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Four new species of *Cyrtonota* CHEVROLAT (*Coleoptera*: *Chrysomelidae*: *Cassidinae*)

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ABSTRACT. *Cyrtonota bergeali* and *C. bugaensis*, both from Colombia, *C. machupicchu* from Peru, and *C. nitida* from Bolivia, Paraguay and SW Brazil (Mato Grosso), new to the science, are described. A key to the species of the *C. lateralis* group is given.

Key words: entomology, taxonomy, new species, *Coleoptera*, *Chrysomelidae*, *Cassidinae*, *Cyrtonota*, South America.

The genus *Cyrtonota* CHEVROLAT, 1837, the member of the tribe *Stolaini*, comprises 54 species, distributed mostly in mountain and submountain regions of South America (BOROWIEC in press). They are mostly large or medium-sized cassids, often metallic coloured or with elytral reticulation. Most species are well defined by distinct pattern or elytral sculpture. In the material studied recently we found four species new to the science. Their description is given below.

***Cyrtonota bergeali* n. sp.**

ETYMOLOGY

Dedicated to our French colleague Michel BERGEAL, who sent us a large series of the new species.

DIAGNOSIS

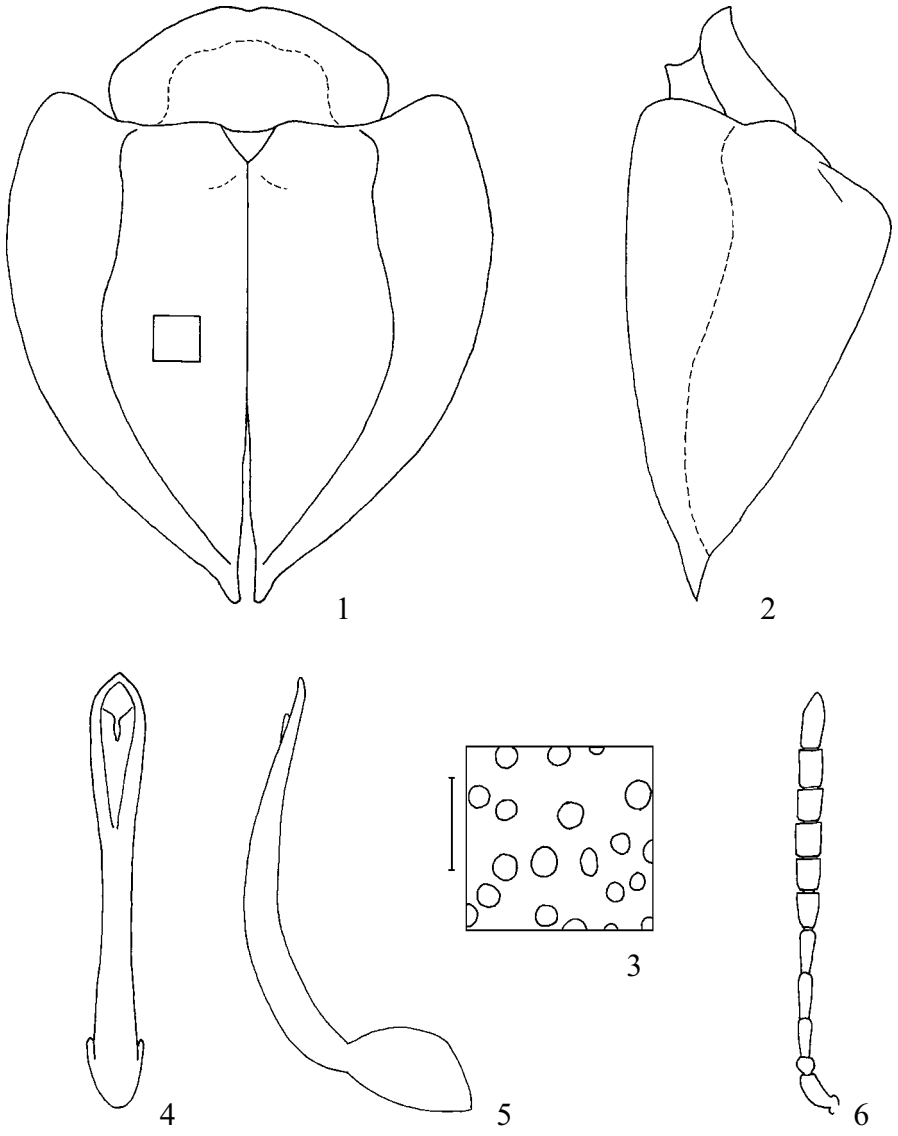
It belongs to the *C. textilis* species group, characterized by elytra not metallic and acuminate apex of elytra. The group comprises also *C. balyi* (KIRSCH), *C. caudata* (BOH.), *C. moderata* (SP.), *C. pavens* (SP.), *C. textilis* (BOH.), *C. steinheili* (WAGEN.), *C. deliciosa* (BALY), *C. honorata* (BALY), *C. trigonata* (SP.) and *C. inspicata* (SP.). *C. balyi* differs in elytral disc black with two large red spots (in *C. bergeali* elytral disc mostly red or completely black). *C. caudata* differs in apical processes of elytra in both sexes very long, caudate. *C. pavens* differs in elytra almost regularly convex, with postscutellar gibbosity obtuse and postscutellar impressions hardly marked (in *C. bergeali* elytra tuberculate with deep postscutellar impressions). *C. textilis* differs in elytra with long and dense hairs (bare in *C. bergeali*), and whole surface of elytra with regular, narrow, impunctate red reticulation (in *C. bergeali* reticulation is irregular, net is broader, partly punctate). *C. steinheili*, *C. deliciosa*, and *C. honorata* differ in elytra without reticulation and at least on slope with short pubescence (in *bergeali* at least partly reticulate and bare); they have also distinct colouration, *C. steinheili* has elytra mostly red with basal part of elytra with large black triangle, *C. deliciosa* and *C. honorata* have elytral disc completely black and explanate margin of elytra with red spot (*deliciosa*) or yellowish, black maculate band (*honorata*). *C. trigonata* and *C. inspicata* differ in smaller size (male usually below 13.5 mm, female below 14.5 mm, in *bergeali* male above 14.3 mm, female above 15.0 mm) and elytral apex less acuminate; *C. trigonata* differs also in lower and more obtuse postscutellar gibbosity, and *C. inspicata* differs in pubescent elytra. *C. moderata*, at first glance, has the most similar body shape and elytral sculpture but differs in pubescent elytra, anterior third of elytra black and reticulation darker red.

