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Taxonomic and nomenclatorial revision within the Neotropical genera of the subtribe Odontocheilina W. Horn in a new sense – 8. Redescription and lectotype designation of *Pentacomia* (*Pentacomia*) *lanei* (W. Horn), with a new record from Paraguay

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Moravec J. & Brzoska D. 2014: Taxonomic and nomenclatorial revision within the Neotropical genera of the subtribe Odontocheilina W. Horn in a new sense – 8. Redescription and lectotype designation of *Pentacomia* (*Pentacomia*) *lanei* (W. Horn), with a new record from Paraguay. *Acta Musei Moraviae, Scientiae biologicae* (Brno) **99(1):** 35–46. – *Pentacomia* (*Pentacomia*) *lanei* (W. Horn, 1924) hitherto known from only three syntypes from Brazil, but recently re-discovered from termite mounds in Paraguay, is presented. A syntype male (SDEI) is designated as a lectotype to increase stability of the taxon. Detailed redescription, illustrations of the habitus and diagnostic characters of the lectotype, paralectotype (SDEI), as well as of the adults from Paraguay including their termitophilous habitat, are presented in colour photographs. The aedeagus of this very rare species is illustrated here for the first time and the structures of the internal sac have confirmed its placement in the nominotypical subgenus of *Pentacomia*. The original spelling of the subtribe name Odontochilina W. Horn, 1899 is emended as Odontocheilina according to Art. 35.4.1 (ICZN 1999).

Keywords. Coleoptera, Cicindelidae, Odontochilina, Odontocheilina, *Pentacomia*, taxonomy, Brazil, Paraguay, termitophilous habitat

Introduction

This paper is a continuation of the ongoing taxonomic revision of nine Neotropical genera of the subtribe Odontocheilina W. Horn, 1899 by the first author. The aim of this series of papers (see Moravec 2012a,b,c, and 2013, Duran & Moravec 2013, Moravec & Duran 2013 and Moravec & Brzoska 2013, 2014) is to publish significant taxonomic and nomenclatorial changes, descriptions of new taxa or redescriptions of rare species to be available before the completion of the final comprehensive publication.

The original spelling of the subtribe name Odontochilina W. Horn, 1899 is emended as Odontocheilina according to Art. 35.4.1 (ICZN 1999).

The subtribe Odontocheilina as discussed by Moravec (2012a), is here restricted exclusively for the Neotropical genera, and in the sense understood here it is separated from the subtribe Prothymina W. Horn, 1910 sensu Rivalier (1969, 1971).

In this paper, *Pentacomia* (*Pentacomia*) *lanei* (W. Horn, 1924) hitherto known only from three syntypes from the type locality in Brazil is redescribed, and a lectotype is designated. The redescription and illustrations are based both on the type specimens deposited in SDEI and adults of a termitophilous population recently rediscovered in Paraguay by Carlos Aguilar Julio, a member of the Museo Nacional de Historia Natural

del Paraguay (San Lorenzo) together with the second author. The aedeagus of this very rare species is illustrated here for the first time and the structures within the internal sac have confirmed the placement in the nominotypical subgenus by Wiesner (1992). The third syntype (female) is deposited in MZSP. No other specimen of this rare species was found in MHNH or other collections.

P. (*Pentacomia*) *lanei* was not treated by Rivalier (1969) in his incomplete revision; he only mentioned that he ignored this taxon because it was entirely unknown to him.

Material and methods

Body length is measured without the labrum and is the distance from the anterior margin of the clypeus to the elytral apex (including the sutural spine). The width of the pronotum includes the lateral margins of the proepisterna. The width of the head is measured across the eyes, the distance between their outer margins. The term "aedeagus" here refers to the median lobe of the organ (without parameres). All dimensions of aedeagi are measured (and primarily figured) in their left lateral position where the basal portion (with basal orifice) points to the right and the left lateral outline (with dorsoapical orifice) faces dorsally, provided that the ventral outline of the median portion is settled in its vertical position, and both upper and lower walls of the dorsoapical orifice are in the same line. The treatment and mounting of the aedeagi, in order to observe the structure of the internal sac, followed the usual procedure as modified and terms of structures explained in Moravec (2002, 2010). Colour photographs (both of the habitus and diagnostic characters, including aedeagi) were taken with a Nikon Coolpix 990 digital camera through an MBS-10 binocular stereo microscope.

