

Taxonomic revision of the Neotropical genus *Oxygonia* Mannerheim - 2 (Coleoptera: Cicindelidae).

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Abstract. In this paper a second part of the author's taxonomic revision of the Neotropical tiger beetle genus *Oxygonia* Mannerheim, 1837 is submitted. The paper is a direct continuation of the first part (Moravec 2015) where six species were redescribed and illustrated with four lectotype designations, two synonymy, one new status, one rectified type designation, one corrected type status, and corrections of some diagnostic characters. As a result of the present revision, twenty species of the genus are recognized. In this second part, along with the continuous emphasis on the recognition of type specimens of taxa described by H. W. Bates, redescrptions of fourteen remaining species are presented. Their habitus and diagnostic characters are illustrated in colour photographs, in most of them for the first time from genuine types and other real specimens, also demonstrating significant sexual dimorphism and variability. It comprises the type specimens of *Oxygonia vuillefroyi* Chaudoir, 1869, *Ox. kondratieffi* Kippenhan, 1997, *Ox. moreti* Deuve, 1992, *Ox. oberthueri* W. Horn, 1896, *Ox. boucardi* Chevrolat, 1881, *Ox. nigricans* W. Horn, 1926, *Ox. uniformis* W. Horn, 1900, *Ox. fleutiauxi* W. Horn, 1896, *Ox. erichsoni* W. Horn, 1898, and *Ox. kippenhani* Schüle, 2008. Redescrptions and illustrations of *Ox. onorei* Cassola & Kippenhan, 1997 and *Ox. nigrovenator* Kippenhan, 1997 are based on specimens from their type localities. The only female of "Species A" by Kippenhan (1997) is considered to be conspecific with *Ox. oberthueri*. Two species, *Ox. floridula*, Bates, 1872 and *Ox. gloriola* Bates, 1872 are treated with lectotype designations with emphasis on the female syntypes (paralectotypes) mutually wrongly associated to males in the original descriptions of these two taxa by Bates (1872a). The nomenclature, further complicated by two unnecessary replacement names, *Ox. unciifera* W. Horn, 1901 for *Ox. floridula*, and *Ox. simplipenis* W. Horn, 1901 for *Ox. gloriola*, is also explained. *Ox. delia* (Thomson, 1859), is discussed, but because of its insufficient original description and unknown type, the name falls to *incertae sedis*. Keys to four species-groups and separately to males and females of the twenty species of the genus are presented.

INTRODUCTION

This paper is a direct continuation of the first part of the revision of the genus *Oxygonia* Mannerheim, 1837 by Moravec (2015). This present revision basically derives from and further develops the review by Kippenhan (1997), where sixteen species and two subspecies were recognized and redescribed, and additional two new species described, with schematic illustrations in line drawings of the habitus and diagnostic characters and correct association of females to males. Nevertheless, in the review (Kippenhan 1997), type specimens of most of the taxa described by H. W. Bates were not exactly recognized and consequently neither redescribed nor illustrated for each genuine type specimen. Therefore, one of the main objectives of this present revision was to locate in collections the relevant type specimens of the taxa described by H. W. Bates.

In the first part of the revision (Moravec 2015), *Ox. schoenherrii* Mannerheim, 1837 (type species of the genus), *Ox. albitaenia* Bates, 1871, *Ox. cyanopsis* Bates, 1872 (as a junior synonym of *Ox. albitaenia*), *Ox. annulipes* Bates, 1872 and *Ox. carissima* Bates, 1872 were redescribed and illustrated for the first time from the holotypes. *Ox. annulipes* was synonymized with *Ox. carissima*, *Ox. albitaenia* was restored to its original species status, and the correct shape of the aedeagus of *Ox. carissima* was introduced. Lectotypes of *Ox. moronensis* Bates, 1872 and *Ox. buckleyi* Bates, 1872 were designated. Lectotype of *Ox. prodiga* (based on *Cicindela prodiga* Erichson, 1847) was designated in order to rectify the invalid lectotype designation by Kippenhan (1997). *Ox. schauumi* W. Horn, 1893 was formally synonymized with *Ox. prodiga* and the synonymy of *Ox. batesi* W. Horn, 1893 with *Ox. prodiga* also was confirmed. The lectotype of *Ox. boucardi* Chevrolat, 1881 was designated to rectify its erroneous

type status published by Kippenhan (1997).

Along with the continuous emphasis on the recognition of type specimens of taxa described by H. W. Bates, this second part of the here presented revision has been extended to all other taxa of the genus comprising altogether twenty here accepted species. Consequently, fourteen remaining species are redescribed here and their habitus and diagnostic characters are illustrated in colour photographs, in most of them for the first time from the exact type specimen, including their opposite sex, demonstrating significant sexual dimorphism. It comprises the holotypes (by monotypy) of *Oxygonia vuillefroyi* Chaudoir, 1869 and *Ox. kondratieffi* Kippenhan, 1997, type specimens of *Ox. moreti* Deuve, 1992, *Ox. oberthueri* W. Horn, 1896, *Ox. boucardi* Chevrolat, 1881, *Ox. nigricans* W. Horn, 1926, *Ox. uniformis* W. Horn, 1900, *Ox. fleutiauxi* W. Horn, 1896, *Ox. erichsoni* W. Horn, 1898, and *Ox. kippenhani* Schüle, 2008. Redescriptions and illustrations of *Ox. onorei* Cassola & Kippenhan, 1997 and *Ox. nigrovenator* Kippenhan, 1997 are based on specimens from their type localities.

Two species, *Ox. floridula* Bates, 1872 and *Ox. gloriola* Bates, 1872 are treated with lectotype designations with emphasis on the female syntypes (paralectotypes) mutually wrongly associated to males in the original descriptions of these two taxa by Bates (1872). This complication when according to ICZN the confused females must remain syntypes (paralectotypes) of the different taxon, was further complicated by two unnecessary replacement names *Ox. simplipenis* and *Ox. uncifera* superfluously proposed by Horn (1901) which caused a great mess to the arrangements of these taxa in collections (see "Remarks" under *Ox. floridula*).

As discussed by Moravec (2015), no type of *Ox. delia*, based on *Phyllodroma delia* Thomson, 1859, has been found within the present revision in relevant collections (see under "*incertae sedis*" here).

The keys to both sexes of the twenty species presented here are primarily emphasized on the external characters, in males in combination with characters of the aedeagi. Some of the characters were previously overlooked by Kippenhan (1997), some features, for instance the microserrulation of the elytral apex overestimated. The extend of impunctate elytral areas proved to be variable, in some species never so extended as illustrated by Kippenhan. The internal sac was not examined and illustrated by Kippenhan (1997) thoroughly, he restricted it only to the flagellum shape, neglecting other sclerites which are here illustrated in majority of species for the first time. Unfortunately, in some type specimens the aedeagi were damaged by previous treatment.

The infrageneric division basically maintains that by Kippenhan (1997) who subdivided the genus to five species-groups based mainly on the shape of the aedeagus apex and length and shape of the flagellum within the internal sac. However, it is modified here to only four species-groups, reflecting also other sclerites within the internal sacs. Consequently, the monobasic "group *gloriola*" by Kippenhan (1997) merges here within the *Ox. moronensis* species-group.

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), body width is the distance across the elytra (when the elytra are partly opened, the gap between their sutures is not included into the measure. 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. Although the labrum is illustrated with the clypeus, only measurements of the labrum are given. 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). It must be noted here that the clearing action by the KOH must be reversed by action of lactic acid, to avoid further action by KOH, which may progressively result to the destruction of the sclerites within the internal sac. Unfortunately, most of the aedeagi of type specimens of several species which were previously treated and stored in tubes with glycerine were found in very bad shape, mostly irrelevant for the exact shape of the internal sac, and in such cases aedeagi of comparable specimens were used for illustrations. Old, unique, mostly pinned type specimens, killed by ethanol and consequently with very hard appendages including firmly closed mandibles, were usually maintained in their original shape in order to avoid a damage.

The colour photographs of the habitus were partly taken with cameras Canon EOS 50D (in MNHN) and Leica Z6 APO (in SDEI) with a zoom system, mostly, and all diagnostic characters, by 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 a slash /, separate labels are indicated by a 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. 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 or private collection (e.g. "Muséum Paris / 1952 / Coll. R. Oberthür") denotes the year in which the specimen become a part of the recent collection (e.g. MNHN), not the year in which it was collected.

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

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

Abbreviations for the collections (for both parts of the revision).:

BMNH	The Natural History Museum London, U.K.;
CCJM	Collection Cicindelidae Jiří Moravec, Adamov, Czech Republic;
CJVB	Collection Jan Vybíral, Židlochovice (u Brna), Czech Republic;
CMNH	Carnegie Museum of Natural History, Pittsburgh, U.S.A.;
CDCL	Collection Charles Dheurle, Langres, France;
CPSH	Collection Peter Schüle, Herrenberg, Germany;
DBCN	Insect Collection of David W. Brzoska, Naples, Florida, U.S.A.;
FCCR	Fabio Cassola Collection Cicindelidae, Museo Civico di Zoologia, Roma, Italy;
MFNB	Museum für Naturkunde der Humboldt-Universität, Berlin, Germany;
MGKC	Michael G. Kippenhan Collection, Portland, Oregon, U.S.A.;
MNHN	Muséum national d'Histoire naturelle, Paris, France;
MUSENUV	Museo de Entomologia, Universidad de Valle, Cali, Colombia;
MZH	Finnish Museum of Natural History, Entomology Team, Helsinki, Finland;
NHMW	Naturhistorisches Museum Wien, Vienna, Austria;
NMPC	National Museum (Entomological Department), Praha, Czech Republic;

- QCAZ Pontificia Universidad Católica del Ecuador, Catholic Zoology Museum, Quito, Ecuador;
SDEI Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany.

TAXONOMY

***Oxygonia* Mannerheim, 1837**

Oxygonia Mannerheim, 1837: 17.

Type species. *Oxygonia schoenherrii* Mannerheim, 1837, by original designation and monotypy.

Differential diagnosis. Having outstanding position within the subtribe Odontocheilina W. Horn sensu Moravec (2012a), the genus *Oxygonia* is distinguished by the following complex of diagnostic characters: protarsomere 5 dorsally inserted into protarsomere 4; apices of femora with two, short spines (such bilobed spiny femoral apices are lacking in other Odontocheilina except for the genus *Opisthencentrus* W. Horn, 1893, reviewed recently by Moravec 2016a); each mandible possesses six teeth and basal molar (male in *Ox. carissima* seven teeth), in contrast to only three to four teeth in other Odontocheilina genera; elytra notably sexually dimorphic in shape of their elytral apex and pattern of the whitish to yellowish maculation; head genae not separated basally from gula by complete suture, only a very short suture separates occiput-temple area from the gula (in contrast to continuous suture in other Odontocheilina genera); labrum not sexually dimorphic in shape (in contrast to distinctly dimorphic labrum in other Odontocheilina except for *Mesacanthina* Rivalier, 1969, but in two species of *Oxygonia* the labrum has variably 4-8 submarginal setae; palpi conspicuously slim and long, particularly the maxillary ones, terminal palpomeres elongate, only gradually dilated towards the apex, apices of longest and penultimate palpomeres of maxillary palpi with notably long and thin setae (in other Odontocheilina such elongate palpi occur in *Mesacanthina* only).

Body small to very large, 10-20 mm long, whole elytral surface sparsely to densely punctate, in some species with impunctate areas to various extent; white to ochre-yellow elytral maculation always lateral to sublateral, in females of all species consisting of isolated maculae, while male elytra in five species possesses a continuous or interrupted, indistinct, thin or wide lateral band; ventral and lateral thoracic sterna glabrous, female mesepisternal coupling sulci absent; legs more or less densely setose, the whitish setae densest on pro- and mesofemora, usually uncinat and irregularly interwoven.

For other characters - see Moravec (2015).

Biology and distribution. Neotropical, South America except for two species in Central America. Adults are diurnal but also nocturnal. For the distribution and behaviour of adults see under individual species here and in Kippenhan (1997), Pearson et al. (1999a), Pearson et al. (1999b), Moravec (2015), and maps of the distribution by Kippenhan (1997), for Ecuador and Bolivia by Pearson et al. (1999a) and Pearson et al. (1999b). Immature stages unknown.

Species-groups

Ox. vuillefroyi species-group: *Ox. vuillefroyi* Chaudoir, 1869, *Ox. kondratieffi* Kippenhan, 1997, *Ox. oberthueri* W. Horn, 1896, *Ox. kippenhani* Schüle, 2008, *Ox. moreti* Deuve, 1992, *Ox. nigricans* W. Horn, 1926 and *Ox. onorei* Cassola & Kippenhan, 1997.

Ox. schoenherrii species-group: *Ox. schoenherrii* Mannerheim, 1837, *Ox. albitaenia* Bates, 1871, *Ox. carissima* Bates, 1872 and *Ox. boucardi* Chevrolat, 1881.

Ox. prodiga species-group: *Ox. prodiga* (Erichson, 1847), *Ox. uniformis* W. Horn, 1900, *Ox. erichsoni* W. Horn, 1898, *Ox. buckleyi* Bates, 1872 and *Ox. floridula*, Bates, 1872.

Ox. moronensis species-group: *Ox. gloriola* Bates, 1872, *Ox. moronensis* Bates, 1872, *Ox. nigrovenator* Kippenhan, 1997 and *Ox. fleutiauxi* W. Horn, 1896.

Key to species-groups

- 1 flagellum within internal sac of aedeagus simple, with arcuate-bent, rarely spur-like base and short flagelliform projection never reaching or penetrating apical orifice, associated with long, stick-like dorsoventral stiffening rib; aedeagus apex constricted into narrow stem terminated by a small knob, which is either button-like, or dorsally shallowly excised, unilateral and blunt or subtruncate, or double-faced to helmet-shaped **Ox. vuillefroyi species-group**
- flagellum very long, reaching or penetrating apical orifice and with either simply horshore-like basal arch, or widely ear-like convoluted 2
- 2 long flagellum widely ear-like convoluted; aedeagus apex either ventrally directed, elongate hornlike or thornlike, in one species almost straight, short, simply cylindric and blunt **Ox. schoenherrii species-group**
- long flagellum with simply horseshoe-shaped basal arch 3
- 3 internal sac with rather wide, serpentlike upper-ventral sclerite which is usually dorsally capitate; aedeagus apex terminated with rounded, dorsally excised knob of a crochet hook-like shape **Ox. prodiga species-group**
- upper-ventral sclerite within internal sac simply serpentlike; aedeagus apex in three species elongate, moderately dorsad-hooked and dilated into dorsally moderately emarginated knob (resembling a club-like head), in one species simply elongate-cylindric (stick-like), blunt **Ox. moronensis species-group**

Keys to species

Notes: female elytra are in most species sexually dimorphic in coloration and shape. The term “lateromedian” macula refers to the macula near or adjacent to the elytral epipleuron, while the “sublateral-median” macula is more distant from the epipleuron. Microserrulation is unreliable for identification due to usual variability. The chatoyant coloration is often changeable depending on illumination angle; also black elytral discal area usually changes to bright metallic.

Aedeagi in Kippenhan (1997) were illustrated in their reverse lateral view, and with wrong shape for *Ox. carissima* and *Ox. schoenherrii*; female elytron of *Ox. oberthueri* was misleadingly illustrated by Kippenhan (1997) with only two maculae, and impunctate (smooth) areas on elytral surface were mostly overestimated (for instance never so expanded as illustrated by him for *Ox. gloriola*).

1 - key to males

- 1 whitish or yellowish elytral maculation entirely absent ***Ox. boucardi*** Chevrolat
 – whitish or yellowish elytral maculation present 2
- 2 elytral maculation consisting of separated maculae 8
 – elytral maculation consists of lateral band which is either indistinct and thin, or wide, continuous or interrupted; elytra punctate throughout, lacking smooth areas 3
- 3 lateral band never reaching sutural spine of elytral apex 6
 – lateral band consistently continuous, reaching elytral apex, in middle with mesad directed dilatation or short transverse protrusion 4
- 4 aedeagus apex in shape of ventrally directed, elongate acute thorn; first protarsomere normally shaped; mandibles (in male only) uniquely with seven teeth plus basal molar; proepisterna and mesepisterna testaceous ***Ox. carissima*** Bates
 – aedeagus apex directed dorsally, narrowly cylindric, terminated by a helmet-like knob; first protarsomere (in lateral view) with sinuous margin and short basal projection; mandibles with 6 teeth plus basal molar (as in all remaining species of the genus); ventral body surface testaceous 5
- 5 antennal scape metallic-black; basal projection on first protarsomere blunt ***Ox. oberthueri*** W. Horn
 – antennal scape ochre testaceous; basal projection on first protarsomere acute ***Ox. kippenhani*** Schüle
- 6 lateral band wide, either continuous (but never entirely reaching elytral apex), rarely interrupted before anteapical angle, thus forming anteapical macula; elytral apex thorn-like, formed by both outer and sutural angle; aedeagus apex ventrally directed, horn-shaped ***Ox. albitaenia*** Bates
 – lateral band reduced to a very thin juxtaepileural stripe (better visible in lateral view) indistinctly connecting subhumeral-humeral band with dilated lateromedian macula which is falciform-prolonged anteromesad and separated from elongate anteapical macula; elytral apex acute with distinct sutural spine; body very large, 17.5-20 mm long 7
- 7 thin lateral band at least partly visible in dorsal view connecting wider sublateral-humeral band (which in dorsal view appears as if interrupted into humeral and subhumeral macula); antennae reaching elytral half; aedeagus apex with blunt, slightly elongate and indistinctly ventrally bent and shallowly emarginate knob; head normally shaped with large eyes; both pro- and mesotarsomeres 1-4 notably dilated ***Ox. moreti*** Deuve
 – thin lateral band barely visible in dorsal view, connecting the anteromesad-prolonged lateromedian macula indistinctly with only subhumeral macula which is separated from small humeral spot; head massively oblong in contrast to small eyes (unique character within the genus); antennae reaching only elytral quarter; aedeagus apex terminated with both ventrally and dorsally dilated knob ***Ox. kondratieffi*** Kippenhan
- 8 elytra with only lateromedian macula which is slightly dilated along epipleuron and falciform-prolonged anteromesad, other maculae absent (extremely rarely very small anteapical macula present); elytral apex acute but lacking sutural spine; body 13-15 mm long; antennae reaching elytral anteapical angle; aedeagus apex narrow and straight, terminated with short, dorsally shallowly excised knob ***Ox. vuillefroyi*** Chaudoir
 – elytral maculation consisting of humeral, subhumeral, lateromedian and anteapical variously shaped maculae (humeral macula sometimes barely visible in dorsal view) 9
- 9 aedeagus apex ventrally directed, in form of elongate horn (but never pointed); elytral apex acutely constricted, thorn-shaped, formed by both outer and sutural angle ***Ox. schoenherrii*** Mannerheim
 – aedeagus apex differently shaped 11
- 11 aedeagus small with dorsally directed apex terminated with a small, simple or double-faced helmet-like knob; elytra black or coppery, punctate throughout (in male only) 12
 – aedeagus long or very long, apex either straight and blunt, or moderately directed ventrally, terminated with distinct, rounded, dorsally excised knob of a crochet hook-like shape, or apex moderately dorsad-hooked and dilated in form of dorsally moderately emarginated club-like head 13
- 12 aedeagus apex with helmet-like knob (shaped as in *Ox. oberthueri*); body medium-sized, almost black;

- elytral maculae distinct, almost of equal size; ventral and lateral pro- and meso-thoracic sterna rusty-testaceous **Ox. nigricans** W. Horn
- aedeagus apex short with rather small, dorsally deeply emarginated knob in its ventral view distinctly spectacle-like bilobed; body small (smallest within the genus); elytra dark coppery, sublateral-median macula transverse **Ox. onorei** Cassola & Kippenhan
- 13 aedeagus apex very slightly directed ventrally, terminated with rounded, dorsally excised knob of a crochet hook-like shape 14
- aedeagus apex either elongate stick-like, straight and rounded, or moderately dorsad-hooked and dilated in form of dorsally moderately emarginated club-like head; elytra with conspicuous smooth (impunctate) areas 18
- 14 elytra bright coloured, with iridescent purple-violet, reddish-cupreous and bright green areas (changeable depending on illumination angle) 15
- elytra either predominantly green or green-blue with coppery discal areas, or almost entirely dark coppery or dark reddish-cupreous 17
- 15 labrum completely metallic coloured: either chatoyant blue, or green or gold-bronze with cupreous areas, primarily 4-setose, but also 6 setae occur **Ox. buckleyi** Bates
- labrum either partly or entirely ochre testaceous, or partly or entirely black (sometimes variably so also in syntopic males), occasionally with indistinct and only partial diffusing metallic lustre 16
- 16 stem of the aedeagus apex rather short and notably wide, and the crochet-like knob dorsally only shallowly excised; elytra predominantly bronze-cupreous with large black-violet discal area and along the whitish, mostly transverse sublateral-median macula; subhumeral macula very small, indistinct; elytral surface punctate throughout lacking smooth areas **Ox. erichsoni** W. Horn
- stem of the aedeagus apex notably elongate; elytra purple-violaceous on basodiscal convexity, reddish-cupreous on large sublateral areas and area of outer anteapical angle, bright green on discal area extended around the whitish lateromedian macula which is transverse and mostly tightly adjacent to epipleuron; subhumeral macula distinct; elytral punctation variably with more spaced punctures or small impunctate area posteromesad of the sublateral-median macula **Ox. prodiga** Erichson
- 17 elytra olivaceous-green or brighter green, usually with coppery anterior area and iridescent blue-green large anteapical area, while black-green on large discal area, and with large coppery impunctate area posteromesad of the whitish sublateral-median macula and expanded towards outer elytral margin **Ox. floridula** Bates
- elytra dark coppery or dark reddish-cupreous, often with dark olivaceous-green areas, punctate throughout **Ox. uniformis** W. Horn
- 18 aedeagus apex straight, notably stick-like elongate, rounded; elytra predominantly iridescent reddish-cupreous with large, iridescent green discal area (changing to black upon different illumination angle), and with iridescent-green, variably expanded impunctate area posteromesad of the whitish sublateral-median macula mostly separated from rather wide smooth area above anteapical macula, rarely the two impunctate areas narrowly connected **Ox. gloriola** Bates
- aedeagus very long, its apex moderately dorsad-hooked and dilated in form of dorsally moderately emarginated club-like head 19
- 19 elytra predominantly bright iridescent reddish or bronze-cupreous with iridescent-green discal areas and usually on variably large impunctate area posteromesad of the whitish sublateral-median macula; anteapical area variably punctate or effaced **Ox. fleutiauxi** W. Horn
- body large, entirely black or with diffusing metallic-lustre; labrum variably with 4-8 setae 20
- 20 body almost entirely black, 16.5-18.3 mm long; impunctate areas on elytra mostly notably large; elytral apex mostly rather rounded than subacute **Ox. nigrovenator** Kippenhan
- body 15-16.2 mm long, black, often with diffusing metallic greenish lustre on elytra, more intense and also cupreous lustre on pronotum and head; impunctate areas on elytra mostly (variably) somewhat smaller; elytral apex mostly subacute, **Ox. moronensis** Bates.

2 - key to females

- 1 whitish or yellowish elytral maculation entirely absent **Ox. boucardi** Chevrolat
 – whitish or yellowish elytral maculation present 2
- 2 elytra with only lateromedian macula which is falciform-prolonged anteromesad, other maculae entirely absent; elytral apex truncate towards sutural spine 3
 – elytra with several separated maculae 4
- 3 body very large, 16.4-17.2 mm long, outer elytral margins mutually notably expanded in subhumeral area (width 5.5-6 mm) while narrower in outer antepical angles; very fine elytral punctation effaced along outer anterior margin (the smooth area mesad expanded), punctures partly or entirely effaced also on antepical-juxtasutural area **Ox. moreti** Deuve
 – body notably smaller, 13-15 mm long, elytral lateral margin less expanded in subhumeral area, but mutually dilated in outer antepical angle, 4.5-5 mm wide; fine elytral punctures indistinctly effaced only on narrow juxtasutural area; labrum with anterior margin usually acutely sinuate.
 **Ox. vuillefroyi** Chaudoir
- 4 elytral apex widely truncate 5
 – elytral apex rounded or subacute 7
- 5 elytra with only two dorsally visible maculae (subhumeral macula absent, rarely indicated in lateral view, sometimes also indicated humeral macula, both invisible from above) 6
 – subhumeral, lateromedian and antepical maculae present (humeral macula variably absent or only indicated, invisible from above); elytral coloration rather dull, rarely more vivid, black with diffusing olivaceous-green lustre, or also indistinct diffusing cupreous hue **Ox. oberthueri** W. Horn
- 6 elytra almost uniformly metallic black with only limited vividly green and cupreous areas, finely and densely punctate except for notably smooth area along outer margin **Ox. carissima** W. Horn
 – elytra multicoloured, variably partly purple or reddish-cupreous laterally or prevailingly, often with limited iridescent-green or cyaneous-green areas, mostly on humeri and apices, or on partly metallic black elytral disc; elytral punctures rather spaced; vertex with deep, mostly rounded impression
 **Ox. schoenherrii** Mannerheim and **Ox. albitaenia** Bates
- 7 elytra notably bright metallic coloured, either shiny green, or green-blue and reddish cupreous on lateral areas and along the sublateral-median macula, or reddish-cupreous on anterior and posterior areas with green or blue iridescent discal area and along the lateromedian macula, or uniformly metallic green or bright olivaceous-green 12
 – elytral coloration metallic, but mostly duller or darker 8
- 8 elytra punctate throughout; elytral apex towards sutural spine rounded 10
 – elytra with impunctate areas; entirely black or with diffusing metallic greenish or cupreous lustre; body very large 9
- 9 body reaching 18 mm in length, black, rarely with faint diffusing metallic iridescence on elytra; impunctate areas on elytra mostly notably large; elytral apex mostly narrowly rounded or subacute **Ox. nigrovenator** Kippenhan
 – body not exceeding 17 mm long, black, often with diffusing metallic greenish lustre on elytra, more intense and also cupreous hue on pronotum and head; impunctate areas on elytra mostly (variably) somewhat less expanded; elytral apex mostly subacute **Ox. moronensis** Bates
- 10 body medium-sized; pronotum slightly longer than wide, lateral margins subparallel 11
 – body very small (smallest within the genus); pronotum notably subglobose, as long as wide or slightly wider **Ox. onorei** Cassola & Kippenhan
- 11 elytra more vividly cupreous; elytral apex towards distinct sutural spine narrowly rounded to subacute; vertex with notably deep V-shaped anteromedian impression and steeply sloped juxtaorbital areas **Ox. uniformis** W. Horn
 – elytra black with faint diffusing olivaceous-green and coppery lustre; sublateral-median macula large, notably distant from epipleuron **Ox. nigricans** W. Horn
- 12 labrum either entirely black or with variably wide ivory yellow to testaceous or brownish sublateral areas, sometimes variably occurring so in syntopic females 13

- labrum completely metallic coloured, mostly chatoyant blue or green or bronze (as in males); elytra with mostly rather small impunctate area (as in males); subhumeral macula usually very small; elytral coloration sexually dimorphic, shiny blue green combined with purple-violet laterally and iridescent blue-green or green on anteapical area **Ox. buckleyi** Bates
- 13 elytra punctate throughout, lacking or with only indistinct or small impunctate areas 14
- elytra always with notably impunctate, smoothed areas 15
- 14 elytra punctate throughout, or variably with more spaced punctures or small entirely impunctate area mesad of the sublateral-median macula; subhumeral macula distinct; elytral coloration rather similar to that in male, reddish-coppery or bronze-cupreous with black-green discal area and green or purple and green wide area along the lateromedian macula **Ox. prodiga** Erichson
- elytra punctate throughout, entirely lacking impunctate areas; subhumeral macula indistinct; elytra mostly predominantly metallic black-green or brighter green (changeable depending on illumination angle), combined with chatoyant purple or bronze-cupreous, mostly on posterolateral area **Ox. erichsoni** W. Horn
- 15 elytra predominantly shiny violet-blue or purple with black-blue or blue-green elytral disc and iridescent green-blue limited anteapical area (coloration distinctly sexually dimorphic); subhumeral and anteapical maculae notably large, impunctate area surrounding lateromedian macula only posteromesad **Ox. floridula** Bates
- elytra predominantly green or olivaceous-green (coloration distinctly sexually dimorphic) 16
- 16 elytra almost uniformly metallic olivaceous-green; impunctate area posteromesad of sublateral-median macula and rather wide area above anteapical macula **Ox. gloriola** Bates
- elytra rather variably coloured, mostly metallic-green with black-bronze discal area (changing to metallic gold-bronze or bronze-cupreous depending on illumination angle), the bronze area extends anteriorly onto large impunctate area mesad and posteriorly of sublateral-median macula; subhumeral macula small **Ox. fleutiauxi** W. Horn

***Oxygonia vuillefroyi* species-group**

***Oxygonia vuillefroyi* Chaudoir, 1869**

(Figs. 1-16)

Oxygonia vuillefroyi Chaudoir, 1869: 25.

Type locality. Ecuador: Quito.

Type material. Holotype (by monotypy), ♀ in MNHN (Coll. Chaudoir), standing above a separately pinned, large handwritten collection label: "Vuillefroyi / Chaud. / Quito? / Jekel. Vuillefroy", labelled: "Holotype" [red, printed] // "Oxygonia / vuillefroyi Chld." [handwritten] // "Revision Jiří Moravec 2017 / Holotype ♀ (by monotypy) / Oxygonia / vuillefroyi Chaudoir, 1869" [red, printed].

Other material examined. Historical data. 1 ♂ in MNHN (Coll. Fleutiaux): "Loja" // "Oxygonia / vuillefroyi Chld.". 2 ♂♂ in MNHN: "Ecuador / Łoja" [crossed]. 1 ♂ in MNHN, 1 ♀ in SDEI: "Zarayacu / Ecuador". 1 ♂ in MNHN: "Macas / Ecuador". 2 ♂♂ in SDEI: "Macas / Ecuador". 2 ♂♂ in SDEI: "Ghans 1050 m / Ecuad. Macas". Recent data. 1 ♂ in NHMW [as *Ox. schoenherri*, sic!]: "Ecuador / Zamora 200m / Pena XI-1970".

1 ♂ in NHMW: "Ecuador – Tungurahua / Rio Verde env. / X.1996 S. Pokorný lgt.". 2 ♂♂ in DBCN: "Ecuador – Sucumbios / Sta. Barbara Rd. / 17 km S – La Bonita / 00°24.1'N; 77°32.0'W / D. Brzoska 11-10-1998". 2 ♂♂, 4 ♀♀ in DBCN: "Ecuador – Zamora-Chinchipec / 2.2 km S – Valladolid / 4°34'S; 79°08'W 1480 m / (rocky stream, noct.) / D. Brzoska 24-IX-1996". 1 ♀ in CCJM: "Ecuador / prov. Zamora-Chinchipec / Zamora env., 1 120 m / 9.XI.1999, S. Dolák lgt.".

Redescription, male. Body (Fig. 2) medium-sized, 13.2-15.0 mm long, 4.10-4.60 mm wide.

Head (Figs. 3-4) normally shaped, with large eyes but narrower than body, 2.95-3.30 mm wide.

Frons indistinctly separated from clypeus, notably convex and confluent with vertex over rounded frons-vertex fold, mostly metallic green in middle with faint cupreous hue laterally,

median area almost smooth, only very finely coriaceous-asperate, lateral areas with a few longitudinal striae adjacent to smooth, shiny green or black-violet, sometimes indistinctly delineated supraantennal plates.

Vertex convex on its anteromedian part of the rounded frons-vertex fold with the same almost smooth surface, then with deep and wide V-shaped anteromedian impression; whole vertex area either metallic-green, covered with rather distinct stria-like rugae forming in middle conspicuous radial ornament when converging towards central, clearly delineated, usually smooth formation which is flat or moderately bulged, while the stria-like rugae on lateral areas diverge posteriad towards temples; juxtaorbital areas with a few striae, while narrow area adjacent to eyes smooth; rugae on occipital area become fragmented and irregular.

Clypeus pale or deep mahogany with faint or strong green lustre, finely irregularly wrinkled.

Genae metallic iridescent green or blue-green, nearly smooth with few distinct juxtaorbital striae and irregular faint wrinkles on posterior area, passing from vertex.

Labrum (Figs. 10-11) primarily with four setae, occasionally with only two or five setae, transverse but rather long, length 0.75-0.95 mm, width 1.65-1.95 mm, with irregularly sinuous anterior margin forming indistinct or more defined, four to six teeth including notably anteriad prolonged tridentate median lobe with always prominently protruding median tooth; coloration black-brown with mahogany anterior areas and mostly with blackened area of central impression.

Mandibles (Figs. 3-4) variably almost entirely black to black brown except for paler basolateral areas, or with mahogany-brown teeth and basolateral mahogany-testaceous areas, subsymmetrical, each mandible with 6 teeth and basal molar, inner teeth comparatively small, fourth tooth in right mandible often bilobed.

Palpi notably elongate (Figs. 3-4), maxillary palpi, variably coloured, either ochre-testaceous with blackened apical half of terminal palpomeres, or brownish with black terminal palpomeres, or all palpomeres almost entirely black; labial palpi ochre to brownish-testaceous with black terminal palpomeres.

Antennae (Figs. 2-4) very long, reaching elytral anteapical angles, rather variably coloured, scape and pedicel black, antennomeres 3-4 either black or with mahogany basal third, antennomeres 5-11 either all, or only 5-8 brownish-testaceous and remaining ones smoky blackened.

Thorax. Pronotum (Fig. 5) markedly shorter than wide, 2.05-2.45 mm long, 2.50-2.80 mm wide, diffusing-mahogany with faint or strong metallic greenish lustre, or almost entirely metallic-green, rarely almost black with indistinct violet lustre; anterior and posterior lobe of almost same width, but markedly narrower than disc, sulci well pronounced; anterior lobe notably short, its surface with only one, rarely two transverse rugae; disc subglobose with distinctly convex lateral margins of dorsally visible proepisterna and notopleural sutures, discal surface on wide median area covered with transversely parallel stria-like rugae which converge towards distinct median line, rugae on anteromedian discal half finer, while much coarser on posteromedian half; rugae on sublateral areas much finer, very shallow and irregular, becoming again deeper, short and transverse towards notopleural sutures; posterior lobe notably long, surface with moderately raised dorsolateral bulges and several coarse, mostly transverse or irregular rugae; lateral and ventral thoracic sterna smooth, metallic green, prosternum sometimes with diffusing testaceous hue, mesepisterna and mesosternum sometimes almost black, metasternum usually with posterior area brownish-testaceous.

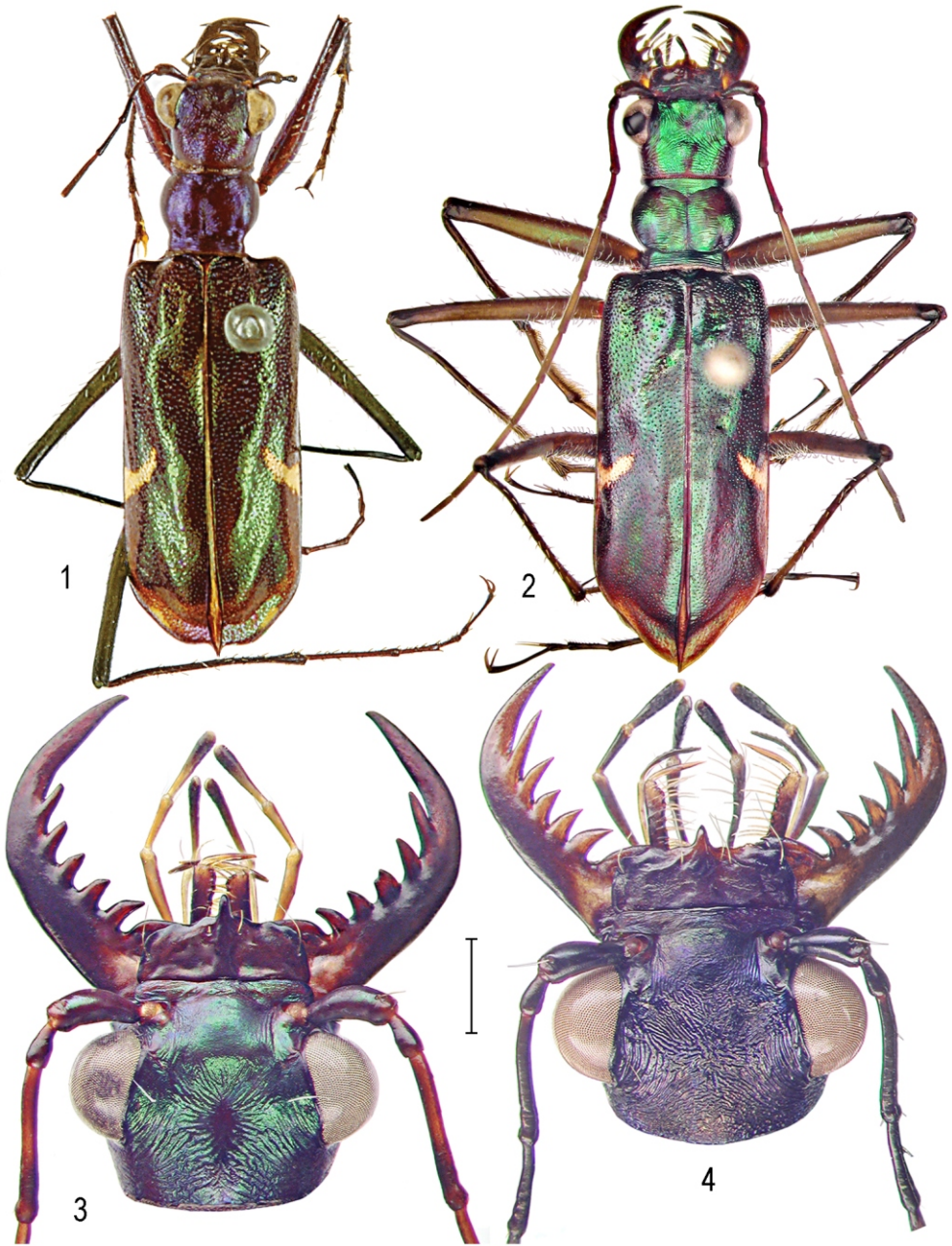
Elytra (Fig. 7) elongate, length 9.00-10.5 mm, with almost quadrate humeri and subparallel lateral margins, outer margin with moderately dilated and arched posthumeral area, then slightly

dilated towards arcuate antepical angle, then obliquely attenuated towards apex which is acute but lacking, sutural spine; dorsal elytral surface convex, with distinct humeral impressions and notably deep and large discal impression clearly delineating distinct basodiscal convexity; apical impression distinct; elytral coloration rather variable and inconsistent because partly de-pigmented and translucent, often pale ochre-testaceous or mahogany-testaceous with faint or very strong chatoyant green lustre on elytral disc, or almost black-violet with green lustre on elytral disc, or almost entirely metallic-green, with faint diffusing mahogany hue on lateral areas and apical areas, but almost always with the partly translucent mahogany-testaceous hue on elytral apical third; in lateral view several small but distinct tubercles on juxtaepipleural area running posteriad along humeri and also within posthumeral epipleural crease; whole elytral surface almost uniformly, rather densely and regularly punctate, punctures isodiametric, only several larger and irregular and occasionally anastomosing punctures or occasional foveae occurring on elytral base, and even more irregular and deeper punctures within humeral impressions; punctures on posterior elytral half slightly larger, but still isodiametric with regular intervals, except for irregularly punctate-bumping surface within deeply impressed apical margin (appearance of punctures may change depending on angle of illumination); elytral maculation consists of only whitish or yellowish lateromedian macula which is slightly dilated along epipleuron and falciform-prolonged anteromesad; other maculae absent, but very rarely a paler, diffusing testaceous area occurs at the moderate subhumeral expansion of the outer elytral margin; antepical-apical area usually de-pigmented, almost translucent, very rarely antepical macula present.

Legs. Procoxae brownish with strong green iridescence, meso- and metacoxae almost black with strong green lustre, pro- and meso coxae densely covered with white, decumbent setae; metacoxae fringed with densely setose outer margin, their discal area glabrous except for two or four, semierect white setae; trochanters brownish to almost black, glabrous; femora brown or black-brown brown, often also pale brownish or pale mahogany-brown, always with green lustre and blackened apical area, comparatively sparsely whitish setose, setae densest and mostly uncinatate and partly interwoven on ventral area of femoral basal half, much sparser on dorsal area and very sparse on femoral apical half; tibiae black-brown, paler ventrally, or partly or almost entirely brownish-testaceous, with much sparser, shorter and stiffer, semierect whitish setae; pro- and mesotibiae as usually with dense pad of greyish-white setae on their apical half; tarsi brownish or mahogany testaceous with blackened apices, first three protarsomeres with distinctly subclavate-dilated apices, and with usual dense pad of short greyish-rusty setae, first protarsomere slightly curved, tarsomere 4 much smaller and with two pairs of notably longer apical setae; tarsomere 5 black, thin and conspicuously elongate; claws black-brown or pale mahogany.

Abdomen mostly black with strong, green lustre, sometimes last three ventrites brownish, rarely almost entirely brown-testaceous; last bilobed pleurite always ochre-testaceous; surface of the ventrites smooth and glabrous except for usual, a few hairlike sensory setae (easily abraded) at their posterior margins.

Aedeagus (Fig. 14) nearly straight with moderately and gradually bent basal portion, rather short and notably voluminous in middle, 3.90-4.30 mm long, 0.85-0.95 mm wide, constricted to narrow and straight stem terminated with short, dorsally shallowly excised knob; internal sac (Figs. 15-16) containing short flagellum with simply arcuate-bent, and rather thick base and short flagelliform projection never reaching apical orifice, associated with characteristic, long, stick-like dorsoventral stiffening rib, and upper-dorsal elongate-clavate sclerite better visible in right lateral view (Fig. 16).



