Taxonomic revision within the Neotropical genus *Oxygonia* Mannerheim - 1 (Coleoptera: Cicindelidae)

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Abstract. In this paper a first part of the author's taxonomic revision of the Neotropical tiger beetle genus *Oxygonia* Mannerheim, 1837 is submitted, with an emphasis on type specimens of following taxa. The male holotype (by monotypy) of *Ox. schoenherrii* Mannerheim, 1837 (type species of the genus) is re-described and its habitus, and diagnostic characters are illustrated in colour photographs, as well as those of other taxa treated here, for the first time illustrated from exact specimens. It includes the holotypes (by monotypy) of *Ox. albitaenia* Bates, 1871, *Ox. cyanopis* Bates, 1871 and *Ox. carissima* Bates, 1872, including illustration of a rectified shape of the aedeagus of *Ox. carissima*. A detailed redescription of the holotype of *Ox. annulipes* Bates, 1872 syn. nov. including its hitherto unknown aedeagus is presented, and this taxon is synonymized with *Ox. carissima*. The synonymy of *Ox. cyanopis* with *Ox. albitaenia* stat. restit., has been confirmed and the latter is restored here to its original species status. Rectified lectotype designation of *Ox. prodiga* (based on *Cicindela* (*Phyllodroma*) *prodiga* Erichson, 1847 is given to replace a previous inappropriate lectotype designation. *Ox. schaumi* W. Horn, 1893 syn nov. and *Ox. batesi* W. Horn, 1893 are treated as junior synonyms of *Ox. prodiga*. Lectotypes of *Ox. moronensis* Bates, 1872 and *Ox. buckleyi* Bates, 1872 are designated and illustrated including the holotype of *Ox. elongata* W. Horn, 1896 of which the synonymy with *Ox. buckleyi* is confirmed. The redescriptions and illustrations of the type specimens are complemented with those of relevant specimens of their opposite sex. In addition, lectotype of *Ox. boucardi* Chevrolat, 1881 is designated to rectify its erroneous type status published previously.

INTRODUCTION

The genus *Oxygonia* described by Mannerheim (1837), and the type species *Ox. schoenherrii* was briefly redescribed by Lacordaire (1842). Horn (1905, 1915) emphasized that *Oxygonia* is diagnostically one of the best defined genera in the family, and this revision has confirmed that the genus distinctly differs from all other genera of the subtribe Odontocheilina, having an exceptional position there. The taxonomic and nomenclatorial history of the genus was summarized by Kippenhan (1997).

In the last published review of the genus by Kippenhan (1997), 18 species and two subspecies were recognized and redescribed, and three new species described, all taxa with schematic illustrations in line drawings of the habitus and diagnostic characters with correct association of females to males (in some species for the first time). 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. Moreover, the great variability in most of the species was not demonstrated in the schematic line drawings by Kippenhan (1997), which were not annotated if taken from a concrete specimen. The aedeagi drawn by Kippenhan also were not associated with a represented specimen of a concrete origin, and the drawings of the aedeagi for *Ox. carissima* Bates, 1872 and *Ox. schoenherrii* Mannerheim, 1837 show an inappropriate shape for these species (Kippenhan 1997, fig. 53 versus figs. 55, 55a). Two confusions in type status and lectotype designation were published in his review (Kippenhan 1997), and he overlooked the aedeagus in the holotype of *Ox. annulipes* Bates, 1872 syn. nov. No specimen in MNHN and only few in BMNH and MFNB collections were labelled by Kippenhan by his det. labels.

Notwithstanding, the present revision of which the first part is introduced here has confirmed that despite the above mentioned and some other shortcomings, the essential concept of the species as presented by Kippenhan (1997) has been correct. Thus the present revision basically derives from and further develops the review by Kippenhan.

One of the main tasks for the present revision was to locate in collections the relevant type specimens (both holotypes and syntypes) of the taxa described by H. W. Bates, which were not originally labelled as types, to re-describe and illustrate them as well as designate lectotypes from relevant syntypes, to assure stability of these taxa within the genus. Most of the type specimens described by H. W. Bates have been found in MNHN, some syntypes in BMNH, partly got there from the collection of his brother Frederic Bates, and only few were distributed to other collections. After Henry Walter Bates passed away in 1892, a majority of his collection including Cicindelidae was bought from the NHM London museum by R. Oberthür and after he passed away, his collection was bought by the Paris Museum and in 1952 become part of the MNHN collection.

In the first part of the revision presented here, the holotype (by monotypy) of *Ox. schoenherrii* Mannerheim, 1837 (type species of the genus), holotypes of *Ox. albitaenia* Bates, 1871, *Ox. cyanopis* Bates, 1872 and *Ox. carissima* Bates, 1872 are redescribed and illustrated, all for the first time, as well as the proper shape of the aedeagus of *Ox. carissima*. A detailed redescription of the holotype of *Ox. annulipes* Bates, 1872 syn. nov. is presented including its aedeagus which is here described and illustrated for the first time, and this taxon is treated here as a junior synonym of *Ox. carissima*. The synonymy of *Ox. cyanopis* with *Ox. albitaenia* stat restit, has been confirmed and the latter is restored here to its original species status. Lectotypes of *Ox. moronensis* Bates, 1872 and *Ox. buckleyi* Bates, 1872 are designated, re-described and illustrated including the lectotype of *Ox. elongata* W. Horn, 1896 of which the synonymy with *Ox. buckleyi* is confirmed. Rectified lectotype designation of *Ox. prodiga* (based on *Cicindela prodiga* Erichson, 1847) is given to replace the previous inappropriate and thus invalid lectotype designation by Kippenhan (1997). *Ox. schaumi* W. Horn, 1893 syn nov. and *Ox. batesi* W. Horn, 1893 are treated as junior synonyms of *Ox. prodiga*. Each type specimen which is redescribed and illustrated here is complemented by a redescription and illustration of characters of its opposite sex.