Labels are cited in the following manner: lines on the same label are separated by slash /, separate labels are indicated by double-slash //. The colour of the label and mode of writing appear in square brackets (in type specimens only).

The list (catalogue) under the species name in the descriptive part is selective. It gives the original name combination, as well as the first publication of all subsequent taxonomic or nomenclatorial acts concerning the taxon.

The following abbreviations of type status are used in the descriptions and captions below the illustrations: LT = lectotype, PLT = paralectotype.

Abbreviations for collections.

BMNH . . . . . The Natural History Museum, London, United Kingdom
CCJM . . . . . Collection Cicindelidae Jiří Moravec, Adamov, Czech Republic
CMNH . . . . . Carnegie Museum of Natural History, Pittsburgh, U.S.A.
DBCN . . . . . Insect Collection of David W. Brzoska, Naples, Florida, U.S.A.
FSCA . . . . . Florida Department of Agriculture, Gainesville, FL, U.S.A.
INBP . . . . . Inventorio Biologico Museo Nacional de Historia Natural del Paraguay, San Lorenzo, Paraguay
MNHN . . . . . Muséum national d'Histoire naturelle, Paris, France
MZSP . . . . . Museum de Zoologia da Universidade de São Paulo, Brazil
NHMK . . . . . Natural History Museum, University of Kansas, Lawrence, Kansas U.S.A.
SDEI . . . . . Senckenberg Deutsches Entomologisches Institut, Müncheberg, (formerly DEI Eberswalde), Germany

Taxonomy

Pentacomia (*Pentacomia*) *lanei* (W. Horn, 1924) (Figs 1–22)

Cicindela (*Pentacomia*) *Lanei* W. Horn, 1924: 47.

Type locality: Brazil: Rio Vaccaria, state of Mato Grosso do Sul.

Cicindela Lanei: Horn 1938: plate 83, fig. 16.
Phyllodroma (*Pentacomia*) *lanei*: Schilder 1953: 545.
Pentacomia (*Pentacomia*) *lanei*: Wiesner 1992: 83.

Type specimens. Lectotype (designated here) ♂ in SDEI labelled: "Matto Grosso / Vacaria / XII. 22 Lane" [printed/handwritten] // "Type! / coll. W. Horn" [printed] // "coll. W. Horn / DEI Eberswalde" [printed] // "Syntypus" [red, printed] // "Lanei / m" [bluish with thin black border, handwritten] // "Pentacomia lanei / W. Horn Type (DEI-Eberswalde) / borrowed by D. L. Pearson / 23 Oct.1996 (drawer ♂ 58)" [printed]; // "LECTOTYPE / Cicindela (Pentacomia) / lanei W. Horn, 1924, design. / Moravec & Brzoska 2014" [red, printed]. Paralectotypes.1 ♀ in SDEI with same first four labels as lectotype and: Revision Jiří Moravec 2012: / PARALECTOTYPE / Cicindela (Pentacomia) / lanei W. Horn, 1924" [red, printed]. 1 ♀ in MZSP (only photos of the female and labels from the MZSP database seen): "Matto Grosso / Vacaria / XII. 22" [printed] // "Pentacomia / Lanei W. Horn / type Dr. W. Horn det. 1923" [handwritten/printed] // "Type / W. Horn" [printed] // "TIPO" [red, printed] // "814" [red ink].
Other material examined. 5 ♂♂, 5 ♀♀ in DBCN (later in NHMK), 1 ♂, 1 ♀ in INBP, 1 ♂, 1 ♀ in FSCA, 1 ♂, 1 ♀ in CMNH, 1 ♀ in BMNH, 3 ♂♂, 2 ♀♀ in CCJM: "Paraguay: Caaguazu / Rt. 17, 13.5 km S, Yhu, 25°10.0′S, 55°55.4′W / 350 m" with the following collecting data: "14-XI-2011; 15-XI-2011; 1-XII-2012 / leg. D. Brzoska".

