

## Two new species of *Metallactus* from Bolivia and Brazil (Coleoptera: Chrysomelidae: Cryptocephalinae)

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**Abstract.** *Metallactus sekerkai* sp. nov. and *M. quadriophthalmus* sp. nov. from Bolivia and Brazil, are described and figured. Both species belong to the first group of SUFFRIAN's (1866) classification. The alleged systematic significance of the prosternal process morphology is briefly discussed.

**Key words.** Coleoptera, Chrysomelidae, Cryptocephalinae, Pachybrachina, entomology, taxonomy, new species, Bolivia, Brazil, Neotropical Region

### Introduction

*Metallactus* Suffrian, 1866 is a problematic taxon as it was proposed on the basis of a few uncertain and variable characters. SUFFRIAN (1866), in his monograph dedicated to the Cryptocephalinae of the Neotropical Region, assigned 58 of the 188 new Pachybrachina species to *Metallactus*. However, in the diagnosis of *Metallactus*, Suffrian stated that he was not fully convinced of the suitability of his decision, and wrote:

'I can hardly say [...] that this genus is a natural entity, as when, for example, we face a real *Pachybrachis*. Rather, we are once again in front of a case in which the nature does not want to subdue itself to the schematism of our genera, therefore, even if you wanted to fit in these genera [*Pachybrachis* and *Griburius*] all the species that can be conveniently included on the basis of their external features, it would keep, however, something in these species that can not be attributed to either of the two genera, and that could still offer arguments to the supporters of the theory of multiplicative genera. But for the moment it seems to me that the best thing to do is to come to some conclusions [...] a review of the genera of this interesting family of leaf beetles can be reserved to a later, more experienced undertaking [translated from German]' (SUFFRIAN 1866).

A systematic analysis of the diagnostic characters of the genus *Metallactus* is being prepared by the author together with a critical review of Neotropical genera of Pachybrachina.

Recently, I had the opportunity to study an interesting material gathered in Bolivia by Lukáš Sekerka, which contained two new species whose descriptions are given below. Additional

specimens of one of the two taxa have been found in material on loan from collections of BMNH, FSCA, JWAT, TAMU, and ZSMC. For now, the two species have been assigned to *Metallactus* on the basis of overall appearance, particularly based on the lateral edge of elytra not deeply excised, the abdomen not exposed, and the elytral length greater than twice the length of the pronotum (CHAMORRO-LACAYO 2013).

## Material and methods

Examination, dissection, measurements and drawings were completed with the use of a stereo microscope with an ocular micrometer. Total length of each specimen was measured from the anterior margin of pronotum to the apex of elytra and is given for each species as range (smallest and largest specimen). Photos were composed by photo-montage with CombineZP Image Stacking Software (HADLEY 2010). Data for type specimens are cited verbatim and additional comments are given in square brackets.

Studied specimens are deposited in the following collections:

BMNH	Natural History Museum, London, United Kingdom;
DSCI	Davide Sassi collection, Castelmarte, Italy;
FSCA	Florida State Collection of Arthropods, Division of Plant Industry, Gainesville, Florida, USA;
JWAT	Jim Wappes collection, San Antonio, Texas, USA;
LSPC	Lukáš Sekerka collection, Prague, Czech Republic;
MNKM	Museo de Historia Natural 'Noel Kempff Mercado', Santa Cruz de la Sierra, Bolivia;
MSNM	Museo Civico di Storia Naturale, Milano, Italy;
NMPC	National Museum, Prague, Czech Republic;
TAMU	Texas A & M University, College Station, Texas, USA;
USNM	National Museum of Natural History, Washington, D.C., USA;
ZSMC	Zoologische Staatssammlung, München, Germany.