DESCRIPTION

Length: male:14.4-15.0 mm, female: 15.1-17.1 mm; width: male:12.0-12.4 mm, female: 12.2-13.8 mm; length of pronotum: male: 3.2-3.3 mm, female: 3.3-3.8 mm; width of pronotum: male: 6.5-6.7 mm, female: 6.6-7.5 mm; length/width ratio: male: 1.20-1.21, female: 1.24-1.29. Body subtriangular, elytra with acuminate apex.

Pronotum black. Elytra mostly red, with numerous small, black spots. In some specimens black is reduced to narrow sutural and elytral margin and only a few punctures. In most specimens anterior margin of elytra is broadly black, also suture and lateral margin, apical processes of elytra and postscutellar impressions are black. Sometimes humeral area is black, occasionally humeral spot is extended and forms a band from base of elytra to 1/5-1/4 length of elytron, in one case the band is connected with black postscutellar tubercle by a row of partly connected black spots. In extreme case also posterior half of elytron is partly black, in one case whole elytra are black with dark red reticulation on explanate margin. Head, ventrites and legs black, with no metallic tint, sides of abdominal sterna with small reddish spot. Antennae uniformly black.

Pronotum 1.92-2.03 times wider than long, with maximum width in 1/3 anterior length, sides distinctly converging posterad, angles rounded, anterior margin only slightly emarginate or without emargination. Disc slightly convex, distinctly bordered from explanate margin by deep lateral sulci, its surface dull,



1-6. *Cyrtonota bergeali*: 1 – body outline, 2 – body in profile, 3 – puncturation of central part of elytron, 4 – aedeagus in dorsal view, 5 – aedeagus in lateral view, 6 – antenna; (scale = 1 mm)

impunctate or with extremely fine pricks and linear median sulcus. Explanate margin on sides deeply impressed, dull, impunctate. Whole surface of pronotum bare.

Scutellum large, triangular, impunctate. Base of elytra much wider than pronotum, humeri slightly to moderately protruding anterad, humeral angles broadly rounded. Disc of elytra with very large postscutellar tubercle and shallow postscutellar impressions. Puncturation of disc completely irregular, punctures large and dense, but unequally disposed, partly very dense, almost touching each other, partly with distance between punctures up to twice larger than puncture diameter. In specimens with distinct black spots punctures have tendency to group on black spots. Space between punctures slightly convex, especially in posterolateral part of disc and on explanate margin, forms indistinct reticulation, but it is never as regular as in other reticulate species of the genus. In almost completely red or completely black specimens reticulation is indistinct and surface of elytra appears rather irregular or slightly rugose than reticulate. Surface of folds smooth and mostly glabrous. Explanate margin as punctate and reticulate as disc. Whole surface of elytra appears bare, only in fresh specimens occur very short, sparse, erect hairs, especially in humeral area of explanate margin and on slope.