Redescription. Body (Figs 1–2) of rather variable size independent of sex, 7.80–8.90 (LT 8.30) mm long, 2.40–2.80 (LT 2.50) mm wide, dorsal surface dark to light reddish-cupreous, usually darker, brown on head and pronotal disc, brighter, fiery reddish-cupreous to purple on elytra, usually with bronze-greenish lustre on posterior elytral third, lacking any white maculae.

Head (Fig. 3) with large eyes, only very slightly narrower than body, 2.30–2.65 mm wide; all head portions glabrous.

Frons distinctly convex in middle, clearly separated from clypeus by rather deep groove and fluently passing to vertex, irregularly asperate to vermicular-rugulose in middle, lateral areas irregularly covered with deeper, short stria-like rugae; supraantennal plates irregularly triangular, smooth or with fine wrinkles, metallic-cupreous, sometimes with green lustre laterally.

Vertex almost flat, only indistinctly impressed in middle; anteromedian area irregularly finely asperate to vermicular-rugulose (the sculpture passing from rounded frons-vertex fold), rugae on median area irregularly vermicular to longitudinal and zigzag-wavy, rugae on sublateral areas more parallel but distinctly zigzag-wavy to vermicular, diverging posteriad when running onto temples; large juxtaorbital areas irregularly wavy-rugulose to zigzag wavy-striate, striae subparallel, only two or three parallel and deeper striae adjacent to eyes; occipital area convex, asperate to finely vermicular-rugulose.

Genae metallic-cupreous with shiny reddish to purple-red lustre, very rarely with feeble greenish lustre on anterior area, smooth in middle, with fine, mostly irregular striae on juxtaorbital and postgenal areas.

Clypeus convex in middle, surface almost smooth, coriaceous, dark metallic-copper with brighter cupreous, rarely faint green lustre on lateral areas.

Labrum 4-setose, sexually dimorphic in shape but in both sexes rather long, ochre-yellow to ochre with sienna-reddish tinge; male labrum (Figs 10–11) 0.65–0.75 mm long, 0.95–1.05 mm wide, with right-angled or rounded basolateral indentation, then prolonged anteriad towards rather prominent but rounded anterolateral teeth which are always in lower position than tridentate anterior lobe with three teeth resembling upper part of a hexagram; female labrum (Figs 12–13) yellow-ochre, usually with more distinct sienna-reddish tinge, notably longer, length 0.90–1.00 mm, width 1.00–1.15 mm, of a similar shape, but the tridentate hexagram-shaped median lobe has longer median tooth.

Mandibles (Figs 3–4) ochre-brown with black-brown or black teeth, usually with mahogany tinge and sometimes with metallic-green or purple iridescences, normally shaped with arcuate lateral margins, in both sexes nearly symmetrical, each mandible with four teeth (and basal molar), the three inner teeth becoming gradually smaller towards the basal molar.

Palpi (Figs 3–4) normally shaped with elongate terminal palpomeres; maxillary palpi ochre-yellow to ochre, in female ochre to brownish-testaceous, in both sexes with terminal palpomere tawny-brown or sienna-brown on basal half and partly to entirely black-brown on apical area, in female often also penultimate palpomere brownish-darkened; labial palpi ochre-yellow to ochre with black terminal palpomere; penultimate (longest) palpomere elongate with almost parallel lateral margins, only slightly dilated towards 0.17–0.19 mm wide apex, in female usually brownish-darkened on its smooth side.

