ISSN 1211-8788 *Acta Musei Moraviae, Scientiae biologicae* (Brno)
97(2): 13–33, 2012

Taxonomic and nomenclatorial revision within the Neotropical genera of the subtribe Odontochilina W. Horn in a new sense – 1 Some changes in taxonomy and nomenclature within the genus *Odontocheila* (Coleoptera: Cicindelidae)

Jiří Moravec

Sadová 336/21, 679 04 Adamov-1, Czech Republic

Moravec J. 2012: Taxonomic and nomenclatorial revision within the Neotropical genera of the subtribe Odontochilina W. Horn in a new sense – 1. Some changes in taxonomy and nomenclature within the genus *Odontocheila* (Coleoptera: Cicindelidae). *Acta Musei Moraviae, Scientiae biologicae* (Brno) **97(2):** 13–33. – As a result of type examination within the Neotropical genus *Odontocheila* Laporte de Castelnau, 1834, certain changes in taxonomy are suggested. *Odontocheila excisipenis* W. Horn, 1932 stat.nov. is elevated to species status. This species proved to be identical with *Odontocheila chiriquina* sensu Rivalier (1969) that, in both its external and internal characters, differs from the genuine *O. chiriquina* Bates, 1881. The latter was also partly confused by Rivalier (1969) with *O. nicaraguensis* Bates, 1874. *Odontocheila atripes* Rivalier, 1970 syn.nov., proved to be a junior synonym of *Odontocheila nigrotarsalis* W. Horn, 1929. A detailed redescription of this very rare species is presented here, including the first description of a female, based on a new record from the Brazil Amazon. Lectotypes of these three taxa are designated, and all the type and other examined specimens cited, together with their biology and distribution. Illustrations of diagnostic characters and habitus accompany the redescriptions as colour photographs. In addition, it is concluded here that *Odontocheila marginata*, based on *Therates marginatus* Fischer von Waldheim, 1821 is a valid name, prior to *O. curvidens* based on *Cicindela curvidens* Dejean, 1825.

Keywords. Coleoptera, Cicindelidae, *Odontocheila*, taxonomy, nomenclature, new synonymy

Introduction

The aim of this paper and the other papers in this series is to publish important taxonomic and nomenclatorial results to make them available before the completion of a final comprehensive publication, currently in preparation, which will provide a thorough revision of the Neotropical genera of the subtribe Odontochilina W. Horn, 1899 in a new sense. The complete results of examination of the relevant type specimens and other material of ten genera with about 120 species are planned for publication in the final edition. Therefore, only a very brief history of classification, together with remarks on the subtribe position within the tribe Cicindelini of the family Cicindelidae Latreille, 1802, are summarized in this paper.

The subtribe Odontochilina was first mentioned by Horn (1899) as "Odontochilini"; he later modified it to "Odontochilina" (Horn 1910). Nevertheless, the subtribe in his sense contained not only genera from the Neotropical region, but also several genera from the Oriental region. Rivalier (1969, 1971) proposed a wide concept of the subtribe Prothimina W. Horn, 1910, covering many genera, including those of the subtribe Odontochilina from the Neotropical region. The infrageneric subdivision and the

generic delimitation of the Neotropical genera *Odontocheila* Laporte de Castelnau, 1834, *Pentacomia* Bates, 1872, *Cenothyla*, Rivalier, 1969, *Phyllodroma* Lacordaire,1843 and several others, proposed by Rivalier (1971), has been widely accepted, as well as the broad concept of the subtribe Prothymina sensu Rivalier (1969, 1971). In such a broad classification, also including Neotropical genera as mentioned above, Rivalier (1969, 1971) characterized the subtribe Prothymina in terms of the tetra-setose labrum in combination with entirely glabrous thoracic and abdominal sterna. However, in contrast to the subtribe characters given by Rivalier (1969, 1971), many species of the Neotropical Odontochilina placed within Prothymina by Rivalier, possess a setal vesture developed to various degrees, with setose lateral thoracic portions, and/or ventral thoracic sterna, ventrites, and even the dorsal body surface. Therefore, the subtribe Odontochilina should be newly defined exclusively for the Neotropical genera, and such an approach is understood and employed here. Alternatively, the wider concept of the subtribe Prothymina may be maintained, but newly defined regarding the chaetotaxy; the characteristics of the subtribe Prothymina should be extended to include genera with well developed setal vesture.

At this point it should also be noted here that in agreement with recent work by specialists in tiger beetles (Putchkov & Cassola 2005), Cicindelidae is maintained here as a separate family within Caraboidea (the arguments for this are briefly summarized in Moravec 2010).

The generic classification of *Odontocheila* and the infrageneric subdivision within the genus *Pentacomia* used by Rivalier (1969) are maintained here, although it is necessary (see Bousquet 2002) to validate the genus-group nomenclature by referring to the Commission for a ruling (ICZN 1999: Art. 70.2) to suppress the first valid type species designation for *Odontocheila* by Hope (1838).

Naturally, this paper does not attempt to resolve such complicated genus-group nomenclature, nor the subgeneric classification. A final classification should be formally proposed in the concluding publication after comprehensive revision.

Material and methods

The body length is always measured without the labrum; it 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 (when 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 the parameres). All dimensions of aedeagi are measured (and primarily figured) in their left lateral position when the basal portion (with basal orifice) points to the right and the left lateral outline (with dorsoapical orifice) faces upwards, 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 explained in Moravec

(2002). The 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.

The keys below the illustrations feature these abbreviations of type status: HT = holotype; PT = paratype; LT = lectotype, PLT = paralectotype.

Abbreviations for the collections in which the material is held:

BMNH . . . . . The Natural History Museum London, U.K.
CCJM . . . . . Collection Cicindelidae Jiří Moravec, Adamov, Czech Republic
MNHN . . . . . Muséum national d'Histoire naturelle, Paris, France
MNHUB . . . . . Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
NHMW . . . . . Naturhistorisches Museum Wien, Vienna, Austria
SDEI . . . . . Senckenberg Deutsches Entomologisches Institut, Müncheberg (formerly DEI, Eberswalde), Germany

Taxonomy

Odontocheila chiriquina Bates, 1881 (Figs 1, 7–20)

Odontocheila chiriquina Bates, 1881: 17.
Type locality. Panama: Chiriqui province, Volcan de Chiriqui (now named Volcán Barú, 3 474 m, in the Volcán Barú National Park).

Odontochila chiriquina: Fleutiaux 1892: 122.
Odontocheila chiriquina: Wiesner 1992: 77 (partim).
Odontochila nicaraguensis sensu Rivalier 1969: 201 (partim).

Misapplications. Non *Odontochila chiriquina* sensu Rivalier 1969: 201, nec Pearson, Buestán & Navarrete 1999: 241, nec Vítolo (2004), which is *O. excisipenis* W. Horn, 1932.
N o t e : the spelling "*Odontochila*" is an unjustified emendation of the genus-group name by Agassiz (1846), also followed by several other authors, including Rivalier (1969).
Type specimens. Lectotype ♂ (designated here) in BMNH, labelled: "V. de Chiriqui, 2–3000 ft., Champion"; "B.C.A., Col., I(1), Odontocheila chiriquina" [printed]; "F.Bates Coll., 1911 – 248" [printed]; "Lectotype, Odontocheila chiriquina Bates, 1881, design. Jiří Moravec 2012" [red, printed]. Paralectotypes. 5 ♂♂, 3 ♀♀ in BMNH with same first two labels. 2 ♂♂, 2 ♀♀ in BMNH with same first two labels and: "Odontocheila nicaraguensis Bates [sic!], det. R. R. Murray'79". 1 ♀ in BMNH with same first label and: "Odontocheila chiriquina Bates" [handwritten]. 1♂, 1 ♀ in BMNH: "V. de Chiriqui, 25-4000 ft., Champion"; "B.C.A., Col., I(1), Odontocheila chiriquina" [printed]; 4 ♂♂, 2 ♀♀ in MNHN (filed as "O. nicaraguensis" by Rivalier): "V. de Chiriqui, 2-3000 ft., Champion"; "H.W.Bates Biol. Coll. Amer."; "Muséum Paris, 1952, Coll. R. Oberthür" [greenish, printed]. 1 ♂ in MNHN: with same first two labels and: "Muséum Paris, F. Fleutiaux" [greenish, printed]. 1 ♂ in MNHN: with same first two labels and: "Muséum Paris, Amerique Centrale, Coll. du Biol. Central Amer., Godman, 1908" [greenish, printed]; "Odontocheila chiriquina Bates" [handwritten]; "1520, Rivalier" [handwritten, meaning the number of treated aedeagus]. 2 ♀♀ in MNHN: "V. de Chiriqui, 2-3000 ft., Champion" [printed (ex coll. Fleutiaux)]. 2 ♂♂, 1 ♀ in MNHUB: "V. d. Chiriqui, 25-4000 ft., Champion". All paralectotypes labelled: "Revision Jiří Moravec 2011: Paralectotype, Odontocheila chiriquina Bates, 1881" [red, printed].
Note on lectotype designation. The lectotype is here designated in the interests of the better stability of the taxon. The specimen in BMNH bearing the locality label "Bugaba, Panama, Champion" and "Type" and "B.C.A., Col., I(1), Odontocheila chiriquina" is not considered a syntype, although coming from the same area, around the Volcán de Chiriqui in Panama, but not from the type locality explicitly given by Bates (1881) as "Panama, Volcan de Chiriqui (Champion)". Moreover, this male from Bugaba possesses an anteapical macula,

extremely rare in this species. I therefore designate the specimen in BMNH, explicitly labelled with the type locality mentioned in the protologue by Bates (1881), as the lectotype. The here-designated lectotype corresponds with the original description by Bates (1881), including its reduced elytral maculation, and is in good condition, with a well-preserved aedeagus.

Other specimens in MNHN (mostly donated through Oberthür) and others in MNHUB, from the type locality (bearing the same locality label as the lectotype and a label showing that they derive from Bates), are evidently syntypes; Bates mentioned that he described both sexes of the species, without specifying the number of specimens (Bates 1881).

