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Taxonomic and nomenclatorial revision within the Neotropical genera of the subtribe Odontocheilina W. Horn in a new sense – 17. O. cajennensis species-complex and key to species of *Odontocheila cajennensis* species-group (Coleoptera: Cicindelidae)

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Moravec J. 2016: Taxonomic and nomenclatorial revision within the Neotropical genera of the subtribe Odontocheilina W. Horn in a new sense – 17. *O. cajennensis* species-complex and key to species of *Odontocheila cajennensis* species-group (Coleoptera: Cicindelidae). *Acta Musei Moraviae, Scientiae biologicae* (Brno) **101(1):** 7–53. – A key to 17 species of the *Odontocheila cajennensis* species-group, including nine species of the taxonomically very complicated complex of taxa hitherto considered to be subspecies of *O. cajennensis* (Fabricius, 1787) is submitted. Type specimens of all the taxa of the species-complex were examined and compared to other accessible material. Partially due to their mostly sympatric occurrence, six taxa are presently restored to their original species status, one newly elevated to the species status. Redescriptions and lectotype designations of *O. cajennensis* (Fabricius, 1787) and *O. bipunctata* (Fabricius, 1792) stat restit. are presented, history of their generally confused taxonomy and nomenclature discussed, and their genuine concepts interpreted in accordance with both their original descriptions and type specimens. Other species of the complex, *O. ochreata* (Reiche, 1842) stat. restit., *O. femoralis* Chaudoir, 1860 stat. restit., *O. rufipes* (Dejean, 1825) stat. restit., *O. erythropus* Chaudoir, 1860 stat. restit., *O. rubefacta* Bates, 1869 stat restit. and *O. bicolor* W. Horn, 1923 stat. nov., are treated with differential diagnoses including a great variability of adults, their biology and distributions and relevant lectotype designations. Two additional species of this species-group, *O. emilerivalieri* sp. nov. and *O. mirekklichai* sp. nov., are described as new to science. Illustrations in colour photographs of the habitus and diagnostic characters of *O. cajennensis*, *O. bipunctata* and the two new species are provided.

Key words. Coleoptera, Cicindelidae, Odontocheilina, *Odontocheila*, taxonomy, nomenclature, *O. cajennensis* species-group, key to species, species-complex, new species, Neotropical Region.

Introduction

This paper is a continuation of the author's ongoing taxonomic revision of 11 Neotropical genera of the subtribe Odontocheilina W. Horn, 1899 sensu Moravec (2012a). The aim of this series of papers (see Moravec 2012abc, 2013, 2014, 2015ab, 2016ab; Duran & Moravec 2013; Moravec & Duran 2013; Moravec & Brzoska 2013, 2014abc, 2015; Moravec & Huber 2015; Moravec *et al.* 2015) is to publish significant taxonomic and nomenclatorial acts or descriptions of new taxa that will be available before the completion of the final comprehensive publication.

Furthermore, the present paper is an independent continuation of the partial taxonomic revision of the *Odontocheila cajennensis* species-group by Moravec & Brzoska (2015) where the species-group was newly defined, based particularly on the number of teeth in the mandibles (a character entirely overlooked by previous authors including Rivalier (1969), and seven species were introduced in detail with a key to

species. They comprised *O. nicaraguensis* Bates, 1874, *O. chiriquina* Bates, 1881, *O. excisipenis* W. Horn, 1932, *O. molesta* Nidek, 1957, *O. angelsolisi* Moravec et Brzoska, 2015 and *O. mirekskrabali* Moravec et Brzoska, 2015 (all occurring in Central America except for *O. excisipenis* which occurs also in western Colombia and western Ecuador), as well as *Odontocheila oseryi* (Lucas, 1857) occurring in Amazon Basin. The true concept of *O. chiriquina* and *O. excisipenis*, confused by Rivalier (1969), was previously rectified by Moravec (2012a).

The partial key to species of the *Odontocheila cajennensis* species-group, published by Moravec & Brzoska (2015), is here complemented by a key to the taxonomically very complicated complex of taxa hitherto considered to be subspecies of *O. cajennensis* (Fabricius, 1787). Based on type examination of all the taxa of the species-complex and their comparison to other accessible material, and because of their mostly sympatric occurrence, they are newly treated as separate species (some of them provisionally). The species-group now comprises altogether 17 species.

Moravec & Brzoska (2015) widely discussed the history of the taxonomy and nomenclature of *O. cajennensis* (Fabricius, 1787) and *O. bipunctata* (Fabricius, 1792) and made clear that there was no difference between the concept of these two taxa by Dejean (1825) and their original descriptions. Nevertheless, one part of the wording in the original Latin description by Fabricius (1787) was not specified by Moravec & Brzoska (2015). Therefore, the exact interpretation of the original description is rectified here, although it has no impact to the true concept of these two taxa, hence *O. cajennensis* with the metallic-black abdomen, versus *O. bipunctata* with the abdomen testaceous, as clarified by Moravec & Brzoska (2015) and previously by Olivier (1790), Dejean (1825) and Rivalier (1969). The original description of *Cicindela cajennensis* by Fabricius (1787) corresponds with the genuine female type specimen from the Fabricius collection in ZMKC, which has its abdomen metallic-cyaneous (except for the last ventrite which is testaceous), while the genuine female type specimen of *Cicindela bipunctata* has is abdomen entirely testaceous. For the details see the "Differential diagnosis", "Redescription" and "Remarks" under *O. cajennensis* and *O. bipunctata* below.

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 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). 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), 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. The list thus does not repeat the same name combination and status, except for the last revision of the genus by Rivalier (1969) which is cited under each taxon.

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

Abbreviations for the collections

ASUT . . . . . Arizona State University, Tempe, U.S.A.
BBFM . . . . . Boris Bubeník Collection, Frídek Místek, Czech Republic
BMNH . . . . . The Natural History Museum London, U.K.
CCJM . . . . . Collection Cicindelidae Jiří Moravec, Adamov, Czech Republic
CDCL . . . . . Collection Charles Dheurle, Langres, France
CJGS . . . . . Collection Jörg Gebert, Schleife-Rohne, Germany
CJVB . . . . . Collection Jan Vybíral, Židlochovice (u Brna), Czech Republic
CMHP . . . . . Collection Martin Häckel, Prague, Czech Republic
CMKP . . . . . Collection Miroslav Klícha, Praha, Czech Republic
CMNH . . . . . Carnegie Museum of Natural History, Pittsburgh, U.S.A.
DBCN . . . . . Insect Collection of David W. Brzoska, Naples, Florida, U.S.A.
FCCR . . . . Fabio Cassola Collection Cicindelidae, Museo Civico di Zoologia, Roma, Italy
IRSNB . . . . . Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
JWCW . . . . . Collection Jürgen Wiesner, Wolfsburg, Germany
KCBC . . . . . Collection Arnošt Kudrna, České Budějovice, Czech Republic
MFNB . . . . . Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
MHCP . . . . . Collection Miroslav Hrdý Praha, Czech Republic

MHCW . . . . . Michio Hori collection, Wakayama, Japan.
MHKK . . . . . Martin Häckel collection, Prague, Czech Republic
MNHN . . . . . Muséum national d'Histoire naturelle, Paris, France
NHMW . . . . . Naturhistorisches Museum Wien, Vienna, Austria
NMPC . . . . . National Museum (Entomological Department), Prague, Czech Republic
RLHC . . . . . Collection Ronald L. Huber, Bloomington, Minnesota, U.S.A.
SDEI . . . . . Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany
USNM . . . . . Smithsonian Institution, Entomology, Washington DC, U.S.A.
ZMKC . . . . . Zoological Museum University of Copenhagen, Denmark.

Taxonomy

Abbreviated key to *Odontocheila* species-groups

1 Mandibles with only 3 prominent teeth (and basal molar): the left mandible with only 3 teeth, or with a small rudiment of fourth tooth indicated by a raised edge; right mandible constantly with 3 teeth (exceptionally with rudiment of fourth tooth at the base of the third tooth). ..... ***O. cajennensis* species-group**

– Mandibles with well developed 4 teeth (and basal molar). ..... **other species-groups**

Nomenclatorial notes. As discussed in Moravec & Brzoska (2015), the widespread spelling of the species name as "*cayennensis*" is considered an incorrect subsequent spelling by Dejean (1825) that was followed by many subsequent authors. As the species name *cajennensis* was used by Fabricius (1787) in the original description, there was no reason to change the original name spelling (see Cassola 2011, Moravec 2012a and Moravec & Brzoska 2015). Although the epithet "*cayennensis*" was in prevailing (but not consistent) usage, the original spelling is retained also here, correspondingly with a number of taxa of other insects described by Fabricius, which retain their species names as *cajennensis* that is in accordance with geographic names latinized by historical authors.

A similar case is the emendation of the genus-group name *Odontochila* by Agassiz (1846), which is generally considered unavailable, although it was in prevailing usage for more than a century and even used by Rivalier (1969) in the first revision of the genus, until Huber (1986) restored the original spelling as *Odontocheila* followed by other authors including Bousquet (2002), as well as in the present series of papers.

Key to species of *O. cajennensis* species-group

Note. Because of variability, particularly within the *O. cajennensis* species-complex, the key starting from the number 9 may not be reliable for aberrant specimens.

1 Metatibiae entirely metallic black or with brownish-testaceous basal third or half; metatarsi constantly entirely metallic black. **2**

– Metatibiae entirely yellow to ochre-testaceous. **8**

2 Labrum bicolored (except for variably coloured labrum in Costa Rican populations of *O. chiriquina* and in syntopic adults of *O. mirekklichai* sp. nov.); the labrum distinctly sexually dimorphic in shape. **3**

– Labrum ochre to reddish-testaceous (or with indistinct dark patches); basal third to half of tibiae ochre to brownish-testaceous. **6**

3 Body generally large; all tibiae entirely metallic black; scape and pedicel metallic black-blue; both penultimate and terminal palpomeres of maxillary palpi metallic black. **4**

– Body generally smaller, up to 13.5 mm long; pro- and mesotibiae (rarely also metatibiae) with brownish-testaceous basal third; elytral apices in male subacute; apex of aedeagus short, simply cylindrical and obtuse or indistinctly dorsally emarginated (never distinctly excised) .... ***O. chiriquina*** **Bates**

4 Apex of aedeagus short, dorsally emarginated or moderately excised. **5**

– Apex of aedeagus dorsally distinctly excised; labrum always bicolored. .... ***O. nicaraguensis*** **Bates**

5 Apex of aedeagus small and narrow (shape as in *O. cajennensis* species complex); body almost black; femora black, tibiae black with metallic violet, blue, or mahogany lustre; elytra with notably large punctures, lacking white maculae or with only indicated lateromedian macula; labrum in male entirely reddish-testaceous or partly darkened, in female black with reddish margins; palpi entirely black, or longest palpomeres of maxillary palpi sometimes partly brownish-testaceous dorsally. ..... ***O. mirekklichai*** **sp. nov**.

– Apex of aedeagus longer and thin, with small sharpened hook; elytral apices variably rounded or subacute independent of sex. .... ***O. angelsolisi*** **Moravec et Brzoska**

6 Apex of aedeagus short, dorsally distinctly excised; elytral apices rounded in both sexes; labrum sexually dimorphic, but notably long in both sexes, with uneven surface. ..... ***O. excisipenis*** **W. Horn**

– Apex of aedeagus longer, with small hook, or arcuate-hooked; labrum almost smooth; scape ventrally paler, basal half of pedicel testaceous. **7**

7 Apex of aedeagus shortly but distinctly arcuate-hooked; elytral apices towards sutural spine notably elongate-acute in both sexes; basal half of penultimate palpomere of maxillary palpus testaceous. .... ***O. molesta*** **Nidek**

– Apex of aedeagus with small, sharpened hook; elytral apices towards sutural spine moderately rounded in both sexes; both penultimate and terminal palpomeres of maxillary palpi metallic black; labrum almost uniform in both sexes. ..... ***O. mirekskrabali*** **Moravec et Brzoska**

8 Metatarsi variably coloured, entirely metallic black or with tarsomeres 1–2 testaceous, 3–5 gradually blackened (exceptionally only last two tarsomeres

black); labrum bicolored, black with reddish-testaceous margins; elytral punctures notably large. ..... ***O. oseryi*** **(Lucas)**

– Metatarsi concolorous with metatibiae, entirely yellow to ochre-testaceous (rarely last two tarsomeres blackened) .... (*O. cajennensis* complex of taxa) **9**

9 Labrum either entirely black, or with indistinct to distinct, narrow or wide brown-testaceous or reddish testaceous margin; antennae metallic black; palpi dark, with black terminal palpomeres of labial palpi and both penultimate and terminal palpomeres of maxillary palpi; abdomen metallic-black, or variably partly or entirely dark or vividly testaceous; sometimes also metasternum testaceous. **10**

– Labrum either entirely or predominantly testaceous, or with large or small black basomedian area. **11**

10 Labrum in both sexes black with indistinct to distinct but narrow brown-testaceous or reddish testaceous margin; pronotum in male with subparallel or almost parallel lateral margins of disc, less distinctly so in female; abdomen and metasternum mostly metallic black or partly testaceous; femora and protibiae almost entirely metallic-black, rarely with only indistinct brownish subapical spot on pro- and mesofemora. ..... ***O. cajennensis*** **(Fabricius)**

– Labrum, particularly in female mostly entirely metallic black; pronotal disc in both sexes generally wider with more convex lateral margins; abdomen mostly entirely testaceous, usually also metasternum brownish to vividly testaceous; femora with distinct testaceous apical area (knees); protibiae and mesotibiae mostly with basal third to half testaceous. ..... ***O. bipunctata*** **(Fabricius) stat restit.**

11 Labrum mostly with large or small black basomedian area. **12**

– Labrum entirely or predominantly testaceous. **14**

12 Femora, tibiae, abdomen, and mostly also metasternum testaceous. ..... ***O. rufipes*** **(Dejean)**

– Femora black or dark brown with testaceous knees; tibiae entirely testaceous; abdomen metallic black or only partly testaceous. **13**

13 Pronotal disc as wide as anterior lobe or only slightly narrower, lateral margins at least moderately convex. ..... ***O. femoralis*** **Chaudoir**

– Pronotal disc notably narrower than anterior lobe. ..... ***O. ochreata*** **(Reiche)**

14 Both femora and tibiae testaceous; abdomen or also metasternum testaceous; body more vividly coloured. **15**

– Femora black or black-brown; tibiae testaceous. **16**

15 Labrum smooth; antennomeres 1–4 metallic black with mahogany to testaceous spots. ..... ***O. erythropus*** **Chaudoir**

– Labrum mostly with uneven surface; antennomeres mostly paler, scape usually mahogany-reddish with violaceous metallic lustre, antennomeres 2–4

reddish-testaceous to ochre-testaceous, in female sometimes black with testaceous spots. ..... ***O. rubefacta*** **Bates**

16 Femora black with testaceous apices (knees); tibiae entirely testaceous; abdomen testaceous; head and pronotum notably bright reddish-cupreous while elytra obscure copper. ..... ***O. bicolor*** **W. Horn**

– Femora black or black-brown (including knees) abdomen entirely metallic black; elytra copper with reddish-cupreous sublateral areas and distinctly iridescent-green lateral areas. ..... ***O. emilerivalieri*** **sp. nov**.

Odontocheila cajennensis species-group

For the detailed definition of the species-group see the "Identification" in Moravec & Brzoska (2015) where also redescriptions (or descriptions respectively) and biology and distribution of *O. nicaraguensis* Bates, 1874, *O. chiriquina* Bates, 1881, *O. excisipenis* W. Horn, 1932, *O. molesta* Nidek, 1957, *Odontocheila angelsolisi* Moravec et Brzoska, 2015, *O. mirekskrabali* Moravec et Brzoska, 2015 and *Odontocheila oseryi* (Lucas, 1857) are presented.

Odontocheila cajennensis species-complex

In contrast to other species of this species-group characterized by metallic-black metatibiae, treated comprehensively by Moravec & Brzoska (2015), the complex of taxa with testaceous tibiae, closely related to *Odontocheila cajennensis* (Fabricius, 1787), represents a taxonomically most difficult problem within this species-group and also in the genus.

The taxa were hitherto considered subspecies of *O. cajennensis* (Horn 1896, 1905, 1910, 1922, 1923, 1926, 1936, Rivalier 1969, and all subsequent authors), and even after the revision presented here, the classification of some of the taxa is not clearly defined, mostly due to the great mutual variability.

The present revision disclosed that most of them have sympatric and partly also syntopic occurrences, which contradicts a subspecies status of most of these taxa, and considering the great overall biodiversity of the Amazon Basin, they are here treated as separate species. From the Atlantic shore of Venezuela including Trinidad, Guyana, Surinam and French Guiana, they penetrate through inner areas of these countries and from Colombian, Ecuadorian, and Peruvian Upper Amazonia to Brazil, obviously spreading along the multitude tributaries of the Amazon River throughout the vast Amazon Basin. In Brazil they are spreading from the state of Amazonas (Teffé, Ega, Manaus) to the state of Pará including its eastern coastal areas (Obidos, Belém), up to the southernmost areas of the Amazon Basin, Mato Grosso and Bolivian Santa Cruz. The adaptation of obviously vicariant populations to different biotopes and environmental changes may result under evolutionary forces, in allopatric, parapatric or sympatric speciation of genetically distinct sister species. It corresponds to the enormous variability that has resulted in inconsistent interpretations of these taxa by different authors.

As discussed by Moravec & Brzoska (2015), differences of most of the taxa are based merely upon the coloration of appendages and abdomen, which proved to be in some adults mutually variable, particularly in the coloration of leg segments, abdominal ventrites and metasternum, combined with the coloration of the labrum and antennomeres. In some populations or even in some syntopic adults, these characters are not correlated, and due to the variability, the basically appropriate key and brief review presented by Rivalier(1969) appear to be misleading for identification of some of the "subspecies". Moreover, such disharmony resulted in different interpretations of some of these taxa, particularly by Rivalier (1969) versus Horn (1910, 1926, 1933) and consequently created inconsistent identifications within individual collections, particularly in MNHN and the collection of Walther Horn (now mostly in SDEI) but also in MFNB and other collections. For example, some specimens with oscillating characters were arranged by Walther Horn in his collection (now SDEI) under the label "*O. cayennensis* / *bipunctata* X *oseryi* X *femoralis*", others (in MFNB) as: "*rufipes* X *rubefacta* X *erythropus*.

A comprehensive molecular study using new prospective methods and consistent sampling methods may better delimit these morphologically closely related taxa, but molecular taxonomy could not be included in the present revision. This may be very difficult not only because it is impossible to obtain molecular data from very old genuine type specimens, but particularly that for obtaining certainly reliable results, a great number of samples must be sequenced from sympatric and syntopic adults of a great number of populations dispersed throughout the vast occurrence, which is complicated by the rapidly disappearing biotopes with the formerly common taxa.

Notwithstanding, the key to species presented above, based on examination of a great number of specimens, may basically serve for the identification of the majority of specimens.

Apart from the descriptions of two species described here as new to science, also *O. cajennensis* and *O. bipunctata* are treated here with redescriptions. The other species below are treated with differential diagnosis; their redescriptions will be in the concluding, not yet issued publication on the Odontocheilina subtribe.

Odontocheila cajennensis (Fabricius, 1787)

Cicindela Cajennensis Fabricius, 1787: 187; 1792: 177, 1801: 243.

Type locality. French Guyana: Cayenne ("habitat Cajennae" by Fabricius 1787).