## Taxonomy

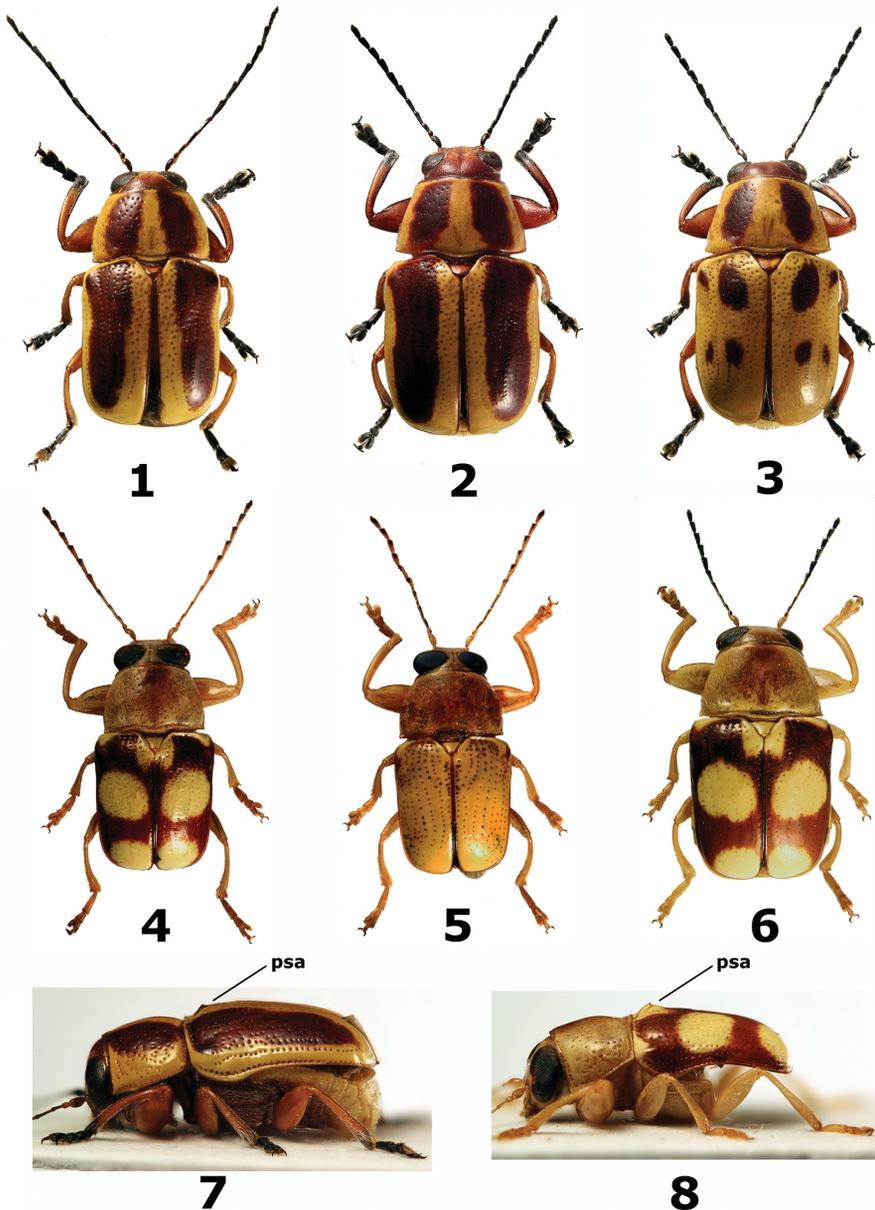
### *Metallactus sekerkai* sp. nov.

(Figs 1–3, 7, 9–11, 15–16, 18–19, 22)

**Type locality.** Bolivia, Department of Santa Cruz, Florida Province, Refugio Los Volcanes (5 km NW of Bermejo), 18°06.3'S, 63°26.0'W, 1050–1150 m a.s.l.