Other specimens examined. 1 ♂ in BMNH: "Bugaba, Panama, Champion"; "Type" [with black frame, printed]; "Type" [circular with red margin, printed]; "B.C.A., Col., I(1), Odontocheila chiriquina" [printed]; "Odontocheila chiriquina Bates" [handwritten]; "Lectotype ♂, Odontocheila chiriquina Bts. by Erwin 96" [sic!, printed/handwritten]; "The lectotype label by Erwin is invalid (unpublished)" [printed]; "This specimen was erroneously labelled – it is not a type" [printed]. 1 ♂ in MNHN, 1 ♂ in MNHUB, 1 ♀ in SDEI: "Bugaba, 800-1500 ft., Champion". 1 ♂ in BMNH with same label and: "Co-type" [sic!]; "Odontocheila chiriquina Bates"; "Named by Dr. W. Horn in Nat. Mus. Brit."; "This specimen was erroneously labelled – it is not a type". 4 ♂♂, 3 ♀♀ in BMNH: "Bugaba, Panama, Champion"; "B.C.A., Col., I(1), Odontocheila chiriquina" [printed]. 1 ♀ in BMNH with same labels and: "Odontocheila chiriquina Bates". 1 ♂, 1 ♀ in MNHUB, 1 ♀ in NHMW: "Bugaba, Panama, Champion". Other data. 3 ♀♀ in MNHUB: "Chiriqui". 1 ♀ in MNHUB: "Costarica [sic!], Chiriqui". 1 ♀ in SDEI: "Staudinger, Chiriqui". 1 ♂ in SDEI: "Lino, 900 m, Panama". 1 ♂ in MNHN "Lino, 800 m, Panama".

Redescription. Body (Fig. 1) medium-sized, 12.0–13.5 (LT 12.2) mm long, 3.80–4.20 (LT 3.70) mm wide, dorsal surface of the head, pronotum and elytra almost uniformly dark copper, sometimes with more vivid bronze lustre and greenish iridescence on lateral areas.

Head (Fig. 7) narrower than body, 3.35–3.90 mm wide, concolorous with the rest of body surface, all parts of head glabrous.

Frons steeply declining towards clypeus, flat except for small, more or less distinct anteromedian bulge, clearly delimited from clypeus and separated from vertex by vertex fold, which is blunt in middle and indistinctly edged laterally, surface black or black-blue, usually with greenish or violaceous iridescence, mostly smooth, sometimes with limited, finely asperate-rugulose posteromedian area (the sculpture passing from vertex over the frons-vertex fold); supra-antennal plates flat, vaguely triangular, smooth, hardly delimited from other area of frons, usually with metallic-green or bronze lustre of varying strength.

Vertex with usual juxtaorbital sensory setae (two on each side), almost flat and metallic cupreous with greenish and bronze reflections; limited anteromedian area almost black, finely and irregularly rugulose, rugae short, wavy to vermicular, rugae on median area usually forming arcuate-parallel ornamentation while lateral and large juxtaorbital areas are finely but distinctly longitudinally parallel striate-rugose; rugae on posteromedian and occipital areas becoming irregular, breaking up into to fine, irregularly rugulose sculpture.

Clypeus cupreous or dark copper, usually with bright reddish and greenish lustre, rather distinctly wrinkled.

Genae metallic black, usually with strong blue or violaceous lustre, almost smooth or with indistinct, shallow and parallel striation.

Labrum 4-setose, with seven teeth in both sexes, surface smooth; male labrum (Figs 8–9) 1.20–1.25 mm long, 1.50–1.75 mm wide, bicoloured, with large testaceous lateral

areas, and large metallic black area of basomedian convexity and narrow anterior border, acute lateral teeth, acute or right-angled anterolateral teeth and prominent median lobe of three anterior teeth that are either at the same level, or with median tooth (usually) shorter, very small, or entirely effaced; female labrum (Fig. 10) of a similar shape but much longer, length 1.60–1.75 mm, width 1.65–1.85 mm with prominent, protruding subacute median tooth, usually much darker, with also black-darkened teeth.

Mandibles (Fig. 7) black-brown except for more or less distinctly ochre-testaceous and narrow lateral stripe, rather short but robust, subsymmetrical, each mandible with only three teeth (and basal molar); third tooth smaller than second.

Palpi (Fig. 7) notably dark; maxillary palpi brownish-testaceous to black-brown, penultimate and terminal palpomeres metallic black; penultimate (longest) palpomere of labial palpi brownish in male, usually partly or entirely black in female, rather narrow with only moderately dilated apex (width up to 0.25 mm); terminal palpomere rather short but narrow, metallic black.

Antennae rather long, reaching elytral half; scape and pedicel metallic black or black-blue (faded to black-brown in older specimens) with mahogany or greenish iridescence, the scape with one apical seta; antennomeres 3–4 metallic-mahogany with black-blue or cobalt-blue apices, alternatively black-blue with metallic-mahogany apices, and with more or less distinct brownish-testaceous subapical spot; antennomeres 5–11 brown, smoky-blackish, or dark-brown and grading to smoky-darkened.

Thorax. Pronotum (Figs 11–12) glabrous, slightly longer than wide, 2.25–2.55 mm long, 2.10–2.50 mm wide; anterior sulcus pronounced laterally, dorsally shallow in middle, posterior sulcus dorsally deeper; anterior lobe wider than posterior, usually rather notably high in middle, densely and irregularly vermicular-rugulose; disc rather flat, lateral margins variably subparallel or moderately convex, in female usually moderately attenuated towards posterior sulcus; notopleural sutures obvious in dorsal view, or less so; medial line indistinct, usually almost merging with discal surface sculpture; this sculpture is extremely fine on the median area, consisting of wavy striae to vermicular rugae that only very irregularly converge towards the median line, but rugae on lateral areas towards the notopleural sutures become much thicker and elongate-transverse; posterior lobe with distinct posterior rim, coarselyand irregularly wavy to vermicular-rugulose except for distinct, nearly smooth, iridescent-green, dorsolateral bulges; prosternum, mesosternum and metasternum glabrous, metallic black, black-copper or black-blue, usually with greenish or cobalt-blue to violaceous lustre, smooth except for shallow transverse rugae on prosternum; proepisterna and mesepisterna glabrous, shiny metallic-black, smooth; female mesepisternal coupling sulci not developed; metepisterna shiny metallic black, usually finely wrinkled, each metepisternum with indistinct cluster of a few white setae at the anterodorsal metepisternal corner adjacent to mesepimeron and elytral epipleuron.

Elytra (Figs 18–20) elongate, length 7.80–8.70 mm, with well-pronounced, rounded to subangular humeri, lateral margins parallel in male, subparallel in female, anteapical angles arcuate, then running obliquely towards apices; these are subacute in male, rounded in female. Sutural spine small but usually distinct; microserrulation indistinct;

elytral dorsal surface nearly even, only slightly convex on posterior half of elytral disc, humeral impressions indistinct, basodiscal convexity moderate, discal impression rather indistinct, mostly shallow, apical impressions indistinct; elytral coloration usually uniformly dark cupreous on elytral disc, sublateral areas vividly iridescent cupreous and iridescent greenish or green-blue on lateral margins, that is, on subhumeral area, passing to black-blue or black-violaceous on juxtaepipleural area; whole elytral surface rather finely punctate, punctures mostly isolated and larger on anterior and subhumeral areas, posteriad becoming smaller and commonly anastomosing in very fine chains, forming sharply asperate but fine sculpture on posterior elytral half that is still finer and very irregular on apical areas, forming an extremely dense asperate sculpture of indefinite pattern there; elytral surface glabrous except for (usually) a few, long, often indistinct, hair-like sensory setae scattered mostly on basal area and others adjacent to epipleura; elytral maculation whitish, usually consisting of only one small lateral-median macula, often barely visible, which is narrowly elongate and very small, to the extent that the elytra may appear immaculate; very rarely an additional barely-visible anteapical spot is present, small or only indistinctly indicated; exceptionally, a brownish humeral spot may be indicated (invisible from above).

Abdomen. Ventrites metallic black with greenish, blue and violaceous lustre, glabrous, except for usual (easily abraded) hair-like sensory setae on posterior margins of ventrites.

Legs. Coxae metallic black-blue with greenish or bronze lustre, pro- and mesocoxae rather densely setose, metacoxae densely setose only on lateral areas; trochanters glabrous (except for usual apical seta), ochre to brownish-testaceous, metatrochanters dark brown, glabrous; all segments of legs metallic black with more or less intense blue, greenish, or violaceous lustre, basal area usually mahogany-brown; profemora rather densely covered with rows of white, mostly erect setae, rather long and sparser on mesofemora and much sparser on metafemora, which may be almost glabrous; protibiae brownish with scattered, stiff white setae and metallic black-blue apical half ventrally covered with dense pad of setae; mesotibiae brownish, covered with scattered whitish setae and brownish thorns with a conspicuous, dense whitish-to-greyish setose pad on the apical tibial half; tarsi black with metallic blue, greenish and violaceous lustre.

Aedeagus (Figs 13–17) comparatively long, similar to all species related to *O. cajennensis*, length 3.70 – 3.90 mm, width 0.80 – 1.00 mm, basal portion short, median portion moderately dilated, apical portion conically attenuated towards small, blunt apex, with a small protrusion of apical orifice with penetrating flagellum; structure of internal sack (Fig. 17) characteristic of the genus, with large, reniform central-ventral piece and long, multicoiled flagellum.

Variability. Only three of the specimens examined (one of them the invalidly labelled "lectotype" by Erwin – see "Type specimens") possess a small anteapical spot, mostly barely visible or only indistinctly indicated. The male (MNHN) from Lino has much paler femora.