Cicindela Cayennensis: Dejean 1825: 21 (incorrect subsequent spelling).
Odontocheila cayennensis: Bates 1869: 288.
Odontochila propinqua Dokhtouroff, 1887: 156, 157 (synonymy by Fleutiaux 1892 – see "Remarks").
Odontochila cayennensis: Fleutiaux 1892: 121.
Odontochila cayennensis cayennensis: Rivalier 1969: 198, 199.
Odontocheila cayennensis. cayennensis: Wiesner 1992: 76.
Odontocheila cajennensis cajennensis: Cassola 2011: 12.
Odontocheila cajennensis: Moravec & Brzoska 2015: 27.

Misapplication. Non *Cicindela cayennensis*: Brullé in Audouin & Brullé: 59, nec Horn 1923: 214, nec Dokhtouroff 1887: 157, which is *O. bipunctata*.

Type material. Lectotype (designated here) ♀ in ZMKC labelled: "cajennensis" [handwritten by Fabricius]; "Lectotype, Cicindela cajennensis Fabricius, 1787, design. Jiří Moravec 2012" [red, printed]; "Odontocheila cajennensis (Fabricius, 1787), det. Jiří Moravec 2012" [printed].

Other material examined (specimens with prevailing characters of *O. cajennensis*). Historical data. 2 ♂♂, 1 ♀ in MNHN: "Muséum Paris / Coll. Chaudoir 1874" // one of them with: "cayennensis F. / Cayenne", Buquet". 1 ♀ in MFNB: "3618" // "cayennen- / sis Dej. / Cayenne Dej" // "Hist. Coll. (Coleoptera), Nr. 3618 / Odontocheila cayennensis Dej. / Cayenne Dejean / Zool. Mus. Berlin". 1 ♂ in MFNB with the same last label. 2 ♂♂, 2 ♀♀ in MNHN: "Muséum Paris / Guyane Fr. / La Mana / Mélion 1864". 2 ♂♂ in MNHN: "Guyane Fr. / Mélion 1864" 1 ♂, 1 ♀ in MNHN: "Muséum Paris / Cayenne / Leprieur 1831". 1 ♂, 1 ♀ in MNHN: ibid., "302 / 39". 1 ♂ in MNHN: "de Chaud. / type" [sic!]. 1 ♂ in MNHN: "Muséum Paris / Guyane / Placers / de Carsevenne / F. Geay 1899". Other data. 4 ♂♂, 6 ♀♀ in MNHN: "Muséum Paris / Guyane Franç. / Gourdonville". 2 ♂♂ in MNHN: "St. Laurent du Maroni". 1 ♂ in IRSNB: "Guyane Française / Les Hettes / Bas Maroni / Coll Le Moult". 1 ♂ in IRSNB: "Guyane: Maroni". 8 ♂♂, 5 ♀♀ in IRSNB: "Guyane Française / Charvein / Bas Maroni / Coll Le Moult". 1 ♂ in MNHN: "Guyane Française / Rey 1909". 1 ♂ in MNHN, 4 ♂♂, 4 ♀♀ in BMNH, 1 ♂ in IRSNB: "Cayenne". 14 spms in NHMW: "Paramaribo". 5 ♂♂, 3 ♀♀ in MNHN: "Guyane Franç. / Passoura / E. Le Moult 1906". 1 ♂ in MNHN: "Ex Museo Bates" // Cayenne / cayennensis / D. nec. Fab." [sic!]. 1 ♂, 1 ♀ in MFNB: "British Guyana". 1 ♂ in BMNH: "British Guyana: / Upper Utari R. / Jan-March 1936 / B.A. Hudson / B.M. 1936-360". 1 ♀ in BMNH: "British Guyana: / Upper Courantine R. / Sept. 1935 / B.A. Hudson / B.M. 1936-360". 1 ♀ in BMNH: "British Guyana: / Amazon – Courantine divide / Head of Orongoque River 1937". 1 ♂ in NHMW: "Carret Am.-str. / Teresa 800 m / Venezuela / 27.VII.53". 1 ♂ in SDEI: "Fassl [leg.] 500m / O- Columbia / Rio Negro". 1 ♀ in SDEI: "Fassl [leg.] 500m / Medina IV.11 / Ost Colombia". 2 ♀♀ in SDEI: "Amazon Str." // "ochreata / Reiche"[sic!]. 1 ♂ in IRSNB: "Mte Christo / Rio Tapajoz 4". 1 ♂ in IRSNB: "Guyana / Bas Amazone". 1 ♂, 1 ♀ in MNHN: "Amazones / Taperinha Santarem / A. H. Fassl 1920". 1 ♀ in NHMW: "Unt. Amaz. / Taperinha Santarem / 11–20.VII.27. Zerny". 1 ♀ in MNHN: "Rio Napo". 1 ♀ in MNHN: "Amazones / Massanary / (Dr. Hahnel)". 1 ♀ in SDEI: "Cuyaba". 1 ♂, 1 ♀ in SDEI: "Rio Mañés" [Maués?] IV.1932 / Wucherpfennig". Recent data. 1 ♂, 1 ♀ in USNM: "Suriname / Brokopondo district / Brownsberg Natuurpark / Mazaroni Pleateau, 400–500 m / 18 August 1982 / W. E. Steiner" // "Earthwatch Suriname / Expedition August 1982; / Collins, Early, Oberman / Pollock, Putnam, Steiner". 23 spms in IRSNB: " Patria / Neotropical Region / Veromiliter / Amazonis / F. Cassola, 2001". 2 ♂♂ in FCCR: "Guyane Française, Régina / Nouragues Saut-Pararé / (04°02′N-52°41″W), 20.IV.2010 / piége ŕ interception vitré SEAG". 2 ♀♀ in BBFM: "Guyane Française / Cacao / 5.VIII.2009-alt 300 m / lgt. Pascal Bonin". 1 ♂ in CCJM: "Cacao /Guyane Française / 26.VII.2007-alt 80 m / leg. Iatcha Theo".

N o t e . some of the identical locality labels also occur in many specimens of *O. bipunctata* (compare the labels in "Other material examined" under that taxon below).

Redescription. partially derived from the female lectotype (LT)**.** Body (Figs 1–2) large to very large, 13.3–16.1 (LT 15.9) mm long, 4.00–4.90 (LT 4.70) mm wide.

Head (Fig. 3) narrower than body, 3.80–4.40 mm wide, concolorous with the rest of dorsal body surface, all parts of head glabrous.

Frons steeply sloping towards clypeus, of triangular shape, smooth and metallic black-violaceous or black-blue with bronze iridescence, clearly separated from clypeus and delimited from vertex by distinct frons-vertex fold formed by triangular, rather blunt edge, with sharper edges laterally; supra-antennal plates flat, vaguely triangular, smooth, hardly delimited from other frons area and concolorous with it, usually with metallic-green or bronze lustre at their apices.

Vertex with usual juxtaorbital sensory setae (two on each side), almost flat and almost black to dark metallic copper, often with feeble, rarely brighter greenish and reddish-cupreous reflections on anterior, sublateral, or also juxtaorbital areas; anteromedian triangular area irregularly rugulose, rugae short, wavy to vermicular, those

on median area usually forming fine, arcuate-parallel ornamentation while lateral and large juxtaorbital areas are coarsely longitudinally parallel striate-rugose; rugae on posteromedian and occipital areas becoming much finer, irregularly vermicular, breaking up into to fine, irregularly asperate sculpture on the occiput.

Clypeus mostly bright-cupreous or dark copper, usually with greenish lustre, distinctly irregularly wrinkled.

Genae metallic-black, usually with faint blue or violaceous lustre, almost smooth and shiny.

Labrum 4-setose, with seven teeth in both sexes, surface smooth or somewhat uneven, metallic black or black-brown with greenish lustre and mostly indistinctly testaceous lateral areas, shape sexually dimorphic; male labrum (Figs 6–7) 1.50–1.65 mm long, 1.85–1.90 mm wide, black with more or less distinct ochre to reddish-testaceous lateral areas, with acute lateral teeth, acute or right-angled anterolateral teeth, and prominent median lobe of three acute anterior teeth that are either at the same level, or with median tooth shorter; female labrum (Figs 8–9) of a similar shape but much longer, length 2.10–2.20 mm, width 2.10–2.15 mm with prominent, protruding, mostly acute median tooth; coloration much darker, black with dark reddish-testaceous areas which are sometimes only indistinct.

Mandibles (Figs 3–4) rather short but robust, subsymmetrical, each mandible with three prominent teeth (and basal molar); right mandible with only three teeth, while left mandible has also small, rudimental fourth tooth or the tooth is indicated by raised edge; the inner teeth gradually smaller towards the basal molar; coloration of both mandibles shiny black, basal half with whitish to testaceous lateral stripe; dilated basolateral portion (visible in lateral view) with strong metallic violaceous-blue lustre.

Palpi (Fig. 3). Both labial and maxillary palpi with normally shaped, rather narrow (not markedly dilated) terminal palpomeres, shiny black, except for longest palpomeres of maxillary palpi which are variably almost black or partly or entirely testaceous, mostly on dorsal or also lateral areas; penultimate (longest) palpomeres of labial palpi elongate-cylindric, only gradually dilated towards apex which is 0.25–0.30 mm wide.

Antennae rather long, in male reaching elytral half, in female only elytral third; antennomeres 1–4 shiny metallic black or black-blue (faded to black-brown in older specimens), scape with one apical seta, with violaceous or blue lustre; antennomeres 2–4 usually with strong metallic green or cobalt-blue lustre, mostly on their apices; antennomeres 5–11 smoky-black, or dark-brown (in old specimens).

Thorax. Pronotum (Figs 11–12) usually slightly longer than wide, 2.60–2.95 mm long, 2.50–2.85 mm wide, glabrous, metallic black, black-copper or with cupreous lustre on anterior and sublateral areas and diffuse greenish lustre in middle, or with faint greenish iridescence on lateral areas, while juxtanotopleural areas are with cobalt-blue or violaceous lustre; anterior sulcus pronounced laterally, dorsally shallow in middle, posterior sulcus dorsally deeper; anterior lobe always wider than the posterior lobe and lateral margins of disc, finely and densely irregularly vermicular-rugulose; disc with moderately convex dorsal surface, lateral margins of dorsally visible proepisterna mostly subparallel, rarely in some females moderately attenuated towards posterior sulcus; notopleural sutures visible in dorsal view, or less so; medial line mostly indistinct, in

anterior area usually almost merging with discal surface sculpture; this sculpture is extremely fine on the median area, consisting of short wavy to vermicular rugae that only very irregularly converge towards the median line; rugae on lateral areas become much thicker and elongate-transverse, but become shallow towards juxtanotopleural limited areas; posterior lobe with distinct posterior rim, rather coarsely and irregularly wavy to vermicular rugulose except for distinct, nearly smooth, iridescent-green, dorsolateral bulges; prosternum, proepisterna, mesosternum, mesepisterna, metasternum and metepisterna smooth and entirely glabrous, mostly shiny metallic-black, sometimes with greenish or violaceous lustre; metepisterna variably with three deep transverse impressions at metepimeron, forming raised ridges; female mesepisternal coupling sulci not developed, the longitudinal central sulcus lacking any pit or furrow (not markedly differentiated from the analogous sulcus in male mesepisternum).

Elytra (Figs 15–17) elongate, length 8.50–10.3 mm, with well-pronounced, rounded to subangular humeri, lateral margins almost parallel in male, subparallel in female, anteapical angles widely arcuate, then running obliquely towards rounded apices (in both sexes); sutural spine small but usually distinct; microserrulation extremely fine or barely visible; elytral dorsal surface moderately convex on posterior half of elytral disc, humeral impressions rather distinct, discal impression shallow, but well delimiting moderate basodiscal convexity, apical impressions shallow but mostly distinct; elytral coloration almost black (faded to brown in old specimens) or black-copper, sublateral areas faintly or more vividly iridescent cupreous, passing to indistinct, iridescent greenish or green-blue stripe on lateral margins (usually less distinct in female); juxtaepipleural area (in lateral view) shiny black-violaceous or violaceous-blue; whole elytral surface rather coarsely punctate, punctures mostly isolated with flat smooth intervals, larger on anterior and subhumeral areas, becoming smaller posteriad and commonly anastomosing with their intervals in chains, mostly so also on elytral disc, becoming finer and with narrow intervals towards posterior elytral half and even much finer on apical areas; their shape appears to form asperate sculpture with sharp intervals depending on angle of illumination, but in fact the punctures are there well delimited, but with narrow and sharper intervals; elytral surface glabrous except for a few, long, often indistinct, and easily abraded hair-like sensory setae scattered mostly on basal area and others adjacent to epipleura; whitish elytral maculation usually consisting of only one small lateromedian macula, which is variably rounded or irregularly triangular or narrowly elongate, sometimes very small and barely visible to the extent that the elytra may appear immaculate; very rarely an additional, mostly small and barely-visible or only indicated anteapical spot is present; humeral spot always absent (humeral area appears in frontal view shiny cupreous or green).

Abdomen. Ventrites variably metallic black with greenish, blue and violaceous lustre, usually with last ventrite or also two or three ventrites testaceous, very rarely almost entirely testaceous, surface of ventrites glabrous, except for usual (easily abraded) two hair-like sensory setae at posterior margins of the ventrites.

Legs. Coxae metallic black with strong green, bronze and blue lustre, pro- and mesocoxae rather densely setose, metacoxae with one central sensory seta and setose lateral margin (setae often abraded); trochanters mostly black or black-brown, glabrous

(except for usual, easily abraded apical seta), metatrochanters glabrous; femora metallic black, laterally with more or less intense blue, greenish, or violaceous lustre, basal area usually mahogany-brown, variably with metallic green or copper apices (knees), but often the apices (knees) are paler, or even dark testaceous; 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, partly for that the setae are easily abraded; protibiae metallic-black with more or less expanded testaceous or mahogany-testaceous basal area, covered with scattered, stiff, whitish to rusty setae, apical half ventrally covered with dense pad of rusty setae; mesotibiae with testaceous area usually more extended on basal third, more densely covered with ochre to rusty setae and with dense pad of greyish to rusty setae on almost whole apical tibial half; metatibiae always yellow- to ochre-testaceous, with sparse, short, stiff to thorn-like rusty setae; pro- and mesotarsi black with strong metallic blue, greenish and violaceous lustre, metatarsi (Figs 13–14) concolorous with metatibiae, yellow- to ochre-testaceous, rarely terminal or two last tarsomeres darkened; claws black-brown.

Aedeagus (Fig. 18) robust, but rather short in comparison to body length, shape similar to all species of the *O. cajennensis* species group, length 4.90–5.10 mm, width 0.95 – 1.05 mm, basal portion short, median portion rather voluminous, ventral side straight, apical portion conically attenuated towards small, narrow, blunt and dorsally more or less distinctly emarginated apex; apical orifice with a small, convex protrusion with protruding flagellum; structure of internal sack (Fig. 19) characteristic of the species-group, with large, reniform central-ventral piece with thin basal appendage, and long, convoluted flagellum with moderately bulbous base and multicoiled flagelliform part usually visible as protruding from the dorsoapical orifice; other sclerites comprises thin dorsal arciform piece, small dorsally placed stiffening rib, central sclerite folded in middle, and large elongate basodorsal piece with bent basal third.

Differential diagnosis and variability. The diagnostic characters of *O. cajennensis*, given partially in the original description of *Cicindela cajennensis* by Fabricius (1787), but also derived from the examined type and other specimens, are as follows. Body large to very large, dorsal surface of the head, pronotum and elytra almost black or black-copper (also in LT) head and lateral areas of pronotum and elytra with feeble (rarely stronger and brighter) cupreous and greenish iridescence. Labrum distinctly sexually dimorphic, metallic-black with testaceous or dark reddish-testaceous marginal areas, more distinctly blackened in the much longer female labrum (also in LT). Palpi black except for more or less distinct testaceous dorsal surface of longest palpomere of maxillary palpus.

Pronotum mostly at least slightly longer than wide, lateral margins of disc mostly subparallel and narrower than the anterior lobe (in contrast to notably wider pronotal disc in *O. bipunctata*). Elytra mostly with only lateromedian whitish macula (as in LT) which is often very small or darkened, very rarely also small or only indicated anteapical macula present; humeral macula absent in both sexes. Femora either metallic-black (as in LT), rarely with apices (knees) brighter metallic coloured or dark testaceous; pro- and meso tibiae with indistinctly (also in LT) or more expanded testaceous apical area; pro- and

mesotarsi metallic-black, usually with strong greenish lustre; metatibiae and metatarsi always yellow-testaceous (except for last one or two tarsomeres which are often blackened). Abdomen variably entirely metallic-black, or partly testaceous (in the lectotype only last ventrite testaceous); the testaceous coloration is independent of other above mentioned characteristics which also vary.

The coloration of the abdomen, particularly due to the wrong interpretation of the original description was a matter of the considerable confusion in the concept of these two taxa by individual authors (see "Remarks" below and under *O. bipunctata*).

Despite the variability, *O. cajennensis* can be immediately recognized from most of the other species of the *O. cajennensis* species-complex. The exception is *O. bipunctata* (Fabricius, 1792) which may be fully conspecific with *O. cajennensis* (see under that species below). This supposition is supported by the sympatric and even syntopic occurrence. Specimens of these two taxa are commonly confused in collections, partly because of their different concept in literature, and because the colorations inconsistently vary in specimens labelled by identical locality labels, thus possibly in syntopic adults. During the thorough revision presented here it was very difficult to find a consistent complex of differentiating characters between these two taxa. It is partly in accordance with the discussion by Rivalier (1969) – see "Remarks" under *O. bipunctata*. The most significant confusion was obvious in the collection of Walther Horn, now in SDEI and partly also in MFNB where specimens of *O. cajennensis* were mostly standing as *O. bipunctata* (see also "Remarks" below), and such inconsistence was found also in other collections.

As mentioned above and clarified in "Remarks" below, the female lectotype of *Cicindela cajennensis* Fabricius, 1787 (Fig. 2) has its abdomen metallic black-cyaneous (except for the testaceous last ventrite), its femora including their apices metallic-black, and the labrum (Fig. 9) black except for indistinct, dark reddish-testaceous marginal areas. The entirely or only partly metallic-black abdomen often occurs also in other adults of *O. cajennensis*, and testaceous last ventrite in female abdomen is even more common. Nevertheless, this coloration is not consistent in some other adults, and varies not only in populations, but also in syntopic adults. Adults from Surinam (USNM) have the marginal area of the labrum (Fig. 8) more conspicuously bright reddish-testaceous, longest palpomeres of labial palpi ochre-testaceous, and apices of femora and apical half of tibiae testaceous, while the abdomen is mostly metallic-black. The extend and intensity of marginal testaceous areas of the labrum, as well as of the ventral body portions, vary among the adults of both these populations and such variability also occurs among other specimens in collections. Specimens from Colombia (SDEI) also have the labrum with testaceous marginal area more expanded.

However, the present revision revealed a significant difference in the shape of the pronotal disc, which is in *O. cajennensis* notably narrower than the anterior lobe and more parallel-side, but this character is mostly reliable in males, because females have the pronotal disc generally wider. The exactly syntopic adults (FCCR) from Nouragues Saur Pararé in French Guyana have their abdomen partly or entirely testaceous, or metallic black, with correlation to the shape of the pronotum: those with the abdomen and

apices of femora testaceous, have the pronotal disc wider (as wide as the anterior lobe), and the labrum almost black, thus clearly referring to *O. bipunctata*, while two of them which have their abdomen metallic black and also apices (knees) of femora metallic coloured, have their pronotal disc narrower and more parallel-side, and also their other characters clearly refer to *O. cajennensi*s. Consequently, these syntopic adults are listed here under the two different names. Adults from Nouragues Saur Pararé, but from somewhat distant locality Petite Montagne Tortue (FCCR), as well as those in IRSNB, labelled: "Nouragues", have their whole abdomen or also metasternum, as well as apices of femora, constantly testaceous, and are listed here as *O. bipunctata*.

