

## Net-winged beetles of the genus *Calolycus* Gorham, 1881, with notes on *Plateros* Bourgeois, 1882 (Coleoptera: Lycidae)

### Жуки-краснокрылы рода *Calolycus* Gorham, 1881, с замечаниями по *Plateros* Bourgeois, 1882 (Coleoptera: Lycidae)

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КЛЮЧЕВЫЕ СЛОВА: Coleoptera, Lycidae, Platerodini, *Calolycus*, *Plateros*, новые виды, таксономия, Неотропика.

ABSTRACT. Five new species of platerodine net-winged beetles are described from Costa Rica: *Calolycus solisi*, *C. montiverdensis*, *C. puntarenensis*, *Plateros calanticatoides* and *P. discolor* **spp.n.** The genus *Calolycus* is redescribed and its taxonomic position is discussed. A key to the five known *Calolycus* species is provided.

РЕЗЮМЕ. Описывается пять новых видов жуков-краснокрылов трибы Platerodini из Коста-Рики: *Calolycus solisi*, *C. montiverdensis*, *C. puntarenensis*, *Plateros calanticatoides* и *P. discolor* **spp.n.** Род *Calolycus* переописывается, и обсуждается его таксономическое положение. Составлена таблица для определения всех пяти известных видов *Calolycus*.

### Introduction

The genus *Calolycus* was created by Gorham [1881] for a single species from Mexico, *C. calanticatus* Gorham, 1881. The second species, from Panama, was added to the genus by Pic [1923]. In a modern treatise of Platerodinae (the status of this taxon was consequently lowered to the tribal level [Kazantsev, 2005]) *Calolycus* was among the few genera that retained their validity, being included in the subfamily incertae sedis [Bocák-ová, 2001].

The recent collecting in Costa Rica and an opportunity to examine the rich lycid collections of Instituto Nacional de Biodiversidad (Heredia) allow adding three more species to *Calolycus*, as well as redefining the diagnosis of the genus. Two new Costa Rica *Plateros* Bourgeois, 1878 species, which resemble *Calolycus* in appearance, are also described.

The following abbreviations are used in the paper:  
ICM — Insect Centre, Moscow;

INBio — Instituto Nacional de Biodiversidad, Heredia, Costa Rica.