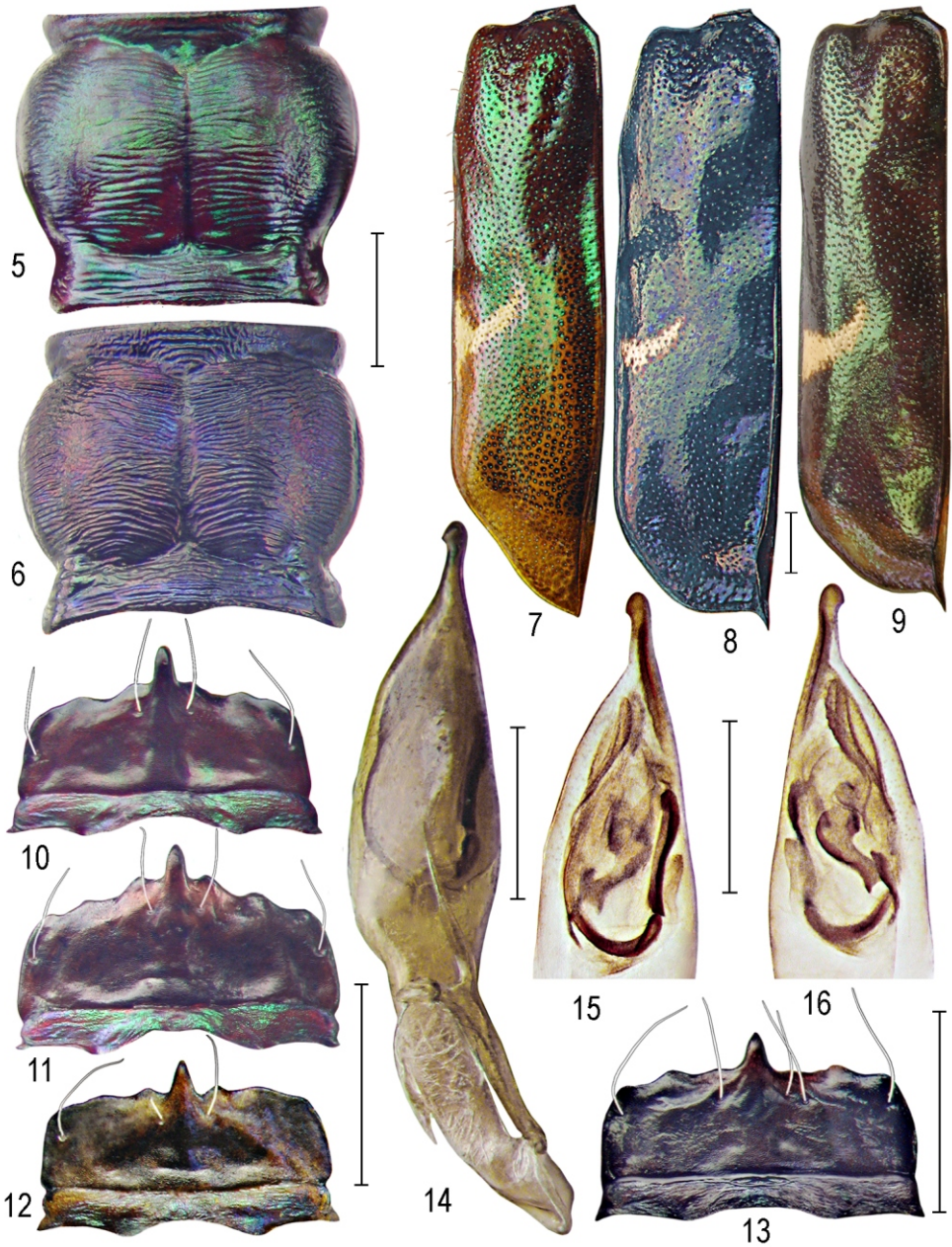
Figs. 1-4. *Oxygonia vuillefroyi* Chaudoir. 1-2 - body: 1 - ♀, 14.4 mm, Ecuador, Quito, HT (MNHN); 2 - ♂, 14.5 mm, Ecuador, La Bonita (DBCN); 3-4 - head: 3 - ♂, ibid. (DBCN); 4 - ♀, Ecuador, Valladolid (DBCN). Bars = 1 mm.

Variability. As stressed in the redescription above, the body coloration is variable (both dorsally and ventrally), with highly variable coloration of maxillary palpi. The labrum is usually almost black, rarely predominantly testaceous, and also the shape of its anterior margin varies. The elytra are either bright metallic green coloured with only indistinct or markedly extended depigmented lateral, mostly antepical-apical area. In one of the examined males from La Bonita (DBCN), barely visible but well delineated antepical macula occurs. One examined male from Valladolid (DBCN) has the aedeagus apex anomalously strongly excised forming a sharpened beak.

Female characters (holotype Fig. 1). *Ox. vuillefroyi* is distinctly sexually dimorphic, females differ in following diagnostic characters: elytral apex (Figs. 8-9) with rounded outer margin, truncate in middle towards distinct sutural spine; labrum more transverse, with irregularly sinuous anterior margin forming five to six indistinct teeth and elongate, prominently protruding median tooth; elytral coloration generally deeper because almost entirely lacking the depigmented, partly translucent mahogany-testaceous areas (the holotype has it only on the apical elytral area), extremely rarely indistinctly indicated, diffusing, barely visible antepical macula present (in holotype Fig. 9); basic elytral coloration mostly metallic black-blue with either diffusing or bright, green, green-blue or violet lustre; dorsal surface of head and pronotum mostly black with violaceous lustre, faded in old specimens (as in holotype) to mahogany with purple-violet lustre; pronotal anterior lobe with several transverse rugae; vertex mostly with shallower, and less distinct V-shaped impression; legs entirely black with diffusing blue or cyaneous lustre; lateral and ventral thoracic sterna and abdomen metallic coloured except for testaceous last abdominal ventrite; protarsi not dilated. Body (Fig. 1) length 13.7-14.8 (in holotype 14.4) mm, width 4.30-5.00 (in holotype 4.40) mm; head 3.00-3.10 mm wide; labrum (Figs. 12-13) 0.75-0.85 (in holotype 0.80) mm long, 1.70-1.85 (in holotype 1.77) mm wide; pronotum (Fig. 6) 2.20-2.45 (in holotype 2.30) mm long, 2.50-2.65 (in holotype 2.60) mm wide; elytra (Figs. 8-9) 9.40-10.30 (in holotype 9.80) mm long.

Differential diagnosis. *Ox. vuillefroyi* shares the same shape of the lateromedian macula with *Ox. moreti* and *Ox. kondratieffi*. However, both these species immediately differ in having much larger body in both sexes and shorter antennae. Male of *Ox. moreti* has the lateromedian macula connected with thin lateral band with humeral lunule (which in dorsal view appears as if interrupted into humeral and subhumeral macula), and possesses very different shape of the aedeagus apex (Figs. 27-28); females of *Ox. moreti* can be distinguished by their outer elytral margins mutually expanded in subhumeral area, while narrower in outer antepical angle (in contrast to the outer margins in *Ox. vuillefroyi* which are slightly but notably dilated at antepical angles); moreover, elytral punctation in females of *Ox. moreti* is effaced along outer elytral anterior margin and the smooth area is also mesad expanded; shallower and partly or entirely effaced punctures also on antepical-juxtasutural area; the labrum in *Ox. moreti* has its anterior margin mostly shallowly sinuate. The male holotype of *Ox. kondratieffi* (SDEI) and the recently caught males (CDCL, MUSENUV) clearly differ in having aedeagus apex forming both ventrally and dorsally dilated knob, and by their oblong, but stout head contrasting with conspicuously small eyes, and elytra with thin whitish lateral stripe indistinctly connecting narrow subhumeral macula (even thinner than in *Ox. moreti*).

Biology and distribution. Confirmed from southern Ecuador and eastern Peru, 1,000-2,400 m a.s.l. For a map of the distribution see in Kippenhan (1997). Apart of the examined specimens listed here, Kippenhan (1997) listed this species from other Ecuadorian localities and one locality



Figs. 5-16. *Oxygonia vuillefroyi* Chaudoir. 5-6 - pronotum: 5 - ♂, La Bonita (DBCN); 6 - ♀, Valladolid (DBCN); 7-9 - elytron: 7 - ♂, La Bonita (DBCN); (MNHN); 8 - ♀, Valladolid (DBCN); 9 - ♀, HT (MNHN); 10-13 - labrum: 10-11 - ♂, La Bonita (DBCN); 12 - ♀, Quito, HT (MNHN); 13 - ♀, Valladolid (DBCN); 14 - aedeagus, La Bonita (DBCN); 14-15, ditto, internal sac in left and right lateral view. Bars = 1 mm.

in Peru, Amazonas, Rio Comaina, Cordillera del Condor. Pearson et al. (1999b) listed a great number of localities from the Ecuadorian provinces of Morona Santiago, Napo, Pastaza, Sucumbíos, Tungurahua and Zamora-Chinchipec, with a map of the distribution in Ecuador.

Adults have nocturnal activity, foraging on rocks and boulders in fast running moderate-sized mountain streams, and are usually attracted to lights (Pearson et al. 1995, Kippenhan 1997, Pearson et al. 1999b, D. Brzoska, pers. com.), during the day taking cover under the stones and in the gravel at the margins along the streams (Erwin & Pearson 2008).

***Oxygonia moreti* Deuve, 1992**

(Figs. 17-29)

Oxygonia moreti Deuve, 1992: 170.

Type locality. Ecuador: Balzapamba [Balsapamba], de Bolivar Province.

Type material. Holotype ♀ in MNHN, labelled: "Holotype" [red, printed] // "Balzapamba / "Prov. de Bolivar / M.de Mathan III.IV.1894" [with thin black border, tarnished, printed] // "Muséum Paris, 1952, Coll. R. Oberthür" [printed] // "*Oxygonia moreti* n. sp. / Th. Deuve det. 1992" [printed/handwritten]. Paratype. 1 ♀ in MNHN: "Paratype" [red, printed] // "Ecuador / Mindo / 1913" // "Muséum Paris, 1952, Coll. R. Oberthür" [printed] // "*Oxygonia moreti* n. sp. / Th. Deuve det. 1992" [printed/handwritten].

Other material examined. Historical data. 1 ♀ in SDEI: "Puerto Rico / Colombia / 5200 ft" // "Coll. W. Horn / DEI Eberswalde" // "*Oxygonia* / *moreti* W. Horn / det. M. Kippenhan 1997".

Recent data. 5 ♂♂ 1 ♀ in DBCN: "Ecuador – Pichincha / Mindo Garden – Mindo Rd / 00°04.04'S; 78°45.2'W / D. Brzoska 28-III-1999"

Redescription, male. Body (Fig. 19) extremely large, 17.9-20.1 mm long, 5.40-6.20 mm wide.

Head (Fig. 20) normally shaped with large eyes but smaller than body, 3.50-3.70 mm wide.

Frons separated from clypeus by thin suture which is usually indistinct in middle, convex and fluently confluent with vertex over blunt frons-vertex fold, dully or smoky-black with faint green and/or cupreous lustre, median area smooth, but sometimes with transverse anterior crease, lateral areas with a few longitudinal striae adjacent to smooth, shiny green supraantennal plates.

Vertex fluently passing from frons as a blunt median area, smooth in middle, then with mostly only shallow and wide V-shaped or U-shaped anteromedian impression of which the lateral areas usually form indistinct or more marked edges running towards anterior part of orbital suture, thus separate laterally vertex from frons; sometimes smaller central impression separated from the anteromedian impression by short and wide, smooth transverse crease; whole vertex area smoky-black with faint green or reddish-cupreous lustre on limited areas, or with diffusing metallic lustre; juxtaorbital areas almost smooth, only irregularly shallowly wrinkled; shallowly sloped towards vertex; partly indistinct stria-like parallel striae often converging in the base of the V-shaped anteromedian impression, while longitudinal, posteromedian to central-occipital area smooth, in contrast to more distinct, obliquely transverse-parallel stria-like rugae covering large posterolateral and lateral occipital area when running towards temples.

Clypeus black-coppery with faint or strong green and reddish lustre, finely irregularly wrinkled.

Genae variably black-green or cupreous, always with strong, chatoyant green and reddish lustre changeable depending upon light angles, nearly smooth, only indistinctly wrinkled.

Labrum (Fig. 21) primarily with four setae, transversely oblong, 0.90-1.10 mm long, 2.15-2.45 mm wide, with irregularly sinuous anterior margin and excised at both sides of anterior protruding median tooth; coloration black, or black-brown with black median tooth and area of central impression or also on lateral areas.

Mandibles (Fig. 20) almost entirely black to black brown except for testaceous basolateral areas, subsymmetrical, each mandible with 6 teeth and basal molar, inner teeth comparatively large, some of the inner teeth inconsistently sometimes bilobed.

Palpi notably elongate (Fig. 20), maxillary palpi indistinctly testaceous as with blackened areas, or black-brown to black, usually with paler base or apices, terminal palpomeres black, also with paler base and apices; labial palpi testaceous with blackened apex of longest palpomeres and black terminal palpomeres.

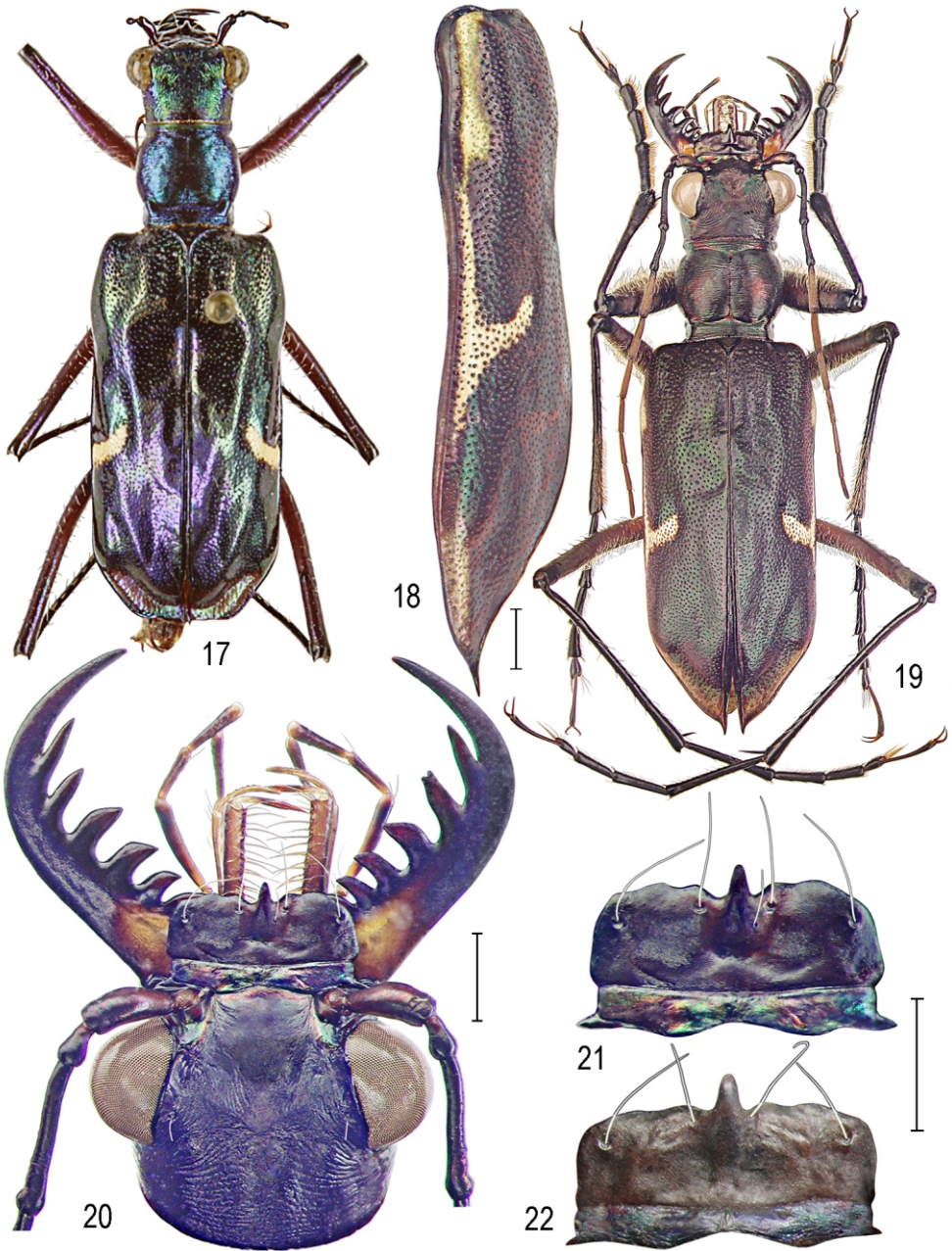
Antennae (Figs. 19-20) rather long, reaching elytral half, antennomeres 1-4 black with mahogany-red or purple lustre on scape and apices of antennomeres 3-4, antennomeres 5-11 rusty-brownish.

Thorax. Pronotum (Fig. 23) slightly shorter than wide, 3.20-2.60 mm long, 2.40-4.00 mm wide, somewhat variably coloured, mostly black with chatoyant diffusing or bright green lustre which is usually prevailing, and also with limited, rarely prevailing, chatoyant reddish-cupreous iridescence inconsistently either in middle or on lateral areas; anterior and posterior lobe of almost same width, but markedly narrower than disc, sulci well pronounced; surface of anterior lobe with few, coarse transverse rugae; disc subglobose with distinctly convex lateral margins of dorsally visible proepisterna and notopleural sutures, discal surface covered with extremely fine and shallow transversely parallel stria-like rugae along distinct median line, somewhat coarser on posteromedian half; rugae on sublateral areas much finer, very shallow and irregular, almost effaced, becoming more clearly marked, short and transverse towards notopleural sutures; sometimes nearly whole pronotal surface almost effaced; posterior lobe notably long with moderately raised dorsolateral bulges, its surface with several, coarse, mostly transverse or irregular rugae; lateral and ventral thoracic sterna smooth, metallic black with strong, chatoyant mahogany-reddish lustre changing to iridescent green or gold-bronze upon different light angle.

Elytra (Fig. 25) elongate, length 12.0-13.2 mm, with rounded to subquadrate humeri and subparallel lateral margins, outer margin with rather distinctly dilated and arched posthumeral area, then slightly narrowed towards arcuate anteapical angle, then obliquely attenuated towards distinctly acute apex with long sutural spine; dorsal elytral surface as in *Ox. vuillefroyi*; elytral coloration rather variable, mostly black-coppery with faint or very strong chatoyant green lustre on elytral disc, mahogany or purple-reddish hue on large lateral areas and apical areas, but sometimes the green coloration prevailing and with only mahogany-red patches on elytral disc; in lateral view several small but distinct tubercles on juxtaepipleural area running posteriad along humeri and also within posthumeral epipleural crease; whole elytral surface almost uniformly, rather densely and regularly punctate of a similar pattern as in *Ox. vuillefroyi*, but punctures somewhat finer, and variably effaced on narrow juxtasutural area, and with only several larger and irregular and occasionally anastomosing punctures or occasional foveae on elytral base and within humeral impressions; ivory-whitish elytral maculation consists of lateromedian macula which is falciform-prolonged anteromesad, dilated near epipleuron and projecting along the epipleuron in form of thin lateral stripe (at least partly visible in dorsal view) connecting subhumeral-humeral band which in dorsal view appears as if interrupted into humeral and subhumeral macula, but in lateral view as continuous band (Fig. 18), the thin lateral stripe is projecting also posteriad and sometimes nearly reaches elongate anteapical macula.

Legs basically as in *Ox. vuillefroyi*, but metacoxae densely punctate-setose throughout, tibiae mostly almost black and setae on femora much denser, long, uncinata and mutually interwoven; not only protarsomeres 1-4, but also mesotarsomeres 1-4 notably dilated.

Abdomen metallic black, lateral areas with strong, chatoyant mahogany-reddish lustre changing to iridescent green or gold-bronze upon different light angle; last ventrite reddish-



Figs. 17-22. *OxYGONIA moreti* Deuve. 17 - body, Ecuador, Balzapamba, ♀, 17.3 mm, HT (MNHN); 18 - elytron in lateral view, ♂, Ecuador, Mindo Garden (DBCN); 19 - body, ♂, 18.4 mm, Mindo (DBCN); 20 - head, ♂, Mindo (DBCN); 21-22 - labrum: 21 - ♂, Mindo Garden (DBCN); 22 - ♀, Balzapamba, HT (MNHN). Bars = 1 mm.

brown, the apical bilobed pleurite testaceous; surface of ventrites smooth and glabrous except for usual, a few hairlike sensory setae (easily abraded) at their posterior margins.

Aedeagus (Figs. 27-28) moderately voluminous in middle, 5.7-6.0 mm long, 1.15-1.25 mm wide, constricted into almost straight stem of apex in form of blunt, slightly elongated knob indistinctly bent ventrad; internal sac (Fig. 29) with short flagellum with rather narrow base and nearly straight stick-like ventral stiffening rib, other sclerites comprises central pieces of various mostly indefinite shape.

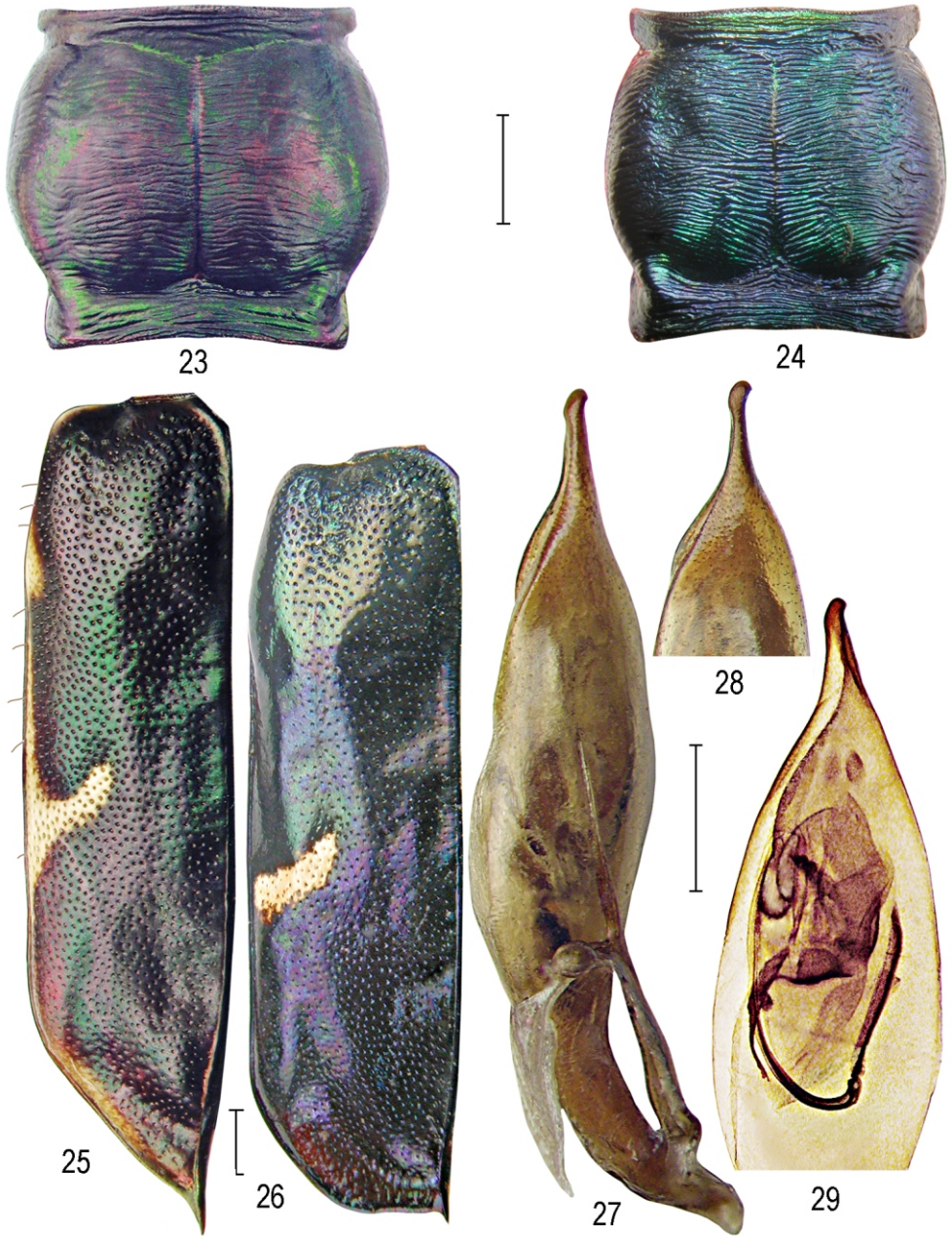
Variability as mentioned in the description above.

Female characters (holotype Fig. 17). *Ox. moreti* is distinctly sexually dimorphic, females differ in following diagnostic characters: elytral apex (Figs. 17, 26) with rounded outer margin and truncated in middle towards distinct sutural spine; elytra generally deeper coloured and with only one, isolated, simply anteromesad falciform-prolonged lateromedian macula, elytral punctuation effaced on rather wide juxtaepileural area, in middle extended mesad; dorsal surface of head and pronotum mostly black-blue or cyaneous blue-green (as in the holotype), pronotum with distinct dorsolateral bulges; metacoxae punctate-setose only on lateral area, discal area with few setae. Body (Fig. 17) length 16.0-17.8 (in holotype 17.3) mm, width 5.70-6.00 (in holotype 5.70) mm; head 3.60-3.75 mm wide; labrum (Fig. 22) 0.95-1.05 (in holotype 1.00) mm long, 2.15-2.27 (in holotype 2.25) mm wide; pronotum (Fig. 24) 2.95-3.02 (in holotype 2.97) mm long, 3.00 (in holotype 3.15) mm wide; elytron (Fig. 26) 11.0-11.8 (in holotype 11.5) mm long.

Differential diagnosis. The largest species of the genus. Males of *Ox. moreti* share the same shape of the lateromedian macula with males of *Ox. vuillefroyi* and *Ox. kondratieffi* - for the differences, as well as of the females, see in "Differential diagnosis" under *Ox. vuillefroyi* above.

Biology and distribution. *Ox. moreti* was confirmed from Ecuador and Colombia. The type locality Balzapamba (today spelled Balsapamba) is situated in the Ecuadorian canton of San Miguel of the Bolivar province (coordinates 1°46'S, 79°11'W). The type locality is the same as that of *Ox. oberthueri*. Besides the specimens listed here in "Other material examined", Kippenhan (1997) examined specimens from other localities. Pearson et al. (1995) described the places and behaviour of adults and also the occurrence in Colombia. Pearson et al. (1999b) listed a great number of localities from the Ecuadorian provinces of Carchi, Cotopaxi, Esmeraldas, and most of them from Pichincha. As discussed by Kippenhan (1997), the only record from Peru, listed by him as if from Cusco, is highly improbable. The species is nocturnal and shares the biology and adult behaviour with obviously sympatric but probably not syntopic *Ox. vuillefroyi* as treated above. According to D. Brzoska (pers. com.), *Ox. vuillefroyi* is found on the east (Amazon) side of the Andes, while *Ox. oberthueri* and *Ox. moreti* are found on the west (Pacific) side. According to Pearson et al. (1999b), *Ox. oberthueri* and *Ox. onorei* inhabit the same places as *Ox. moreti*.

Remarks. The male of *Ox. moreti* was described for the first time by Kippenhan (1997), thus the correct affiliation of the males to the syntopic females has confirmed the differences of this species from *Ox. vuillefroyi* and *Ox. kondratieffi*.



Figs. 23-29. *Oxygonia moreti* Deuve. 23-24 - pronotum: 23 - ♂, Mindo Garden (DBCN); 24 - ♀, Balzapamba, HT (MNHN); 25-26 - elytron: 25 - ♂, Mindo Garden (DBCN); 26 ♀, HT (MNHN); 27-28 - aedeagi, Mindo Garden (DBCN); 29 - ditto, internal sac. Bars = 1 mm.

Oxygonia kondratieffi Kippenhan, 1997 (Figs. 30-35)

Oxygonia kondratieffi Kippenhan, 1997: 316.

Type locality. Colombia: 60 km northwest of Cali.

Type material. Holotype (by monotypy) ♂ in SDEI, labelled: 60 km NW of / Cali, Colombia / 29 June, 1972" [handwritten] // "Holotype / *Oxygonia* / kondratieffi / M. Kippenhan" [red with thin black border, printed/handwritten/printed].

Other material examined. 1 ♂ in CDCL: "Colombia / Coronillo, Valle / IV.1995" // "Bleuzen leg". 1 ♂ in CDCL: "Ecuador, Esmeraldas / Cuchumbi 700-800 m // pk 63 via San / Lorenzo / 9.III.2016 J. Touroult leg" // "long. 90 52'28.61'', lat. 78°29'32.25''". In addition, according to photographs of habitus and characters: 1 ♂ in MUSENUV: "Colombia, Valle del Cauca, El Darién, La Cristalina, 980 m rocky terrain, 13.IV.1994. O. Grijalva leg".

Redescription, male holotype. Body (Fig. 30) 17,5 mm long, 5.60 mm wide.

Head (Fig. 34) massively oblong in contrast to exceptionally small eyes (unique character within the genus), markedly narrower than body, only 3.65 mm wide.

Frons as in *Ox. villefroyi*, but more coppery with faint greenish lustre, in middle fluently passing to vertex over blunt frons-vertex fold, and laterally delineated with indistinct edges above supraantennal plates.

Vertex surface as in *Ox. villefroyi*, with similarly arranged, only somewhat shallower stria-like rugae, which are sparser in middle; anteromedian impression deep and wide, U-shaped; whole vertex area metallic brownish-cupreous with faint chatoyant green lustre on anteromedian and occipital areas (changeable depending on illumination angle), occipital area in middle with parallel-transverse stria-like rugae, smoothed and ochre-brownish posteriorly.

Clypeus coppery with faint green and reddish lustre, finely irregularly wrinkled.

Genae brownish coppery, with chatoyant green and reddish lustre (changeable depending on light angles) nearly smooth, with a few faint subparallel wrinkles.

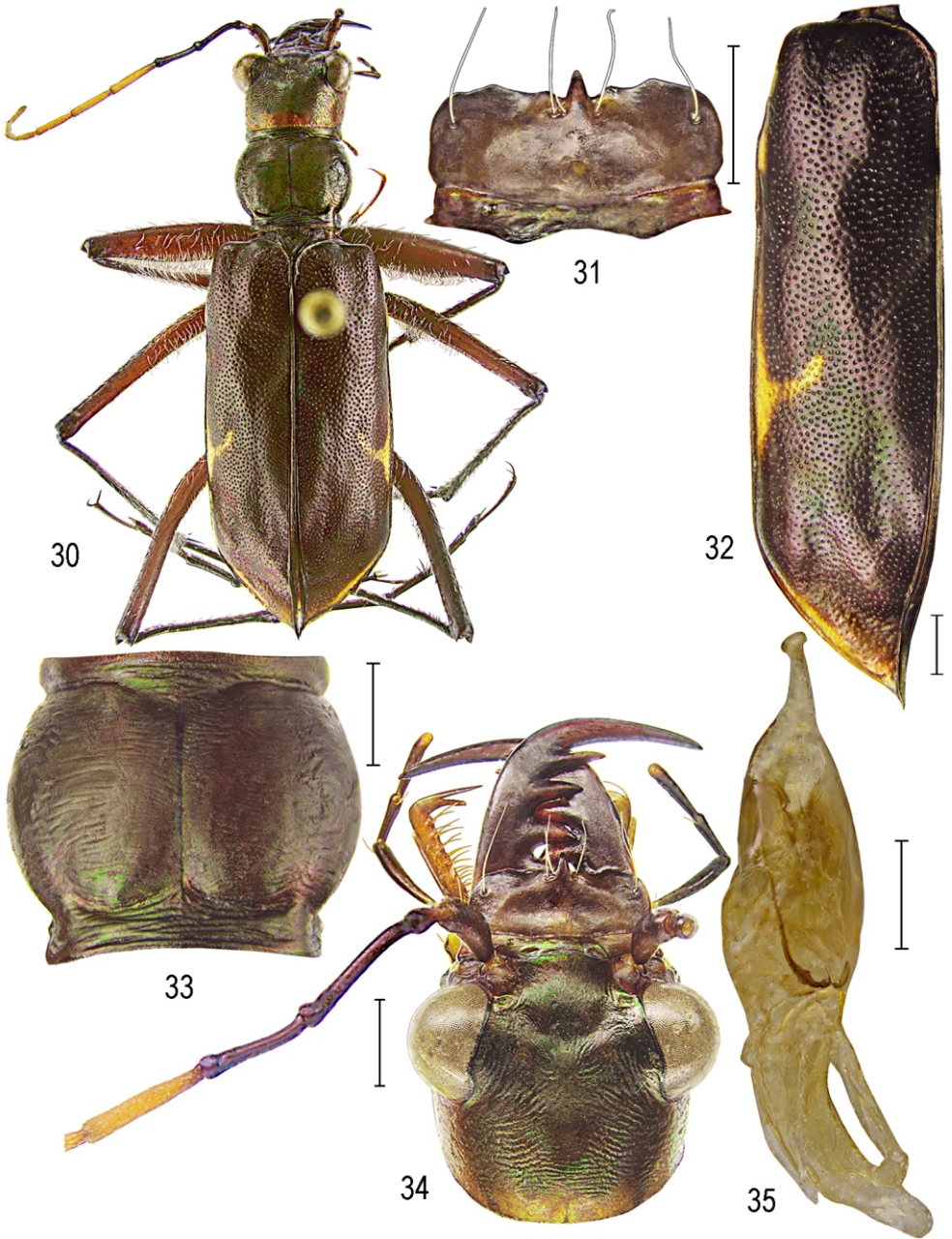
Labrum (Fig. 31) primarily with four setae, in the holotype with additional anteromedian seta, 1.00 mm long, 2.15 mm wide, brownish on wide median area, and blackened on median tooth and lateral areas; shape similar to that in *Ox. moreti*, transversely oblong, anterior margin sinuate and shallowly excised at both sides of anteriad protruding median tooth.

Mandibles (Fig. 34) black brown except for testaceous basolateral areas, each mandible with 6 teeth and basal molar, but as the mandibles of the holotype are firmly closed, the shape of inner teeth is not observable.

Palpi (Fig. 34) as in *Ox. moreti*.

Antennae (Figs. 30, 34) very short, slightly passing elytral quarter, antennomeres 1-4 black with mahogany-red lustre on scape and on antennomeres 3-4; antennomeres 5-11 conspicuously yellow-testaceous.

Thorax. Pronotum (Fig. 33) 3.00 mm long, 3.50 mm wide, basically shaped as in *O. moreti*, but posterior lobe somewhat shorter, and more distinctly narrower than anterior lobe which is separated from disc with sulcus deep in middle, giving together with the posterior sulcus a subcordiform shape to disc; coloration cupreous with chatoyant diffusing and partly brighter green lustre in middle, on lateral areas and particularly on posterior lobe; disc with distinctly convex lateral margins, its surface covered with extremely fine and shallow transversely parallel stria-like rugae which are almost effaced in middle, more marked on anterior area along distinct median line, while rugae on sublateral and lateral areas are deeper, sparse, almost transverse or irregular, posterior lobe markedly separated from disc with deep sulcus which is triangular in



Figs. 30-35. *Oxygonia kondratieffi* Kippenhan, ♂, Colombia, Cali, HT (MNHN). 30 - body, 17.5 mm; 31 - labrum; 32 - elytron; 33 - pronotum; 34 - head; 35 - aedeagus (damaged by previous treatment). Bars = 1 mm.

middle and arcuate laterally, its surface with moderately raised dorsolateral bulges and several coarse, transverse rugae which become short and curved in middle, parallel with the suture of the sulcus which separate the disc; proepisterna and metepisterna brownish-coppery with faint chatoyant reddish and green lustre, mesepisterna darker, prosternum, mesosternum and metasternum metallic black-coppery with faint, chatoyant purple reflections.

Elytra (Fig. 32) elongate, 11.8 mm long, with subquadrate humeri and subparallel lateral margins, outer margin with moderately dilated posthumeral area, then slightly narrowed and slightly dilated in middle then slightly narrowed towards rounded anteapical angle, and obliquely attenuated towards distinctly acute apex with long sutural spine; dorsal elytral surface shaped as in *Ox. moreti*; basic elytral coloration black-coppery on disc and lateral areas while large sublateral areas are brighter cupreous with inconsistent, faint, diffusing olivaceous-green reflections; whole elytral surface almost uniformly, rather densely and regularly punctate (pattern as in *Ox. moreti*); ivory yellow elytral maculation consists of lateromedian macula as in *Ox. moreti* falciform-prolonged anteromesad, dilated near epipleuron and projecting along epipleuron in form of thin lateral stripe (barely visible in dorsal view) connecting subhumeral ovaliform macula which is separated from small humeral macula that is invisible in dorsal view, the thin lateral stripe is only shortly projecting posteriad and distant from very narrow, elongate, yellowish anteapical lunule.

Legs basically as in *Ox. moreti*, setae on femora similarly numerous and very dense, long, uncinata and mutually interwoven.

Abdomen metallic black-coppery with faint, chatoyant purple reflections, surface of the ventrites smooth and glabrous except for usual, a few hairlike sensory setae (easily abraded) at their posterior margins.

Aedeagus (Fig. 35) basically similar to that in *Ox. moreti*, voluminous in middle, but its apex fundamentally differs, because the narrow stem is terminated with both ventrally and dorsally dilated knob; inner sack was damaged by the wrong previous treatment when stored in small tube with glycerine; nevertheless, it shows a spur-like shaped base of the short flagellum (Fig. 35), other sclerites are no longer recognizable.

Variability. The additionally examined male (CDCL) from San Lorenzo near Alto Tambo in the Ecuadorian province of Esmeralda differs from the holotype in having predominantly bright green body with purple elytral margins and absence of the elytral anteapical macula, while the other male (CDCL) labelled "Coronillo Valle" has purple-red elytra with the anteapical macula well delineated. These two males are 18.1-19.5 mm long, 5.20-6.0 mm wide; head 3.60-4.20 mm wide; pronotum 3.10-3.40 mm long, 3.30-4.00 mm wide; elytra 11.9-12.9 mm long; labrum 1.10-1.20 mm long, 2.10-2.30 mm wide, black in the green male, mahogany-brown in the purple male; their aedeagi are 5.70-6.30 mm long, 1.30-1.40 mm wide, the aedeagus apex of the same shape as in the holotype (Fig. 35).

Female characters unknown.

Differential diagnosis. *Ox. kondratieffi* clearly differs from both *Ox. villefroyi* and *Ox. moreti* in having its aedeagus apex forming both ventrally and dorsally dilated knob, and immediately by its oblong, but massive head in contrast to conspicuously small eyes (unique character within the genus); *Ox. kondratieffi* further differs from *Ox. moreti* in having the ivory-whitish lateral juxtaepipleural stripe thinner and connecting only indistinctly subhumeral macula which is separated from small, in dorsal view invisible humeral macula. *Ox. villefroyi* differs in

having the only clearly delineated lateromedian macula and extremely rarely very small anteapical macula present (in only three males and four females from 161 specimens in the DBCN collection - D. Brzoska pers. com).

Biology and distribution. Colombia and Ecuador. The type locality of *Ox. kondratieffi* lies 60 km north-west of Cali (Santiago de Cali), the capital of the department of Valle de Cauca in south-western Colombia. The recently caught male (CDCL) labelled "Coronillo Valle", also comes from the Valle de Cauca. According to the photographs sent by Anderson Arenas Clavijo (MUSENUV), in the Valle del Cauca this species also occurs in El Darién. The other male (CDCL) comes from San Lorenzo near Alto Tambo in the Ecuadorian province of Esmeralda on the west side of the Andes near the Colombian border.

Remarks. Despite the damaged internal sac by previous wrong treatment, the outer shape of the aedeagus is well preserved and corresponds with the drawing by Kippenhan (1997), and also the short flagellum remains obvious (Fig. 35) but the flagellum differs in shape from that in the drawing by Kippenhan (1997, fig. 48). The male (CDCL) from Alto Tambo has the same aedeagus apex as that of the holotype. The drawing of the habitus by Kippenhan (1997, fig. 9, in the captions wrongly numbered as fig. 10) does not show the subhumeral macula which, despite its small size, is visible in the dorsal view as a thin, short, longitudinal yellowish stripe (Figs. 30, 32 here).

***Oxygonia oberthueri* W. Horn, 1896** (Figs. 36-56)

Oxygonia Oberthür W. Horn, 1896: 340.

Oxygonia oberthueri: Kippenhan 1997: 322 (valid emendation of the species-name).

Type locality. Ecuador: Balzapamba [Balsapamba], de Bolivar Province.

Type material. Lectotype (designated by Kippenhan 1997) ♂ in SDEI, labelled: "Balzapamba / "Prov. de Bolivar / M. de Mathan III.IV.1894" [tarnished, with thin black border, printed] // "Type ! / Coll. W. Horn" [printed] // "Syntypus [red, printed] // "Coll. W. Horn / DEI Eberswalde" [printed] // "Oberthür / mihi" [large, greenish with black frame, subsequently attached collection label] // "Lectotype / *Oxygonia / Oberthür* W. Horn / by M. Kippenhan" [red with thin black border, printed/handwritten/printed]. Paralectotypes. 1 ♂, 1 ♀ in SDEI with same labels except for "Paralectotype" on the red label by Kippenhan (one of the males lacking the second label). 1 ♀ in SDEI with same locality label and: "Revision Jiří Moravec 2017: "Paralectotype / *Oxygonia / oberthueri* W. Horn, 1896" [red, printed]. 32 ♂♂, 18 ♀♀ in MNHN (standing along large printed label "Revision Jiří Moravec 2015: / the specimens of *Ox. oberthueri* coming / from Oberthür Coll. should be / paralectotypes" with same locality label as the lectotype and: "Muséum Paris / 1952 / Coll. R. Oberthür" [printed]. 1 ♂, 1 ♀ in MNHN [Coll. Fleutiaux] with same locality label (the male with: "*Oxygonia / Oberthür* / mihi / Type!"). All these syntypes in MNHN labelled: "Revision Jiří Moravec 2017: "Paralectotype / *Oxygonia / oberthueri* W. Horn, 1896" [red, printed].

