Taxonomic and nomenclatorial revision within the Neotropical genera of the subtribe Odontocheilina W. Horn in a new sense – 13.
The genus Mesacanthina Rivalier, stat.nov., separated from the genus Pentacomia Bates (Coleoptera: Cicindelidae)

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MORAVEC J. & HUBER R. L. 2015: Taxonomic and nomenclatorial revision within the Neotropical genera of the subtribe Odontocheilina W. Horn in a new sense – 13. The genus Mesacanthina Rivalier, stat.nov., separated from the genus Pentacomia Bates. (Coleoptera: Cicindelidae). Acta Musei Moraviae, Scientiae biologicae (Brno) 100(1): 67–114. – Results of a thorough revision of all known taxa of Mesacanthina Rivalier, 1969, including the taxa hitherto considered to be subspecies or synonyms of Mesacanthina cribrata (Brullé, 1837), are presented. Because of its outstanding diagnostic characters, Mesacanthina, originally a subgenus of the genus Pentacomia Bates, 1872, is here elevated to a separate genus. Nine species of the genus are newly recognized here: M. cribrata (Brullé, 1837) comb.nov., M. argentina (Lucas, 1857) comb.nov., M. exigua (Bates, 1872) comb.nov., M. microtheres (Bates, 1872) comb.nov., M. punctum (Klug, 1834) comb.nov., and M. ronhuberi (Moravec, 2012) comb.nov. Lectotypes of M. cribrata, M. argentina and M. reductesignata, as well as neotypes of M. exigua and M. microtheres are designated. Distribution and biology of these species are treated, and their predominantly sympatric occurrence in the large area of the Amazon Basin, which contradicts a subspecies status of most of these taxa, is discussed. Key to the species, as well as colour photographs of the habitus and diagnostic characters, showing also their variability, are presented.

Key words. Coleoptera, Cicindelidae, Odontocheilina, Mesacanthina, stat.nov., taxonomy, nomenclature, Neotropical Region.

Introduction

This paper is a continuation of the ongoing taxonomic revision of ten 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, 2013, 2014 and 2015, DURAN & MORAVEC 2013, MORAVEC & DURAN 2013, MORAVEC & BRZOSKA 2013, 2014a,b,c and 2015) is to publish significant taxonomic and nomenclatorial changes that will be available before the completion of the final comprehensive publication. As discussed by MORAVEC (2012a,b), the subtribe Odontocheilina is here defined exclusively for the Neotropical genera separated from the subtribe Prothymina W. Horn, 1910 sensu RIVALIER (1969, 1971), who in his broad classification included to Prothymina also Neotropical genera of Odontocheilina. RIVALIER (1969, 1971) entirely overlooked and ignored the fact that in contrast to Prothymina, many species of Odontocheilina possess setal vesture, which is one of the most important diagnostic characters.
In this paper, results of a complete revision of the taxa within the taxonomically highly complicated complex of taxa related to *Mesacanthina cribrata* (Brullé, 1837) are presented.

Moravec (2012c) in agreement with the second author (pers. com.), mentioned that *Mesacanthina* with the type species *Cicindela cribrata* Brullé, 1837 (by original designation), originally described by Rivalier (1969) as one of the four subgenera of the genus *Pentacomia* Bates, 1872, deserved status of a separate genus. The diagnostic characters, particularly the slim, remarkably long mandibles and palpi, and the labrum in both sexes with only one, prominently protruding median tooth, clearly distinguish *Mesacanthina* from the genus *Pentacomia* and its other subgenera. Consequently, *Mesacanthina* is here elevated to a separate genus, and as a result of the revision of the relevant type and a great number of other specimens from various localities, nine species of the genus *Mesacanthina* are newly recognized. Five of these species, belonging to the so called “*M. cribrata* complex”, and which were hitherto considered to be subspecies of “*Pentacomia (Mesacanthina)* cribrata” Brullé or synonyms of it, proved to be separate species distinguished mutually by a complex of diagnostic characters. Our results are partly in accordance with Pearson, Buestán & Navarrete (1999) who mentioned that some of the subspecies may eventually prove to be separate species.

One of the important differentiating diagnostic characters which appeared to be constant in syntopic adults of the “*M. cribrata* complex”, is the setosity of the proepisterna in some of the species, in one of them also setose dorsal pronotal surface. The setal vesture was entirely overlooked or underestimated in descriptions not only by historical authors, but also by Rivalier (1969, 1971).

The species status of these nine species of *Mesacanthina* is also supported by their mostly sympatric occurrence in the large area of the Amazon Basin, which contradicts their subspecies status; they obviously spread along the enormous system of the numerous tributaries of the Amazon River.

Two of the *Mesacanthina* species, *M. punctum* (Klug, 1834) and *M. ronhuberi* (Moravec, 2012), were thoroughly treated by Moravec (2012c); therefore only their differential diagnosis and distribution are treated here.

**Material and Methods**

Body length is measured without 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 (as both the proepisterna and the notopleural sutures are visible from above). 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 the apex of the aedeagus is perfectly settled in its horizontal position. The
treatment and mounting of the aedeagi, in order to observe the structure of the internal sac followed the usual procedure as modified and the terms explained by MORAVEC (2002, 2010). The position of the aedeagus is very important also for the real shape of the sclerites forming the structure of the internal sac.

The colour photographs of the habitus and diagnostic characters, including aedeagi, were taken by the first author with a Nikon Coolpix 990 digital camera through an MBS-10 binocular stereo microscope.

The morphological terminology is mostly adopted from Torre-Bueno dictionary (NICHOLS 1989), those describing the surface macrosculpture partly from HARRIS (1979), but many terms were proposed by MORAVEC (2002, 2007, 2010).

Labels are cited in the following manner: lines on the same label are separated by slash /, separate labels are indicated by double-slash //; each specimen or a series of specimens are separated by a full stop. The colour of the label and mode of writing appear in square brackets (in type specimens only, while in other specimens the citation is mostly restricted to locality labels and using Roman numeral). Words printed in labels in full capital letters are transcribed as normal letters here (capitals are used in abbreviations only). It should be noted that a date on some labels with the name of a museum collection denotes the year in which the specimen was accessioned (donated) to the recent collection (e.g. MNHN, BMNH), mostly not the year in which it was collected.

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

Following abbreviations of type status are used in the descriptions and captions below the illustrations: HT = holotype; PT = paratype, AT = allotype; ST = syntype, LT = lectotype, PLT = paralectotype, NT = neotype.

Abbreviations for the collections:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ASUT</td>
<td>Arizona State University, Tempe, U.S.A.</td>
</tr>
<tr>
<td>BMNH</td>
<td>The Natural History Museum London, U.K.</td>
</tr>
<tr>
<td>CADW</td>
<td>Collection Alexander Dostal, Wien (Vienna), Austria</td>
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<tr>
<td>CCJM</td>
<td>Collection Cicindelidae Jiří Moravec, Adamov, Czech Republic</td>
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<td>CDCL</td>
<td>Collection Charles Dheurle, Langres, France</td>
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<td>CMNH</td>
<td>Carnegie Museum of Natural History, Pittsburgh, U.S.A.</td>
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<tr>
<td>COSJ</td>
<td>Collection Ondřej Safránek, Jiřetín pod Jedlovou, Czech Republic</td>
</tr>
<tr>
<td>CPVP</td>
<td>Collection Petr Votrubá, Praha, Czech Republic</td>
</tr>
<tr>
<td>DBCN</td>
<td>(formerly ICDB) Insect Collection of David W. Brzoska, Naples, Florida, U.S.A.</td>
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<tr>
<td>FSCA</td>
<td>Florida State Collection of Arthropods, Department of Agriculture, Gainesville, Florida, U.S.A.</td>
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<tr>
<td>IRSNB</td>
<td>Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium</td>
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<tr>
<td>JWCW</td>
<td>Collection Jürgen Wiesner, Wolfsburg, Germany;</td>
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<tr>
<td>KCBC</td>
<td>Collection Arnošt Kudrna, České Budějovice, Czech Republic;</td>
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<tr>
<td>MKGC</td>
<td>Michael G. Kippenhan Collection, Portland, Oregon, U.S.A.</td>
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<tr>
<td>MFNB</td>
<td>Museum für Naturkunde der Humboldt-Universität, Berlin, Germany</td>
</tr>
<tr>
<td>MNHN</td>
<td>Muséum national d’Histoire naturelle, Paris, France</td>
</tr>
<tr>
<td>MZMB</td>
<td>Entomology department of the Moravian Museum, Brno, Czech Republic</td>
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</table>
Taxonomy

Genus *Mesacanthina* Rivalier, 1969 stat.nov.


**Type species.** *Cicindela cribrata* Brullé, 1837 (by original designation, originally of the subgenus *Mesacanthina*).

**Differential diagnosis.** All nine species of *Mesacanthina* are distinguished immediately from all species of the genus *Pentacomia* by the extremely long and slim mandibles and palpi, and the labrum with only one, prominently protruding medial tooth and with its discal portion mostly almost transverse in female, while in male is mostly semicircular to sub-triangular. By this unique shape of the labrum, this genus also differs from all species of other 11 genera of the subtribe Odontocheilina.

Of the differentiating diagnostic characters which appeared to be constant in syntopic adults of six species of the “*M. cribrata* complex”, the very important are the setosity of the proepisterna in four of the species complex, combined in two of them with a reduced number of teeth in mandibles, and in one of them with also setose dorsal pronotal surface, while in two remaining species the proepisterna are entirely glabrous and their mandibles have regularly four teeth (and basal molar).