**Type material.** HOLOTYPE: ♂, 'Bolivia Santa Cruz dpt. Florida pr. 1050-1150 m Refugio Los Volcanes 18°06.3'S, 63°26.0'W beating of vegetation L. Sekerka lgt. 10.-14.xii.2011' [white label, printed] // '*Metallactus sekerkai* sp. nov. Holotypus D. Sassi des.' [red, printed] (NMPC). PARATYPES: 2 ♂♂ 2 ♀♀, same data as the holotype (NMPC, LSPC, DSCI); 1 ♂ 1 ♀, 'Bolivia, Santa Cruz Above Achira Rd to Floripondo 1900 m 10 December, 2011' [white label, printed] // '18°09' S 63°47' W Bonaso, Morris & Wappes' [white, printed] (JWAT, MNKM). All paratypes provided with additional label: '*Metallactus sekerkai* sp. nov. Paratypus D. Sassi des.' [red, printed].

**Description of male.** Habitus in Figs 1–3, 7. Body length: 5.50–5.75 mm; interocular distance equals to 9.2 % of total body length (measures are average values taken on three specimens). Body cylindrical, slender, elongate. Head, yellow, with reddish patches on vertex, insertion of antennae and lower part of clypeus; vertex sparsely and minutely punctate; interocular median longitudinal line very distinctly impressed; frontoclypeal suture sometimes marked by two distinct, oblique rows of punctures, frontoclypeal punctures coarse and generally gathered along inner ocular rim; ocular lines long and coarsely punctate; eyes moderately prominent



Figs 1–8. 1–3, 7 – *Metallactus sekerkai* sp. nov.: 1 – holotype; 2 – female, typical chromatic form; 3 – female, chromatic variation; 7 – holotype, lateral view. 4–6, 8 – *M. quadriophthalmus* sp. nov.: 4 – holotype; 5 – male, chromatic variation; 6 – female; 8 – holotype, lateral view. Abbreviation: psa = postscutellar area. All the figured specimens come from their respective type localities. Specimens are not figured to the same scale.

when observed from above; antennae black, only apex of antennomeres I–IV yellowish; length ratio of antennomeres: 100 : 60 : 100 : 140 : 170 : 180 : 180 : 180 : 170 : 170 : 170. Pronotum yellow with two longitudinal reddish bands, slightly angulate on inner rim, extending from apical to basal margin; sides only slightly arcuate and thus lateral margins completely visible from above; punctuation coarse and sparse, almost absent on median area of disk; barely perceptible transverse impression along each sides of median line, close to posterior margin.

Scutellum dark yellow to red towards apex, quite stout, sides barely convergent so the surface is almost equal in width, apex regularly rounded.

Elytra parallel-sided, distinctly wider than pronotum, yellow, two large longitudinal reddish bands extended from base toward apex, in continuity with those on pronotum, bands are slightly concave on outer sides, tapered posteriorly and not reaching apex; postscutellar area regularly even, not forming tubercle (Fig. 7), elytral punctuation fairly impressed, punctures similar in size and shape to that of pronotum, arranged in quite regular rows, slightly less impressed towards apex, rows barely recognizable on periscutellar area and behind humeri; interstices flat and lustrous.

Legs normally shaped, reddish, apex of tibiae and tarsi black; tibiae sparsely covered with whitish setae; tarsi not particularly enlarged. Ventrites reddish with large marginal band on abdominal ventrites and pygidium yellow; whole ventrites and pygidium with sparse, whitish setae. Prosternal process (Fig. 16) broad, surface strongly and densely punctate, covered by long and whitish setae, deeply impressed in middle, with sides abruptly rising, and strong acute denticle in middle of apical margin. Fifth abdominal ventrite with shallow but distinct bare oval and lustrous depression, posterior margin fairly notched.

Median lobe of aedeagus (Figs 9–11) widened towards apex, marginal apex evenly curved, setose on sides, devoid of apical tooth, ventral surface with couple of barely perceptible shallow depressions on apical half, delimiting faint and short median carina; ostium basally delimited by couple of slender frenula, separated apart by membranous area; in lateral view apical half bulging and apex fairly bent ventrally.