Other material examined. Historical data. 8 ♂♂, 1 ♀ in MNHN, 1 ♂ in NHMW: "Balzapamba / "Prov. de Bolivar / M. de Mathan III.IV.1894" // "Muséum Paris / Ex Coll. M. Maindron / Coll. G. Babault". 6 ♂♂ in MFNB with same locality label [one of them: "Col. H.C. Vogel", one other with: "82495"). 1 ♂ in MNHN: with same locality label and: "*Oxygonia / oberthür* / Horn, Venezuela [sic]". 1 ♂ in SDEI with same locality label and: "*Oxygonia oberthür* Horn" // "Coll. Kratz" // "Coll. W. Horn / DEI Eberswalde". 3 ♂♂, 1 ♀ in BMNH with same locality label. 1 ♂ in SDEI: "Balzapamba / Bolivie / Coll. Baden Rugen". 1 ♂ in MNHN: "Muséum Paris / Venezuela [sic] / Bolivar / Donquier 1898". 1 ♂ in MNHN: "Equateur / Balzapamba / Route de Quito" // Prov. de Bolivar / 7bre 8bre 1883 / M. de Mathan" // "Muséum Paris, 1952, Coll. R. Oberthür". 1 ♂ in MNHN: "Ecuador / Barou" // "Ex Musaeo / W. Rothschild / 1898" // "Muséum Paris, 1952, Coll. R. Oberthür" // "*Oxygonia / Oberthür* / m. / Determinaevit / Dr. W. Horn". 1 ♂ in MFNB: "Ecuador" // "63284". Recent data. 4 ♂♂ 1 ♀ in DBCN: "Ecuador - Pichincha / Mindo Garden - Mindo Rd / 00°04.04'S; 78°45.2'W / D. Brzoska 28-III-1999". 1 ♂ in DBCN: "Ecuador - Pichincha / Mindo R / near Mindo Garden / D. Brzoska 23-III-1996". 1 ♀ in DBCN: "Ecuador - Pichincha / Old S. Domingo Rd. 6.5 km / N-S Domingo Rd. 1100 m / D. Brzoska 22-V-1995". 1 ♂ in AKJC, 1 ♂,

1 ♀ in CCJM: "Ecuador, Pacto, 1000-1400 m, 50 km NW of Quito, 25. II-3.III.2002, A. Kudrna Jnr. lgt." 1 ♀ in CCJM: "Ecuador Cotopaxi / Las Pampas – Otonga / 1700 m 20.II.1997 / Elicio Tapia leg.". In addition, according to photographs of habitus and characters: 1 ♂ in MUSENUV: "Colombia-Risaralda / Pueblo Rico / Park Natural Municipal Río Negro / 1586 m / 12.IX.2015 J. Ramirez leg". 1 ♂ in MUSENUV: "Colombia-Nariño, Barbaocoas, Reserva Natural Río Nambi 1350 m / 15-16.X.2013 M.C. Zuñiga leg".

Redescription, male. Body (lectotype Fig. 36) of very variable size, 11.4-14.5 (lectotype 13.8) mm long, 3.8-4.30 (lectotype 4.10) mm wide.

Head (Fig. 38-39) normally shaped with large eyes but narrower than body, 2.80-3.30 mm wide.

Frons moderately convex, steeply sloped towards clearly separated clypeus, passing into vertex over blunt but distinct frons-vertex fold; dully black, sometimes with indistinct, diffusing green lustre, smooth except for few indistinct wrinkles adjacent to distinctly marked, metallic-black or black-green supraantennal plates.

Vertex anteriorly merging with frons in middle, almost flat with juxtaorbital areas moderately sloped and wide, shallow, sometimes indistinct widely V-shaped anteromedian impression of which the lateral parts together with apices of supraantennal plates separate vertex from frons laterally, smoky-black, sometimes with faint, diffusing green lustre; surface almost smooth except for very finely striae along the anteromedian impression converging in middle, and more distinct parallel striae on juxtaorbital areas, posteromedian area and occiput in middle almost smooth, lateral areas with fine stria-like rugae, passing onto temples.

Genae black-green, or olivaceous-green, or with strong green lustre, almost smooth with shallow, parallel striae in middle and irregularly wrinkled posteriorly.

Clypeus black with cupreous and green hue, with usual, thorn-like appendages.

Labrum (Figs. 47-48) with four setae, rather variably shaped, more or less transverse, 0.50-0.70 mm long, 1.40-1.70 mm wide, with rounded basolateral margins and a sinuous anterior margin which asymmetrically indicates teeth, or only arcuate raised and deeply notched at both sides of variably long median tooth which is either buried in the notches, its apex variably in the same level as the anterior margin, or longer and indistinctly or distinctly protruding; labral surface ochre testaceous with black basomedian area including central impression, margins and median tooth.

Mandibles (Figs. 38-39) black or black-brown with ochre-testaceous basal areas and basolateral stripe, subsymmetrical, comparatively slim and rather long, lateral margins regularly arcuate, each mandible with 6 teeth and basal molar, inner teeth comparatively long.

Palpi (Figs. 38-39) as in *Ox. moreti*. Antennae rather long, reaching elytral half; scape dilated in apical half, with only apical seta; black, antennomeres 2-4 black, glabrous except for very indistinct seta at apices; antennomeres 5-11 brownish or black-brown or gradually smoky-blackened, 5-7 rather wide, 8-11 gradually narrower.

Thorax. Pronotum (Figs. 40-41) as long as wide or mostly slightly shorter than wide, rarely slightly longer, 2.30-2.80 mm long, 2.15-2.90 mm wide; sulci well pronounced; anterior lobe slightly wider but shorter than posterior lobe or of almost same width, but much narrower than disc, blackish with faint diffusing green lustre; surface of anterior lobe with distinct, transverse rugae; disc somewhat variably shaped with distinctly convex lateral margins of dorsally visible proepisterna which are usually mutually slightly subparallel in middle, or moderately dilated posteriad (as in lectotype), dorsally well obvious notopleural sutures less convex, mutually parallel or slightly narrowed in middle; median area smoky black or black-coppery with faint, diffusing greenish lustre, lateral areas usually pale mahogany or orange-reddish or ochre-testaceous; discal surface very finely and shallowly striate-rugulose, usually with continuous, parallel and

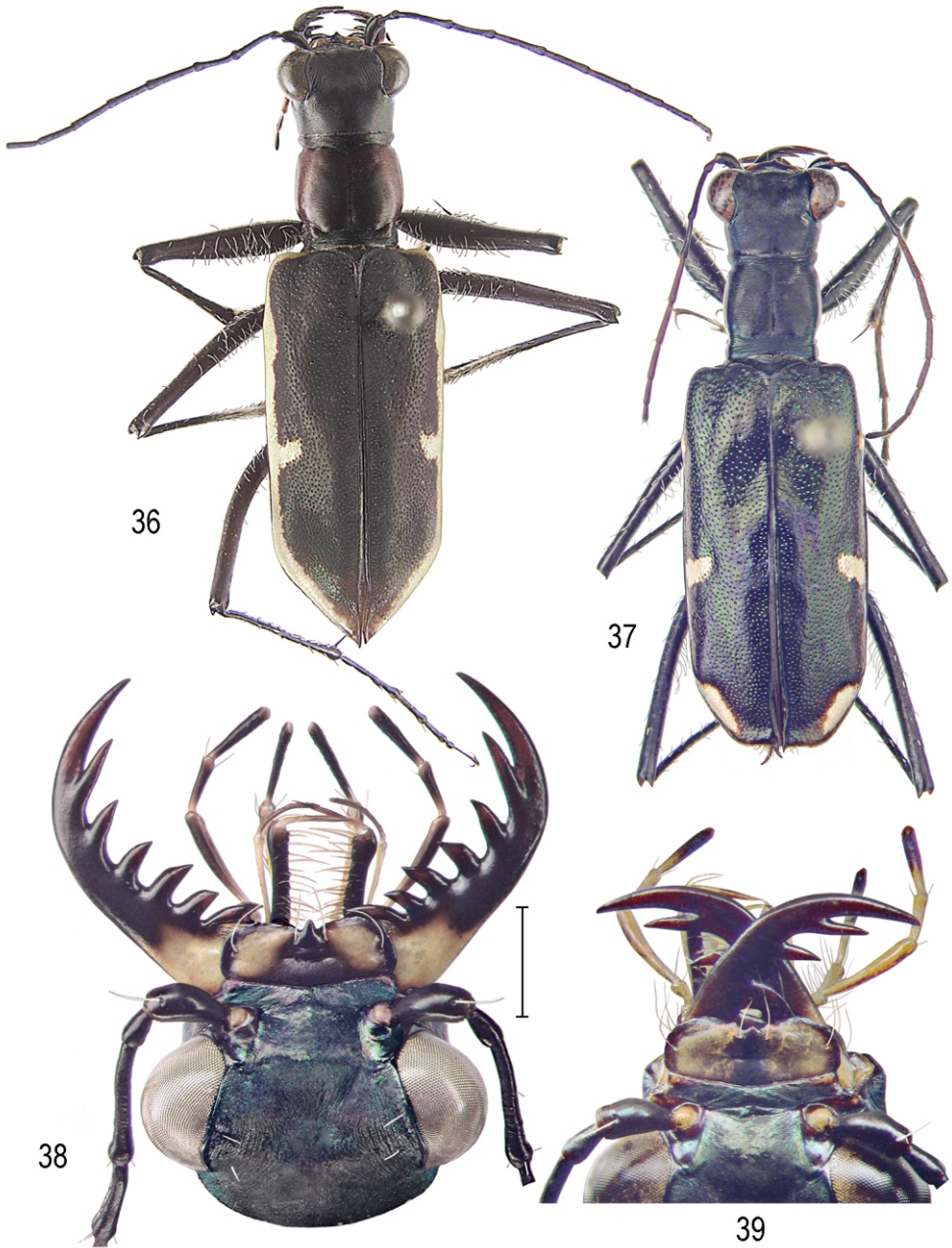
almost transverse stria-like rugae along distinct median line, sometimes so only on posterior discal half, while the rugae on anteromedian area are almost effaced, and on sublateral and lateral areas nearly or entirely effaced, sometimes also whole median area almost smooth; posterior lobe notably long, its surface with moderately raised dorsolateral bulges and covered with coarse, transverse, continuous or irregular rugae; prosternum, mesosternum, metepisterna and metasternum smooth, yellow-ochre to ochre-testaceous, mesepisterna and proepisterna often reddish-testaceous (the coloration passing on proepisterna from the dorsolateral areas of the pronotum).

Elytra (Figs. 43-44) elongate, length 8.00-9.40 mm, with rounded humeri and subparallel or mostly parallel lateral margins, then obliquely attenuated, forming acute apex with distinct sutural spine (apex much more acute than in males of *Ox. carissima*); dorsal elytral surface as in *Ox. carissima* but coloration generally somewhat duller, moderately convex, with distinct humeral impressions and deep discal impression clearly delineating distinct basodiscal convexity, additional small but usually distinct impression on elytral disc just behind the larger impression, and very shallow impression on the area mesad of yellow lateromedian protrusion of the whitish lateral band; anteapical-apical impression rather deep; elytral coloration on elytral base and whole sublateral area along the discal impression and behind elytral half variably black-coppery or lighter coppery, usually with faint, chatoyant but diffusing green lustre and more indistinct mahogany reflections, markedly changeable depending on light angle, sometimes changing to almost entirely green; whole elytral surface almost uniformly, finely and rather densely and regularly punctate as in *Ox. carissima*, but the punctures are notably finer and dull, never distinctly green-reflecting light, larger and occasionally anastomosing punctures on elytral base, within humeral impressions and along discal impression, while on posterior elytral half the punctures are densest (the punctures on the posterior area may appear as rasp-like upon different angle of illumination, but in fact are regular); very rarely three or five indistinct, foveae running from elytral base along the middle of elytral disc; elytral maculation ivory white, rarely yellow, as in *Ox. carissima* consisting of continuous lateral band which is narrower along humerus and becoming wider when running along the outer elytral margin, forming rounded lateromedian protrusion and mostly even more dilated along anteapical-apical angle, nearly reaching sutural spine.

Legs. Coxae ochre-testaceous, discal area of pro- and mesocoxae densely covered with white, decumbent setae; metacoxae densely punctate-setose on their anterolateral area while their discal area with only cluster of several erect setae; trochanters ochre-testaceous; all leg segments black, femora whitish setose, setae, rather sparse, densest and occasionally uncinately interwoven on ventral area of femoral basal half, much sparser on dorsal area and very sparse on femoral apical half; tibiae with much sparser, shorter and stiffer, semierect white setae; pro- and mesotibiae with usual dense pad of greyish-white setae on their apical half; first three protarsomeres distinctly subclavate-dilated, protarsomere 1 (in lateral view) with sinuous margin and short basodorsal projection with mostly blunt apex, tarsomere 4 much shorter and with two pairs of notably long apical setae; tarsomere 5 thin and conspicuously elongate; claws dark reddish-brown.

Abdomen yellow-ochre to ochre-testaceous, rarely with mahogany lustre on lateral areas of first two visible ventrites; surface of the ventrites smooth and glabrous except for usual, easily abraded few hairlike sensory setae at their posterior margins.

Aedeagus (Figs. 50-56) shaped as in preceding species but dorsally emarginated in middle, and constricted into dorsally directed, narrowly cylindrical stem terminated by a helmet-like knob; internal sac (Figs. 55-56) containing short flagellum with widely arcuate bent base and



Figs. 36-39. *Oxygonia oberthueri* W. Horn. 36-37 - body: 36 - ♂, 13.8 mm, Ecuador, Balzapamba, IT (SDEI); 37 - ♀, 12 mm, Balzapamba, PLT (MNHN); 38-39 - head: 38 - ♂, Mindo Garden (DBCN); 39 - ♂, Balzapamba, PLT (SDEI). Bars = 1 mm.

longitudinal-elongate, slightly sinuous stick-like ventral stiffening rib and thin, oblique-elongate central sclerite connected with wider upper-dorsal piece; other pieces feebly sclerotized. The aedeagus of the lectotype stored in a small tube with glycerine is not illustrated here because of its bad shape caused by the previous treatment.

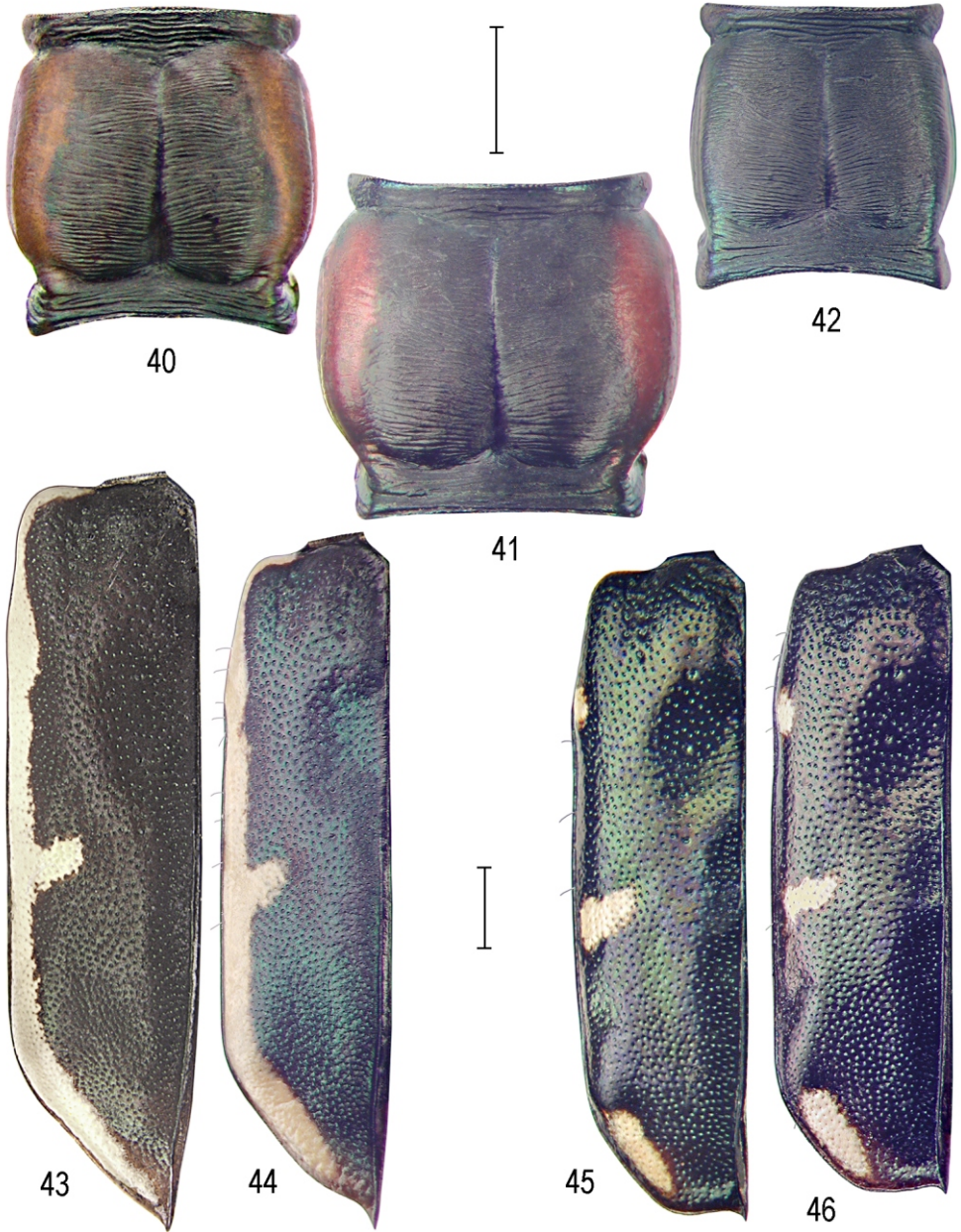
Variability. Besides the variability directly stressed in the redescription above, particularly the pronotal shape in males (Figs. 40-41), also the aedeagus apex somewhat varies in size, but it is always double-faced, helmet-like shaped (Figs. 50-56). Interestingly, length and width of individual body portions mutually vary, independent of the overall body size.

Female characters. *Ox. oberthueri* is distinctly sexually dimorphic, females immediately differ from males in having three distinct, isolated elytral maculae, sometimes also with indistinct humeral macula invisible from above (instead of the continuous lateral band in male), and the elytral apex (Figs. 45-46) has outer margin truncated in middle towards sutural spine; dorsal coloration generally deeper and sometimes almost shiny; pronotum black and notably narrower; elytral punctation throughout, rather dense; labrum black, but in one examined female bicoloured as in males, and its legs with subapical third of femora brownish-testaceous, while in others the legs are entirely black as in males; ventral and lateral thoracic sterna metallic-black except for deep mahogany-red tinge on proepisterna; abdomen metallic-black-brown except for testaceous last ventrite. Body (Fig. 37) 12.4-13.1 mm long, 4.0-4.2 mm wide; head 3.00-3.10 mm wide; labrum (Fig. 49) 0.50-0.55 mm long, 1.50-1.55 mm wide; pronotum (Fig. 42) 2.30-2.40 mm long, 2.20-2.30 mm wide; elytra (Figs. 45-46) 8.00-8.40 mm long.

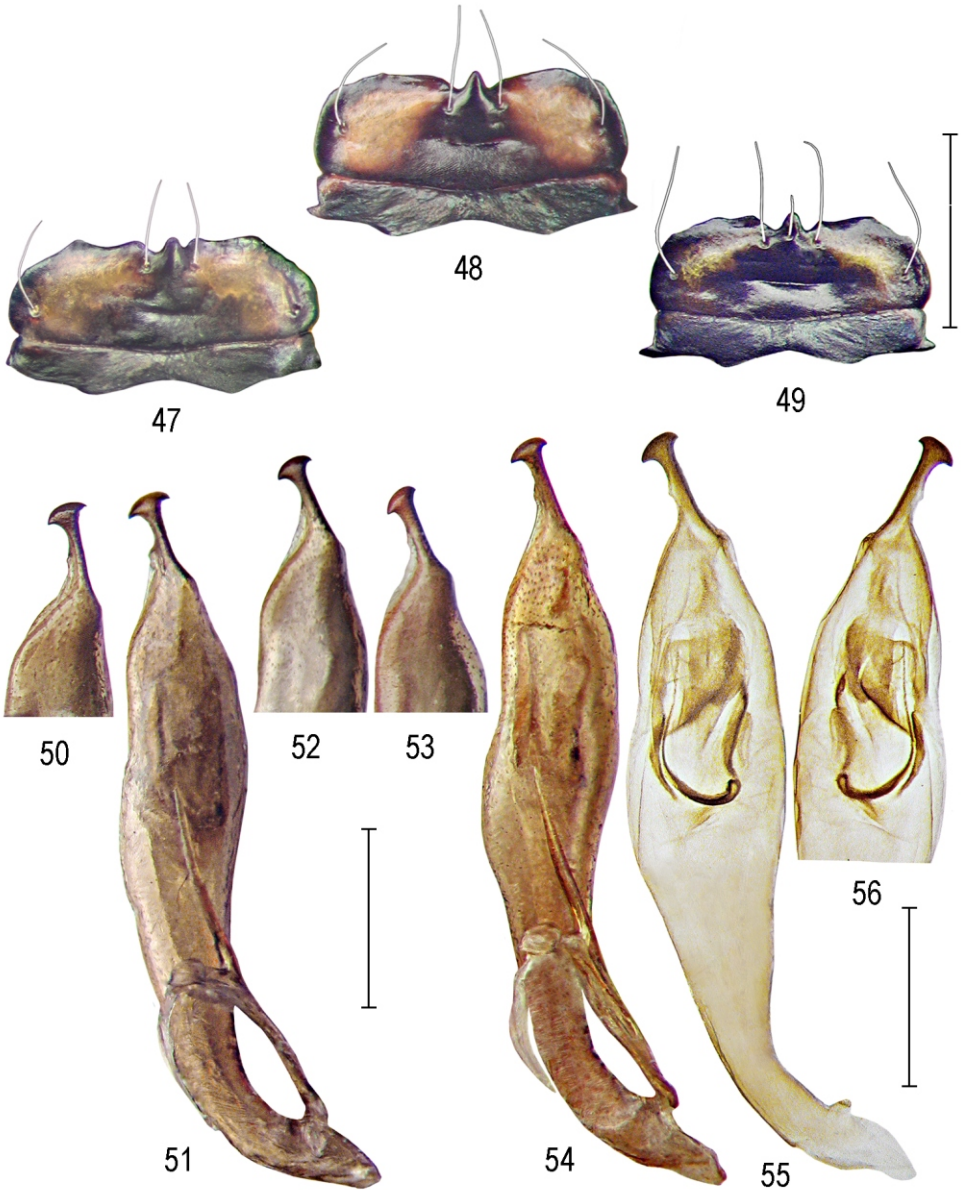
Differential diagnosis. Because of the continuous yellowish elytral lateral band, males of *Ox. oberthueri* externally resemble those of *Ox. carissima* Bates, 1872 of which the holotype and the holotype of *Ox. annulipes* Bates, 1871 were redescribed thoroughly by Moravec (2015) with new synonymy of the latter with *Ox. carissima*. Males of *Ox. carissima* are distinguished by brighter coloration of the elytral surface, and clearly by the seven teeth (plus basal molar) in each mandible, which is unique character within the genus, and by the very different shape of the aedeagus (for the first time correctly described and illustrated by Moravec (2015)). The basodorsal bulged projection on the first male protarsomere in *Ox. oberthueri* is shared only with that in male of *Ox. kippenhani* Schüle, 2008, which, however, has the projection more acute and particularly differs from *Ox. oberthueri* by its testaceous antennal scape. Females of *Ox. carissima* can be immediately distinguished from females of *Ox. oberthueri* by only two dorsally visible whitish elytral maculae, and females of *Ox. schoenherrii* Mannerheim, 1837, and *Ox. albitaenia* Bates, 1871 by more spaced elytral punctures, less reliably also by the deeper, oval-shaped impression on the vertex.

Biology and distribution. Ecuador and Colombia. The occurrence in Colombia was confirmed from the photographs kindly sent to me by Anderson Arenas Clavijo (MUSENUV) from the Colombian departments of Risaralda and Nariño, cited in the "Other material examined" above, and from the latter locality it was reported by Vítolo (2004). The occurrence in Venezuela (one probably mislabelled specimen in MNHN) is doubtful.

The type locality Balzapamba (today spelled Balsapamba) in Ecuador is the same as that of *Ox. moreti* (see under that species above). Besides the specimens listed in "Other material" examined above, Kippenhan (1997) examined and listed specimens from other localities, more completely listed by Pearson et al. (1999b) from the Ecuadorian provinces of Azuay, Bolívar, Cañar,



Figs. 40-46. *Oxygonia oberthueri* W. Horn. 40-42 - pronotum: 40 - ♂, Balzapamba, LT (SDEI); 41 - ♂, Ecuador, Puerto Inca (DBCN); 42 - ♀, Balzapamba, PLT (MNHN); 43-46 - elytron: 43 - ♂, LT (SDEI); 44 - ♂, Puerto Inca (DBCN); 45 - ♀, Balzapamba, PLT (MNHN); 46 - ♀, ibid., PLT (SDEI).



Figs. 47-56. *Oxygonia oberthueri* W. Horn. 47-49 - labrum: 47 - ♂, Balzapamba, LT (SDEI); 48 - ♂, Mindo Garden (DBCN); 49 - ♀, Balzapamba, PLT (MNHN); 50-56 - aedeagi: 50 - Balzapamba, PLT (MNHN); 51-52 - Mindo Garden (DBCN); 53-54 - Puerto Inca (DBCN); 55-56 - ditto, internal sac in left and right lateral view. Bars = 1 mm.

Cotopaxi, El Oro, Esmeraldas and Pichincha. These authors mentioned diurnal activity of adults, but they also are nocturnal (D. Brzoska, pers. com.). Erwin & Pearson (2008) mentioned that this species is primarily diurnal, occasionally nocturnal, attracted to UV-lights at dusk. It is obviously not only sympatric, but also syntopic with *Ox. moreti*. According to Pearson et al. (1999b), these two species inhabit the same places as also previously mentioned by Pearson et al. (1995), including a syntopic occurrence with several species of the tiger beetle genus *Oxycheila* Dejean, 1825.

Remarks. In the original description of *Oxygonia oberthueri*, Horn (1896) mentioned only symbols of male and female, but not a number of syntypes, but he wrote: "*A celeberrimo Oberthür mihi datum, cuius in collectione haec bestia frequentissima est*". It means many specimens in Oberthür collection (now MNHN) and Horn either had seen them personally, or was aware of them and described this species very probably in agreement with Oberthür who gave him only samples. Apart from the lectotype designated by Kippenhan (1997) and two others labelled by him as paralectotypes, other syntypes bearing the same locality labels were found in the Horn collection in SDEI labelled by me as paralectotypes. The numerous specimens in MNHN labelled with the absolutely same printed labels as the lectotype and bearing also the label: "Muséum Paris / 1952 / Coll. R. Oberthür" attached to the specimens after the collection of Oberthür was bought by the Paris Museum and in 1952 became part of the MNHN collection, are obviously syntypes. This is also confirmed by the fact that one of two other specimens in MNHN but in the separate Collection of Fleutiaux, with the same locality label, bears the label by Horn: "*Oxygonia / Oberthüri / mihi / Type!*". In this respect, and regarding the Horn's Latin sentence in the original description, I have considered and labelled all such specimens in SDEI and MNHN as paralectotypes.

***Oxygonia kippenhani* Schüle, 2008** (Figs. 57-65)

Oxygonia kippenhani Schüle, 2008: 39, figs 1-6.

Type locality. "Colombia: Muzo, 1500 m, department and province of Boyacá.

Type material. Holotype ♂ in SDEI, labelled: "Colombia, Muzo, / 1500 m / 4.2002" [printed] // "Holotypus / *Oxygonia kippenhani* / P. Schüle det. 2007" [red, printed]. Paratype. 1 ♂ in CPSH with same label data except for: "Paratypus / *Oxygonia kippenhani* / P. Schüle det. 2007" [red, printed].

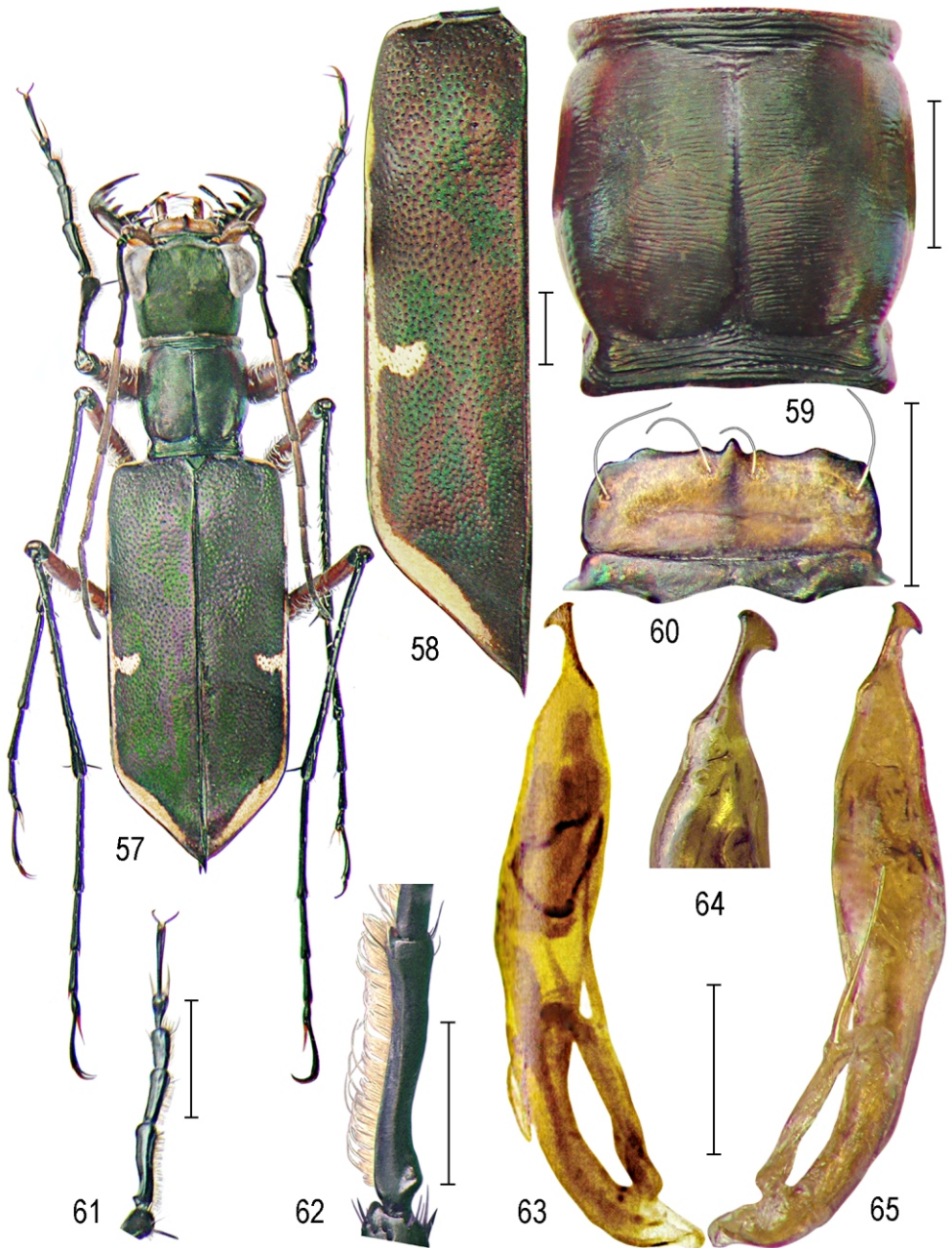
Redescription, male (holotype Fig. 57). As most of the diagnostic characters of *Oxygonia kippenhani* are virtually identical with those mentioned in the "Differential diagnosis" for *Ox. oberthueri* above, only the measurements and distinguishing characters follow.

Body (Fig 57.) holotype 14.1 mm long, 4.00 mm wide; paratype 14.5 mm long, 4.10 mm wide. Head 3.10 mm wide. Labrum (Fig. 60) 0.65-0.75 long, 1.65-1.70 mm wide. Antennae (Fig. 57). Scape ochre-testaceous, other antennomeres as in *Ox. oberthueri*.

Pronotum (Fig. 59) 2.65-2.70 mm long, 2.50-2.70 mm wide. Elytra (Fig. 58) 9.20-9.50 mm long.

Legs. First protarsomere (Figs. 61-62) with the dorsolateral projection slightly more bulged and more acute than in *Ox. oberthueri*.

Aedeagus (Figs. 63-65) 4.90-5.20 mm long, 0.70-0.80 mm wide; because the aedeagus of the holotype stored in glycerine (Fig. 65 in its right lateral view) is no longer with well



Figs. 57-65. *Oxygonia kippenhani* Schüle, ♂, Colombia: Muzo. 57 - body, HT (SDEI); 58 - elytron, HT; 59 - pronotum, HT (SDEI); 60 - labrum HT (SDEI); 61 - protarsomere, ♂, HT (SDEI); 62 - first protarsomere PT (CPSH); 63-65 - aedeagi: 63 - HT (adopted from Schüle 2008); 64 - PLT (CPSH); 65 - HT, right lateral view (SDEI). Bars = 1 mm.

recognizable internal sac, its left lateral aspect (Fig. 63) was adopted from Schüle (2008, fig. 5); its shape and internal sac well corresponds with those of *Ox. oberthueri*.

Female characters unknown.

Differential diagnosis. see under *Ox. oberthueri* above.

Biology and distribution. Known only from the type locality near the town of Muzo in the Colombian Department of Boyacá, located at the foothills of the eastern part of the Andean Mountains, 100 km north-northwest of Bogotá.

Remarks. As *Ox. kippenhani* is known only from the two type specimens, and as the testaceous scape was not found in all of the examined specimens of *Ox. oberthueri*, the species status of this taxon is here maintained.

***Oxygonia nigricans* W. Horn, 1926** (Figs. 66-82)

Oxygonia nigricans W. Horn, 1926: 189.

Type locality. Colombia: Gorgona Island, near the shore ("prope oram").

Type material. Lectotype (designated by Kippenhan 1997) ♂ in SDEI, labelled: "Colombia: / Gorgona Island / On rocks in stream / July 1924 / St. George Expedn. / C.L. Collenette" [printed/handwritten/printed] // "Brit. Mus / 1924-488" [printed] // "Type! / Coll. W. Horn" [printed] // "Syntypus" [red, printed] // "Coll. W. Horn / DEI Eberswalde" [printed] // "nigricans / mihi" [large, greenish collection label subsequently attached to the specimen] // "Lectotype / *Oxygonia / nigricans* W. Horn / by M. Kippenhan 1994" [red, printed/handwritten / printed"]. Paralectotypes. 1 ♂, 1 ♀ in BMNH with same label data.

Other material examined. 5 ♂♂ 2 ♀♀ in DBCN: "Panama: Darien, 500m / P. N. Darien-Cana, Rio Cana / 07°45.3'N; 77°40.1'W / D. Brzoska 16-VI-2004".

Redescription, male. Body (lectotype Fig. 66) of very variable size, 11.6-15.0 (lectotype 12.00) mm long, 3.70-4.50 (lectotype 3.70) mm wide (males from Panama are generally larger, 13.3-15.00 mm long, 4.00-4.50 mm long), almost uniformly dully black with only inconsistent and indistinct olivaceous-green and coppery shades.

Head (Fig. 68) with notably bulged eyes, but narrower than body, 3.10-3.50 mm wide.

Frons and vertex as in *Ox. oberthueri* smoky black and with the same very faint surface sculpture, only juxtaorbital areas somewhat more distinctly sloped.

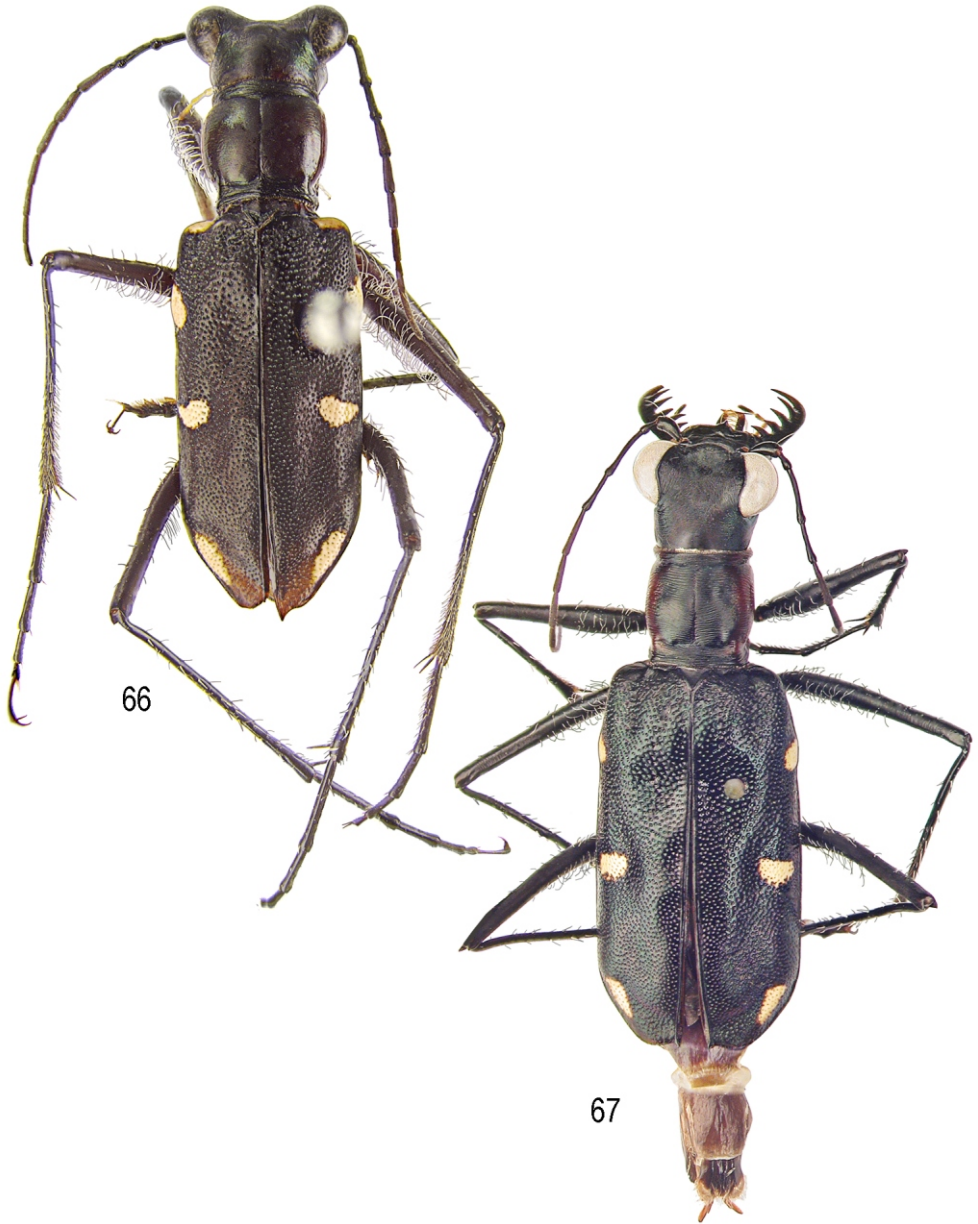
Clypeus almost black with several irregular wrinkles and usual, thorn-like appendages.

Genae as in *Ox. oberthueri*.

Labrum (Figs. 78-79) 0.80-0.85 (lectotype 0.70) mm long, 1.70-1.75 (lectotype 1.70) mm wide, with same variability in shape and coloration as in *Ox. oberthueri*, the median tooth mostly somewhat longer. Mandibles (Figs. 68, 69) black or with brownish teeth, subsymmetrical, comparatively robust, each mandible with 6 teeth and basal molar, inner teeth comparatively long, those in right mandible robust, while in left mandible third to five teeth notably wider than second and third, but the size may vary.

Palpi (Figs. 68, 70) shaped as in preceding species, both maxillary and labial palpi ochre-testaceous, apical two thirds of terminal palpomeres black.

Antennae (Figs. 66, 68) rather short, barely reaching elytral third, antennomeres 1-4 metallic black, 5-11 smoky black.



Figs. 66-67. *Oxygonia nigricans* W. Horn, body: 66 - ♂, 12 mm, Colombia, Gorgona Island, IT (SDEI); 67 - ♀, 12.5 mm, Panama, Darien, Rio Cana (DBCN).

Thorax. Pronotum (Figs. 71,73) as long as wide or very slightly longer than wide, 2.40-2.95 (lectotype 2.50) mm long, 2.40-2.90 (lectotype 2.45) mm wide, shape, coloration and transverse rugae of anterior and posterior lobe as in *Ox. oberthueri*, as well as the slight variability in shape of discal margins; disc rather variably coloured, median area smoky black (in lectotype faded to faint coppery shade) lateral areas sometimes dark or more vividly mahogany-reddish (in lectotype only indistinctly), the coloration passing from proepisterna; discal surface very finely and shallowly striate-rugulose, parallel and almost transverse stria-like rugae converge towards rather distinct median line, (in lectotype very fine and almost effaced on median area); rugae on sublateral and lateral areas become irregularly spaced and usually coarser and deeper and mostly transverse on lateral areas towards notopleural sutures; posterior lobe transverse and rather long, separated from disc by rather deep sulcus which slightly or more distinctly converges with the median line of the disc; surface of posterior lobe with more intense but inconsistent green lustre, covered with coarse and finer, transverse, continuous or irregular rugae; dorsolateral bulges moderately raised; proepisterna, and all other lateral and ventral thoracic sterna mahogany-reddish or reddish-testaceous (the same coloration as on the dorsolateral areas of the pronotum), rarely with faint greenish reflections, smooth.

Elytra (Figs. 74-76) 7.70-9.80 mm long (length of the right elytron of the lectotype 7.80 mm, left elytron (Fig. 74) has broken apex), almost uniformly dull black with only inconsistent and indistinct, diffusing olivaceous-green and coppery shades, elongate, with rounded humeri and almost parallel lateral margins except for distinct arcuate subhumeral dilation bordering the large ovaliform subhumeral macula; anteapical angles arcuate, then obliquely running towards almost acute apex which is, however, moderately emarginated towards short but distinct sutural spine; surface rather densely punctate throughout as in *Ox. oberthueri*; whitish elytral maculation consists of four, distinct maculae: humeral macula wide, clearly visible from above (as in lectotype Figs. 66, 74), or only as a narrower stripe; subhumeral macula ovaliform; sublateral-median macula usually transverse but short, dilated mesad and rounded; anteapical macula elongate and comparatively wide.