Differential diagnosis. *O. chiriquina* is one of several species related to *Odontocheila cajennensis* Fabricius, 1878 (taxonomic group 1, Rivalier 1969), immediately

distinguishable from all subspecies of *O. cajennensis* by the combination of dark metallic coloured metatibia with metallic-black metatarsi. The labrum in *O. chiriquina* has a smooth, bicoloured surface, ochre-testaceous in the male, dark reddish-testaceous in the female, and in both sexes with large metallic-black area of basomedian convexity (black coloration often predominating on the female labrum). The bicoloured smooth labrum immediately differentiates *O. chiriquina* from *O. excisipenis* W. Horn, 1932 in which the labrum is entirely testaceous, much longer and with a wrinkled surface; aedeagus similar to that in most taxa of the "*O. cajennensis* complex" with rounded apex that is narrow and dorsally only indistinctly emarginate (never excised) and thus easily distinguishable from the obviously dorsally excised apex of the aedeagus in *O. excisipenis*.

O. chiriquina differs only slightly from *O. nicaraguensis* Bates, 1874 by its generally smaller and brighter coloured body (see also "Remarks" below).

Biology and distribution. Occurring in Panama, known from the type locality in the Chiriqui province. The Bugaba locality lies in the same province. The Lino locality is very probably Alto Lino near Boquete in Chiriqui province, just some 30 km southeast of the type locality.

O. chiriquina appears geographically well-separated from the very similar *O. nicaraguensis* of which all currently available specimens come from Nicaragua and northern and central Costa Rica (see also "Remarks" below). Records of *O. chiriquina* from other countries made by certain authors, among them Pearson, Buestán & Navarrete (1999) from Ecuador, Erwin & Pearson (2008) from Costa Rica and Vítolo (2004) from Colombia, as well as Wiesner (1992) from Colombia and Ecuador, are based on confusion with *O. excisipenis* by Rivalier (1996), discussed in "Remarks" below. The occurence in Bolivia mentioned by Wiesner (1992) is obviously in error.

Remarks. Rivalier (1969), who never examined the type specimens of this species, confused *O. chiriquina* with *O. excisipenis* W. Horn, 1932 which was also entirely unknown to him (see below). Moreover, he mistakenly distinguished *O. chiriquina* from *O. nicaraguensis* on the basis of different shape and coloration of the labrum, which he considered longer and entirely testaceous in *O. chiriquina*. In fact, the type specimens of *O. chiriquina* possess the same bicoloured labrum as *O. nicaraguensis*, which is ochre to dark testaceous with a wide, metallic black basomedian area. Despite the fact that a number of specimens with identical labels of the type locality of *O. chiriquina* (and the collector Champion) as mentioned by Bates (1881) are also deposited in MNHN and are in fact syntypes of this taxon by Bates, Rivalier (1969) erroneously considered these specimens to be *O. nicaraguensis*, while the specimens with a much longer and entirely testaceous labrum (in fact *O. excisipenis*) he misidentified as *O. chiriquina* (see also "Remarks" under *O. excisipenis* below). Moreover, he quite inappropriately noted (Rivalier 1969) that it was Horn who confused *O. chiriquina* with *O. nicaraguensis*. Not only Rivalier did not examine the type specimens, he evidently failed to read the original descriptions of *O. chiriquina* by Bates (1881), and of *O. excisipenis* by Horn (1932).

It should also be noted that *O. nicaraguensis*, which shares a bicoloured labrum with *O. chiriquina*, externally differs from *O. chiriquina* merely in its generally darker body coloration and large body size. As there are only a few (and moreover old) specimens of

O. nicaraguensis in collections, further examination of recently-caught adults from various and exact localities is required to confirm the separate species status of *O. chiriquina* from *O. nicaraguensis*, and/or to investigate the possibility that *O. chiriquina* is a geographical subspecies of *O. nicaraguensis*. The results of my examinations of currently available specimens has confirmed that these two species are geographically separated. The description of *O. nicaraguensis* (type locality Chontales, Nicaragua) was based on a single female (holotype by monotypy) deposited in MNHN (donated in 1954 by Oberthür, who obtained it from Bates). Consequently, the other female specimen of *O. nicaraguensis* labelled as "Type" in BMNH was evidently labelled additionally and is not a type specimen.

***Odontocheila excisipenis* W. Horn, 1932 stat.nov.** (Figs 2–3, 21–31)

Odontochila chiriquina excisipenis W. Horn, 1932: 408, 405 fig. 10.
Type locality. Western Columbia: Rio Dagua, Juntas, 400 m a.s.l.

Odontocheila chiriquina excisipenis: Wiesner 1992: 77.

Misinterpretation. *Odontochila chiriquina* sensu Rivalier 1969: 201.
Type specimens. Lectotype ♂ (designated here) in SDEI, labelled: "Fassl[leg.], Juntas, Rio Dagua, W. Columbia, 400 m., aus Blättern fliegend"[handwritten]; "Type, W. Horn" [printed]; "Syntypus" [red, printed]; "Para–Lectotype [sic!] ♂, Odontochila excisipenis Horn, by Erwin 96" [handwritten/printed/handwritten]; "The paralectotype label by Erwin is invalid (unpublished)" [printed]; "Lectotype, Odontochila chiriquina excisipenis W. Horn, 1932, design. Jiří Moravec 2012" [red, printed]. Paralectotypes. 1 ♀ in SDEI with same locality label as lectotype and with additional folded illegible labels. 1 ♂ in SDEI: "Cachabé 96, Rosenberg"[handwritten]; "ssp. excisipenis, m" [green, handwritten]; "Lectotype [sic!] ♂, Odontochila excisipenis Horn, by Erwin 96" "Odontocheila chiriquina excisipennis [sic! incorrectly spelled], W. Horn type (DEI-Eberswalde), borrowed by D. L. Pearson, 23.Oct.1996 (drawer #57"[printed]; 2 ♂♂, 1 ♀ in SDEI with same locality label. 1 ♂ in SDEI: "Queredo Ecd[Ecuador], occ. [leg.]Campos 100 m." [handwritten]; "6" [handwritten]; "chiriquina" [handwritten]. 1 ♀ in SDEI: "Cachabé, low c. XII.96 (Rosenberg)" [printed]; "Tving Mus." [printed]. 1 ♀ in SDEI: "Rio Dagua, Columbien, Rosenberg" [handwritten]. 1 ♀ in SDEI: with illegible label and: "Coll. Baden Ruge, 2000 m" [handwritten].

The paralectotypes bear invalid labels by Erwin: "Paralectotype, Odontochila excisipenis Horn, by Erwin 96" [handwritten/printed/handwritten], or "Paralectotype" [red, printed], and following labels: "Type, W. Horn" [printed]; "Syntypus" [red, printed]; "Revision Jiří Moravec 2012: Paralectotype, Odontochila chiriquina excisipenis W. Horn, 1932" [red, printed]; "The para [lectotype respectively] label by Erwin is invalid (unpublished)" [printed]; "Odontocheila excisipenis W. Horn, 1932, stat. nov., det Jiří Moravec 2012" [printed].
Note on lectotype designation. As Horn (1932) mentioned in the protologue four different localities for the nine syntypes of his new taxon (see "Biology and distribution" above) without explicitly mentioned a type, in the interests of the better stability of the taxon I here designate as lectotype the syntype from the exactly-specified locality of Rio Dagua, Juntas, 400 m, in western Colombia.
Other specimens examined. 2 ♂♂ in BMNH, 2 ♂♂ in MNHN, 2 ♂♂ in SDEI: "Cachabé, low c. XII.96 (Rosenberg)". 2 ♂♂ in BMNH: ibid., except for: "I.97". 3 ♂♂, 1 ♀ in BMNH: ibid., except for: "XI.96". 1 ♂, 2 ♀♀ in BMNH: "R. Dagua, Colombia, (Rosenberg)". 1 ♂ in BMNH with same labels and: "chiriquina, var. W. Horn". 1 ♀ in BMNH: "Colombia". 1 ♂ in BMNH: "Cali" [all standing as O. chiriquina, in BMNH with additional label: "F. Bates, 1911 – 248"]. 2 ♂♂, 2 ♀♀ in SDEI: "Rio Dagua, Columbien, I-VIII.1895" [standing as O. chiriquina]. 28 ♂♂, 10 ♀♀ in MNHN: "Colombie, Valleé de Cauca, M. de Mathian, 1898" [standing as O. chiriquina]. 1 ♂ in MNHUB: "West Ecuador, Santa Carlos" [standing as *O. chiriquina*]. 1 ♂ in MNHUB: "West Ecuador, St. Domingo" [standing as *O. chiriquina*]. 1 ♀ in NHMW: "Ecuador, Rio Palenque, 47 km S St. Domingo".

Redescription. Body (Figs 2–3) medium-sized to large, 13.0–15.2 (LT 13.1) mm long, 4.00–4.70 (LT 4.10) mm wide, dark copper with iridescent greenish lateral areas.

Head (Fig. 21) narrower than body, 3.80–4.30 mm wide, surface as in *O. chiriquina*, but sculpture on vertex somewhat coarser.

Clypeus as in *O. chiriquina*.

Genae notably large, entirely smooth and glabrous, shiny black with weak greenish lustre.

Labrum 4-setose, in both sexes with seven teeth as in *O. chiriquina*, but much longer and uniformly pale reddish-testaceous, or ochre-testaceous, only very rarely indistinctly darkened on basal area, with the labral surface finely but noticeably wrinkled; male labrum (Figs 22–23) 1.50–1.70 mm long, 1.70–1.85 mm wide; female labrum (Fig.24) usually somewhat darker, sometimes with black-darkened teeth and distinctly longer, length 2.00–2.10 mm, width 1.90–2.15 mm.

Mandibles (Fig. 21) of similar shape and with only three teeth (and basal molar) as in *O. chiriquina*, but coloration usually with mahogany lustre.

Palpi (Fig. 21) of the same shape and colour as in *O. chiriquina*.

Antennae as in *O. chiriquina*, but scape and pedicel paler, metallic mahogany, usually with ochre-testaceous ventral area.