**Females** differ from males in stouter body, body length 6.50–6.75 mm, interocular distance equals to 12.7 % of total body length (measures are average values taken on two specimens), shorter antennae, prosternal process more robust and wide, its median tooth more prominent beyond posterior margin (Fig. 15). Anal ventrite with small, deep, slightly transverse pit, reaching posterior margin of anal ventrite.

Rectal apparatus (Figs 18–19) with two dorsal and one ventral sclerites; dorsal sclerites narrow, tapered towards median line, apodemes quite large but hyaline, bent upwards and leaning against rectum, thus barely visible from above, transverse connection across dorsal fold sinuate in middle; ventral sclerite large, ribbon-like, slightly tapered on sides, more pigmented in middle, with rounded apodemes wider than rectum; lateral fold barely pigmented, devoid of sclerotizations.

Spermatheca (Fig. 22) U-shaped, slightly pigmented; basal part not swollen; base not reflexed, gland and duct insertions not sclerotized; ductus long, slender and coiled, its insertion on bursa copulatrix slightly enlarged and clearly pigmented.

**Differential diagnosis.** The new taxon in terms of size and shape of the body approaches some species of the first group of SUFFRIAN'S (1866) system, and in particular *M. minax* Suffrian, 1866 is similar. However, the latter species is fairly differently coloured and has weaker pronotal and elytral punctation. The median lobe of the aedeagus is also completely different in *M. minax*, having a massive bulge on its ventral side. With regards to the chromatic pattern, some specimens resemble *M. abbreviatulus* Suffrian, 1866, which is stockier, with pronotal punctation almost obliterated on the shiny surface and elytral punctures finer and denser. *Metallactus abbreviatulus* also differs in the shape of the prosternal process, and absence of the denticle in the middle of the apical margin. *Metallactus albivittis* Suffrian, 1866 has a similar colouration too, but is slender and more coarsely punctate, especially on the pronotum and the frons. Besides, the interocular distance is greater in males of *M. albivittis*.

**Etymology.** The species is dedicated to Lukáš Sekerka, specialist in Coleoptera, particularly Chrysomelidae, and collector of most of the specimens.

**Biology.** The type locality, situated on the slopes of the so-called 'Elbow of the Andes', is a unique place where several ecoregions meet and result in high biological diversity. According to recent collecting efforts, the locality contains numerous undescribed leaf beetles whose distribution seems to be limited; a few of them have been recently described, along with detailed characterization of the locality (SEKERKA & WINDSOR 2012, SEKERKA et al. 2014). All specimens from Refugio Los Volcanes were collected by beating of flowers of a small tree, supposedly belonging to the Euphorbiaceae, growing on the edge of evergreen premontane forest situated at the bottom of valley near the river at 1050 m a.s.l. (L. Sekerka, pers. comm.). The two specimens from Achira were collected by beating of vegetation along the road. The locality is situated approximately 20 km (air) west of Refugio los Volcanes and is formed by patches of forest scattered among pastures and crop fields.

**Distribution.** Bolivia (Santa Cruz).

**Taxonomic remarks.** The shape of the prosternal process (Figs 15–16), posteriorly terminating in a well marked tooth, is unusual in the genus *Metallactus* and is reminiscent of some species currently included in the genera *Sternoglossus* Suffrian, 1866\* and *Mastacanthus* Suffrian, 1852. SUFFRIAN (1852, 1866) attributed great importance to the shape of the prosternum in establishing new genera in Neotropical Pachybrachina. In fact, the division into groups on the basis of this criterion has never been tackled by any subsequent authors (e.g. CHAPUIS 1874, JACOBY 1888–1892, RILEY et al. 2002, CHAMORRO-LACAYO & KONSTANTINOV 2004, CHAMORRO-LACAYO 2013, BARNEY et al. 2013). After comparing this character among several dozen species of Pachybrachina from the Neotropical Region, I noticed a high degree of variability in the shape of the prosternum. Presently, I do not think that the sharing alone of single similarities in the morphology of the prosternal process could yield a correct taxonomical setting based on solid phylogenetic criteria.