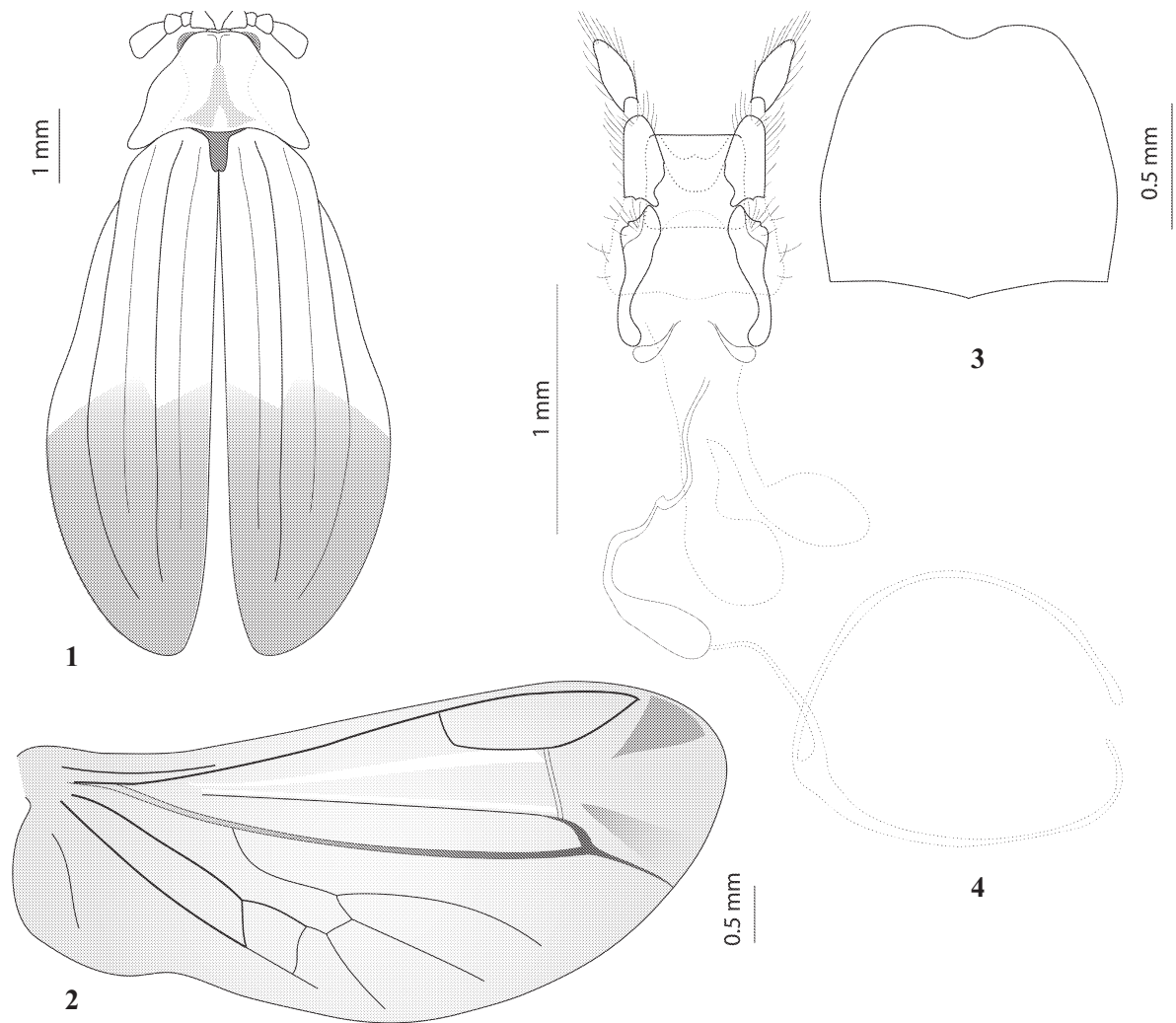
### Descriptions

#### *Calolycus* Gorham, 1881

Type species: *Calolycus calanticatus* Gorham, 1881

REDESCRIPTION. **Male.** Elongate, flattened (Fig. 1). Head transverse, narrowed behind eyes. Fastigium right-angled. Labrum transverse, sclerotized, lying anteriorly of epistoma. Eyes relatively small, spherical. Mandibles small, strongly and evenly curved inward. Maxillary palps robust, 4-segmented, with ultimate palpomere dilated distally. Prementum short, undivided; labial palps small, 3-segmented, ultimate palpomere large, dilated distally; mentum short. Gula absent, genal sclerites connected by narrow process. Antennal prominence inconspicuous, antennal sockets separated by minute lamina. Antenna 11-segmented, moderately long, with antennomeres 3–11 conspicuously flattened, but almost parallel-sided; antennomere 3 not considerably longer than antennomere 2 (Fig. 1); antennal pubescence short and decumbent complemented with scarce erect hairs on antennomeres 3–11.

Pronotum relatively large, transverse, with fine median carina in anterior third and inconspicuous median furrow in posterior half; posterior angles conspicuously produced obliquely backwards (Fig. 1). Prosternum short, triangular, connected to hypomeron by sternopleural apophyses. Mesothoracic spiracles well sclerotized, protruding laterally beyond coxal limits. Mesoventrite short, connected to mesepisternum by sternopleural apophyses; mesepimeron conspicuously shorter and narrower than mesepisternum. Mesonotum with scutellum not attaining to anterior margin; scutellum with narrowed distally postnotal plate. Elytra wide, widening posteriorly, with four primary costae, costae 2 and 4 considerably elevated (Fig. 1); interstices 1–4 with double rows of cells, interstice 4 with irregular reticulation; elytral pubescence short and uniform. Metanotum square, with convex scuto-scutellar ridge; allocristae conspicuous, starting slightly posteriorly of the middle of scutum; scutellum with median suture, postnotal plate with incomplete median suture. Metaventrite with acute posterior angles; discrimen (metasternal suture) incomplete. Metendosternite small, with short lateral arms and transverse suture. Metathoracic wing with long anal cell; wedge cell present; cuba brace present; Cu veins connected to M (Fig. 2).