**Other generic characters.** Body very small to small, 5.30–9.00 mm long, 1.90–3.10 mm wide (females mostly larger than males). Palpi very long and slender with white setae, ivory-white to ochre-testaceous with terminal palpomeres metallic-black darkened or also penultimate palpomeres are blackened. Mandibles with three or four teeth (and basal molar), or the right mandible possesses four teeth while the left has only three teeth. Apart from the unique shape of the labrum emphasized above, the labrum is 4-setose as in all other genera of the subtribe Odontocheilina (sometimes one or two of the labral setae can absent, very rarely additional fifth seta is present), ivory-white to ochre, in female of one species black. Elytra elongate, with normally rounded humeri, or the humeri (particularly in female) are slightly to more distinctly anteriad-protruding; elytral apices subacute in male, rounded in female; elytral surface rather finely to more coarsely punctate on the whole elytral length; elytral white maculation either “complete”, consisting of humeral macula which is either rounded and isolated, or in form of continuous or interrupted humeral lunule, long or short longitudinal-lateral band which is mesad-prolonged into either continuous, or interrupted, transverse median-discal band, and antepical-apical lunule, or the maculation is reduced to only two isolated maculae; elytral epipleura fringed by whitish setae which are particularly long and dense on subhumeral area. Thorax with rather wide pronotum, pronotal disc either subglobose or with subparallel to

parallel lateral margins, its dorsal surface sculptured with extremely fine or much coarser vermicular to zigzag-wavy rugae; proepisterna, metepisterna and ventral sterna glabrous, alternatively the proepisterna partly or entirely, sparsely to densely setose, in one species also dorsal pronotal surface setose (the setae are easily abraded); female mesepisterna of a very unusual shape: dorsal part of each mesepisternum very short with the median bulge (that normally separated mesepisternum from proepisternum) placed much more dorsad; ventrad of this bulge, there is a deep crease along posterior margin adjacent to mesocoxa (suggesting that during the copulation the very long apical teeth of male mandibles reach down beyond the female mesepisterna). Abdominal ventrites either with glabrous surface and only marginal sensory setae, or the surface covered with mostly sparse and indistinct microsetae. Aedeagus in all species rather short and voluminous in middle, conically constricted towards narrow, subacute, blunt, subtruncate or truncate apex; internal sac well developed, with small upper-dorsal spikes and other sclerites, slightly or conspicuously differing in shape depending on species.

**Biology and distribution.** Species of *Mesacanthina* are commonly spread in the large area of the Amazon Basin which is known for its tremendous biodiversity, but the genus also occurs in Argentina and Paraguay where three species probably spread from Bolivia. They have mostly sympatric, rarely probably also syntopic occurrence, inhabiting mostly sandy places and beaches of water streams and lakes, but also playa biotopes, on mud and grassy mud places, from lowlands up to 1800 m.a.s.l. ADIS et al. (1998) described diurnal behaviour of adults (as of *M. cribrata*, but according to the occurrence we suppose that in fact *M. exigua*) on sandy or clayey beaches and banks of the Rio Solimões – Rio Amazon near Manaus, Brazil, pairs copulating at the edges of the water. These authors mentioned larvae (also diurnal), their tunnels found on clayey sediments along the beaches, with a probably developed adaptation on rapid changes in conditions of the river edges. According to ZERM & ADIS (2001b), larval tunnel openings were found at the edges of cracks in desiccating soil. ZERM & ADIS (2001a) partly described also periods, larval development and egg development in laboratory.

**Remarks.** LYNCH ARRIBÁLZAGA (1878) treated species of *Mesacanthina* in the genus *Phyllodroma* Lacordaire, 1843, followed by SCHILDER (1953a) who had *Phyllodroma* as a subgenus of *Pentacomia*. However, the genus *Phyllodroma*, with the type species (by original designation) *Phyllodroma cylindricollis*, based on *Cicindela cylindricollis* Dejean, 1825, a species which diagnostically differs from *Mesacanthina* as well as from all species of the genus *Pentacomia* (see RIVALIER 1969 and MORAVEC 2012b). Because of the unique diagnostic characters, HORN (1895) considered the species now belonging to *Mesacanthina* to be significantly distinguished from the genera *Phyllodroma* and *Odontocheila* (the latter in his sense partly comprised also *Pentacomia*). Later HORN (1899) followed by SARMIENTO (1963), treated most of the species of *Mesacanthina* in the genus *Prepusa* Chaudoir, 1850. However, *Prepusa* was proposed by Chaudoir (1850) as a replacement name for *Eulampra* Chaudoir, 1848 with type (and unique) species *Cicindela miranda* Chaudoir, 1843. BOUSQUET (2002) argued that the replacement name was superfluous and therefore unavailable, and that *Eulampra* is a valid name. Nevertheless, as the genus-group name *Prepusa* is long-accepted and commonly used, it
should be preserved. Nonetheless, the monobasic genus *Prepusa* diagnostically differs from *Mesacanthina*, as well as from all other genera of the subtribe (see also Moravec (2012c)).

**Key to species of the genus Mesacanthina**

Note: a certain variability and evolutionary forces to allopatric speciation exist also in the six species of “*M. cribrata* complex”, but in a hundreds of specimens examined, the correlation of the characters given in the key was disrupted in only four specimens of syntopic adults and from two localities only.

1 white elytral maculation consisting of only two maculae: median-discal spot clearly distant from the outer elytral margin, and larger, mostly triangular antepical macula .......................................................... 2.
   – white elytral maculation consisting of humeral macula which is either rounded and isolated, or in form of continuous or interrupted humeral lunule, long or short longitudinal-lateral band which is mesad-prolonged into either continuous, or interrupted, transverse median-discal band, and antepical-apical lunule ............................................................ 3.

2 mandibles with four teeth (and basal molar); labrum in both sexes ivory-white to yellow-whitish testaceous ................. *M. punctum* (Klug)
   – mandibles with only three teeth (and basal molar), rarely right mandible with a rudiment of fourth tooth; female labrum black .................
     .............................................................................. *M. ronhuberi* (Moravec)

3 humeral macula small and rounded, longitudinal-lateral band and its transverse protrusion short ............... *M. reuctesignata* (W. Horn)
   – humeral macula in form of continuous or interrupted humeral lunule, longitudinal-lateral band long ......................................................... 4.

4 pronotal surface and proepisterna entirely glabrous; both mandibles with four teeth (and basal molar) ......................................................... 5.
   – proepisterna or also pronotal surface sparsely to densely setose .......... 6.

5 pronotal disc notably wider than long, with distinctly convex lateral margins (in male rarely subparallel in middle) and extremely fine surface sculpture; elytra in female with notably anteriad-protruding humeri (“hunch-shouldered”); white elytral maculation in both sexes mostly wide and with continuous humeral lunule and median band (complete) ........
   .................................................................................... *M. cribrata* (Brullé)
   – pronotal disc with subparallel lateral margins and notably coarser surface sculpture; elytral humeri rounded (normally shaped); white elytral maculation mostly with interrupted (only rarely continuous) median band ...
     .............................................................................. *M. argentina* (Lynch Arribálzaga)

6 pronotal surface including proepisterna setose; pronotal disc subglobose; white elytral maculation conspicuously wide and “complete”; right mandible with only three teeth ................. M. setopronotalis (W. Horn)
- pronotal surface glabrous, only proepisterna setose ......................... 7.

7 pronotal disc subglobose with subparallel lateral margins in middle, or lateral margins somewhat constricted posteriorly; mandibles with four teeth (and basal molar); elytral humeri in female moderately to more distinctly anteriad-protruding ......................................................... 8.
- pronotal disc with parallel lateral margins, notably coarsely sculptured; mandibles with only three teeth (and basal molar), or asymmetrically left mandible with four teeth while right mandible has only three teeth, or very rarely a rudiment of the fourth tooth; elytral humeri normally shaped; white elytral maculation mostly with interrupted median-discal band or rarely also humeral lunule interrupted ......................... M. chalceola (Bates)

8 elytra cupreous or copper-green, in female with notably anteriad-protruding humeri (“hunch-shouldered”); white elytral maculation mostly wide and with continuous humeral lunule and median band (complete); elytral punctation rather fine ........................................ M. exigua (Lucas)
- elytra black, humeri in female moderately anteriad-protruding; white elytral maculation entire or with semi-interrupted median band which is usually bent posteriad; elytral punctures coarser, much more commonly anastomosing in chains ......................... M. microtheres (Bates)

Mesacanthina cribrata (Brullé, 1837) comb.nov. (Figs 1–2, 10–26)

Cicindela cribrata Brullé, 1837: 9.
Odontochila cribrata: FLEUTIAUX 1892: 124.
Prepusa cribrata: HORN 1899: 44.
Phyllodroma (Pentacomia) cribrata: SCHILDER 1953a: 545.
Pentacomia (Mesacanthina) cribrata: RIVAIER 1969: 233 (fig. 25cr, 235, fig. 26cr).

Type locality. Bolivia: Moxos Province (department of Beni) “sur des banes de sable Mamore”.


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Redescription. Body (Figs 1–2) extremely small to small (females larger than males), 5.60–7.30 (LT 7.10) mm long, 1.90–2.70 (LT 2.50) mm wide.

A head (Figs 10–11) with very large eyes, but notably narrower than body, 1.60–2.10 mm wide.

Frons glabrous, sloping towards clypeus and clearly separated from it, confluent with vertex, almost flat or moderately convex, dark or bright cupreous, usually with golden-bronze and green iridescence, extremely finely longitudinally parallel-striate to the fineness that the striae are on antero-median area hardly recognizable and the surface appears asperate; the extremely fine sculpture passes fluently onto vertex; supra-antennal plates irregularly elongate-triangular, smooth, but inner margins usually merging with the surface sculpture, shiny iridescent-green or golden-bronze to reddish-cupreous.

Vertex variably coloured, nearly black-copper with strong or faint green, bronze or reddish-cupreous lustre, or more vividly cupreous to bronze-cupreous, often with almost black juxtaorbital areas, almost flat in middle, glabrous; surface of anteromedian area extremely finely and densely longitudinally parallel-striate, striae in middle often vermicular, forming an arcuate ornament; striae on sublateral areas and passing onto temples are more distinct and parallel than very fine parallel striae on orbital areas; occipital area finely and irregularly wavy-rugulose to asperate.

Genae glabrous, metallic cupreous or black-copper with strong or faint greenish and bronze lustre, finely and densely parallel-striate.

 Clypeus glabrous, bright cupreous, usually with green and bronze iridescence, finely and irregularly rugulose.
Labrum 4-setose, in both sexes uniformly coloured, ivory-white, or yellow to ochre-testaceous (tarnished in old specimens), except for brown-darkened median tooth, with rounded to nearly-angular basolateral margins and effaced lateral teeth, but with long, conspicuously projecting median tooth which is in both sexes rather thin, subacute or acute; male labrum (Fig. 13) 0.55–0.65 mm long, 0.75–1.05 mm wide, its discal portion mostly almost semicircular; female labrum (Fig. 14) 0.50–0.65 mm long, 0.90–1.10 mm wide, its discal portion usually more distinctly transverse.

Mandibles (Figs 10–12) with extremely long and slim terminal teeth, particularly in female, with arcuate lateral margins, subsymmetrical, each mandible in both sexes with four teeth (and basal molar), inner teeth becoming smaller towards the basal molar; in some (also syntopic) males the fourth tooth can be placed tightly near the third; coloration metallic cupreous with green and reddish iridescence, teeth darkened, terminal teeth often almost black; lateral areas ivory-white to ochre, the pale coloration usually more extended in male.