Thorax. Pronotum (Fig. 25) of a similar, rather variable shape and surface sculpture to that of *O. chiriquina*, but generally slightly more obviously elongate and with distinct greenish tinge, 2.40–2.80 mm long, 2.20–2.65 mm wide; lateral thoracic portions and ventral sterna as in *O. excisipenis*, but entirely glabrous (lacking the indistinct cluster of a few setae at the anterodorsal corner of metepisterna).

Elytra with similar shape and surface sculpture to that of *O. excisipenis*, but with almost angular humeri and more rounded apices, generally uniformly cupreous except for notably iridescent green lateral areas, 8.60–9.60 mm long; elytral maculation similar to that of *O. excisipenis*, but elytra mostly with only lateral-median macula, anteapical spot extremely rare and if present merely indicated, and humeral macula always absent.

Abdomen as in *O. chiriquina*.

Legs as in *O. chiriquina*, but coxae with central seta as well (easily abraded), and dorsal area of femora much paler, metallic mahogany, ventral area metallic black-blue, with strong violaceous or green lustre.

Aedeagus (Figs 26–29) very large, notably voluminous in middle, 4.50–4.80 mm long, 1.25–1.30 mm wide, apical part conically attenuated towards narrow apex, which is markedly excised dorsally, and with a small protrusion of apical orifice with penetrating flagellum; internal sac (Fig. 29) well developed, reniform central-ventral piece notably voluminous, upper dorsal arciform piece very thin, other sclerites, including the long, multicoiled flagellum, which penetrate from dorsoapical orifice, similar to other species of *Odontocheila*.

Differential diagnosis. Immediately distinguishable from *O. chiriquina* Bates, 1881 by its longer, entirely ochre-testaceous to reddish-testaceous (only occasionally slightly darkened) labrum with shallowly but clearly wrinkled surface, and by obviously emarginate apex of the aedeagus. Moreover, the body is noticeably larger, and elytra generally with only lateral-median macula, which is usually very small.

Biology and distribution. All the specimens of *O. excisipenis* examined come from western Colombia and central and western Ecuador. The species thus appears geographically separated from *O. chiriquina*.

Horn (1932) mentioned in the protologue four different localities for the syntypes of his new taxon: two in western Colombia: Rio Dagua, and Rio Dagua, Juntas, 400 m, two in Ecuador: Cachabe and Queredo, 100 m, and one allegedly in Bolivia: "Santos Marcos" (also cited by Wiesner 1992) which should probably be spelled "San Marcos", a place lying just on the Costa Rica – Panama border, or it represents a personal name of the collector. No specimen of *O. excisipenis* bearing such a label has been found either by myself or the curators of the SDEI collection, and the occurrence in Bolivia as well as in Panama is highly improbable. The historical locality Cachabe (= Cachabé) probably refers to a small village surrounded by dense forest, lying on the river of the same name on the north-western coast of the Ecuador (Esmeraldas province) near the Colombian border. "Queredo" is probably an incorrect spelling of Quevedo, which lies in Los Rios province, western Ecuador. The specimen from Rio Palenque comes from the Science Center in the Los Rios Nature Reserve, 47 km south of Santo Domingo in the same Ecuadorean province as the specimens from Quevedo. The numerous adults, more recently caught, from Valleé de Cauca are also from the area of the type locality, since the Rio Dagua is a stream in the Valle de Cauca in western Colombia.

Pearson, Buestán & Navarrete (1999), influenced by the confusion generated by Rivalier (1969), treated this species as *O. chiriquina*, but they properly characterized the distribution of a "form *excisipenis*", mentioned by these authors as a possibly separated "Chocó species" restricted to the floor of coastal primary forest in the foothills of the Andean Pacific slope from Colombia to central Ecuador. Erwin & Pearson (2008), under *O. chiriquina excisipenis*, correctly noted the distribution as Colombia and Ecuador, and named it "Chocó forest beetle" in English.

The record of *O. chiriquina* from Colombia by Vítolo (2004) certainly belongs to *O. excisipenis*, although the aedeagus, only schematically illustrated, (Vítolo 2004, fig. 10.1b) features an inappropriately acute apex.

There are some references to the behaviour of the adults. Horn (1932) mentioned that the collector Fassl had observed the adults flying onto shaded low foliage in the afternoon (this is also partly written on the label of the lectotype and on the large, partially illegible label of one of the paralectotypes). Erwin & Pearson (2008) mentioned that the adults are diurnal and fly up from the forest floor to land on the leaves of understory plants when disturbed, and that they roost on low foliage during the night, but no more exact report was made by these authors.

Remarks. Originally described by Horn (1932) as a subspecies of *O. chiriquina*, but because of clear differences in both external and internal characters, *O. excisipenis* is here raised to separate species status. Besides pointing out the differences in shape and coloration of the labrum, its wrinkled surface and other external characters, Horn also illustrated the excised shape of the apex of the aedeagus perfectly (Horn 1932, fig. 10). Pearson, Buestán & Navarrete (1999), obviously influenced by the confusion generated by Rivalier (1969), treated this species generally as *O. chiriquina*, but they mentioned for the first time that "form *excisipenis*" might be a separate species.

Rivalier (1969), despite the differentiating characters emphasized by Horn (1932), misidentified this Horn taxon as *O. chiriquina* and, moreover, confused it with *O. nicaraguensis* Bates, 1874 (see above under *O. chiriquina*). This is evident not only in the specimens he arranged in MNHN under *O. chiriquina* (in fact *O. excisipenis*), but also from the differentiating characters he noted and illustrated (Rivalier 1969: 201–202, fig 2ch) where he incorrectly distinguished *O. chiriquina* from *O. nicaraguensis* on the basis of the long, testaceous labrum. In fact, the type specimens of both *O. chiriquina* and *O. nicaraguensis* possess the same bicoloured labrum which thus clearly differs from the entirely testaceous and notably longer labrum of *O. excisipenis*. Consequently, as he never had seen the syntypes of *O. chiriquina excisipenis* W. Horn and could not recognize those of *O. chiriquina* Bates, he misidentified the taxon by Horn as *O. chiriquina*, and the genuine *O. chiriquina* Bates as *O. nicaraguensis* Bates, and such confusion was partly or entirely followed by other authors (see "Biology and distribution" in this taxon and in *O. chiriquina* above).

O. excisipenis may also be confused with *O. molesta* Nidek, 1957 which, however, differs in the conspicuously acute apices of its elytra, and particularly in its elongate aedeagus with distinctly hooked apex.

Odontocheila nigrotarsalis W. Horn, 1929 (Figs 4–6, 32–51)

Odontochila nigrotarsalis W. Horn, 1929: 155, Pl. 9, figs. 6–7.
Type locality. Brazil: "Manaos, Amazonas".

Odontochila atripes Rivalier, 1970: 858; **syn.nov.**
Type locality. French Guyana: "Guiane, Alicoto – Oyapock" (probably the Oyapock River area).

Odontocheila nigrotarsalis: Wiesner 1992: 77.
Odontocheila atripes: Wiesner 1992: 78.

Type specimens. Lectotype ♂ (designated here) of *Odontochila nigrotarsalis* W. Horn, in SDEI, labelled: "Zikan II, Manaos" [handwritten]; "16:7, 27 M" [handwritten]; "Type W. Horn" [printed]; "Col. W. Horn, DEI Eberswalde" [printed]; "Lectotype, Odontochila nigrotarsalis W. Horn, 1929, design. Jiří Moravec 2012" [red, printed]. Paralectotype. 1 ♂ in SDEI with same labels except for the red label: "Revision Jiří Moravec 2012: Paralectotype, Odontochila nigrotarsalis W. Horn, 1929" [red, printed].
Type specimens of synonyms. Holotype ♂ of *Odontocheila atripes* Rivalier, in MNHN labelled: " Piège lumineux" [printed]; "Guiane Mission, Balachowsky – Gruner, Oct. – Nov. 1969" [printed]; Guiane, Alicoto – Oyapock, 13.Nov.1969" [printed]; "édeage 1972, Rivalier" [handwritten]; "Odontochila atripes Rivalier" [handwritten]; "Type" [red, printed]; "Revision Jiří Moravec 2012: Holotype, Odontocheila atripes Rivalier, 1970" [red, printed]. Paratypes. 2 ♂♂ in MNHN with same labels and: "Revision Jiří Moravec 2012: Paratype, Odontocheila atripes Rivalier, 1970" [red, printed].
Other specimens examined. 4 ♂♂, 2 ♀♀ in CCJM: "Brazil, Amazonas, Autazes, 25.X.1993, shady paths on outskirts, leg. M. Hrabovský".

Redescription. Body (Figs 4–6) of almost uniform size independent of sex, 9.20–9.90 (LT 9.90) mm long, 2.60–2.90 (LT 2.90) mm wide, dorsal surface cupreous, pronotum and elytra with brighter cupreous sublateral areas and iridescent green or green-blue lateral areas.

Head (Fig. 32) large, always at least slightly wider than body, 2.70–3.00 mm wide, all portions glabrous, concolorous with other body surfaces, all head portions glabrous.

Frons obliquely declining towards clypeus, with distinctly convex triangular median area, clearly delimited from clypeus and fluently merging with vertex over rounded frons-vertex fold which is only indistinctly edged laterally, surface black or black-blue, usually with greenish, blue or violaceous iridescence, lateral areas almost smooth, only indistinctly longitudinal-striate, median area finely asperate to vermicular-rugulose, rugae mostly transverse; supra-antennal plates flat, barely delimited from other area of frons, with strong metallic green, blue or violaceous lustre.

Vertex with the usual juxtaorbital sensory setae (two on each side), almost flat and dark copper or bright cupreous with greenish and bronze reflections; anteromedian area and frons-vertex fold finely irregularly rugulose, rugae short, wavy to vermicular (sculpture passing from frons), rugae on median area usually forming arcuate-parallel ornament while lateral and large juxtaorbital areas are rather distinctly longitudinally parallel striate-rugose; rugae on posteromedian area usually divergent posteriad or very irregular; occipital areas very finely irregularly asperate-rugulose.