Figs. 1–4. Details of *Calolycus solisi* sp.n., paratype, female: 1 — body outline, 2 — hind wing; 3 — ultimate female ventrite; 4 — female genitalia.

Рис. 1–4. Детали строения *Calolycus solisi* sp.n., паратип, самка: 1 — общие очертания тела, 2 — заднее крыло; 3 — верхинный вентрит самки; 4 — гениталии самки.

Protrochantins proximally considerably wider than mesotrochantins. Pro- and mesocoxae elongate, but not contiguous apically; metacoxae distinctly separated. Legs relatively short; trochanters elongate, slightly widening distally; femurs and tibiae flattened, femurs conspicuously wider than tibiae; tibiae curved, tibial spurs short and slender; tarsomeres 3–4 dilated distally, tarsomeres 1–2 narrow, with apical plantar pads; all claws simple. Abdominal spiracles located dorsally on sternites near lateral edge. Paraproct divided medially; spiculum gastrale absent. Aedeagus with long, strongly asymmetric phallobase and slightly asymmetric median piece and parameres; parameres short and dentate; median piece distally variously modified; phallobase sometimes with median suture (Figs 5–10, 12–13).

**Female.** Similar to male, but eyes smaller, antennae shorter and narrower. Spiculum ventrale absent (Fig. 3), valvifers free, short and robust, coxites semi-fused basally, proctiger square (Figs 4, 11).

**DIAGNOSIS.** *Calolycus* is separated from other platerodine lycids by the long conspicuously twisted phallobase. Externally, it can be distinguished by the prominent posterior pronot-

al angles and widened elytra with robust second and fourth primary costae.

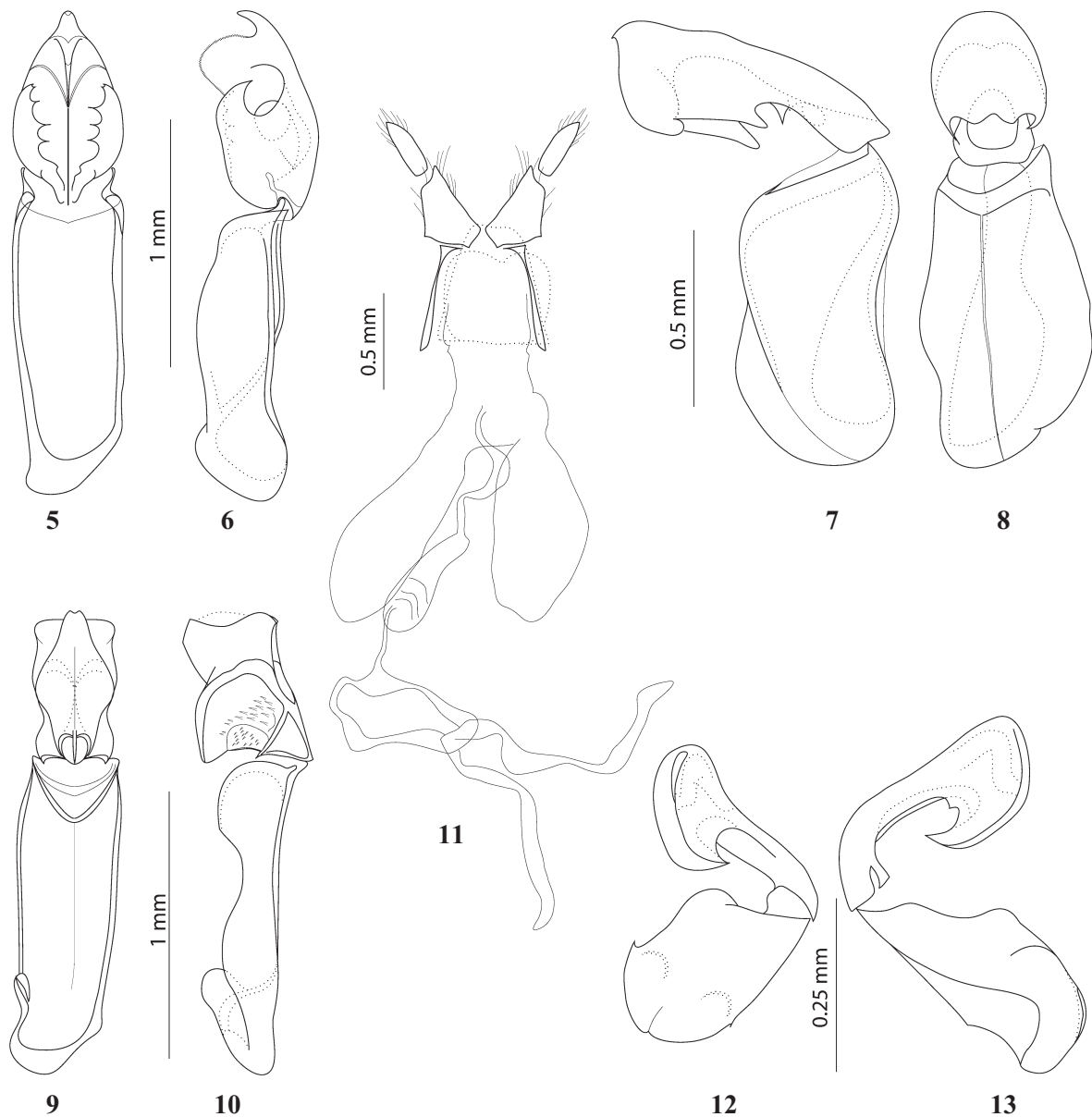
**DISTRIBUTION.** The distribution area of the genus is limited to Central America, from Mexico to Panama. *Calolycus* currently includes five species, three of which are described as new.