As it was partly difficult during this revision to separate in collections specimens with prevailing characters as two different taxa, a possibility to synonymize *O. bipunctata* with *O. cajennensis* was considered. Nevertheless, because of some differences including the generally notably wider pronotal disc in *O. bipunctata* and existing scarcity of a larger recent material of syntopic adults, as well as due to their sympatric and syntopic occurrence which contradicts their subspecies status, for the time being, these two taxa are treated here as two separate species.

Biology and distribution. Occurring from the Atlantic shore of British Guyana, Surinam, French Guyana and Trinidad, rarely in neighbouring areas of Venezuela and Colombia, obviously penetrating along the distant Amazon tributaries to other areas of the vast Amazon Basin, including the Brazilian states of Pará and Amazonas. Saut Pararé is a part of the Nouragues Station along the Arataye River, a scientific research station in the tropical riverine forest of French Guiana (Guyane Française, also spelled Guyana). Specimens from Itaituba, Rio Tapajoz, originally standing in collections both as *O. cajennensis* and "*O. cajennensis bipunctata*", proved to be *Odontocheila oseryi* (Lucas, 1857) – the confusion was due to the partly testaceous metatarsi which variably occur in *O. oseryi* as demonstrated in Moravec & Brzoska (2015). Some of such variable specimens of *O. oseryi* were arranged by Walther Horn in his collection (now SDEI) under his label "*O. cayennensis* / *bipunctata* X *oseryi* X *femoralis*".

The records from Bolivia are very probably inappropriate, caused by confusions with other taxa, particularly by Horn in his collection (now in SDEI). All examined specimens from Bolivia proved to be *O. rubefacta* or *O. rufipes*; it partly corresponds with the list of Bolivian specimens by Pearson *et al.* (1999) except for the report of *O. femoralis* which was probably confused by these authors with *O. ochreata*.

Erwin & Pearson (2008) generalized the behaviour of adults of all the taxa of this species-complex as "adults are diurnal, roosting on low foliage during the night; they fly up from the forest floor to land on the leaves of understory plants when disturbed". The larva was described by Arndt *et al.* (1996), but as the description was based on a material from Reserva Ducke near Manaus, Brazil, the lava very probably belonged to *O. rufipes* (Dejean, 1825).

Remarks. As no number of specimens was given in the original description by Fabricius (1787), the female type is here designated as a lectotype to assure stability of the taxon.

As mentioned in the "Introductory" above, because one part of the original Latin description by Fabricius (1787) was not specified by Moravec & Brzoska (2015), it is clarified here as follows.

While Fabricius (1787) in the original description of his *Cicindela cajennensis* described the ventral body side as "*subtus cyanea*"(thus cyaneous), he also wrote: "*ano tibiisque posticis testaceis*" (= anus, metatibiae testaceous). The "*ano*" which in Latin means "anus", was incorrectly interpreted by some authors, such as Brullé in Audouin & Brullé (1834) and Horn (1923), as if it meant testaceous coloration of the whole abdomen. However, the genuine female type (lectotype here designated) from the collection of Fabricius (now in ZMKC) has its abdomen metallic black-cyaneous except for the last ventrite which is testaceous, and this coloration perfectly corresponds with the original description, and is in accordance with such coloration in many other specimens of this species (see "Differential diagnosis and variability" above.

Olivier (1790) interpreted the description by Fabricius (1787) quite correctly when he cited the original Latin description by Fabricius, and redescribed the ventral side of *Cicindela cajennensis* as: "*Le dessous de corps est d'un noir bleuâtre, brillant, avec l'e extrémité de l'abdomen ferrugineuse"* – thus only the last ventrite testaceous which perfectly corresponds with the genuine type specimen in ZMKC, and with the concept of this species by Rivalier (1969).

As discussed by Moravec & Brzoska (2015), some authors including Wiesner (1992) mentioned in fact a homonymous name "*O. cayennensis* Dejean, 1825" as a synonym of *O. bipunctata* (Fabricius, 1792). However, no such a name by Dejean exists, nor does such confusion, because the treatment of this species by Dejean (1825) was only a redescription of *Cicindela cajennensis* Fabricius, 1787 (under the incorrect subsequent spelling "*cayennensis*"). Dejean (1825) explicitly refers to Fabricius (1801: 243, no 59) where *C. cajennensis* is re-described by Fabricius with reference to his paper (Fabricius (1792: 177, no 36) with the same delineation of *C. cajennensis* repeated from the original description by Fabricius (1787). Herbst (1806) also only re-described *Cicindela bipunctata* Fabricius, 1792, as he refers to the same paper by Fabricius (1801).

Dejean (1825) in his redescription of "*Cicindela cayennensis*" mentioned metallic coloration of the ventral area of the body: "*Le dessous du corps est d'un foncé un peu verdâtre*", which is in accordance with the coloration of the lectotype of *Cicindela cajennensis* as well as with the original Latin description by Fabricius (1787) as discussed above.

Despite these facts, some even recent authors such as Bousquet (2002) and Lorenz (2005a, 2005b), argued that "*O. c. cayennensis* sensu Dejean (1825)" was in fact "*O. c. bipunctata*". They were obviously influenced by Brullé in Audouin & Brullé (1834), Dokhtouroff (1887) and Horn (1923), who incorrectly interpreted the original description by Fabricius (1787) which is clarified above. In addition, Horn commonly considered some other "subspecies" of *O. cajennensis* to be "*O. c. bipunctata*" (as mentioned by Rivalier 1969 and here).

Dokhtouroff (1887) put forward another great mess to the taxonomy by his superfluous description of *Odontochila propinqua* Dokhtouroff, 1887 to replace non existing "*O. cayennensis* Dejean" (or sensu Dejean 1825 respectively). All these authors evidently did not examine the genuine type of *Cicindela cajennensis* Fabricius in ZMKC, because within the present revision there was only the original handwritten label by Fabricius (Fig. 10).

Fleutiaux (1892) listed correctly *O. propinqua* as a synonym of *O. cajennensis* (as "*cayennensis*"), and with a question mark also Wiesner (1992), while Horn (1905, 1910, 1926) treated it as a synonym of *O. bipunctata*, probably influenced by the paper by Dokhtouroff (1887), which contributed to the wrong interpretation of these taxa.

Odontocheila bipunctata (Fabricius, 1792) stat. restit.

Cicindela bipunctata Fabricius, 1792: 174, 175; 1801: 238.

Type locality. "America".

Cicindela bipunctata: Dejean 1825: 22.
Odontochila cayennensis: Dokhtouroff 1857: 157 (non *O. cajennensis* (Fabricius, 1787).
Odontochila bipunctata: Chaudoir 1860: 51 (319).
Odontochila cayennensis bipunctata: Rivalier 1969: 199.
Odontocheila cayennensis bipunctata: Wiesner 1992: 77.

Misapplication. Non *Cicindela bipunctata*: Brullé in Audouin & Brullé 1834: 60, nec Horn 1923: 214, which is *O. cajennensis* (Fabricius, 1787).
Type material. Lectotype (designated here) ♀ in ZMKC labelled: "2 punctata" [handwritten by Fabricius]; "Lectotype, Cicindela bipunctata Fabricius, 1792, design. Jiří Moravec 2012" [red, printed]; "Odontocheila cajennensis bipunctata Fabricius, 1792, det Jiří Moravec 2012" [printed]. Paralectotype. 1 ♀ in ZMKC without labels (standing in ZMKC in the same box with the type of *C. cajennensis*, but very probably a syntype of *C. bipunctata* sharing all characters with the lectotype of this taxon, including the testaceous abdomen.
Other material examined (specimens with prevailing characters of *O. bipunctata*). Historical data. 1 ♂ in MNHN: "bipunctata Dej. / Amer. merid. Dej." // "Muséum Paris / Coll. Chaudoir 1874" // "bipunctata F.". 1 ♂ in MFNB: "3616" // "bipunctata / F. Dej. / Surinam / Dej. Mus./ Cayenne –Sal. // "Hist. Coll. (Coleoptera), Nr. 3616 / Odontocheila bipunctata Fab. / Surinam, Dej. – Cayenne / Zool. Mus. Berlin". 1 ♂, 2 ♀♀ in MFNB with same last label. 3 ♂♂, 1 ♀ in MNHN: "Muséum Paris / Coll. Chaudoir 1874". 1 ♀ in MNHN: "Muséum Paris / Cayenne / Leprieur 1831 / "302 / 39". 2 ♂♂, 2 ♀♀ in MNHN: "Muséum Paris / Guyane Franç. / Gourdonville". 1 ♂ in MNHN: "Ex Museo Bates". 1 ♂, 1 ♀ in MNHN: "Muséum Paris / Guyane Fr. / La Mana / Mélion 1864". 1 ♂ in MNHN: "St. Laurent du Maroni / Audot 1852". 1 ♂ in BMNH [standing as *O. c. oseryi*]: "West Indies / June 76 / ~~St. Lucia~~ Trinidad / Graham Mitchel" // "BMNH {E} / 1998-35". Other data. 1 ♂, 1 ♀ in MNHN: "Guyane Franç. / Passoura / E. Le Moult 1906.6". 3 ♂♂ in MNHN, 1 ♂, 1 ♀ in IRSNB: "St. Laurent du Maroni". 2 ♂♂ in MNHN, 3 ♂♂, 1 ♀ in SDEI, 2 ♂♂, 1 ♀ in MFNB, 20 ♂♂, 4 ♂♂ in IRSNB: "Surinam". 2 ♂♂ in BMNH: "Surinam, Marovijne / River / VII.1965. E.A.M. Gale / Cambridge Exped. / B.M. 1965–516". 5 ♂♂, 2 ♀♀ in MFNB: "Surinam / Paramaribo / J. Michaelis Sv.". 1 ♂ in SDEI: "Moengo, Boven / Cottioań, Surinam". 1 ♀ in SDEI, 4 spms in NHMW: "Paramaribo". 1 ♂, 1 ♀ in MNHN: "Muséum Paris / Guyane Française / St. Jean du Maroni". 1 ♂, 2 ♀♀ in IRSNB: "St. Jean du Maroni". 1 ♂ in IRSNB: "Guyane Française / La Forestière / Haut Maroni". 1 ♂ in IRSNB: "Guyane Française / Rocher de Courou". 1 ♂ in IRSNB: "Guyane Française / Les ?Lattes" [illegible]. 1 ♂ in MNHN: "Guyane Fr./ env. de Cayenne". 1 ♀ in BMNH: "Guyane Franç. / Nouveau Chantier / Collection Le Moult". 7 ♂♂, 8 ♀♀ in IRSNB: "Guyane Franç. / Nouveau Chantier / Bas Maroni". 1 ♀ in IRSNB: "Guyane Fr.". 1 ♀ in CMKP: "Guyane Fr. NW / 20 km E of Saint / Laurent du Maroni / 12.VIII:2006 leg. Snížek".1 ♂, 3 ♀♀ in SDEI, 3 ♂♂, 1 ♀ in MFNB, 2 ♂♂, 2 ♀♀ in BMNH: "Cayenne". 6 ♂♂, 3 ♀♀ in BMNH, 1 ♂, 1 ♀ in NHMW: "Trinidad". 2 ♂♂, 4 ♀♀ in BMNH:

"Trinidad / F. Birch, 1904". 1 ♀ in BMNH: "W. Indien / Trinidad / Mora Forest / 16.I.1924 / Dr. S.A. Neave". 5 ♂♂, 2 ♀♀ in MNHN, 2 ♂♂, 3 ♀♀ in IRSNB: "Guyane". 1 ♂ in MFNB: " 360" [no locality]. 2 ♀♀ in MNHN: " Guyane / Affluent Maroni / F. Gay 1903". 1 ♂ in MNHN: "Guyane Française / Dr. Bouchard 1913". 1 ♀ in MNHN: "Chervein / Bas Maroni / Coll. Le Moult". 1 ♂ in MNHN: "Guyane Franç. / Canopi / F. Ceay 1900". 1 ♂ in MNHN: "Oyapok [Oyapock] / Canopi" 2 ♂♂, 2 ♀♀ in SDEI: "Kamakusa / Brit. Guiana". 7 ♂♂, 1 ♀ in MFNB, 1 ♂ in IRSNB: "British Guyana". 2 ♂♂, 2 ♀♀ in BMNH: "Kartabo, Brit. Guyana / / June 1922 / e coll. M.D. Haviland / d.d. Collegium Newuhamense". 2 ♂♂, 1 ♀ in BMNH: "B. Guyana / Barlet Coll. / B.M.1943-60". 4 ♂♂, 1 ♀ in BMNH, 1 ♀ in IRSNB: "Bartica / Brit. Guyana". 1 ♂, 1 ♀ in MFNB: "Guyana". 1 ♀ in BMNH: "Guyana / Winiperu / R. Essequibo / Vii–iX.1967 Mt. Cogon". 4 ♂♂, 3 ♀♀ in BMNH: "British Guyana / Essequibo R. / Morabali Creek / 28.VII.1929 / Ox. Univ. Exped. / B.M. 1929–485". 1 ♂ in NHMW: "Brit. Guyana / Mackensie Ituni / Riv. Essequibo / 1969 leg. A. Hejja". 4 spms in NHMW: "Paramaribo". 1 ♂, 1 ♀ in BMNH: "Mazaruni / High Forest / 16.VIII.1937" // "British Guayana / Coll. Richard / & Smart / B.M.1937–776". 1 ♀ in BMNH: "Amer. mer.". 1 ♂, 1 ♀ in BMNH, 1 ♂ in IRSNB: "Demerana". 1 ♂ in IRSNB: "Mallali / Brit. Guiana". 1 ♂ in MNHN: "Amazones / Taperinba Santarem / A. H. Fassl 1920". 2 ♂♂, 3 ♀♀ in MNHN: "Amazones / Obydos / M. de Mathan / 2e Trimestre 1878". 3 ♂♂ in MNHN: "Amazones / Massanary / (Dr. Hahnel)". 1 ♀ in SDEI: "Est de Pará" [standing as "*O.* c. *cayennensis*"]. 1 ♂ in SDEI: "S. Gabriel" // Zikan [leg.] / Amaz.". 1 ♂ in SDEI: "Rio Maués / Amaz. Zikan"[leg]. 1 ♂ in BMNH: "Amazon / Nanta". 1 ♂ in BMNH: "Ega". 1 ♀ in BMNH: "Brazil". 1 ♀ in CMKP: "Brazil RR / Apiau / 7.IX.1986 / leg. J. Majer". 1 ♂ in MNHN, 1 ♀ in SDEI, 1 ♀ in IRSNB "Venezuela Suapure / Tenez". 1 ♀ in NHMW: "Venezuela / T.F. Amazonas / Teucua". 11 ♀ in NHMW: "Dr. Moritz / Venezuela". ♂ in BMNH: "Suapure /Venezuela / Apr.7.1899". 1 ♀ in USNM: " Venezuela Exp. / Territ. Amazonas / Mt. Marahuaca / N. slopes, Benitez / Camp. May 1–15.1950 / J. Maldonado / Capriles Coll.". 1 ♀ in NHMW: "Columbia / de Chocó". Recent data. 1 ♂, 1 ♀ in CCJM: "West Suriname / Nickerie Distr. / Apoera Kaboueri Creek / 1–20.VIII.1990 / leg A, Oesterle". 1 ♂, 2 ♀♀ in BMNH: "Guiana IX–XI.1992 / Kurupukari / 4°40′N: 58°40′W / Malaise/FIT / BMNH BMNH {E} / 2006-132". 1 ♂, 1 ♀ in CDCL: "Guyane Fr. / Degrad Saramaca / XII.1992 / Dheurle Coll.". 3 ♂♂ in USNM: "Guyana: Mazaruni / Potaro District / Takutu Mountains / 6°15′N; 59°5′W / 11–20.XII.1983" // Earthwatch Research / Expedition / P.D. Perkins & / W.E. Steiner / collectors". 1 ♀ in IRSNB: "Guyane 2000 IRSNB / Guyane Française / Saul Crique Popote / 3°36′N, 53°10′W / 29.VI.–1.VII.2000 / leg. Braet et al. / a la lumière". 1 ♂ in IRSNB: same data except for: "28.VI. 2000" and " Fauchage / bord de Lagon". 1 ♀ in IRSNB: "Coll. R.I.Sc.N.B. / Guyane Française / Saul 22–30 / VI.2000 / Piège Malaise / leg. Y. Braet". 1 ♂ in IRSNB: "Coll. R.I.Sc.N.B. / French Guyana / Nouragues / 04°.05′N, 52°42′W / 17–22-X-2001 / leg. F. Feer". 3 ♂♂, 2 ♀♀ in FCCR: "Guiane Française, Régina / Nouragues Saut-Pararé / Petite Montagne Tortue (est), bas-fond / 04°19′14.1″N-52°14′27.5″W / 20.V.2010, M5, G. Lammare (SEAG)". 2 ♂♂, 1 ♀ in FCCR: "Guyane Française, Régina / Nouragues Saut-Pararé / (04°02′N-52°41″W), 20.IV.2010 / piége ŕ interception vitré SEAG". 1 ♀ in FCCR: with same locality data and: "Inselberg (Petit Plateau) / 12.VIII.2010 SEAG".5 ♂♂, 5 ♀♀ in DBCN: "Trinidad – St. George / Asa Wright Nat. Center / Arima Valley / D. Brzoska 10-VI-1991". 4 ♂♂, 4 ♀♀ in DBCN: "Guyana – Region B / Iwokrama Forest Res. / Turtle Mt. Camp / 04°43.9′S, 58°43.1′W" / D. Brzoska 31-V-2001". 1 ♂ in CCJM: "Guyane Fr., NW / S of Saint Laurent of Maroni / 14.VIII. 2006 leg. M. Snížek".

Redescription of the lectotype (female). Body (Fig. 21) 15.0 mm long, 4.7 mm wide, dorsal surface as in *O. cajennensis*.

Head as in *O. cajennensis*, 4.50 mm wide.

Labrum (Fig. 29) as in *O. cajennensis*, but in female almost entirely black, 2.10 mm long, 2.05 mm wide.

Thorax. Pronotum (Fig. 33) 2.70 mm long, 2.85 mm wide, anterior lobe nearly as wide as the lateral margins of disc (including dorsally visible margins of proepisterna) which are more convex and attenuated posteriad; posterior lobe markedly narrower than both anterior lobe and disc; lateral and ventral sterna including metasternum black-cupreous with mahogany tinge.

Palpi as in *O. cajennensis*, but testaceous coloration of longest palpomeres of labial palpi is reduced only on dorsal area.

Legs as in *O. cajennensis*, but femora (Figs 21, 24) with distinctly testaceous apical area (knees); protibiae and mesotibiae with basal half testaceous.

Abdomen (Fig. 24) with last five ventrites testaceous.

Differential diagnosis and variability. This taxon may be fully conspecific with *O. cajennensis* (see also under that taxon above) having the same range of the body size, shape and testaceous metatibiae and metatarsi as in *O. cajennensis*, except for following characters which are often variable. Although sympatric or even syntopic with *O. cajennensis*, *O. bipunctata* has been recognized by most authors including Rivalier (1969) as a subspecies differing from the "nominotypical subspecies" in coloration of body portions, namely by the entirely testaceous abdomen and partly also the metasternum, apices of femora (knees) and large apical area of pro- and mesotibiae, combined with almost black labrum and also all palpomeres. Rivalier (1969) mentioned that some intermediate coloration of the abdomen rarely occurs in both taxa, but the present revision revealed it quite common, moreover in syntopic adults. While the testaceous abdomen in *O. bipunctata* also occurs in *O. cajennensis* (but the testaceous area is usually darker or mostly covering only last one to three ventrites), the testaceous area on the protibiae, particularly on mesotibiae, expanded on their whole basal half, appears to be more consistent character of *O. bipunctata*, but this character also varies in some populations. The other distinguishing character found within this present revision is a wider pronotal disc (Figs 33–34) which has anterior margins as wide as the anterior lobe, more convex and moderately attenuated posteriad, in contrast to the narrower and more parallel-side pronotal disc in *O. cajennensis* (Figs 11–12). Although the pronotal shape is generally variable, namely in females of both taxa, the wider pronotal disc occurs in the majority of examined adults of *O. bipunctata*.