Clypeus usually bright reddish-cupreous often with greenish lustre on lateral areas, rather distinctly wrinkled, glabrous.

Genae metallic black with strong blue, green or violaceous lustre, almost smooth or indistinctly shallowly parallel striate.

Labrum 4-setose, male labrum (Figs 33–34) 0.75–0.85 mm long, 1.15–1.35 mm wide, testaceous except for black basomedian area and narrow anterior border, with acute lateral teeth, acute or subacute anterolateral teeth, low anterior lobe at the same level, or slightly prolonged and usually with only two teeth or with blunt, or merely indicated median tooth as well; female labrum (Fig. 35) notably longer, length 0.90–1.05 mm, width 1.20–1.30 mm, of a similar shape but with prominent tridentate median lobe with protruding, elongate median tooth.

Mandibles (Fig. 32) normally shaped with arcuate lateral margins, black-brown except for narrow lateral stripe, more or less distinctly ochre-testaceous, subsymmetrical, each mandible with four teeth (and basal molar), the three inner teeth becoming smaller towards the basal molar.

Palpi (Fig. 32) notably light, both maxillary and labial palpi ivory-yellow to ochre-testaceous except for brownish to mahogany-brown terminal palpomeres; penultimate (longest) palpomere of labial palp rather narrow with subparallel lateral margins, only indistinctly dilated towards apex, 0.20–0.23 mm wide.

Antennae long, in male passing elytral half, in female somewhat shorter; scape notably wide, with only apical seta, together with pedicel, yellow-testaceous or ochre-testaceous, pedicel usually with more or less distinct violaceous belt; antennomeres 3–4 brownish-testaceous or pale mahogany, with more or less distinct, ochre subapical spot, alternatively with somewhat metallic darkened apices, with only the usual sparse setae; antennomeres 5–11 brown, becoming smoky-darkened or entirely smoky-blackish.

Thorax. Pronotum (Figs 36–37) slightly longer than wide, 1.75–2.10 mm long, 1.70–1.95 mm wide, multicoloured, dark copper on median, mostly markedly convex area, bright reddish-cupreous on sublateral areas, while lateral areas are deep iridescent green passing to violaceous blue, and purple on juxtanotopleural areas; sulci well pronounced; anterior lobe wider than posterior, densely but distinctly irregularly wavy-

rugulose; disc almost subglobose, lateral margins variably subparallel or moderately convex in male, notably convex in female; notopleural sutures visible in dorsal view; medial line distinct; discal surface densely but distinctly wavy rugulose, rugae mostly transverse on anteromedian area, oblique on the posterior, converging towards the median line; rugae on lateral areas towards the notopleural sutures become almost transverse; posterior lobe with distinct posterior rim and iridescent green dorsolateral bulges, median area reddish-cupreous, surface coarsely, irregularly wavy to vermicular-rugulose; all thoracic sterna glabrous; prosternum, mesosternum and metasternum deep metallic blue to cyaneous blue, with greenish and violaceous lustre, smooth; proepisterna, mesepisterna and metepisterna shiny black, sometimes with feeble greenish lustre, smooth, metepisterna usually coriaceous-wrinkled; female mesepisternal coupling sulci indistinguishable.

Elytra (Figs 40–42) elongate, length 5.50–5.90 mm, with well pronounced, rounded humeri, lateral margins almost parallel in both sexes, anteapical angles arcuate, then obliquely running towards apices, which are rounded in both sexes; sutural spine very small; microserrulation indistinct or very irregular; elytral dorsal surface convex on posterior half of elytral disc, humeral and discal impressions moderate, but clearly delimiting basodiscal convexity; apical impressions distinct; elytral coloration mostly dark copper on elytral disc, sublateral areas vividly cupreous and iridescent greenish or green-blue on lateral areas, passing to blackblue or black-violaceous and purple on juxtaepipleural areas; whole elytral surface quite finely punctate, punctures larger and mostly isolated on anterolateral areas and within humeral impressions, posteriad becoming smaller and often anastomosing into chains of wavy intervals, forming a "rasp" sculpture that becomes finer on posterior declivity, and on anteapical and apical areas crumbling to very irregular, asperate sculpture; elytral surface glabrous except for the usual few long, often indistinct, hair-like sensory setae scattered mostly in basal area and others adjacent to epipleura; whitish elytral maculation consisting of three maculae, sexually dimorphic: in male with notably elongate humeral macula running posteriad along the outer margin and thus only partly visible in dorsal view, rather large, often triangular sublateral-median macula, and elongate, or elongate-triangular anteapical macula; humeral macula in female elytra much shorter, placed on ventrolateral humeral area, thus invisible from above.

Abdomen. Ventrites metallic black with greenish, blue and violaceous lustre, glabrous, except for usual (easily abraded) hair-like sensory setae on posterior margins of ventrites.

Legs. Coxae metallic green, pro- and mesocoxae densely setose, metacoxae with central seta and lateral margin densely fringed with white setae; trochanters glabrous (except for usual apical seta), yellow-testaceous; femora dorsally brownish-testaceous, usually with mahogany lustre, basal and whole ventral area yellow to ochre, profemora rather densely covered with rows of white to greyish, rather long and semierect setae which are sparser and erect on mesofemora and much sparser on metafemora which may even be partly glabrous; protibiae testaceous with scattered stiff white setae and metallic mahogany apical third, ventrally covered by dense pad of greyish setae; mesotibiae testaceous, with scattered, stiff, erect, whitish setae and dense, greyish-white setose pad

on the mesotibial apical half; protarsi black-violaceous with strong metallic blue, greenish and purple lustre, first three tarsomeres in male (Figs 38–39) with remarkably wide, black pad of long, dense setae; meso- and metatarsi brownish-testaceous to black-brown with mahogany tinge.

Aedeagus (Figs 43–51) notably voluminous in middle, 3.50–3.85 mm long, 0.90–1.00 mm wide, apical portion gradually attenuated, ventrally arcuate and with narrow, moderately dorsally-directed apex which appears to be subacute, or blunt, depending upon the angle of view, because the apex is much wider and spatulate in ventral view (Figs 44, 46, 48)); dorsoapical orifice with penetrating flagellum; internal sac (Figs 50–51) similar to other species of *Odontocheila*, containing voluminous reniform central-ventral piece, elongate upper dorsal arciform piece, and other characteristic sclerites, including the long, multicoiled flagellum, which penetrates from dorsoapical orifice.

Variability. Apart from the usual slight variability in coloration and shape of sublateral-median and antapical maculae pointed out in the redescription above, the apex of aedeagus in lateral view may appear acute, subacute or blunt depending on the angle – the shape appears to change if the aedeagus is even slightly turned, because in ventral or dorsal view the apex is wide and spatulate (spoon-like).

Differential diagnosis. Distinguished from all other species of *Odontocheila* by the shape and coloration of the first three protarsi in males, which posses an unique, wide pad of dense, black setae; labrum rather long in both sexes, bicoloured, dark ochre-testaceous with metallic black basomedian area; antennomeres 1–4 testaceous to brownish-testaceous, scape wide, always ochre-testaceous (sometimes with mahogany lustre); palpi yellow-testaceous with brownish-mahogany darkened terminal palpomeres; pronotum multicoloured, dark copper in middle, bright reddish-cupreous on sublateral areas, deep iridescent green grading to violaceous blue on lateral areas; male elytra with elongate humeral macula, mostly triangular sublateral-median macula and anteapical macula; in female the humeral macula is short and not visible from above. Therefore, as in many other species of *Odontocheila*, females are almost indistinguishable from those of similar taxa, in this species merely in terms of the multicoloured pronotum and elytra in combination with other characters. Aedeagus in lateral view with narrow, subacute to acute apex, which is in ventral view distinctly enlarged and of a spatulate (spoon-like) shape. Males of *O. amabilis* possess similar shape and coloration of protarsi, but differs in having elytra with violaceous tinge, short humeral macula and different shape of the aedeagus.

Biology and distribution. *O. nigrotarsalis* is evidently a very rare species. It inhabits a rather restricted area, occurring from French Guyana towards northern Brazil. The type locality, Manaus (spelled on the labels of the type specimens and in the original description by Horn as "Manaos"), the capital of the state of Amazonas, lying at the confluence of the Negro and Solimoes rivers, is not in fact too distant from Alicoto – Oyapock, the type locality of the synonymous *O. atripes*. The Oyapock River forms the French Guyana – Brazil frontier. The more recently-caught adults were flying on shady paths on the outskirts of the city of Autazes just southeast of Manaus, the area of the type locality. Adis *et al.* (1998) mentioned *O. nigrotarsalis* as a species with diurnal activity

from the "terra firme" uplands of the Manaus area, without particular specification of a record.

Remarks. When RIVALIER (1969) described his *Odontocheila atripes*, he obviously had not examined the type specimens of *O. nigrotarsalis*, which proved to be conspecific, and the name by HORN (1929) has priority. These two taxa were described only from the male; the female was unknown and is described here for the first time.

The aedeagus of the synonymous *O. atripes* was illustrated by RIVALIER (1970, fig. 1) only schematically, and that of the holotype was mounted by Rivalier between two glass slides (as "édeage 1972"). Although the aedeagus deposited in MNHN no longer in good condition, largely due to this mounting method, the shape of its apex corresponds well with all the other type specimens illustrated here (see also "Variability" above).

A note on the nomenclature of *Odontocheila marginata* (Fischer von Waldheim, 1821)

LORENZ (2005a, 2005b) inappropriately treated *Odontocheila marginata* (Fischer von Waldheim, 1821) as a synonym of *Odontocheila curvidens* (Dejean, 1825), because he erroneously considered that Fischer von Waldheim had described his taxon under the generic name *Cicindela* Linné, 1758. Consequently, LORENZ (2005a, 2005b) erroneously treated the name as a primary junior homonym of *Cicindela marginata* Fabricius, 1775. In fact, FISCHER VON WALDHEIM (1820–1822) described his taxon as *Therates marginatus*. As the name is not preoccupied in *Therates* Latreille, 1817, *Odontocheila marginata* which is, moreover, a long-accepted and commonly used name, is prior to *Cicindela curvidens* which is clearly a junior synonym, as already noted by FLEUTIAUX (1892) followed by other authors – except for the erroneous treatment by Lorenz.