Antennae rather short in both sexes reaching only elytral quarter, scape black-brown to black except for pale-brownish ventral area, pedicel almost black, antennomeres 3–4 black, often with purple and green metallic lustre, 5–11 smoky-black.

Thorax. Pronotum (Figs 15–16) as long as wide or only indistinctly longer than wide, length 1.50–1.70 mm, width 1.45–1.65 mm, sulci well pronounced; anterior lobe metallic cupreous, only slightly wider than the posterior, but much higher, surface irregularly wavy-rugose to vermicular-rugulose; disc with lateral margins (including clearly visible proepisterna) distinctly convex giving the disc a subglobose shape, or subparallel in middle; notopleural sutures thin but clearly obvious from above; median line thin but usually well pronounced on whole discal length; discal coloration metallic cupreous, often black-darkened on large median area, surface rather densely vermicular-rugulose to zigzag-wavy rugulose, rugae mostly subparallel and transverse; posterior lobe metallic cupreous, rather coarsely irregularly rugulose, rugae mostly vermicular in middle and deeper on moderately raised dorsolateral bulges, usually with a few more continuous and irregularly transverse rugae adjacent to distinct posterior rim; proepisterna smooth and shiny-cupreous with fiery or purple, rarely greenish lustre, smooth and entirely glabrous; mesepisterna darker, smooth and glabrous, female mesepisternal coupling sulci lacking any pit, in form of a longitudinal furrow which is only somewhat deeper than in male; metepisterna concolorous with proepisterna, glabrous and smooth, with two wrinkles at metepimeron; ventral thoracic sterna

concolorous with proepisterna and metepisterna; prosternum and mesosternum almost smooth and glabrous; metasternum smooth and glabrous except for distinctly punctate-setose lateral areas with white, rather short setae.

Elytra (Figs 17–19) elongate, length 4.70–5.40 mm, with rounded humeri, lateral margins subparallel, in female slightly dilated in middle, in both sexes with slightly convex subhumeral area, anteapical angles arcuate, then obliquely running towards rounded apices; sutural spine short but distinct; microserrulation fine and usually very irregular; elytral dorsal surface almost even on disc: humeral impressions usually rather deep, discal impression shallow to moderate, indistinctly delimiting moderately raised basodiscal convexity; sublateral longitudinal impressions indistinct or absent, apical impression shallow, or moderate; whole elytral surface notably deeply punctate, punctures large and deep, mostly isodiametric and isolate with rather wide intervals, largest on anterior elytral half, in some females the punctures are larger with narrow intervals forming a reticulate sculpture; characteristic, much deeper punctures with wide, smooth and shiny intervals running longitudinally on basodiscal convexity in form of irregular chatoyant streaks changing from shiny-fiery to black; smaller, occasionally anastomosing punctures occur along sutures; smaller punctures cover also apical area, their shape is changeable depending on angle of illumination; elytral coloration metallic-cupreous with fiery to purple lustre, often with bronze to feeble greenish lustre on posterior elytral third; the effaced intervals on basodiscal convexity appear black in front and lateral illumination; elytral surface glabrous except for usual, a few and often very indistinct hairlike sensory setae scattered mostly on anterior area, a few of them at epipleura and several much shorter and indistinct setae scattered along the margin of the elytral apices.

Legs. Procoxae and mesocoxae brownish, rarely with greenish lustre anteriorly and tawny-brown or sienna-brown on ventral area, front area densely whitish-setose; metacoxae metallic cupreous with black subapical area and paler, tawny apex, their narrow antero-lateral area densely finely punctate-setose; trochanters sienna-brown; femora dark sienna-brownish with black apices or black on whole apical third, surface covered with irregular rows of scattered, erect and semierect white setae; tibiae almost black, protibiae with metallic-cupreous or purple lustre, metatibiae black with feeble metallic-green lustre on their apices, covered with scattered, somewhat stiffer, semierect, whitish setae; apical-ventral area of profemora and mesofemora covered with dense whitish to greyish setose pad; tarsi black, protarsi and partly also mesotarsi with metallic-green or blue-green lustre and usually purple apices, metatarsi black, often with purple lustre; first three protarsomeres in male only indistinctly dilated, with usual, dense greyish-white pad of short setae; claws black.