The coloration of other body portions and buccal appendages are mutually variable, and the testaceous abdomen in *O. bipunctata* is not sometimes in correlation with the extend of the testaceous coloration on the labrum, longest palpomeres of maxillary palpi, pro- and mesotibiae, as well as with dark or testaceous apices (knees) of femora. Such inconsistence occurs even in some of the obviously syntopic adults. Rivalier (1969) argued that the body coloration of *O.* "*cayennensis bipunctata*" is almost black ("*presque noir*") but this proved to be inconstant as well. For instance, the lectotype (Fig. 21) in ZMKC has lateral margins of the elytra (Fig. 32) with greenish iridescence, and some populations, even some syntopic adults independent of locality, are more vividly coloured with metallic-cupreous and greenish tinge.

For example, some of the adults from Arima Valley, Trinidad (DBCN) and Iwokrama, Guyana (DBCN), but also from Saint Lauredt du Maroni, Guiane Française are more vividly coloured, dark cupreous with notable green iridescence on lateral margins (Figs 20, 31). In addition, in some males the labrum has more expanded testaceous marginal areas (Fig. 28), while in others the labrum is almost black, and also all other characters, including their almost entirely black palpi and testaceous abdomen, or also metasternum, clearly refer to *O. bipunctata.* The male in BMNH labelled "West Indies / Trinidad", possesses even much brighter dorsal body coloration; because of its brown to blackened metatarsi, it was identified by F. Cassola as "*O. c. oseryi*", but its

entirely testaceous metasternum and abdomen refer to aberrant adult of *O. bipunctata*, rather than to represent an undescribed species.

Specimens labelled "Itaituba / Tapajoz", standing in SDEI as "*O. c. bipunctata*" and "*O. c. femoralis*", proved to be in fact *O. oseryi* (see Moravec & Brzoska 2015).

Biology and distribution. Almost of the same range as in *O. cajennensis*. In collections, many specimens of *O. bipunctata* bear the same locality labels as those of *O. cajennensis* (see "Other material examined" under both taxa). The locality Paramaribo is in Surinam. Rio Apiau is a small eastern tributary of Rio Mucajai which enters the larger tributary Rio Branco of which the western tributary Rio Tacutu rises at the Brazilian border with British Guyana. The Branco River enters the large river Rio Negro which merges with the Amazon River at Manaus. Thus *O. bipunctata* is obviously spread along these Amazon tributaries to the central areas of the Amazon Basin, including the Brazilian states of Pará and Amazonas. Rio Maués (= Maués Açu River) is a river of the northwestern Brazilian state of Amazonas, east of the Madeira River, where it is sympatric with some other species of the complex, such as *O. rufipes* and *O. emilerivalieri* sp. nov. (see under these taxa below). It seems that *O. bipunctata* rarely occurs in Colombia. Rodriguez *et al.* (1994) mentioned that in Venezuela it is more common than *O. cajennensis*. These authors considered three adults from San Carlos, Rio Negro in the Amazonas area of Venezuela to be an undescribed subspecies.

Horn (1923, 1926) reported this taxon from Ecuador (Archidona, Macas), but he obviously confused it with *O. ochreata*, or the specimen was mislabelled. Records in some other papers, are impossible to specify without examinations of the specimens.

Adults have diurnal activity. As in most species of this species-group, the adults from the Arima Valley, Trinidad, as well as those from the Iwokrama Forest Reserve in Guyana, were flying on the ground of forest trails, hunting small insects, and escaped by a quick fly to neighbouring vegetation when disturbed; during the night they were found sitting underneath foliage of the vegetation along the trails (D. Brzoska pers. com.).

Remarks. The genuine female from the collection of Fabricius (now in ZMKC) labelled by the label (handwritten by Fabricius, Fig. 22) is designated here as a lectotype to assure stability of the taxon.

For the reasons stressed in the "Differential diagnosis" above, *O. bipunctata* is provisionally treated here as a separate species until a greater number of syntopic adults taken recently from exact localities can be examined.

It is partially in accordance with Rivalier (1969), who noted that "*O. cajennensis bipunctata*" can hardly be considered as a geographical subspecies because of its sympatric occurrence with "*O. c. cajennensis*". He speculated that it can represent a polymorphic "population" as a result of genetic mutations and hybridization between two closely related taxa. Notwithstanding, because of the reasons stressed in the "Differential diagnosis" above, *O. bipunctata* may barely represent vicariant populations tending to allopatric or sympatric speciation, because only some of the differences in the coloration may be caused by the adaptation on different biotopes. A possibility that *O. bipunctata* represents only juvenile adults of *O. cajennensis*, thus with paler, testaceous tibiae and

abdomen, is contradicted by their deep dorsal body coloration, usually almost black labrum, and in some of the adults by their abraded mandibles (as usual in old adults).

As mentioned in the "Introductory" above, a comprehensive molecular study may be very difficult.

Any partial DNA tests, when only an incomplete material is sequenced may result in inconsistent and misleading results even if using newest methods.

Bates (1869) treated *Cicindela bipunctata* Fabricius as a junior synonym of *O. cajennensis* (as "*cayennensis*"), but he erroneously supposed that *O. cajennensis* sensu Dejean (1825) is a distinct species (judging from the redescription by Dejean only). Fleutiaux (1892) also listed "*O. bipunctata* as a synonym of *O. cayennensis.*

As discussed in "Remarks" under *O. c. cajennensis* above, the redescriptions of these two taxa by Dejean (1825) perfectly correspond with their lectotypes in ZMKC.

Odontocheila mirekklichai sp.nov.

Type locality. Peru: Sinchicui River, district of Iquitos, region of Loreto.

Type material. Holotype ♂ in MNHN, labelled: "Peru – Iquitos / Sinchicui River / 2–3.XII.1994 M. Klicha lgt." [printed] // "Shady and wetly / path in a jungle" [printed]. Allotype ♀ in CMKP with same labels as holotype. Paratypes. 1 ♂, 1 ♀ in CMKP, 1 ♂, 1 ♀ in CCJM with same labels as holotype. 1 ♂, 2 ♀♀ in RLHC: "Peru: Loreto / Iquitos / July 1991, Michael Buche". All type specimens labelled: "Odontocheila / cayennensis / ssp. oseryi Lucas / M. Klícha det." [printed] // "Holotype (Allotype or Paratype respectively) / Odontocheila / mirekklichai sp. nov. / det. Jiří Moravec 2016" [red, printed].

Description. Body (Fig. 35) very large, 15.9–16.7 (HT, AT) mm long, 4.80–5.10 (HT, AT) mm wide, black-copper, rather matt, sublateral areas of pronotum indistinctly iridescent green, elytra almost black with chatoyant faint cupreous or olivaceous-green iridescence and only narrow, faintly iridescent-greenish lateral stripes.

Head (Fig. 36) narrower than body, 4.40–4.70 mm wide, all parts of head glabrous.

Frons, vertex, clypeus and genae as in *O. cajennensis*.

Mandibles (Fig. 36) robust, subsymmetrical, each mandible with three prominent teeth (and basal molar), and indistinctly indicated fourth tooth by raised edge which is in right mandible rudimental and indistinct; coloration of both mandibles black, rather matt, with faint reddish tinge in middle, basal half with whitish to ochre-testaceous lateral stripe; basolateral portion (visible in lateral view) with strong metallic violaceous-blue lustre.

Palpi (Fig.36). Maxillary palpi with normally shaped, only moderately dilated terminal palpomeres; longest palpomeres of maxillary palpi variably brownish-testaceous with blackened margins and ventral side. or entirely black; both penultimate and terminal palpomeres metallic-black; labial palpi entirely black, their penultimate (longest) palpomeres elongate-cylindric, only gradually dilated towards apex which is up to 0.35 mm wide.

Labrum 4-setose, with seven teeth, sexually dimorphic in shape and coloration; male labrum (Fig.37) rather long, length 1.65–1.70 mm, width 2.00–2.20 mm, with distinct, mostly acute basolateral teeth, acute or subacute anterolateral teeth and prominent

median lobe of three acute anterior teeth; coloration variably either entirely testaceous or with slightly (rarely more distinctly) darkened basomedian area; surface almost smooth or indistinctly uneven; female labrum (Fig. 38) much longer, 2.20–2.30 mm long, 2.30–2.40 mm wide, median lobe with three acute anterior teeth of which the median tooth is much longer; coloration black-brown to pitchy-black on median area and with more or less distinctly reddish-testaceous lateral margins; surface with uneven to shallowly rugulose median area.

Antennae in male reaching elytral half, in female only elytral third; antennomeres 1–4 almost unicoloured, metallic black with strong blue and violaceous lustre, particularly on scape and on apices of antennomeres 3–4; antennomeres 5–11 smoky-blackened.

Thorax. Pronotum (Figs 39–40) glabrous, usually slightly longer than wide, 3.00–3.10 mm long, 2.90–3.00 mm wide, metallic black-copper in middle; sublateral areas of disc and posterior lobe slightly more vividly cupreous, lateral areas with only faint green or greenish-blue lustre passing to cobalt-blue to violaceous on juxtanotopleural areas; sulci well pronounced (anterior sulcus deep only laterally, posterior sulcus deeper); anterior lobe distinctly wider than posterior lobe and also than the lateral margins of disc (including dorsally visible proepisternal margins), its anterior margin in middle prolonged anteriad, surface densely and irregularly wavy-rugulose to vermicular-rugulose; disc on its dorsal surface rather distinctly convex, lateral margins of proepisterna together with notopleural sutures only moderately convex behind the anterior lobe, then mostly subparallel and moderately or distinctly attenuated towards posterior sulcus (together with the notopleural sutures which are indistinctly visible from above); medial line mostly indistinct, usually almost merging with discal surface sculpture; discal surface covered with short, irregularly vermicular rugae which are fragmented on anteromedian area, and coarser, subparallel zigzag-wavy on sublateral areas, those on posterior area irregularly and often indistinctly converging towards the median line; rugae on lateral areas become thicker and elongate-transverse, but fizzling towards notopleural sutures; posterior lobe with distinctly delineated posterior rim, coarsely and irregularly wavy rugose to vermicular rugulose, but rugae mostly shallower or absent on distinctly raised dorsolateral bulges which are usually shiny reddish-cupreous; lateral and ventral thoracic sterna entirely glabrous, shiny metallic-black; metepisterna with usual impressions at metepimeron; female mesepisternal coupling sulci unnoticeable (female mesepisterna not markedly differentiated from those in male).

Elytra (Figs 41, 43) elongate, length 9.70–10.3 mm, with well-pronounced, rounded to subangular humeri, lateral margins in male subparallel, in female indistinctly dilated in middle; anteapical angles widely arcuate, then running obliquely towards apices which are towards indistinct sutural spine rounded in both sexes, more arcuately in female, microserrulation extremely fine and irregular, barely visible, usually partly absent; elytral dorsal surface moderately convex, humeral impressions shallow but together with shallow discal impression clearly delineating moderate to more distinctly embossed basodiscal convexity; apical impressions rather distinct; elytral coloration almost black or black-copper with indistinct, diffuse cupreous and olivaceous-green iridescence

(changeable depending on angle of illumination), sublateral areas indistinctly iridescent reddish-cupreous, narrow lateral areas with mostly indistinct green or green-blue iridescence; juxtaepipleural area (in lateral view) shiny black-violaceous or violaceous-blue; whole elytral surface coarsely punctate, punctures often very large on anterior half of elytral disc (Figs 42, 44), isolated or often anastomosing in chains, the largest punctures within discal impression and on lateral areas of basodiscal convexity, often with irregular intervals and irregularly anastomosing; punctures become smaller and commonly anastomosing on posterior declivity and apical areas; on the posterior elytral area their narrow, sharp intervals appear to form a rasp-asperate sculpture, but the appearance depends on the angle of illumination; elytral surface glabrous except for general, a few, long, often indistinct and easily abraded hair-like sensory setae; whitish elytral maculation very indistinct, consisting of only one, usually very small lateromedian macula, which is sometimes barely visible, or the spot is present on one of the elytron only, rarely the elytra are entirely immaculate (as in HT, Fig. 41); anteapical and humeral macula always absent (humeral area in frontal view appears shiny-cupreous or shiny green, simulating thus a humeral macula).

Abdomen. Ventrites shiny black, sometimes with faint greenish lustre anteriorly, surface of the ventrites glabrous, except for usual (easily abraded) two hair-like sensory setae at their posterior margins.

Legs. Coxae and trochanters metallic black; femora metallic-black, laterally with more or less intense blue, greenish, mahogany or violaceous lustre, basal area and in male usually also ventral area of pro-and mesofemora paler, reddish-mahogany; tibiae metallic black with mahogany or violaceous lustre, rarely basal half of metatibiae pale mahogany; tarsi entirely metallic-black, with blue or violaceous lustre; claws black-brown; setal vesture of legs as in *O. cajennensis*.

Aedeagus (Figs 45–46)) long and robust, length 4.80–5.00 mm, width 1.40–1.50 mm, shape as in *O. cajennensis* and other taxa of the species-complex, basal portion short, median portion distinctly voluminous, ventral side straight, apical portion dorsally conically attenuated towards small, narrow, blunt and dorsally emarginated apex; small, convex depigmented protrusion of apical orifice with penetrating flagellum; structure of internal sack as in *O. cajennensis* and other species of the whole species-group.

Differential diagnosis and variability. Species of the *Odontocheila cajennensis* species-group. *O. mirekklichai* sp. nov. resembles by its external characters *O. nicaraguensis* and other species of this species-group with metallic black metatibiae and metatarsi, but this new species, despite its metallic black legs, is evidently closer to the *O. cajennensis* species-complex. *O. nicaraguensis* and *O. excisipenis* differ in having wider and more distinctly excised apex of their aedeagi, *O. chiriquina* in somewhat wider apex of its aedeagus, smaller body and testaceous apical half of tibiae, and all these species are distinguished from *O. mirekklichai* sp. nov. by much finer elytral punctation. Other species of this species-group with black metatibiae and metatarsi differ in having very different shape of their aedeagi, and, moreover, occur in Central America.

Consequently, because of the same coarse pattern of the elytral punctation and small, emarginated apex of the aedeagus, *O. mirekklichai* sp. nov. is much closer to *O. oseryi*

(Lucas, 1857) which occurs throughout the Amazon Basin, and which also has partly or entirely black metatarsi, but clearly differs in having ochre-testaceous metatibiae and bicolored labrum in both sexes (details in Moravec & Brzoska 2015).

The labrum of *O. mirekklichai* sp. nov. is in male variably either entirely reddish-testaceous (as in the holotype, Fig. 37) or partly blackened, in female distinctly blackened except for reddish-testaceous margins (Fig. 38). The palpi are either entirely black, or with the longest palpomere of labial palpi partly ochre-brownish on its dorsal side.

Etymology. Named after Czech entomologist Miroslav Klícha, the collector of the new species.

Biology and distribution. Known only from the type locality in Peru.

Remarks. Within the whole *Odontocheila cajennensis* species-group, both *O. mirekklichai* sp. nov. and *O. oseryi* represent an intermediate link between the species with black metatibiae and metatarsi, and those belonging to the *O. cajennensis* species-complex characterized by their consistently testaceous metatibiae and metatarsi.

Odontocheila emilerivalieri sp.nov.

Type locality. Brazil: Manicoré, area of the Madeira River in the state of Amazonas.

Type material. Holotype, ♂ in MNHN, labelled: "Amazones / Manicore / ex Stgr.[Staudinger]" [printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish with black border, printed] "Holotype / Odontocheila / emilerivalieri sp. nov. / det. Jiří Moravec 2016" [red, printed]. Allotype. ♀ in MNHN with same labels as holotype and: "Allotype / Odontocheila / emilerivalieri sp. nov. / det. Jiří Moravec 2016" [red, printed]. Paratypes. 1 ♂, 1 ♀ in SDEI: "Est Amazonas / Manicoré / XI.1923 / H. L. Boy" [printed] // "Melzer ded." [handwritten, illegible]. 1 ♂, 1 ♀ in SDEI: "Manicoré / XI.23 / H.L. Boy" [handwritten] // "Melzer ded." [handwritten, illegible]. 1 ♂ in SDEI: "Staudinger / Manicoré" [printed]. 1 ♀ in SDEI: "Manicoré / Rio Madeira / Juni 1921 / Zikan ded." [handwritten]. 1 ♂ in IRSNB: "Brazil, Manicoré / Rio Madeira" [printed]. All paratypes labelled: "Coll. W. Horn / DEI Eberswalde" [printed] // "Paratype / Odontocheila / emilerivalieri sp. nov. / det. Jiří Moravec 2016" [red, printed].
Other material examined. 1 ♂, 1 ♀ in BMNH: [standing as "*femoralis*"]: "Brazil, Amazonas / Reserva Colosso / around Camp / 24–26.I.1996" // "BMNH {E} / 2003-84" // "Odontocheila cayennensis (Fabr.) / ssp. femoralis / Chaudoir, 1860 / Det. F. Cassola 2008".

Description. Body (Figs 47–49) very large, 14.7–17.0 (HT, AT) mm long, 4.50–5.50 (HT, AT) mm wide, dorsally cupreous with notably iridescent green sublateral areas.

Head (Fig. 50) notably narrower than body, 4.20–4.80 mm wide, concolorous with the rest of body surface, all parts of head glabrous.

Frons, vertex, genae and clypeus shaped as in *O. cajennensis*, but more vividly coloured.

Labrum 4-setose, with seven teeth, ochre-testaceous or reddish-testaceous (except for blackened margins of teeth), sometimes indistinctly tessellate-tarnished on median area (as usual in old specimens), shape sexually dimorphic; male labrum (Figs 55–56) 1.60–1.70 mm long, 1.90–2.00 mm wide, with acute lateral and anterolateral teeth (if not abraded), and prominent median lobe of three acute anterior teeth (their apices abraded in old adults) which are slightly or more distinctly longer than the median tooth. labral surface almost smooth; female labrum (Fig. 57) of a similar shape but much longer with

prominent, protruding, median tooth, length 2.30–2.60 mm, width 2.20–2.40 mm coloration as in male labrum, sometimes somewhat darkened (old specimens), surface with indistinctly uneven median area.

Mandibles (Fig. 50) somewhat narrower than in *O. cajennensis*, subsymmetrical, inner teeth gradually smaller towards the basal molar; each mandible with three prominent teeth (and basal molar); left mandible with indistinctly indicated fourth tooth by raised edge; right mandible either with a rudiment of fourth tooth at the base of the third tooth, or entirely lacking it; coloration of both mandibles dark brown with reddish mahogany tinge, basal half with whitish to ochre-testaceous lateral stripe which is expanded laterally onto dilated basolateral portion which has black base with faint violaceous-blue lustre (visible in lateral view).

Palpi (Fig. 50). Both labial and maxillary palpi with normally shaped, rather narrow (not markedly dilated) terminal palpomeres, shiny black, except for longest palpomeres of maxillary palpi which are ochre-testaceous with darkened lateral areas, more darkened in female; penultimate (longest) palpomeres of labial palpi elongate-cylindric, only gradually dilated towards apex which is 0.30–0.35 mm wide.