#### *Calolycus solisi* sp.n.

Figs 1–6.

**MATERIAL.** Holotype: ♂, Costa Rica: Guanacaste, env. Santa Cecilia, 600–700 m, 30.I.2002, S.Sevak leg. (ICM); paratypes, 4 ♀♀: Costa Rica: Guanacaste, A.C.G. La Cruz, P.N. Guanacaste, Estac. Pitilla, 9 km S Santa Cecilia, 700 m, 21.I.1988, Solis leg.; Costa Rica: Guanacaste, P.N. Guanacaste, Estac. Pitilla, 9 km S Santa Cecilia, 700 m, III.1989, GNP Biodiversity Survey; Costa Rica: Guanacaste, P.N. Guanacaste, Estac. Pitilla, 9 km S Santa Cecilia, 700 m, II–III.1993, P.Rios leg.; Costa Rica: Alajuela, Sect. San Ramon de Dos Rios, 620 m, 20.II–5.III.1995, F.A.Quesada leg. (INBio and ICM).

**DESCRIPTION.** Black. Pronotum pink except medially; elytra in proximal half testaceous.



Figs. 5–13. Male and female genitalia of *Calolycus* spp.: 5–6 — *C. solisi* sp.n., holotype, aedeagus; 7–8 — *C. montiverdensis* sp.n., aedeagus; 9–10 — *C. puntarenensis* sp.n., aedeagus; 11–13 — *C. calanticatus* Gorham, 11 — female genitalia; 12–13 — aedeagus [after Bocáková, 2001]; 5, 7, 9 — ventral view; 8, 10, 12–13; 6, 8, 10, 12–13 — lateral view.

Рис. 5–13. Гениталии самцов и самок *Calolycus* spp.: 5–6 — *C. solisi* sp.n., голотип, эдеагус; 7–8 — *C. montiverdensis* sp.n., эдеагус; 9–10 — *C. puntarenensis* sp.n., эдеагус; 11–13 — *C. calanticatus* Gorham, 11 — гениталии самки; 12–13 — эдеагус [по Bocáková, 2001]; 5, 7, 9 — снизу; 6, 8, 10, 12–13 — сбоку.