\* *Sternoglossus* should be considered the correct spelling of the name (*glossa* means tongue in Ancient Greek). Even though SUFFRIAN (1866) published the description of this genus spelled as *Sternoglossus*, it is clear that he wanted the spelling of the name to be differently written, as evidenced by the index of the same work. Therefore, the first writing in the text should be regarded as a *lapsus calami*, i. e. a spelling that must be corrected (ICZN 1999: Article 32.5).

***Metallactus quadriophthalmus* sp. nov.**

(Figs 4–6, 8, 12–14, 17, 20–21, 23)

**Type locality.** Bolivia, Department of Santa Cruz, Andrés Ibañez Province, Reserva Privada Potrerillo del Guenda (10 km (air) NW of Teverinto), 17°40.26'S, 63°27.45'W, 370 m a.s.l.

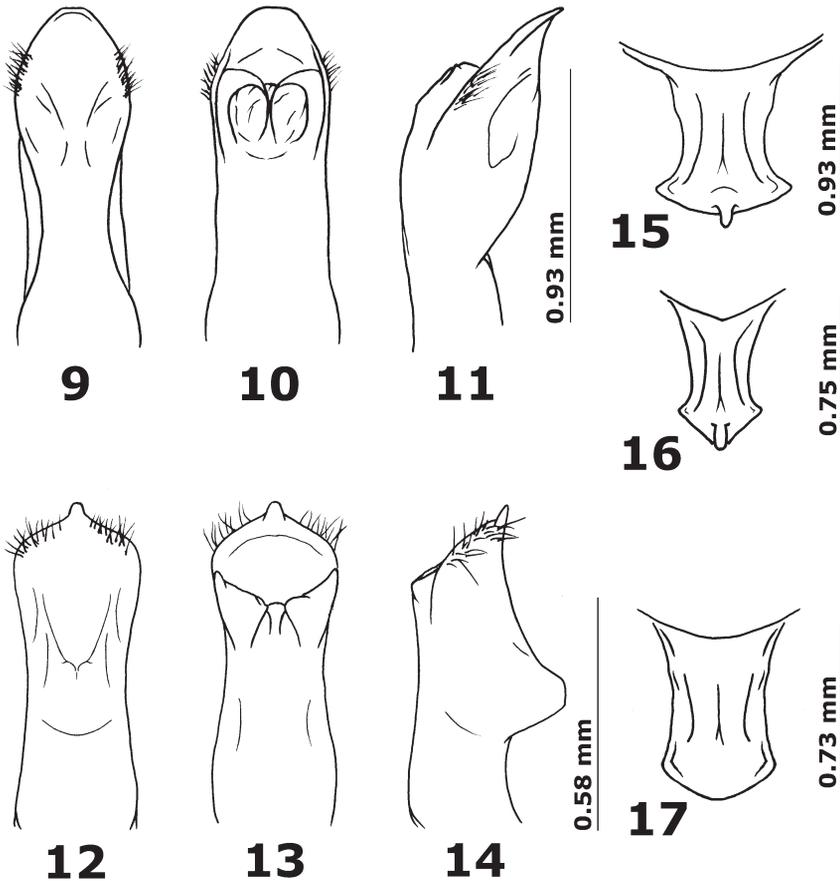
**Type material.** HOLOTYPE: ♂, 'Bolivia Santa Cruz dpt. Andrés Ibañez pr. 18.-25.xi.2011 Potrerillo del Guenda 17°40.26'S, 63°27.45'W 370m at Light L. Sekerka & D. Windsor lgt.' [white label, printed] // '*Metallactus quadriophthalmus* sp. nov. Holotypus D. Sassi des.' [red, printed] (NMPC). PARATYPES (51 specimens): 13 ♂♂ 18 ♀♀, same data of the holotype (NMPC, LSPC, DSCI, MNKM, MSNM, USNM); 1 ♂, 1 ♀ 'Bolivia, Santa Cruz Andres Ibanez Prov. Potrerillo del Guenda 6-8 December, 2011' [white label, printed] // '17°40 S 63°20 W Wapes, Lingafelter Morris & Woodley' [white, printed] (JWAT, MNKM); 1 ♂, 'Bolivia Santa Cruz Potrerillos del Guendà 40km Santa Cruz 17°40.3' S 63°27.4' W 22-xi-12-xii-2005 coll. B.K. Dozier' [white label, printed] (FSCA); 1 ♂ 1 ♀, 'Bolivia Santa Cruz Reserva Privada Potrerillos de Guendà 