Abdomen. First three visible ventrites metallic-cupreous, other ventrites metallic-black with bronze, greenish or blue lustre; surface of all ventrites smooth and glabrous, only their posterior margins fringed with usual raw of hairlike sensory setae.

Aedeagus (Figs 5–7) elongate, length 1.80–1.95 mm, width 0.35–0.40 mm (in LT with deformed basal half), straight with arcuate base and rather voluminous in middle, then attenuated towards elongate-conical apical portion with narrow, rounded apex which

is only indistinctly dorsally bent; internal sac (Figs 8–9) containing ventral spur with thin, mediocre long filiform projection and characteristic elongate central piece with acute apex and angular appendage at its base.

Variability. This species is only very slightly variable in the intensity of the bronze-green lustre on the posterior elytral third, and somewhat also in the size of elytral punctures as stressed in the redescription, and the longitudinal streaks of widened and smooth intervals on the basodiscal convexity changing their coloration from bright-red to black depending on the angle of illumination.

Differential diagnoses. *Pentacomia* (*Pentacomia*) *lanei* is unique among all other species of the nominotypical subgenus because of the absence of any white maculation on its almost even elytra, in combination with reddish-cupreous to purple coloration of dorsal body surface, and the longitudinal streaks of smooth chatoyant intervals on the basodiscal convexity changing their coloration from fiery-red to black.

Pentacomia (*Mesochila*) *discrepans* (W. Horn, 1893) is somewhat similar owing to its body coloration and some adults from Brazil (including the holotype in SDEI) also have immaculate elytra, but it clearly differs in having a very different shape of the labrum in both sexes, elongate aedeagus with hooked apex, and internal sac with a conspicuous, elongate spike which is usually obvious even in untreated aedeagi as protruding from their dorsal orifice.

Pentacomia (*Poecilochila*) *championi* Rivalier, 1969 also has immaculate elytra, but it immediately differs in having much darker, brown-copper to black-copper dorsal body surface, elongate pronotum, and the aedeagus of a very different shape with much shorter and wider apex and very different structures within the internal sac.

Other species with immaculate elytra, *Pentacomia* (*Poecilochila*) *rugipennis* (Kolar, 1836) immediately differs by its black body and conspicuous, longitudinal and almost parallel grooves running on the punctate elytral surface.

It is very interesting that the shape of the aedeagus and the sclerites within the internal sac of *P.* (*P.*) *lanei* (characterized by a ventral spur and particularly by the oblong central piece with acute apex and angular appendage at the base) are very similar to those of *Pentacomia* (*Pentacomia*) *sericina* (Klug, 1834) which externally differs strongly, particularly in its dark coloration with white, complete elytral maculation consisting of a humeral band, bent median band and anteapical macula.

Biology and distribution. Very rare species. No other specimens were found in collections.

The type locality was interpreted by Horn (1924) as "Matto Grosso, Rio Vaccaria", in fact lying in the state of Mato Grosso do Sul. Horn (1924, 1926) describes the biotopes of the area called "Vaccarias" (or "Vacarias") near the Rio Vaccaria (also spelled as "Vacaria") as a country with bush and scattered forest of stunted trees, mostly used as cattle pasture, often with large, cone-shaped termite mounds. He later (Horn 1926) specified this "Vacarias" area to be situated in southern Matto Grosso, and probably to avoid a confusion he simultaneously mentioned a similar "Vacarias" area, the "Campos de Vacarias", thus only an area of a similar character, but lying in the southernmost Brazil

state of Rio Grande do Sul where *P.* (*Pentacomia*) *lanei* has never been collected. Although no termitophilous habitat of the three syntypes of *P.* (*Pentacomia*) *lanei* is obvious from the original paper by HORN (1924), which states that they were caught on soil near a path in the middle of a slope of a hill, a correlation with termite sites remains be possible with respect to the description of the area of the type locality mentioned above.