Although a type specimen of *Therates marginatus* has not been found either in relevant Russian collections, or others, and is very probably lost, there is no doubt that these two taxa of *Odontocheila* are conspecific, because FISCHER VON WALDHEIM (1820–1822) accompanied his diagnosis with an apposite illustration of several diagnostic characters, including the remarkable shape of the mandible, characteristic of *Odontocheila marginata* (and of the synonymous *O. curvidens*). A neotype designation should be proposed in my concluding publication.

Acknowledgements

I would like to thank Stephan Blank and Lutz Behne (SDEI, Müncheberg), Max Barclay and Beulah Garner (BMNH, London), Thierry Deuve and Azadeh Taghavian (MNHN, Paris), Manfred Uhlig and Bernd Jäger (MNHUB, Berlin) and Herald Schillhammer (NHMW, Vienna), for their assistance during my visits and for loans of type and other specimens. Josef Jelínek (NMPC, Prague) kindly reviewed the manuscript. I am particularly obliged to Miroslav Škrabal (Nový Hrozenkov) for his comtinuous support of my research. The research received support (for my study visits to BMNH, MNHUB and MNHN) from the SYNTHESYS project http://www.synthesys.info/ which is financed by the European Community Research Infrastructure Action under the FP7 "Structuring the European Research Area" programme.

References

Bates H. W. 1881: *Fam. Cicindelidae.* Biologia Centrali–Americana, Coleoptera 1: 1–18, T.1.

Adis J, Paarmann W., Amorim M. A., Arndt E. & da Fonseca C. R. V. 1998: On occurrence, habitat specifity and natural history of adult tiger beetles (Coleoptera: Carabidae: Cicindelinae) near Manaus, Central Amazonia, and key to the larva of tiger beetle genera. *Acta Amazonica* **28(3):** 247–272.

Agassiz L. 1846: *Nomenclatoris Zoologici, Index Universalis, continens nomina systematica classium, ordinum, familiarum et generum animalium mnium, tam viventium quam fossilium, secundum ordinem alphabeticum unicum disposita, adjectis homonymiis plantarum, nec non variis adnotationibus et emendationibus.* Jent et Gassmann, Soloduri, viii + 393 pp.

Bousquet Y. 2002: Additions and corrections to the world catalogue of genus-group of Geadephaga (Coleoptera) published by Wolfgang Lorenz (1998). *Folia Heyrovskyana* Suppl. 9: 1–78.

Cassola F. 2001: Studies of tiger beetles. CXXIII. Preliminary approach to the macrosystematics of the tiger beetles (Coleoptera, Cicindelidae). *Russian Entomology Journal* **10(3):** 265–272.

Erwin T. L. & Pearson D. L. 2008: *A treatise on the Western Hemisphere Caraboidea (Coleoptera). Their classification, distributions, and ways of the life. Volume II. Carabidae – Nebriformes 2 – Cicindelitae*. Pensoft Series Faunistica 84, Pensoft Publishers, Sofia, Bulgaria.

Fischer von Valdheim G. 1820–1821: *Entomographia Imperii Russici. Auctoritate Societatis Caesareae Mosquensis Naturae Scrutatorum collecta et in lucem edita. Volumen I.* Semen, Moscou, viii + 210 + 104 pp. (+ 26 pls) [the plates printed in 1820, pages 1–104 post Sept. 1821].

Fleutiaux E. 1892: *Catalogue systematique des Cicindelidae*. Liege, 1–186.

Hope F. W. 1838: *The coleopterist's manual. Part 2.* Henri G. Bohn, London, 168 pp.

Horn W. 1899: Ueber das System der Cicindeliden. *Deutsche Entomologische Zeitschrift* **1:** 33–51.

Horn W. 1929: Sur deux especes nouvelles d'Odontochila neotropiques et quelques autres especes rapprochees. *Revista Chilena de Historia Natural* **33:** 154–158.

Horn W. 1932: Ueber die Bewertung der äusseren Geschlechts-Merkmale für die Systematik und Neues über neotropische *Odontochilae* (*Cicind*.). *Revista de Entomologia* **2(4):** 401–410.

Horn W. 1910: Coleoptera Adephaga fam. Carabidae subfam. Cicindelinae. In: Wytsman P. (ed.): Genera Insectorum **82:** 105–208.

ICZN 1999: *International code of zoological nomenclature. Fourth edition.* International trust for zoological Nomenclature, London, xxix+306 pp.

Lorenz W. 2005a: *Systematic list of extant ground beetles of the world (Insecta, Coleoptera, "Geadephaga": Trachypachidae and Carabidae incl. Paussinae, Cicindelinae, Rhysodinae)*. *Second edition*. Wolfgang Lorenz, Tutzing, Germany, iv + 530 pp.

Lorenz W. 2005b: *Nomina Carabidarum: a directory of the scientific names of ground beetles (Insecta, Coleoptera, "Geadephaga" : Trachypachidae and Carabidae incl. Paussinae, Cicindelinae, Rhysodinae)*. *Second edition*. Wolfgang Lorenz, Tutzing, Germany, 937 pp.

Moravec J. 2002: *A monograph of the genus Physodeutera (Coleoptera: Cicindelidae). Tiger beetles of Madagascar 2*. Kabourek, Zlín, 290 pp.

Moravec J. 2010: *Tiger beetles of the Madagascan Region (Madagascar, Seychelles, Comoros, Mascarenes, and other islands. Taxonomic revision of the 17 genera occurring in the region (Coleopterea: Cicindelidae)*. Biosférická rezervace Dolní Morava, o.p.s. Lednice na Moravě, Czech Republic, 429 pp.

Pearson D. L., Buestán J. & Navarrete R. 1999: The Tiger beetles of Ecuador: their Identification, Distribution and Natural History (Coleoptera: Cicindelidae). *Contributions on Entomology, International* **3(2):** 185–315.

Putchkov A. V. & Cassola 2005: Tiger beetles deserve separate family status in suborder Adephaga (Coleoptera, Cicindelidae). *Bulletin de la Société entomologique de France* **110:** 281–293.

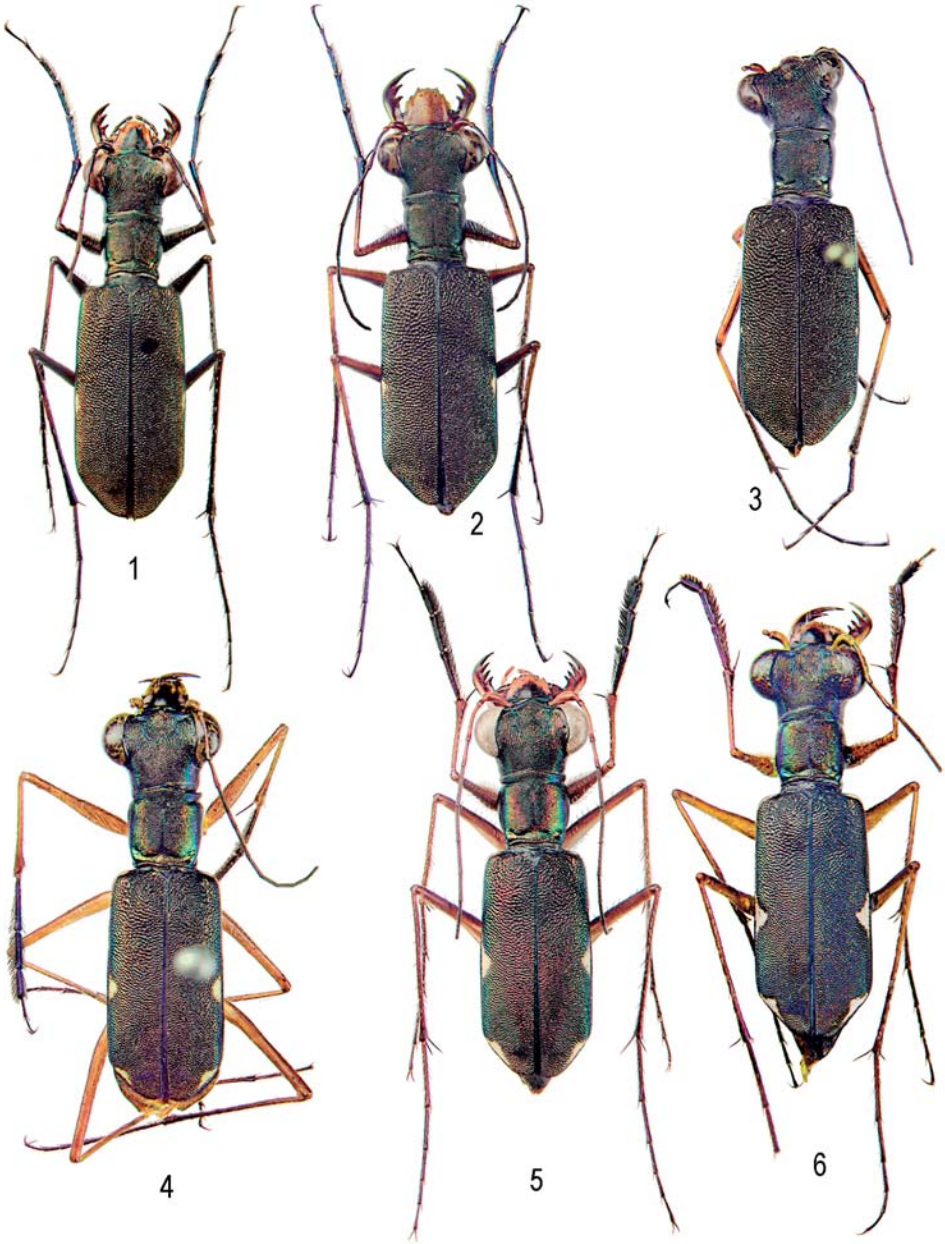
Rivalier E. 1969: Démemberment du genre Odontochila (col. Cicindelidae) et Révision des principales espèces. *Annales de la Sociéte entomologique de France (N.S.)* **5:** 195–237.