Clypeus, ventrites and legs with no diagnostic characters. Length ratio of antennal segments: 100:38:100:111:100:92:85:85:92:92:138.

Male genitalia: aedeagus very long and slim, slightly constricted in the middle, apex without distinct apical process; in lateral view aedeagus slightly curved.

TYPES

Holotype male: "Colima, Valley Buga, Colombia, 3-89"; 17 paratypes: the same data; one paratype: "COLOMBIA, BUGA-VALLE" (holotype preserved in Muséum d'Histoire Naturelle, Paris, France, paratypes preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław, Poland, collection of junior author, Castelmarte, Italy, collection of Michel BERGEAL, Versaiiles, France, and in Manchester Museum, Manchester, England).

***Cyrtonota bugaensis* n. sp.**

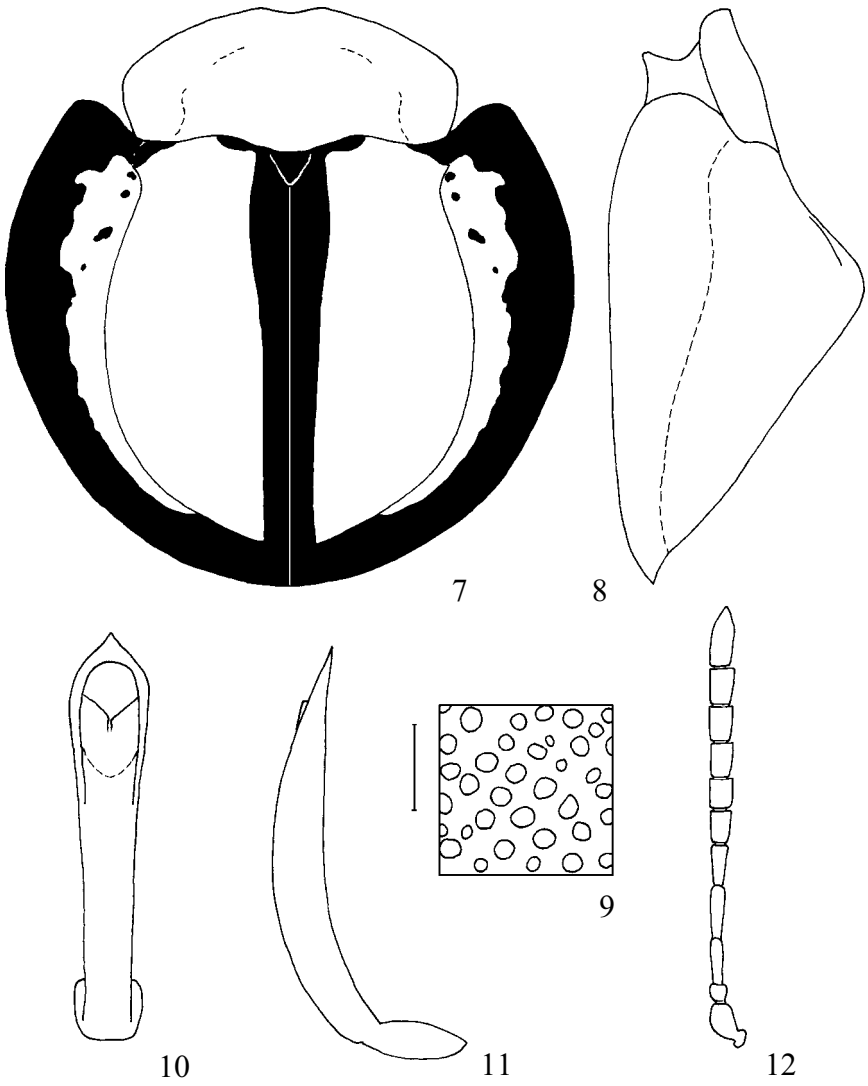
ETYMOLOGY

Named after locus typicus, Buga in Colombia.