17°40.26' S 63°27.44' W 400m 9/28-xi 2006 B.K. Dozier coll.' [white label, printed] (FSCA); 1 ♂, 'Bolivia Santa Cruz Amboro National Park Los Volcanes c. 1000m S 18°06' W 63°36' 20/xi-12/xii/2004' [white label, printed] // 'MV light Sheet Barclay, M.V.L. & Mendel, H. BMNH(E) 2004-280' [white label, printed] (BMNH); 1 ♀, 'Bolivia Santa Cruz dpt., Andrés Ibañez pr.: Los Jubas Hacienda „Peta“ 10.xii.2011 17°52.31'S, 62°51.60'W 370m on vegetation D. Windsor & M. Perez lgt.' [white label, printed] (NMPC); 1 ♀, 'Bolivia Santa Cruz dpt. Ñuflo de Chávez pr. 28.xi-5.xii.2011 Concepción-FCBC Alta Vista 16°08.1'S, 61°56.1'W 425m beating of vegetation L. Sekerka & D. Windsor lgt.' [white label, printed] (NMPC); 1 ♀, 'Bolivia Santa Cruz 4-6k sse Buena Vista F&f Hotel Oct 22-31 2002 Wappes & Morris' [white label, printed] (TAMU); 5 ♀♀, 'Bolivia Santa Cruz 3.7km sse Buena Vista Hotel Flora & Fauna 405m 5-15-xi-2001 17°29.949' S 63°33.152' W M.C.Thomas & B.K. Dozier tropical transition forest' [white label, printed] (FSCA); 1 ♂, 'Bolivia Santa Cruz, 3.7 km sse Buena Vista Hotel Flora & Fauna, 430m.' [white label, printed] // B.K.Dozier collector 14-28-x-2000' [white label, printed] (FSCA); 1 ♀, 'Bolivia Santa Cruz 500m 12.V.1955 Zischka' [white label, printed] (ZSM); 1 ♂ 1 ♀, 'Bolivia Santa Cruz 500m 5.XII.1960 Zischka' [white label, printed] (ZSM); 2 ♂♂ 1 ♀, 'Brazil Rondônia 62 km SW Ariquemes nr Fzda Rancho Grande 8-20-XI-1994 JE Eger Black Light Trap' [white label, printed] (FSCA). All paratypes provided with additional label: '*Metallactus quadriophthalmus* sp. nov. Paratypus D. Sassi des.' [red, printed].