Antennae long, in male slightly surpassing elytral half, in female somewhat shorter, but reaching elytral half; scape shiny metallic black with strong blue and violaceous lustre, pedicel notably paler, brownish with mahogany lustre and thin, testaceous anterior stripe; antennomeres 2–4 metallic black with faint green or blue lustre and reddish macula in their third and on their apices; antennomeres 5–11 black-brown, smoky-blackened towards apices.

Thorax. Pronotum (Fig. 51) glabrous, as long as wide or very slightly longer, 2.80–3.25 mm long, 2.75–3.20 mm wide, metallic-copper or reddish cupreous with strong greenish lustre on lateral areas, which is often expanded towards median area (as in HT); juxtanotopleural areas black with blue to violaceous lustre; sulci well pronounced, anterior sulcus only laterally; anterior lobe always wider than the posterior and of the same width as lateral margins of disc, very finely and densely irregularly asperate-rugulose to vermicular-rugulose; disc with moderately convex dorsal surface, lateral margins of dorsally visible proepisterna mostly subparallel, but moderately attenuated towards posterior sulcus, more distinctly so in female; notopleural sutures thin and indistinctly visible from above; medial line mostly indistinct, usually nearly merging with surface sculpture; discal surface extremely finely asperate in middle to vermicular rugulose on sublateral areas (sculpture finer than in *O. cajennensis*); rugae on lateral areas much thicker, elongate and transverse towards notopleural sutures, but never surpassing them; posterior lobe with distinct posterior rim, irregularly and rather coarsely vermicular-rugulose except for rather distinctly raised, nearly smooth and iridescent-green dorsolateral bulges; prosternum, proepisterna, mesepisterna and metepisterna shiny metallic black, unicoloured, smooth and glabrous, metepisterna variably with short, deep transverse impressions at metepimeron; female mesepisternal coupling sulci not developed, with only longitudinal central sulcus lacking any pit, thus indistinguishable from the analogous sulcus in male mesepisternum; mesosternum and metasternum smooth and glabrous, shiny metallic-black with faint to strong green-blue or violaceous lustre.

Elytra (Figs 52–54) elongate, length 9.00–10.6 mm, humeri, lateral margins and apices as in *O. cajennensis*; elytral dorsal surface only moderately convex on posterior half of elytral disc, appearing nearly even, only humeral impression distinct, discal impression shallow, but clearly delimiting moderate basodiscal convexity; apical impressions shallow; elytral coloration on elytral discal surface dark copper or reddish-cupreous, sublateral areas reddish-cupreous with distinct, iridescent-green lateral areas; juxtaepipleural area (in lateral view) shiny black-violaceous or violaceous-blue; whole elytral surface rather coarsely punctate, pattern of the punctation and indistinct, sparse hairlike sensory setae as in *O. cajennensis*; whitish elytral maculation consisting of only one, very small, slightly elongate or irregularly shaped lateromedian macula, and very rarely (in one male only) also indistinctly indicated, very small and darkened anteapical spot present; humeral macula in both sexes absent.

Abdomen consistently metallic black with green-blue and violaceous lustre; surface of ventrites glabrous, except for usual (easily abraded) two hair-like sensory setae at their posterior margins.

Legs. Coxae with white setae; pro- and mesocoxae iridescent green, rather densely setose; metacoxae violaceous-blue, with one central sensory seta and one or two apical setae, outer lateral margin with row of setae or only with a cluster of setae (setae partly abraded); pro- and mesotrochanters in male testaceous, in female brownish darkened (except for usual apical easily abraded seta),, metatrochanters black-brown, glabrous; femora metallic black including apices, metafemora very rarely with reddish-violet subapical spot, whole apical half with mahogany or violaceous lustre, basal area usually paler (faded in old specimens); all tibiae testaceous, apices of protibiae somewhat darkened, metatibiae yellow-ochre to ochre-testaceous; protarsi metallic-black with blue or violet lustre; mesotarsi metallic-black, usual with first tarsomere brownish; metatarsi yellow-ochre or ochre-testaceous (concolorous with metatibiae), last tarsomere usually darkened; claws brownish-testaceous.

Aedeagus (Figs 58–59) robust, shape as in all species of the *O. cajennensis* species-complex, length 4.40–5.20 mm, width 1.20–1.40 mm; structure of internal sack (Fig. 60) as in *O. cajennensis* and other species of the complex.

Differential diagnosis and variability. Species of the species-complex of *O. cajennensis*, possessing consistently testaceous metatibiae and metatarsi. One of the largest species of the complex. Due to the testaceous labrum and bright coloration of the body which is cupreous with notably iridescent green sublateral areas, *O. emilerivalieri* sp. nov. resembles *O. rubefacta* and *O. erythropus*, but immediately differs from them in having its femora and whole abdomen consistently metallic-black. *O. femoralis* and *O. ochreata* which also have their femora and abdomen black, can be immediately distinguished by their bicolored labra.

Three specimens in MFNB labelled “Ecuador” and one female (KCBC) from Lorochati, Ecuador differ from *O. emilerivalieri* sp. nov. in having their femora testaceous. They are tentatively considered here to be aberrant adults of *O. rubefacta* (see “under that species below).

Etymology. Dedicated with a great respect to French entomologist Emile Rivalier (1892–1979), reputable specialist in tiger beetles, who annotated (Rivalier 1969) that two specimens from Manicoré (deposited in MNHN), might represent an undescribed taxon.

Biology and distribution. Known from the type locality in the Brazilian state of Amazonas, the area of the town of Manicoré on the Madeira River with the Manicoré Biological Reserve. The two specimens (BMNH) listed in "Other material examined" comes from the same state of Amazonas.

Remarks. Despite the great variability within the species-complex, the new species is described here because of its consistently correlated characters which are far beyond the usual variability.

Odontocheila ochreata (Reiche, 1842) stat. restit.

Cicindela ocreata Reiche, 1842: 240 (misprint of the species-name spelling?).

Type locality. "provincia Equatoria" (Bogota, Equateur) on the labels.

Odontocheila ocreata: Bates 1869: 290.
Odontochila cayennensis ochreata: Fleutiaux 1892: 121 (emendation of the species name)
Odontochila cayennensis ochreata: Rivalier 1969: 198.
Odontocheila cayennensis ochreata: Wiesner 1992: 77.

Type material. Holotype (by monotypy) ♀ in MNHN, labelled: "Bogota" [greenish, handwritten] // "ocreata / Reiche / Equateur" [tarnished, ochre, handwritten] // "Muséum Paris / Coll. Chaudoir 1874" [greenish, printed] // "Var. / ochreata / Reiche / Colombie. / 59. C. Reiche" [ochre-tarnished with black frame, handwritten] // "Revision Jiří Moravec 2014: Holotype (by / monotypy) / Cicindela / ocreata Reiche, 1842" [red, printed] // "Odontocheila cajennensis / ochreata (Reiche, 1842) / det. Jiří Moravec 2014"

Other material examined. About 300 specimens (listed in the concluding, not yet issued publication), mostly from BMNH, MNHN, MFNB, SDEI, IRSNB, USNM, CMNH, NHMW. Those from Colombia: Nova Grenada; Putomayo Mocoa; Muzo; Caqueto Morelia; Rio Bodoquero; Rio Orteguaza S of Florencia; Villavicantio. Most of them are from Ecuadorian Amazonia: Napo-Loreto; Rio Napo; Sucumbios; Archidona; Canelos; Coca; Quito; Aquados; Elanos; Santa Inéz; Garzacocha; Morona Santiago; Macas; Puyo.
Recent data. 1 ♀ in CJGS: "Ecuador, Rio Napo, Jatun / Sacha, SE Tena / (Primär Regenwald) / 450 m üNN / 1°05′, 77°42′, P15 / 7–9.IV.1997 / C&B Komposch lgt.". 1 ♂, 1 ♀ in CJGS: "Peru / Tingo Maria, 720 m / 9°19′34″S,76°01′47″W / 16.I.2011, W.-H- Liebig". 1 ♂, 2 ♀♀ in CCJM: "Ecuador, Loreto / II.1996 / leg. S. Brantlová". 2 ♂♂ in BMNH: "Ecuador: Morona / Santiago, Cord de / Cutucu / 6 k. E. of Macas / 1000 m, 24.III.1981 M. Cooper". 3 ♂♂, 2 ♀♀ in NHMW: "Ecuador, Napo distr. / Loreto, 17.II.–14.III. 1996 / J. Strnad leg.". 1 ♂ in CCJM: "Ecuador, Pastaza / Rio Curaray / Dantacocha / 29.IV.–4.V.2007 / Šebela & Prouza lgt.". 1 ♀ in CCJM: "Ecuador Cotopaxi / Otonga, 6.IV.2000 / leg. Šebela & Prouza". 1 ♂ in CCJM: "Ecuador / Prov. Napo / Tena env. 600 m. 18–26.I.2007 / leg. Š. Dolák". 1 ♀ in NHMW: "Ecuador, Sucumbios / Rio Napo Garzacocha / 16–22.V.1992 / F. Cassola & D. L. Pearson". 1 ♂ in NHMW: "Ecuador / Lumbaqui / 25.IX. 1994 Brantlová lgt.". 1 ♂, 1 ♀ in JVCB: "Ecuador 1.–2.II.2000 / Provincia Napo / San Ramon (Rio Napo) / lgt. Mráček". 1 ♂ in MHCW: "Apuya Forest. Misahaulli, / near Tena, Napo prov., / 630 m alt. Ecuador / April 9, 2014 / Michio Hori leg.". 1 ♀ in CDCL: "Equateur / Tena, I.2001 / Lecourt leg. / Coll. Dheurle". 1 ♀ in BMNH: "Ecuador Orellana / Payamino Research Station / 0°29′36.01″S, 77°17′29.15″W / 300 m, Tropical Rainforest / General Collecting, 30.VII–12.VIII.2007". 1 ♀ in BMNH: "Ecuador Yasuni Nat. Park / Tiputini Research Station. Day / 19.XI–05.XII.2013 B.H. Garner / BMNH {E}2013-193". 1 ♂, 1 ♀ in USNM: "Ecuador Napo: Onkone / Gare Camp 00°39″10′S, 76°26′00″W / terra firma forest".

Nomenclatorial note. The original name spelling as "*ocreata*" by REICHE (1842) is commonly considered as a misprint. Nevertheless, the name may have been given to this species by Reiche deliberately, because the Latin "*ocreatus*" (derived from "*ocrea*"= tibia), means "with tibia-covering high boots" and it may correspond with the ochre coloration of the tibiae in contrast to the black femora in *O. ochreata*. In such case, the commonly accepted emendation to "*ochreata*" by FLEUTIAUX (1892) was superfluous, but as the emended name is in prevailing usage, it is used also here. In any event, the species-name obviously means the ochre coloration of the tibiae, not some ochre tinge on femora (which are primarily black), or their ochre apices as it was inappropriately interpreted by RIVALIER (1969).

Differential diagnosis and variability. *O .ochreata* shares the blackened basomedian area of the labrum, black femora with testaceous apices (knees), as well as the ochre-testaceous tibiae with *O. femoralis*, and adults of these two taxa are barely recognizable. The only difference of *O. ochreata* from *O. femoralis* gained within this presented revision is a generally narrower pronotal disc in male of *O. ochreata*. In addition, the generally more obscure body coloration in *O. ochreata*, mentioned by RIVALIER (1969), has been confirmed, but both these characters may vary.

O. bipunctata (partly confused with *O. femoralis* by HORN 1905, 1910) also shares the black femora with testaceous apices with *O. ochreata* and *O. femoralis*, but differs in having the pro – and mesotibiae metallic-black with testaceous area only on their apical half, its labrum and palpi are generally much darker, and abdomen and mostly also metasternum testaceous.

The coloration of the abdomen, rarely also of legs, somewhat varies as in most other taxa of the *O. cajennensis* complex.

HORN (1905, 1910) listed *O. ochreata* (as *ocreata*) as a synonym of "*O. cayennensis bipunctata*" in his wrong sense.

Biology and distribution. Despite the type locality, only several specimens examined come from Colombia (see "Other material examined" above). The historical specimens labelled "Nova Grenada" come from not exactly specified locality, because New Grenada (Nueva Granada) was a republic established after the dissolution of "Gran Colombia", and consisted of today's Colombia, Panama and small areas of Ecuador and Venezuela. Most of the specimens come from Ecuador. The Yasuni National Park with 982,000 hectares of the tropical rainforest is situated in the Ecuadorian provinces of Orellana, Napo and Pastaza, with the Tiputini, Yasuni Curaray rivers and tributaries of the Napo River; Coca also is in the same area. The Apuya Forest near Tena and Puyo, with the Misahaullí River which merges with the Napo River, also in the Ecuadorian province of Napo. Lumbaqui is located in the north-eastern Ecuadorian province of Sucumbíos.

PEARSON *et al.* (1999) mentioned that "subspecies" *ochreata* is in Ecuador found throughout the lowlands (below 900 m) of eastern provinces whenever undisturbed "tierra firme" forest exists, and that adults forage for pray and search for mates on the forest floor.

Remarks. The type locality of this taxon may appear rather unclear. REICHE (1842) mentioned in the original description that the type was caught by Lebas in "provincia

Equatoria", and the female holotype (MNHN) is labelled "Bogota, Equateur", and "Colombie". As the paper by Reiche (1942) deals with taxa described from Colombia, we must interpret the type locality the Equatorial area of Colombia (as also the type locality of *Pentacomia cupriventris* Reiche, 1842).

Odontocheila femoralis Chaudoir, 1860 stat restit.

Odontochila femoralis Chaudoir, 1860: 51 (319).

Type locality "près du fleuve de Amazones".

Odontocheila femoralis: Bates 1869: 290.
Odontochila femoralis: Fleutiaux 1892: 122.
Odontochila cayennensis femoralis: Horn 1896: 356.
Odontochila cayennensis femoralis: Rivalier 1969: 200.
Odontocheila cayennensis femoralis: Wiesner 1992: 77.

Type material. Lectotype (designated here) ♂ in MNHN, labelled: "Muséum Paris / Coll. Chaudoir 1874" [greenish, printed] // "Type" [red, printed] // "Lectotype / Odontochila / femoralis Bates 1869 / design Jiří Moravec 2012" [red, printed] Paralectotypes. 1 ♂, 1 ♀ in MNHN with same labels as lectotype, the male with additional label: "femoralis / Chaud. / Amazones / Bates". 1 ♂ in MNHN "Amazon" [handwritten] // "Muséum Paris / Coll. Chaudoir 1874" [greenish, printed] // "Type" [red, printed]. All paralectotypes labelled: "Revision Jiří Moravec 2011: / Paralectotype / Odontochila / femoralis Chaudoir, 1860" [red, printed].
Other material examined. more than 40 specimens (listed in the concluding, not yet issued publication), mostly from BMNH, MNHN, MFNB, SDEI and IRSNB examined, mostly historical ones, labelled: "Upper Amazon"; "Amazon Str."; "Amazon" or "Brazil"; "Amazon, St. Paulo" and "Sao Paulo de Olivença".

Differential diagnosis and variability. Probably conspecific with *O. ochreata* Reiche, 1842, because most of the diagnostic characters, such as the bicolored labrum, black femora and testaceous tibiae are common for both these taxa. The only possibly reliable difference from *O. ochreata* is the generally narrower pronotal disc in male of *O. femoralis*. Some other differences are within variability (see under *O. ochreata* above). The lectotype *O. femoralis* has the last abdominal ventrite and the bilobed pleurite ochre-testaceous, but most adults have whole abdomen black. The elytra of one specimen in SDEI labelled "S. Paulo de Olivença" is with bright purple and green lustre and its femora have only their apical half black.

Two specimens from Reserva Colosso in the Brazilian state of Amazonas, standing in BMNH as *O. femoralis*, have the femora black, but the labrum almost testaceous, thus referring to *O. emilerivalieri* sp. nov. (see under that species above).

Biology and distribution. The occurrence of this taxon covers obviously the same area as in *O. ochreata* and *O. rufipes*. The type locality "près de fleuves de Amazones", mentioned in the original description both for *O. femoralis* and *O. erythropus* by Chaudoir (1860) is ambiguous as it may also mean Peruvian Amazonia. The localities were ambiguously "specified" for *O. femoralis* by Bates (1869) as "St. Paulo, Upper Amazons", while he mentioned Brazilian "Rio Tapajoz (sic!) for *O. ochreata*, "Ega" (= Teffe) for *O. erythropus*, and "Pará" for *O. rufipes*. Rivalier (1969) stated without any detail the occurrence of *O. femoralis* in Sao Paulo de Olivença (see also in "Differential diagnosis" above), but all these taxa obviously occur in the whole Amazon Basin.

Recent data. 1 ♂, 1 ♀ in JWCW: "Brasilien, Umg. Jaru / 300 km SU von / Porto Velho / Prov. Rondonia 8–13.IV.1973 / leg. P. Henckel".

The examined specimens are mostly historical ones, none of them with recent data, except for the aberrant male and female from Rondonia (JWCW) which differ in having their labrum and abdomen entirely testaceous (the male brownish to testaceous). As also some other specimens of *O. femoralis* have the abdomen partly testaceous, and as other characters of these two specimens, including their black femora with testaceous apices, correspond with *O. femoralis*, these two specimens are here tentatively considered aberrant adults, but may represent another undescribed species.

The male from Mato Grosso standing in BMNH as "*O. cayennensis femoralis*" refers to *O. bicolor* W. Horn, 1923 (see under that species below).

Specimens from the Rio Tapajoz ("Itaituba, east of Pará") standing in collections as *O. femoralis* or also *O. bipunctata* proved to be in fact *O. osery*i – see Moravec & Brzoska (2015) and under *O. bipunctata* above.

Wiesner (1992) and Pearson *et al.* (1999), probably based on confusions with *O. ochreata*, reported this taxon from Bolivia (as "*O. cayennensis femoralis*"). Horn (1926) reported it from Ecuador and Colombia, but he obviously confused it with *O. ochreata* as well, while the report by Horn (1926) from Peru (Rio Jurua, and Iquitos) come from Peruvian Amazonia and may correspond with specimens labelled "Upper Amazon" (see "Other material examined" above).

Remarks. In the original description, Chaudoir (1860) mentioned 10 syntypes of both sexes received from Bates. One of the males is here designated as the lectotype to assure stability of this taxon.

Odontocheila bicolor W. Horn, 1923 stat nov.

Odontochila cayennensis bicolor W. Horn, 1923: 214.

Type locality. Brazil: Corumba, Mato Grosso.

Odontocheila cayennensis ?*bicolor*: Wiesner 1992: 77.

Type material. Lectotype (designated here) ♂ in SDEI, labelled: "Corumba / Matt. Grosso" [printed] // "Staudinger" [printed] / "Type W. Horn" [red, printed] // "Syntypus" [red, printed] // "Coll. W. Horn / DEI Eberswalde" // "f. bicolor / v. mihi" [green with thin black border, handwritten] // "Lectotype / Odontochila cayennensis / bicolor W. Horn, 1923 / design. Jiří Moravec 2012" [red, printed]. Paralectotypes. 2 ♂♂, 3 ♀♀ in SDEI with same data labels and: "Revision Jiří Moravec 2011: / Paralectotype / Odontochila / bicolor W. Horn, 1923" [red, printed].
Other material examined. Historical data.1 ♂, 1 ♀ in IRSNB: "Corumba / Matto Grosso" // Odontochila / cayennensis / bicolor W. H. / Dr. W. Horn det. 1924". Recent data. 1 ♂ in BMNH [standing as "*O. c. femoralis*"]: "Dry forest" // "Brazil: Mato Grosso / 12°50′S, 51°45′W / B. E. Freeman". 1 ♂ in CMHP: "Brazil – Mato Grosso / Barra do Carças, / Serra Azul, 3–8.XII.2012 / F. Vaz-de-Mello lgt.".