**Male.** Head dorsally almost flat, with shallow impressions behind antennal prominence, antennal sockets contiguous. Eyes relatively small, separated medially above by about 2.1 times their radius. Ultimate maxillary palpomere about as long as palpomeres 2 and 3 combined, slightly wider than long. Antennae attaining to elytral two thirds; antennomere 3 about 1.6 times as long as antennomere 2 and 2.2 times shorter than antennomere 4 (Fig. 1).

Pronotum transverse, pentagonal, 1.7 times wider than long, with acute prominent posterior angles (Fig. 1). Scutellum narrowed distally and slightly incised at apex. Elytra long, 5.4 times as long as wide humerally, widest behind the middle.

Aedeagus with hooked apically median piece and ventrally dentate parameres, phallobase 1.6 times longer than median piece (Figs 5–6).

**Female.** Similar to male, but eyes smaller and antennae shorter.

Length: 8.8–10.5 mm. Width (humerally): 2.7–3.1 mm.

**ETYMOLOGY.** The species is named after Dr. A. Solis (Heredia, Costa Rica) who collected one of the specimens of the type series.

**DIAGNOSIS.** *C. solisi* sp.n. is easily distinguishable from *C. calanticatus* by the coloration and the male genital structures (Figs 5–6).

*Calolycus montiverdensis* sp.n.

Figs 7–8.

**MATERIAL.** Holotype: ♂, Costa Rica: Monteverde, 1600 m, 19.IV.2003, S.Sevak leg.; paratype: ♀, labeled as holotype (ICM).

**DESCRIPTION.** Black. Pronotum deep pink-red except medially, elytra red.

**Male.** Head dorsally with shallow rounded impression behind antennal prominence, antennal sockets contiguous. Eyes relatively small, separated medially above by about 2.2 times their radius. Ultimate maxillary palpomere shorter than palpomeres 2 and 3 combined and slightly wider than long. Antennae almost attaining to elytral two thirds; antennomere 3 about 2 times as long as antennomere 2 and 2.2 times shorter than antennomere 4.

Pronotum transverse, semicircular, 1.7 times wider than long, with acute prominent posterior angles. Scutellum narrowed distally, slightly incised at apex. Elytra long, 3 times as long as wide humerally, widest behind the middle.

Aedeagus with hooked parameres, phallobase with median suture, only slightly longer than median piece (Figs 7–8).

**Female.** Similar to male, but eyes smaller and antennae shorter.

Length: 8.2 (♂)–9.6 mm (♀). Width (humerally): 2.4 (♂)–2.8 (♀) mm.

**ETYMOLOGY.** The specific name is derived from the type locality.

**DIAGNOSIS.** *C. montiverdensis* sp.n. is easily distinguishable from congeners by the coloration and the male genital structures (Figs 7–8).

*Calolycus puntarenensis* sp.n.

Figs 9–10.

**MATERIAL.** Holotype: ♂, Costa Rica: Puntarenas, env. Quemado, 200 m, 18–19.I.2002, S.Sevak leg. (ICM).

**DESCRIPTION.** Black. Lateral margins of pronotum and elytral humeri testaceous.

**Male.** Head dorsally with deep round impression behind antennal prominence, antennal sockets contiguous. Eyes relatively small, separated medially above by about 1.7 times their radius. Ultimate maxillary palpomere about as long as wide and approximately as long as palpomeres 2 and 3 combined. Antennae almost attaining to elytral two thirds; antennomere 3 about twice as long as antennomere 2 and about 1.8 times shorter than antennomere 4.

Pronotum transverse, almost rectangular, 1.6 times wider than long, with acute prominent posterior angles. Scutellum narrow, slightly incised at apex. Elytra long, 3.3 times as long as wide humerally, widest behind the middle.

Aedeagus with setose median piece, phallobase with median suture, about twice as long as median piece (Figs 9–10).

**Female.** Unknown.

Length: 7.4 mm. Width (humerally): 2.0 mm.