DIAGNOSIS

It belongs to the *C. compulsa* species group, characterized by elytra without metallic tint, apex of elytra broadly rounded, not acuminate, pronotum without spots of dense hairs and elytral disc strongly tuberculate. This group comprises

also *C. punctatissima* (Sp.), *C. kolbei* (Sp.), *C. banghaasi* (Sp.), *C. compulsa* (Sp.) *C. bondari* (Sp.), *C. gibbera* (Bor.) and *C. christophori* (Bor.). *C. punctatissima* differs in uniformly black elytra (mostly yellowish-brown in *bugaensis*) and less circular body (almost regularly circular in *bugaensis*), *C. compulsa* and *C. gibbera* differ in elytra with distinct red reticulation (no reticulation in *bugaensis*), *C. bondari* differs in elytra mostly black with six red, reticulate spots



7-12. *Cyrtonota bugaensis*: 7 – body outline, 8 – body in profile, 9 – puncturation of central part of elytron, 10 – aedeagus in dorsal view, 11 – aedeagus in lateral view, 12 – antenna; (scale = 1 mm)

(no reticulate spots in *bugaensis*) and *C. kolbei* and *banghaasi* differ in elytra uniformly brown, at most with narrowly black margins (in *bugaensis* suture and margins of elytra are broadly black). *C. christophori* form Ecuador is the most similar in almost circular body shape and broadly black suture and elytral margin but differs in red ground colour of elytra (yellowish brown in *bugaensis*), puncturation of disc sparser with surface of disc not appearing irregular (in *bugaensis* punctures are denser, partly connected and surface of lateral part of disc appears irregular), and puncturation of pale parts of explanate margin uniform with no tendency to form groups of dense punctures (in *bugaensis* punctures have tendency to form groups of 3-6 dense punctures).

DESCRIPTION

Length (all measurements for male only): 15.0 mm; width: 14.7 mm; length of pronotum: 4.3 mm; width of pronotum: 8.4 mm; length/width ratio: 1.02. Body circular in outline, apex of elytra regularly rounded.

Pronotum black. Elytra mostly yellowish, suture and margin broadly black, yellow parts of explanate margin with few, small, blackish spots. Head, ventrites and legs black, with no metallic tint, sides of abdominal sterna with small reddish spot. Antennae uniformly black.

Pronotum 1.95 times wider than long, with maximum width in the middle, sides converging posterad, angles rounded, anterior margin shallowly emarginate. Disc flat, hardly bordered from explanate margin, its surface dull, bare, impunctate but with very fine pricks and linear median sulcus. Explanate margin only shallowly impressed, dull, impunctate.

Scutellum small, triangular, impunctate. Base of elytra much wider than pronotum, humeri distinctly protruding anterad, humeral angles broadly rounded. Disc of elytra with very large postscutellar tubercle but with very shallow postscutellar impressions. Puncturation of disc completely irregular, punctures large and dense, distance between punctures mostly smaller than puncture diameter, in posterior half of disc surface appears slightly irregular. Whole surface of disc bare, space between punctures slightly glabrous, only black part of suture close to scutellum and apex of elytra dull. Puncturation of yellow part of explanate margin c. twice smaller than on disc, sparser, with tendency to form groups of 4-7 punctures, but surface does not appear reticulate. Punctures of dark part of explanate margin slightly smaller than those of light part, sparser with distance between punctures as wide as to four times wider than puncture diameter.

Clypeus, ventrites and legs with no diagnostic characters. Length ratio of antennal segments: 100:43:107:120:94:80:73:80:86:86:133.

Male genitalia: aedeagus elongate, only slightly widened apically, apex acute; in lateral view aedeagus almost straight.

TYPE

Holotype male: “COLOMBIA, BUGA-VALLE” (preserved in the collection of junior author, Castelmarte, Italy).

Cyrtonota machupicchu n. sp.

ETYMOLOGY

Named after locus typicus, ancient Machu Picchu in Peru.