Palpi (Figs 10–11) very long and slim; both maxillary and labial palpi notably elongate, ivory white to ochre, their terminal palpomeres brown-darkened to black, often with green lustre, moderately and gradually dilated towards their apices; penultimate (longest) palpomere of labial palpi very slender (width up to 0.1 mm).

Antennae rather long, in male reaching elytral half, in female shorter, rather variably coloured: antennomeres 1–4 metallic black-brown to black-copper with strong greenish, or reddish lustre, antennomeres 5–11 black, or black-brown and progressively smoky-darkened; scape with one white apical seta, pedicel glabrous; each of the antennomeres 3 and 4 with several microsetae and 2–3 longer setae on their apices.

Thorax. Pronotum (Figs 15–16) glabrous, always wider than long, 1.00–1.40 mm long, 1.10–1.55 mm wide (including proepisternal margins), sulci well pronounced (anterior sulcus only laterally); anterior lobe slightly wider than the posterior, but narrower than disc; its anterior margin in middle often prolonged anteriad, densely irregularly rugulose; disc notably wider than long, subglobose, lateral margins (including notopleural sutures which are clearly obvious from above) convex, rarely subparallel in middle; medial line narrow but distinct; discal surface sculpture very fine and dense, asperate to consisting of very irregular, mostly vermicular to zigzag-wavy rugae, on anterior and posterior areas passing to more parallel striae which converge irregularly towards the median line; shallow rugae on lateral areas usually slightly surpass notopleural sutures; posterior lobe more distinctly and irregularly rugulose, or mostly transversely rugose, dorsolateral bulges moderate, or only slightly raised; all ventral and lateral sterna including proepisterna glabrous and smooth, metallic black-green to green-blue with golden-bronze to reddish-cupreous lustre, or predominantly cupreous; mesepisterna of a very unusual shape: female mesepisternal coupling sulci in the form of a deep crease along posterior margin adjacent to mesocoxa (see also in the generic redescription above)

Elytra (Figs 17–20) elongate, length 3.60–4.60 mm, with arcuate humeri which are in male indistinctly, in female notably anteriorly protruding (“hunch-shouldered”); lateral margins in male subparallel, in female moderately dilated in middle, antecapial angles
arcuate, then running obliquely towards apices which are towards small sutural spine subacute in male, rounded, in female; sutural spine small but distinct, usually much smaller in female; microserrulation fine but distinct and often irregular; elytral dorsal surface moderately convex, particularly so on posterior half of elytral disc, humeral impressions distinct, deeper in female, basodiscal convexity moderate or rather distinct, discal impression rather deep, anteapical impressions rather distinct and therefore the anteapical margins appear moderately bulged; elytral coloration dark cupreous with greenish lustre, or dark olivaceous-green, rarely more vividly cupreous; whole elytral surface rather finely punctate, punctures mostly isolated, much larger on anterior and subhumeral areas, on basodiscal convexity and particularly within the discal impression where the larger punctures are often anastomosing in chains, sometimes forming cavernous sculpture, becoming much finer towards posterior area of disc and on lateral areas, but commonly anastomosing in the area adjacent to suture, while punctures on the anteapical and apical areas become much finer, denser and irregular; elytral surface glabrous except for the usual few long, often indistinct, hair-like sensory setae scattered mostly on basal area, and with densely clustered white setae on lateral area of each epipleuron, longest and densest on the subhumeral area of the epipleuron (these setae are only partly visible from above); epipleura in lateral view rather wide, ivory to testaceous; white elytral maculation in both sexes mostly wide and “complete”, consisting of continuous humeral lunule, longitudinal-elongate lateral band mesad-prolonged into transverse median-discal band which is often dilated on elytral disc, and continuous anteapical-apical lunule reaching suture, and rarely connected with the longitudinal lateral band by a thin stripe.

Legs. Pro- and mesocoxae brownish-testaceous with greenish or bronze lustre, rather densely setose; metacoxae metallic black-green with only lateral areas densely setose; trochanter glabrous, yellow to ochre-testaceous; femora brownish with indistinct, paler subapical belt, their dorsal area often black-brown with greenish or cupreous lustre, ventral area paler, ochre-testaceous to brownish-testaceous, sometimes the pale coloration extended almost on whole femora; femoral surface densely covered with rows of white, mostly erect and rather long setae which are much sparser on metafemora; tibiae brown or black-brown with green lustre which is more intense on tibial apices, covered with scattered whitish setae and white and brownish thorn-like setae; apical-ventral third of pro- and mesotibiae with usual, dense, whitish to greyish setose pad; tarsi metallic green, mahogany or purple, tarsomeres of metatarsi often dark testaceous with metallic apices; first three tarsomeres of protarsi in male rather distinctly dilated and with usual whitish setose pad.

Ventrites shiny metallic black with strong, chatoyant-green, bronze or purple lustre, last ventrite usually partly ochre-testaceous; surface of ventrites glabrous except for the usual, but quite copious, hair-like sensory setae at posterior margins of ventrites, only rarely very indistinct and barely visible microsetae occur also on the ventrite surface.

Aedeagus (Figs 21–25) 2.00 – 2.10 mm long, 0.40 mm wide, widest above the middle, apical part conically attenuated towards narrow, rounded or obtuse apex; internal sac (Figs 24–25) well developed, containing basodorsal spur with rounded base and thin
projection, small, irregularly-shaped stiffening rib, barely definite central pieces as surrounded with a membrane, one of them rather voluminous piece constricted in middle and with rounded apex, conspicuously curved central-dorsal piece with spiny apex turned dorsad, and dorsal-upper spine.

Variability. Only that mentioned in the redescription above.

**Differential diagnosis.** This type species of the genus is immediately recognizable by the “complete” pattern of the rather wide, white elytral maculation combined with mandibles with constantly four teeth (and basal molar), proepisterna entirely glabrous, and elytral humeri in female anteriad-protruding (less distinctly also in male). The same shape of the mandibles, elytra and elytral maculation is shared with *M. exigua*, which, however, principally differs in having setose proepisterna.

The four-toothed mandibles and entirely glabrous proepisterna as in *M. cribrata* are also possessed by *M. argentina*, which however externally differs in having generally much larger, mostly vividly cupreous body (but this coloration varies, particularly in Bolivian specimens), pronotum with subparallel to parallel lateral margings and notably coarser surface sculpture, and female elytra have normally shaped humeri. Moreover, the elytra of *M. argentina* have mostly the transverse median-discal band interrupted into a separate discal macula, but this shape is variable (see under that species below). *M. chalceola* which has a sympatric occurrence, differs not only in having setose proepisterna (the setae can be easily abraded), but it can be immediately distinguished by its very different shape and surface sculpture of the pronotum, as well as by three-toothed mandibles (at least the left mandible).

**Biology and distribution.** *M. cribrata*, originally described from Bolivia, is according to the results of this revision partly sympatric with other species which were hitherto considered its subspecies or synonyms. In the areas of the type locality in the province of Moxos, Beni department, where the type specimens were caught on the sand beaches of Rio Mamoré, this species was caught also recently on the banks of the Mamore river and other places. It appears that in its localities in the Beni department it is only very rarely sympatric with other species of the “*M. cribrata* complex”. In the same department, as well as in the department of La Paz, but in different areas, only *M. chalceola* occurs.

*M. cribrata* is common in the Peruvian province of Madre de Dios, which includes Pakitza on the Manu River, a part of the large area of the Manú National Park, predominantly a part of the Southwest Amazon moist rainforest of unique biodiversity preserved thanks to its inaccessibility. From Pakitza it also was reported by Pearson & Huber (1995). However, in the area of the Tambopata River of the same province of Madre de Dios, it is sympatric with *M. chalceola*, but probably the adults are not syntopic, because adults of *M. cribrata* were taken in the same day in a playa trail, while *M. chalceola* in beach forest (although in another places *M. cribrata* also inhabits playa biotopes and a syntopic occurrence of these immediately distinguishable species is possible). In the neighbouring Bolivian departments of Santa Cruz and Cochabamba, as well as in the Peruvian and Ecuadorian Amazonia, also other species occur. Reports in literature from Colombia belong in fact to *M. chalceola* and *M. exigua*. 
Remarks. The original description (BRULLÉ 1837) in his *Voyage dans l’Amérique méridional* 6, in *Insectes de l’Amérique méridionale recueillis par Alcide d’Orbigny*, was based on both sexes and obviously on more specimens. It is therefore interesting that no syntype was found in the MNHN collection. The male syntype deposited in SDEI is heavily damaged (see in the “Type material” above) so the only other genuine type specimen, the female in SDEI from the type locality Moxos and by Alcide d’Orbigni is here designated as the lectotype (Fig. 26 shows two of the original labels).

HORN (1899) and SARMIENTO (1963) treated this species as *Prepusa cribrata* (see “Remarks” under the generic description above).

*Mesacanthina argentina* (Lynch Arríbálgzaga, 1878) comb. nov. et stat. restit. (Figs 3, 27–49)

*Phyllodroma argentina* Lynch Arríbálgzaga, 1878: 309

*Odontochila argentina* FLEUTIAUX 1892: 121.

*Prepusa cribrata argentina*: HORN 1899: 44.

*Cicindela cribrata argentina*: HORN 1899: 44.

*Mesacanthina argentina* (Lynch Arribálzaga, 1878) comb.nov. et stat. restit. (Figs 3, 27–49)

*Phyllodroma argentina* Lynch Arríbálgzaga, 1878: 309

*Odontochila argentina* FLEUTIAUX 1892: 121.

*Prepusa cribrata argentina*: HORN 1899: 44.

Type locality. Argentina: Salta.


Note: the female lectotype is in rather bad shape (see more in the redescription).


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Redescription. Body (Fig. 3) small but largest within the “M. cribrata complex”, 6.80–9.00 mm long, 2.30–3.10 mm wide (females larger than males).

Head (Fig. 35) markedly narrower than body, 1.90–2.30 mm wide.

Frons as in M. cribrata, but much more distinctly longitudinally parallel-striate.

Vertex as in M. cribrata, but the surface sculpture coarser, consisting of much deeper striae; posterior and occipital area covered with irregular, vermicular to zigzag-wavy rugae divergent when passing onto temples.

Clypeus and genae as in M. cribrata.

Labrum as in M. cribrata (within usual variability of its shape), male labrum (Fig. 35–36) 0.60–0.70 mm long, 1.00–1.10 mm wide, usually with its discal portion almost semicircular and longer than in female; female labrum (Figs 37–38) usually with its discal part more transverse (but the shape in both sexes varies), with the same shape of the only median tooth, 0.60–0.75 mm long, 1.00–1.20 mm wide (the labrum of the lectotype is deformed, either anomalously developed, or partly eaten by dermestids).