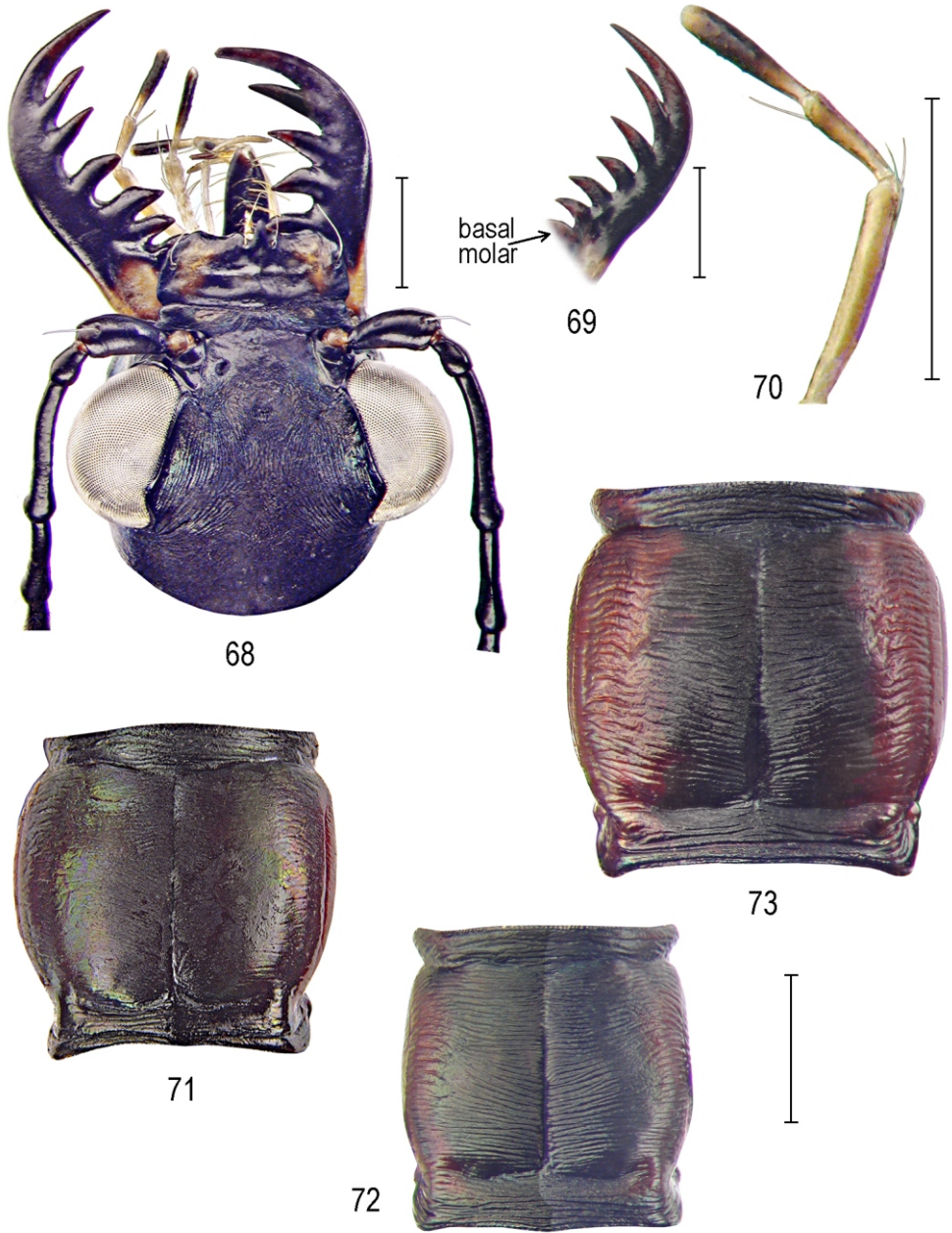
Legs black, setal vestiture as in *Ox. moreti* with dense, uncinata and interwoven setae on femora, but denser on mesofemora than on profemora.

Abdomen metallic black with faint greenish lustre on the first visible ventrite (the metallic coloration contrasting with the reddish-testaceous coloration of the thoracic sterna), surface of ventrites smooth and glabrous except for the usual, sparse hairlike sensory setae at their margins.

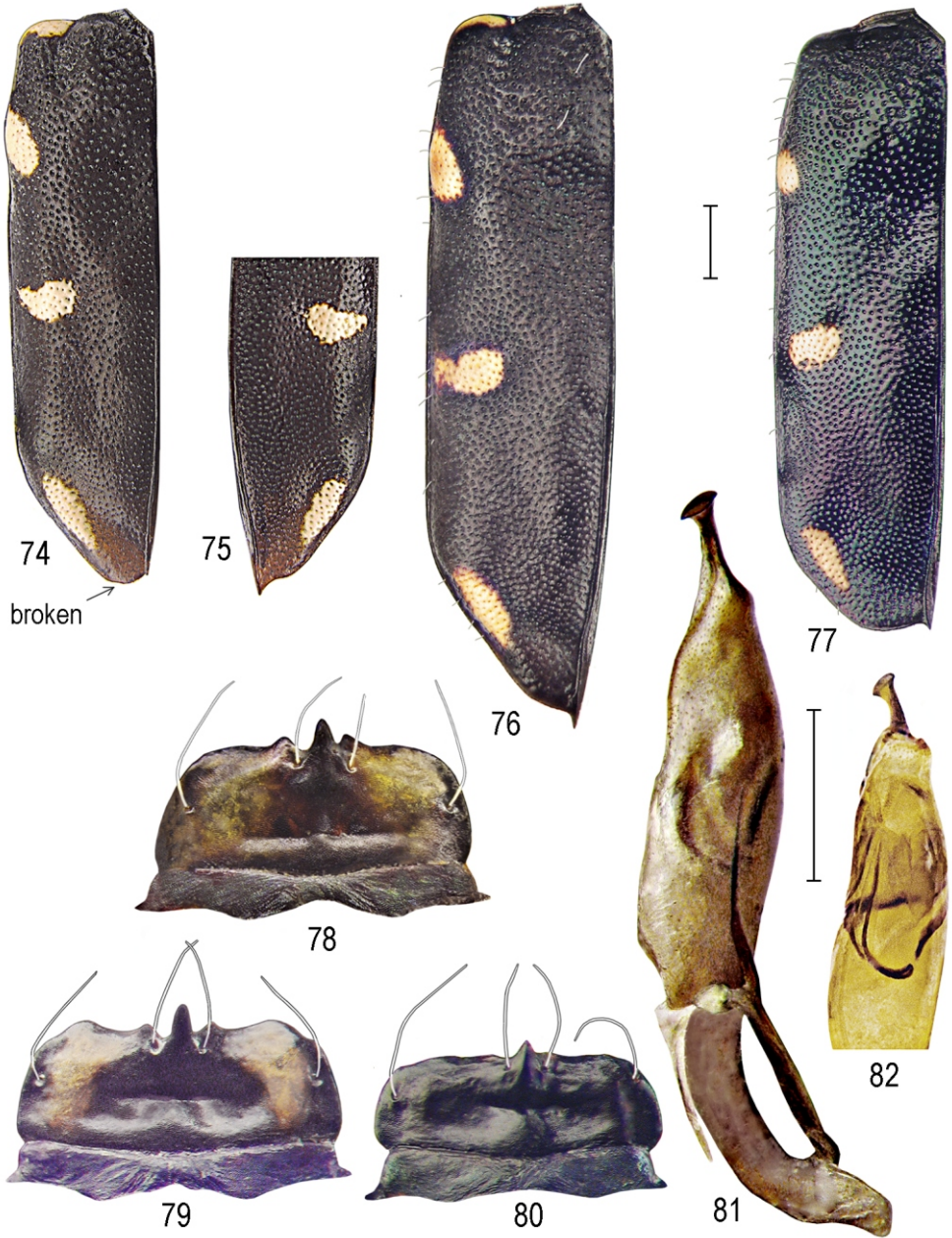
Aedeagus (Figs. 81, 82) virtually shaped as in *Ox. oberthueri* and *Ox. kippenhani*, but generally smaller, 3.70-4.40 (in lectotype 3.75) mm long, 0.70-0.80 mm wide; internal sac basically as in *Ox. oberthueri*, but the aedeagus and internal sac in the lectotype (Fig. 82) is not in good shape because stored in glycerine for about 23 years (see note in "Material and methods" above).

Variability. Only that mentioned in the redescription.

Female characters. *Ox. nigricans* is sexually dimorphic mainly in the shape of the elytral apex which is in female rounded towards small sutural spine, humeral macula indistinct, invisible from above, or entirely absent; elytral coloration slightly more shiny, often with diffusing olivaceous-green hue, mostly on lateromedian area; pronotum more uniformly black-coppery, its lateral margins dilated posteriad. Body (Fig. 67) 12.5-12.9 mm long, 4.10-4.30 mm wide; head 3.05-3.20 mm wide; labrum (Fig. 80) 0.60-0.70 mm long, 1.55-1.65 mm wide; pronotum (Fig. 72) 2.40-2.60 mm long, 2.25-2.45 mm wide; elytron (Fig. 77) 8.10-9.00 mm long.



Figs. 68-73. *Oxygonia nigricans* W. Horn. 68 - head, ♂, Panama, Rio Cana (DBCN); 69 - right mandible, ♀, ibid. (DBCN); 70 - maxillary palpus, ♀, ibid. (DBCN); 71-73 - pronotum: 71 - ♂, Colombia, Gorgona Island, LT (SDEL); 72 - ♀, Panama, Rio Cana (DBCN); 73 - ♂, ibid. (DBCN). Bars = 1 mm.



Figs. 74-82. *Oxygonia nigricans* W. Horn. Fig. 74-77 - elytron: 74-75 - ♂, left (broken) and apex of right elytron, Colombia, Gorgona Island, LT (SDEI); 76 - ♂, Panama, Rio Cana (DBCN); 77 - ♀, ibid. (DBCN); 78-80 - labrum: 78 - ♂, LT (SDEI); 79 - ♂, Rio Cana (DBCN); 80 - ♀, ibid. (DBCN); 81 - aedeagus, ibid. (DBCN); 82 - damaged, LT (SDEI). Bar = 1 mm.

Differential diagnosis. Male of *Ox. nigricans* shares the shape of the aedeagus apex with *Ox. oberthueri* and *Ox. kippenhani*, the character which differentiates these three species from other species of the genus. Nevertheless, males of *Ox. nigricans* are immediately distinguished by their elytra with separate maculae (in contrast to the continuous lateral band in *Ox. oberthueri* and thin, interrupted band in *Ox. kippenhani*). Females of *Ox. nigricans* differ in having rounded elytral apex (in contrast to the elytral apex in females of *Ox. oberthueri* and *Ox. kippenhani*, which is truncate in middle), and from other species by the predominantly dully black coloration. Kippenhan (1997) used as one of the differential characters a microserrulation of the elytral apical margin, also in his key to species, and also for *Ox. nigricans*. In fact, no notable microserrulation was found in this species within this present revision. Kippenhan (1997) stated that the elytral apex in female of *Ox. nigricans* is "strongly truncate". However in fact the apex is rounded and emarginated towards sutural spine, and although the shape may somewhat vary, it always differs from the apex which is truncated in middle (as in species of items 2-6 in the "Key to females" above).

Biology and distribution. Colombia and Panama. Originally described by Horn (1926) from the small Gorgona Island situated in southwest coast of Colombia, for a long time known only from the type locality and the three type specimens (Kippenhan (1997)). The recent discovery of this species in Panama mentioned by Moravec (2015) and listed in "Other material examined" above, has extended the distribution of this rare species to Central America, where the occurrence of only *Ox. boucardi* was known.

***Oxygonia onorei* Cassola & Kippenhan, 1997**

(Figs. 83-96)

Oxygonia onorei Cassola & Kippenhan, 1997: 16, fig. 1 a,b,c.

Type locality. Ecuador: Las Pampas, province of Cotopaxi.

Type material. Holotype ♂ in CMNH (not examined), labelled: "Ecuador / Cotopaxi, V.88 / Las Pampas, Legit. G. Onore" // "Holotypus / *Oxygonia* / *onorei* n. sp. / F. Cassola & M. Kippenhan / ded., 1995". Paratype (not examined) 1 ♂ in FCCR: "La Otonga, 1800 m / Cotopaxi Ecuador / 25.May 1996, A. Paucar leg."

Other material examined. 2 ♂♂ in CCJM (ex FCCR): "Ecuador Cotopaxi / La Otonga, 1850 m / 12.IV.1997 / G. Onore leg.". 1 ♀ in MGKC with same label data except for: "1900 m / 3.IV.1997".

Redescription, male. Body (Fig. 83) small (smallest within the genus), 10.1-11.0 mm long, 3.10-3.30 mm wide.

Head (Fig. 84) normally shaped with large eyes but narrower than body, 2.30-2.50 mm wide.

Frons almost flat and steeply sloped towards clearly separated clypeus, passing into vertex over blunt frons-vertex fold; metallic black with cupreous, bronze and green lustre, smooth except for few indistinct wrinkles adjacent to distinctly marked, metallic-green supraantennal plates.

Vertex anteriorly merging with frons in middle over the blunt frons-vertex fold, but laterally separated from frons by short lateral edges partly formed by apices of the supraantennal plates; juxtaorbital areas with bulging eyes rather steeply sloped towards vertex; surface with wide, shallow, sometimes indistinct V-shaped anteromedian impression, metallic black or black-coppery with faint or strong green or green-blue lustre usually in middle and cupreous iridescence anteriorly and laterally; surface on anteromedian areas almost smooth, several very fine and shallow parallel striae running along the anteromedian impression and converging in middle,

much more distinct parallel striae on juxtaorbital areas while median area behind the impression is almost smooth with only indistinct longitudinal striae, but lateral areas with rather distinct parallel striae divergent towards shiny-green temples where they become fragmented and very irregular when passing onto genae; posteromedian area with transverse parallel stria-like rugae becoming effaced on median occipital area.

Genae shiny iridescent-green, or blue-green, often with cupreous lustre on juxtaorbital areas, shallowly parallel-striate in middle, more distinctly on juxtaorbital areas, irregularly wrinkled posteriorly when passing onto temples.

Clypeus iridescent-green, or blue-green, finely coriaceous-wrinkled, with usual, thorn-like appendages.

Labrum (Figs. 87-88) 0.45-0.48 mm long, 1.20-1.25 mm wide, with same variability in shape and bicolored coloration as in *Ox. oberthueri* and *Ox. nigricans*, with irregularly raised and sinuate anterior margin, often forming irregular bump-like teeth, median tooth prominent, but mostly in the same level as the anterolateral part of the gibbosity of anterior margin.

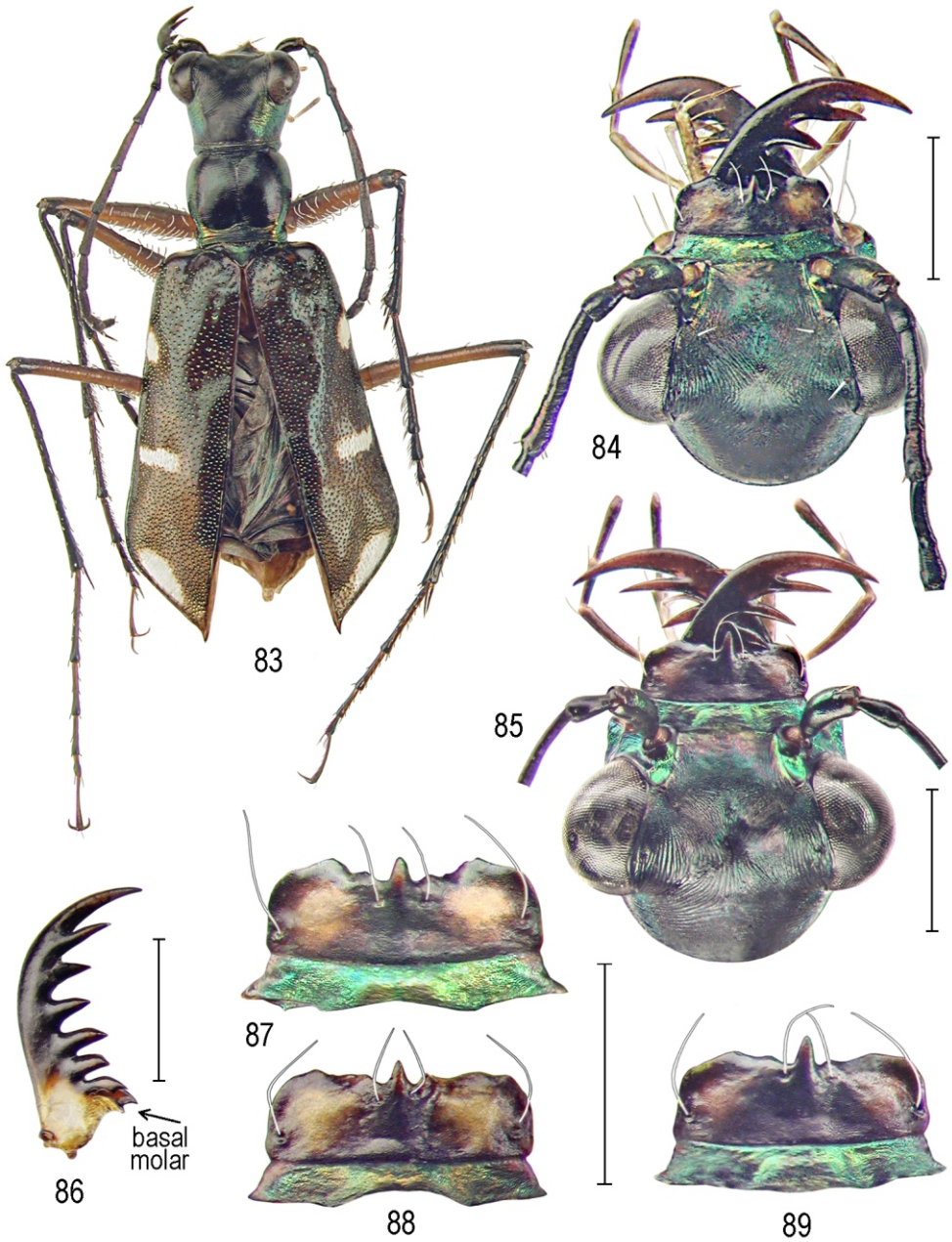
Mandibles (Figs. 84, 86) black with large ivory yellow to ochre-testaceous basolateral area, sometimes with brownish-red tinge on teeth, shape as in *Ox. nigricans*.

Palpi (Fig. 84) shaped as in preceding species, ochre-testaceous, usually with darkened margins and blackened terminal palpomeres.

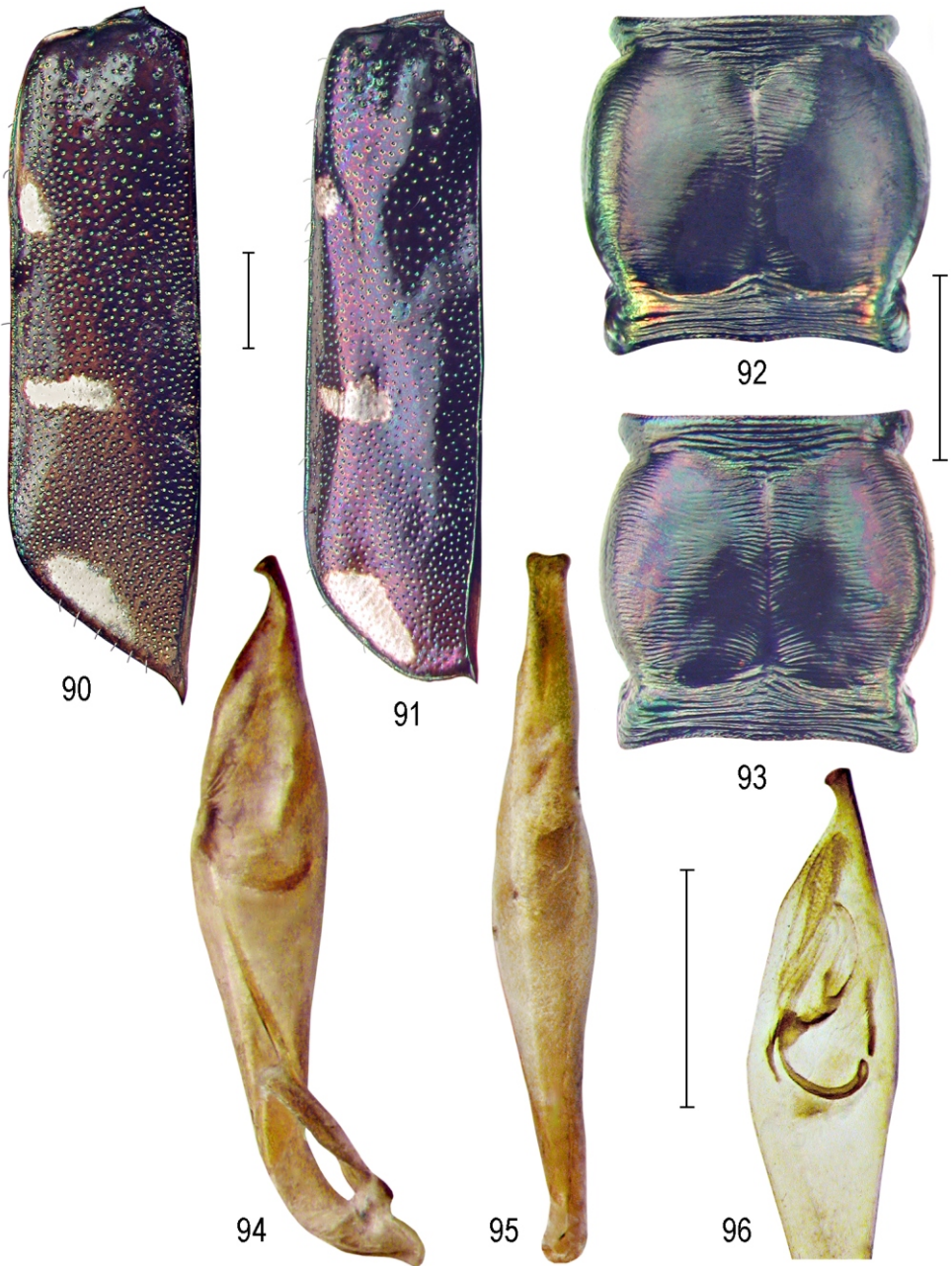
Antennae (Figs. 83-84) rather short, reaching third of the elytral length, antennomeres 1-4 metallic black (scape often with green lustre), antennomeres 3-4 with conspicuous, sharpened dorsal edge and indistinct cupreous lustre at their apices; remaining antennomeres smoky black with usual dense micropubescence (5-6 sometimes with brownish tinge).

Thorax. Pronotum (Fig. 92) slightly longer than wide, 1.85-1.90 mm long, 1.75-1.80 mm wide, black-coppery with chatoyant diffusing green or blue-green lustre in middle, lateral areas iridescent-green, and posterior lobe with reddish-cupreous or bronze lustre; anterior lobe narrower than posterior lobe and markedly narrower than disc, sulci well pronounced; surface of anterior lobe with few, coarse transverse rugae; disc notably subglobose with distinctly convex lateral margins of dorsally visible proepisterna and thin notopleural sutures, discal surface on narrow area along median line inconsistently covered with very fine and shallow transversely parallel stria-like rugae (more distinct when adjacent to median triangular curve of anterior sulcus), striae become shorter and finer posteriad when adjacent to the median line, slightly coarser and longer again on posterior area; large sublateral areas almost smooth, lateral areas with shallow, irregularly transverse rugae which become even shallower, fragmented and irregular towards notopleural sutures; posterior lobe notably long and wide, its surface with moderately raised dorsolateral bulges and covered with rather dense, transverse, mostly continuous rugae; proepisterna deep metallic cupreous with strong, chatoyant mahogany-reddish lustre changing to iridescent green or gold-bronze upon different light angle, shallowly coriaceous wrinkled; mesepisterna concolorous with proepisterna, surface densely asperate-wrinkled; prosternum metallic-blue-green, finely wrinkled; mesosternum chatoyant green or blue, smooth; metasternum and metepisterna ochre-testaceous, smooth.

Elytra (Fig. 90) elongate, length 6.80-7.10 mm, with rounded humeri and subparallel outer margin, slightly dilated towards arcuate anteapical angle, then obliquely attenuated towards distinctly acute apex with distinct sutural spine; surface moderately convex, with moderate humeral impressions and rather deep discal impression clearly delineating distinct basodiscal convexity, additional small impression on elytral disc just behind the larger impression, and very shallow impression also on the area mesad of whitish lateromedian macula; the surface almost regularly and rather densely punctate throughout, punctures with green light-reflections; elytral



Figs. 83-89. *Oxygonia onorei* Cassola & Kippenhan, Ecuador, Cotopaxi, La Otonga. 83 - body, ♂, 10.4 mm (CCJM); 84-85 - head: 84 - ♂ (CCJM); 85 - ♀ (MGKC); 86 - ♂, left mandible (CCJM); 87-89 - labrum: 87-88 - ♂ (CCJM); 89 - ♀ (MGKC). Bars = 1 mm.



Figs. 90-96. *Oxygonia onorei* Cassola & Kippenhan, Ecuador, Cotopaxi, La Otonga. 90-91 - elytron: 90 - ♂ (CCJM); 91 - ♀ (MGKC); 92-93 - pronotum: 92 - ♂ (CCJM); 93 - ♀ (MGKC); 94-96 - aedeagus (CCJM): 94 - left lateral view; 95 - ventral view; 96 - internal sac. Bars = 1 mm.

coloration almost uniformly dark coppery with more vividly cupreous posterolateral large areas; whitish elytral maculation consists of four, distinct maculae: humeral macula wide, visible from above as narrow stripe; subhumeral macula rather small, ovaliform and notably distant from epipleuron; sublateral-median macula notably transverse and mesad-prolonged; antepical macula elongate and comparatively wide.

Legs with ochre coxae and trochanters and setal vesture of all leg segments as in *Ox. oberthueri*, but femora with brownish-testaceous ventral area; bilobed spiny apex more distinct in metafemora; metatarsi usually with testaceous basal half.

Abdomen ochre-testaceous as in *Ox. oberthueri*, with faint green iridescence.

Aedeagus (Figs. 94-96) elongate and almost straight, 3.0-3.1 mm long, 0.6 mm wide, moderately dilated in middle and constricted into rather small and short apex in shape of dorsally deeply emarginated knob (Fig. 94); in its ventral view the apex is distinctly spectacle-like bilobed (Fig. 95); internal sac (Fig. 96) rather similar to that in *Ox. oberthueri* with similar shape of the short flagellum and also central sclerites of indefinite shape, but the stick-like ventral stiffening rib is straighter, and dorsoapical voluminous piece is either absent or it is feebly sclerotized and unrecognizable.

Variability. Only that mentioned in the description above.

Female characters. The sexual dimorphism is obvious mainly in the elytral apex which is in female rounded (Fig. 91), the elytral coloration is much brighter, black-blue on elytral disc and metallic reddish-cupreous to purple on remaining area, sometimes with limited greenish lustre; humeral macula absent, sublateral-median whitish macula somewhat shorter and wider, also antepical macula wider; pronotal disc (Fig. 93) reddish-cupreous on sublateral areas and with more distinct stria-like rugae covering much wider median area of the discal surface; labrum (Fig. 89) as in male; palpi (Fig. 85) darker; ventral thoracic sterna darker, and abdomen metallic-green with bright green and gold-bronze reflections. Measurements almost the same as in males.

Differential diagnosis. Immediately recognizable by the uniquely small body size in both sexes, males also by the unique shape of the bilobed aedeagus apex in its ventral view (Fig. 95). Some exceptionally small females of externally very similar *Ox. uniformis* can be distinguished by their less convex, subparallel outer margins of pronotal disc, less rounded (almost subacute) elytral apex, and much steeply sloped orbital areas towards vertex.

Biology and distribution. Known only from the area of the type locality in the Ecuadorian province of Cotopaxi, Las Pampas and La Otonga, 1800-1900 m., the western Andean slopes in northern Ecuador (Cassola & Kippenhan 1997, Kippenhan 1997).

Remarks. *Ox. onorei* was originally described by Cassola & Kippenhan (1997) from only two males, female was described for the first time by Kippenhan (1997), and the female characters treated here come from the female borrowed from his MGKC collection, while the redescription of the male is based on two males (CCJM ex FCCR), all from the area of the type locality.

Oxygonia schoenherrii* species-group**Oxygonia schoenherrii* Mannerheim, 1837**

(see Moravec (2015: 40–45, figs 23-38))

Ox. schoenherrii Mannerheim, 1837: 19.**Type locality.** "Columbia ad Antiochia" = Colombia, Department of Antioquia.**Misapplications.** *Ox. prodiga* sensu Chaudoir (1869:25) cited by Bates (1872a: 238, partim) - non *Ox. prodiga* (Erichson, 1847) – see "Remarks" under *Ox. prodiga* in Moravec (2015).Non *Oxygonia cyanopsis* Bates, 1871 (female) as a junior synonym by Horn (1900b: 215), which is junior synonym of *Ox. albitaenia* restituted to its original species status by Moravec (2015).

Holotype ♂ (by monotypy, in MNHN) redescribed and illustrated by Moravec (2015).

***Oxygonia albitaenia* Bates, 1871**

(see Moravec (2015: 45–50, figs 39-53))

Oxygonia albitaenia Bates, 1871: 377.**Type locality.** "New Grenada".*Oxygonia schoenherrii* var. *albitaenia*: Horn 1900: 215.*Oxygonia schoenherrii albitaenia*: Kippenhan 1997: 329.*Oxygonia cyanopsis* Bates, 1871: 377 – synonymy by Kippenhan 1997: 329 – see "Remarks" in Moravec (2015).**Type locality.** "New Grenada".*Oxygonia cyanopsis*: Fleutiaux 1892: 29 (incorrect subsequent spelling) – see "Remarks" in Moravec (2015).*Oxygonia albitaenia*: Moravec 2015: 45.**Type locality.** "New Grenada".**Misinterpretation.** "*Oxygonia schoenherrii cyanopsis* var. *albitaenia*" (misinterpreted German text and acts by Horn (1900b: 215) by Kippenhan 1997: 329) – see "Remarks" in Moravec (2015).

Holotype ♂ (by monotypy, MNHN) redescribed and illustrated by Moravec (2015).

***Oxygonia carissima* Bates, 1872**

(see Moravec (2015: 32–40, figs 1-22))

Oxygonia carissima Bates, 1872a: 242.**Type locality.** Ecuador, "Macas district" ("R. Morona" on the label – see "Biology and distribution" in Moravec 2015).

Holotype ♂ (by monotypy) redescribed and illustrated by Moravec (2015).

Oxygonia annulipes Bates, 1872a: 242 synonymy by Moravec (2015).**Type locality.** Ecuador, Macas district ("R. Morona" on the label – see "Biology and distribution" in Moravec 2015).

Holotype ♂ (by monotypy, MNHN) redescribed and illustrated by Moravec (2015).

***Oxygonia boucardi* Chevrolat, 1881**

(Figs. 97-133)

Oxygonia boucardi Chevrolat, 1881: 7.**Type locality.** "Panama".**Type material.** Lectotype (designated by Moravec 2015) ♂ in MNHN, labelled: "*Oxygonia / Boucardi / Chevrol. / 1881 / Panama*" [green, handwritten] // "*Ex Musaeo / W. Rothschild 1898*" [with black border, printed] // "*Ex Mus. / A. Boucard*" [printed] // "*Muséum Paris / 1952 / Coll. R. Oberthür*" [pale greenish, printed] // "*Type*" [red, printed] // "*Lectotype / Oxygonia / boucardi Chevrolat, 1881 / design. Jiří Moravec 2015*". Paralectotypes. 1 ♂ in BMNH: "*B. C. A., Col., 1 (1) / Oxygonia / Boucardi, Chevrolat, Chevrolat*" [handwritten] // "*Panama / Boucard*" [handwritten] // "*Lectotype [sic] ♂ / Oxygonia / Boucardi, Chev. / by Erwin '76*" [printed, red and black ink]. 1 ♀ in MNHN: "*Ex Musaeo / W. Rothschild*"

[printed] // "Ex Mus. / A. Boucard" [printed] "Muséum Paris / 1952 / Coll. R. Oberthür" [pale greenish, printed] // "Revision Jiří Moravec 2015: / Paralectotype / Oxygonia / boucardi Chevrolat, 1881" [red, printed].

Other material examined. Recent data. 3 ♂♂, 1 ♀ in DBCN, 1 ♂ in CCJM, 1 ♂, 1 ♀ in CJVB: "Panama – Chiriqui / Fortuna Highway / Quebrada Arena / D. Brzoska 22-V-1995". 1 ♀ in DBCN, 1 ♀ in CCJM: "Panama – Bocas del / Toro, Rio Mali – 5 km / Cont. Divid. Trail / D. Brzoska 22-V-1995". 3 ♂♂ in DBCN: "Costa Rica Alajuela / Fortuna San Ramon Road / km 20 N – San Ramon / D. Brzoska 23-VI-1997". 2 ♀♀ in DBCN: "Costa Rica Alajuela / R.F San Ramon 900 m / Rio San Lorencito / 22-V-1996". 1 ♂ in DBCN: "Costa Rica Alajuela / Km 24 (N – San Ramon) / 10°13.0'N; 84°37.7'W / D. Brzoska 1-V-1999". 2 ♂♂, 1 ♀ in CCJM: "Costa Rica Alajuela Prov. / Alberto Manuel Brenes / Biol. Reserve (San Ramon) 10°31.1'N; 84°35.8'W / 25.V. 2013, leg. D. Brzoska and Jiří Moravec".

Redescription, male (lectotype Fig. 97). Body (Figs. 97-98) medium sized, 12.3-14.0 (lectotype 13.4) mm long, 3.90-4.30 (lectotype 4.20) mm wide.

Head (Figs. 112, 118-119) with large eyes but much narrower than body, 2.90-3.20 mm wide.

Frons only slightly convex in middle and steeply sloped towards clearly separated clypeus, fluently passing to vertex in middle over blunt frons-vertex fold, laterally separated from vertex by indistinct short lateral edges above apices of supraantennal plates, reddish-cupreous, usually with strong green iridescence on anterior and lateral areas, asperate or very finely longitudinally striate on anteromedian area, slightly more distinctly parallel-striate on lateral areas adjacent to smooth, shiny violaceous-blue, triangular supraantennal plates; posteromedian area finely transverse-wavy rugulose, the rugae passing on blunt frons-vertex fold.

Vertex black with reddish cupreous and chatoyant green lateral areas, usually gold-bronze and finely transverse-wavy rugulose on anteromedian area (the same sculpture passing from frons), with shallow or indistinct U-shaped anteromedian impression, sublateral areas densely, but distinctly obliquely parallel-striate, striae converging in central area which is covered with a few, longitudinal or irregular rugae, often divergent also posteriad forming a radiate ornament on slightly convex centre; juxtaorbital areas rather densely covered with distinct parallel striae behind the eyes divergent towards temples; striae on posterior occipital area almost regularly transverse-parallel, becoming irregular when passing towards temples which are finely asperate-wrinkled.

Genae iridescent green, irregularly shallowly wrinkled and shallow, parallel striae on juxtaorbital area.

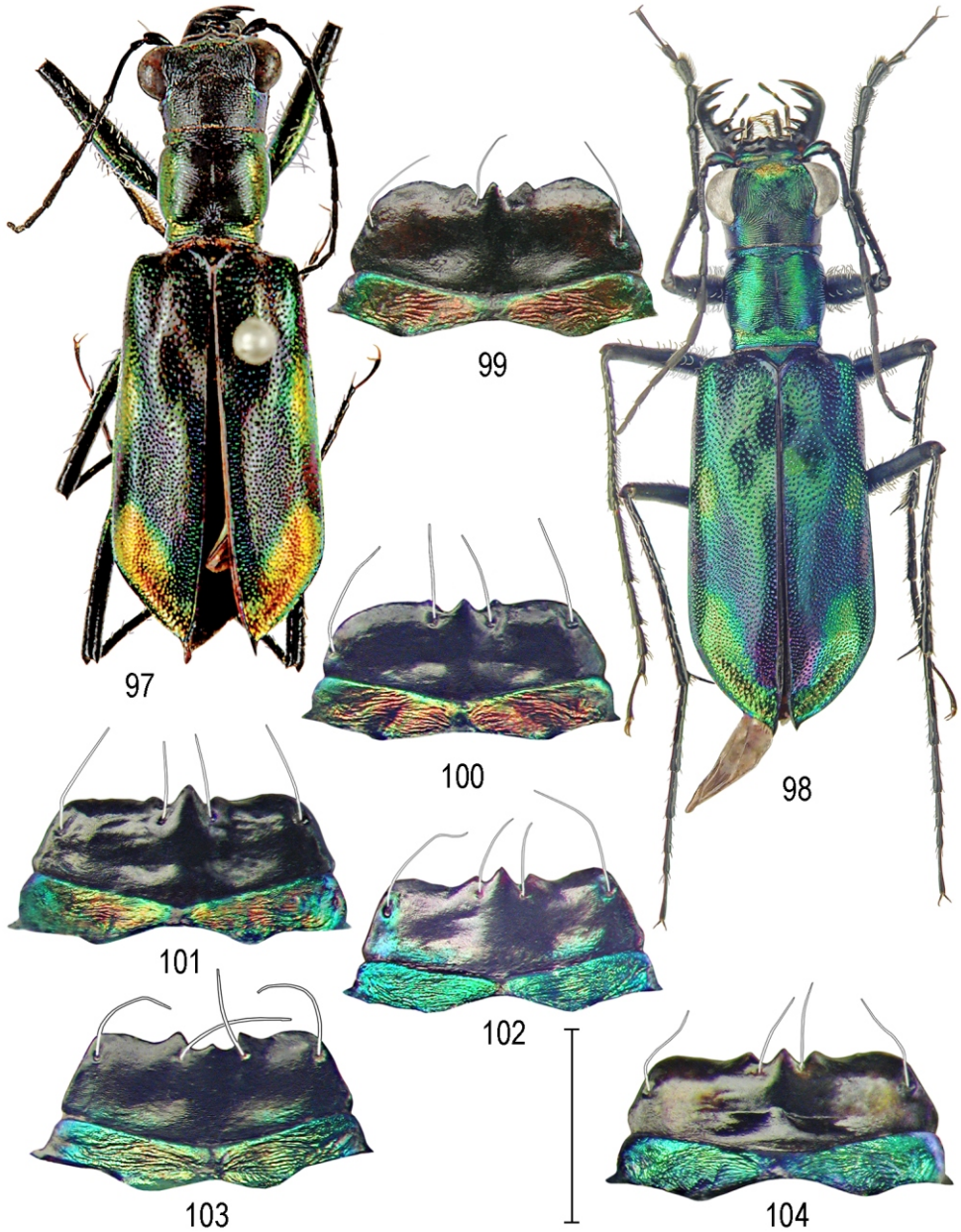
Clypeus with usual thorn-like lateral appendages, metallic cupreous with iridescent green lateral areas, or entirely iridescent-green-blue, finely irregularly wrinkled.

Labrum (Figs. 99-103) metallic black or black-brown, sometimes and inconsistently with paler lateral areas, rarely with green lustre on lateral margins, transverse-oblong, 0.50-0.60 (in lectotype 0.60) mm long, 1.40-1.55 (in lectotype 1.50) mm wide, with very variable shape of sinuous anterior margin which is arcuate laterally and often forming three anterior teeth of which the central tooth is mostly slightly or more distinctly protruding, but also small (as in the lectotype Fig. 100), or very small and immersed (Fig. 103) as formed by the deep notches at both sides of the tooth.

Mandibles (Figs. 112-115, 118) almost black with small testaceous basolateral or only inner basal area, and indistinct or very short dark testaceous lateral stripe, with almost symmetrical arcuate lateral margins, inner teeth very variably shaped and inconsistently, either almost regularly, or widely and irregularly spaced, the fifth tooth usually doubled.

Palpi (Figs. 112, 118-119) Maxillary palpi elongate, notably variable in coloration, either yellow to ochre, or testaceous with blackened terminal palpomeres, or almost entirely black; labial palpi yellow-testaceous with gradually blackened apical half of terminal palpomeres.

Antennae (Figs. 112, 116-117, 118) rather short, reaching third of the elytral length,



Figs. 97-104. *Oxygonia boucardi* Chevrolat. 97-98 - body: 97 - ♂, 13.4 mm, "Panama", IT (MNHN); 98 - ♂, 12.1 mm, Costa Rica, San Ramon (CCJM); 99-104 - labrum: 99 ♂, IT (MNHN); 100-101 - ♂, Panama, Quebrada Arena (DBCN); 102-103 - ♂, Costa Rica, San Ramon (CCJM); 104 - ♀, Panama, Bocas del Toro (CCJM). Bars = 1 mm.

antennomeres 1-4 metallic black, scape often with strong green-blue lustre, antennomeres 3-4 metallic-black, with capitate apices; remaining antennomeres smoky black with usual dense, greyish or rusty micropubescence; antennomeres 5-6 notably clavate-dilated (Figs. 116-117).