DIAGNOSIS

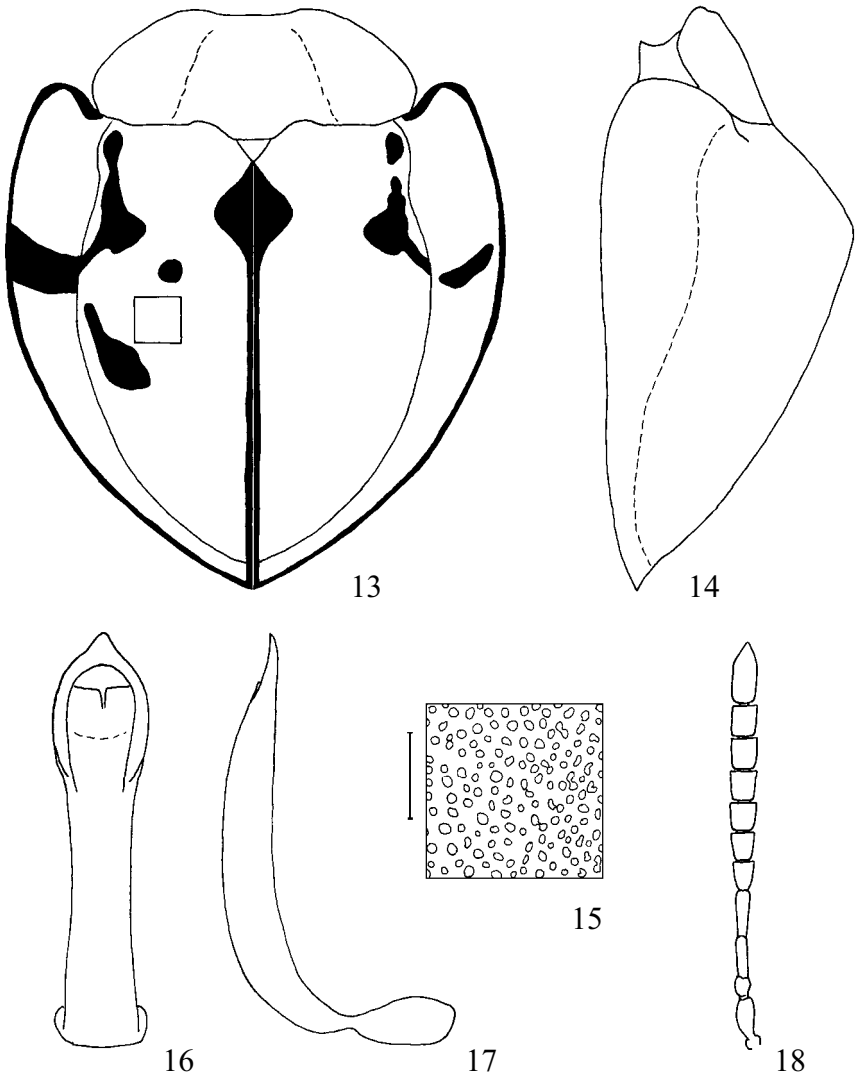
It belongs to the *C. poecialspidoides* group characterized by elytra not metallic, apex of elytra rounded or angulate but not distinctly acuminate, pronotum without spots of dense hairs and elytra in profile regularly convex or gibbous but not tuberculate. The group comprises also *C. marginata* (KIRSCH), *C. huallagensis* (SP.), *C. elongata* (SP.), *C. flavoplagiata* (SP.), *C. poecilaspoides* (BALY) and *C. botanocharoides* (BOR.). *C. marginata* and *C. huallagensis* differ in brown ground colour of elytra, without black pattern (red with black pattern in *C. machupicchu*). *C. flavoplagiata* and *C. botanocharoides* differ in larger body (length above 14 mm, in *machupicchu* below 12 mm), ground colour of elytra yellow or yellow-brown (red in *machupicchu*) and elytral disc regularly convex (gibbous in *machupicchu*). *C. elongata* and *C. poecilaspoides* have similar elytral colouration, with ground colour red and pattern with suture and elytral margin black, black postscutellar spot and usually black, transverse spot anterir to the middle of explanate margin of elytra. *C. poecilaspoides* differs in regularly convex elytra (gibbous in *machupicchu*), *C. elongata* differs in elongate body, more than 1.5 times longer than wide (below 1.3 in *machupicchu*), elytra in anterior half almost parallelsided (rounded in *machupicchu*), rugose punctate explanate margin of pronotum (not rugose in *machupicchu*), and partly rugose punctate sides of elytral disc (not rugose in *machupicchu*).

DESCRIPTION

Length (all measurements for male only): 11.2-11.7 mm; width: 9.2-9.4 mm; length of pronotum: 2.7-2.9 mm; width of pronotum: 6.0-6.4 mm; length/width ratio: 1.22-1.25. Body oval, with slightly acuminate apex of elytra.

Pronotum black. Scutellum black. Elytra mostly red with black, variable pattern. Suture and extreme margin of elytra narrowly black. Suture behind scutellum with moderately large, round or rhomboidal spot. Humeral callus with black spot, often the spot elongate, protruding behind the callus and forms band extending to 1/5 length of elytron, sometimes the band broken in the middle and divided into two spots. Sometimes in the central part of disc, slightly anterior to the mid length of elytron there is a small round spot, occasionally also posterolateral part of disc with elongate spot. Explanate margin of elytra in anterior to the middle always with transverse spot, which varies from broad, forming a complete band across the explanate margin, to small, forming a transverse line not extending to both border of disc and margin of elytra. Head, ventrites and legs black, with no metallic tint, sides of abdominal sterna with small reddish spot. Antennae uniformly black or ventral part of segments 2-4 yellowish to brown.