Differential diagnosis. *Odontocheila bicolor* externally differs from the other taxa of *O. cajennensis* complex in having the markedly bright red coloured head and pronotum, often with pink-violaceous lustre on frons. It shares the dark brown to black femora with *O. ochreata* and *O. femoralis*, but the male labrum in *O. bicolor* is reddish-testaceous, in

female with only indistinctly blackened limited basomedian areas, its femora are lacking the testaceous apices (knees) and possess a mahogany-red lustre with particularly reddish area on profemoral base, and its abdomen is reddish-testaceous.

The male in BMNH is less vividly coloured.

Biology and distribution. Known only from Mato Grosso (formerly spelled "Matto Grosso"), Brazil. Corumbá is the westernmost and northernmost city in the Brazilian state of Mato Grosso do Sul.

Remarks. The lectotype is designated here to assure stability of the taxon. Rivalier (1969) mentioned that he did not know this taxon (as in most other taxa described by Walther Horn, he did not examine the type specimens).

Odontocheila rufipes (Dejean, 1825) stat. restit.

Cicindela Rufipes Dejean, 1825: 22, 23.

Type locality. "Brésil".

Odontocheila rufipes: Bates 1869: 290.
Odontochila rufipes: Fleutiaux 1892: 122
Odontochila cayennensis rufipes: Horn 1896: 356.
Odontochila cayennensis rufipes: Rivalier 1969:192.
Odontocheila cayennensis rufipes: Wiesner 1992: 77.

Type material. Holotype (by monotypy) ♂ in MNHN, labelled: "165" [printed] // "rufipes / Klug / Brésil, C. Gory" [with black border, handwritten] // "Muséum Paris / Coll. Chaudoir, 1874" [greenish, printed] // Revision Jiří Moravec 2014: Holotype (by monotypy) Odontocheila / rufipes Dejean, 1825" [red, printed].
Other material examined. Hundreds of specimens examined (BMNH, MNHN, MFNB, SDEI, IRSNB, NHMW, USNM, CMNH) listed in the concluding, not yet issued publication.
Most historical specimens are labelled "Amazonia" only, or come from Brazilian Pará; Belém; Ega; Obydos; Juruty; Santarem; but also from Bolivian Incas de La Paz; Santa Cruz de la Sierra; Sara. Most recent specimens come from Peruvian, Bolivian and Brazilian Amazonia. Recent data. 1 ♂, 1 ♀ in JWCW: "Bolivia, 400 m / Dpt. Cochabamba / Chapare, II.1974" 1 ♂ in BMNH [standing as *O. c. rubefacta*]: "Peru: Pasco / Puerto Bermudes, 800 m / 6XI.1984 / M. Cooper" // "M. Cooper / BMNH {E} / 2004-275". 1 ♀ in KCBC: "Peru / Puero Inca / II.1995 leg. Kondler". 1 ♂ in BMNH [standing as *O. c. rubefacta*]: "Bolivia: Cochabamba / Villa Tunari, 400 m / 20.XI.1989 / M. Cooper" // "M. Cooper / BMNH {E} / 2004-275". 1 ♀ in BMNH: 9 ♂♂, 3 ♀♀ in USNM: "Peru: Madre de Dios / Rio Tambopata, Ccolpa / de Guacamayos, 300m / 13°08.5′S, 69°36.4′W / A. Forsyth, X-1995". ". 4 ♂♂, 1 ♀ in DBCN: "Peru – Madre de Dios / Rio Alto Madre de Dios / Pantiacolla Lodge, / 410–700 m.a.s.l., 12°39.4′S, 71°13.9′W / D. Brzoska 26-X-2000" 1 ♂, 1 ♀ in CDCL: Brasil PA / Obidos / I.1995". 7 ♂♂, 4 ♀♀ in NHMW: "Brazil / Obidos, Juruty, Pará / Santarem, II–III.1983 / Coll. Christ Farrel". 13 ♂♂, 1 ♀ in BMNH [standing as "erythropus"], 2 ♂♂, 1 ♂ in CMNH: "Peru: Madre de Dios / Rio Tambopata Res. / 30 km (air) SW Pto Maldonado, 290 m / 12°50′S, 069°20′W" / I.1993, J. Anderson". 2 ♂♂ in CCJM: "Peru Madre de Dios / Tambopata River / T. River Lodge / 6–20.XI.1995 M. Klícha lgt". 2 ♂♂, 1 ♂ in CMKP: "Peru: Madre de Dios / Tambopata River / Gollpa Lodge / 9–12.XI.1995, M. Klícha lgt." // "On jungle trails / and low vegetation / inside jungle". 2 ♂♂, 3 ♀♀ in NHMW: "Brazil Merid. / Santa Catarina / Joinsville / XII. 1982 / Coll. Christ Farell".

Differential diagnosis and variability. Distinguished from *O. erythropus* and *O. rubefacta* (which also have their femora, tibia and abdomen generally testaceous) by the blackened basomedian area of the labrum combined with entirely testaceous legs (except for pro-and mesotarsi partly or entirely metallic-black to brown), and not only the

abdomen, but also the metasternum is often testaceous; the antennomeres 1–4 are metallic black or brown with green lustre, thus differing from those in O. rubefacta.

Nevertheless, the coloration is variable, the abdomen in females is often brownish, while the labrum in some males is only indistinctly blackened as it is also in the lectotype. Some of the syntopic adults from Peruvian Rio Alto Madre de Dios (DBCN) have their labra with basomedian area metallic-black, but some of them have the labrum less distinctly darkened, thus comparable to *O. erythropus*. Some aberrant adults of *O. rubefacta* with only indistinctly blackened basomedian area of the labrum may be distinguished by the uneven labral surface from *O. erythropus*, but barely from some adults of *O. rufipes*, because its labrum is sometimes also somewhat uneven (see also under *O. erythropus* and *O. rubefacta* below).

Biology and distribution. Dejean (1826) mentioned as the type locality of his *Cicindela rufipes* only Brazil, but the specimens in MFNB which come obviously from the same series as the holotype, are labelled "Pará", so we can consider the Brazilian state of Pará to be the type locality (see also "Remarks" below). As obvious from the localities cited in "Other material examined" above, apart from the state of Pará where it occurs in the main Amazon parts, in Obidos, Santarem, up to Belém on the Amazon delta near its estuary to the Atlantic, as well as in the state of Amazonas near Ega (Teffé), to Manaus. Rivalier (1969) mentioned (without any specification) that this taxon occurs exclusively in Amazon Basin, but it is common also in Peruvian Amazonia, Iquitos, Tambopata in Madre de Dios (also reported from this area by Pearson & Huber 1995), and penetrates also to Bolivian Amazonia, up to the district of Santa Cruz where it is sympatric with *O. rubefacta*; thus the subspecific status of these taxa is untenable.

Some of historical specimens, standing in collections (particularly in SDEI) under this name, proved to be in fact *O. rubefacta* or *O. erythropus*. Records from Cayenne, French Guiana by Horn (1910) proved to be *O. bipunctata*, those reported from Archidona, Ecuador by Horn (1926) proved to be aberrant adults of *O. ochreata*. The specimens (NHMW) with Santa Catarina, Joinsville (= Joinville) written on their labels were probably mislabelled, as the occurrence in the southeastern coastal Atlantic Rain Forest is improbable.

Adults are diurnal and have the same behaviour as the other species of this species-group. When Pearson & Huber (1995) reported this taxon from Tambopata, Madre de Dios, Peru, the behaviour of adults was described as mentioned in "Biology and distribution" under *O. cajennensis* above. Adults from Pantiacola, Peru were caught along the Mirador Trail through the forest of the forest near the Alto Madre de Dios River (D. Brzoska pers. com.).

Remarks. In the original description Dejean (1825) clearly attributed the species name to Klug (by the headline: "*Cicindela Rufipes* Klug"), written also on the label of the holotype which Dejean received from Klug and noted that he attributed (conserved) the name to Klug. The other historical specimens, 2 ♂♂, 1 ♀ in MFNB, the male labelled by large greenish-blue label "rufipes / Klug / Para and all numbered "3621", belonged evidently to the same series possessed by Klug before he sent one of the males (the holotype) to Dejean.

Cicindela dentata mentioned by Sturm (1826), considered by Fleutiaux (1892) and Horn (1905, 1910) as a synonym of *O. rufipes*, is a nomen nudum (never described).

Odontocheila erythropus Chaudoir, 1860 stat. restit.

Odontochila erythropus Chaudoir, 1860: 51 (319), 52 (320).

Type locality. "près du fleuve de Amazones".

Odontocheila erythropus: Bates 1869: 290.
Odontochila erythropus: Fleutiaux 1892: 122.
Odontochila cayennensis erythropus: Horn 1896: 356.
Odontochila cayennensis rufipes: syn. *erythropus*: Horn 1923: 215.
Odontochila cayennensis erythropus: Rivalier 1969: 199.
Odontocheila cayennensis erythropus: Wiesner 1992: 77.

Type material. Lectotype ♂ (designated here), labelled by small, square green label and: "erythropus / Chaud. / Amazones. / 59. Bates" [large, with black frame, handwritten] // "Muséum Paris / Coll. Chaudoir 1874" [greenish, printed] // "Type" [red, printed] // "Lectotype / Odontochila / erythropus Chaudoir, 1860 / design. Jiří Moravec 2012" [red, printed]. Paralectotypes. 2 ♀♀ in MNHN: with small, square green label, one of them: "5", and "Muséum Paris / Coll. Chaudoir 1874" [greenish, printed] // "Revision Jiří Moravec 2011: / Paralectotype / Odontochila / erythropus Chaudoir, 1860" [red, printed].
Other material examined. Historical data.1 ♂ in SDEI [standing as "*rufipes*"]: "Amazon". 2 ♂♂, 1 ♀ in MFNB: "Ecuador" // "S. Anton Curaray / F. Ohs. 13.I.06". 15 ♂♂, 4 ♀♀ in MNHN: "Teffe, Amazones / M. de Mathan / IV.er 78 et 1er 79". 2 ♂♂, 3 ♀♀ in MNHN, 1 ♂ in BMNH: "Ega" / "Ex Museo / H.W. Bates / 1892". 1 ♂, 2 ♀♀ in MNHN: "Ega". 2 ♀♀ in MNHN, 1 ♂ in MFNB: "Amazones". 1 ♀ in MFNB: "Brasil". 1 ♂, 1 ♀ in BMNH, 1 ♂ in IRSNB: "Amazon". 1 ♂ in BMNH: "Brasilia / Upper Amaz." 1 ♂ in BMNH: "Brazil". 1 ♂ in MNHN, 6 ♂♂ in BMNH: "Amazones / Teffe". 1 ♂, 1 ♀ in MFNB: "Teffé (Ega) / Amazones". 1 ♂ in MFNB: "erythropus / Chaud. / Amazon.". Recent data. 1 ♂ in NHMW: "Reserva Ducke / 17.III.1971". 3 ♂♂ in BMNH: "Manaos / Brazil 11.I.96 / E.E.A. Austen / 96-80". 1 ♂ in BMNH: "Brazil, Amazonas / Reserva Ducke / 26 km NE Manaus / Flight intercept trap / 1995–1996 / "BMNH{E}2003-84". 1 ♂, 1 ♀ in BMNH**:** "Brazil, Am[azones] / Reserva Ducke / 26 km NE Manaus / Barbosa, M.G.V." // "Plot C / Malaise[trap] 3 (and 5) / March 1995" // "BMNH {E} / 2003-84" // "G 3.6" // "Odontocheila / cf chiriquina / (Bates, 1881) / Det. F. Cassola 2008" [sic!]. 1 ♀ in MHCP: "Brazil, Amazon. / Managapuru / IX.2000 / M. Hrabovský lgt."

Differential diagnosis and variability. *O. erythropus*, considered by Horn (1923) a synonym of "*O. c. rufipes*", was distinguished from *O. rufipes* by Rivalier (1969) by its testaceous labrum. *O. erythropus* shares the testaceous labrum with *O. rubefacta* from which it differs in having antennomeres 1–4 metallic-black with testaceous or reddish maculae on antennomeres 2–4, while *O. rubefacta* have the antennomeres 3–4 either mahogany or ochre-testaceous. However this coloration, as well as that of the scape which can either be metallic black-violet, or testaceous with violaceous or reddish tinge is variable as in many other *Odontocheila* species outside of the *O. cajennensis* species-group, for instance in *O. angulipenis* W. Horn, 1932 the scape may either be testaceous or metallic-black (see Moravec 2014: 73, figs 48–49). Nevertheless, *O. rubefacta* differs from *O. erythropus* in having both penultimate and terminal palpomeres of maxillary palpi generally paler, and its labral surface is mostly uneven. Nevertheless, also these characters, as well as the coloration of the labrum, are variable.

While many adults of *O. erythropus* have the labrum dark testaceous to reddish-testaceous, sometimes with blackened basal area (also in the lectotype), other adults, for instance a female from Manaus (CMKP) has the labrum entirely yellow-ochre.

For the variability within these closely related taxa also see the "Differential diagnosis and variability" under *O. rufipes* above and *O. rubefacta* below.

Biology and distribution. The type locality of *O. erythropus* was rather ambiguously stated by Chaudoir (1860) as "près du fleuve de Amazones" (the same type locality as for *O. femoralis*). Bates (1869) mentioned Brazilian Amazonas, and the occurrence in Teffe mentioned by Horn (1910) was confirmed within this revision in SDEI and other collections, surprisingly standing in MNHN mostly under *O. rufipes*, despite the testaceous labrum with only indistinctly blackened basal area, which also is present on the labrum of the lectotype of *O. erythropus*.

The report from Ecuador by Horn (1910) was probably based on the three historical specimens in MFNB, mentioned in the "Differential diagnosis" of *O. rubefacta* below.

Based on the revision presented here, the occurrence of *O. erythropus* appears to be geographically separated from the distribution of the closely related *O. rubefacta.* However, its subspecific status is contradicted by the sympatric occurrence of *O. erythropus* with *O. rufipes* (and partially also with *O. bipunctata*) in the Brazilian Amazonia, in Ega (= Teffe), as well as by the same distribution of *O. rubefacta* with *O. rufipes* in Peruvian and Bolivian Amazonia including the Bolivian district of Santa Cruz (see "Other material examined" and "Biology and distribution" under *O. bipunctata*, *O. rubefacta* and *O. rufipes*). Alternatively, *O. rubefacta* may be considered to be a subspecies of *O. erythropus*, but no longer of *O. cajennensis*.

Remarks. In the original description of *O. erythropus*, Chaudoir (1860) mentioned four syntypes of both sexes. Therefore, the lectotype is designated here to assure stability of this taxon.

Horn (1929, figs 16 and 19) illustrated two different shapes of the aedeagi for this taxon, but the difference was caused very probably by a different position of the observed aedeagi, when that on the fig. 16 was probably slightly turned. This taxon was treated by Horn (1923, 1931) as a synonym of "*O. cayennensis rufipes*".

Odontocheila rubefacta Bates, 1869 stat. restit.

Odontocheila rubefacta Bates, 1869: 287.

Type locality. Peru: "Upper Amazons, Yurimaguas ("Yunmaguas" by Bates) and other places on banks of the Huallaga river".

Odontochila rubefacta: Fleutiaux 1892: 122.
Odontochila cayennensis rubefacta: Horn 1896: 356;
Odontochila cayennensis rubefacta: Rivalier 1969: 201.
Odontocheila cayennensis rubefacta: Wiesner 1992: 77.

Type material. Lectotype (designated here) ♂ in MNHN: labelled: "R. / Huallaga" [handwritten] // "Ex Museo / H.W. Bates / 1892" // "rubefacta / Bates Ent m. m. Mag. 1869" // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish with black border, printed] // Lectotype / Odontocheila / rubefacta Bates, 1869 / design. Jiří Moravec 2013" [red, printed]. Paralectotypes. 1 ♂ in MNHN[Coll Fleutiaux]: "Yurimagnas" // "Ex Museo / H.W. Bates / 1892".1 ♀ in MNHN with same labels as in lectotype (except for that with the species name). Paralectotypes labelled: "Revision Jiří Moravec 2011: / Paralectotype / Odontocheila / rubefacta Bates,1869" [red, printed].

Other material examined. More than hundred of specimens examined (BMNH, MNHN, MFNB, SDEI, IRSNB, NHMW, CDCL, USNM, CMNH) listed in the concluding, not yet issued publication.
Most historical specimens are from Peru (labelled "Pérou"or "Peruvio"): Huallaga; Yurimagnas; River Huallaga; Hualaga, Rio Mixiolo; Pachitea; Panguana; Panguana, Rio Yuyapichis; Pichitea; Pucalpa; Mt. Alegre; Marcapata [standing in MFNB as "*rufipes*"]; Cumbase; Amazon; (or Amazones); Huanuco, Rio Cuchuras; Amazon, Nanta; Rio Oxabamba [standing in MFNB as: "*rufipes* X *rubefacta* X *erythropus*- sic!], others are from Bolivia: Santa Cruz, Buena Vista; Cochabamba; Villa Tunari (Cochabamba), and from Venezuela: "Orinoco", and one historical ♂ labelled "Venezuela / S. Vráz". Recent data. 1 ♂ in BMNH: "Bolivia: Cochabamba / Villa Tunari, 400 m / 20XI.1989 / M. Cooper". 1 ♂, 1 ♀ in CDCL: "Bolivie / Villa Tunari / XI.1999 / Coll. Dheurle". 1♀ in CCJM: "Bolivia: Beni / 51.9 km S. Riberalta / 24.XI.1994 / Brzoska & Guerra". 1 ♂ in NHMW: "Peru, Panguana / 90°37′S, 74°56′W, 260 m // "Rio Yuyapichis" // Pichitea 24.VIII.–3.IX.1986 / leg. Listenbart". 3 ♂♂, 1 ♀ in DBCN, 1 ♂ in CCJM: "Peru: Huanuco, 800 m / Tingo Maria – Monzon Rd. / (S – Aqua Blanca) / 9°17.5′S;76°04.8′W / D. Brzoska 12-X-1999". 1 ♀ in DBCN: "Peru – Madre de Dios / Manu Res. Zone / Cocha Otorongo 305 m / 12°02.3′S, 71°11.5′W / D. Brzoska 21-X-2000". 1 ♀ in KCBC: "Ecuador / Lorocachi / Rio Curararay / S 1°37′0″; W 75°57′0″ / 29–30.X.2008".

Differential diagnosis and variability. Because of the testaceous legs, *O. rubefacta* is very similar to *O. rufipes* and particularly to *O. erythropus*, generally distinguished from *O. rufipes* by its testaceous labrum and different coloration of the antennomeres 1–4.

