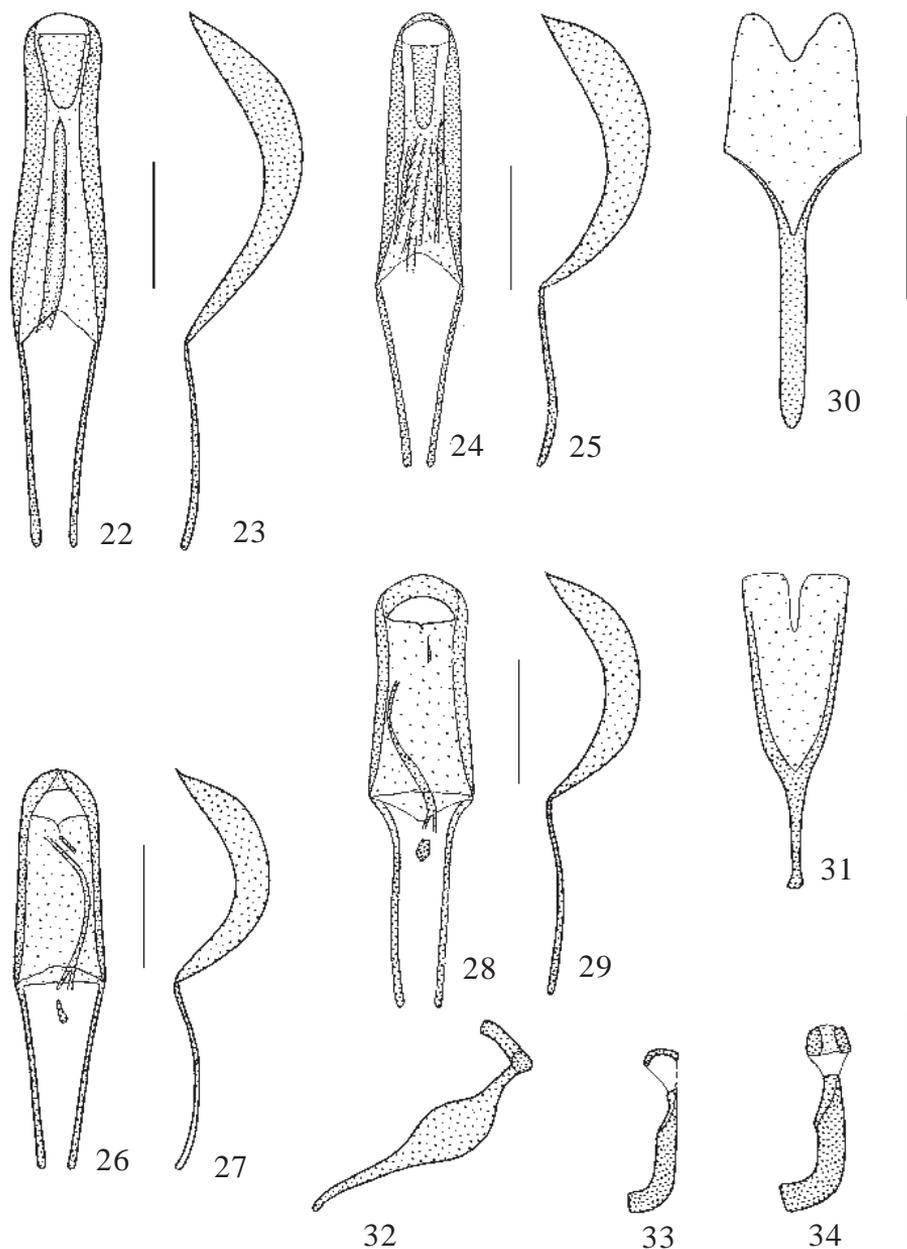
Holotype: male, Suriname (MLUH). Paratypes: 2 females, same data as holotype (MLUH, RCCM).

#### Description

Male (holotype). Length of pronotum and elytra 1.7 mm.

Body short, oval, reddish, basal 2/3 of rostrum, prothorax, metasternum and ventrites 1 and 2 blackish, covered with moderately dense setae-like light grey-brownish.

Rostrum (Figs. 12-13) short, 0.63X as long as pronotum, subcylindrical, in lateral view straight, very slightly narrowing from base to apex; in dorsal view with sides subparallel from base to apex; with sculpture composed of punctures and longitudinal striae, with recumbent to suberect scales in basal half. Frons slightly narrower than rostrum at base. Eyes flat. Antennae inserted just in front of middle of rostrum; scape short, 3X as long as wide, funicle with segment 1 distinctly more robust and 2.5X longer than segment 2, segments 2-5 transverse and equal in width, club globose, short, oval.