Pronotum 2.16-2.22 times wider than long, with maximum width in basal 1/4 length, sides slightly converging posterad, angles rounded, anterior margin shallowly emarginate. Disc slightly convex, its surface dull, bare, impunctate with fine pricks and linear median sulcus. Explanate margin only shallowly impressed, dull, with fine pricks. Whole surface of pronotum with short, sparse, adherent hairs.



13-18. *Cyrtonota machupicchu*: 13 – body outline, 14 – body in profile, 15 – puncturation of central part of elytron, 16 – aedeagus in dorsal view, 17 – aedeagus in lateral view, 18 – antenna; (scale = 1 mm)

Scutellum small, triangular, impunctate. Base of elytra distinctly wider than pronotum, humeri distinctly protruding anterad, humeral angles broadly rounded. Disc unevenly convex, gibbous in profile, postscutellar impressions distinct. Puncturation of disc completely irregular, punctures small and dense, distance between punctures as wide as to twice smaller than puncture diameter. On slope punctures slightly smaller than in anterior part of disc. Surface of disc in anterior half of disc glabrous, in posterolateral part slightly dull, but does not appear distinctly irregular or rugose. Puncturation of explanate margin as large and dense as on disc. Whole surface of elytra covered by short, moderately dense, mostly adherent hairs.

Clypeus, ventrites and legs with no diagnostic characters. Length ratio of antennal segments: 100:60:107:115:77:77:77:84:92:86:190.

Male genitalia: aedeagus elongate, distinctly widened apically, apical process obtuse; in lateral view aedeagus almost straight.

TYPES

Holotype male: "S. America, Peru, Cusco Reg., Aquas Calientes, (Machu Picchu), h~1500, 24-30.XI.1997, leg. P. UDOVITCHENKO; two paratypes: the same data; one paratype: "WINA WAYNA/CUZCO (PERU'), 30-I-1994, m 2600/2700, Leg. ETONTI" (holotype and two paratypes preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław, Poland, and one paratype preserved in the collection of junior author, Castelmarte, Italy).

Cyrtonota nitida n. sp.

ETYMOLOGY

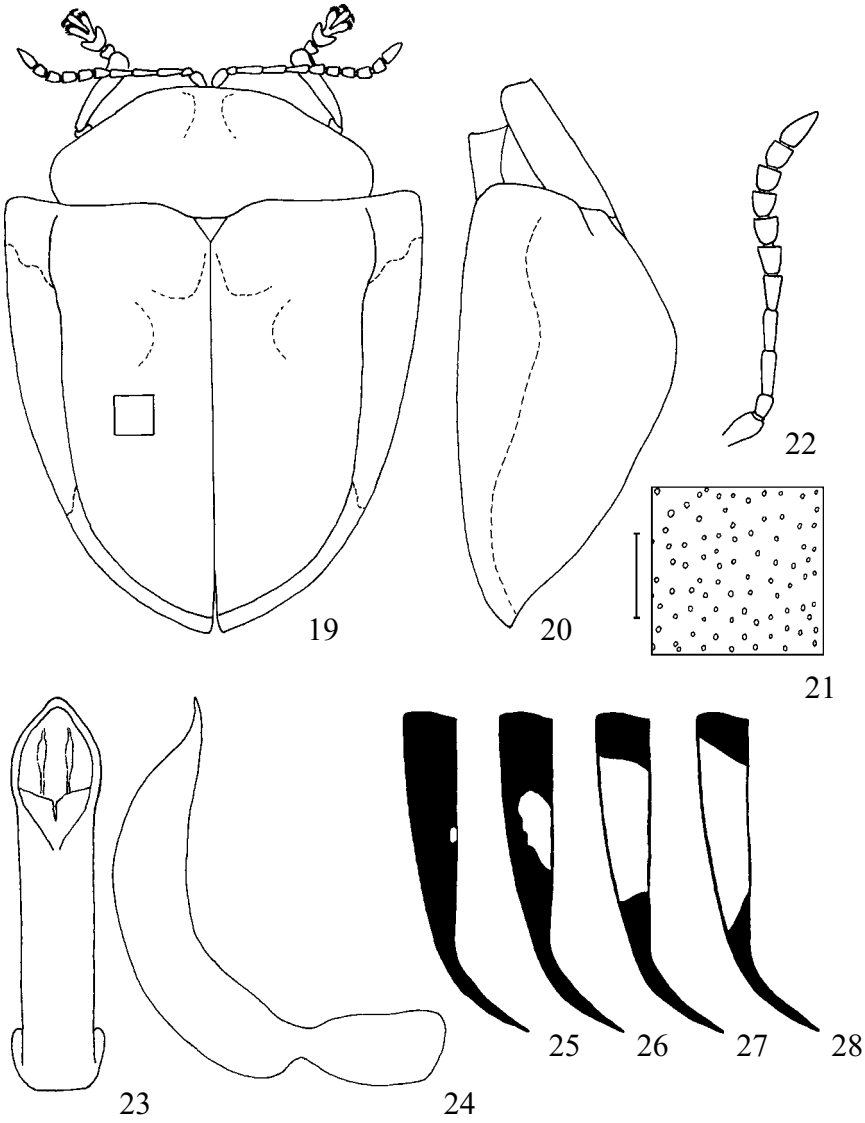
Latin "*nitidus*" means glabrous, smooth; named after smooth and glabrous elytral surface. The name was proposed as in litt. for two specimens preserved in Paris Museum.