Bates (1869) distinguished *O. rubefacta* from *O. erythropus* by the metallic pitchy-violet coloration of the "breast and abdomen except towards the apex", and indeed, the lectotype in MNHN has its metasternum black with mahogany lustre (the original coloration obviously faded as usually in old specimens), and its abdomen is metallic-black with faint violet-blue lustre, except for two last ventrites which are testaceous. In contrast, Rivalier (1969) stated that the abdomen and metasternum are testaceous as in *O. erythropus*. In examined specimens of *O. rubefacta*, this coloration varies. Most of them have the abdomen or also metasternum testaceous, while in some others the metasternum and first visible abdominal sternites are black-brown passing to reddish-brown, and only last three ventrites are testaceous. Moreover, the coloration of the antennal scape and antennomeres 2–4, characterized by Rivalier (1969) as "roux sucre d'orge" and considered by him to be one of the main diagnostic characters distinguishing *O. rubefacta* from *O.erythropus*, is variable, thus in some adults unreliable for identification. Most adults of *O. rubefacta*, both from Peru and Bolivia, have the antennal scape reddish-testaceous with strong mahogany to violaceous lustre, while the antennomeres 2–4 are reddish-testaceous (as in the lectotype). The recently caught specimens (DBCN and CCJM) from Aqua Blanca in the Peruvian province of Huanuco have the scape metallic mahogany with strong violaceous lustre, the antennomeres 2–4 yellow-ochre to testaceous, the labrum in both sexes entirely yellow-ochre, abdomen and the metasternum testaceous, legs ochre-testaceous (except for darkened protarsi and partly also mesotarsi), thus differing from the lectotype also by the notably paler antennomeres 3–4. However, some adults from Bolivia, such as from Riberalta in the district of Beni (CCJM) have the antennomeres 3–4 black with testaceous apical areas as in *O. erythropus*, and rarely also the scape is metallic black-blue. The testaceous coloration of the labrum also varies, somewhat blackened basomedian labral area (mostly in females) is not in *O. rubefacta* rare, particularly in populations from Peru, such as in the lectotype and female paralectotype and in one female from Tarapato (all illustrated for the concluding publication). The female (SDEI) labelled: "Bolivia / Dep. S. Cruz /

Umg Buenavista" has its labrum blackened and the scape dorsally black, thus intermediate between *O. rufipes*.

The labral surface in *O. rubefacta* is mostly uneven, but the intensity of the roughness of the labral surface also varies, from almost rugulose as in the lectotype and the above mentioned female from Tarapato to shallowly wrinkled or almost smooth in some adults from Huanuco.

Three specimens in MFNB labelled "Ecuador" refer by its testaceous labrum to *O. rubefacta*, their metallic-black antennomeres 3–4 with pink-testaceous to violaceous apical quarters refer to *O. erythropus*, their entirely testaceous femora and tibiae refer to *O. rufipes*, but the abdomen and metasternum are metallic-black or black-brown. They were probably reported from Ecuador by Horn (1910) as *O. erythropus* (see under that species above). Together with the similarly coloured female (KCBC) recently caught in Lorocachi, Ecuador (see "Other material examined" above), they are considered here to be aberrant adults of *O. rubefacta*, but more probably may represent an undescribed species, differing from *O. emilerivalieri* sp. nov in having the testaceous femora (see under the new species above). The same coloration of the antennae, testaceous abdomen, metasternum and legs has also one female from Peruvian Madre de Dios, Manu Reserve Zone (DBCN), but its labrum is blackened on its basal area as in *O. rufipes*.

Biology and distribution. The type locality of *O. rubefacta* is the Huallaga River near the river port of the city of Yurimaguas (wrongly spelled as "Yunmaguas" by Bates 1869). It also occurs in the central Peruvian Madre de Dios including the Manu Reserve, and other Peruvian localities, in the Peruvian district of Huánuco (Tingo Maria), in areas of Río Oxabamba and Río Toro which merge with the larger Río Chanchamayo between the towns San Carlos and La Merced (capital of the Chanchamayo province, region Junín). Pucalpa in eastern Peru is located on the banks of the Ucayali (= Oucayale) River, one of the main Amazon tributaries. In Peru, *O. rubefacta* also occurs in the district of Macrapata in the province of Quispicanchis (Region Cusco), characterized by the Andean Willcanuta mountain range. The specimens labelled " Amazon / Nanta" come from an area of a historical settlement Nanta, now spelled Nauta, a town in the north-eastern part of the province of Loreto in the Peruvian Amazon, about 100 km south of Iquitos. Through Macrapata in the province of Quispicanchis (Region Cusco) in Peru, it is spread towards Bolivia up to the district of Santa Cruz where it is sympatric with *O. rufipes*. Pearson & Huber (1995) recorded this taxon from Peruvian Pakitza which is a part of the Manú National Park on the Manu River, where it was also recently caught.

If the specimens labelled "Orinoco" were not mislabelled, it occurs also in Venezuela along the Orinoco River, probably in the Amazonas area of smaller tributaries of Rio Negro, although Rodriguez *et al.* (1994) did not mention it from Venezuela. This is supported by the male (CCJM) caught by the famous Czech historical traveller Enrique Stanko Vráz, probably during his trip through South America in 1889–1893 which also included Venezuelan Amazonas when he travelled along the Orinoco and Rio Negro rivers.

This taxon cannot be a geographical subspecies, because *O. rufipes*, hitherto also considered to be one of the subspecies of *O. cajennensis*, is sympatric with *O. rubefacta*

in Peru, Bolivia and other places of the Amazon Basin. As obvious from the "Other material examined" and under *O. rufipes* above, some of the examined specimens come from the same localities as *O. rufipes*. Also Pearson *et al.* (1999) listed both *O. rufipes* and *O. rubefacta* from the Bolivian districts of Cochabamba, Pando and Santa Cruz, the latter also from Beni.

Adults are diurnal and have the same behaviour as those of other taxa of this species-group; those from Aqua Blanca, Huanuco, Peru were caught on the ground along the forest trail with red clay banks, together with adults of *Pentacomia chrysamma* Bates, 1872 (D. Brzoska, pers. com.).

Remarks. In the original description, Bates (1869) mentioned more syntypes of both sexes, taken by Barraquin and E. Bartlett. One of the syntypes, originally from the collection of H. W. Bates and accessioned to the MNHN collection from the collection of R. Oberthür, is designated here to increase stability of the taxon.

For the sympatric occurrence in the Amazon Basin and as the differences are based merely upon the coloration of appendages, metasternum and abdomen, which are inconsistent, and in many cases not correlated *O. rubefacta* may be a junior synonym of *O. rufipes* as stated by Horn (1923, 1926). Nevertheless, the concept of separate species restored here appears to be more appropriate than to consider *O. rufipes* and *O. rubefacta* (and also *O. erythropus*) fully conspecific (see "Differential Diagnosis and variability" under these three taxa above).

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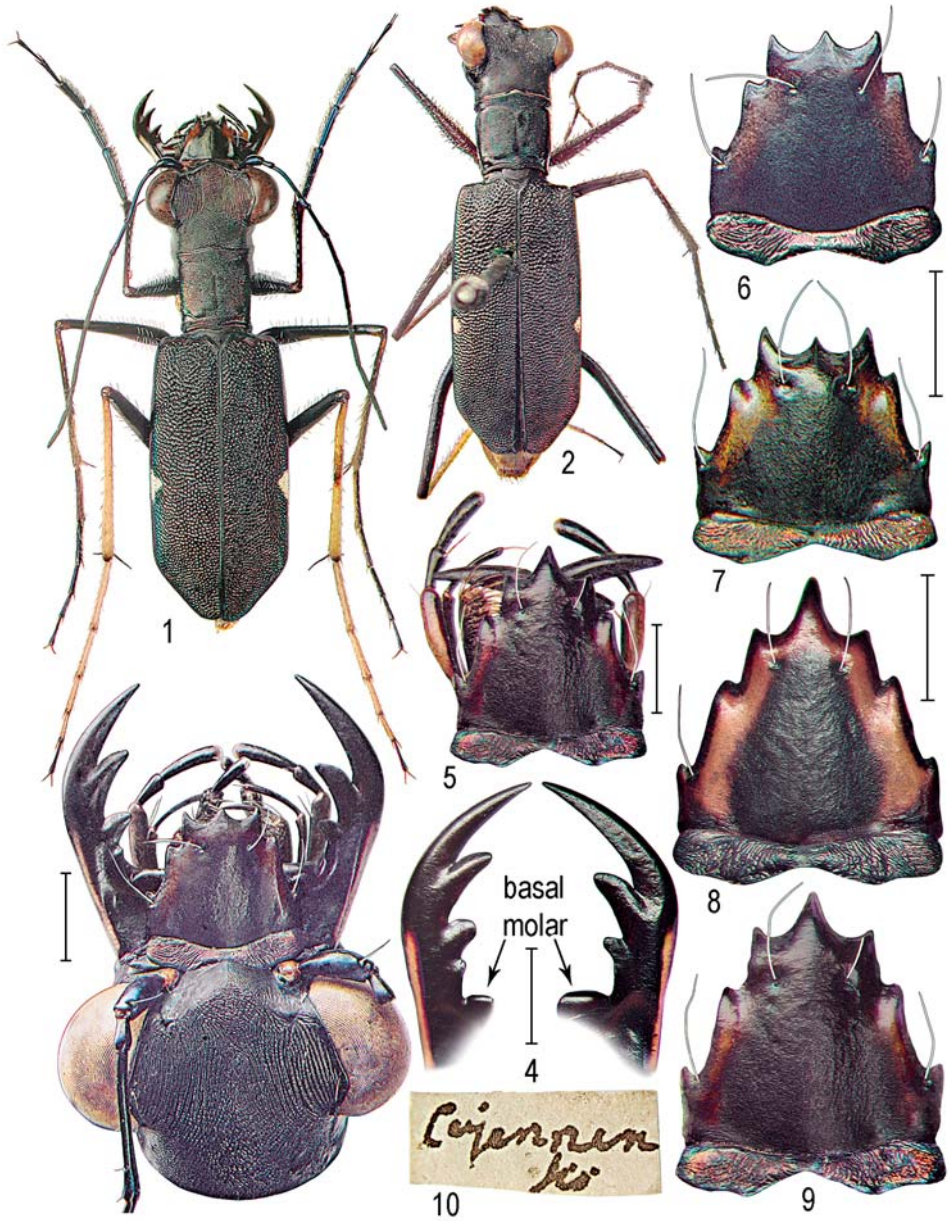
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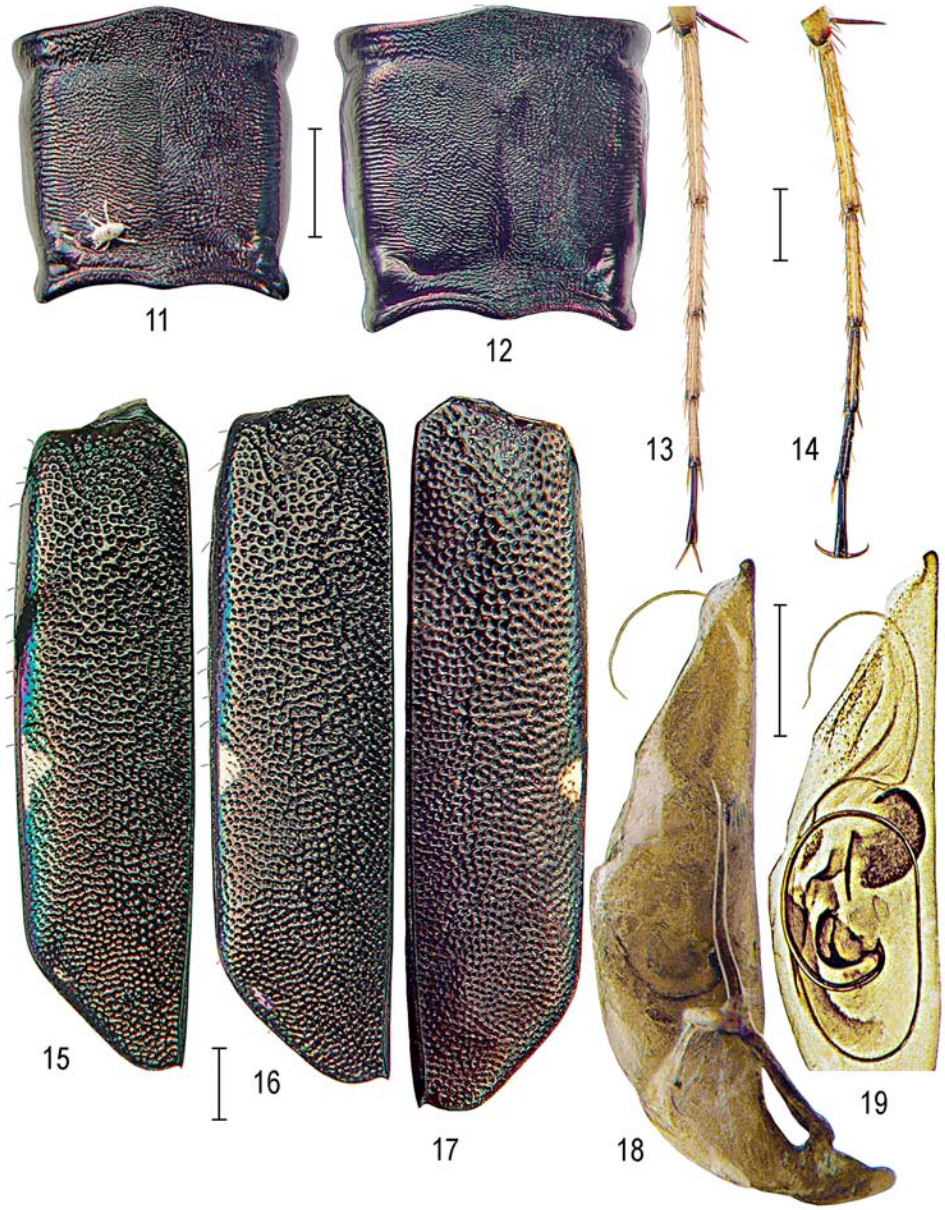
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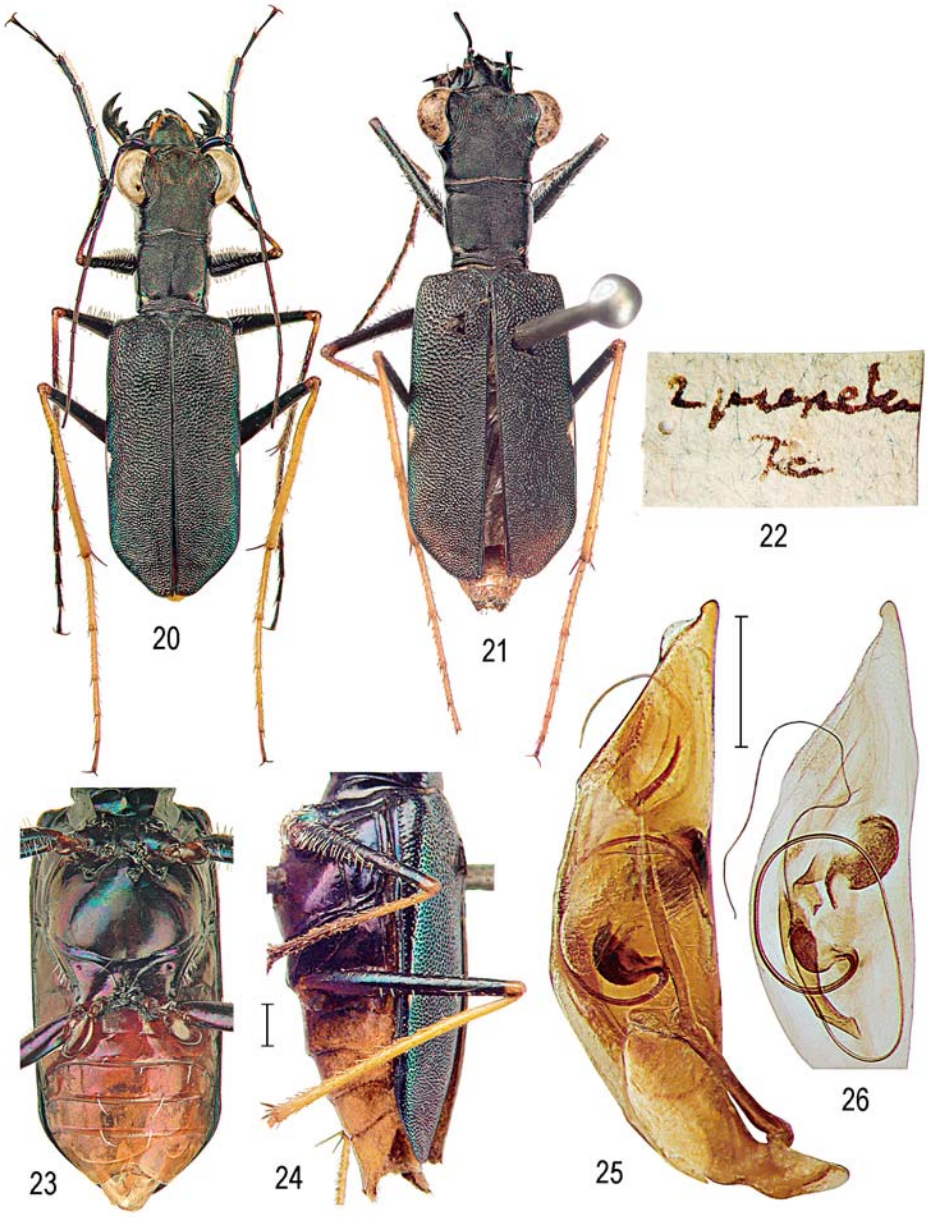
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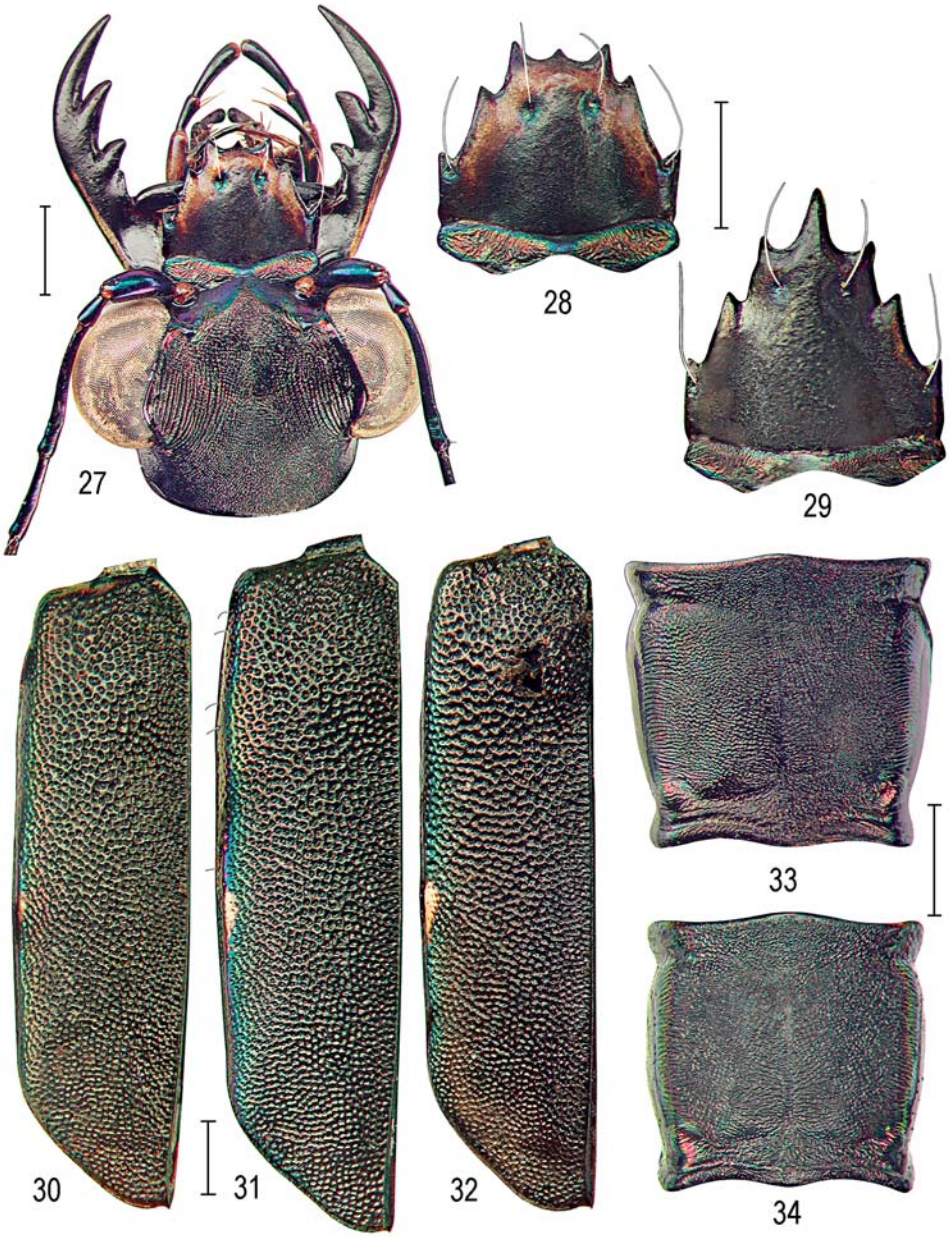
Figs 1–10. *Odontocheila cajennensis* Fabricius. 1–2, habitus: 1 – ♂, 14.7 mm, Cacao, Guyane Française (CCJM); 2 – ♀, LT (ZMKC); 3 – head, ♂, Nouragues, Guyane Française (FCCR); 4 – mandibles, ♂, Surinam (USNM); 5 – buccal appendages, ♀, LT (ZMKC); 6–9, labrum: 6 – ♂, Nouragues (FCCR); 7 – ♂, Cacao (CCJM); 8 – ♀, Surinam (USNM); 9 – ♀, LT (ZMKC); 10 – label, LT (ZMKC). Bars = 1 mm.