**ETYMOLOGY.** The specific name is derived from the type locality.

**DIAGNOSIS.** *C. puntarenensis* sp.n., being reminiscent of *C. calanticatus* in the coloration pattern, is distinguishable from all members of the genus, except *C. gorhami* from Panama, by the non-pinkish pronotum, as well as the structure of the aedeagus (Figs 9–10). The new species may be differentiated from *C. gorhami* by the less evident testaceous spots on the elytral humeri.

*Plateros calanticatoides* sp.n.

Figs 14–17.

**MATERIAL.** Holotype: ♂, Costa Rica: Guanacaste, Z.P. Tenorio, Tierras Morenas, Rio San Lorenzo, 1050 m, IV.1992,

F.Quesada leg. (INBio); paratypes, 3 ♂ and 9 ♀: Costa Rica: Guanacaste, SW side Volcan Cacao, Estac. Cacao, Malaise trap, 1000–1400 m, 1988–1989, Costa Rica: Guanacaste, Z.P. Tenorio, Tierras Morenas, Rio San Lorenzo, 1050 m, IV.1991, C.Alvarado leg.; Costa Rica: Guanacaste, P.N. Guanacaste, Estac. Pitilla, 9 km S Santa Cecilia, 700 m, V.1991, G.Rodriguez leg.; Costa Rica: Alajuela, Sector San Ramon, 620 m, 13–28.III.1994, K.Taylor leg.; Costa Rica: Guanacaste, Tenorio A.C.A., Tierras Morenas, Rio San Lorenzo, 1050 m, III.1994, G.Rodriguez leg.; Costa Rica: Guanacaste, P.N. Guanacaste, Estac. Pitilla, Fila Orosilito, 1000 m, IV.1994, P.Rios leg. (INBio and ICM).

**DESCRIPTION.** Black. Pronotum deep pink except medially; elytral humeri testaceous.

**Male.** Head dorsally with deep triangular impression behind antennal prominence, antennal sockets contiguous. Eyes large, separated medially above by about their radius. Ultimate maxillary palpomere dilated distally, slightly longer than wide and approximately as long as palpomere 2. Ultimate labial palpomere relatively large, dilated distally. Antennae almost attaining to elytral two thirds; antennomere 3 about twice as long as antennomere 2 and 2.8 times shorter than antennomere 4 (Fig. 14).

Pronotum transverse, 1.6 times wider than long, with produced anterior margin and acute prominent posterior angles (Fig. 14). Scutellum narrow, parallel-sided, slightly incised at apex. Elytra long, 2.9 times as long as wide humerally, widest at distal fourth.

Aedeagus with long straight narrow widened at base median piece; with inner sac extracted apical portion narrowed (Figs 15–17).

**Female.** Similar to male, but eyes smaller, antennae narrower and shorter.

Length: 7.4–8.7 mm. Width (humerally): 2.2–2.5 mm.

**ETYMOLOGY.** The name is derived from *C. calanticatus*, alluding to the similarity of coloration of the two species.

**DIAGNOSIS.** *P. calanticatoides* sp.n. remarkably resembles *Calolycus calanticatus* by the coloration pattern; it is readily distinguishable from the congeners by its coloration and the male genital structures (Figs 15–17).

*Plateros discolor* sp.n.

Figs 18–20.

Holotype: ♂, Costa Rica: San Jose, P.N. Chirripo, F. Cementerio de la Maquina, 2100–2500 m, 2.III.1993, F.Quesada, M.Segura leg. (INBio); paratypes, 1 ♂, 2 ♀: Costa Rica: Puntarenas, Sendero a Cerro Echandl, Sobre la fila, 2600 m, 13–14.IV.1998, E.Navarro leg.; Costa Rica: Puntarenas, Valle Silencio, Cerro Francis, 2134 m, 16.IV.2001, F.Gonzalez leg. (INBio and ICM).