Mandibles (Figs 32–34) as in M. cribrata, but their median area mostly more reddish-cupreous or mahogany, rarely metallic-green, and the terminal teeth slightly shorter (the left mandible of the lectotype is deformed, either anomalously developed, or partly eaten by dermestids).

Palpi as in M. cribrata (within usual variability of their shape, and tint of coloration), maxillary palpi (Figs 32, 34).

Antennae as in M. cribrata (within usual variability of coloration), but the scape (Fig. 39), apart from the apical seta, has sometimes also 1–2 apical setae (which can be easily abraded).

Thorax. Pronotum (Figs 47–48) glabrous, as long as wide, or slightly longer, 1.40–1.75 mm long, 1.35–1.75 mm wide (including proepisternal margins), sulci well pronounced; anterior lobe only slightly wider than the posterior and slightly narrower than disc, its anterior margin in middle often prolonged anteriad, rather coarsely and irregularly rugulose; disc wider than long, but its lateral margins including rather distinct notopleural sutures are in male notably parallel, in female subparallel, usually moderately convex and parallel in middle (the notopleural sutures are running almost in the same line as the outer margins of the proepisterna); medial line narrow but distinct; discal surface sculpture (Fig. 49) much coarser than in M. cribrata, consisting of irregular, mostly zigzag-wavy rugae; more parallel stria-like rugae converging irregularly towards the median line on anterior area; usually more transverse rugae on lateral areas slightly surpassing notopleural sutures; posterior lobe distinctly and very irregularly rugulose; dorsolateral bulges large, moderately to rather distinctly raised; all ventral and lateral sterna including proepisterna entirely glabrous and smooth, metallic black-green to
green-blue with strong reddish-cupreous or golden-bronze lustre; mesepisterna and female mesepisternal coupling sulci of the very unusual shape as in *M. cribrata*.

Elytra (Figs 40–46) elongate, length 4.50–5.50 mm, with normally shaped, arcuate humeri (never notably anteriorly protruding); lateral margins in both sexes parallel, rarely in female slightly dilated in middle, antepalp angles arcuate, then running obliquely towards apices which are towards small sutural spine in both sexes rounded (rarely in male, subacutely) and not or only very indistinctly emarginated towards indistinct sutural spine; microserrulation very fine and often irregular; elytral dorsal surface moderately convex, humeral impressions rather wide and shallow, and therefore together with mostly shallow discal impression indistinctly delimiting rather distinct basodiscal convexity; elytral coloration variably dark cupreous with greenish lustre, or partly dark olivaceous-green (also in LT), but more commonly reddish-cupreous, rarely deep-green; whole elytral surface punctate as in *M. cribrata*, but the punctures are generally somewhat larger, particularly on anterior area, on basodiscal convexity and within the discal impression where they are often irregularly anastomosing in chains, sometimes forming cavernous sculpture there; elytral surface glabrous except for the usual, few and often indistinct long hair-like sensory setae scattered mostly on basal area, and with sparsely clustered, rather long white setae on lateral area of each epipleuron (the setae are somewhat shorter than in *M. cribrata* and usually barely visible from above); white elytral maculation in both sexes consisting of mostly continuous humeral lunule, longitudinal-elongate lateral band which is dilated posteriorly and anteriorly, only rarely prolonged into continuous transverse median-discal band, but much more commonly interrupted, forming thus isolated macula on elytral disc; antepalp-apical lunule is continuous reaching suture, but always markedly distant from the posterior end of the longitudinal lateral band.

Legs. All segments of legs rather variably coloured as in *M. cribrata*, but ventral area of femora more commonly pale ochre-testaceous to mahogany-testaceous, and this coloration is more commonly extended almost on whole femora, and also tibiae are often paler; setosity as in *M. cribrata*.

Abdomen. Ventrites with entirely glabrous surface (except for the usual, but quite copious, hair-like sensory setae at posterior margins of ventrites), coloration as in *M. cribrata*, but mostly with prevailing reddish-cupreous lustre.

Aedeagus (Figs 27–31) shaped as in *M. cribrata* and with similar variability, 2.05–2.30 mm long, 0.40 mm wide, widest above the middle; internal sac (Fig. 21) distinct, containing basodorsal spur with rounded base and thin projection; small, irregularly-shaped stiffening rib, small elongate basal-central piece, large central tooth with wide base, dorsal tear-shaped piece, two dorsal-upper spines and one ventral-upper spine (which is absent in all other species except for *M. chalceola* of which the other sclerites, however, considerably differ).

Variability. As mentioned in the redescription, the coloration varies. While the specimens from Argentina are mostly with prevailing reddish-cupreous coloration on dorsal body surface and mandibles, some adults of the population from Rio Mairana and Pocitos in Bolivia are bright-greenish to deep-green coloured, and their elytral whitish
median-discal band is variably interrupted or continuous. Antennae in Argentinean adults have sometimes the antennomeres 1–4 more reddish-cupreous tinged; apart from the usual apical seta, the antennal scape, has sometimes 1–2 additional (discal) setae (which can be abraded in most specimens, particularly by mounting treatment).

**Differential diagnosis.** *M. argentina* shares the four-toothed mandibles and entirely glabrous proepisterna with *M. cribrata*, but it can be distinguished by its parallel-side (in female subparallel) pronotal disc with notably coarser sculpture on dorsal pronotal surface, and normally shaped, rounded elytral humeri; the transverse median-discal band of whitish elytral maculation is mostly interrupted, forming thus a separate discal macula, but this shape is rather variable, and also the size and coloration of the generally much larger and mostly vividly cupreous body vary. In addition, the setae arising from the lateral margin of the epipleura are somewhat shorter and sparser than in *M. cribrata*, and the internal sac of the aedeagus contains sclerites which considerably differ from those in *M. cribrata*.

The white elytral maculation with interrupted median-discal band is very similar to that in *M. chalceola* which principally differs in having its proepisterna setose, and mandibles with only three teeth (and basal molar) or the mandibles are asymmetrically with three teeth only in right mandible.

It should be mentioned that of the hundreds of examined specimens including syntopic adults, two of nine specimens (COSJ) from Espejillos near the city of Santa Cruz, possess partly setose proepisterna, while the other characters correspond with *M. argentina*. Nevertheless, the locality, a gorge with clayey sediments and sandy places of a dry rivulet bed is very long, and as *M. chalceola* also occurs in the same area, a possible hybridization or evolutionary forces should be taken into consideration; notwithstanding, we believe that such minor exceptions in only few specimens cannot disrupt the species concept.

**Biology and distribution.** The most specimens of *M. argentina* come from the area of the type locality Salta in Argentina, but this species is also common in Bolivian departments of Tarija, Gran Chaco, Chuquisaca, rarely Santa Cruz. From the Argentinean provinces of Salta, San Juan and Misiones it was recently reported by **WIESNER & BANDINELLI** (2014) with a map of the distribution in Argentina; some of the specimens have been examined and are listed here.

We were unable to examine most of the numerous specimens listed from Bolivia by **PEARSON, GUERRA & BRzoska** (1999) as *M. cribrata* and *M. chalceola*, but they obviously cover several species; for instance examined specimens from Rio Mairana (Santa Cruz department), as well as the records by these authors from the Bolivian department of Tarija, listed as *M. chalceola*, proved to be in fact *M. argentina*.

**Remarks.** The amazingly detailed description of this species by **LYNCH ARRIBÁLZAGA** (1878) under the name *Phyllodroma argentina*, was based on two males and one female collected by Eduardo L. Holmberg. Unfortunately, the only preserved genuine syntype of this species is the female from the collection of Holmberg, now deposited in SDEI and designated here as the lectotype. As the lectotype is in a bad shape and its left mandible...
and labrum deformed (anomalously developed or eaten by dermestids), only its elytron and right mandible are illustrated here. Together with curators and personally we searched in other collections, but without a success. According to Axel O. Bachmann (pers. com) Holmberg loaned the type specimens to Lynch Arribálzaga for the description, and they were apparently returned to Holmberg, whose collection (chiefly Hymenoptera) was totally destroyed by dermestids after the death of Holmberg. The remains were deposited in the collection of Museo Argentino de Ciencias Naturales (Buenos Aires). According to Axel O. Bachmann (pers. com), who searched in this Argentinean museum collection where old collections of Argentina including of Lynch Arribálzaga and probably Holmberg are deposited, there is no type specimen of this species.

SCHILDER (1953b), probably due to the similar pattern of white elytral maculation, synonymized this taxon with *M. chalceola* (as “Cicindela cribrata chalceola”), and the synonymy was followed by GUERRA et al. (1997), WIESNER (1992), LORENZ (1998a,b, 2005a,b) and ERWIN & PEARSON (2008).

SARMIENTO (1963), who did not examine type specimens of the “*M. cribrata* complex”, and based his examination mostly on Argentinean specimens, inappropriately synonymized *M. argentina* with *M. cribrata* (as *Prepusa*), and treated as synonyms also other taxa of this complex (except for *M. reductesignata*). He superfluously transferred *M. cribrata* and *M. reductesignata* (spelled by him as “reductisignata”) to the genus *Prepusa* as he overlooked that *M. cribrata* (as *Cicindela*) was previously transferred to *Prepusa* by HORN (1899) – regarding the genus-group name *Prepusa*, see “Remarks” under the generic description here. Moreover, the redescription of “*Prepusa* cribrata” by SARMIENTO (1963) obviously covered also the taxa treated here as separate species; his rather schematic illustration of the internal sac of the aedeagus refers to *M. argentina*, which, as a result of our revision, differs from *M. chalceola* in the complex of here emphasized diagnostic characters.

It should be noted that the scholastic line drawings of labra and aedeagi allegedly for *M. cribrata* and *M. argentina* by MANDL (1958) are rather inaccurate and does not reflect the variability.

**Mesacanthina exigua** (Lucas, 1857) comb.nov.  
(Figs 4–5, 50–66)

*Peridexia exigua* Lucas, 1857: 32
*Odontochila exigua*: HORN 1892: 212.
*Odontochila exigua*: FLEUTIAUX 1892: 124. (as synonym of “*Odontochila* cribrata”).

**Type locality.** “Minas Gerais” (see Remarks)


**Redescription.** Body (Figs 4–5) appearance as in *C. cribrata*, but generally somewhat smaller and coloration more often dark copper, 6.10–7.30 (ST ♀ 6.20, the lost ST ♂ 6.90) mm long, 1.90–2.70 (ST ♂ 2.10, the lost ST ♀ 2.30) mm wide.