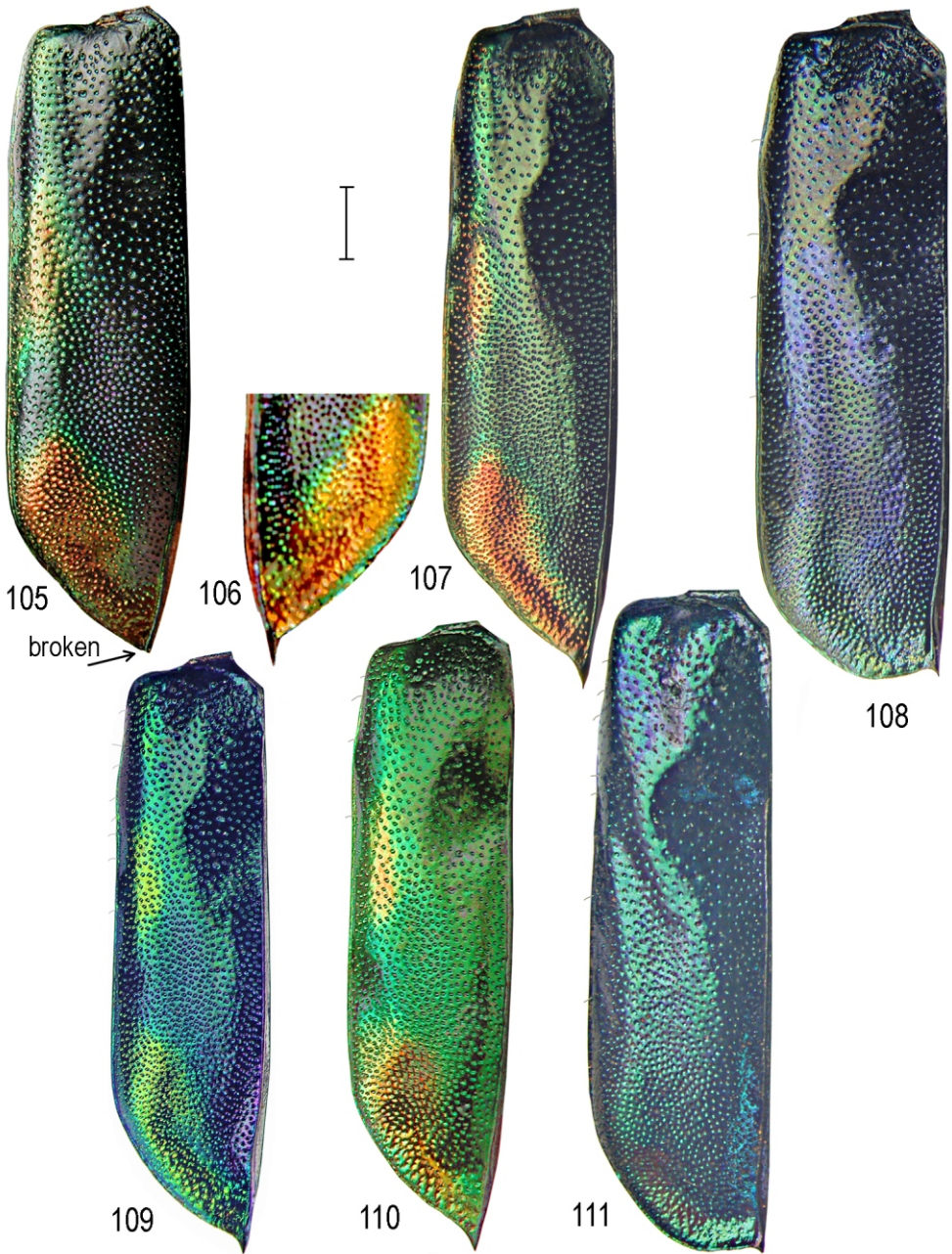
Thorax. Pronotum (Figs. 120-122) rather variably shaped, rectangular, either slightly longer than wide, or slightly wider, length 2.15-2.50 (in lectotype 2.40) mm, width 2.25-2.50 (in lectotype 2.50) mm, variably coloured, mostly depending on the locality, either black-coppery with green and reddish-cupreous lustre on lateral areas changing to fiery-red when illuminated laterally, or bright metallic green-blue on large median area, reddish and gold-bronze on narrow sublateral areas and green-blue on lateral areas; sulci well pronounced; anterior lobe slightly wider or of the same width as the posterior lobe, and mostly only slightly narrower than lateral margins of disc; surface of anterior lobe with several, rather coarse transverse rugae; disc with parallel or subparallel lateral margins of dorsally visible proepisterna and notopleural sutures, surface of large median area covered with almost regularly transverse or transverse-arcuate stria-like rugae converging to rather distinct median line, lateral areas towards notopleural sutures covered with much shorter, deeper and somewhat irregular rugae; posterior lobe transverse and rather long, separated from disc with rather deep sulcus, in middle triangularly converging with the median line of the disc; surface of posterior lobe covered with coarse and finer, rather variably transverse and continuous or irregular rugae; dorsolateral bulges indistinct; proepisterna, and all other lateral and ventral thoracic sterna chatoyant iridescent green-blue, rarely with faint reddish reflections, changing to bright blue depending upon light angle, smooth; prosternum and metepisterna finely wrinkled.

Elytra (Figs. 105-107, 109-110) elongate, length 8.50-8.90 mm, with rounded to subquadrate humeri and subparallel margins; outer margin slightly dilated towards arcuate anteapical angle, then obliquely attenuated towards distinctly acute apex with distinct sutural spine (in lectotype the apex broken Fig. 105); surface moderately convex, with moderate humeral impressions and deep and posteriad prolonged discal impression clearly delineating distinct basodiscal convexity, additional shallow impression on sublateral areas in middle; surface almost regularly and rather densely punctate throughout, more spaced and larger punctures on basal area, anastomosing within humeral impressions; punctures with green light-reflection; elytral coloration variable, either metallic black-green on anterior and central area of elytral disc including discal impression and along sutures (the black coloration changes to metallic-green depending on light angle), while sublateral area is iridescent green and cupreous, in dorsal view mostly with yellow-orange sublateral-median longitudinal area, and bronze and bright reddish-cupreous large anteapical area which changes to fiery-red, in lateral view appearing as narrow fiery-red or gold-bronze stripe, or the elytra are predominantly metallic-green with faint golden iridescence or/and with less distinct reddish-cupreous anteapical area, or almost entirely bright metallic-green (see "Variability" below; whitish elytral maculation constantly absent).

Legs. Coxae metallic-green, pro- and mesocoxae densely punctate-setose, metacoxae with punctate-setose lateral margin and also their discal area, or the discal area with only several setae; trochanters black-brown to black; femora metallic-black with deep green lustre, or predominantly metallic-green, bilobed apical spines rather short, setae on ventral femoral area rather dense, long, uncinata and mutually interwoven, sparser and semierect on their dorsal side; tibiae and tarsi metallic-black, their setal vesture as in other species.

Abdomen metallic green, changing to blue or reddish depending on illumination angle, surface of ventrites glabrous except for usual hairlike sensory setae at ventrite margins.

Aedeagus (Figs. 125-133) widest near the narrow, rather shortly bent base, conically



Figs. 105-111. *Oxygonia boucardi* Chevrolat, elytron. 105 - ♂, with broken apex, "Panama", LT (MNHN); 106 - ditto, elytral apex, right elytron; 107 - ♂, Panama, Quebrada Arena (DBCN); 108 - ♀, Panama, Bocas del Toro (CCJM); 109-110 - ♂, Costa Rica, San Ramon (CCJM); 111 - ♀, "Panama", PLT (MNHN). Bar = 1 mm.

attenuated towards almost straight, short, blunt apex, in ventral view with two distinct, longitudinal, sclerotized ventral edges forming blunt apex (Figs. 126, 130), the edges are in lateral view either notably bumpy-sinuate (Figs. 128-129, 131-132) or almost smooth (Fig. 125); internal sac (Fig. 130) with long coiled flagellum usually protruding from apical orifice, base of the flagellum placed in central part of the sac, while flagelliform part is coiled towards base.

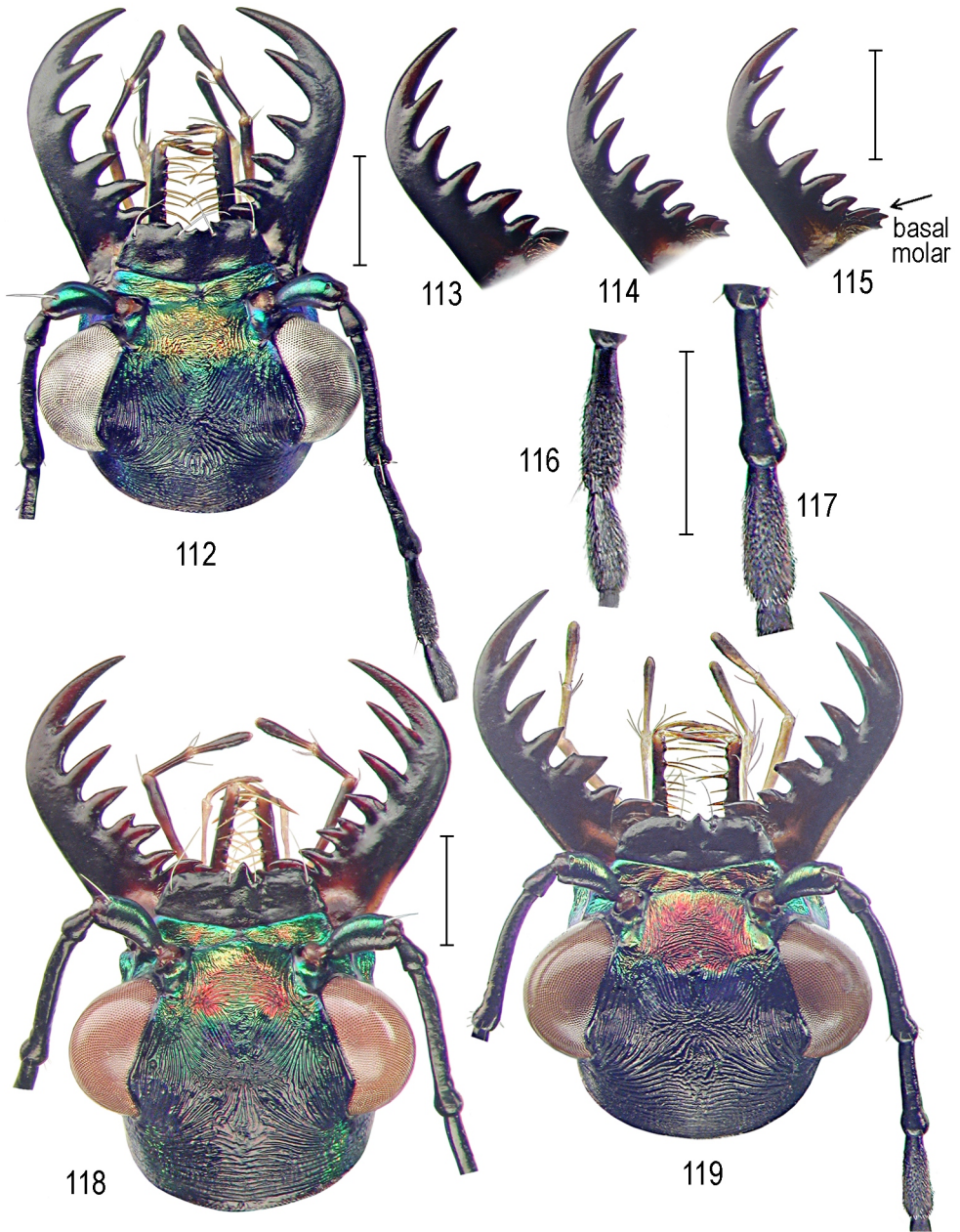
Variability. As treated in the redescription above, the coloration is highly variable, particularly elytra of adults from Costa Rica are mostly prevailingly more greenish than in the multicoloured Panamanian populations, but both coloration patterns rarely occur in adults from these two countries. Remarkably variable are inner teeth of the mandibles, which in some males from Costa Rica are widely and irregularly spaced, while in most males from Panama the inner teeth are more regular, but their fifth tooth is often doubled. However, intermediate shapes of the inner teeth in males from Costa Rica occur. The aedeagi of the males from Costa Rica have the longitudinal, sclerotized ventral edges notably bumpy-sinuate (Figs. 129-132) while in the aedeagi of Panamanian males the edges are almost smooth.

Female characters. The sexual dimorphism is obvious mainly in the elytral apex which is in female rounded, body portions including elytra almost unicoloured, either metallic-coppery with faint, variably cupreous and green-blue, diffusing or brighter iridescences, or almost entirely metallic black-blue with violet or iridescent green lustre. Body 13.0-14.0 mm long, 4.70-4.90 mm wide; head 3.00-3.20 mm wide; labrum (Fig. 104) 0.45-0.60 mm long, 1.45-1.50 mm wide; pronotum (Figs. 123-124) 2.30-2.40 mm long, 2.35-2.50 mm wide; elytra (Figs. 108, 111) 8.50-8.90 mm long.

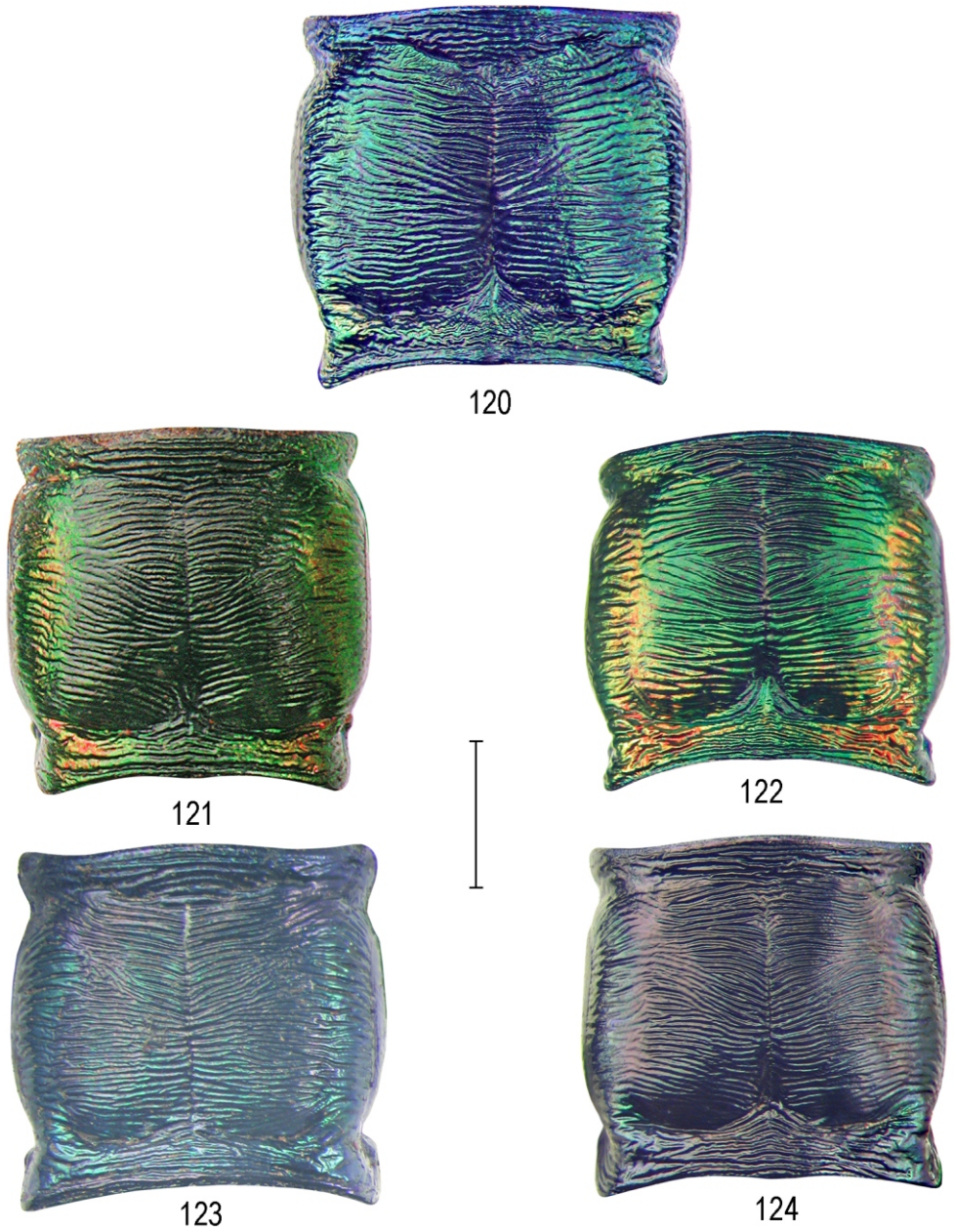
Differential diagnosis. *Ox. boucardi* is the only species of the genus lacking elytral maculation, thus immediately recognizable in both sexes.

Biology and distribution. Panama and Costa Rica, 600-1200 m a.s.l. The type locality in Panama was not specified by Chevrolat (1881). In Panama it occurs in elevations 900-1200 m a.s.l., in the province of Chiriqui and Bocas del Toro. According to D. Brzoska (pers. com.), the adults from Panama were caught along the Fortuna Highway in Quebrada Arena (Bugaba, Chiriqui) and in the province of Bocas del Toro, Continental Divide Trail passing between the provinces of Chiriqui and Bocas del Toro, part of the Nature Reserve La Fortuna in the Cordillera de Talamanca mountain range. The locality of the river Rio Malí is along the Chiriqui - Fortuna Road, just less than 1 km from the Chiriqui province border. The two localities are no more than 5-10 km apart, but interestingly each is in a different watershed, Bocas del Toro to the Caribbean, while Chiriqui to the Pacific, but as the Continental Divide is not there so high, the areas are not so distinctly separated by the ridge to cause allopatric speciation. Adults have diurnal activity and are exceptionally good flyers.

In Costa Rica, *Ox. boucardi* occurs in the province of Alajuela in several places near San Ramon. Thanks to my friend David Brzoska who previously visited the locality, we caught in May 2013 several adults along banks of the river Rio San Lorencito within the Biological Reserve Alberto Manuel Brenes (10°31.1'N; 84°35.8'W) in elevation 900 m. There during a heavy rainy day the adults were flying onto leaves of several meters high trees overhanging the river. They were not attracted to lights, in contrast to another tiger beetle *Oxycheila polita* which was common there at night on the boulders in the river and en masse attracted to lights.



Figs. 112-119. *Oxygonia boucardi* Chevrolat. 112 – head – ♂, Costa Rica, San Ramon (CCJM); 113-115 – left mandible, ♂, ibid. (CCJM); 116 – antennomeres 5-6, ♂, ibid.; 117 – antennomeres 4-5, ♂, ibid. (CCJM); 118-119 – head, ♂, Panama, Quebrada Arena (DBCN). Bars = 1 mm.



Figs. 120-124. *Oxygonia boucardi* Chevrolat, pronotum. 120 - ♂, Costa Rica, San Ramon (DBCN); 121 - ♂, "Panama", LT (MNHN); 122 - ♂, Panama, Quebrada Arena (DBCN); 123 - ♀, "Panama", PLT (MNHN); 124 - ♀, Panama, Bocas del Toro (CCJM). Bar = 1 mm.



Figs. 125-133. *Oxygonia boucardi* Chevrolat, aedeagi. 125 - Panama, Quebrada Arena (DBCN); 126 - ditto, ventral view; 127 - ditto, internal sac; 128 - Costa Rica, San Ramon (CCJM); 129 - ibid. (DBCN); 130 - ditto, ventral view; 131 - ibid. (CCJM); 132 - ibid. (DBCN); 133 - ditto, internal sac. Bar = 1 mm.

Remarks. As mentioned by Moravec (2015), Kippenhan (1997) erroneously considered that *Ox. boucardi* was described from only holotype. However, the original description by Chevrolat (1881) clearly describes male and female, but without a number of specimens. Therefore, the male lectotype (MNHN) was designated by Moravec (2015) in order to increase stability of the taxon and rectify the previous error in the type status. The male paralectotype in BMNH was labelled by Erwin as "Lectotype", but the designation has never been published (Terry Ervin, pers. com.).

***Oxygonia prodiga* species-group**

***Oxygonia prodiga* (Erichson, 1847)**

(see Moravec 2015: 50–56, figs 54–68)

Cicindela (Phyllodroma) prodiga Erichson, 1847: 68.

Oxygonia prodiga: Fleutiaux 1892: 29.

Type locality. "Peru".

Lectotype ♂ (MFNB) designated, redescribed and illustrated by Moravec (2015).

Non *Oxygonia prodiga* sensu Chaudoir (1869: 25), nec Bates 1872a: 238, partim, which is *Ox. schoenherrii* Mannerheim, 1837.

Oxygonia schaumii W. Horn, 1893: 194, synonymy by Moravec (2015)

Type locality. "Peru mont."

Oxygonia Batesi W. Horn, 1893: 195 – synonymy by Kippenhan 1997: 333 (synonymy with "*Ox. prodiga schaumii*" by Horn 1900: 214).

Oxygonia prodiga schaumii: Horn 1900: 214.

Redescription and illustrations of the holotypes of the synonymous *Ox. batesi* ♀ and *Ox. schaumii* ♂ (SDEI) by Moravec (2015).

***Oxygonia buckleyi* Bates 1872**

(see Moravec 2015: 56–62, figs. 69– 90)

Oxygonia buckleyi Bates, 1872a: 241.

Type locality. Ecuador: Upano River near Macas (see "Biology and distribution" below).

Oxygonia elongata W. Horn, 1896: 341 – synonymy by Kippenhan (1997).

Type locality. Ecuador.

Oxygonia buckleyi elongata: Horn 1915: 208 – synonymy by Kippenhan (1997).

Lectotype ♂ designated, redescribed and illustrated by Moravec (2015).

***Oxygonia erichsoni* W. Horn, 1898**

(Figs. 134-144)

Ox. erichsoni W. Horn, 1898: 103.

Type locality. Bolivia: Rio Songo (= Rio Zongo) in the department of La Paz, region of Yungas.

Type material. Lectotype [designated by Kippenhan 1997] ♂ in SDEI, labelled: "Staudinger / Songo (Boliv.)" // [printed/handwritten] // "Type ! / Coll. W. Horn" [printed] // "Syntypus" [red, printed] // Coll. W. Horn / DEI Eberswalde" [printed] // "Erichsoni / mihi" [greenish with black frame, large additionally attached handwritten collection label] // "Lectotype / *Oxygonia / erichsoni* W. Horn / by M. Kippenhan 1994" [red with black border, printed/handwritten/printed]. Paralectotypes. 2 ♂♂, 1 ♀ in SDEI with same labels except the first: "Staudinger / Yungan, Boliv." and "Paralectotype / *Oxygonia / erichsoni* W. Horn / by M. Kippenhan 1994".

Other material examined. 1 ♂, in SDEI: "Rio Songo Fass[leg.] / O. Boliv. 750 m. // Coll W. Horn / DEI Eberswalde".

Redescription, male. Body (lectotype Fig. 134) 13.8-14.4 (lectotype 13.8) mm long, 4.30-4.50 (lectotype 4.30) mm wide.

Head (Figs. 135-136) normally shaped with large eyes but smaller than body, 3.15-3.20 mm wide.

Frons clearly separated from clypeus, cupreous to reddish-cupreous, finely asperate in middle, iridescent green and finely subparallel striate on lateral areas, coarser striae adjacent to smooth, shiny violaceous-blue and green, triangular supraantennal plates, anteromedian area finely wavy to vermicular rugulose.

Vertex reddish cupreous with green iridescence on lateral areas, separated from frons by rounded frons-vertex fold, finely wavy to vermicular rugulose on anteromedian area (the sculpture passing from frons over the rounded frons-vertex fold) passing to a vermicular rugosity present also within shallow V-shaped anteromedian impression; sublateral areas densely, but distinctly obliquely parallel-striate, striae converging in central area which is covered with longitudinal and irregular rugae; juxtaorbital areas rather densely covered with distinct, longitudinally parallel striae, which are wavy on their anterior area (behind supraantennal plates); striae on posterolateral areas become irregularly fragmented diverging towards temples; posterior and occipital area iridescent-green, finely and very irregularly transversely striate-rugulose.

Genae metallic green, covered with shallow, parallel striae.

Clypeus metallic green with faint reddish-cupreous reflections, finely irregularly rugulose.

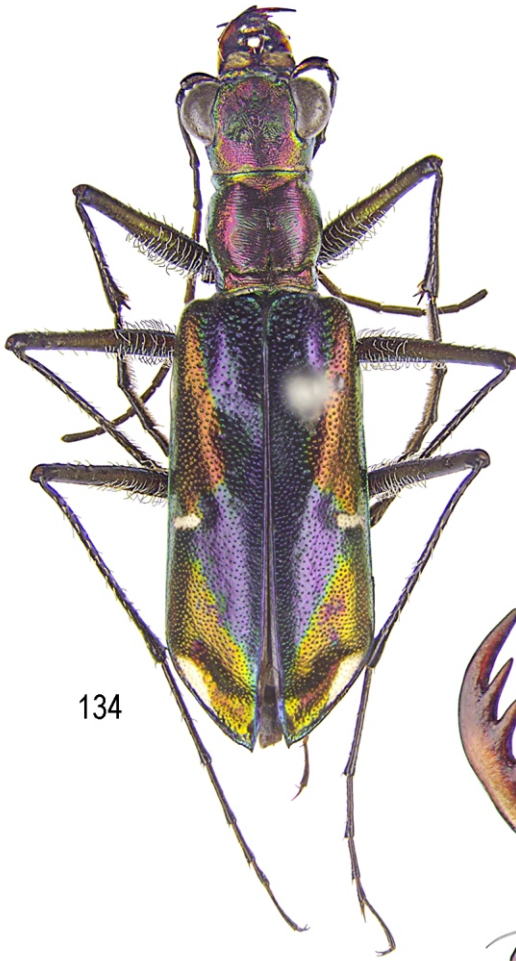
Labrum (Fig. 141) 4-setose, transversely oblong, but comparatively long, 0.65-0.75 (in lectotype 0.70) mm long, 1.60-1.75 (in lectotype 1.60) mm wide, with rounded basolateral margins, in lectotype (Fig. 141) with simply arcuate anterior margin and only shallow emargination on either side of rather small, slightly protruding median tooth, ochre testaceous except for blackened outer margins and median area including central impression.

Palpi (Figs. 135-136). Maxillary palpi brownish-testaceous, penultimate palpomere with blackened areas, terminal palpomeres black; longest palpomeres of labial palpi testaceous with brown-darkened apical margin, terminal palpomeres black.

Mandibles (Figs. 135-136) black-brown with cupreous to mahogany-reddish tinge, mostly on teeth, and large ochre-testaceous lateral areas (in lectotype Fig. 135 firmly closed), subsymmetrical, each mandible with six, rather long teeth and basal molar.

Antennae (Figs. 134-136) rather short, reaching only elytral third; scape rather wide but elongate, metallic black with green, blue and cupreous reflections; antennomeres 2-4 metallic black, apices with indistinct reddish lustre, 5-11 black-brown, gradually narrowed and smoky-blackened, sometimes antennomere 5 brownish.

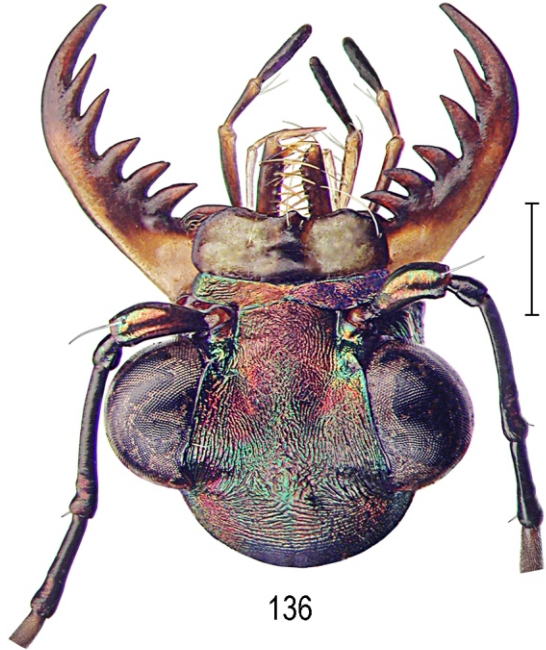
Thorax. Pronotum (Fig. 137) as long as wide, or slightly longer than wide, 2.40-2.50 (in lectotype 2.40) mm long, 2.25-2.50 (in lectotype 2.25) mm wide, with well pronounced sulci (the anterior deep only laterally); anterior lobe as long as posterior lobe, reddish-cupreous with green lustre on anterior and lateral margins, surface covered with irregularly long transverse, rather coarse rugae; disc bright reddish-cupreous with green iridescence in middle and on lateral areas; lateral margins of dorsally visible proepisterna and notopleural sutures rather distinctly convex; discal surface covered with irregularly transverse, rather shallow stria-like rugae which are more parallel-transverse on median area, converging towards distinct medial line; rugae on lateral areas coarser and more irregular, not surpassing the notopleural sutures; posterior lobe concolorous with disc, with moderately raised dorsolateral bulges, its surface covered with coarse rugae, few of them along the posterior rim continuous and transverse, those in middle very irregular, converging towards the median line of the disc; lateral thoracic sterna chatoyant



134



135



136

Figs. 134-136. *Oxygonia erichsoni* W. Horn. 134 - body, ♂, 13.6 mm, Bolivia, Rio Songo. LT (SDEI); 135 - head part, ♂, LT (DBCN); 136 - head, ♂, Bolivia, Rio Songo (SDEI). Bar = 1 mm.

metallic bronze-cupreous changing to iridescent green depending on angle of illumination, green lustre predominantly on mesepisterna, surface glabrous, metepisterna finely coriaceous-wrinkled; prosternum and mesosternum shiny metallic green; metasternum shiny gold-bronze with reddish-coppery iridescence, lateral areas shiny metallic green.

Elytra (Fig. 139) elongate, 9.30-9.90 (lectotype 9.30) mm long, with rounded humeri and almost parallel lateral margins, with arcuate anteapical angle, then obliquely attenuated towards acute apex with rather small but distinct sutural spine; surface with comparatively shallow but large discal impression, together with humeral impressions clearly delimiting distinct basodiscal convexity; additional, shallow impression on the area of sublateral-median macula; the surface rather densely and regularly punctate throughout lacking smooth areas; larger and irregularly anastomosing punctures within humeral impressions; coloration predominantly (also in lectotype) bronze to reddish-cupreous with large black-violet discal area and along the whitish sublateral-median macula, and gold-bronze anteapical area (coloration changeable depending on angle of illumination); elytral maculation consisting of four maculae: humeral macula invisible or only partly visible from above; subhumeral macula very small, indistinct (in lectotype visible from above as a narrow spot, in paralectotypes even smaller); sublateral-median macula narrow and transverse; anteapical macula large, slightly prolonged along the margin towards apex but not reaching sutural spine.

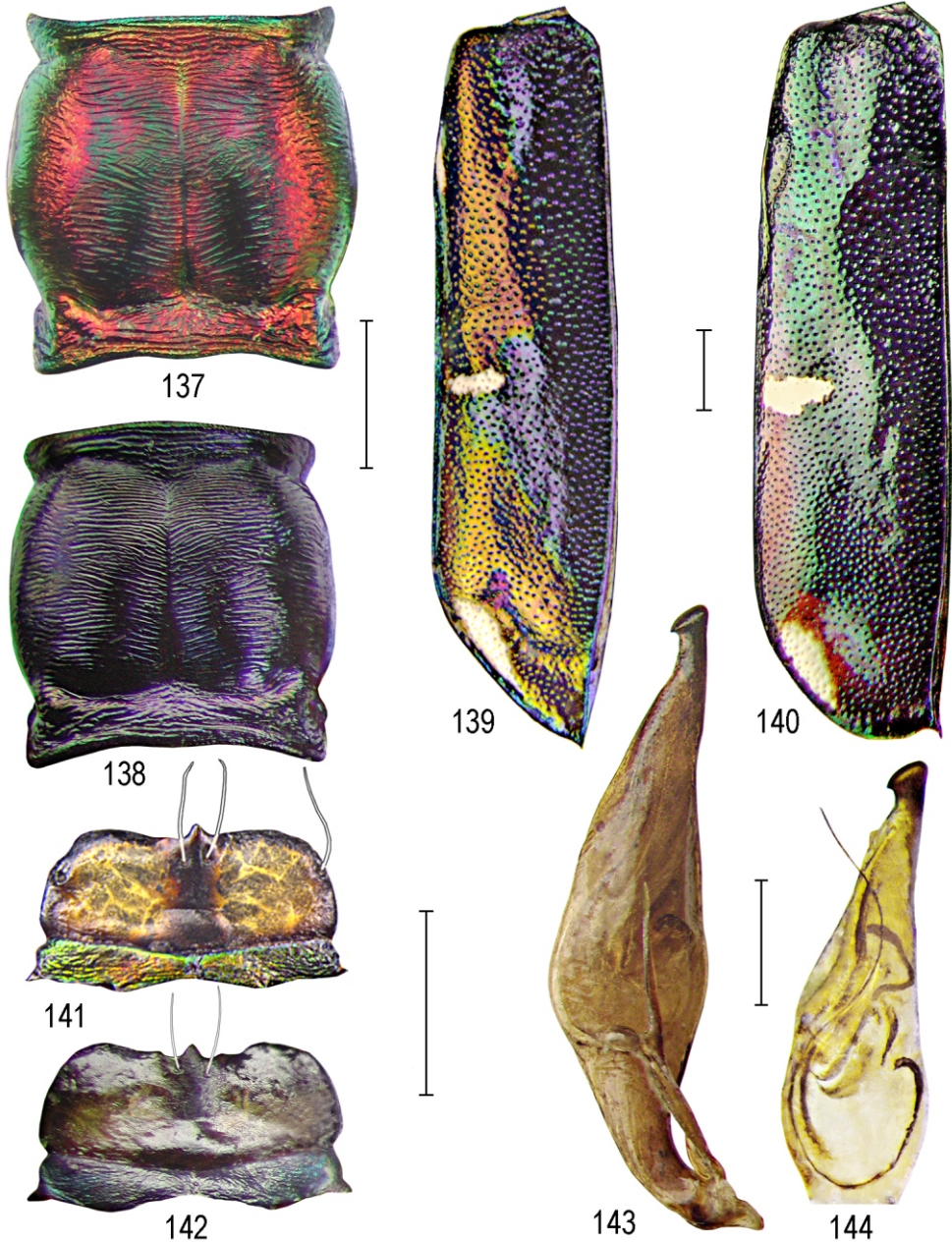
Legs. Coxae metallic green, pro- and mesocoxae densely covered with white, decumbent setae; metacoxae densely punctate-setose on lateral area; trochanters black-brown; femora, tibiae and tarsi black with faint greenish lustre, femoral bilobed apical thorns short and blunt; whitish setae densest and mostly unciniate-interwoven on ventral area of femoral basal half, sparser on dorsal area and much sparser on apical area; tibiae with short, stiff and semierect white setae.

Abdomen. Ventrites shiny metallic green, wide median area shiny gold-bronze with reddish-coppery iridescence, surface glabrous (except for the usual one or two sensory marginal setae on each side of the ventrites).

Aedeagus (Figs. 143-144) basically as in *Ox. prodiga*, *Ox. uniformis* and others of this species-group, but the aedeagus apex is notably wide because the stem of the aedeagus apex is notably short and stout, and the crochet-like knob dorsally only shallowly emarginated; internal sac within the aedeagi of the type males were damaged due to a previous wrong treatment and long storage in glycerine, but that of the illustrated paralectotype (Fig. 144) shows simply coiled flagellum base with long flagelliform portion protruding from dorsolateral orifice; shape of other sclerites vaguely recognizable, the only more visible characteristic is the ventrally placed, cranked sclerite with dilated apical portion, similar to that in *Ox. prodiga* (see fig 64 in Moravec 2015), but the apical portion of the sclerite is less dilated.

Variability. Only as mentioned in the redescription above.

Female characters. The only known female paralectotype (SDEI) differs from male particularly in having elytra with widely rounded apex (Fig. 140) and predominantly metallic-green coloured with narrow, reddish lateral area of posterior elytral half and deep mahogany-red area surrounding the anteapical macula (the coloration changeable depending on angle of illumination), humeral macula absent and subhumeral spot invisible from above, elytron length 8.8 mm. Body 13.5 mm long, 4.6 mm wide; head black-coppery with green lustre on lateral areas; labrum (Fig. 142) much darker, predominantly black-brown, 0.65 mm long, 1.60 mm wide; pronotum (Fig. 138) 2.40 mm long, 2.25 mm wide, much darker, black-coppery with green lustre on anterior margin of anterior lobe, in middle of disc and on posterior lobe where also



Figs. 137-144. *Oxygonia erichsoni* W. Horn. 137-138 - pronotum: 137 - ♂, Bolivia, Rio Songo, LT, (SDEI); 138 - ♀, Rio Songo, PLT (SDEI); 139-140 - elytron: 139 - ♂, LT (SDEI); 140 - ♀, PLT (SDEI); 141-142 - labrum: 141 - ♂, LT (SDEI); 142 - ♀, PLT (SDEI); 143 - aedeagus, Rio Songo (SDEI); 144 - internal sac (damaged by previous treatment), LT (SDEI). Bars = 1 mm.

diffusing faint purple lustre occur; parallel, obliquely transverse stria-like rugae cover wider median area of the pronotal disc and are more distinct and denser on its anterior area.

Differential diagnosis. Resembling adults of *Ox. prodiga* because of similar transverse shape of the lateromedian whitish macula, particularly those with only indistinct impunctate areas on their elytra (see Moravec 2015), but differing in having the elytra consistently punctate throughout, entirely lacking any impunctate areas, and in the different pattern of the elytral coloration; males of *Ox. erichsoni* are immediately recognizable by the shape of the aedeagus apex (Figs. 143-144), as no other species has the stem of the aedeagus apex so stout, and the crochet-like knob of the apex only so shallowly excised as in *Ox. erichsoni*. Behaviour of the adults unknown.

Biology and distribution. Known only from the four type specimens and other historical male specimen (SDEI) from the type locality, an area of Rio Songo (now spelled Rio Zongo) in the Bolivian department of La Paz, region of Yungas. No other record was mentioned by Pearson et al. 1999a), the authors only cited the type locality, specified as "Murillo, Rio Zongo, 15°43'S, 67°41'W (570 m), Yungas de la Paz", referring to Mandl (1958) but Mandl only mentioned it as: "Rio Songo (570 m), in den Jungas de La Paz (nicht in La Paz selbst)", and he obviously cited this record from the male in SDEI listed above.

Remarks. Kippenhan (1997) erroneously cited the locality label of the lectotype as "Staudinger / Yungas / Boliv." but the male with the red lectotype label by Kippenhan has in fact its locality label "Staudinger / Songo [Boliv.].". As Kippenhan cited the type locality from Horn (1898) as: "Yungan"[=Yungas] and Songo", the error (either in mislabelling the lectotype label or wrong citation of the locality label of the lectotype) is irrelevant as the type locality is the same for all the type specimens as it is also obvious from the other male in SDEI with "Rio Songo, Boliv. 750 m." on its label (see "Biology and distribution" above).

***Oxygonia uniformis* W. Horn, 1900**

(Figs. 145-158)

Oxygonia uniformis W. Horn, 1900a: 201.

Type locality. "Ecuador".

Type material. Holotype (by monotypy) ♂ in SDEI, labelled: "Ecuador" [handwritten] // "Type ! / Coll. W. Horn" [printed] // "Holotypus [red, printed] // "Coll. W. Horn / DEI Eberswalde" [printed] // uniformis / mihi" [greenish with black frame, handwritten (large, additionally attached collection label) // "Revision Jiří Moravec 2015: / Holotype (by monotypy) / *Oxygonia* / uniformis W. Horn, 1900" [red, printed].

Other material examined. 1 ♂, in DBCN: "Ecuador: Pastaza / Puyo Baños Rd. / 15.1 km NW – Puyo / D. Brzoska 19-X-1997". 1 ♀ in DBCN with same label except for: "20 km NW Puyo". 1 ♂ in DBCN: "Ecuador: Napo / Loreto – Coca Road / 28.5 km E – Tena Rd. / D. Brzoska 17-X-1997". 1 ♀ in DBCN with same label except for: "4.7 km E – Tena Rd / 00°43.6'S / 77°46.0'W / D. Brzoska 18-X-1998".

Redescription, male (holotype Fig. 145). Body (Figs. 145-146) medium-sized, comparatively gracile, 12.4-13.7 (holotype 13.4) mm long, 3.5-3.90 (holotype 3.80) mm wide.

Head (Fig. 150) normally shaped with large eyes, but smaller than body, 2.80-3.05 mm wide.

Frons moderately convex and steeply sloped towards rather indistinctly separated clypeus, passing into vertex over blunt frons-vertex fold; metallic black with diffusing coppery or/and,

bronze and green lustre, almost smooth except for few striae adjacent to distinctly marked, metallic black or black-green supraantennal plates, and finely irregularly rugulose area of frons vertex fold.

Vertex anteriorly merging with frons in middle over the blunt frons-vertex fold, laterally separated from frons only by apices of the supraantennal plates, the anterior area occasionally with two setiferous pits, each bearing long, rusty seta (abraded in holotype); juxtaorbital areas with bulging eyes markedly steeply sloped towards vertex; surface with well marked, deep V-shaped anteromedian impression, metallic black or black-coppery with diffusing, faint green lustre which is usually stronger laterally; anteromedian area finely irregularly, mostly transversely vermicular-rugulose (sculpture passing over frons-vertex fold), surface of the V-shaped impression and surrounding area finely but distinctly parallel-striate, striae converging towards centre somewhat more distinct; parallel stria-like rugae on juxtaorbital areas (except for their anterior areas where the striae are fragmented, finer and irregular); median area behind the impression mostly with irregular rugae, but lateral areas with rather distinct parallel stria-like rugae divergent towards shiny-green or cupreous temples, becoming fragmented and very irregular when passing onto genae; posteromedian area with transverse parallel stria-like rugae which are usually almost effaced on median occipital area.

Genae shiny iridescent-green, or blue-green, with cupreous lustre, or predominantly reddish-cupreous, variably shallowly parallel-striate in middle, more distinctly on juxtaorbital areas, but also almost entirely distinctly parallel-striate, except for postgenal areas which are shallowly irregularly wrinkled when passing onto temples.