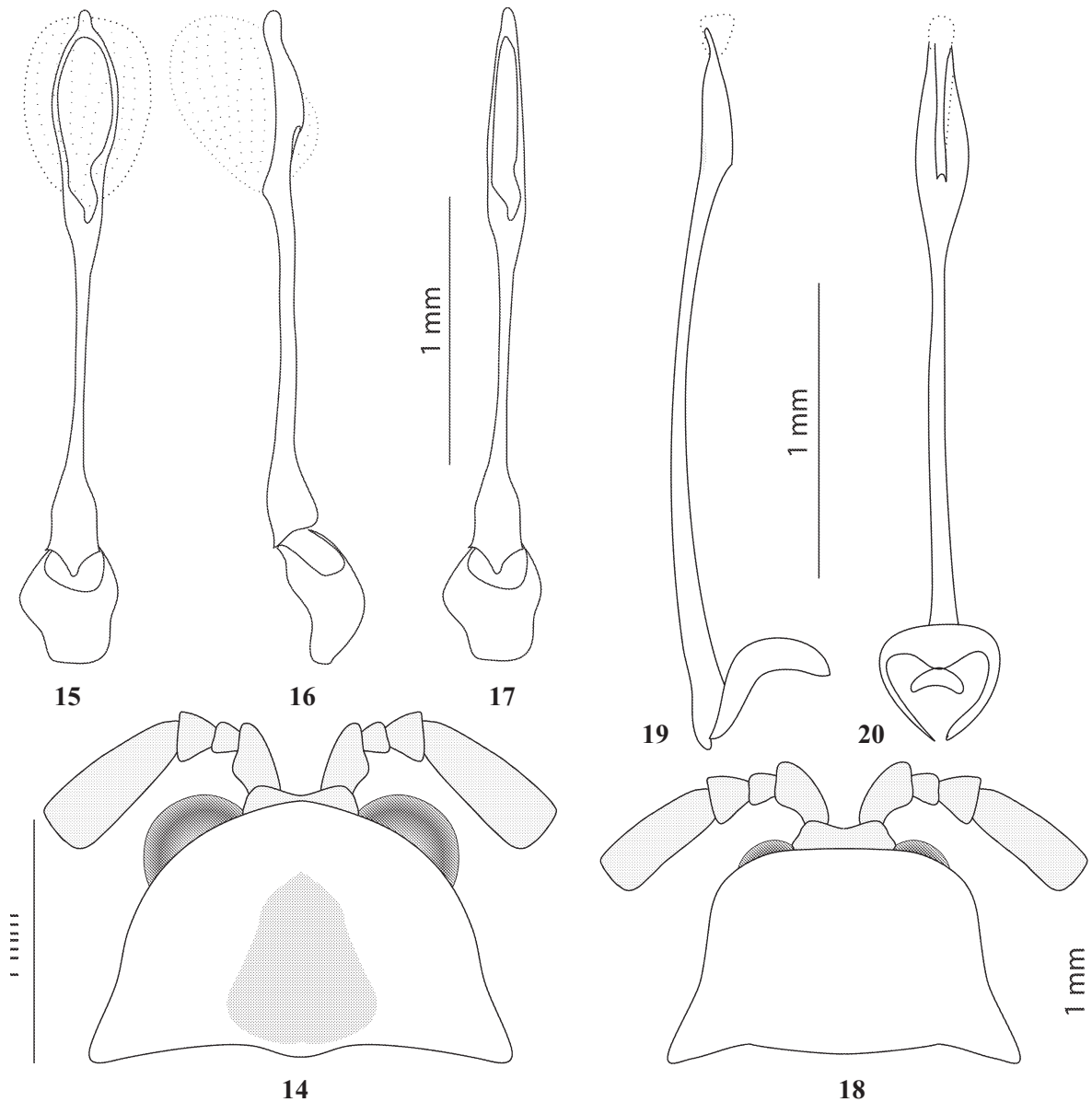
**DESCRIPTION.** Black. Pronotum orange-yellow.

**Male.** Head dorsally with conspicuous deep triangular impression behind antennal prominence, antennal sockets contiguous. Eyes relatively small, separated medially above by 2 times their radius. Ultimate maxillary and labial palpomeres longer than wide, slightly dilated distally. Antennae almost attaining to elytra two thirds; antennomere 3 about twice as long as antennomere 2 and 2 times shorter than antennomere 4 (Fig. 18).