Head (Figs 55–56) with frons, vertex, genae and clypeus as in *M. cribrata*. Labrum as in *M. cribrata*, but generally smaller; male labrum (Figs 58–59) with almost semicircular discal part, 0.50–0.55 mm long, 0.75–0.90 mm wide; female labrum (Figs 60–61) more transverse, 0.50–0.60 mm long, 0.90–1.05 mm wide.

Mandibles (Figs 55–57) shaped as in *M. cribrata*, with four teeth in both mandibles; terminal teeth slender and extremely long, particularly in female.

Palpi (Figs 55–57) as in *M. cribrata*.

Antennae as in *M. cribrata*, but antennomeres 1–4 generally darker, usually dark reddish-brown to almost black with green lustre on scape and pedicel, and greenish, mahogany or purple lustre on antennomeres 3–4.

Thorax. Pronotum (Figs 53–54) dorsally glabrous, wider than long (particularly in female), 1.10–1.30 mm long, 1.15–1.50 mm wide, with the same, mostly subglobe shape and extremely fine surface sculpture of disc as in *M. cribrata*, but more often in female the convex lateral margins are subparallel in middle; ventral and lateral sterna as in *M. cribrata*, but proepisterna setose (setae can be easily abraded).

Elytra (Figs 50–52) shaped as in *M. cribrata*, but predominantly dark copper, and elytral apices in male more often subacute towards more distinct sutural spine, in female rounded; elytral length 3.60–4.40 mm.

Legs as in *M. cribrata* with similar variability in coloration.

Abdomen as in *M. cribrata*, but surface of ventrites with more copious, indistinct microsetae (visible only in a certain angle of illumination, and easily abraded).

Aedeagus (Figs 62–66) of similar shape and size as in *M. cribrata*, but the apical half attenuated to narrower apex, but this shape is very variable; internal sac (Figs 65–66) with much longer dorsal-upper spine than in other species, and also the other sclerites differ; the basal piece is not with a filiform projection, but it is obvious that there are two separated pieces.
Variability. Of the variability mentioned in the redescription, the variability of the apex of the aedeagi is very unusual, and possibly another “cryptic” species can be recognized within the “M. cribrata species complex”.

Differential diagnosis. By its external characters, particularly the constantly four-toothed mandibles, wide pronotum with fine sculpture on dorsal surface, elytra with “complete” white maculation and anteriad-protruding humeri in female, *M. exigua* is superficially very similar to *M. cribrata*, but principally differs in having setose proepisterna; moreover, the dorsal body surface is generally darker, and antennal scape and pedicel are almost metallic black (with strong green lustre). *M. exigua* shares the “complete” white elytral maculation, wide pronotal disc and setose proepisterna with *M. setopronotalis* which clearly differs in having dorsal pronotal surface setose and mandibles with only three teeth (and basal molar). *M. chalceola* which also possesses setose proepisterna, can be immediately distinguished from *M. exigua* by its narrower, parallel-side pronotum, mandibles with only three teeth (and basal molar), or asymmetrically the left mandible with four teeth, while the right mandible has only three teeth (very rarely also a rudiment of the fourth tooth); moreover, elytral humeri in *M. chalceola* are normally shaped in both sexes, and white elytral maculation is mostly with interrupted median-discal band.

Biology and distribution. Distributed in a large area of the Amazon Basin in Peru, Ecuador and Bolivia; only a few specimens have been examined from Colombian and Brazil Amazonia. For the type locality see “Remarks” below.

Remarks. **Lucas** (1857) did not write how many specimens he used for his description, but in his original description of *Cicindela exigua* he probably made a mistake when he stated the type locality as “Minas Gerais”. We doubt that there is the occurrence of this species as Minas Gerais is near the eastern coast of Brazil, not in the true Amazonia, and no specimen from the area was examined by us during the present revision. Years ago, the second author examined a female syntype of *M. exigua*, rather ambiguously labelled “Bresil” (not originally labelled as “type”) borrowed from MNHN, and he made a detailed redescription of the female in his personal notebook. Unfortunately, this type specimen has not been found recently by the first author or by the curator in the General collection of MNHN. The first author have examined three possibly syntypes of *M. exigua* deposited in MNHN, one of them, the male labelled: “Museum Paris / Ht, Amazone / de Castelnau 1847” can be more probably a syntype and can be designated as a lectotype, but meanwhile we keep it as a syntype. The other male and female in MNHN have the printed labels “Museum Paris / Ht, Amazone / Pebas / de Castelnau 1847, and they also have the same plain-green circled label with “9/47” on its opposite side, as the male syntype, as well as the female examined by the second author, and evidently come from the same journey “l’Amérique du Sud” realized in 1847 by Laporte de Castelnau, and the gained material examined by Lucas (1857). After we have compared the unpublished detailed redescription by the second author of the possibly lost female syntype to these possibly syntypes, we believe that all come from the same locality despite different labels. All were originally pinned and later glued by somebody on the same papered boards. Although the “Pebas” written on the labels lies in Peruvian
Amazonia and not in Brazil, the female from Pebas is identical with the redescription of the lost female syntype labelled “Bresil”; it has the same elytra including the “complete” elytral maculation, as well as the shape of the labrum and pronotum and the setose proepisterna, although most of the setae are abraded by the above mentioned re-mounting of the specimens.

Alternatively, only the probably lost female with the label “Brazil” examined by the second author can be the genuine type, and all others, although coming from the same journey by Castelnau, were not examined by Lucas when he described this species. If so, they cannot be syntypes. Nevertheless, as all taxa described by Lucas (1857) come from the journey “l’Amérique du Sud” by Laporte de Castelnau, realized in 1847, and most of them were described by Lucas from the Mission Sarayacu in Peruvian Amazon (Pebas lies in the same area on the Ucayali River in the Upper Amazonia in the Peruvian province of Loreto), we believe that the “Minas Gerais” in the original description was an error, as it was also the possibly additionally attached label “Brazil” to the possibly lost female.

**Mesacanthina microtheres** (Bates, 1872) comb.nov. (Figs 6, 67–79)

*Cicindela microtheres* Bates, 1872: 265

*Odontochila microtheres*: Fleutiaux 1892: 124.

*Propusa microtheres*: Horn 1899: 44.

*Cicindela microtheres*: Bates, 1872: 265

*Prepusa microtheres*: Horn 1899: 44.

*Cicindela microtheres*: Horne 1899: 44.

*Phyllodroma* (*Pentacomia*) *microtheres* Schilder 1953a: 545.

Type locality. Ecuador: “Macas district”.


Redescription. Body (Fig. 6) appearance as in *C. cribrata*, but notably black coloured, 5.70–6.80 (NT 6.20) mm long, 1.90–2.50 (NT 2.20) mm wide.

Head (Fig. 67) large, but notably narrower than body, 1.70–1.90 mm wide.

Frons glabrous, steeply sloping towards clypeus and clearly separated from it and confluent with vertex, black, almost smooth in middle, lateral areas finely longitudinally parallel-striate.
Vertex black, almost flat in middle, glabrous; surface of anteromedian area very finely and densely longitudinally parallel-striate, striae in middle often vermicular, forming an arcuate ornament; striae on sublateral areas and passing onto temples are more distinct; orbital areas very unusually with only few parallel longitudinal striae adjacent to eyes, but the remaining anterior-basal orbital area is obliquely transversely or arcuately, extremely finely parallel-striate; occipital area finely and irregularly wavy-rugulose to asperate.

Labrum as in *M. cribrata*, male labrum (Fig. 68) with semicircular discal part, 0.50–0.60 mm long, 0.75–0.90 mm wide; female labrum (Fig. 69) more transverse, 0.50–0.55 mm long, 0.95–1.00 mm wide.

Mandibles (Fig. 67) as in *M. cribrata* with fourth-teeth and of the same shape, but generally much darker, and in female with less extended ochre lateral area.

Palpi (Fig. 67) as in *M. cribrata*, but besides the black-green terminal palpomeres, sometimes also the penultimate palpomere of maxillary palpi are darkened or with metallic-green lustre.

Antennae as in *M. cribrata*, but antennomeres 1–4 much darker, to almost black with blue, or green and purple lustre on antennomeres 3–4, antennomeres 5–11 black; scape notably large and with only apical setae.

Thorax. Pronotum (Figs 70–71), dorsally glabrous, in male almost as long as wide, in female wider, 1.05–1.30 mm long, 1.10–1.40 mm wide; anterior lobe wider than the posterior, but narrower than disc, its anterior margin in middle distinctly prolonged anteriad, densely irregularly rugulose; disc notably wider than long, more distinctly in female, lateral margins in male (including notopleural sutures and outer margins of proepisterna) parallel or slightly narrower in middle, in female more convex; medial line narrow but distinct; discal surface sculpture very fine and dense, asperate to consisting of very irregular, mostly vermicular and wavy rugae, anterior area with parallel, fine and dense striae passing towards the median line; posteromedian area with coarser parallel rugae running towards the median line; shallow but distinct almost transverse rugae on lateral areas surpass notopleural sutures; posterior lobe more distinctly and irregularly rugulose, rugae cover also moderate dorsolateral bulges; ventral and lateral sterna as in *M. exigua*, but proepisterna distinctly punctate-setose.

Elytra (Figs 78–79) black-coloured, 3.70–4.40 mm long, shaped as in *M. exigua*, humeri in female anteriad-protruding; elytral apices in male even more distinctly subacute towards more distinct sutural spine, in female widely rounded towards indistinct sutural spine; elytral whitish maculation somewhat differs from other species: anterior half of humeral lunule is in female often barely visible, and median-discal band is either continuous, or semi-interrupted, and its discal portion is usually bent downwards; anteapical and apical lunule as in *M. cribrata*; elytral punctation consists of notably larger punctures which are much more commonly anastomosing in chains, their intervals forming almost cristulate sculpture; particularly large punctures are within discal impression but also around the white median band.
Legs as in *M. cribrata*, but femora and tibiae predominantly almost black with green lustre and with less extended pale basoventral area on femora; tarsi metallic black-blue or black-green.

Abdomen as in *M. exigua*, besides the longer sensory setae, surface of ventrites with indistinct microsetae (visible only in a certain angle of illumination, and easily abraded).

Aedeagus (Figs 72–77) of similar shape and size as in *M. exigua*; internal sac (Figs 76–77) also similar, but the sclerites somewhat differ.

**Differential diagnosis.** *M. microtheres* is a rather outstanding species. It shares the setose proepisterna with *M. exigua* and *M. chalceola*, but is distinguished from them and from all other species of the genus by its black body coloration. The regularly four-toothed mandibles and extremely fine sculpture on pronotal surface distinguish *M. microtheres* also from dark, nearly black specimens (DBCN) of *M. chalceola* (from the Bolivian department of La Paz). The pronotum of *M. microtheres* has parallel lateral margins in male (thus immediately differing from that in *M. exigua*), only slightly more convex in female. Elytral punctuation consists of larger punctures which are more commonly anastomosing in chains, particularly around the white median band, their intervals often forming almost cristulate sculpture; moreover, the whitish elytral median-discal band is mostly narrowed when arising from its lateral portion (tending to be interrupted), its discal portion is usually bent downwards.