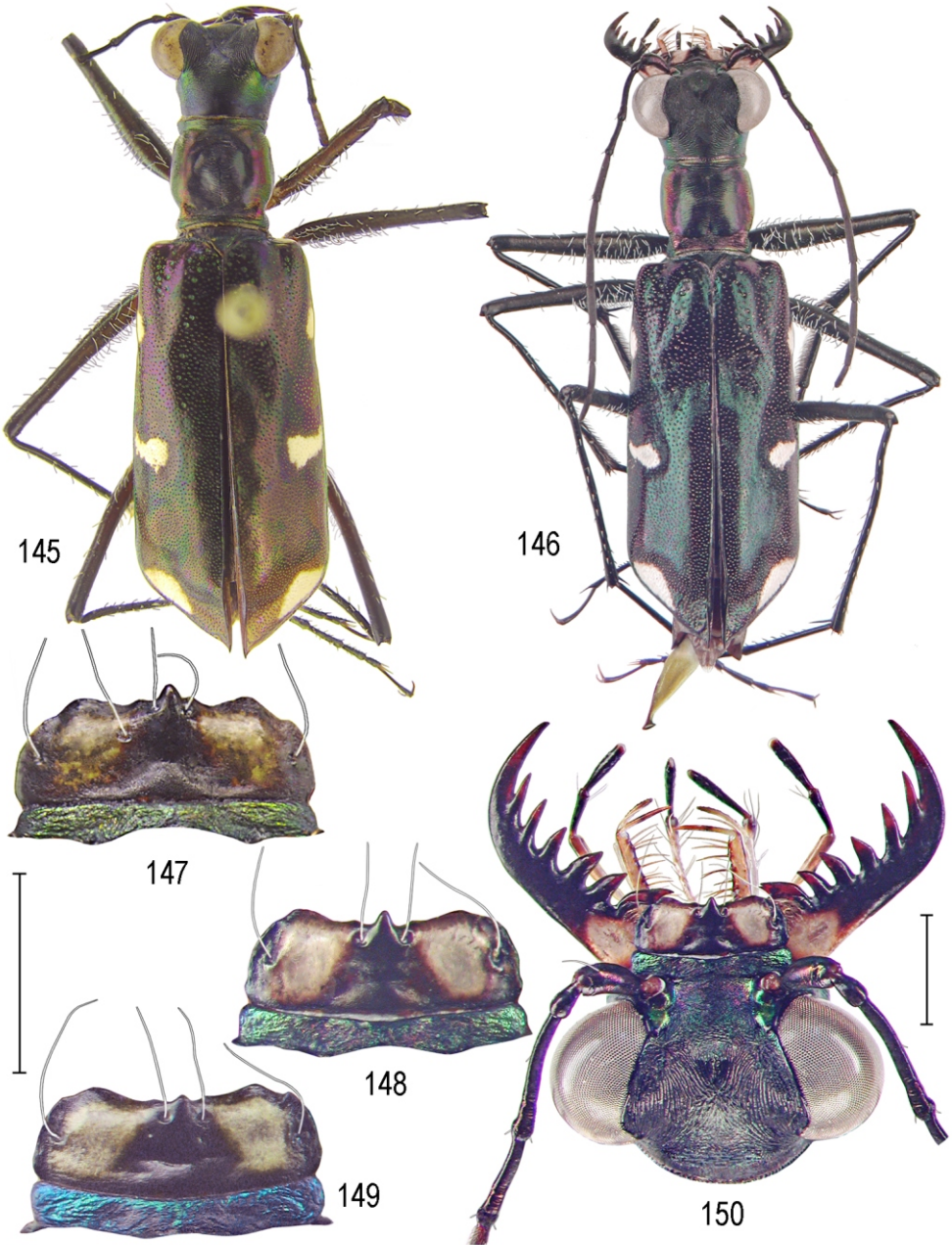
Clypeus as in *Ox. erichsoni*.

Labrum (Figs. 147-148) primarily 4-setose, occasionally with additional anterior seta; 0.55-0.65 (in holotype 0.60 mm) mm long, 1.45-1.50 (in holotype 1.50) mm wide. shaped and distinctly bicoloured as in *Ox. onorei* and *Ox. prodiga*, but the median tooth generally smaller (the coloration in holotype (Fig. 147) faded and tarnished as usual in old specimens).

Mandibles (Fig. 150) shaped as in *Ox. oberthueri* (in holotype firmly closed, barely observable), black, usually with rusty-red apices of rather long inner teeth.

Palpi (Fig. 150) as in other species notably elongate, rather constantly coloured, ochre to testaceous except for black penultimate and terminal palpomeres of maxillary palpi and black terminal palpomeres of labial palpi.

Antennae (Fig. 150) rather long, reaching elytral half, comparatively narrow, scape and antennomeres 2-4 black with very faint coppery and green reflections, 5-11 smoky-black with usual rusty-greyish micropubescence. Thorax. Pronotum (Fig. 151) (in holotype dorsally damaged by large, irregular and partly deep impression), slightly longer than wide, 2.15-2.35 mm long, 2.05-2.20 mm wide; anterior lobe notably wider than posterior lobe, separated from disc by rather shallow sulcus; surface of anterior lobe black-coppery, partially with green or reddish-cupreous lustre and few, coarse transverse rugae; disc somewhat variably shaped, generally with subparallel, rarely more convex lateral margins of dorsally visible proepisterna and notopleural sutures which are always mutually parallel or slightly narrowed in middle; median area smoky black or black-coppery with faint, diffusing olivaceous-green lustre, lateral areas usually iridescent reddish, while juxtantopleural areas in dorsal view are iridescent-green, but changing to iridescent reddish in lateral view; discal surface on median area covered with continuous, parallel and almost transverse stria-like rugae along distinct median line, usually coarser on posterior area; rugae on sublateral areas much shallower or almost effaced, but again coarser and transverse on narrow juxtantopleural area; posterior lobe with moderately raised dorsolateral bulges, its surface covered with rather dense, irregular or mostly transverse rugae;



Figs. 145-150. *Oxygonia uniformis* W. Horn. 145-150 - body: 145 - ♂, 13.5 mm, "Ecuador", HT (SDEI); 146 - ♂, 12.4 mm, Ecuador, Puyo Baños (DBCN); 147-149 - labrum: 147 - ♂, HT (SDEI); 148 - ♂, Puyo Baños (DBCN); 149 - ♀, ibid. (DBCN); 150 - head, ♂, Puyo Baños (DBCN). Bars = 1 mm.

proepisterna, mesepisterna and metepisterna chatoyant reddish-cupreous changing to iridescent green depending on light angle, or almost entirely bright mahogany-red, finely wrinkled (metepisterna only dorsally); prosternum, mesosternum, and metasternum smooth, iridescent-green, usually with strong mahogany-red lustre on lateral areas of metasternum.

Elytra (Figs. 153-154) elongate, 8.10-8.8 mm long, with subquadrate humeri and subparallel outer margins slightly dilated towards widely arcuate anteapical angle, then obliquely attenuated towards acute apex passing into distinct, wide sutural spine; surface moderately convex, with rather deep discal impression which together with moderate humeral impressions clearly delineate distinct basodiscal convexity, additional small impression on the area of whitish sublateral-median macula; surface almost regularly and rather densely punctate throughout, several foveae on elytral base with green light-reflection; elytral coloration notably shiny metallic black with changeable more vividly cupreous lateral areas and green sublateral areas (in holotype Fig. 153 the cupreous coloration prevailing, changing to light purple, with olivaceous green hue within humeral impressions and along the yellowish sublateral-median macula and on anteapical area); whitish to yellowish elytral maculation consists of four distinct maculae: humeral macula wide, visible from above as narrow stripe; subhumeral macula ovaliform; sublateral-median macula mesad-dilated; anteapical macula comparatively wide, slightly posteriad-elongated.

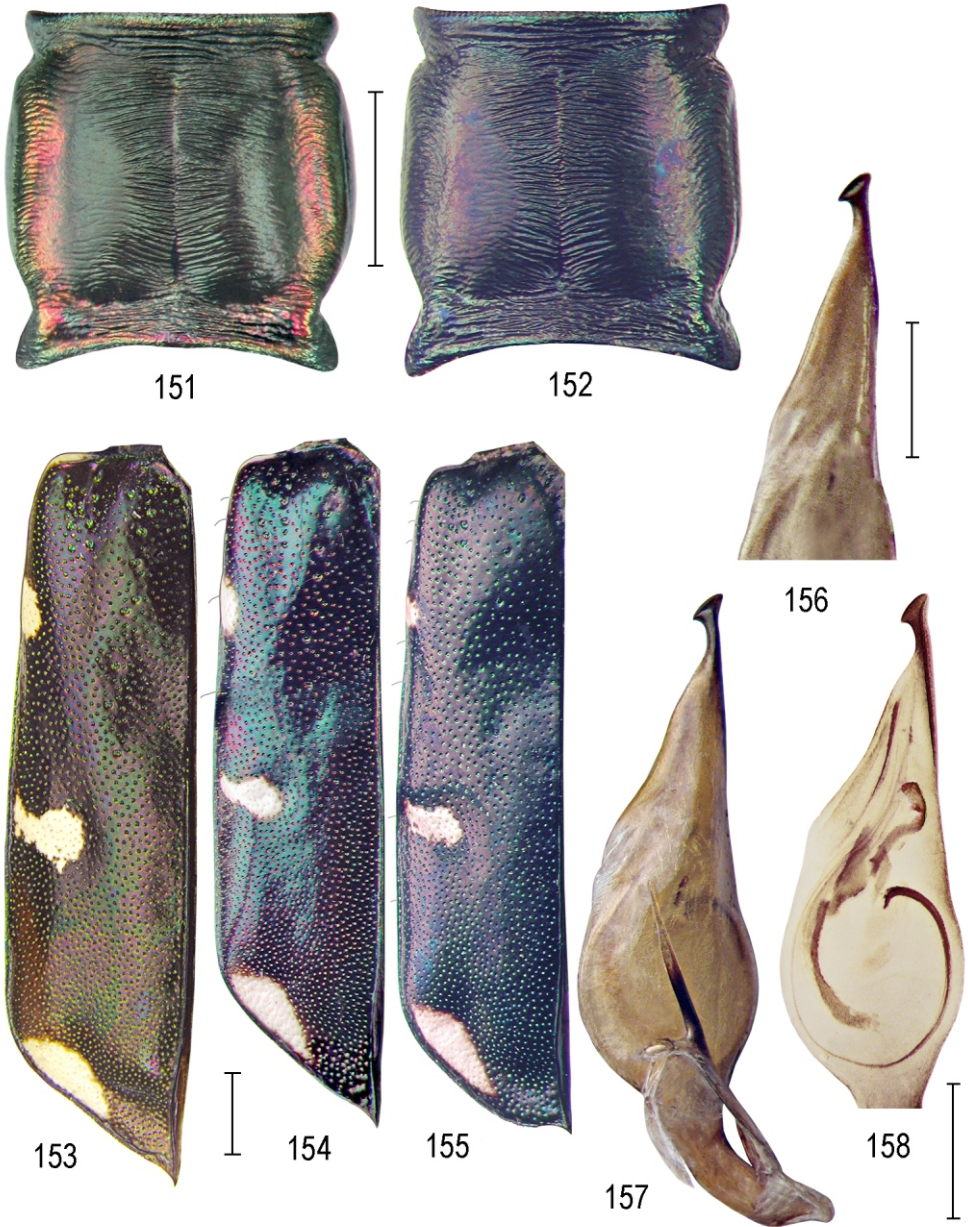
Legs black and with density of setae on femora as in *Ox. nigricans*, but apices of femora with shorter bilobed spines.

Abdomen iridescent-green, usually with strong mahogany-red lustre on lateral areas, or prevailing shiny metallic mahogany-red; surface of ventrites smooth and glabrous except for usual hairlike sensory setae at their inner margins.

Aedeagus (Figs. 156-158) basically shaped as in *Ox. prodiga* and others of this species-group, notably circular-voluminous above the base, then conically attenuated towards almost straight or slightly dorsally bent, rather long, cylindric stem terminated with rounded, dorsally obliquely sloped and excised knob of a crochet hook-like shape; internal sac (Fig. 158) containing flagellum with only slightly dilated and sclerotized base and long, very thin flagelliform portion which is basally widely coiled, then running towards apex but barely visible as feebly sclerotized,, in examined aedeagi not protruding from dorsoapical orifice; other sclerites comprises: long, arciform basodorsal sclerite, two membranous central pieces and central-upper snaky-bent piece terminated with short, wide tooth.

Variability. The elytral coloration is changeable depending on light-angle, and may fade in old specimens or may be changed by treatment in acetic acid by old authors. The prevailingly cupreous coloration in the holotype rather well corresponds with that originally described by Horn (1900) as "*elytris olivaceo-purpurascensibus (centro visu aut purpureo-violaceis aut viridiscensibus) sat nitentibus, basi ipsa aureo-splendente*". Recently caught adults are much darker than the holotype (as described in the redescription above). Variable is also the coloration of the lateral and ventral body portions, shape of the pronotal disc in male, and also the extent of striate areas on pronotal surface.

Female characters. The sexual dimorphism is obvious mainly in the elytral apex which is in female rounded towards smaller sutural spine (Fig. 155), elytral coloration generally much darker, but with similar coppery or green hue on the shiny surface; humeral macula much smaller, invisible in dorsal view; labrum variably either bicoloured (Fig. 149) or almost black (but never entirely black in examined females); pronotum (Fig. 152) more uniformly black-coppery,



Figs. 151-158. *Oxygonia uniformis* W. Horn. 151-152 - pronotum: 151 - ♂, Puyo Baños (DBCN); 152 - ♀, Puyo Baños (DBCN); 153-155 - elytron: 153 - ♂, "Ecuador", HT (SDEI); 154 - ♂, Puyo Baños (DBCN); 155 - ♀, Puyo Baños (DBCN); 156-157 - aedeagi: 156-157 - ♂, Puyo Baños (DBCN); 158 - ditto, internal sac. Bars = 1 mm.

narrower and almost rectangular, lateral margins of disc never convex, but subparallel, very slightly dilated posteriad; surface of pronotal disc variably striate only on narrow or wide median area. Body 12.2-13.2 mm long, 3.90-4.30 mm wide; head 2.80-3.00 mm wide; labrum 0.50-0.65 mm long, 1.40-1.50 mm wide; pronotum 2.10-2.20 mm long, 2.0-2.10 mm wide; elytra 8.00-8.50 mm long.

Differential diagnosis. By the elytral maculation *Ox. uniformis* resembles *Ox. nigricans* of the preceding species-group, but can be distinguished by its rather gracile body and shiny elytral surface, and females by their almost rectangular pronotum. Males can be immediately distinguished from those of *Ox. nigricans* by the very different shape of the aedeagus. The other species of this species-group differ in having much brighter, multicoloured elytral coloration. The aedeagus apex in *Ox. uniformis* is similar to that in *Ox. prodiga* (figured by Moravec 2015, figs. 56, 63-64) and *Ox. buckleyi* (Moravec 2015, figs 74, 76-79, 89), but the crochet-like knob of the apex is notably wider, while the narrow stem bearing the apical knob (Figs. 156-158) is shorter than in *Ox. prodiga*, but longer than in *Ox. buckleyi*, and much narrower than the notably wide stem in the aedeagus apex of *Ox. erichsoni* (Figs. 143-144).

Biology and distribution. Southern Ecuador, province of Napo and rarely in Pastaza and Sucumbios (Pearson et al. 1999b). Maps of distribution are in Kippenhan (1997) and more completely in Pearson et al. (1999b). *Ox. uniformis* inhabits the same area as *Ox. nigrovenator*, most specimens were caught along the Tena – Baeza Road and from the same area along the road from Loreto to Coca (D. Brzoska, pers. com.). Pearson et al. (1999b) mentioned that the adults have diurnal activity foraging mostly in shaded areas on moss-covered logs and rocks in and along the edges of the mostly narrow streams; when disturbed they quickly fly up to land on leaves of overhanging vegetation. The narrow streams are according to the cited authors almost overgrown with vegetation and slowly moving, in contrast to the fast-running streams on which most other species occur, but adults of *Ox. carissima* and *Ox. nigrovenator* were occasionally found with *Ox. uniformis*.

Remarks. Some of the distinguishing female characters were misleadingly stated by Kippenhan, particularly not reflecting the variability in the coloration of the labrum and striation on surface of the pronotal disc.

***Oxygonia floridula*, Bates, 1872.**

(Figs. 159-187)

Oxygonia floridula Bates, 1872a: 241 (partim, **male**).

Oxygonia gloriola Bates, 1872a: 241 (partim, **female**) – Non *Ox. gloriola* Bates, 1872a: 241, male!).

Type locality. Ecuador: Upano River near Macas (see labels Figs. 184-187 and “Biology and distribution” below).

Oxygonia unциfera W. Horn, 1901: 124 – unnecessary replacement name, synonymy by Kippenhan (1997), see “Remarks” below.

Type locality. Santa Inéz (sic!) see “Remarks” below).

Type material of *Ox. floridula*, males. Lectotype (designated here) ♂ in MNHN, labelled: “Upuna / ♂ / River / Buckley” [partly circular, handwritten] // “floridula ♂” [partly circular, handwritten] // “Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930” [greenish, tarnished, handwritten] // “Equateur” [greenish, tarnished, handwritten] // “Lectotype / *Oxygonia* / floridula Bates, 1872 / design. Jiří Moravec 2015” [red. printed]. Paralectotypes. 1 ♂ in MNHN: “Ecuador / Buckley” // “Ex Musaeo / H. W. Bates / 1892” [with black frame, printed]. 1 ♂ in MNHN (Coll. Fleutiaux): “R. Upano / Ecuador” // “Ex Musaeo / H. W. Bates / 1892” [with black frame, printed]. 2 ♂♂ in MNHN: “Macas / Ecuad.”

[handwritten] // "Muséum Paris / 1952 / Coll. R. Oberthür" [pale greenish, printed]. 2 ♂♂ in SDEI: "Ecuador / Type / ex cab. / Buckley" [handwritten] // "Coll. Ehlers / V. de Poll" [printed] "Type! Coll. W. Horn" [printed] // "Coll. W. Horn / DEI Eberswalde" [printed] // "Syntypus" [one of the two males with additional collection label: "floridula / ♂ Bat." [greenish with black frame, handwritten]. 1 ♂ in BMNH [standing as *Ox. uncifera* sic!]: "41985" [handwritten, partly illegible] // "Buckley" [handwritten] // "Ecuador / Macas" [handwritten] // "Fry Coll. 1905-100" [printed]. 3 ♂♂ in BMNH [standing as *Ox. uncifera* sic!]: "Ecuador / Buckley" [handwritten] // "floridula / Bates ♂" [handwritten] // "F. Bates Coll. / 1911-248" [printed]. All male paralectotypes labelled: "Revision Jiří Moravec 2015 (or 2017): Paralectotype / *Oxygonia* / floridula Bates, 1872" [red, printed].

Females of *Ox. floridula*, but paralectotypes of *Ox. gloriola*. 1 ♀ in MNHN: "Upuna / ♀ / River / Buckley" [partly circular, handwritten] // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930" [greenish, tarnished, handwritten]. 1 ♀ in MNHN: "Rio Upano / Morona / Ecuador" [handwritten] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed]. 1 ♀ in MNHN: "R. Upano / Ecuador" // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [pale greenish, printed]. 1 ♀ in MNHN: with same labels and: "Oxygonia gloriola / Bates ♀" [handwritten]. 3 ♀♀ in MNHN: "Macas / Ecuador" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♀ in MNHN [Coll. Fleutiaux]: "Rio Upano / Ecuador" // "Ex Musaeo / H. W. Bates / 1892". 1 ♀ in SDEI: "Ecuador / Type / ex cab. / Buckley" [handwritten] // "Coll. Ehlers / V. de Poll" [printed] // "Type! Coll. W. Horn" [printed] // "Coll. W. Horn / DEI Eberswalde" [printed] // "Syntypus" [red, printed]. All paralectotypes labelled: "Revision Jiří Moravec 2017: / Paralectotype of / *Oxygonia gloriola* Bates, 1872 / although in fact female of *Oxygonia floridula* Bates, 1872" [red, printed].

Females of *Ox. floridula* standing in collections MNHN, SDEI and MFNB as *Ox. gloriola*. 4 ♀♀ in MNHN: "Muséum Paris / 1952 / Coll. R. Oberthür" [no locality]. 2 ♀♀ in MNHN: "Equateur" // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930". 1 ♀ in MNHN: with same labels and: "Oxygonia uncifera W. H. / Dr. W. Horn det. 1925". 1 ♀ in MNHN: "Ecuador" // "Ex Musaeo Mniszecz" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♀ in MNHN: "Ecuador" // "Muséum Paris / 1952 / Coll. R. Oberthür". 3 ♀♀ in MNHN: "Ex Museum / A. Sallé / 1897" [no locality]. 1 ♀ in MNHN: "Equateur / de Banós Canelos / M. de Mathan IX-X. 1894" // "Muséum Paris / 1952 / Coll. R. Oberthür". 2 ♀♀ in MNHN: "Ecuador / Loja / Abbe Canjon". 1 ♀ in MNHN [Coll. Fleutiaux]: "Ecuador" // "O. gloriola / ♀ Bates". 1 ♀ in MNHN [Coll. Fleutiaux]: no locality. 1 ♀ in SDEI: "Ecuador / ex cab. / Buckley" // "gloriola / var." // "Coll. Ehlers / V. de Poll" // "Coll. W. Horn / DEI Eberswalde". 1 ♀ in SDEI: "var. 3 et 4 / antennarium / article apice / metallice". 1 ♀ in MFNB: "57007", "Oxygonia / Buckley ♂♀ / Bates / Amazon. Bouc." // "Zool. Mus. / Berlin" // "Oxygonia / gloriola ♀ / Bates / det. Kippenhan 1994" [sic!]. 1 ♀ in MFNB: "57007", "Oxygonia / Buckley ♂♀" [sic!] / Bates / Amazon. Bouc.". CZool. Mus. / Berlin", "Oxygonia / gloriola ♀ / Bates / det. Kippenhan 1994" [sic!]. 1 ♀ in MFNB: "Ecuador ♀" // "Zool. Mus. / Berlin". 1 ♀ in MFNB: with same labels and: "gloriola" [sic!]. 1 ♀ in MFNB: with same labels and: "Oxygonia / gloriola ♀ / Bates / det. Kippenhan 1994" [sic!]. 1 ♀ in MFNB: "Santa Inéz / [Ecuad.] / R. Haensch S." // "Zool. Mus. / Berlin". 1 ♀ in MFNB with same labels and: "Oxygonia / gloriola ♀ / Bates / det. Kippenhan 1994" [sic!]. 1 ♀ in MFNB "Ecuador / St. Cruz.", "Oxy. glo- / riola Bates [sic!] // "Oxygonia / gloriola ♀ / Bates / det. Kippenhan 1994" [sic!]. 1 ♀ in MFNB "Ecuador", "gloriola Bates" // "82491" // "Coll. H.C. Vogel" // "Zool. Mus. / Berlin". 1 ♀ in MFNB with same labels and: "Oxygonia / gloriola ♀ / Bates / det. Kippenhan 1994" [sic!]. All the above listed females labelled: "Oxygonia / floridula Bates, 1871 / det. Jiří Moravec 2015 (or 2017)".

Females of *Ox. floridula* standing in collections under the unnecessary replacement name *Ox. uncifera* W. Horn. 1 ♀ in SDEI [as invalid lectotype of *Ox. uncifera* W. Horn]: "Santa Inéz / [Ecuad.] / R. Haensch S." // "Type! Coll. W. Horn" // "Coll. W. Horn / DEI Eberswalde" // "Syntypus" [red, printed] // "uncifera f. / mihi" [greenish with black frame, additionally attached handwritten collection label] // "Lectotype / *Oxygonia / uncifera* W. Horn ♀ / M. Kippenhan 1994" [red, printed/handwritten/printed]. 2 ♀♀ in SDEI [as paralectotypes of *Ox. uncifera* W. Horn] with same first four labels and: "Paralectotype / *Oxygonia / uncifera* W. Horn / M. Kippenhan 1994". 1 ♀ in SDEI: "Santa Inéz / [Ecuad.]" // "Oxygonia / gloriola Bt." // "Coll. O. Leonhard". 1 ♀ in NHMW: "Ecuador" // "126 Oxygonia / gloriola Bates [sic!] / = uncifera / ♀ W. Horn" // "Coll Mandl". 1 ♀ in NHMW: "gloriola ♀" [sic] // "124 Oxygonia / uncifera W. Horn / Dr. K. Mandl det. 1980". 1 ♀ in NHMW: "Ecuador" // "Ex Cab. Dokhtorow" // "Ex Mus. / Vindob.". All labelled: "Oxygonia / floridula Bates, 1871 / det. Jiří Moravec 2015 (or 2017)".

Females of *Ox. floridula* standing in BMNH and NHMW quite confusedly under the unnecessary replacement name *Ox. simplipenis* W. Horn. 3 ♀♀ in BMNH: "♀" // "Buckley" // "Ecuador / Macas" // "Fry Coll. 1905-100". 12 ♀♀ in BMNH: "Ecuador / Buckley", six of them with: "F. Bates Coll. / 1911-248". 1 ♀ in BMNH with small triangular green label and: "Ecuador" // "teste Buckley // "gloriola ♀ / Bates" [opposite side of the label]. All females labelled: "Revision of Jiří Moravec 2016: / Females of *Ox. floridula* / and *Ox. gloriola* mutually / confused by Bates 1872" // "Oxygonia / floridula Bates, 1872 / det. Jiří Moravec 2015". 1 ♀ in NHMW: "Santa Inéz / [Ecuad.]" // "Oxygonia / simplipenis W. Horn / P. Basilewsky det.". 1 ♀ in NHMW: "Ecuador / Fruhstorfer". 1 ♀ in NHMW: "Ecuador" // "126 Oxygonia / floridula Bates / = simplipenis W. Horn [sic!]. All labelled: "Oxygonia / floridula Bates, 1871 / det. Jiří Moravec 2015 (or 2017)".

Other material examined. Historical data. 1 ♂ in MNHN: "Ex Musaeo / H. W. Bates / 1892" // "Muséum Paris / 1952 / Coll. R. Oberthür" // "floridula / Bates ♂" [no locality]. 4 ♂♂ in MNHN: "Ecuador" // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930". 2 ♂♂ in MNHN: "Ecuador" // "Ex Musaeo Mniszecz" // "floridula / Bates ♂". 1 ♂ in

MNHN: "Equateur" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂ in MNHN: "Muséum Paris / 1952 / Coll. R. Oberthür" [no locality]. 3 ♂♂ in MNHN: "Ecuador Or. / de Banós a Canelos / M. de Mathan 1894" // "Muséum Paris / 1952 / Coll. R. Oberthür". 3 ♂♂ in MNHN: "Ecuador / Loja / Abbe Canjon" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂ in MNHN: "Ex Museum / A. Sallé / 1897" // "Muséum Paris / 1952 / Coll. R. Oberthür" [no locality]. 1 ♂ in MFNB: "Ecuador" // "633283" // "Zool. Mus. / Berlin". 1 ♂ in MFNB: "Ecuador" // "floridula Bates", "82484" // "coll. H. C. Vogel" // "Zool. Mus. / Berlin". 5 ♂♂ in MFNB: "Ecuador / Santa Inez / R. Haensch S" // "floridula" // 1 ♂ in MFNB: "Columbia". 15 ♂♂ in BMNH: "Ecuador / Buckley" // "F. Bates Coll. / 1911-248" (some of them with: " // "floridula / Bates ♂", or: "floridula / Bates ♂ / t. W. Horn". 1 ♂ in SDEI: "Macas / Ecuador". 1 ♂ in SDEI: "Ecuador / Janson 34". 1 ♂ in SDEI: "O. floridula" [no locality]. 5 ♂♂ in 1 SDEI: "Santa Inéz / [Ecuad.] / R. Haensch S." 1 ♂ in SDEI [as *Ox. simplipenis* (sic)]: "Ecuador" // ? illegible label // "Coll. O. Leonhard" // Coll. DEI / Eberswalde" // "Revision Jiří Moravec 2017: / confused labels? / *Ox. simplipenis* / is unavailable replacement name by / Horn (1901) for *Ox. gloriola* but / this male is *Ox. floridula* Bates, 1872!" 1 ♂ in SDEI [as *Ox. simplipenis* (sic)]: "Macas / Ecuador" [handwritten] // "sp. ? / (sp. nov. ?)" // "Coll. W. Horn / DEI Eberswalde". 1 ♂ in NHMW: "Ecuador" // "Oxygonia / uncifera W. Horn". 1 ♂ in NHMW: "Horn 1892" // "Oxygonia / floridula Bates / Ecuador". 1 ♂ in NHMW [as *Ox. prodiga* (sic)]: "Santa Inéz / [Ecuad.] / Haensch S" // "Oxygonia / prodiga [sic] / P. Basilevsky det". All labelled: "Oxygonia / floridula Bates, 1871 / det. Jiří Moravec 2015 [or 2017]".

Recent data. 5 ♂♂ in DBCN: "Ecuador: Morona / Santiago / 5 km W – Gen[eral] Proaño / 02°15'57''S; 78°10'94''W / D. Brzoska 25-X-1997". 4 ♀♀ in DBCN: "Ecuador: Morona / Santiago / Alahi Road / 6 km W – Gen[eral] Proaño / 02°15.5'S; 78°10.9'W / D. Brzoska 25-X-1997".

1 ♂, 2 ♀♀ in DBCN: "Ecuador: Morona / Santiago / 3 km NW – San Isidoro / 0.2°12'42''S; 78°10'45''W / D. Brzoska 25-X-1997".

Redescription, male (lectotype Fig. 159). Body (Figs. 159-160) medium-sized, 14.2-15.2 (lectotype 15.0) mm long, 4.40-4.70 (lectotype 4.50) mm wide.

Head (Fig. 162) normally shaped with large eyes, but smaller than body, 3.20-3.30 mm wide.

Frons moderately convex and steeply sloped towards rather indistinctly separated clypeus, passing into vertex over blunt frons-vertex fold; usually almost entirely metallic black-green with coppery tinge in middle and green lateral areas, almost smooth except for few striae adjacent to distinctly marked, metallic black or green supraantennal plates, and finely irregularly rugulose area of frons vertex fold.

Vertex anteriorly merging with frons in middle over the blunt frons-vertex fold, laterally separated from frons only by short edges partly formed by apices of the supraantennal plates, surface shaped and pattern of striae as in *Ox. uniformis* including the deep V-shaped anteromedian impression, but juxtaorbital areas with bulging eyes somewhat less steeply sloped towards vertex, and coloration almost uniformly metallic black-green with faint green lustre on juxtaorbital and templar areas.

Genae almost uniformly bright metallic green, or blue-green, usually with faint bronze iridescence, irregularly very shallowly wrinkled with only several striae on juxtaorbital areas.

Labrum (Figs. 171-172) primarily 4-setose, occasionally with additional anterior seta; 0.70-0.80 (in lectotype 0.75 mm) mm long, 1.65-1.80 (in lectotype 1.80) mm wide, with variably sinuate anterior margin and small or more protruding median tooth, very variably coloured, either black-brown (also in lectotype Fig. 171), usually faded and tarnished in old specimens, or indistinctly or strongly bicoloured with ivory white to testaceous sublateral areas.

Mandibles (Fig. 162) black or black-brown with ivory to ochre-testaceous basal areas and basolateral stripe, rather robust, subsymmetrical, lateral margins regularly arcuate, each mandible with 6 teeth and basal molar, inner teeth comparatively long.

Palpi (Fig. 162) as in other species notably elongate, maxillary palpi variably ochre to testaceous except for black penultimate and terminal palpomeres, sometimes also the longest palpomere blackened laterally or almost entirely black; longest palpomeres of labial palpi ochre-testaceous with blackened apices and black terminal palpomeres.

Antennae (Figs. 159-160, 162) of rather variable length, usually barely reaching elytral half (sometimes, also in lectotype even shorter); almost entirely black, scape and antennomeres 2-4

black with faint green lustre, rarely with also very faint cupreous reflections, 5-11 smoky-black, in old specimens usually (also in lectotype) faded to testaceous, with usual rusty-greyish micropubescence.

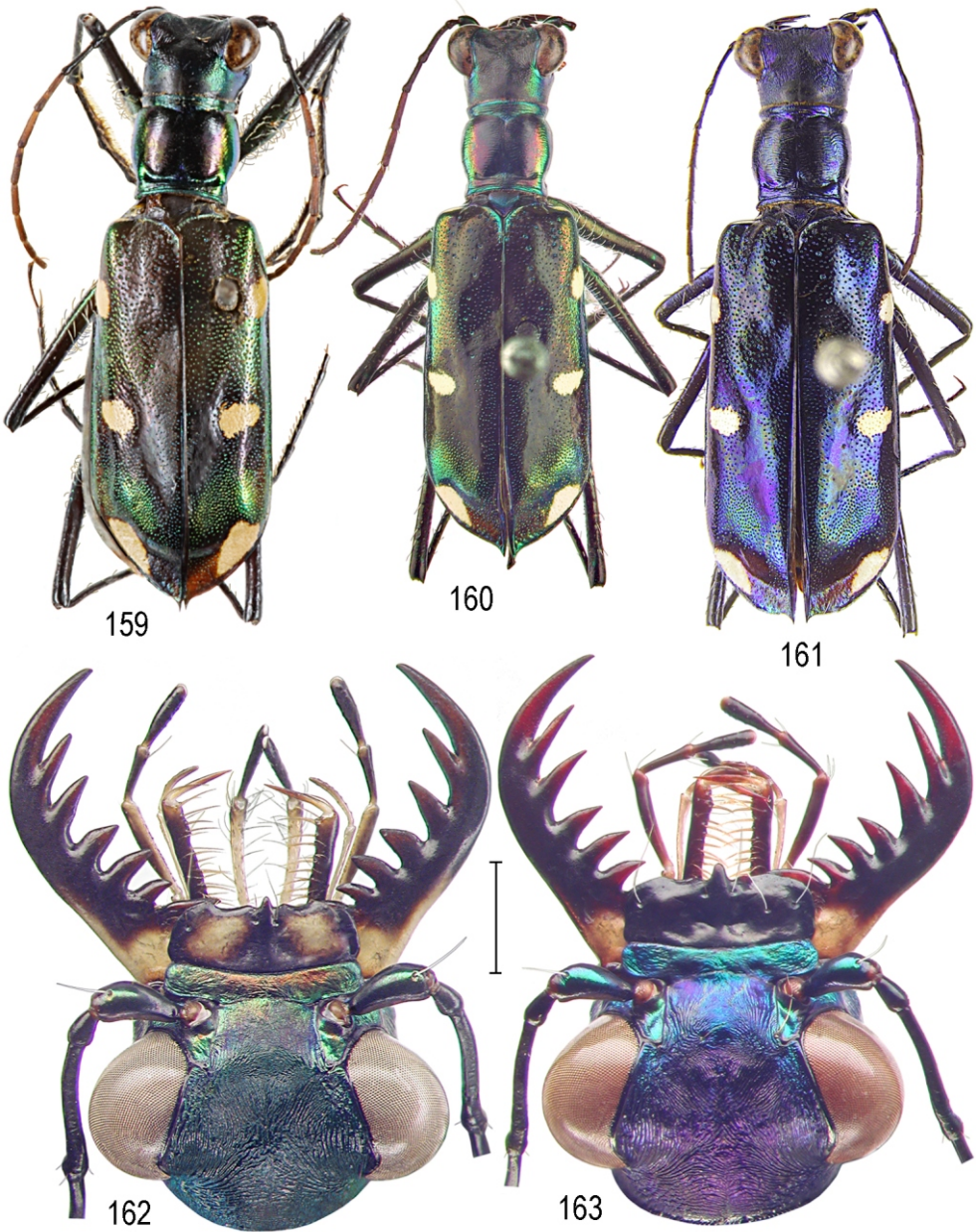
Thorax. Pronotum (Fig. 164) almost as long as wide, 2.50-2.80 (in lectotype 2.75) mm long, 2.50-2.80 (in lectotype 2.80) mm wide, with anterior lobe only slightly wider than posterior lobe, separated from disc by rather shallow sulcus which is widely V-shaped towards median line of the disc and together with deep posterior sulcus giving the disc almost cordiform shape; surface of anterior lobe prevalingly iridescent green, covered with six to eight rather coarse transverse rugae; disc mostly with notably convex or somewhat mutually subparallel lateral margins of dorsally visible proepisterna and notopleural sutures which are more often mutually subparallel; wide median area metallic coppery with faint, diffusing olivaceous-green or violet lustre, sublateral areas usually iridescent reddish, while juxtannotopleural areas iridescent-green; discal surface along distinct median line covered with mostly indistinct, parallel and almost transverse stria-like rugae, which are occasionally coarser, but become almost effaced on large sublateral areas, but again coarser and transverse on juxtannotopleural areas; posterior lobe prevalingly with iridescent green lustre, its surface covered with a few, irregular, mostly transverse rugae, dorsolateral bulges moderately raised, or more distinct as sharpened by the adjacent rugae; lateral and ventral thoracic sterna almost uniformly metallic and iridescent green or green-blue, occasionally with faint bronze iridescence, smooth, only mesepisterna and metepisterna finely wrinkled.

Elytra (Figs. 166-167) elongate, 9.50-9.90 (in lectotype 9.80) mm long, with rounded to subquadrate humeri and subparallel outer margins slightly dilated towards widely arcuate anteapical angle, then obliquely attenuated towards subacute or more acute apex with distinct sutural spine; surface rather distinctly convex, with rather deep discal impression which together with moderate humeral impressions clearly delineate moderate or more distinct basodiscal convexity; additional, rather deep and elongate impression on the area of whitish sublateral-median macula, inconsistently with several mirrored-green foveae running from elytral base along elytral disc, rarely up to elytral half, surface rather densely punctate, but punctures effaced not only on large area along and posteromesad of the whitish sublateral-median macula, but the impunctate area around the macula is expanded towards outer elytral margin; partly, but never entirely effaced punctures are sometimes on basodiscal convexity and inconsistently narrow smoothed area is also above the whitish anteapical macula; elytral coloration olivaceous-green or brighter green, usually with coppery anterior area and iridescent blue-green large anteapical area, while black-green on large discal area, and with large coppery to deep coppery-violaceous areas mostly on the impunctate area; whitish to ivory-yellowish elytral maculation consists of four distinct maculae: humeral macula wide, but visible from above as narrow stripe; subhumeral macula ovaliform; sublateral-median macula rounded or shortly mesad-elongated; anteapical macula wide, slightly posteriad-elongated.

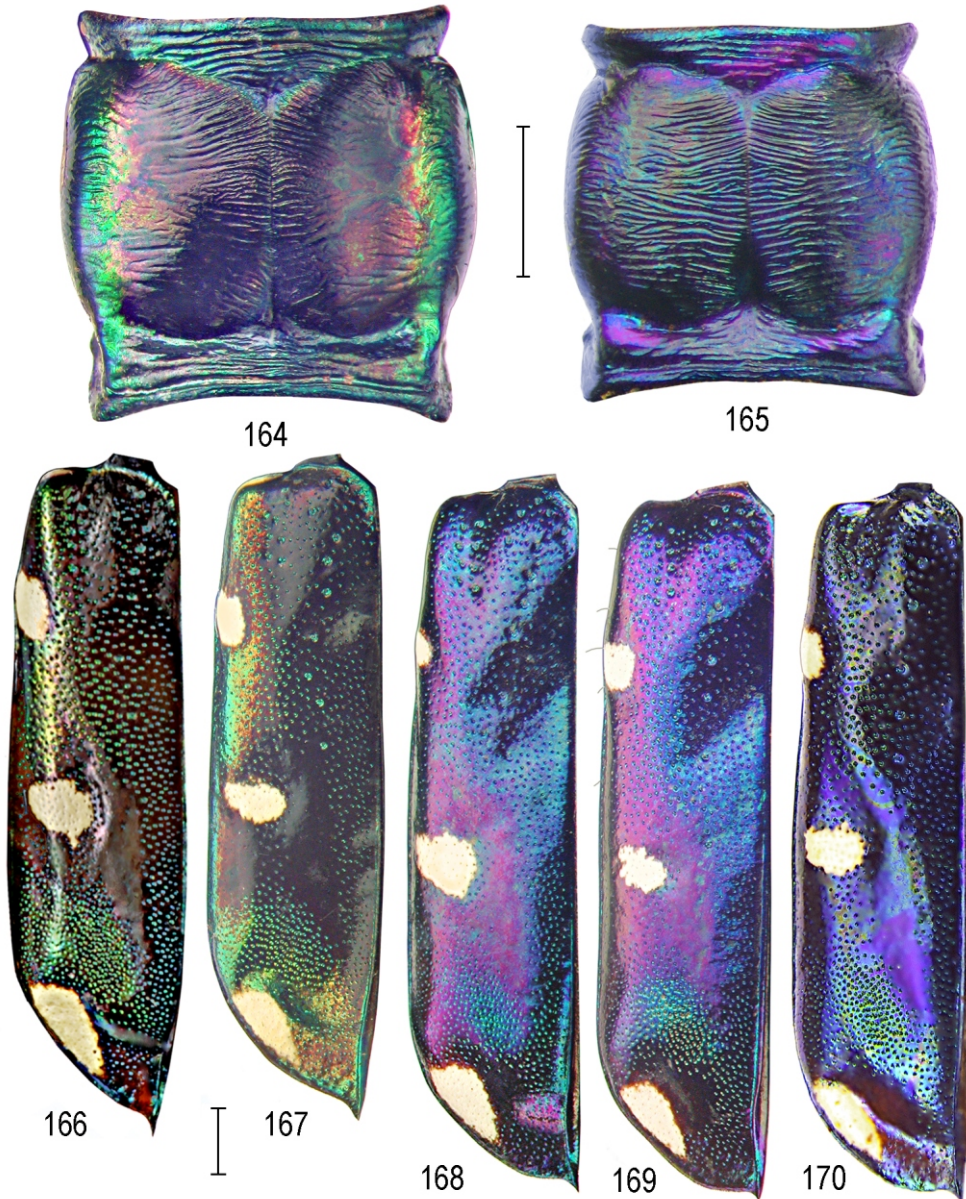
Legs black as in *Ox. uniformis*, with the same density of uncinata and often interwoven setae on femora+ the bilobed thorns on femoral apices are small.

Abdomen iridescent-green, usually with faint cupreous or bronze lustre on lateral areas; surface of ventrites smooth except for the sensory setae at margins, as in all preceding species.