Rivalier E. 1970: Cicindelidae (Coleoptera) recoltes en Guyane française par la mission du museum national d'histoire naturelle. *Annales de la Societe entomologique de France, Nouvelle Serie*, **6(4):** 857–859.

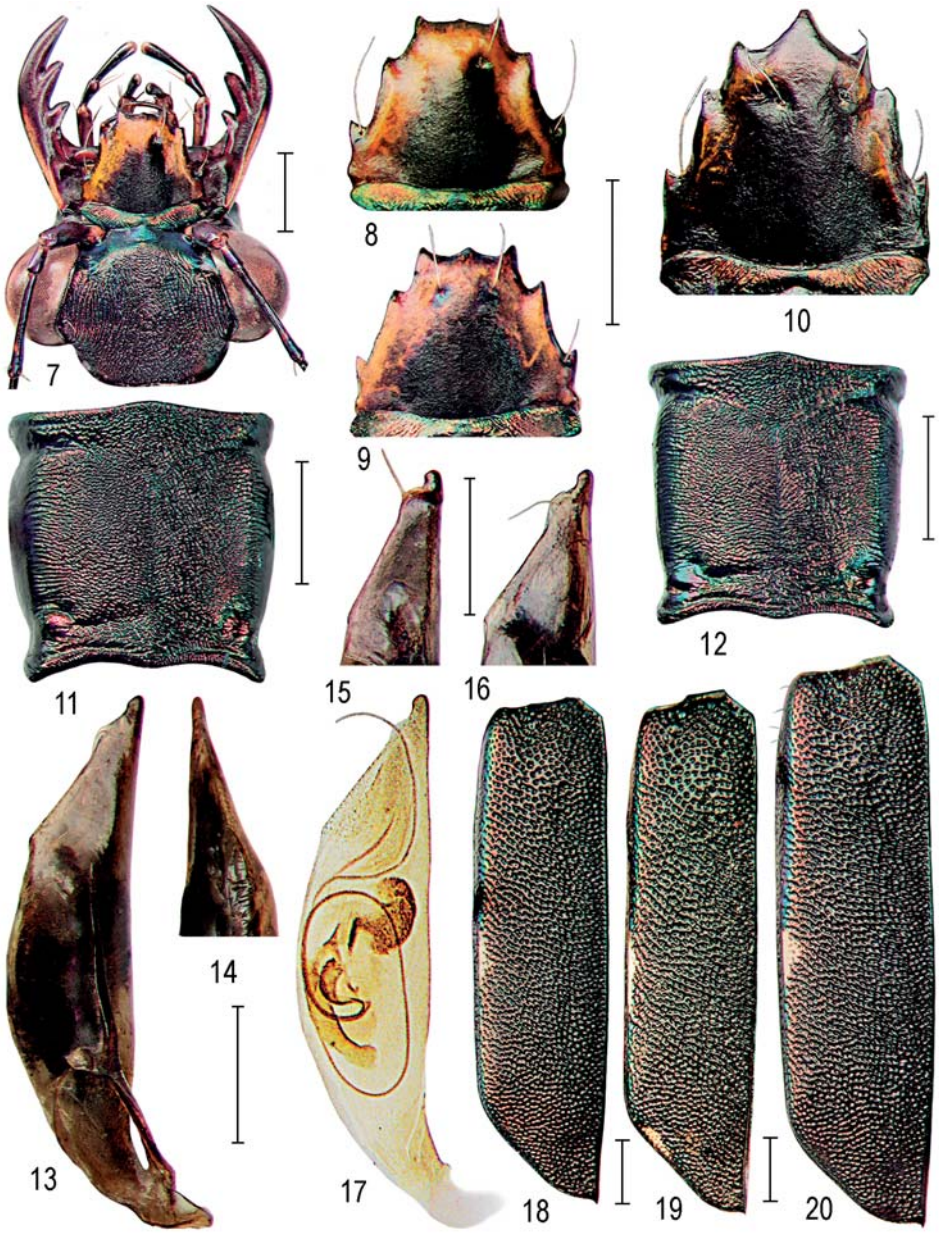
Rivalier E. 1971: Remarques sur La tribu des Cicindelini (Col. Cicindelidae) et sa subdivision en sous-tribus. *Nouvelle Revue d'Entomologie* **1:** 135–143.

Vítolo A. L. 2004: *Guia para la identificación de los escarabajos tigre (Coleoptera: Cicindelidae) de Colombia*. Instituto de Investigación de Recurcos Biológicos Alexander von Humboldt, Bogotá, Colombia.

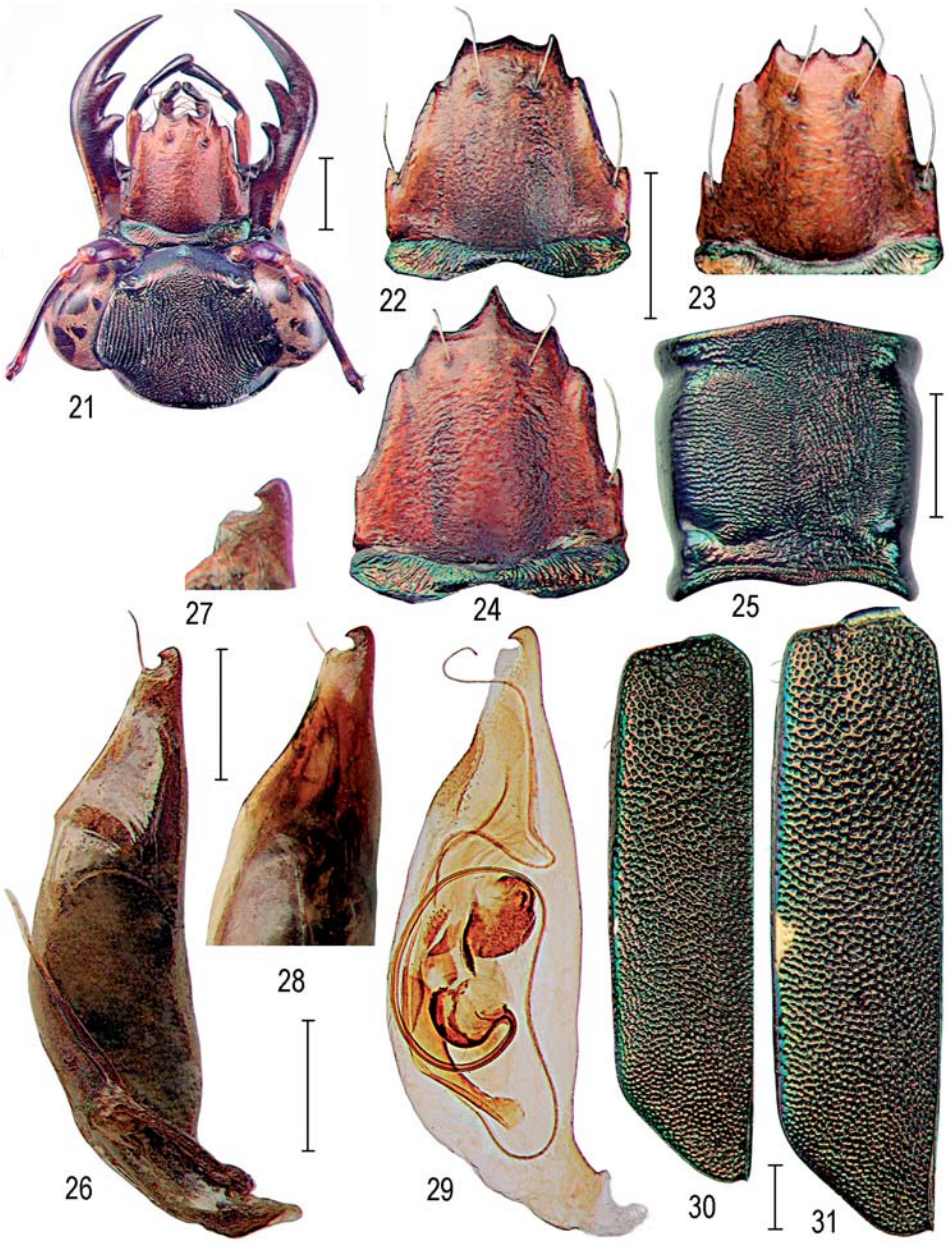
Wiesner J. 1992: *Verzeichnis der Sandlaufkäfer der Welt. Checklist of the tiger beetles of the world (Coleoptera, Cicindelidae)*. Keltern, Verlag Erna Bauer, 364 pp.