**Biology and distribution.** The neotype locality of *M. microtheres* corresponds with the original type locality. Rio Upano is a river near the town of Macas in the Ecuadorian province of Morona Santiago, and also recently caught specimens come from this Amazonian area along the Macas – Puyo road and around Puyo which belongs to the neighbouring province of Pastaza. The adults inhabit the river beaches in the altitude about 1000 m.a.s.l. According to one of the collectors (David Brzoska pers. com), the adults were found in moist sandy upper flood plains of rivers and streams, but not usually along the water’s edge. In the area of Ecuador along the Upano and Pastaza Rivers the sand is darker.

**Remarks.** The original description of *Cicindela microtheres* Bates, 1872 was very probably based on only male. The type was very probably lost as no specimen corresponding with it by labels has been found by us and curators in collections including the most relevant MNHN and BMNH. Therefore, the male (BMNH) from the area of the type locality and possessing diagnostic characters emphasized in the original description by Bates (1872) is designated here as a neotype.

**Horn** (1899), who accommodated most of species of *Mesacanthina* in the genus *Prepusa*, inappropriately synonymized “*Prepusa* microtheres” with “*Prepusa* cribrata.” Also **Sarmiento** (1963), who did not examine type specimens of the “*M. cribrata* complex”, and based his examinations mostly on Argentinean specimens, followed the synonymy and generic classification.
Mesacanthina chalceola (Bates, 1872) comb. nov. et stat. restit.
(Figs 8, 80–100)

Odontochila chalceola: Fleutiaux 1892: 124.
Prepusa chalceola: Horn 1899: 44.
Phyllodroma (Pentacoma) cribrata chalceola: Schröder 1953a: 545.

Type locality. “Interior of Northern Peru”.


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Redescription. Body (Fig. 8) very small to small, of very variable size in both sexes, but females mostly larger than males, 5.55–7.40 (NT 5.40) mm long, 1.80–2.70 (NT 2.00) mm wide.

Head (Figs 80–81) markedly narrower than body, 1.65–2.10 mm wide.

Frons as in *M. cribrata*, but more distinctly longitudinally parallel-striate.

Vertex as in *M. cribrata*, but the surface sculpture more distinct, consisting of much deeper striae; posterior and occipital area covered with irregular, vermicular to zigzag rugae which become divergent when passing onto temples.

Clypeus and genae as in *M. cribrata*.

Labrum basically as in *M. cribrata* but more variable in shape, particularly in female; male labrum (Figs 85–86) 0.55–0.60 mm long, 0.80–0.85 mm wide, usually with its discal part notably longer than in female, semicircular, its outer margin often sinuate; female labrum (Fig. 87) 0.60–0.70 mm long, 0.95–1.05 mm wide, usually with its discal part more transverse, but the shape in both sexes varies.

Mandibles (Figs 80–84) with only three teeth (and basal molar), or asymmetrically left mandible with four teeth, while the right mandible has only three teeth or very rarely also a rudiment of the fourth tooth; terminal teeth in male notably shorter than those in female; coloration as in *M. cribrata*.

Palpi (Figs 80–82) as in *M. cribrata*, but generally darker.

Antennae as in *M. cribrata*.

Thorax. Pronotum (Figs 93–94) dorsally glabrous, 1.40 mm long, 1.05–1.50 mm wide (in male as long as wide, or slightly longer, in female wider); anterior lobe slightly wider than the posterior and very slightly narrower than disc, its anterior margin in middle often prolonged anteriad, rather coarsely and irregularly rugulose; disc wider than long, but its lateral margins including rather distinct notopleural sutures are in male notably parallel, in female usually moderately convex and subparallel (parallel in middle); medial line distinct; discal surface sculpture much coarser than in *M. cribrata*, resembling that in *M. argentina*, consisting of irregular, mostly zigzag-wavy rugae; usually more transverse rugae on lateral areas slightly surpass notopleural sutures; posterior lobe distinctly and very irregularly rugulose, rugae covering also moderately raised dorsolateral bulges; ventral and lateral sterna as in *M. exigua* and *M. microtheres*, proepisterna setose on their whole surface, but the setae can be easily abraded.

Elytra (Figs 88–92) elongate, 3.40–4.20 mm long, lateral margins in male parallel, in female slightly dilated in middle, antepatinal angles arcuate, than obliquely running towards apices which are in male subacute to acute towards distinct sutural spine, in female rounded towards indistinct sutural spine; Elytral coloration very variable, bronze-cupreous, dark copper, black with olivaceous, green or cyanous tinge; elytral punctation similar to that in *M. cribrata*; whitish elytral maculation resembling that in *M. argentina*, consisting of humeral lunule which is either continuous or rarely interrupted, the longitudinal-lateral band is dilated posteriorly and anteriorly, and the median-discal band is predominantly interrupted, forming thus isolated discal macula, rarely semi-interrupted.

Legs as in *M. cribrata* with similar variability in coloration.
Abdomen as in *M. exigua*, surface of ventrites covered with more distinct and usually denser microsetae.

Aedeagus (Figs 95–100) similar to other species, but internal sac (Figs 98–100) with different sclerites.

Variability. The specimens (DBCN) from the Bolivian department of La Paz and Peruvian Chanchamayo (cited in “Other material examined”) are nearly black with olivaceous or cyaneous tinge.

Differential diagnosis. *Mesacanthina chalceola* possesses a similar pattern of the white elytral maculation with interrupted median-discal band and the same shape of the lateral band, as well as the pronotum with parallel or subparallel lateral margins and similar, rather coarse surface sculpture as in *M. argentina*, but principally differs in having setose proepisterna, and the mandibles with only three teeth (and basal molar), or asymmetrically left mandible with four teeth, while the right mandible has only three teeth or very rarely also a rudiment of the fourth tooth; the structure of the internal sac of the aedeagus also differs. The shape of the mandibles, as well as the coarser sculpture on the pronotal surface, clearly distinguish *M. chalceola* (including its black-aberrant specimens mentioned in the “Variability” above) from *M. microtheres*.

Biology and distribution. The type locality of *M. chalceola* was stated inexactly by Bates (1872) as “Interior of Northern Peru”. The neotype designated here comes from the area which rather corresponds with the type locality, because Boqueron Abad (sometimes as Boqueron Padre Abad) is a narrow gorge on the border of the Peruvian provinces of Loreto and Huanuco in the Cordillera Azul, through which it passes the trans-Andean highway to Pucallpa. In the Peruvian province of Madre de Dios, *M. chalceola* is sympatric with *M. cribrata* (see under that species above). It occurs in other areas of the Peruvian Amazon, but also in Bolivia and Colombia. In Bolivian departments of Cochabamba and Santa Cruz it is sympatric with *M. cribrata*, in the latter department also with *M. argentina*; in the areas of Río Surutu and Río Yapacani, it occurs together with *M. cribrata*. Records by Pearson, Guerra & Brzoska (1999) from the Bolivian department of Tarija and from some other localities in the departments of Santa Cruz and Chuquisaca, proved to be in fact *M. argentina* (see under *M. argentina* here). Also the occurrence of *M. chalceola* (as “*M. cribrata chalceola*”) in Argentina (Salta) mentioned by Wiesner (2000) belonged in fact to *M. argentina* which was recently correctly listed from Salta by Wiesner & Bandinelli (2014) (see under that species here).

Remarks. The original description of *Cicindela chalceola* Bates, 1872 was probably based on one female only, which is very probably lost as no type specimen (or a specimen corresponding with it by labels) has been found by curators and personally by us in collections including the most relevant MNHN and BMNH. Therefore, the male deposited in BMNH coming from an area of the type locality is designated here as a neotype. The diagnostic characters of the neotype well correspond with the original description. The body size of this species was described by Bates (1872) as larger than that in *M. cribrata*, but this statement is quite misleading as the body-size is usually much larger in females. Moreover, the body size considerably varies in all species of the “*Mesacanthina cribrata* complex”, and is even more variable in this species.
The resemblance of the white elytral maculation as well as the cupreous coloration of many specimens, probably caused that *M. chalceola* was in collections commonly confused with *M. argentina* despite the diagnostic difference in the mandibles and the setose proepisterna. The setosity was not mentioned in the original description, as it was overlooked or underestimated not only by historical authors, but also by Rivalier (1969) who did not mention it also in all other taxa of the subtribe.

Schilder (1953b) correctly recognized that the older name *Cicindela chalceola* was not preoccupied and had priority and he therefore disagreed with the unavailable “reverse” synonymy of *C chalceola* with *C. argentina* by Horn (1905), followed by Bruch (1911) and the synonymy maintained by Horn (1915, 1926, 1931). On the other hand, Schilder (1953a) incorrectly synonymized *M. argentina* with *M. chalceola* (see “Remarks” under *M. argentina*). As Rivalier (1969) in his revision did not mention *M. chalceola* but only *M. argentina* (as Pentacomia (*Mesacanthina*) *argentina*), he probably also quite inappropriately considered the former as a synonym of the latter.

*Mesacanthina setopronotalis* (W. Horn, 1909) comb.nov. et stat.nov. (Figs 7, 101–112)

*Cicindela cribra setopronotalis* W. Horn, 1909: 447.
*Cicindela cribra seto-pronotalis*: Horn 1920: 3.
*Phyllodroma (Pentacomia) cribra setopronotalis*: Schilder 1953a: 545.

**Type locality.** Rio Juruá (= Yuruá, incorrectly spelled “Iurura” by Horn 1909), Amazon Basin (see “Biology and distribution” below).


**Redescription.** Body (Fig. 7) very small, 5.80–6.60 (HT 5.80) mm long, 2.00–2.40 (HT 2.00) mm wide.

   Head (Figs 108–109) markedly narrower than body, 1.70–1.90 mm wide.

   Frons, vertex, genae and clypeus as in *M. cribra*.

   Labrum basically as in *M. cribra*; male labrum (Fig. 102) 0.57–0.60 mm long, 0.80–0.85 mm wide, its discal portion notably longer than in female, semicircular to almost triangular and with often sinuate outer margin; female labrum (Fig. 103) 0.55 mm long, 1.00 mm wide, its discal part more transverse.
Mandibles (Figs 108–109) asymmetrical, left mandible with four teeth, while the right mandible has only three teeth (and basal molar); terminal teeth in both sexes very long and slender; coloration as in *M. cribrata*.