**Description of male.** Habitus in Figs 4–6, 8. Body length: 3.85–4.25 mm; interocular distance:  $0.24 \pm 0.02$  mm (5.9 % of total body length). Body cylindrical, slender, elongate. Head entirely pale yellow, only mandibles distinctly blackish on apical half. Vertex impunctate with dull surface; longitudinal weakly impressed and faintly pigmented line extended along frons and upper part of clypeus; clypeal area not delimited, i.e. frontoclypeal suture blurred; frontoclypeal surface fairly lustrous, with punctures arranged in two irregular and divergent rows extended from superior ocular margin to antennal insertions, further transverse arcuate row of punctures within antennal insertions. Ocular lines very distinct, long, punctate, extended down to ocular notch. Eyes bulging, in dorsal view distinctly protruding along sides of head; antennae yellow, apex of antennomeres brownish, length ratio of antennomeres: 100 : 50 : 90 : 100 : 140 : 130 : 120 : 120 : 90 : 90 : 100.

Pronotum yellow with barely visible reddish patch along median line; sides regularly arcuate, punctuation on disk coarse, sparse, slightly denser along sides; lateral margins narrow, anterior half not or barely visible from above, anterior and posterior angles slightly protruding; faint shallow impression along posterior margin not extended beyond its inner half.

Scutellum yellow, raised, slender, arcuate laterally, with truncated apex.

Elytra almost parallel-sided, distinctly wider than pronotum, reddish, with two rounded spots on apex and in middle of disk, small elliptical periscutellar patch and subtriangular spot partly covering humera light yellow; sides slightly converging towards apex; postscutellar

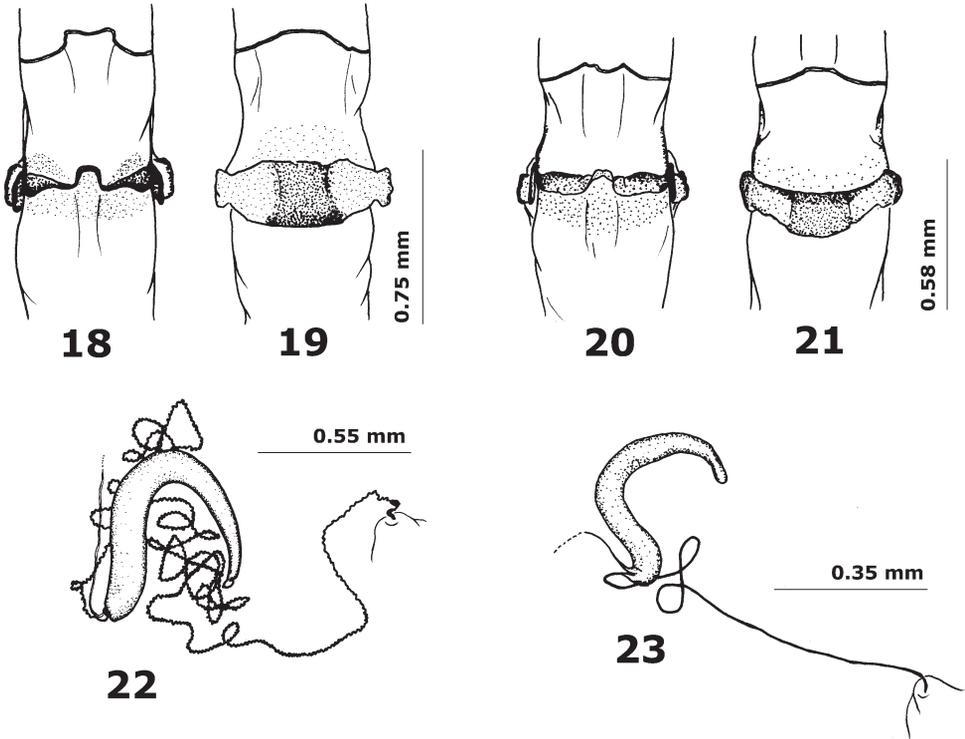


Figs 9–17. 9–11, 15–16 – *Metallactus sekerkai* sp. nov. 12–14, 17 – *M. quadriophthalmus* sp. nov. 9–14 – apex of median lobe of aedeagus (9, 12 – ventral, 10, 13 – dorsal, 11, 14 – lateral views); 15–17 – prosternal process: (15 – female; 16–17 – male).

area slightly but perceptibly raised in shape of small tubercle (Fig. 8), punctation similar in size and shape to that of pronotum, arranged in quite regular rows, slightly less impressed towards apex; interstices flat.

Legs normally shaped, yellow, only apical half of unguicles bright black; tibiae sparsely covered with whitish setae; tarsi not particularly enlarged.

Ventrites and pygidium yellow with sparse, whitish setae. Prosternal process (Fig. 17) broad, 1.5–1.6 times longer than wide, surface densely and coarsely punctate and pubescent, strongly impressed in middle, with lateral margins abruptly raised and slightly arcuate, posterior margin fairly raised and regularly rounded. Fifth abdominal ventrite with faint, moderately transverse impression, posterior margin not notched.