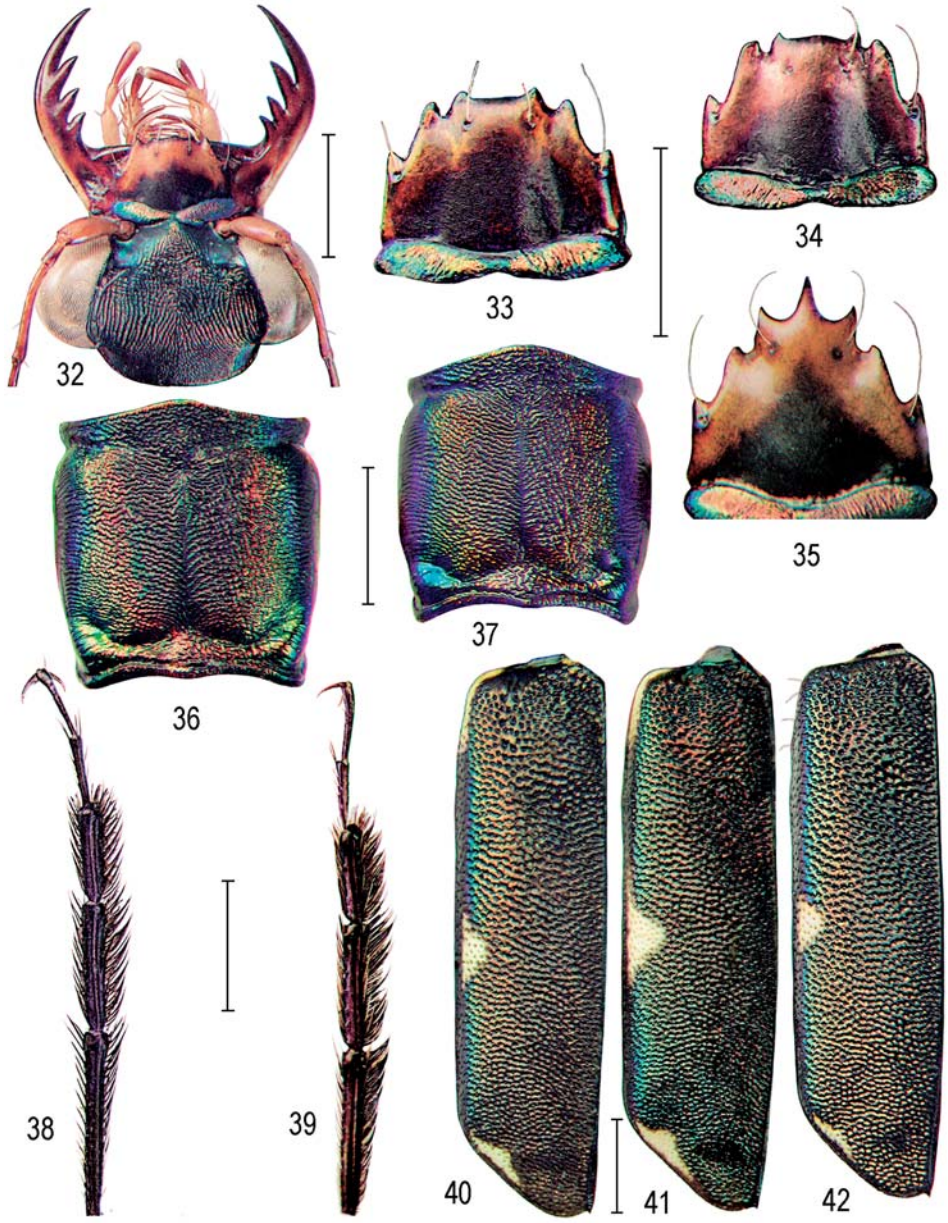
Figs 1–6. Habitus. 1: *Odontocheila chiriquina* Bates, male, 12.2 mm, V. de Chiriqui, Panama, LT (BMNH); 2–3: *O. excisipenis* W. Horn (2 – male, 13.8 mm, Cachabe, Ecuador (MNHN); 3 – male, 13.1 mm, Juntas, Rio Dagua, W. Columbia, LT (SDEI); 4–6: *O. nigrotarsalis* W. Horn (4 – male, 9.9 mm, Brazil, Manaus, LT (SDEI); 5 – male, 9.3 mm, Brazil, Autazes (CCJM); 6 – male, 9.9 mm, French Guyana, Alicoto – Oyapock, PT (MNHN) of syn. *O. atripes* Rivalier).



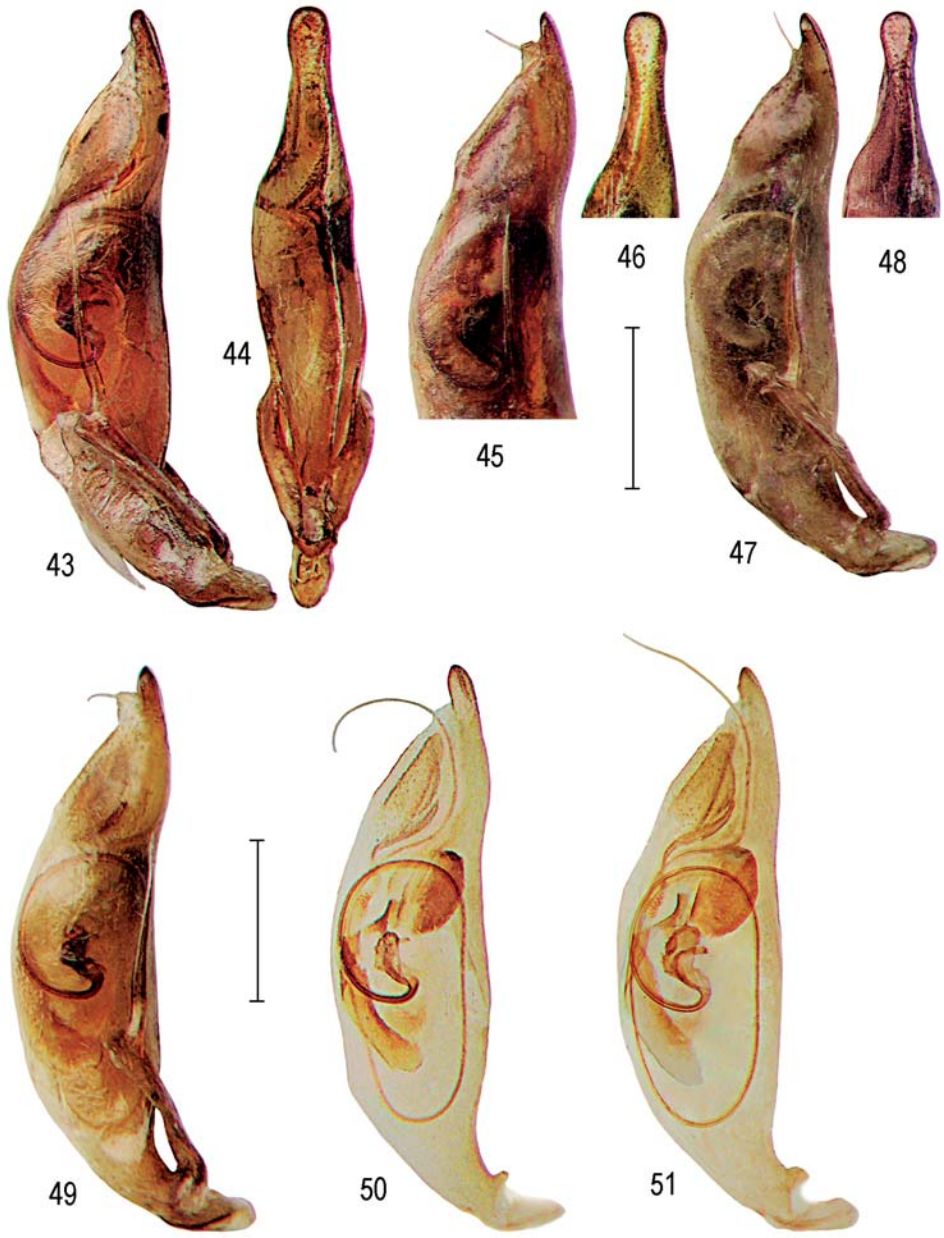
Figs 7–20. *Odontocheila chiriquina* Bates. 7: head, male, LT; 8–10: labrum (8 – male, Panama, V. de Chiriqui, LT (BMNH); 9 – male, Panama, Bugaba, (BMNH); 10 – female, type locality, PLT, (BMNH); 11–12: male pronotum (11 – LT; 12 – Bugaba (BMNH); 13–16: aedeagi (13 – LT; 14 – ditto, ventral view; 15 – apex, Bugaba, (BMNH); 16 – apex, type locality, PLT (MNHN); 17 – cleared, showing internal sac, PLT, ibid. 18–20: elytron (18 – male, LT; 19 – male, Bugaba (BMNH); 20 – female, type locality, PLT (BMNH). Bars = 1 mm.



Figs 21–31. *Odontocheila excisipenis* W. Horn. 21: head, male, Cachabe, Ecuador (MNHN); 22–24: labrum (22 – male, Juntas, Rio Dagua, W. Colombia, LT (SDEI); 23 – male, Cachabe, PLT, (SDEI); 24 – female, ibid., PLT (SDEI); 25: pronotum, male, LT; 26–29: aedeagi (26 – LT; 27 – apex, Valle de Cauca, Colombia (MNHN); 28 – Cachabe (MNHN); 28 – ditto, showing internal sac). 30–31: elytron (30 – male, LT; 31 – female, Cachabe, PLT (SDEI). Bars = 1 mm.



Figs 32–42. *Odontocheila nigrotarsalis* W. Horn. 32: head, male, Brazil, Autazes (CCJM) 33–35: labrum (33 – male, Brazil, Manaus, LT (SDEI); 34 – male, French Guyana, Alicoto – Oyapock, PT (MNHN) of syn. *O. atripes* Rivalier; 35 – female, Brazil, Autazes (CCJM); 36–37: pronotum (36 – male, LT; 37 – male, PT (MNHN) of syn. *O. atripes* Rivalier); 38 – 39: protarsi of male (38 – LT; 39 – PT (MNHN) of syn. *O. atripes*); 40–42: elytron (40 – male, LT; 41 – male, HT (MNHN) of syn. *O. atripes*; 42 – female, Brazil, Autazes (CCJM). Bars = 1 mm.



Figs 43–51. *Odontocheila nigrotarsalis* W. Horn, aedeagi : 43 – Brazil, Manaus, LT (SDEI); 44 – ditto, ventral view; 45 – type locality, PLT (SDEI); 46 – ditto, apex in ventral view; 47 – French Guyana, Alicoto – Oyapock, PT (MNHN) of syn. *O. atripes* Rivalier; 48: ditto, apex in ventral view; 49 – Brazil, Autazes (CCJM); 50 – ditto, cleared, showing internal sac; 51 – cleared, PT (MNHN) of syn. *O. atripes* Rivalier).