The recently discovered termitophilous population in Paraguay was found near the town of Yhú in the province of Caaguazu, west of the Brazilian state of Mato Grosso do Sul, but is a rather long way from the type locality. Adults were predominantly found on small termite mounds, that were often broken (Figs 20–21), or reduced to red clay patches with only vent holes present (Fig. 22). Obviously it was not a secondary occurrence, because, like another termitophilous tiger beetle *Cheilonycha auripennis* Lucas, 1857, the adults sheltered inside the termite mounds during the night and the hottest hours of the day. The hunting behaviour of *C. auripennis* on high termite hills (probably of a *Cornitermes* species) was earlier reported by WASMANN (1895a, b), BERG (1900), HORN (1924) and recently also by GUERRA (1993), PEARSON, GUERRA & BRZOSKA (1999). In Paraguay, we had the same experience with *Cheilonycha auripennis angustedilatata* W. Horn, 1922, as well as with *Brasiella aureola* Klug, 1834, both inhabiting mostly very high termite hills. The termitophilous tiger beetles sheltered inside the mounds can survive during commonly occurring fires. ARNDT et al. (1996) and Erwin & Pearson (2008) mentioned that, according to GUERRA (1993), larvae of *Cheilonycha auripennis* make their burrows in the surface of the termite mounds.

Remarks. In the original description of this species (HORN 1924) only two females and one male were mentioned. The reasons for the selection of the syntype male in SDEI as the lectotype designated here to increase stability of the taxon has been mainly due to a rather good condition of the male which, moreover, originally comes from Walther Horn's collection. The syntype female in MZSP is in a worse state, with very incomplete antennae and the body surface spoiled by patches caused by moulds and penetration of dust particles. It was not examined by us, but photographs of the female from the MZSP database were kindly sent to us by the curator Guilherme Ide Santos (Sao Paulo).

SCHILDER (1953) placed *Pentacomia lanei* in the genus *Phyllodroma* Lacordaire, 1842 as he considered *Pentacomia* to be a subgenus of *Phyllodroma*. However, the genus *Phyllodroma* with type species (by original designation) *Phyllodroma cylindricollis*, based on *Cicindela cylindricollis* Dejean, 1825, differs widely from the genus *Pentacomia* as stated by RIVALIER (1969) who for the first time introduced the genus *Phyllodroma* as characterized by the distinct structure of its internal sac. The internal sac in *Phyllodroma*, in contrast to the genus *Pentacomia*, contains a long, multicoiled flagellum which is associated with a compact, translucent sustaining membrane, thus also differing from the long, coiled, but not so supported flagellum in the genus *Odontocheila* Laporte de Castelnau, 1834.