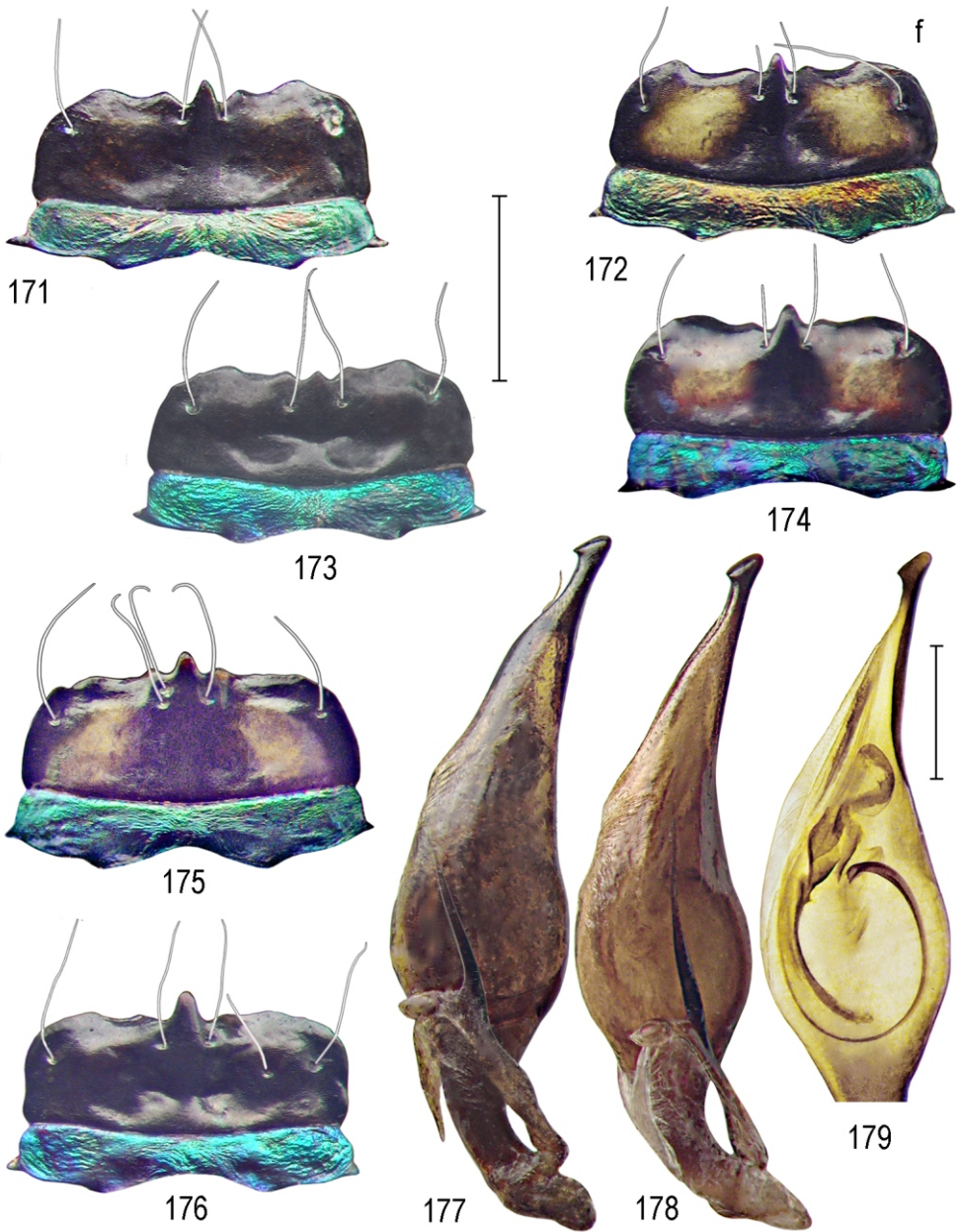
Aedeagus (Figs. 177-179) 4.60-4.90 mm long, 1.25-1.35 mm wide, basically shaped as in *Ox. prodiga* and *Ox. uniformis*, but apex slightly directed ventrally, attenuated to narrow stem which is longer than in *Ox. uniformis*, but shorter than in *Ox. prodiga*, terminated with similar, dorsally excised knob of a crochet hook-like shape; internal sac (Fig. 179) with sclerites and flagellum as in *Ox. uniformis*, but in some aedeagi the flagelliform portion protruding from dorsoapical orifice.



Figs. 159-163. *Oxygonia floridula* Bates. 159-161 - body: 159 - ♂, 15 mm, Ecuador, "Upuna" River, LT (MNHN); 160 - ♂, 14.2 mm, "Ecuador, Type, ex cab. Buckley", PLT (SDEI); 161 - ♀, 15.1 mm, "Ecuador, Type, ex cab. Buckley" (in code PLT of *Ox. gloriola*, SDEI, in fact *Ox. floridula*); 162-163 - head: 162 - ♂, Ecuador, General Proaño (DBCN); 163 - ♀, Ecuador, San Isidoro (DBCN). Bars = 1 mm.



Figs. 164-170. *Oxygonia floridula* Bates. 164-165 - pronotum: 164 - ♂, Ecuador, "Upuna" River, LT (MNHN); 165 - ♀, "Ecuador, Type, ex cab. Buckley" (in code PLT of *Ox. gloriola*, SDEI, in fact *Ox. floridula*); 166-170 - elytron: 166 - ♂, LT (MNHN); 167 - ♂, "Ecuador, Type, ex cab. Buckley", PLT (SDEI); 168-170 - in code paralectotypes of *Ox. gloriola* (in fact *Ox. floridula*): 168 - ♀, Ecuador, Rio Upano (MNHN); 169 - ♀, "Ecuador, Type, ex cab. Buckley" (SDEI); 170 - ♀, as "type of *Ox. gloriola* ex coll. V. de Poll" (SDEI). Bars = 1 mm.



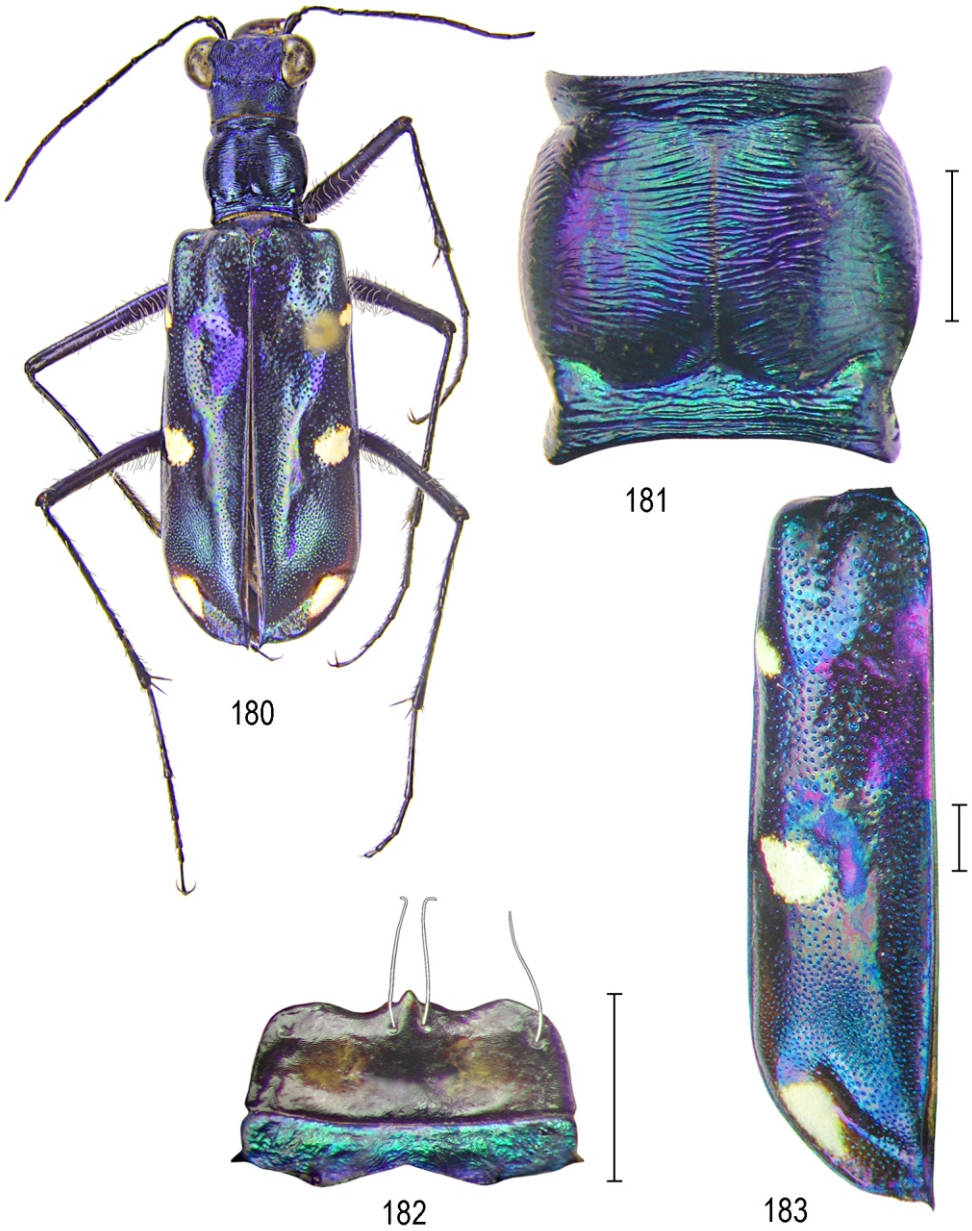
Figs. 171-179. *Oxygonia floridula* Bates. 171-176 - labrum: 171 - ♂, Ecuador, "Upuna" River, LT (MNHN); 172 - ♂, Ecuador, General Proaño (DBCN); 173 - ♀, Ecuador, Rio Upano (in code PLT of *Ox. gloriola*, MNHN, in fact *Ox. floridula*); 174 - ♀, Ecuador, "Type, ex cab. Buckley" (in code PLT of *Ox. gloriola*, SDEI, in fact *Ox. floridula*); 175-176 - ♀, Ecuador, San Isidoro (DBCN); 177-179 - aedeagi: 177 - LT (MNHN); 178 - General Proaño (DBCN); 179 - ditto, internal sac. Bars = 1 mm.

Variability. Only that mentioned in the redescription above.

Female characters. *Ox. floridula* is strongly sexually dimorphic, not only in the elytral apex which is in female rounded towards sutural spine (less markedly than in previous species), but immediately differing in the contrasting elytral coloration which is in female shiny violet-blue or purple, with black-blue elytral disc and iridescent blue or green-blue limited discal and antepical areas, usually with deep violet impunctate area posteromesad of the whitish sublateral-median macula (under front illumination the coloration is prevailingly deep blue); head prevailingly purple and blue; mandibles usually with mahogany-red teeth; labrum mostly anthracitic-black to black-brown, but sometimes also bicoloured; palpi of the same variability in coloration as in males; pronotum much darker, black-coppery, anterior and posterior lobe with brighter green and violaceous reflections, disc with dark blue-green median area covered with more continuous and denser striae; prosternum and mesosternum metallic violet-blue, metasternum, proepisterna and metepisterna iridescent-green passing to violet-blue under different light-angle; abdomen iridescent-green-blue with gold-bronze and violaceous reflections. Body (Figs. 161, 180) 13.8-15.6 mm long, 4.40-4.70 mm wide; head (Fig. 163) 3.10-3.30 mm wide; labrum (Figs. 173-176, 182) 0.65-0.80 mm long, 1.65-1.80 mm wide; pronotum (Figs. 165, 181) 2.30-2.65 mm long, 2.30-2.70 mm wide; elytra (Figs. 168-170, 183) 9.60-10.30 mm long.

Differential diagnosis. Males of *Ox. floridula* immediately differ from others of this species-group with similarly crochet hook-like aedeagus apex by the prevailingly olivaceous-green coloration; females may resemble those of *Ox. buckleyi*, particularly because of their similar elytral coloration, but both males and females of *Ox. buckleyi* immediately differ in having completely bright-metallic coloured labrum.

Biology and distribution. Eastern Andean slopes of southern Ecuador. The type locality "Ecuador: Upano River near Macas" (the same as for *Ox. gloriola*). Bates (1872a), did not mention the type locality under the original descriptions of these two species, only in an introduction to his paper he ambiguously mentioned: "Mr. Buckley discovered the haunts of the Equadorian *Oxygoniae* accidentally, while bathing in the River Upano, or Upper Morona, near Macas". As discussed by Moravec (2015), as on some labels of these two and some other taxa also is written: "R. Morona / Ecuador" it is obvious that Bates wrongly interpreted "Upper Morona" to be the Morona River, which is 45 or 65 km southeast of Macas, but its small tributaries can be nearer of Macas; probably Mr. Buckley was bathing and collecting in a small tributary. Rio Upano (wrongly written as "Upuna river" on some labels) originates on the southeastern downslope of the Parque Nacional Sangay and then flows southward past Macas. Notwithstanding, Macas and the rivers are in the province of Morona Santiago. The locality of recently caught adults, General Proaño, is situated about 6 km north of Macas. All other syntypes (paralectotypes) of *Ox. floridula* in MNHN, BMNH and SDEI come from the same area near Macas, and also recently caught adults from Patuca listed by Pearson et al. (1999b) are from the same area of the Upano River, but these authors also listed localities in the provinces of Pastaza (Baños, Canelos, Puyo Baños), Tungurahua (Puyo – Baños road) and Zamora Chinchipe. Two records from Peru are doubtful (Kippenhan 1997), but the male in MFNB labelled "Amazon" probably comes from the Andean margin of the Ecuadorian Amazonia (Pastaza River). The recently caught numerous syntopic males and females of *Ox. floridula* (and separately also of *Ox. gloriola*) have confirmed the true association of the females to males of these two species (see "Remarks" below).



Figs. 180-183. *Oxygonia floridula* Bates, ♀, invalid LT of *Ox. uncifera* W. Horn (unnecessary name), Ecuador, Santa Inéz (SDEI). 180 - body, 15.6 mm; 181 - pronotum; 182 - labrum; 183 - elytron. Bars = 1 mm.

Upuna
♂ river
Buckley

Florida
-la ♂

Equateur

184

MUSEUM PARIS
Ex Coll. M. MAINDRON
Coll. G. BABAULT 1930

LECTOTYPE
Oxygonia
floridula Bates, 1872
design. Jiří Moravec 2015

Ecuador
type
ex coll
Buckley

coll. Ehlers
V. de Poll

Coll. W. Horn
DEI Eberswalde

Type!
coll. W Horn

Syntypus

185

Revision Jiří Moravec 2017:
PARALECTOTYPE
Oxygonia
floridula Bates, 1872

R. Upano
Ecuador

Oxygonia
gloriola
Bates ♀

Ex Musæo
H.W.BATES
1892

186

MUSEUM PARIS
1952
COLL R OBERTHUR

Revision Jiří Moravec 2017:
PARALECTOTYPE of
Oxygonia gloriola Bates, 1872
although in fact female of
Oxygonia floridula Bates, 1872

Ecuador
type
ex coll
Buckley

coll. Ehlers
V. de Poll

Coll. W. Horn
DEI Eberswalde

Type!
coll. W Horn

Syntypus

187

Revision Jiří Moravec 2017:
PARALECTOTYPE of
Oxygonia gloriola Bates, 1872
although in fact female of
Oxygonia floridula Bates, 1872

Figs. 184-187. *Oxygonia floridula* Bates, labels. 184 - ♂, LT (MNHN); 185 - ♂, PLT (SDEI); 186 - ♀, (in code PLT of *Ox. gloriola*, MNHN, in fact *Ox. floridula*); 187 - ♀, (in code PLT of *Ox. gloriola*, SDEI, in fact *Ox. floridula*). No scale.

According to Pearson et al. (1999b) and D. Brzoska (pers. com.), adults are diurnal, foraging on large boulders in streams, and are often syntopic with most others of this species-group, such as *Ox. gloriola*, *Ox. moronensis*, and *Ox. buckleyi*, but also with *Ox. carissima* and *Ox. vuillefroyi*.

Remarks. Bates (1872a) mentioned in the original description that he had seen at least six specimens of each sex. As far as *Ox. floridula* was based on mixture of two species, the male lectotype is here designated in order to fix identity of the taxon. The lectotype clearly comes from the original series of the type specimens by Buckley. Its handwritten labels (in Fig. 184) correspond with the labels of other syntypes (also of several other species described by Bates). The specimens were sold to Oberthür, who also spread them to other collections, in this case to M. Maindron and G. Babault, before they become part of the MNHN collection (see "Biology and distribution" above and "Remarks" in Moravec 2015).

Ox. floridula and *Ox. gloriola* possess seriously complicated taxonomy and nomenclature. Bates (1872a) in his original description of these two taxa wrongly affiliated the females of *Ox. floridula* to the males of *Ox. gloriola* and vice versa. He was obviously influenced by the misleading coloration of the males versus the females of these two species and by the fact that he received adults of these two and other taxa from the collector Mr. Buckley from the same area in the Ecuadorian province of Morona Santiago (see "Biology and distribution" above). Most of his specimens were subsequently spread by Bates to various collections (see Moravec 2015), in the case of these two species under the wrong identification of the females and with the wrong names on their labels.

According to ICZN (1999, Art 72.4.1), the type series of a nominal species-group taxon consists of all the specimens included by the author to be the new nominal taxon (directly or by his bibliographical reference). Consequently, according to ICZN (1999, Art 72.4.1, 72.6, 72.7), despite a confusion, the syntypes must remain syntypes of the taxa as originally designated. Thus in this case, after the designations of the male lectotype of *Ox. floridula*, the female syntypes become paralectotypes of *Ox. gloriola*, although in fact are females of *Ox. floridula*, and vice versa.

Because of the wrong mutual association of females to males by Bates, Horn (1901), who for the first time partly rectified the error, quite superfluously published two unnecessary replacement names: *Oxygonia uncifera* for *Ox. floridula*, and *Oxygonia simplipenis* for *Ox. gloriola*. Kippenhan (1997) explained the problem and he for the first time exactly associated the females to males based on recently caught syntopic adults of both sexes, redescribed them in their rectified concept, and simultaneously treated *Ox. uncifera* as a new synonym of *Ox. floridula*. Nevertheless, although Kippenhan (1997) clearly stated that *Ox. uncifera* and *Ox. simplipenis* were "unnecessary new names", he designated a lectotype of *Ox. uncifera* (Figs. 180-183) choosing one of the females standing in SDEI under that name but labelled "Santa Inéz", thus from different type locality than that of *Ox. floridula*. Because *Ox. uncifera* is junior objective synonym of *Ox. floridula* and shares its type, the lectotype designation by Kippenhan (1997) is invalid (ICZN 1999, Art. 74.2).

It must be noted here that the mutual confusion of females by Bates (1872a), as well as the two unnecessary replacement names *Ox. uncifera* and *Ox. simplipenis*, partly ambiguously proposed by Horn (1901), have resulted to further confusions in collections. Although Kippenhan (1997) in his review correctly associated the females of these two species to males, in the MFNB collection the females of *Ox. floridula* were still misidentified and labelled by Kippenhan according to their confused concept as "*Oxygonia gloriola* ♀" (see the labels listed above). Likewise, all females of these two species in the MNHN, SDEI, MFNB, NHMW and BMNH

collections remained arranged according to their mutually confused, wrong identification, or, inconsistently under the two synonymous replacement names. For instance in BMNH, the males of *Ox. floridula* and females of *Ox. gloriola* have been arranged under *Ox. uncifera*, while of the specimens standing in BMNH under *Ox. simplipennis* the males are *Ox. gloriola*, but females proved to be *Ox. floridula* Bates, 1872. Likewise, although Horn (1901) created his unnecessary replacement name *Ox. simplipennis* for males of *Ox. gloriola*, the only two males standing in the Walther Horn collection (now in SDEI) under the collection label "*simplipennis*" proved to be in fact males of *Ox. floridula*. As obvious from Horn (1901) and mentioned by Kippenhan (1997), Horn was not at the time entirely convinced of the exact association of the females and full credibility of his replacement name. Alternatively the two males were such identified and placed under the collection label subsequently upon the partly ambiguous explanation of the act by Horn, probably by Döbler who published a list of type specimens of Cicindelidae in the SDEI collection (Döbler 1973).

Notwithstanding, both *Oxygonia uncifera* and *Ox. simplipennis* are unnecessary replacement names and objective synonyms of *Ox. floridula* and *Ox. gloriola*.

***Oxygonia moronensis* species-group**

***Oxygonia gloriola* Bates, 1872**

(Figs. 188-210)

Ox. gloriola Bates, 1872a: 240 (partim, **male**).

Oxygonia floridula Bates, 1872a: 241 (partim, **female**). Non *Ox. floridula* Bates, 1872a: 241, male.

Type locality. Ecuador: Upano River near Macas (see "Biology and distribution" below).

Oxygonia simplipennis W. Horn, 1901: 124 - unnecessary replacement name, synonymy by Kippenhan (1997), see "Remarks" below.

Type material of *Ox. gloriola*, males. Lectotype (designated here) ♂ in MNHN, labelled: "R. Upano / Macas / Equador" // "Oxygonia / gloriola / Bates ♂" [handwritten] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish printed] // "Lectotype / Oxygonia / gloriola / Bates, 1872 / design. Jiří Moravec 2015" [red, printed]. Paralectotypes. 1 ♂ in MNHN: "Macas / Ecuador or" [printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [printed]. 1 ♂ in MNHN: "Macas / Equateur" [printed] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish printed]. 1 ♂ in MNHN: "Rio Upano / Morona / Ecuador" [handwritten] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [printed]. 1 ♂ in SDEI: "gloriola / ♂ Bates" // "Type! Coll. W. Horn" [printed] // "Coll. W. Horn / DEI Eberswalde" [printed]. 1 ♂ in SDEI: with same labels and: "gloriola, Bates / ♂" [greenish with black frame, additional collection label]. 1 ♂ in SDEI: with same labels and additional small plain label. All paralectotypes labelled: "Revision Jiří Moravec 2017: Paralectotype / Oxygonia / gloriola Bates, 1872" [red, printed].

Females of *Ox. gloriola*, but paralectotypes of *Ox. floridula*. 1 ♀ in MNHN: "R. Morona / Ecuador" [handwritten] // "floridula / Bates" [handwritten] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [printed] // "Revision Jiří Moravec 2017: Paralectotype / Oxygonia / floridula Bates, 1872" [red, printed]. 1 ♀ in SDEI: "gloriola, Bates / ♀" [handwritten] // "Coll. V. de Poll" [printed] // "Type! Coll. W. Horn" [printed] // "Coll. W. Horn / DEI Eberswalde" [printed] // "Syntypus" [red, printed] // "gloriola, Bates / ♂" [greenish with black frame, additional collection label]. All paralectotypes labelled: "Revision Jiří Moravec 2017: / Paralectotype of / Oxygonia floridula Bates, 1872 / although in fact female of Oxygonia gloriola Bates, 1872" [red, printed].

Females of *Ox. gloriola* standing quite wrongly in BMNH as *Ox. uncifera* W. Horn, 1901 (sic!). 1 ♀ in BMNH: "Buckley" // "Equador / Macas" // "Fry Coll. 1905-100". 1 ♀ in BMNH: "52139" // "Buckley" // "Equador" // "Fry Coll. 1905-100" // "Oxygonia / uncifera" [and illegible letters] / Dr. W. Horn det. 191". 3 ♀♀ in BMNH: "Ecuador / Buckley", one of them with: "floridula / Bates ♀" // "F. Bates Coll. / 1911-248". 1 ♀ in BMNH: "Upuna Riv." / Ecuador / (Buckley) // "floridula / Bates ♀" // "F. Bates Coll. / 1911-248". All labelled: "Revision of Jiří Moravec 2016: / Females of *Ox. floridula* / and *Ox. gloriola* mutually / confused by Bates 1872" // "Oxygonia / gloriola Bates, 1872 / det. Jiří Moravec 2015 (or 2017)".

Other material examined. Historical data. 2 ♂♂ in MNHN: "Equateur / Buckley" // "Muséum Paris / 1952 / Coll. R. Oberthür [probably also syntypes (paralectotypes)]. 1 ♂ in MNHN: "Ecuador" // "Ex Musaeo Mniszech" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂ in MNHN: "gloriola ♂" // "Ex Museum / A. Sallé / 1897" // "Muséum Paris / 1952 / Coll. R. Oberthür" [no locality]. 2 ♂♂ in MNHN: "Ecuador" // Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂ in MNHN (Coll. Fleutiaux): "Ecuador" // "Oxygonia / gloriola ♂". 1 ♂ in MNHN (Coll. Fleutiaux): "Oxygonia / gloriola / Bates / Equateur". 1 ♂ in SDEI: "Ecuador" // "Ex Dokhtourov" // "Coll. O. Lenhard". 1 ♂ in SDEI: "Ecuador" // "Ex Cab. Donckier". 1 ♂ in NHMW: "Ecuador" // "Oxygonia / uncifera W. Horn" [sic] / P. Basilewsky det". 1 ♂ in NHMW: "Ecuador / w Quito / Manabi 960 / G. Evcoett J.M" // "Oxygonia uncifera [sic] W. Horn / Dr. K. Mandl det.". All labelled: "Oxygonia / gloriola Bates, 1871 / det. Jiří Moravec 2015 (or 2017)". Recent data. 5 ♂♂ in DBCN: "Ecuador: Morona / Santiago / 5.2 km S – Patuca / 02°46'68''S; 78°15'00''W / D. Brzoska 23-24-X-1997". 1 ♂, 4 ♀♀ in DBCN: "Ecuador: Morona Santiago / Pto. Morona Rd. / 5.2 km S – Patuca / 02°46.6'S; 78°14.9'W / D. Brzoska 19-21-X-1998". 2 ♂♂, 2 ♀♀ in CCJM, 1 ♂ in CJVB: "Ecuador / Provincia Pastaza / Santa Clara / 25-28.1.2000, leg. Mrázek".

Redescription, male (lectotype Fig. 188). Body (Figs. 188, 190) medium-sized, 13.8-14.6 (lectotype 14.6) mm long, 4.40-4.70 (lectotype 4.50) mm wide.

Head (Fig. 191) normally shaped, with notably large eyes, but smaller than body, 3.30-3.60 mm wide.

Frons shaped as in *Ox. floridula*, but usually iridescent reddish-cupreous with green reflections and more rugulose on frons vertex fold, supraantennal plates shiny green with reddish base.

Vertex with lateral (juxtaorbital) edges triangular-attenuated anteriorly, notably narrow between rather steeply bulged eyes (much narrower than in *Ox. floridula*), while the eyes are unusually large; surface shaped and pattern of striae as in *Ox. uniformis* and *Ox. floridula*, including the deep V-shaped anteromedian impression, but the striae more distinct, particularly coarse and usually very irregular and fragmented in middle, variably coppery with bright green lustre and reddish posterior and templar areas, but also black-violet with only faint green lustre.

Genae iridescent green, changing to iridescent red or gold-bronze depending on light angle, very finely striate on anterior and juxtaorbital areas, striae usually effaced in middle.

Labrum (Figs. 196-197) 0.65-0.75 (in lectotype 0.75 mm) long, 1.70-1.85 (in lectotype 1.75) mm wide variably shaped and coloured as in *Ox. floridula*, but the median tooth almost always very small, Mandibles (Fig. 191) as in *Ox. floridula*.

Palpi (Fig. 191) as in *Ox. floridula* but less variable in coloration of maxillary palpi which are mostly ochre-testaceous with black terminal palpomeres, rarely the longest and penultimate palpomere brownish or partly blackened.

Antennae (Figs. 188, 190-191) as in *Ox. floridula*, but scape mostly with reddish-cupreous lustre.

Thorax. Pronotum (Figs. 192-193) slightly or more distinctly shorter than wide, 2.30-2.50 (in lectotype 2.50) mm long, 2.50-2.80 (in lectotype 2.60) mm wide, basically shaped as in *Ox. floridula*, with similar variability, but lateral margins usually more convex; surface of anterior lobe prevalingly reddish-cupreous, usually iridescent-green on anterior margin, covered with three to five rather coarse and continuous parallel-transverse rugae; disc mostly with notably convex, slightly posteriad-dilated lateral margins of dorsally visible proepisterna, and notopleural sutures which are more often mutually subparallel; shiny red or deeper reddish with iridescent-green, or deep blue-green or black-violet, the coloration more or less spread on median area and on narrow lateral areas, the reddish coloration sometimes (also in lectotype) prevailing; covered with stria-like rugae arranged as in *Ox. floridula*, but more distinct and usually covering wider median area, and usually effaced on sublateral areas, again coarser and irregularly transverse on juxtannotopleural areas; posterior lobe prevalingly reddish-cupreous, its surface covered with mostly transverse rugae as in *Ox. floridula*; lateral and ventral thoracic sterna shiny green or reddish to fiery-red, depending on light angle changing to shiny green or green-blue, or bronze iridescence, smooth, only mesepisterna and metepisterna finely wrinkled.

Elytra (Figs. 200-202) oblong, 9.30-10.10 (in lectotype 9.80) mm long shaped as in *Ox. floridula* but from the arcuate anteapical angle more steeply attenuated towards acuminate apex which is often confluent with short sutural spine; elytral coloration usually predominantly bright reddish-cupreous to shiny fiery-red, combined with shiny green on basodiscal convexity and on elytral disc along sutures, widely extended around the lateromedian macula, but sometimes the red coloration prevailing (Fig. 201); ivory-white elytral maculation as in *Ox. floridula*, but the maculae generally somewhat smaller; elytral punctation as in *Ox. floridula*, but the impunctate area restricted only to mostly rather narrow area posteromesad of sublateral-median macula, but rather wide smooth area is above the anteapical macula; the two areas are mostly separated by punctate area, only very rarely confluent by a narrow impunctate stripe.

Legs as in *Ox. floridula*.

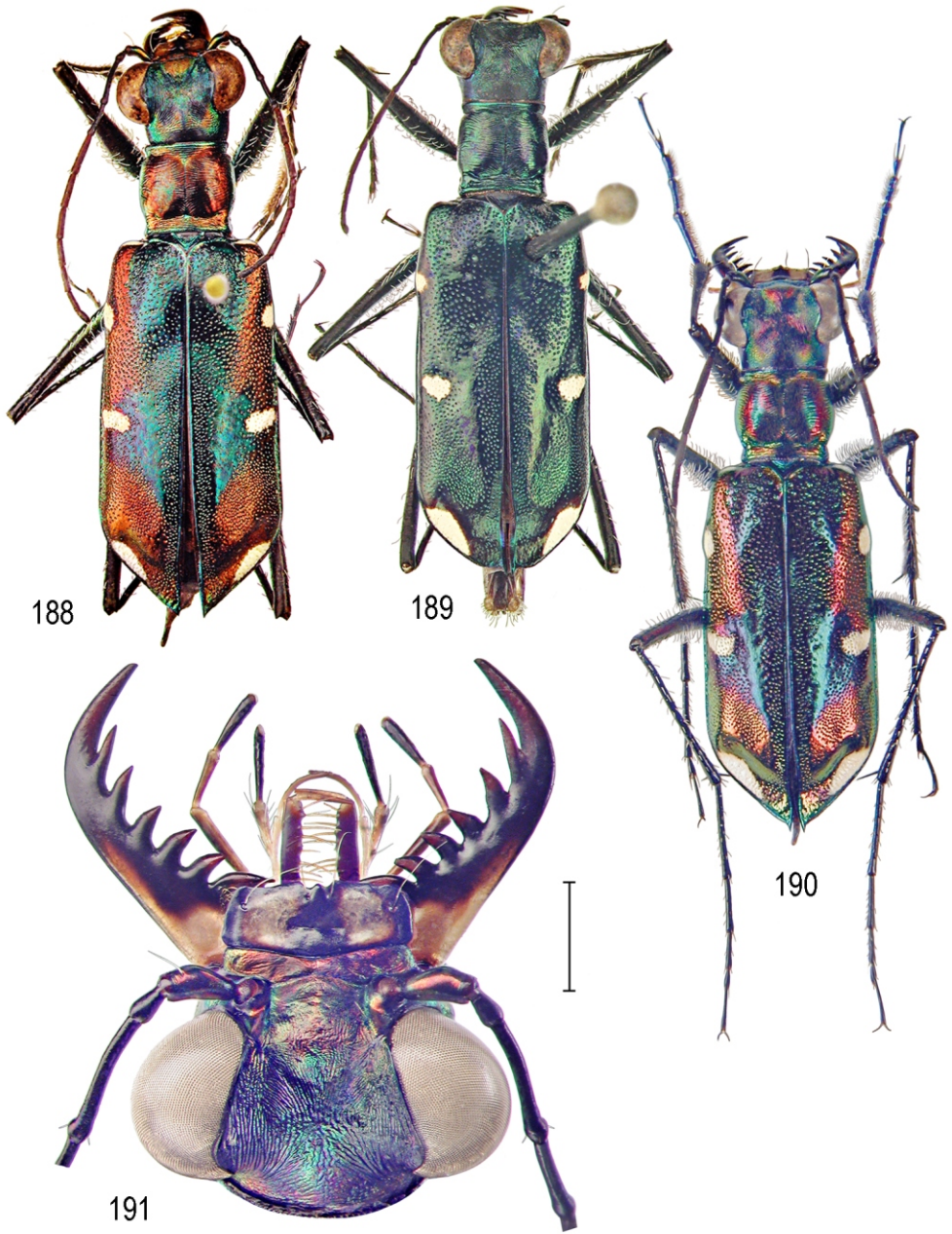
Abdomen iridescent-green, with strong mahogany-red to fiery-red lustre on lateral areas, the green coloration changing to fiery-red upon different light angle.

Aedeagus (Figs. 207-210) very long, 5.90-6.30 mm long, 1.50-1.55 mm wide, as in others of this species-group rather elongate and almost straight, apical portion only slightly directed ventrally and conically attenuated towards apex, but the apex is uniquely simply elongate-cylindrical and blunt (stick-like); internal sac (Figs. 209-210) containing long flagellum with rather thin sclerotized base and long flagelliform portion which is basally widely coiled, then running towards apex, but in examined aedeagi never penetrate it; other sclerites comprise: very long and thin arciform basodorsal sclerite, rather short supporting rib and membranous central piece, and upper central-ventral snaky-bent piece.

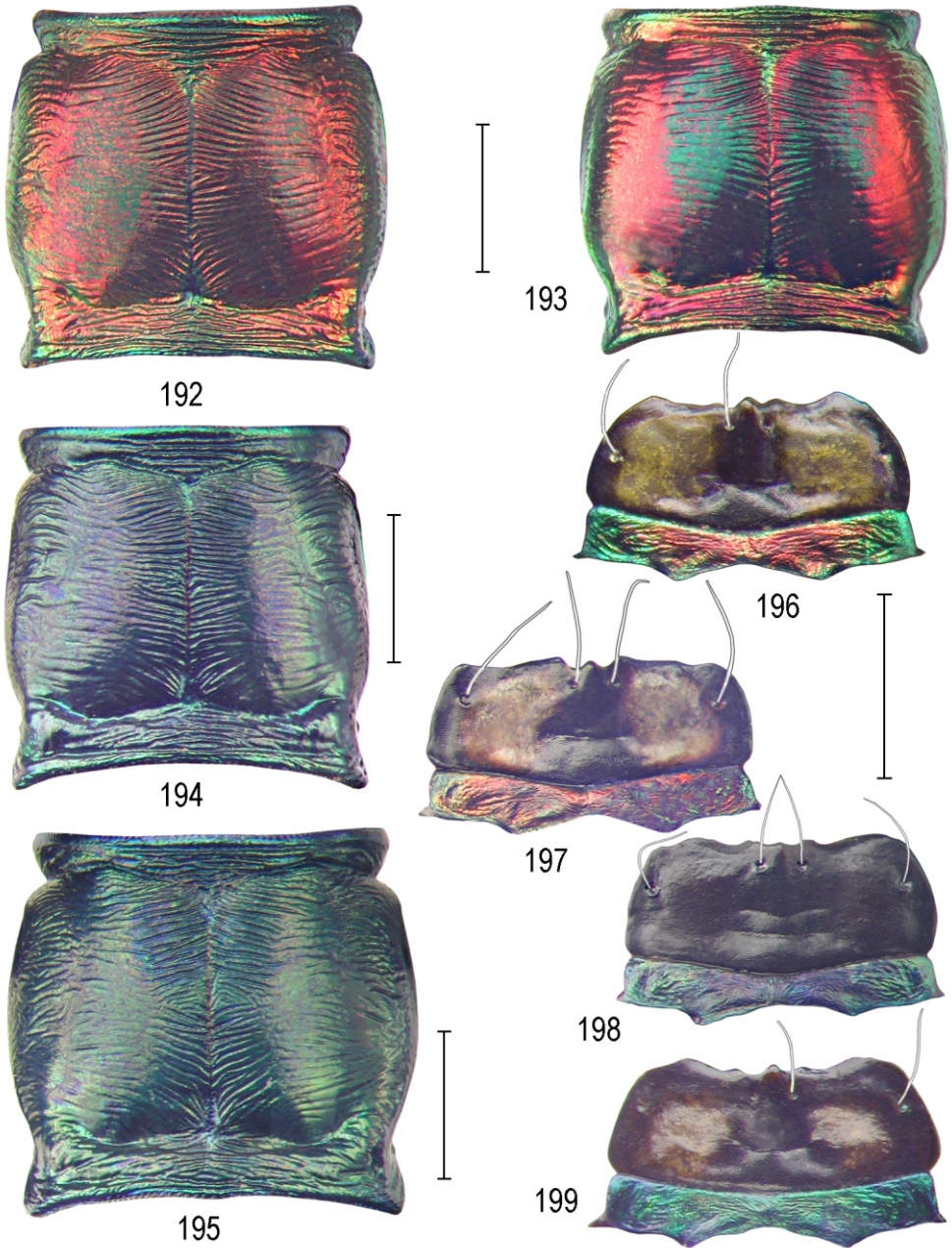
Variability. Apart from the coloration mentioned in the redescription above, the impunctate areas on the elytra also vary. Kippenhan (1997, fig. 25a) illustrated male elytra of *Ox. gloriola* with large and connected impunctate areas, but it does not correspond with this character in the lectotype (see Fig. 200 here) and with most of other examined males. In fact, the area surrounding the sublateral-median macula is sometimes very narrow, always restricted only posteromesad of the sublateral-median macula, and mostly isolated from the smooth anteapical area by dense punctures; only very rarely the two smooth areas are confluent together by a very narrow impunctate stripe. As in others of this species-group, also the coloration of the labrum and palpi varies.

Female characters. *Ox. gloriola* is strongly sexually dimorphic; the elytral apex is in female rounded (Fig. 203), but the strong difference is in the almost uniformly shiny olivaceous-green elytral coloration, with only indistinct diffusing violet-blue lustre on elytral base and along sutures; the impunctate areas as in males, but also on juxtasutural subhumeral area; the shiny coloration of the smooth areas changing to black depending on light angle; head and pronotum deep olivaceous-green with changeable deep violet or cupreous lustre, pronotal disc with more distinct striae covering wider median area and variably slightly posteriad-dilated lateral margins; lateral and ventral thoracic sterna and abdomen metallic green-blue with gold-bronze lustre. Body (Fig. 189) 13.9-14.4 mm long, 4.60-4.80 mm wide; head 3.30-3.50 mm wide; labrum (Figs. 198-199) 0.65-0.75 mm long, 1.70-1.75 mm wide; pronotum (Figs. 194-196) 2.30-2.40 mm long, 2.50-2.70 mm wide; elytron (Fig. 203) 9.30-9.50 mm long.

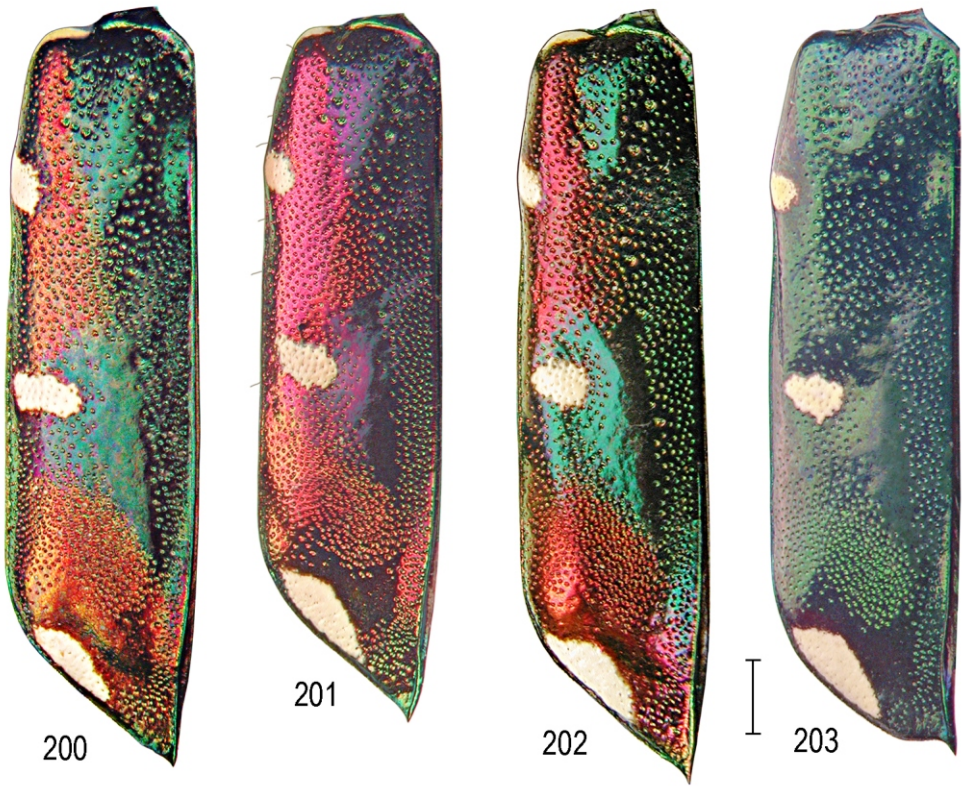
Differential diagnosis. Males of *Ox. gloriola* are in collections sometimes confused with males of *Ox. prodiga* and *Ox. buckleyi* due to their almost identical elytral coloration combined with bright red and green, but the elytral sublateral-median macula is in *Ox. gloriola* clearly



Figs. 188-191. *Oxygonia gloriola* Bates. 188-190 - body: 188 - ♂, 14.6 mm, Ecuador, Rio Upano, Macas, LT (MNHN); 189 - ♀, 14.4 mm, Ecuador, "R. Morona" (in code PLT of *Ox. floridula*, MNHN, in fact *Ox. gloriola*); 190 - ♂, 14.7 mm, Ecuador, Santa Clara (CCJM); 191 - head, ♂, Ecuador, Patuca (DBCN). Bar = 1 mm.