Figs. 22-34: Median lobe in dorsal and lateral view of *Rhinumiarus lyali* (22 and 23); *R. obrienorum* (24 and 25); *R. schneiderianus* (26 and 27); *R. karasyovi* (28 and 29). Spiculum ventrale of *R. obrienorum* (30) and *R. schneiderianus* (31). Spermatheca of *R. schneiderianus* (32); *R. lyali* (33); *R. obrienorum* (34). Scales 0.2 mm.

Pronotum distinctly transverse, 1.38X as wide as long, subconical, with sides moderately rounded, widest at base, weakly convex on disc; densely punctate, intervals between punctures smooth and shining and clearly visible between subrecumbent to erect scales. Prosternum with anterior margin moderately and acutely emarginate medially, with relatively weak median sulcus.

Elytra short, subquadrate, 1.12X as long as wide, 1.33X as wide as pronotum; sides weakly rounded, widest at middle; nearly flattened on disc, interstriae clearly visible between 2-3 irregular rows of subrecumbent scales and one median row of erect scales; striae clearly visible, as wide as two thirds of interstria, with scarcely evident scales smaller than those of interstriae.

Legs short; femora subclavate; tibiae moderately short, gradually widening from base to apex, ventrally at apex moderately directed outwards, protibiae dorsally at apex with lateral margin restricted nearly at right angle; unci moderately robust, that of metatibiae smaller than others; tarsi short, segment 1 1.5X longer than wide, segment 2 1.2X longer than wide, segment 3 bilobed, distinctly wider than segment 2, claw segment slightly shorter than segments 1-3 together.

Metasternum weakly concave along middle. Abdomen moderately convex, with punctures moderately dense and moderately regular, intervals between punctures partly wider than width of punctures and clearly visible between subrecumbent to suberect scales; ventrites 1 and 2 medially nearly flat; ventrites 1 and 2 2.4X longer than ventrites 3 and 4; posterior margin of ventrite 5 with weak convexity medially. Pygidium (fig. 19) short, nearly flat.

Median lobe (Figs. 26-27) moderately short, in dorsal view very slightly narrowing from base to apex.

Female. As male except rostrum very slightly longer, 0.68X as long as pronotum, antennal insertion at middle of rostrum, uncus of metatibiae lacking. Spermatheca with body enlarged in the basal portion, with ramus placed in an oblique plane with regards to body (Fig. 32). Spiculum ventrale with apical portion with narrow, divergent sclerotized arms and very weakly and uniformly sclerotized median portion, and with apodeme robust and short (Fig. 31).

Variability. Length range 1.5-1.7 mm. In one paratype also the elitra are blackish-brown and the pronotum is distinctly convex on the disc.

#### Discussion and differential diagnosis

This species appears very closely related to *R. karasyovi*, from which it can be distinguished by few but easy characters, first of all the shape of the rostrum.

#### Distribution

Suriname.

#### Etymology

I have the pleasure to name this species after Karla Schneider, who gave me the permission to study the Mecinini in the Germar's collection.

#### ***Rhinumiarus karasyovi* sp. n.** (Figs. 3, 14-15, 18, 20-21, 28-29)

##### Type locality

Brasil, Sao Paulo, Bocaina.

##### Type material

Holotype: male, Bocaina, Ostgr. Sao Paulo, Coll. Kessel (VKCM).

##### Description

Male (holotype). Length of pronotum and elytra 1.8 mm.

Body short, oval, reddish, basal two thirds of rostrum, prothorax, metasternum and ventrites 1 and 2 blackish, covered with moderately dense setae-like light grey-brownish (partly with weak gold reflection) scales.

Rostrum (Figs. 14-15) short, 0.61X as long as pronotum, subconical, in lateral view straight, gradually but distinctly narrowing from base to apex; in dorsal view with sides subparallel from base to antennal insertion, then gradually narrowing to apex; with sculpture composed of punctures and longitudinal striae, one of which wider, a little deeper and clearly visible along midline at middle third, with recumbent to suberect scales in basal half. Frons slightly narrower than rostrum at base. Eyes flat. Antennae inserted just behind middle of rostrum; scape short, 3X as long as wide, funicle with segment 1 distinctly more robust and 2.5X longer than segment 2, segments 2-5 transverse and equal in width, club globose, short, oval.

Pronotum distinctly transverse, 1.36X as wide as long, subconical, with sides weakly rounded, widest at base, nearly flat on disc; densely punctate, intervals between punctures smooth and shining and moderately visible between subrecumbent to erect scales. Prosternum with anterior margin moderately and acutely emarginate medially, with relatively weak median sulcus.