Figs 18–23. 18–19, 22 – *Metallactus sekerkai* sp. nov. 20–21, 23 – *M. quadriophthalmus* sp. nov. 18–21 – female rectal apparatus (18, 20 – dorsal, 19, 21 – ventral views); 22–23 – spermatheca.

Male genitalia (Figs 12–14): median lobe with maximum width in the distal half, apex triangular-shaped, setose on sides, with strong, clear-cut apical tooth; ventral surface raised in stout, strongly protruding swelling, faintly bilobate on apex; ostium transverse, basally delimited by couple of frenula separated apart by well sclerotized median lamina; protruding swelling particularly apparent in lateral view and apex almost straight.

**Females** differ from males in: stouter body, body length 4.10–5.13 mm, interocular distance:  $0.59 \pm 0.04$  mm (12.6 % of total body length), prosternal process broader than in males, 1.30–1.40 times longer than wide, parallel-sided, surface slightly impressed along sides and with lateral margins moderately raised, posterior margin regularly rounded. Antennae shorter and almost totally black. Anal ventrite with deep circular pit extending across whole length of ventrite.

Rectal apparatus (Figs 20–21) with two dorsal and one ventral sclerites; dorsal sclerites narrow, subrectangular, more pigmented on its anterior part, apodemes large, hyaline, bent

upwards and leaning against rectum, thus barely visible in dorsal view; transverse connection across dorsal fold sinuate in middle; ventral sclerite ribbon-like, arcuate with concave anterior margin, with rounded apodemes wider than rectum and fairly more pigmented on apex; lateral fold very narrowly pigmented, devoid of sclerotizations.

Spermatheca (Fig. 23) sickle-shaped, slightly pigmented; basal part not swollen; base slightly bent backwards, with gland and ductus insertions not pigmented but enlarged and well sclerotized, thus that base of spermatheca seems bifurcated; ductus quite short, slender and not coiled, its insertion on bursa copulatrix neither enlarged nor pigmented.

**Variability.** Specimens from Rondônia show slight differences compared to those from Bolivia: 1) punctures on frontoclypeal area are denser and more impressed; 2) median elytral yellow spot is more transverse; 3) aedeagus is more parallel-sided; 4) the apical aedeagal denticle less pronounced and distinct; 5) aedeagal ventral bump more deeply sulcate.

**Differential diagnosis.** In size and body shape the new taxon resembles some species of the first group of SUFFRIAN'S (1866) system, in particular *M. nobilis* Suffrian, 1866, from which it distinctly differs by completely different colouration, the latter being rufous with four black elytral spots. The new species is also somewhat similar to *M. semirufus* Suffrian, 1866 regarding to the colour pattern. The latter is considerably smaller in size (3.20 mm in total length, compared to 4.10–4.70 mm of the new species). The new species also shows a remarkable chromatic dimorphism (Figs 4–6), existing in both sexes. Five males, out of 22, and four females (out of 30), have the dorsal surface entirely yellow ('pale form') without reddish pattern. The perceivable raised area on the elytra, situated posteriad to the scutellum and shaped in the form of tubercle (Fig. 8), is present also in other species currently attributed to *Metallactus*, such as *M. peruanus* Jacoby, 1907. It is unclear, at present, if this character has phylogenetic significance.

**Etymology.** Named after the chromatic pattern of the 'typical morph' characterized by four rounded light spots on the elytra. The name is adjective.

**Biology.** Nearly all specimens from Potrerillo del Guenda were collected at lights (usually until 10 PM) during the early rainy season. Despite extensive collecting efforts in the type locality, the host plant associations of the new species remains unknown. The forest at the type locality and also at Hotel Flora & Fauna near Buena Vista is lowland semideciduous chiquitano forest (L. Sekerka, pers. comm.).

**Distribution.** Bolivia (Santa Cruz) and Brazil (Rondônia).

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