Figs. 192-199. *Oxygonia gloriola* Bates. 192-195 - pronotum: 192 - ♂, Rio Upano, Macas, LT (MNHN); 193 - ♂, "gloriola, ♂ Bates, Type!", PLT (SDEI); 194 - ♀, "R. Morona" (in code PLT of *Ox. floridula*, MNHN, in fact *Ox. gloriola*); 195 - ♀, Santa Clara (CCJM); 196-199 - labrum: 196 - ♂, LT (MNHN); 197 - ♂, Patuca (DBCN); 198 - ♀, ibid. (DBCN); 199 - ♀, R. Morona (in code PLT of *Ox. floridula*, MNHN, in fact *Ox. gloriola*). Bars = 1 mm.



R. Morona
Ecuador

floridula
Bates ♀

Ex Musæo
H.W.BATES
1861

204

MUSÉUM PARIS
1852
COLL. R. OBERTHÜR

Revision Jiří Moravec 2017:
PARALECTOTYPE of
Oxygonia floridula Bates, 1872
although in fact female of
Oxygonia gloriola Bates, 1872

Figs. 200-204. *Oxygonia gloriola* Bates. 200-203 - elytron: 200 - ♂, Rio Upano, Macas, LT (MNHN); 201 - ♂, "gloriola, ♂ Bates, Type!", PLT (SDEI); 202 - ♂, Ecuador (as *Ox. simplipennis*, SDEI); 203 - ♀, R. Morona (in code PLT of *Ox. floridula*, MNHN, in fact *Ox. gloriola*); 204 - ditto, labels. Bar = 1 mm.



205



Figs. 205-210. *Oxygonia gloriola* Bates. 205 - labels of LT; 206-208 - aedeagi: 206 - aedeagus apex, ♂, Rio Upano, Macas, LT (MNHN); 207-208 - Ecuador, Patuca (DBCN) 209-210 - ditto, internal sac in left and right lateral view. Bar = 1 mm.

distant from the epipleuron, vertex between eyes narrower, while the eyes notably bulged and unusually large; *Ox. buckleyi* immediately differs in having completely bright-metallic coloured labrum. The aedeagus in *Ox. gloriola* fundamentally differs from all species of the genus in having uniquely shaped apex that is almost straight, simply cylindrical and blunt (stick-like shaped). Males of *Ox. fleutiauxi* also have rather similarly coloured elytra and similar shape of the elytral apex, but clearly differs in having the aedeagus apex moderately dorsad-hooked and slightly dilated, resembling a club-like head.

Females of *Ox. gloriola* are rather easily differentiated from females of other species with similar pattern of the whitish elytral maculation by their almost uniformly olivaceous-green elytra. Some females of *Ox. oberthueri* also have greenish coloured elytra, but they are punctate throughout, lacking impunctate areas. The smooth area near the sublateral-median macula is sometimes very small, always running only posteromesad to the macula, thus much narrower and never expanded towards outer elytral margin (as it is in *Ox. floridula*), but the smooth area above the anteapical macula is in *Ox. gloriola* much larger, and very rarely these two impunctate areas are narrowly confluent (see also "Variability" above).

Biology and distribution. Virtually the same as in *Ox. floridula* with which it shares also the type locality in Ecuador. Kippenhan (1997) also mentioned one record from Moyobamba, Peru, and also Erwin & Pearson (2008) mentioned the occurrence of *Ox. gloriola* in Peru. Maps of distribution are in Kippenhan (1997) and Pearson et al. (1999b).

Remarks. Bates (1872a) mentioned in the original description that he had seen many specimens of this species. As far as *Ox. floridula* was based on mixture of two species, the male lectotype is here designated in order to fix identity of the taxon.

For the complicated taxonomy and nomenclature see "Remarks" under *Ox. floridula* above. As Bates (1872a) in his original descriptions of these two taxa wrongly associated the females of *Ox. floridula* to the males of *Ox. gloriola*, Horn (1901) proposed for *Ox. gloriola* a new replacement name *Ox. simplipenis*, though rather ambiguously regarding females, as explained by Kippenhan (1997) who exactly associated the females to males and correctly stated that the name *Ox. simplipenis* is an unnecessary replacement name. For the chaotic confusion of the specimens in collections see in "Remarks" under *Ox. floridula* above.

Because of the simply cylindrical shape of the aedeagus apex, Kippenhan (1997) proposed for *Ox. gloriola* a monobasic species-group "groupe *gloriola*". Nevertheless, it is here included to the *Ox. moronensis* species-group, particularly for the similar external characters of *Ox. fleutiauxi* and similar shape of the aedeagus in its median portion. Moreover, the almost identical structure of the internal sac including the simply serpentlike sclerite also is shared with all other species of the *Ox. moronensis* species-group.

***Oxygonia fleutiauxi* W. Horn, 1896**

(Figs. 211-233)

Ox. fleutiauxi W. Horn, 1896: 340.

Type locality. Peru: Moyobamba.

Type material. Lectotype [designated by Kippenhan 1997] ♂ in SDEI, labelled: "Donckier / Oberthür" [printed/handwritten] // "Pérou / Moyobamba / M. de Mathan / 1er Sem. 1887" [ochre-tarnished with thin black border, printed] // "Type I / Coll. W. Horn" [printed] // "Syntypus" [red, printed] // "Coll. W. Horn / DEI Eberswalde" [printed] // "Lectotype / *Oxygonia* / *fleutiauxi* W. Horn / by M. Kippenhan 1994" [red, printed/handwritten/printed]. Paralectotypes. 1 ♂, 1 ♀ in SDEI with same labels, the males with additional label: "Fleutiauxi / mihi [green with black frame, handwritten,

large collection-label] // "Paralectotype / *Oxygonia* / fleutiauxi W. Horn / by M. Kippenhan 1994" [red, printed/handwritten/printed]. 1 ♀ in SDEI: "Pérou Moyobamba / M. de Mathan / 1888" [printed] // "Fleutiauxi / W. H. ♀" [handwritten] // Coll. DEI / Eberswalde" [printed]. 10 ♂♂, 9 ♀♀ in MNHN (Coll. General): "Pérou Moyobamba / M. de Mathan / 1888" [printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [printed]. 2 ♂♂, 2 ♀♀ in MNHN (Coll. Fleutiaux) with same label data. All paralectotypes labelled: "Revision Jiří Moravec 2017: / Paralectotype / *Oxygonia* / fleutiauxi W. Horn, 1896" [red, printed].

Other material examined. Historical data: 1 ♀ in SDEI: "Pérou Moyobamba / M. de Mathan / 1888" [printed] // "Coll. V. de Poll" [probably syntype]. 1 ♀ in SDEI: "Heyne [leg.] / Chanchamayo / Peru". 1 ♂ in SDEI: "Peru" // Coll. O. Lonhard". 2 ♂♂, 1 ♀ in SDEI: "Dept. San Martin / vic. Rioja / Jungle, 900m. a.s.l." // "Peru, S.A., 10. 2-3-1936 / F. Woytkowski" // "Univ. Kansas 1937" // "Coll W. Horn / DEI Eberswalde". 2 ♂♂, 2 ♀♀ in DBCN with same label data except for: "10-4-1936".

Recent data. 7 ♂♂, 4 ♀♀ in DBCN: "Peru: Ucayali / Tingo Maria-Pucallpa Rd. / km. 205, Puente Chino, 1300 m. / 09°08.2'S, 75°47.3'W / D. Brzoska 11-X-1999".

Redescription male. Body (lectotype Fig. 211) medium-sized to large, 14.8-17.0 (lectotype 16.2) mm long, 4.60-5.10 (lectotype 4.80) mm wide.

Head (Figs. 213, 214) normally shaped, with large eyes, but much smaller than body, 3.40-3.60 mm wide.

Frons shaped as in *Ox. floridula*, but usually iridescent reddish-cupreous to fiery red with green reflections and surface irregularly wavy-rugulose more coarsely and vermicular-rugulose on frons vertex fold, supraantennal plates usually well delineated, large and shiny green.

Vertex normally shaped (of normal width between eyes), with the same pattern of striation as in *Ox. gloriola*, including deep V-shaped anteromedian impression and usually coarser, irregular and fragmented rugae below the central conjunction of the striae; variably but more usually predominantly purple-red with faint or more extended bright green lustre, usually in middle.

Genae as in *Ox. gloriola*.

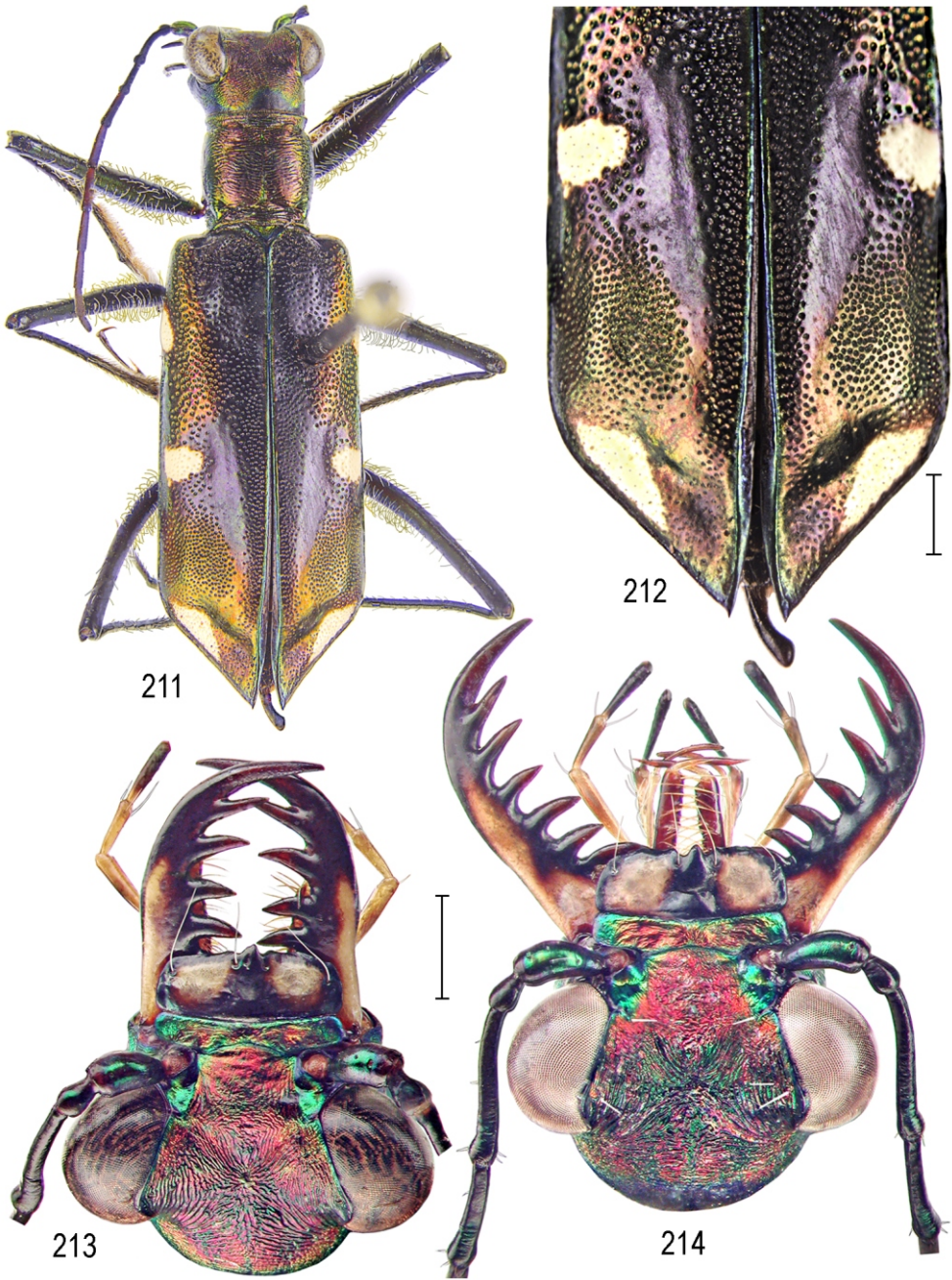
Labrum (Figs. 219-221) 0.70-0.75 (in lectotype 0.72 mm) mm long, 1.70-1.80 (in lectotype 1.75) mm wide, mostly strongly bicoloured, ivory-yellow to ochre-testaceous, sublateral areas sometimes darker, tarnished in old specimens; anterior margin variably sinuate as in preceding species, median tooth mostly thick and protruding from rather deep notches on either side.

Mandibles (Figs. 213-214) comparatively long and narrow, lateral margins almost regularly arcuate, with six teeth and basal molar, inner teeth rather elongate, coloration as in preceding species.

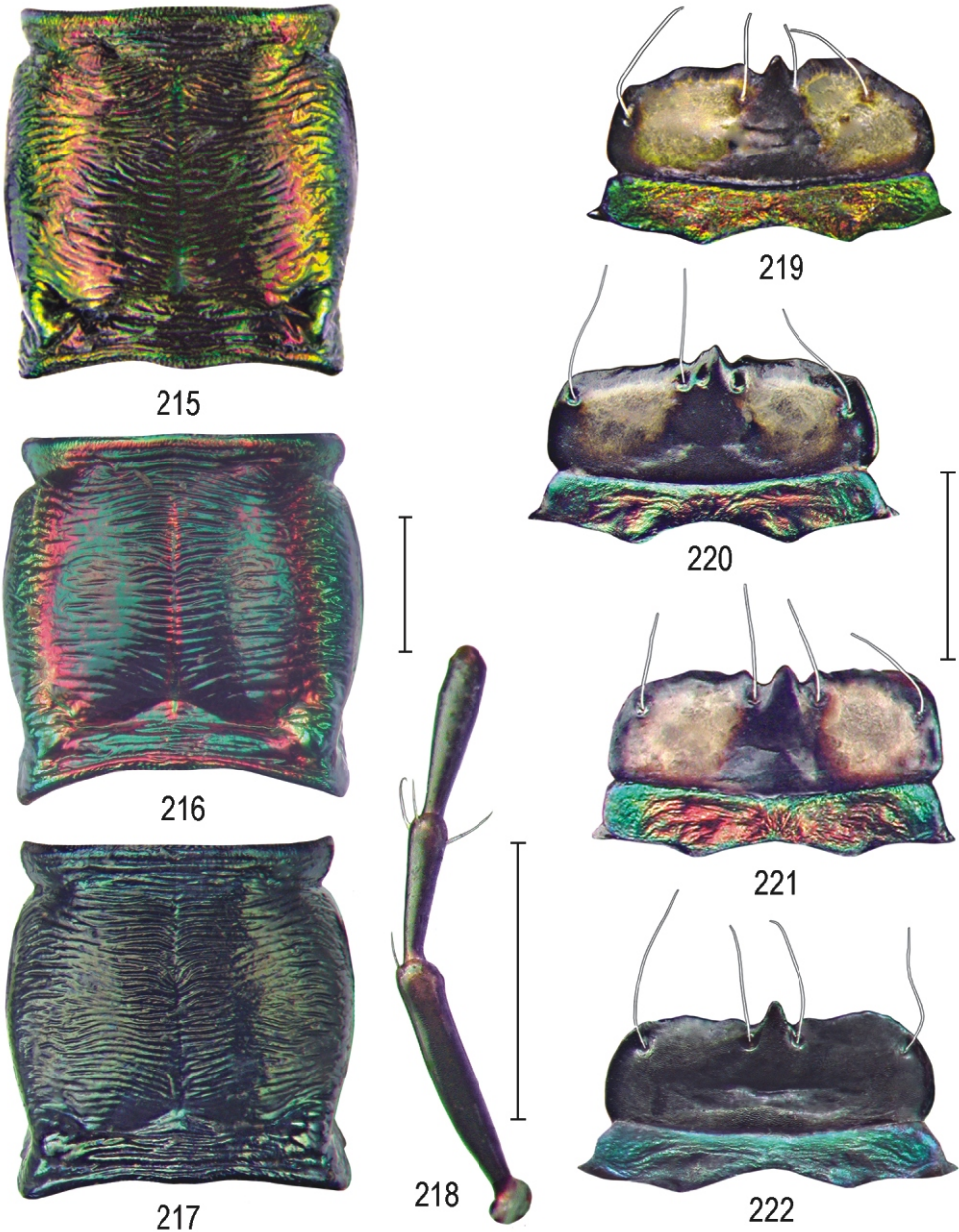
Palpi (Figs. 213-214) shaped as in *Ox. gloriola* mostly ochre to testaceous except for black terminal palpomeres.

Antennae (Figs. 211, 213-214) rather short, not passing elytral third, antennomeres 1-4 scape and pedicel metallic black with strong green lustre on scape and often also on pedicel and on apices of antennomeres 3-4.

Thorax. Pronotum (Figs. 215-216) almost rectangular, variably as long as wide, rarely wider, but mostly slightly longer than wide, 2.75-2.90 (lectotype 2.80) mm long, 2.65-2.90 (lectotype 2.65) mm wide, predominantly iridescent reddish-cupreous with gold-bronze iridescence, usually green on anterior margins and on median area of disc; anterior lobe almost as wide as posterior lobe, surface of anterior lobe covered a few rather coarse and mostly continuous parallel-transverse rugae; disc mostly with only moderately convex lateral margins of dorsally visible proepisterna, notopleural sutures barely visible from above, discal surface covered with rather irregular and distinct rugae, more regular and stria-like along the median line, much shallower and irregular or sometimes partly effaced on sublateral areas, again coarser on lateral areas; posterior lobe covered with several, irregular, mostly transverse rugae; dorsolateral bulges rather distinct, but usually merging with the rugae; lateral and ventral thoracic sterna iridescent green,



Figs. 211-214. *Oxygonia fleutiauxi* W. Horn. 211 - body, ♂, 16.2 mm, Peru, Moyobamba, IT (SDEI); 212 - ditto, elytral detail; 213-214 - head: 213 - ♂, IT (SDEI); 214 - ♂, Peru, Tingo Maria (DBCN). Bar = 1 mm.



Figs. 215-222. *Oxygonia fleutiauxi* W. Horn. 215-217 - pronotum: 215 - ♂, Peru, Moyobamba, LT (SDEI); 216 - ♂, ibid., PLT (MNHN); 217 - ♀, ibid., PLT (MNHN); 218 - maxillary palpus, ♀, ibid., PLT (MNHN); 219-222 - labrum: 219 - ♂, LT (SDEI); 220 - ♂, PLT (MNHN); 221 - ♂, Peru, Tingo Maria (DBCN); 222 - ♀, PLT (MNHN). Bars = 1 mm.

changing to gold-bronze or cupreous, smooth, except for rugulose prosternum, and finely wrinkled mesepisterna, metepisterna and indistinctly also juxtannotopleural area of proepisterna.

Elytra (Figs. 212, 223-225, 227) oblong, 10.2-11.6 (in lectotype 11.1) mm long shaped and coloured as in *Ox. gloriola* but the reddish coloration mostly with purple hue and gold-bronze iridescence, and the bright green area on elytral base and disc sometimes (also in holotype) black-violet with violaceous smooth area posteromesad lateromedian macula; ivory-white elytral maculation as in *Ox. gloriola*, but the lateromedian macula much closer to epipleuron; elytral punctation as in *Ox. gloriola*, but larger impunctate area surrounding the lateromedian macula not only posteromesad, but also anteriad, but anteapical-apical area mostly punctate, rarely, also in lectotype (Figs. 212, 223) partly effaced.

Legs as in preceding species, femora metallic-black, usually with diffusing green lustre, setae on femora densely uncinata-interwoven; bilobed thorns on femoral apices small.

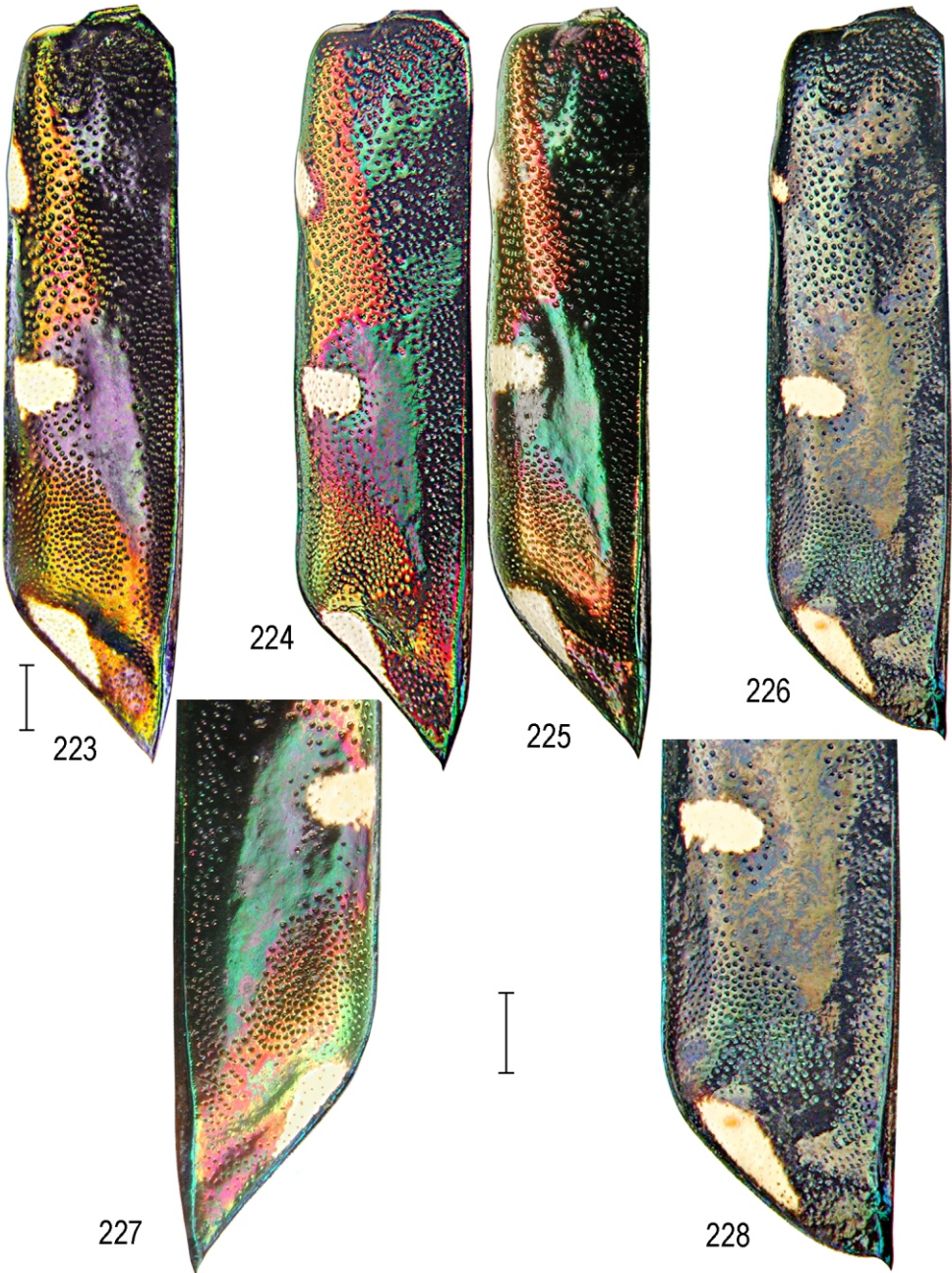
Abdomen as in *Ox. gloriola*.

Aedeagus (Figs. 229-233) notably elongate, almost straight and very long, length, 6.90-7.40 mm, width 1.40-1.55 mm, apical half almost regularly conically attenuated towards narrowly elongated, moderately dorsally hooked apex terminated with dilated, rounded knob which is only dorsally shallowly emarginated (resembling club head); internal sac (Fig. 233) containing very long flagellum with base shaped as in *Ox. gloriola*, but very long flagelliform portion usually protruding from the dorsoapical orifice; other sclerites as in *Ox. gloriola*, with characteristic, simply snake-like upper-central piece.

Variability. Apart from that mentioned in the description and obvious from the illustrations, the humeral macula in males is mostly invisible from above, subhumeral macula sometimes very small.

Female characters. Female differs from male particularly in having elytral apex almost rounded to subacute towards small sutural spine and much less bright coloration, the reddish areas are substituted by dark green-blue, combined with violet-brown which is more expanded around whitish sublateral-median macula, humeral macula absent; pronotum black-coppery with green lustre usually on anterior and posterior lobe, and discal surface covered with more prominent rugae; labrum in examined females entirely black; maxillary palpi (Fig. 218) black, longest and penultimate palpomeres of labial palpi testaceous with blackened apical third and black terminal palpomeres, or almost entirely blackened. Body 14.7-16.5 mm long, 4.70-5.20 mm wide; head 3.40-3.60 mm wide; labrum (Fig. 222) 0.65-0.80 mm long, 1.65-1.75 mm wide; pronotum (Fig. 217) 2.60-2.90 mm long, 2.60-2.80 mm wide; elytron (Figs. 226, 228) length 10.2-11.2.

Differential diagnosis. Males of *Ox. fleutiauxi* possess almost the same body coloration as in *Ox. gloriola*, combined with bright green and red (although on the elytra the red coloration has mostly purple-red tinge and bronze iridescence), but they are immediately distinguished by their aedeagus apex which is moderately dorsad-bent and slightly dilated, resembling a club-like head, but also by their notably larger body size. For other differences from similarly coloured *Ox. gloriola* and *Ox. buckleyi* see under *Ox. gloriola* above. *Ox. moronensis* and *Ox. nigrovenator* also possess the same shape of the aedeagus apex as in *Ox. fleutiauxi*, but they immediately differ in having prevalingly black coloration (see below).



Figs. 223-228. *Oxygonia fleutiauxi* W. Horn, elytron. 223 - ♂, Peru, Moyobamba, LT (SDEI); 224 - ♂, ibid., PLT (MNHN); 225 - ♂, Peru (MFNB); 226 - ♀, PLT (MNHN); 227 - ♂ (right elytron, detail of impunctate areas), Peru (MFNB); 228 - ♀, detail of impunctate areas, PLT (MNHN). Bar = 1 mm.



Figs. 229-233. *Oxygonia fleutiauxi* W. Horn, aedeagi. 229 - Peru, San Martin, Rioja (SDEI); 230 - aedeagus apex, Peru, Moyobamba, IT (SDEI); 231 - ibid., PLT (MNHN); 232 - Peru (SDEI); 233 - ditto, internal sac. Bar = 1 mm.

Biology and distribution. Peru. The syntypes and historical specimens come from the type locality near Moyobamba, and most other old records are from the same area in the region of San Martín, northern Peru, where it is sympatric with *Ox. prodiga*. The locality Rioja is situated in the valley of the upper Mayo River north of the San Martín Region. The recently caught adults listed above come from the Peruvian region of Ucayali, along the Tingo María-Pucallpa road towards Puente Chino, and were caught during the day along small streams partially covered with vegetation, in the altitude 1300 m (D. Brzoska, pers. com.).

Remarks. Horn (1896) in the original description mentioned two males received from Donckier, but also that he observed other specimens in collections of Edmond Fleutiaux and René Oberthür. He also mentioned that he simultaneously observed a syntopic female in the mentioned French collections, thus supposedly of the same species. Consequently, besides the male sex, he simultaneously described one female for *Ox. fleutiauxi* from his memory and characters gained from one of the French collection (fortunately quite correctly). Therefore, apart from the lectotype designated by Kippenhan (1997) and paralectotypes in SDEI (male and female labelled as such by Kippenhan), also the other specimens in MNHN with the same locality label and coming from the collections of Fleutiaux and Oberthür, are here considered paralectotypes and were labelled as such by me in MNHN.

Oxygonia moronensis Bates, 1872 (see Moravec 2015: 62–68, figs 91–109)

Ox. moronensis Bates, 1872a: 1872a: 242.

Type locality. Ecuador: Upper Morona. Bates (1872a) mentioned “R. Upano, Ecuador, (Buckley)”, but syntypes labelled also “Upuna river” or “Macas”, or “Ecuador, Buckley”, or “R. Morona” as also the lectotype.— see “Biology and distribution” in Moravec (2015).
Lectotype ♂ (MNHN) designated, redescribed and illustrated by Moravec (2015).

Oxygonia nigrovenator Kippenhan, 1997 (Figs. 234-244)

Ox. nigrovenator Kippenhan, 1997: 347.

Type locality. Ecuador: Napo, 20 km east of Tena – Baeza Road.

Type material. Holotype (not examined), ♂ in QCAZ, labelled: “Ecuador: Napo / 20 km e. Tena-Baeza Road / 25.Sept. 1994 (1.100m) D.L. Pearson et al” // “Holotype / *Oxygonia nigrovenator* / Kippenhan” [red with black border, printed/handwritten]. Paratypes. Of the paratypes listed by Kippenhan the following ones examined: 1 ♂, 1 ♀ in DBCN with same label data.

Other material examined. 1 ♂ in DBCN: “Ecuador: Napo / 19.7 km E – Tena Road / D. Brzoska 17-18-X-1997” (type locality). Other data (type locality area): 4 ♂♂, 4 ♀♀ in DBCN, 2 ♂♂, 1 ♀ in CCJM, 1 ♂, 1 ♀ in CJVB: “Ecuador – Napo / Loreto – Coca Road / 4.7 km E – Tena Road / 00°43.6’S; 77°46.0’W / D. Brzoska 17-18-X-1998”. 3 ♂♂ in DBCN with same label data except for: “43 km E – Tena Road / 00°42.4’S; 77°35.9’W / D. Brzoska 18-X-1998”.

Redescription, male. As the diagnostic characters of *Oxygonia nigrovenator* are virtually identical with those treated in the “Redescription” and “Differential diagnosis” for *Ox. moronensis* by Moravec (2015), only the measurements and distinguishing characters follow.

Body (Fig. 234) very large, 16.5-18.3 mm long, 4.80-5.30 mm wide, almost entirely black.

Head (Fig. 235) normally shaped with large eyes but markedly narrower than body, 3.50-3.70 mm wide.

Frons, vertex, genae and clypeus shaped and with surface sculpture as in *Ox. moronensis*, but almost entirely black, rarely with diffusing metallic hue.

Labrum (Figs. 236, 237) 0.70-0.80 mm long, 1.90-2.00 mm wide, shaped and coloured as in *Ox. moronensis*, with similar variability in having 4-8 setae and either predominantly black or with more or less expanded ochre-testaceous lateral areas.

Palpi (Fig. 235) mostly entirely black as in *Ox. moronensis*.

Mandibles (Fig. 235) black-brown with only small yellow-ochre basolateral areas, subsymmetrical, each mandible with 6 teeth and basal molar (as in *Ox. moronensis*).

Thorax. Pronotum (Fig. 239) 2.70-3.10 mm long, 2.60-3.00 mm wide, shaped and with surface sculpture as in *Ox. moronensis*, but entirely black, rarely with indistinct, diffusing metallic hue.

Elytra (Fig. 243) 11.3-12.2 mm long, shaped and with punctuation and whitish maculation as in *Ox. moronensis*, but entirely black, rarely with indistinct, diffusing metallic coppery or olivaceous hue. Legs as in *Ox. moronensis*, but entirely black.

Abdomen as in *Ox. moronensis*, but entirely black.

Aedeagus (Figs. 241-242) notably straight and long (as in *Ox. fleutiauxi* and *Ox. moronensis*), 7.10-7.40 mm long, 1.50-1.25 mm wide, shape and internal sac (Fig. 242) as in *Ox. moronensis* and *Ox. fleutiauxi*.

Variability. Only in the very rarely occurring, indistinct diffusing metallic coppery or olivaceous-green hue.

Female characters. The sexual dimorphism seems to be slightly more distinct than that in *Ox. moronensis*, because the elytral apices are usually more rounded while those in females of *Ox. moronensis* are almost subacute. Body 16.9-18.2 mm long, 5.3-5.6 mm wide; head 3.55-3.60 mm wide; labrum (Fig. 238) 0.75-0.85 mm long, 1.95-2.05 mm wide; pronotum (Fig. 240) 2.80-2.95 mm long, 2.60-2.80 mm wide; elytron (Fig. 244) 12.0-12.2 mm long.

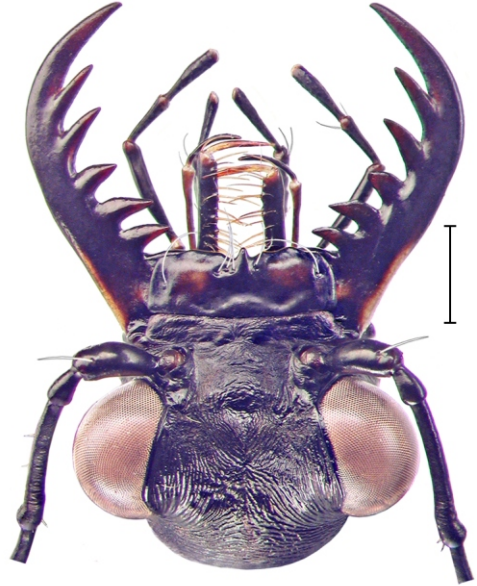
Differential diagnosis. *Ox. nigrovenator* is almost identical with *Ox. moronensis* differing only in its larger and uniformly black body with only rare and indistinct metallic hue, and generally in larger impunctate areas on its elytra; nevertheless, the smooth areas are variable in both these taxa, and also in *Ox. moronensis* are often conspicuously large, as illustrated from the lectotype and paralectotype by Moravec (2015, figs 96, 104, 107), and almost entirely black specimens also occur in *Ox. moronensis*. Nevertheless, in the majority of adults of *Ox. moronensis* the pronotum has rather strong reddish-cupreous lustre and often green lustre on lateral areas. The aedeagi in these two taxa are identical.

Both *Ox. nigrovenator* and *Ox. moronensis* can hardly be confused with any of the other *Oxygonia* species. They also are clearly distinguished from some unusually dark-coloured males of *Ox. schoenherrii* by their larger body size and pattern of the whitish elytral maculation, and by the shape of their aedeagi; females can be distinguished by their entirely or predominantly black body and pattern of the elytral maculation. Both males and females of *Ox. moreti* (the largest species of the genus) immediately differ in their pattern of the whitish elytral maculation.

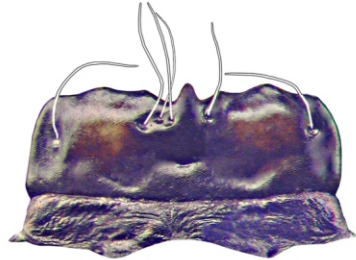
Biology and distribution. Ecuador, province of Napo and rarely in Pastaza. Maps of distribution are in Kippenhan (1997) and Pearson et al. (1999b). Majority of paratypes and other



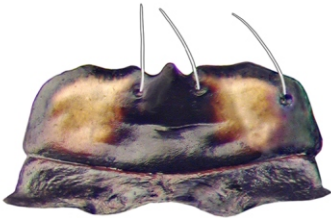
234



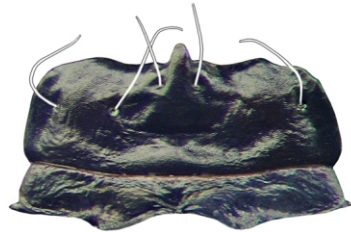
235



237

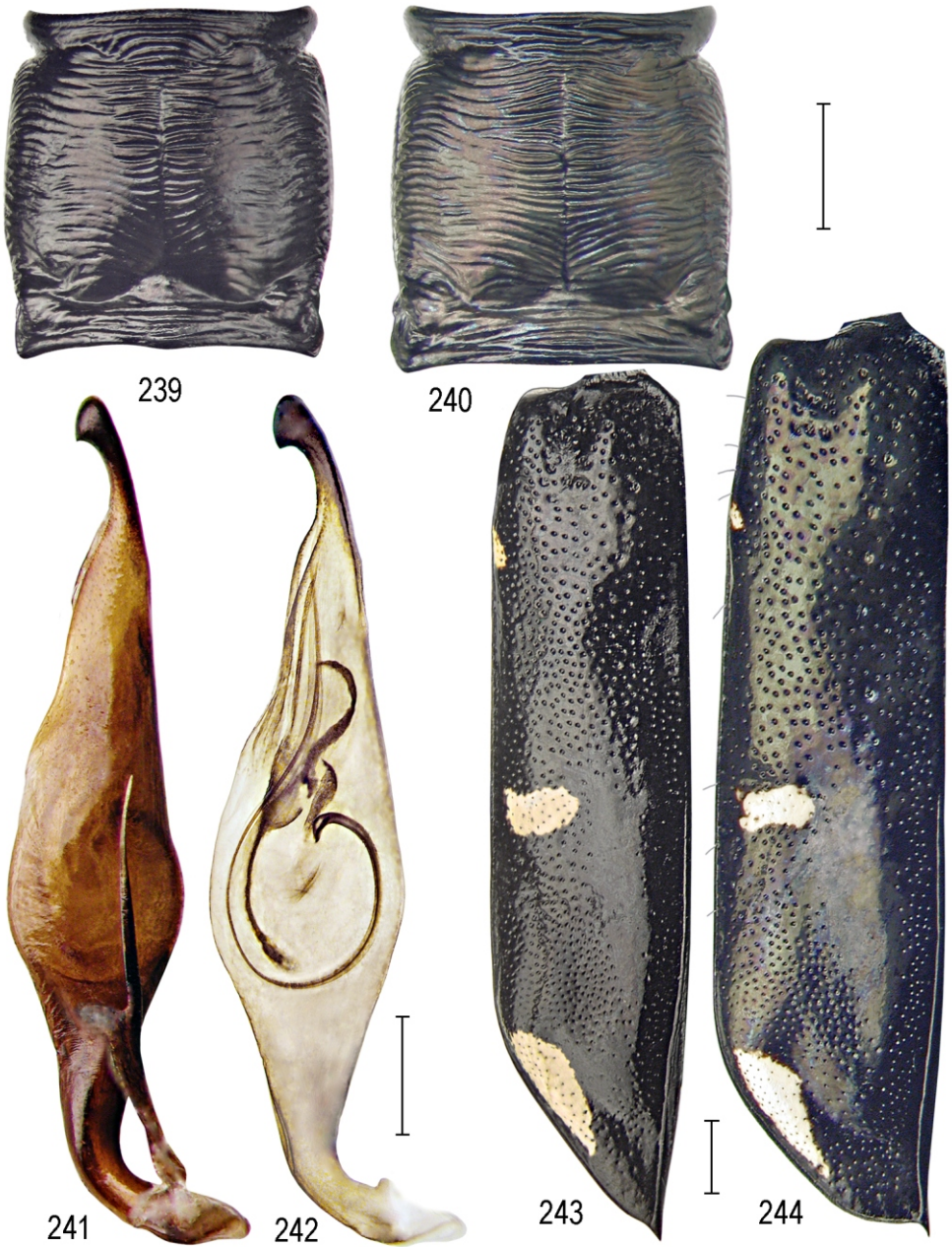


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Figs. 234-238. *Oxygonia nigrovenator* Kippenhan, Ecuador, Coca-Tena road (type locality area) (DBCN). 234 - body, ♂; 235 - head, ♂; 236-238 - labrum: 236-237 - ♂; 238 - ♀. Bars = 1 mm.



Figs. 239-244. *Oxygonia nigrovenator* Kippenhan, Ecuador, Coca-Tena road (type locality area) (DBCN). 239-240 - pronotum: 239 - ♂; 240 - ♀; 241-242 - aedeagus and internal sac; 243-244 - elytron: 243 - ♂; 244 - ♀. Bars = 1 mm.

specimens come from the type locality or its vicinity, along the Tena – Baeza Road; the specimens caught along the road from Loreto to Coca comes practically from the same area (D. Brzoska, pers. com.). Kippenhan (1997) listed one paratype also from “Napo, via Loreto, Río Hollin”. As addressed by Pearson et al. (1999b) this species appears to occupy in Ecuador an extremely limited range of the eastern slopes associated with the lower elevation 1100-1200 m of the isolated Vólcan Sumaco, but these authors listed also one specimen 80 km south of Sumaco in the district of Pastaza, 10 km southeast of Puyo, north-east from the type locality. Adults have both diurnal and nocturnal activity foraging on rocks of mountain steams and fly quickly to escape danger and land on the rocks. This species is sympatric with diurnally active *Ox. uniformis* (Pearson et al. 1999b, D. Brzoska, pers. com.).

Remarks. As *Ox. nigrovenator* differs from *Ox. moronensis* in only some of the external characters treated in “Differential diagnosis” above, probably only DNA tests taken in future from fresh specimens of these phylogenetically close species may confirm their separate species status. Alternatively they may be considered geographic subspecies, but although *Ox. moronensis* appears to be clearly geographically separated, the whole occurrence of *Ox. nigrovenator* cannot be fully known due to the rather cryptic behaviour of the adults and consequent difficulties within the searching for species of this genus.

SPECIES INCERTAE SEDIS

***Oxygonia delia* (Thomson, 1859)**

Phyllodroma delia Thomson, 1859: 91.

Oxygonia delia: Bates 1872b: 287 (as possible synonym of *Ox. gloriola*)

?*Oxygonia delia*: Wiesner 1992: 85.

Type locality. “Pérou inter.”

Remarks. As discussed by Moravec (2015), no type of *Ox. delia*, based on *Phyllodroma delia* Thomson, 1859, has been found within the present revision in relevant collections. Bates (1872b) for the first time mentioned this taxon as a member of the genus *Oxygonia*, with his doubts if it may be conspecific with *Ox. prodiga*, after he cited from the brief description by Thomson (1859). Fleutiaux (1892) listed *Ox. delia* as a synonym of *Ox. prodiga*, and Kippenhan (1997) placed it tentatively near *Ox. prodiga* as well. Wiesner (1992) listed it with question mark as to its association with *Oxygonia*. As Thomson (1859) clearly emphasized impunctate areas on the elytral surface, *Ox. delia* is here considered to be more probably conspecific with *Ox. gloriola*, thus in accordance with Horn (1893) and as discussed by Moravec (2015). Notwithstanding, as the original description by Thomson (1859) does not include the aedeagus, his validly described taxon falls into *incertae sedis*.

***Oxygonia* “species A” by Kippenhan (1997).**

The only female of this species caught in Nanegallito in the Ecuadorian province of Pichincha and presented by Kippenhan (1997), moved from the private FCCR collection to the Museo Civico di Zoologia, Roma, Italy (Cassola 2013). Despite the illustration by Kippenhan (1997, fig. 14) showing some different characters, now, together with M. Kippenhan (pers. com.), who has

examined the female again and sent me its photograph, we suppose that it is an aberrant female of *Ox. oberthueri*.

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