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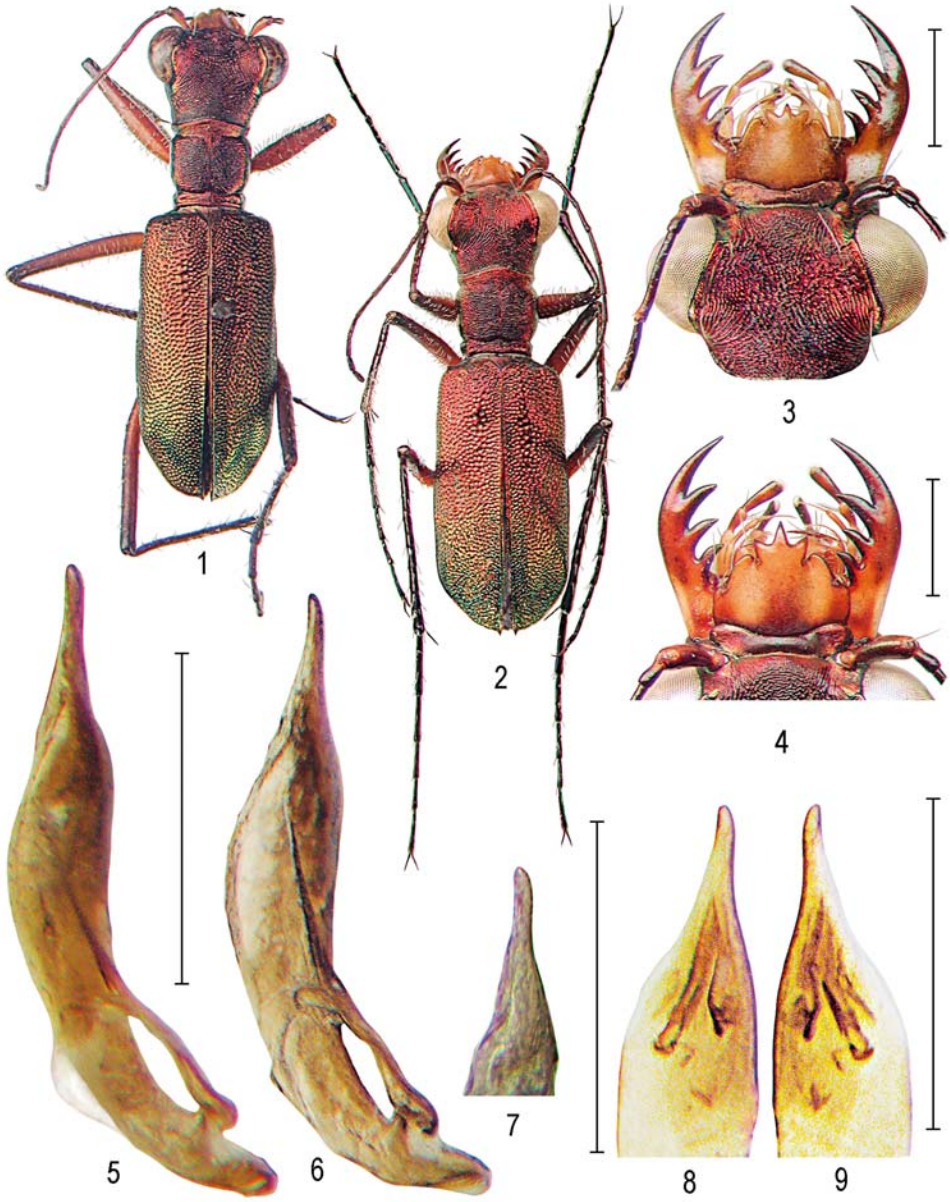
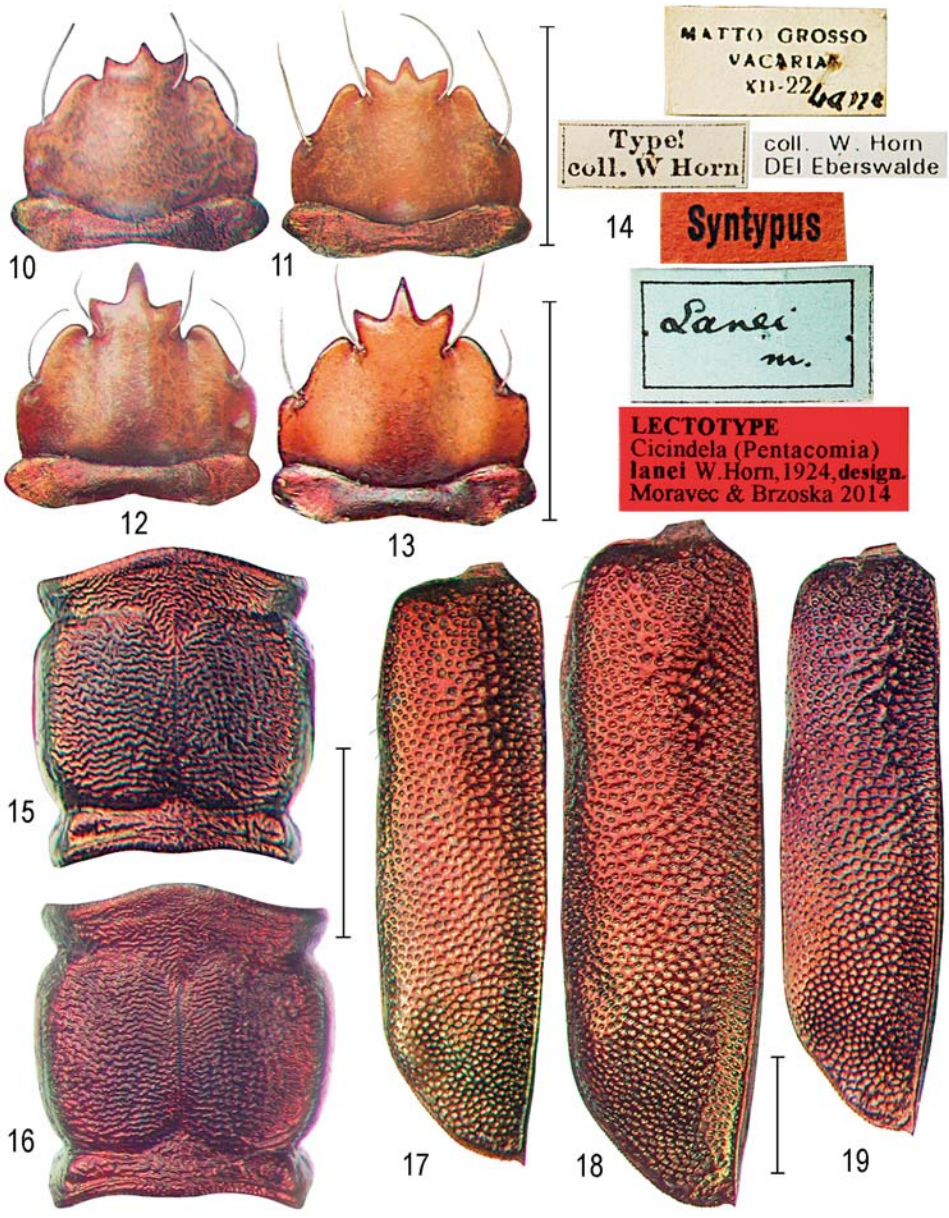