Elytra short, subquadrate, 1.09X as long as wide, 1.29X as wide as pronotum; sides weakly rounded, widest at middle; nearly flattened on disc; interstriae moderately visible between 3-5 irregular rows of subrecumbent scales and one median row of erect scales; striae clearly visible, as wide as two thirds of interstria, with scarcely evident scales smaller than those of interstriae.

Legs short; femora subclavate; tibiae moderately short, gradually widening from base to apex, ventrally at apex moderately directed outwards, protibiae dorsally at apex with lateral margin restricted nearly at right angle; unci moderately robust, that of metatibiae smaller than others; tarsi short, segment 1 1.5X longer than wide, segment 2 1.2X longer than wide, segment 3 bilobed, distinctly wider than segment 2, claw segment slightly shorter than segments 1-3 together.

Metasternum weakly concave along middle. Abdomen moderately convex, with punctures moderately dense and moderately regular, intervals between punctures partly wider than width of punctures and clearly visible between subrecumbent to suberect scales; ventrites 1 and 2 medially nearly flat; ventrites 1 and 2 2.6X longer than ventrites 3 and 4; posterior margin of ventrite 5 with moderate convexity medially. Pygidium (Fig. 20) elongate, nearly flat.

Median lobe (Figs. 28-29) moderately short, in dorsal view gradually narrowing in basal half, sinuate in apical half.

Female. Unknown.

#### Discussion and differential diagnosis

This species is closely related to *R. schneiderianus*, from which it can be distinguished by the cylindrical rostrum, the dense elytral vestiture and the shape of the median lobe. It would be very interesting to find the female of this species in order to study the relationships between its spermatheca and that of *R. schneiderianus* and to individuate possible apomorphic character states for the group in this structure.

#### Distribution

Southern Brasil.

#### Etymology

I have the pleasure to name this species after my friend and colleague Vladimir Karasyov, who sent to me the holotype in study.

## KEY TO THE SPECIES OF *RHINUMIARUS*

- 1 Base of elytra weakly concave and at most weakly sinuate at level of interstria 5 (Figs. 16 and 17); male pygidium convex; posterior margin of ventrite 5 regularly concave; prosternum with anterior margin strongly emarginate medially, with moderately deep median sulcus; tibiae ventrally at apex distinctly directed outwards ..... 2
- Base of elytra distinctly concave and distinctly sinuate at level of interstria 5 (Fig. 18); male pygidium flattened; posterior margin of ventrite 5 concave, with weak to moderate convexity medially bearing small ventral triangular prominence (Fig. 21); prosternum with anterior margin moderately emarginate medially, with relatively weak median sulcus; tibiae ventrally at apex moderately directed outwards ..... 3
- 2 Elytra at base not sinuate at level of interstria 5 (Fig. 16); tibiae ventrally with outer margin arcuately directed outwards at apex; rostrum of female in dorsal view with sides gradually narrowed from antennal insertion to apex (Fig. 5) .  
..... *R. lyali* Caldara
- Elytra at base weakly sinuate at level of interstria 5 (Fig. 17); tibiae ventrally with outer margin not arcuately directed outwards at apex; rostrum of female in dorsal view more abruptly restricted at antennal insertion, with parallel sides from antennal insertion to apex (Fig. 7) ..... *R. obrienorum* **sp. n.**
- 3 Rostrum of male in dorsal view with sides subparallel from base to apex (Fig. 12), in lateral view very slightly narrowing from base to apex (Fig. 13); interstriae clearly visible between 2-3 irregular rows of subrecumbent scales and one median row of erect scales; posterior margin of ventrite 5 with weak convexity medially; pygidium short (Fig. 19) ..... *R. schneiderianus* **sp. n.**
- Rostrum of male in dorsal view with sides subparallel from base to antennal insertion, then gradually narrowing to apex (Fig. 14), in lateral view moderately narrowing from base to apex (Fig. 15); interstriae moderately visible between 3-5 irregular rows of subrecumbent scales and one median row of erect scales; posterior margin of ventrite 5 with moderate convexity medially; pygidium elongate (Fig. 20) ..... *R. karasyovi* **sp. n.**

## ACKNOWLEDGMENTS

I would like to thank Vladimir Karasyov (Minsk), Christopher H. C. Lyal (London), Charles W. O'Brien (Tallahassee), and Karla Schneider (Halle) for sending material in study. I am also indebted to Valter Fogato (Milano) for the fine photographs which illustrate the text, and to Christopher Lyal for linguistic revision of the manuscript.

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