Palpi (Fig. 109) as in *M. cribrata*.

Antennae as in *M. cribrata*.

Thorax. Pronotum (Fig. 101) similar in shape as in *M. cribrata*, but dorsal surface setose, 1.05 mm long, 1.20 mm wide; anterior lobe slightly wider than the posterior and slightly narrower than disc, its anterior margin in middle often prolonged anteriad, rather coarsely and irregularly rugulose and covered with rather sparse, mediocre long white setae; disc wider than long, subglobose, in male with convex lateral margins, in female usually lateral margin subparallel; medial line distinct; discal surface sculpture as in *M. cribrata*, only slightly coarser, whole dorsal surface of disc rather densely covered with short to mediocre long, white setae (which can be easily abraded); posterior lobe with sparser setae; ventral and lateral sterna as in *M. exigua*, proepisterna densely setose on their whole surface, but the setae can be easily abraded.

Elytra (Figs 110–112) elongate, 3.60–4.25 mm long, shape, coloration and pattern of elytral punctuation as in *M. cribrata*; whitish elytral maculation “complete” of the same pattern as in *M. cribrata* and *M. exigua*, but the maculation is notably wider, and the wide anteapical-apical lunule is mostly connected with the wide longitudinal-lateral band by a narrow stripe.

Legs as in *M. cribrata* with similar variability in coloration.

Abdomen as in *M. cribrata*, surface of ventrites glabrous, but some of the sensory setae at margins of ventrites sometimes spread onto the surface.

Aedeagus (Fig. 104–107) similar to that in *M. cribrata*, 1.95 mm long, 0.40 mm wide; internal sac (Figs 106–107), differing from all other species, particularly by very different, notably long and rather thick stick-like central piece.

**Differential diagnosis.** *M. setopronotalis* differs from all other species of the genus in having dorsal surface of its pronotum densely covered by short setae (the setae are easily abraded, as it is, fortunately only partly, in the two specimen from CMNH), but the other characters can still distinguish this species clearly. The pronotum is notably wider than long with convex lateral margins, proepisterna setose, and the mandibles asymmetrical with right mandible with only three teeth (and basal molar).

*M. chalceola* also has only three teeth in its mandibles (either in both mandibles or asymmetrical in only the right mandible) as well as setose proepisterna, but it clearly differs in having the dorsal pronotal surface glabrous, narrower pronotum with parallel margins and much coarser surface sculpture, and its white elytral maculation is much thinner and with mostly interrupted median-discal band.

The wide pronotum, setose proepisterna and the “complete” white elytral maculation of *M. setopronotalis* are shared with *M. exigua*, which however clearly differs in having its mandibles consistently with four teeth (and basal molar) and dorsal pronotal surface entirely glabrous.
**Biology and distribution.** *M. setopronotalis* is obviously a very rare species, previously known only from the holotype caught by Schneider in an area of Rio Yuruá (= Juruá) and the identified female (BMNH) from the type locality (probably the same which was recorded by HORN (1920), but the female in BMNH was labelled by him as *Cicindela cribrata*). The locality is rather ambiguous, because Rio Yuruá is very long (of total length about 2400 km); it rises among the Ucayali highlands in Peru and flows northwards through the Brazil state of Acre, meanders eastward and then north-eastward into the Amazon River. The other examined two males (CMNH) come from the area of the neighbouring Rio Purús, which also is a very long Amazon tributary, originating in Peru, its main part in Brazil where it enters the larger Amazon tributary Rio Solimões about 110 km west of its mouth to the Amazon river in Manaus. Both rivers have very similar biotopes.

Records from Bolivia by PEARSON, GUERRA & BRZOSKA (1999) are based on misidentification: for instance the examined specimens (JWCW) labelled: “Bolivia, Santa Cruz / Rio Surutu / Ichio, 27.X.2002 / leg. J. Ledezma & al.” proved to be in fact *M. cribrata*, and others from Rio Surutu (DBCN), listed here, are *M. cribrata* and *M. chaliceola*.

**Remarks.** Besides the misidentification in literature mentioned in “Biology and distribution” above, some other specimens of *M. cribrata* were misidentified by Mandl in collections as *M. setopronotalis*. The authors obviously overlooked that HORN (1909) in the original description of “*Cicindela cribrata* subsp. *setopronotalis*” emphasized the setose dorsal pronotal surface.

**Mesacanthina reductesignata** (W. Horn, 1905) comb.nov.
(Figs 9, 113–128)

*Cicindela cribrata* reductesignata W. Horn, 1905: 18.

*Phyllodroma* (*Pentacomia*) *cribrata* reductesignata: SCHILDER 1953a: 545.

*Cicindela cribrata* reductesignata: MANDL 1958: 23, 24, plate 1, fig. 1, (5, 6).


*Pentacomia* (*Mesacanthina*) reductesignata: RIVALIER 1969: 233, 234, fig. 25rs, 235, fig. 26rs.

**Type locality.** Argentina: “N.W. Gran Chaco”.


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Redescription. Body (Fig 9) small, but much larger than in *M. cribrata*, 7.50–8.40 mm long, 2.60–3.00 mm wide (females larger than males).

Head (Fig 117) markedly narrower than body, 2.20–2.40 mm wide.

Frons and vertex as in *M. cribrata*, but much more distinctly striate, vertex with longitudinally parallel-striae on lateral areas deeper and more parallel when passing towards temples.

Clypeus and genae as in *M. cribrata*.

Labrum as in *M. cribrata*, but generally more transverse, male labrum (Figs 119–120) 0.60–0.70 mm long, 1.05–1.10 mm wide; female labrum (Fig. 121) with the same shape of the only median tooth but usually with discal part even more transverse, 0.80–0.85 mm long, 1.20–1.40 mm wide, ivory-white coloration sometimes ochre-testaceous darkened in middle, and with brownish tooth.

Mandibles (Fig. 117) as in *M. cribrata*, apical teeth extremely long in both sexes (HT, Fig.9, has apices of the terminal teeth broken).

Palpi (Fig. 117) as in *M. cribrata* (within usual variability of their shape, and tint of coloration).

Antennae as in *M. cribrata*, but the antennomeres 1–4 darker, almost black with green or purple lustre. Thorax. Pronotum (Fig. 118) almost as long as wide, 1.40–1.70 mm long, 1.50–1.70 mm wide, anterior lobe wider than the posterior, rather coarsely irregularly vermicular to wavy rugulose; disc almost globose, because not only its lateral
margins, but also its dorsal surface is notably convex, surface sculpture rather distinct, consisting of vermicular to wavy rugae which are in middle more parallel and obliquely transverse when converging towards rather distinct median line; posterior lobe covered with shallower, very irregular rugae which cover also moderate dorsolateral bulges; lateral and ventral sterna, including proepisterna coloured and glabrous as in *M. cribrata*.

Elytra (Figs 113–116) elongate, 4.60–5.20 mm long, humeri rounded, rarely in female very indistinctly anteriad-protruding, lateral margins moderately dilated in middle, more distinctly so in female, anteapical angles arcuate, then obliquely running towards apices which are in male subacute towards small sutural spine, in female widely rounded towards indistinct sutural spine; pattern of elytral punctation as in *M. cribrata*; whitish elytral maculation very reduced; humeral macula small and rounded; longitudinal-lateral band and its transverse protrusion short, very rarely the median band is even more reduced, broken into very short and indistinct, separated maculae (Fig. 116); anteapical-apical lunule distinct, reaching suture.

Legs as in *M. cribrata* with similar variability in coloration.

Aedeagus (Figs 122–128) differing from other species in the shape of its apex which is much narrower with tips moderately bent ventrad; internal sac (Figs 125–128) well developed, containing small, highly-sclerotized basal spur with a circular base, small, irregularly shaped stiffening rib, elongate central tooth with indefinitely shaped basal part, large, conspicuous median-dorsal piece with spiny apex associated with small spine; dorsal-upper spine, and a membranous, elongate ventral piece.

Variability. *M. reductesignata* is variable in the coloration and the shape of the median band (as mentioned in the “Redescription” and “Differential diagnosis” and obvious from Figs 113–116).

**Differential diagnosis.** *M. reductesignata* immediately differs from six species of the “*M. cribrata* complex” by its reduced pattern of white elytral maculation: humeral macula small and rounded, longitudinal-lateral band including its transverse protrusion short. Very rarely the median band is even more reduced, broken into separated maculae which may be very short and indistinct (Fig. 116). Internal sac of the aedeagus is much more similar to that in *M. punctum* than to species of the “*M. cribrata* complex”.

**Biology and distribution.** *M. reductesignata* is very common species, reported from many localities in Paraguay (provinces of Boquerón, Central, Guairá and Pte Hayes) by WIESNER (2000), and from Argentina reported recently by WIESNER & BANDINELLI (2014) from a great number of localities in the provinces of Santa Fé, Córdoba, Santiago del Estero, Jujuy, Chaco and Misiones, with a map of the distribution in Argentina. It is there sympatric with *M. argentina*. In Bolivia it is common in the departments of Tarija and Santa Cruz, reported from many localities of these provinces by PEARSON, GUERRA & BRZOSKA (1999); in these Bolivian departments it is sympatric with *M. argentina* which was reported by these authors partly as *M. chaleeola*.

**Remarks.** Originally described by HORN (1905) as a subspecies of *M. cribrata* (as Cicindela), but quite properly recognized and treated as a separate species by RIVALIER (1969) followed by WIESNER (1992) and all subsequent authors.
**Mesacanthina punctum** (Klug, 1834) comb.nov.

Cicindela punctum Klug, 1834: 12.
Odontocilla puncta (sic!): Fleutiaux 1892: 124.

**Prepubes punctum**: Born 1899: 44.

*Pentacoma (Mesacanthina) punctum*: Rivaler 1969: 234, fig. 25, 235.

**Type locality.** Brazil.

**Misapplications.** *Non Pentacoma (Mesacanthina) punctum sensu* Pearson, Guerra & Brzóska 1999: 457 (partim), which is *M. ronhuberi* (Moravec, 2012) comb.nov.


**Redescription.** Detailed redescription and illustrations see in Moravec (2012c).

**Differential diagnosis.** Among the species of the genus *Mesacanthina, M. punctum* is immediately recognizable by its pattern of white elytral maculation, lacking humeral macula and any lateral band, but consisting of only a median-discal spot clearly distant from the outer elytral margin, and larger, mostly triangular anteapical macula. Such

Pattern of maculation is shared only with *M. ronhuberi* (see below), but *M. punctum* is clearly recognizable by its four-toothed mandibles (apart from basal molar), and labrum ivory-white to ochre-testaceous in both sexes. Adults from Brazilian Mare Hespanha (SDEI) are with strong green lustre.