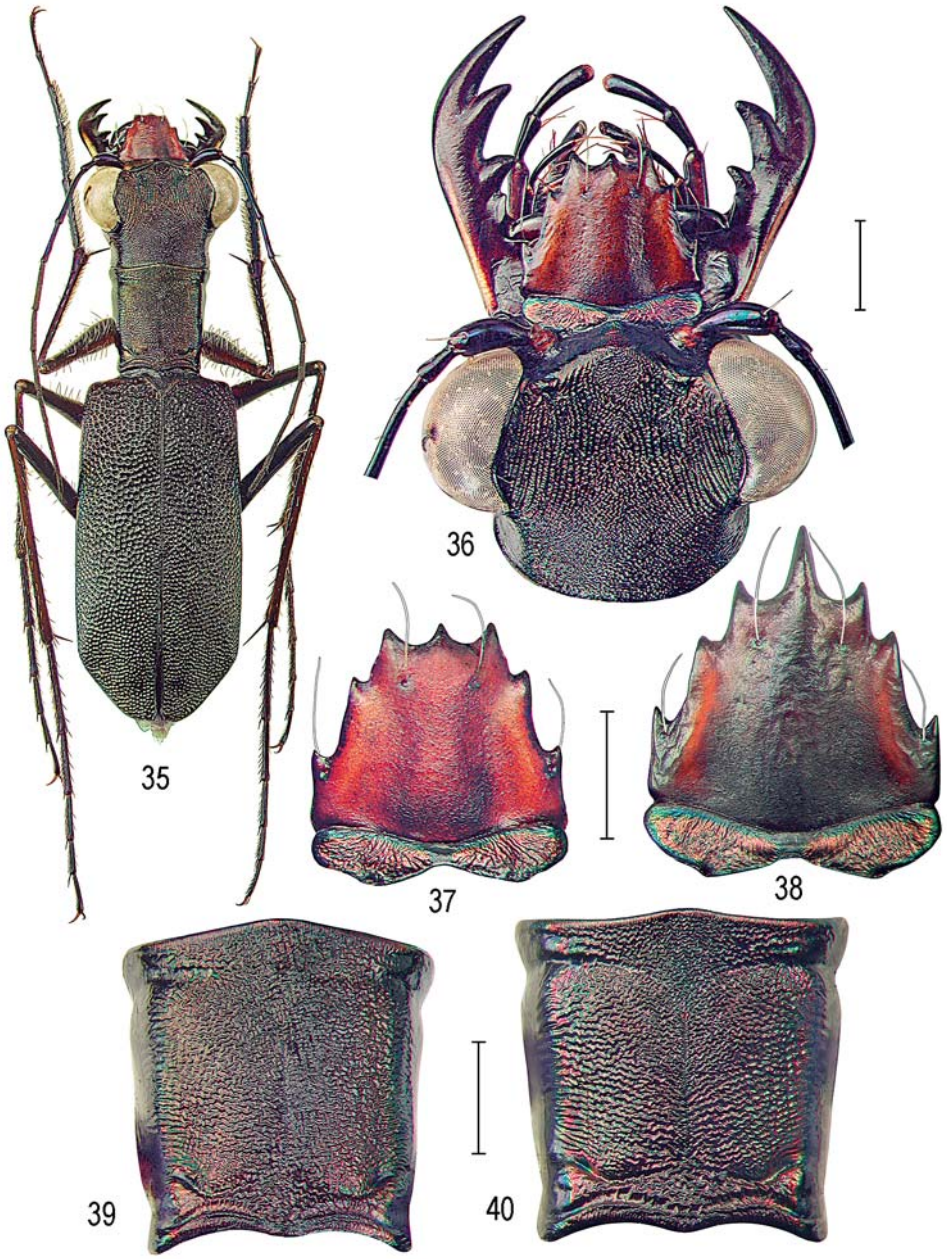
Figs 11–19. *Odontocheila cajennensis* Fabricius. 11–12, pronotum: 11 – ♂ (with attached mite), Nouragues, Guyane Française (FCCR); 12 – ♀, LT (ZMKC); 13–14, metatarsus: 13 – ♂, Cacao, Guyane Française (CCJM); 14 – ibid., ♀ (CCJM); 15–17, elytron: 15 – ♂, ibid.; 16 – ♂, Nouragues (FCCR); 17 – ♀, LT (ZMKC); 18 – aedeagus, Nouragues (FCCR); 19 – internal sac, ibid. Bars = 1 mm.



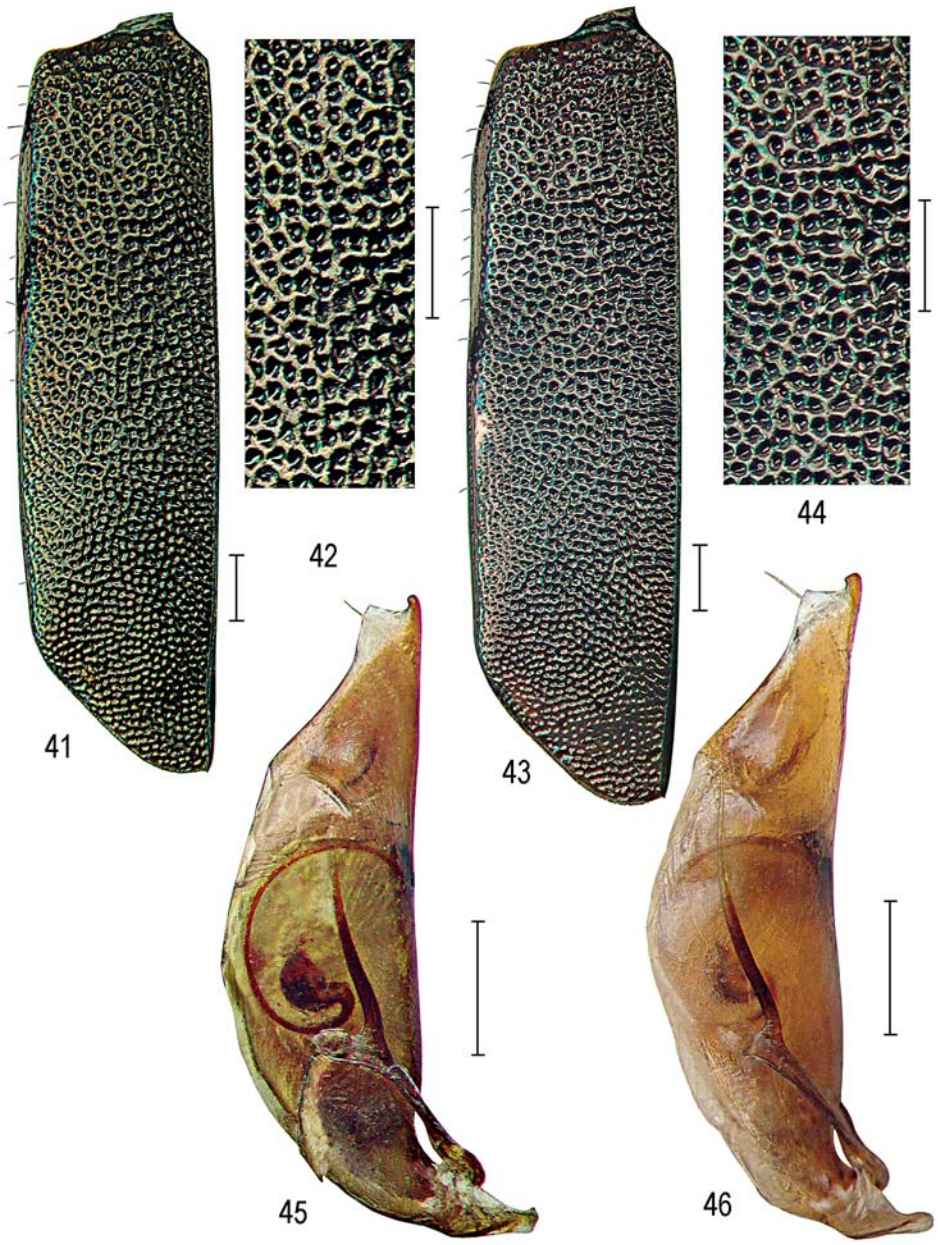
Figs 20–26. *Odontocheila bipunctata* Fabricius. 20–21, habitus: 20 – ♂, 14.4 mm, Saint Laurent du Maroni (CCJM); 21 – ♀, LT (ZMKC); 22 – label, LT (ZMKC); 23 – metasternum and abdomen, ♂, Saint Laurent du Maroni (CCJM); 24 – ditto, lateral view, ♀, LT (ZMKC); 25 – aedeagus, Saint Laurent du Maroni (CCJM); 26 –internal sac, ibid. Bars = 1 mm.



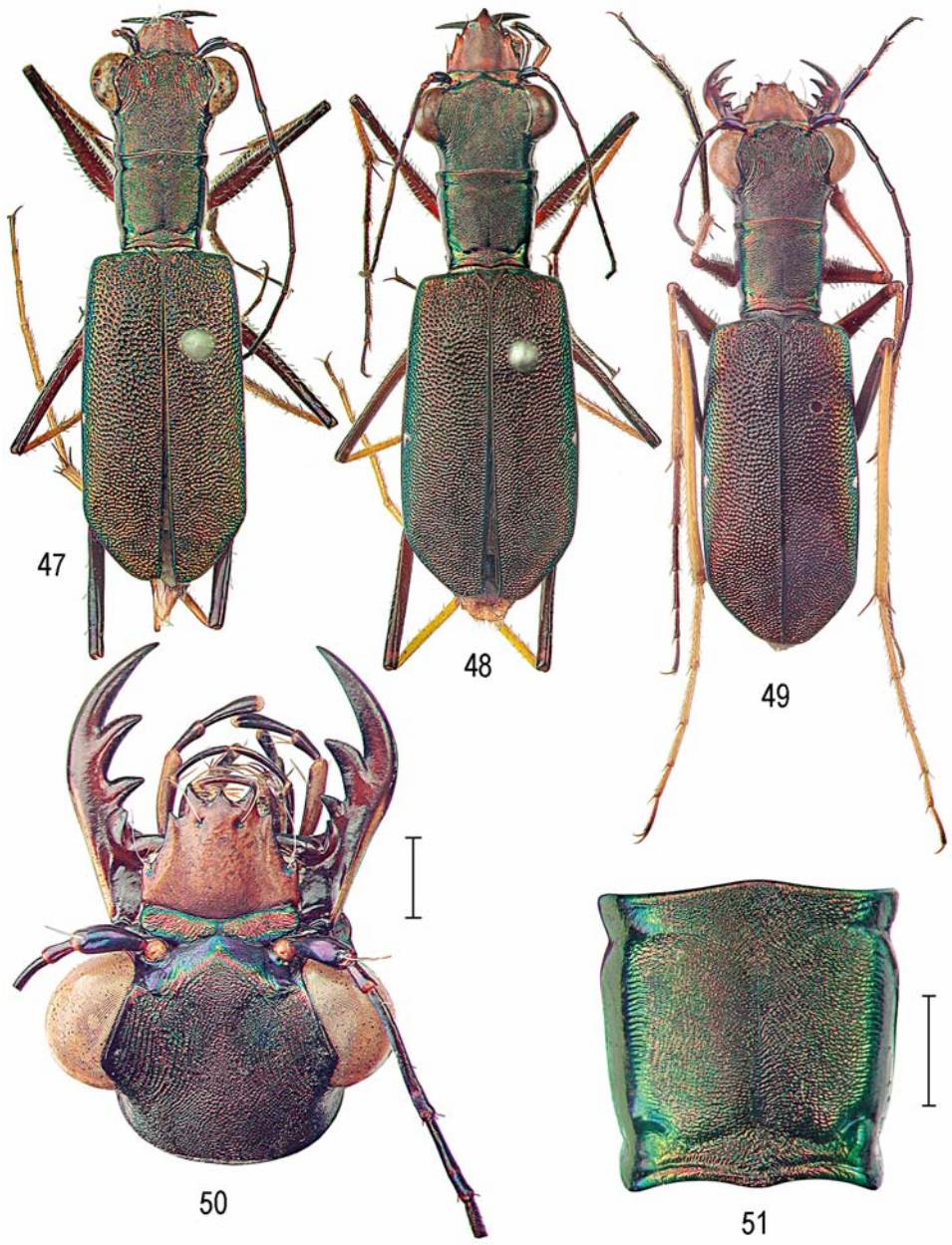
Figs 27–34. *Odontocheila bipunctata* Fabricius. 27 – head, ♂, Saint Laurent du Maroni (CCJM); 28–29, labrum: 28 – ♂, – ibid.; 29 – ♀, LT (ZMKC); 30–32, elytron: 30 – ♂, Saint Laurent du Maroni (CCJM); 31 – ♂, ibid. (IRSNB); 32 – ♀, LT (ZMKC); 33–34, pronotum: 33 – ♀, LT (ZMKC); 34 – Saint Laurent du Maroni (IRSNB). Bars = 1 mm.



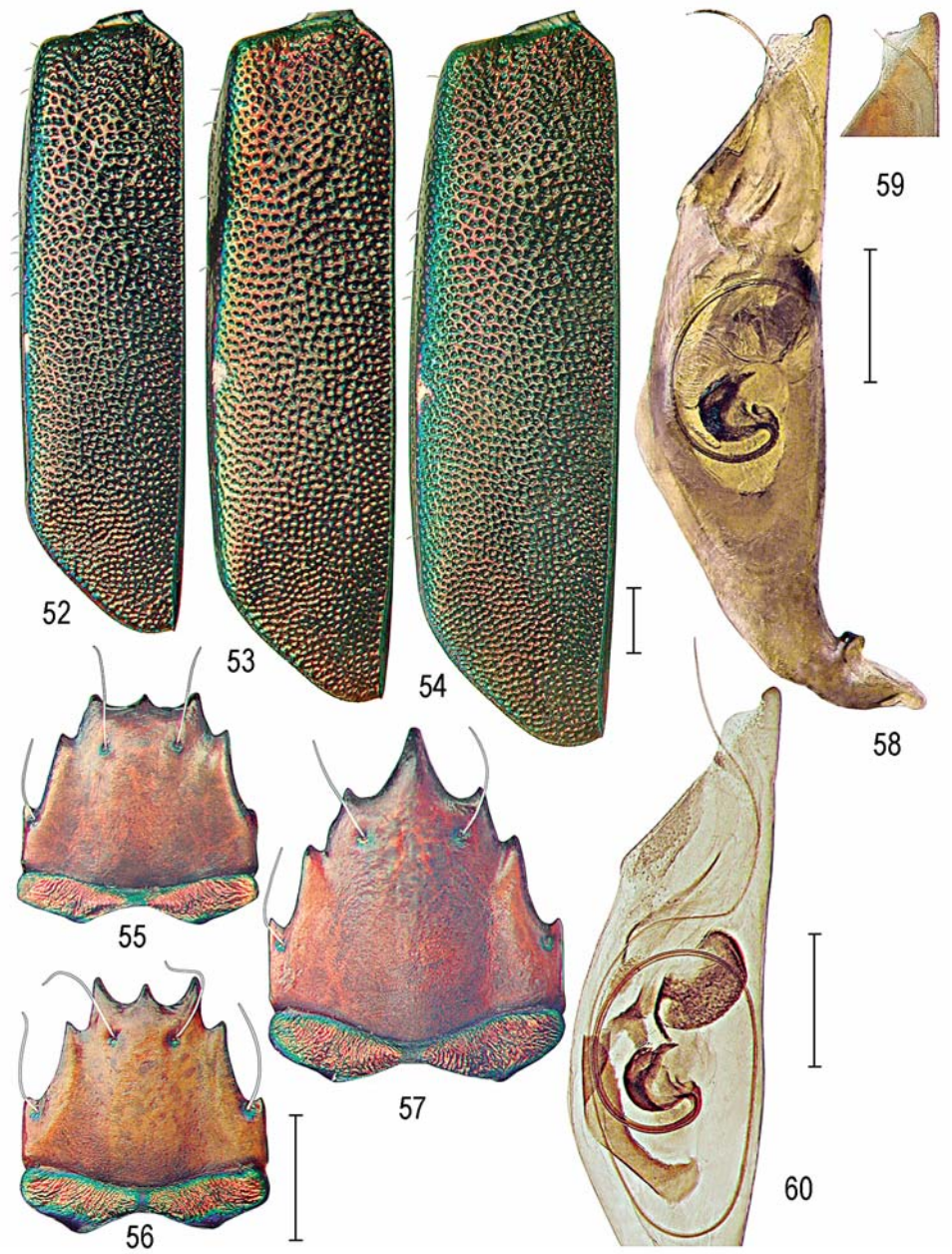
Figs 35–40. *Odontocheila mirekklichai* sp. nov., Sinchicuy River, Peru. 35 – habitus, ♂, 15.9 mm, HT (MNHN); 36 – head, ♂ HT; 37–38, labrum: 37 – ♂, HT; 38 – ♀, AT (CMKP); 39–40, pronotum: 39 – ♂, HT; 40 – ♀, AT. Bars = 1 mm.



Figs 41–46. *Odontocheila mirekklichai* sp. nov., Sinchicuy River, Peru. 41 – elytron, ♂, HT (MNHN); 42 – ditto, detail of elytral sculpture; 43 – elytron, ♀, AT (CMKP); 44 – ditto, detail of elytral sculpture; 45–46, aedeagus: 45 – HT (MNHN); 46 – PT (CCJM). Bars = 1 mm.



Figs 47–51. *Odontocheila emilerivalieri* sp. nov., Manicoré, Brazil. 47–49 – habitus: 47 – ♂, 14.5 mm, HT (MNHN); 48 – ♀, 17 mm, AT (MNHN); 49 – ♂, PT (SDEI); 50 – head, ♂, PT (SDEI); 51 – pronotum, ♂, HT (MNHN). Bars = 1 mm.



Figs 52–60. *Odontocheila emilerivalieri* sp. nov., Manicoré, Brazil. 52–54, elytron: 52 – ♂, HT (MNHN); 53 – ♂, PT (SDEI); 54 – ♀, AT (MNHN); 55–57, labrum: 55 – ♂, HT (MNHN); 56 – ♂, PT (SDEI); 57 – ♀, AT (MNHN); 58–59, aedeagus: 58 – PT (SDEI); 59 – apex, HT (MNHN); 60 – internal sac, PT (SDEI). Bars = 1 mm.