DIAGNOSIS

It belongs to the *lateralis* species group. The group comprises the smallest *Cyrtonota* species with elytra at least partly metallic, elytral disc more or less gibbous or angulate in profile, and basal antennal segments 2-5 at least ventrally yellow. *C. nitida* differs from all species of the group in very fine and sparse elytral puncturation, with distance between punctures two to four times wider than puncture diameter (in other species puncturation is coarser and denser with distance between punctures as wide as to slightly wider than puncture diameter, sometimes punctures partly touching each other and surface appears partly irregular to rugose).

DESCRIPTION

Length: male: 8.0 mm, female: 8.8-9.7 mm; width: male: 6.4 mm, female: 6.2-7.3 mm; length of pronotum: male: 2.3 mm, female: 2.6-2.8 mm; width of pronotum: male: 5.0 mm, female: 5.1-5.5 mm; length/width ratio: male: 1.25,



19-28. *Cyrtonota nitida*: 19 – body outline, 20 – body in profile, 21 – puncturation of central part of elytron, 22 – antenna , 23 - aedeagus in dorsal view, 24 – aedeagus in lateral view, 25-28 – variation of yellow spot of explanate margin of elytra; (scale = 1 mm)

female: 1.33-1.42. Sexual dimorphism distinct, male smaller and stouter than female, with rounded humeral angles (angulate in female).

Pronotum black with green or bronze metallic tint. Elytra mostly black, with distinct metallic green or brass tint. Disc immaculate or in anterior half with two extremely small, yellow spots, occasionally also in posterior half with two hardly visible yellow spots. Explanate margin with yellow spot of various size, from extremely small in the middle of border between the margin and disc, to large, occupying more than half length of the margin. Antennae mostly black, segments 1-5 at least on underside yellowish-brown, sometimes upperside of basal segments with metallic blue tint. Ventrites black with green or blue metallic tint, only sides of abdominal sterna with small, yellowish-brown spot.

Pronotum 1.96-2.20 times wider than long, with maximum width in 1/4 length form base, sides at base rounded, then strongly converging anterad, anterior margin shallowly emarginate. Disc moderately convex, at top with more or less evident glabrous area, with narrow median sulcus. Surface of disc impunctate, or only glabrous area with fine pricks or very fine puncturation. Sides of disc and explanate margin dull, impunctate.

Scutellum small, triangular, impunctate. Base of elytra strongly wider than pronotum. Basal margin of elytra almost straight, humeri only slightly protruding anterad, humeral angles in male rounded in female angulate. Elytral disc distinctly convex but not angulate in profile, postscutellar impressions shallow (in one of the specimens from Paraguay hardly marked), with no distinct borders. Puncturation of disc irregular, very small, distance between punctures 2-4 times wider than puncture diameter. Surface between punctures mostly dull, only humeri, top of disc and sutural elevation more or less glabrous. Each elytron along suture and on sides with very shallow impressions, but surface of disc does nor appear distinctly irregular. Explanate margin declivous, yellow spots coarsely punctate, punctures four to five times larger than punctures of disc, dense, distance between punctures smaller than puncture diameter. Dark parts of explanate margin impunctate or with fine pricks. Clypeus, ventrites and legs with no diagnostic characters. Antennae short, length ratio of antennal segments: 100:60:100:92:80:66:63:60:60:64:106.

Male genitalia: Stout, basal and central part parallelsided, apex slightly widened, apical process obtuse, in profile aedeagus regularly curved.