**Biology and distribution.** All the specimens examined come from Brazil, Argentina and Paraguay. The Mar de Hespanha locality is in the Brazilian state of Minas Gerais. The “Hansa” location is historical, referring to a colony in the Brazilian state of Santa Catarina. As well as the specimens cited from the Paraguayan departments of Guaira, Central, Cordillera, Conception and Paraguari, Wiesner (2000) reported this species from other Paraguayan localities in the Amambay, Caaguazú, Caazapá, Canindeyu, Misiones and San Pedro departments. The species has not been reported from any of the departments of the large area of Paraguayan Grand Chaco.

The reports from Bolivia by Pearson, Guerra & Brzoska (1999) refer partly to *M. ronhuberi*. The same is partly true of the Bolivian reports by Ledezma (2000) and the reference to this author by Erwin & Pearson (2008).

One of the personal experiences with the biology of *M. punctum* includes recently observed adults in Paraguay, where this species is common and inhabits the sandy banks of rivers and small streams. The adults are diurnal and fly very well. In most Paraguayan localities the adults were hunting on the sandy banks of rivers and on large, flat, mostly laterite rocks and stones along streams, sometimes together with *Brasiella (Gaymara) chlorosticta* (Kollar, 1836). In the riverside locality between Valenzuela and Sapukai (Paraguari department), the adults occurred on wet black mud densely overgrown with grass; in jeopardy, they usually rested on the black mud, thus becoming almost invisible. In the locality Itaugua, La Cantera (department Central), the adults flew along waterways in a kaolin quarry.

The larva and its biology were described by Zikan (1929).

**Remarks.** The mandibles with four teeth (and basal molar), as well as the ivory-white to ochre coloration of the labrum in both sexes were constant characters in all the specimens examined, including the female paralectotype (MFNB).

Horn (1899) inappropriately placed *M. punctum* to the genus *Prepusa* Chaudoir, 1850 (see “Remarks” under the generic description).

*Mesacanthina ronhuberi* (Moravec, 2012) comb.nov.

*Pentacomia (Mesacanthina) ronhuberi* Moravec, 2012c: 54, figs 2, 15–33.

**Type locality.** Bolivia, Department of Beni: Vaca Diez, 100 km S Riberalta (12°45′S;66°30′W).

**Type material.** Holotype ♂ in NHMK, labelled: “Bolivia – Beni / 100 km S Riberalta / 26.XI.1994 / Brzoska/Guerra” [printed]; “Pentacomia (Mesacanthina) / n. sp. / (near punctum Klug) / det R.L.Huber, 1996” [handwritten/printed]. Allotype ♀ in CCJM with same locality label except for: “74.5 km S Riberalta, 24.XI.1994” [printed]. Paratypes. 11 ♂♂, 9 ♀♀ in DBCN (later in NHMK), 1 ♂ in USNM, 4 ♂♂, 1 ♀ in RLHC, 2 ♂♂ in CCJM, 1 ♂ in JWCR, 1 ♂ in MFNB with same label as holotype. 5 ♂♂, 2 ♀♀ in DBCN (later in NHMK), 2 ♂♂, 1 ♀ in CCJM: ditto, except for: “115 km S Riberalta” [printed]. 8 ♂♂, 6 ♀♀ in DBCN (later in NHMK), 1 ♂ in MNHN, 1 ♂, 4 ♀♀ in CCJM: ditto, except for: “74.5 km S Riberalta, 24.XI.1994” [printed]. 1 ♂, 2 ♀♀ in DBCN (later in NHMK).

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in DBCN (later in NHMK), 1 ♂ CCJM, 1 ♂ in USNM: ditto, except for “61.3 km S Riberalta” [printed].
1 ♂ in DBCN (later in NHMK), 1 ♂ in RLHC: “Bolivia, Pando / Cobija Rd. / 17 km NW Rio Beni / 25.XI.1994 / Brzoska/Guerra” [printed]. 18 ♂♂, 19 ♀♀ in DBCN (later in NHMK), 1 ♂, 1 ♀ in NMPC, 1 ♀ in MNHN, 1 ♂ in SDEI, 1 ♂ in MZMB, 3 ♂♂, 3 ♀♀ in CCJM: “Bolivia – Santa Cruz / 28.5km S – San Rafael 305 m / D. Brzoska 3-XII-1995”. 6 paratypes from DBCN cited above will be later evenly distributed to be deposited in FSCA and CMNH. All type specimens labelled: “Holotype (Allotype, or Paratype respectively) / Pentacomia / (Mesacanthina) / ronhuberi sp.nov. / det Jiří Moravec 2012” [red, printed].


Redescription. The original description and illustrations see in Moravec (2012c).

Differential diagnosis. Resembling Mesacanthina punctum, but generally much smaller, and immediately distinguished by the shape of the mandibles in both sexes: the fourth tooth of the left mandible is much smaller, rudimentary, or even entirely absent, while the right mandible has consistently only three teeth (and basal molar) in contrast to constantly well-developed four teeth in both mandibles of M. punctum; the female labrum of M. ronhuberi is consistently entirely metallic black or black-brown, in contrast to the ivory-white to ochre labrum in both sexes of M. punctum; the aedeagus of M. ronhuberi is dorsally more arcuate and has a distinctly subacute apex, and the punctate sculpture on its anterior elytral area is markedly coarser, consisting of much larger punctures with narrow intervals. Moreover, the pronotum is more elongated, always at least slightly longer than wide, the trochanters testaceous as well as the ventral area of the femora, thus much paler than in M. punctum. A complex of diagnostic characters, most immediately the position of the elytral median macula, also distinguish M. ronhuberi from all other species of the genus Mesacanthina.

Biology and distribution. All the type specimens come from Bolivia. The Beni department, and the neighbouring Pando department (Rio Beni) in the northernmost part of Bolivia near the Brazilian border, in fact lies in the same area as the type locality Riberalta (coordinates appear in “Type material” above). The San Rafael locality in the Bolivian department of Santa Cruz is a long way from the type locality. Two females in MFNB and SDEI are labelled “Cuyaba”, which refers to part of Cuiaba, capital of the Brazilian state of Mato Grosso (also spelled “Matto”), but despite separation from the type locality, the Brazilian locality is not so very distant from the Bolivian San Rafael. Apart from other male in SDEI with illegible label but evidently from Brazil, no other specimens of this species were found in collections. Nevertheless, specimens of M. ronhuberi may be deposited in some museum collections in Bolivia, because specimens from the type locality and the same collectors are listed (under Pentacomia (Mesacanthina) punctum) in Pearson, Guerra & Brzoska (1999), but their depository is not mentioned. The adults of this species flew short distances among sparse grass in sandy areas; the sand was damp from recent rain, but the place was not near water (Brzoska pers. com).

Remarks. Although the adults from San Rafael in the Bolivian department of Santa Cruz possess larger elytral median macula, they are certainly conspecific with M. ronhuberi. Their important diagnostic characters are identical with those of the adults from the type locality, including the same number of inner teeth of the mandibles, as well as the

consistently black female labrum; the only difference in the size of the elytral maculae when all other characters are identical, is within usual variability and is of no taxonomic value.

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**Figs 1–5.** Habitus of *Mesacanthina*. 1–2: *M. cribrata* (Brullé). 1 – ♂, 6.1 mm, Bolivia, Beni, San Borja (CCJM); 2 – ♀, 7.1 mm, Bolivia, Moxos, LT (SDEI); 3: *M. argentina* (Lynch Arribálzaga) ♂, 7.3 mm, Argentina, Salta (JWCW); 4–5: *M. exigua* (Lucas). 4 – ♂, 6.2 mm, Hte. Amazone ST (MNHN); 5 – ♀, 6 mm, Peru, Loreto, Rio Tapiche (DBCN).

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Fig. 6–9. Habitus of Mesacanthina. 6: *M. microtheres* (Bates) ♂, 6.2 mm, Ecuador, Macas, NT (BMNH); 7: *M. setopronotalis* (W. Horn) ♂, 5.8 mm, Rio Juruá, HT (SDEI); 8: *M. chalceola* (Bates), ♂, 6.2 mm, Peru, Padre Abad, NT (CMNH); 9: *M. reductesignata* (W. Horn) ♂, 7.4 mm, N. Argentina, Gran Chaco, LT (SDEI).


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Figs 21–31. Two species of *Mesacanthina*. 21–26 – *M. cribrata* (Brullé): 21–25 – aedeagi: 21 – “Bolivia” (SDEi); 22 – Bolivia, Moxos, Rio Mamore (DBCN); 23 – San Ramon (DBCN); 24–25 – showing internal sac in left and right lateral view; Moxos, Rio Mamore (DBCN); 26 – two of original labels, LT. 27–31 – *M. argentina* (Lynch Arribálzaga), aedeagi: 27 – Argentina, Salta (JWCW); 28 – ditto, apex in ventral view; 29 – Bolivia, Abapo (DBCN); 30 – Salta, (JWCW); 31 – ibid., showing internal sac. Bars = 1 mm.

Figs 32–44. *Mesacanthina argentina* (Lynch Arribálzaga). 32 – head, ♂, Argentina, Salta, (JWCW); 33 – right mandible ♀, Salta, LT (SDEI); 34 – mandibles, ♂, Salta-Pocitos (JWCW); 35–38 – labrum: 35–36 – ♂♂, Salta (JWCW); 37 – ♀, ibid. (JWCW); 38 – ♀, Salta-Pocitos (JWCW); 39 – antennal scape, Salta (JWCW); 40–44 – elytron: 40–41 – ♂♂, Bolivia, Abapo (DBCN); 42 – ♂, Salta (JWCW); 43 – ♂, Bolivia, Tarija (ASUT); 44 – ♂, Salta-Pocitos (JWCW). Bars = 1 mm.

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Figs. 80–92. *Mesacantha chalceola* (Bates) – all from Peru: 80–81 – head: 80 – ♂, Padre Abad, NT (CMNH); 81 – ♂, Pasco, San Juan (DBCN); 82–84 – mandibles: 82 – ♂, Chanchamayo (SDEI); 83 – ♂, San Martin, Rioja (SDEI); 84 – ♀, Vilcanota (SDEI); 85–87 – labrum: 85 – ♂, NT; 86 – ♂, Pasco, San Juan (DBCN); 87 – ♀, Ricuri-Cocha (CMNH); 88–92 – elytron: 88 – ♂, NT; 89–91 – ♂♂, Chanchamayo (SDEI); 92 – ♀, Ricuri-Cocha (CMNH). Bars = 1 mm.

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