Figs 1–9. *P.* (*Pentacomia*) *lanei* W. Horn. 1–2 – habitus (1 – ♂, 8.3 mm, Rio Vaccaria, LT (SDEI); 2 – ♂, 8.2 mm, Paraguay, Yhú (CCJM); 3 – head, ♂, ibid. (CCJM); 4 – buccal appendages, ♀, ibid. (CCJM); 5–9 – aedeagi, ibid. CCJM; 7 – apex of aedeagus, LT; 8–9 internal sac in left and right lateral view. Bars = 1 mm.



Figs 10–19. *P.* (*Pentacomia*) *lanei* W. Horn. 10–13 – labrum (10 – ♂, Rio Vaccaria, LT (SDEI); 11 – ♂, Paraguay, Yhú (CCJM); 12 – ♀, Rio Vaccaria PLT (SDEI); 13 – ♀, Paraguay, Yhú (CCJM); 14 – labels, LT; 15–16 – pronotum (15 – ♂, LT; 16 – ♀, PLT); 17–19 – elytron (17 – ♂, LT; 18 – ♀, PLT; 19 – ♀, Paraguay, Yhú (CCJM). Bars = 1 mm.

Figs 20–22. *P.* (*Pentacomia*) *lanei* W. Horn: termitophile biotope, Paraguay, Caaguazu province, 13.5 km south of Yhú.