TYPES

Holotype female: “Paraguay, Puerto Pablo, 24 X 1936”; paratype female: “Paraguay, Puerto Pablo, 24 X 1936”; paratype male: “BRAZIL, Mato Grosso, Chapada Plateau, Corumba, III 1993”; paratype female: “Corumba Brazil” “March” “lowland”; paratype female: Bolivia: “MUSEUM PARIS, SANTA CRUZ DE LA SIERRA, D’ORBIGNY 1834” “1807” “6806 34”; paratype female: Bolivia: “MUSEUM PARIS, GUARAYOS, D’ORBIGNY 1834” “2071” “1700 34”. Holotype and one paratype preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław, Poland, other paratypes in Carnegie Museum, Pittsburg, USA and Musém National d'Histoire Naturelle, Paris, France.

NOTE

Cyrtonota lateralis group is distinct within the genus, with most species grouping in mountain and submountain regions of western South America. They are partly similar and difficult to identify and can be identified using the key given below.

KEY TO THE SPECIES OF *CYRTONOTA LATERALIS* GROUP

1. Explanate margin and disc of elytra partly or completely metallic ..... 2.
-. Explanate margin of elytra completely yellow. Elytral disc mostly yellow, at base with large, triangular, partly or completely metallic spot ..... *dimidiata* (BOH.)
2. Explanate margin completely metallic ..... 3.
-. Explanate margin partly yellow, in extreme cases yellow is reduced to a very small spot in the middle of border between explanate margin and disc ..... 4.
3. Puncturation of elytral disc coarser and denser, surface of disc appears partly irregular, with few folds. Postscutellar impressions more impressed, with well defined, partly glabrous borders. Humeral angles more protruding anterad, especially in females. Rare form with reduced spot of explanate margin ..... *goryi* (BOH.)
-. Puncturation of elytral disc finer and sparser, surface of disc regular, with no distinct folds. Postscutellar impressions less impressed, with indistinct borders. Humeral angles in both sexes less produced anterad ..... *smaragdina* (BOH.)
4. Spot of explanate margin of elytra small, not extending to margin of elytra ..... 5.
-. Spot of explanate margin of elytra large, always extending to margin of elytra ..... 6.
5. Elytra more angulate in profile. Puncturation of elytral disc coarser and denser, surface of disc appears partly irregular, with few folds. Postscutellar impressions more impressed, with well defined, partly glabrous borders. Humeral angles more protruding anterad, especially in females. Rare form with reduced spot of explanate margin ..... *goryi* (BOH.)
-. Elytra less angulate in profile. Puncturation of elytral disc fine and sparse, surface of disc smooth. Postscutellar impressions shallowly impressed, with indistinct borders. Humeral angles only slightly protruding anterad. Form with partly reduced spot of explanate margin ..... *nitida* n. sp.
6. Puncturation of elytral disc coarser and denser with distance between punctures as wide as to slightly wider than puncture diameter, sometimes punctures partly touching each other and surface appears partly irregular to rugose ..... 7.

-. Puncturation of elytral disc fine and sparse, with distance between punctures two to four times wider than puncture diameter, surface of disc never appears irregular or rugose
..... *nitida* n. sp.

7. Elytral disc less convex, postscutellar impressions less impressed. Sexual dimorphism more evident, females distinctly slimmer than males. Humeral angles more angulate, especially in female. Ground colour of elytra usually metallic green, rarely cuprous to bronze ..... 8.
-. Elytral disc more convex, body strongly angulate in profile, postscutellar impressions deep. Sexual dimorphism less evident, both sexes stout. Humeral angles obtuse. Ground colour of elytra usually cuprous to bronze
..... *lateralis* (L.)
8. Elytral disc with yellow spots ..... 9.
-. Elytral disc without yellow spots ..... 10.
9. Elytral disc usually with four spots, occasionally with two spots then elytral puncturation coarser, especially in posterolateral part of disc. Colombia, Ecuador, N Brazil, N and C Peru.
..... *serinus* ER.
-. Elytral disc at most with two very small spots in anterior part of elytra. Puncturation of disc finer. May be only southern form of *serinus*, known mostly from S Peru, Bolivia, SW Brazil and N Argentina
..... *bistigma* (BOH.)
10. Spot of explanate margin large, occupies at least half length of the margin. Ground colour of elytra metallic green. Elytral disc less convex, postscutellar impressions only slightly marked. Distributed in mountain and submountain regions of S Peru, Bolivia, SW Brazil and N Argentina. Typical form with immaculate disc of elytra
..... *bistigma* (BOH.)
-. Spot of explanate margin smaller, occupies at most third length of the margin. Ground colour of elytra bronze. Elytral disc more convex, postscutellar impressions distinctly marked. Distributed in lowland regions of C and N Brazil (Amazonas, Para)
..... *jekeli* (BOH.)

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