Pronotum transverse, almost rectangular, 1.6 times wider than long, with acute prominent posterior angles (Fig. 18). Scutellum narrow, parallel-sided, slightly incised at apex. Elytra long, 3.6 times as long as wide humerally, widest behind the middle.

Aedeagus with long and very narrow straight median piece (Figs 19–20).

**Female.** Similar to male, but eyes smaller, antennae narrower and shorter.



Figs. 14–20. Details of males of *Plateros* spp.: 14–17 — *P. calanticatoides* sp.n., holotype, 14 — anterior part of body; 15–17 — aedeagus; 18–20 — *P. discolor* sp.n., holotype, 18 — anterior part of body; 19–20 — aedeagus; 14, 18 — head and pronotum, dorsal view; 15, 20 — ventral view; 16, 18 — lateral view; 17 — ventral view with extracted inner sac.

Figs. 14–20. Детали строения самцов *Plateros* spp.: 14–17 — *P. calanticatoides* sp.n., голотип, 14 — передняя часть тела; 15–17 — эдеагус; 18–20 — *P. discolor* sp.n., голотип; 18 — передняя часть тела; 19–20 — эдеагус; 14, 18 — голова и переднеспинка, сверху; 15, 20 — снизу; 16, 19 — сбоку; 17 — снизу, с удаленным внутренним мешком.

Length: 9.4–10.0 mm. Width (humeraly): 2.2–2.5 mm.

ETYMOLOGY. The name is derived from Latin for “of different colours”, alluding to the contrasting coloration of the new species.

DIAGNOSIS. *P. discolor* sp.n. is distinguishable from the congeners by the coloration and the male genital structures (Figs 19–20).

The five species of *Calolycus* may be differentiated by the key given below. It is noteworthy that, with *C. calanticatus* reported from Costa Rica as well [Bocáková, 2001], four of the five species occur in this Central American country.

#### KEY TO *CALOLYCUS*

1. Elytra uniformly red. Aedeagus with hooked parameres, phallobase only slightly longer than median piece (Figs 7–8) ..... *C. montiverdensis* sp.n.
- Elytra bicoloured ..... 2
2. Elytra testaceous in anterior half, black in posterior half. Aedeagus with hooked apically median piece and ventrally dentate parameres, phallobase considerably longer than median piece (Figs 5–6) ..... *C. solisi* sp.n.
- Elytra mostly black, with testaceous humeri ..... 3

3. Lateral margins of pronotum deep pink. Phallobase only slightly longer than median piece (Figs 12–13) .....  
 ..... *C. calanticatus* Gorham  
 – Lateral margins of pronotum testaceous ..... 4  
 4. Testaceous spots on elytral humeri minute. Phallobase much longer than median piece (Figs 9–10) .....  
 ..... *C. puntarenensis* **sp.n.**  
 – Testaceous stripes on elytral humeri conspicuous .....  
 ..... *C. gorhami* Pic

## Discussion

The genus *Calolycus* shares almost all morphological characters of any importance with *Plateros* [Kazantsev, 2005], being separated from other platerodines by relatively few features. Among these, however, is the aedeagus with symmetrical median lobe and elongate twisted phallobase, at a time when a similar type of the aedeagus is known only in *Mesolycus* Gorham, 1883 (Macrolycini) [Kazantsev, 2004]. In fact, the structure of aedeagi in these two genera is such a match that one could contemplate having a closer look at the relationships of *Calolycus* and Macrolycini. However, the other characters of *Calolycus*, on the one hand, and Macrolycini, on the other, i.e. condition of the coronal and subantennal sutures, structure of the labium, mesepi-

meron, metendosternite, metacoxae, claws, etc., compel to regard the aforesaid remarkable similarity of the male genital structures homoplastic. Therefore, position of *Calolycus* in Platerodini is considered to be confirmed, at least at the current level of knowledge of the family.

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