No type of *Ox. delia*, based on *Phyllodroma delia* Thomson, 1859, has been found within the present revision in relevant collections including the historical collection of R. Oberthür in MNHN where types of taxa by Thomson were mostly housed. Fleutiaux (1892) listed *Ox. delia* (Thomson 1859) as a synonym of *Ox. prodiga*, and Kippenhan (1997) placed it tentatively near *Ox. prodiga* as well. Although Thomson (1859) based his description on a male, no shape of its aedeagus was mentioned by him, but he clearly emphasized impunctate areas on the elytral surface. Therefore, in accordance with Horn (1893), *Ox. delia* is more possibly conspecific with *Ox. gloriola* Bates, 1872.

Type specimens of remaining taxa of *Oxygonia* deposited in MNHN and SDEI, and other syntypes in BMNH, have also been examined, and their redescription and illustrations are being prepared for a final part of this revision. As this first part is mainly directed on the type specimens of only eleven validly described taxa (six validly recognized species of the total number of 17 species of the genus), a key to species can be published in the final part of the revision.

In addition, lectotype of *Ox. boucardi* Chevrolat, 1881 is here designated to rectify its erroneous type status previously published by Kippenhan (1997).

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. The term "aedeagus" here refers to the median lobe of the organ (without parameres). All dimensions of aedeagi are measured (and primarily figured) in their left lateral position where the basal portion (with basal orifice) points to the right and the left lateral outline (with dorsoapical orifice) faces dorsally, provided that the ventral outline of the median portion is settled in its vertical position, and the apex of the aedeagus is perfectly settled in its horizontal position. The position of the aedeagus is very important also for the real shape of the sclerites forming the structure of the internal sac. 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). Most of the examined specimens, including old types, were pinned that sometimes caused their damage. Old, unique type specimens, mostly killed by hard ethanol and consequently with very hard appendages and firmly closed mandibles, were usually maintained in their original shape in order to avoid a damage caused by a solution used for their re-hydration; any remounting in order to examine their mandibles and aedeagi are impossible without a risk of a damage of the unique specimens. Only if no recent material compared to type specimens exists, the aedeagi were carefully separated from the abdomen of old specimens.

The colour photographs of the habitus were mostly taken with cameras Canon EOS 50D (in MNHN) and Leica Z6 APO (in SDEI), both with a zoom system. All diagnostic characters, including aedeagi were taken 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 slash /, separate labels are indicated by double-slash //; each specimen or a series of specimens are separated by a full stop. The colour of the label and mode of writing appear in square brackets. 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. "Ex Musaeo / H. W. Bates / 1892") denotes the year in which the specimen become a part of the recent collection (e.g. BMNH, 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; LT = lectotype, PLT = paralectotype.

Abbreviations for the collections:

BMNH The Natural History Museum London, U.K.
CCJM Collection Cicindelidae Jiří Moravec, Adamov, Czech Republic.
DBCN Insect Collection of David W. Brzoska, Naples, Florida, U.S.A.
MFNB Museum für Naturkunde der Humboldt-Universität, Berlin, Germany.
MNHN Muséum national d'Histoire naturelle, Paris, France.
MZH Finnish Museum of Natural History, Entomology Team, Helsinki, Finland.
NMPC National Museum (Entomological Department), Praha, Czech Republic.
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. Distinguished from other genera of the subtribe Odontocheilina W. Horn sensu Moravec (2012a) by the following complex of diagnostic characters: tarsomere 4 is dorsally inserted into terminal tarsomere 5; each mandible possesses six teeth and basal molar (male in *Ox. carissima* seven teeth), in contrast to only three to four teeth in 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-templar area from the gula (in contrast to continuous suture in Odontocheilina genera); labrum is not sexually dimorphic in shape (in contrast to distinctly dimorphic labrum in *Odontocheila* and other genera of Odontocheilina except for *Mesacanthina* Rivalier, 1969), but in three species of *Oxygonia* the labrum has variably 4-8 submarginal setae (Figs. 82, 108); clypeus with conspicuous triangular lateral extensions; apices of femora with two, short spines (such spiny femoral apices are lacking in Odontocheilina except for the genus *Opisthencentrus* W. Horn, 1893); palpi conspicuously 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 Odontocheilina such slender, elongate palpi occur in *Mesacanthina* only).

Other characters are not distinctly differentiated from those in other genera of the subtribe Odontocheilina.

Other generic characters. Body medium sized to very large, length 10-19 mm, variously coloured, particularly on elytra, either almost black with faint metallic cupreous or green lustre, or dull black-green to bright iridescent red and green passing to various, purple to violet lustre, mostly depending on angle of illumination; all body portions glabrous, except for usual, very sparse hairlike sensory setae indistinctly scattered on elytra, mostly along the epipleura, and sensory hairlike setae at margins of abdominal ventrites (their surface is glabrous); head with large eyes but narrower than body and only slightly wider than pronotum which is either with subparallel or moderately convex lateral margins, rarely subtrapezoid or (mostly) notably semiglobose in shape; the above mentioned labrum is either testaceous with black basomedian area, or metallic-purple or green, its shape varies also in syntopic adults, it has sinuous anterior

margin forming blunt anterolateral teeth which may be effaced, or the labrum has more distinct four teeth and always more protruding median tooth with blunt apex; while the labrum is not dimorphic in shape, female labrum is usually darker than in male, in two species black; except for the three species with occasionally up to eight labral setae in both sexes, the labrum in other species has primarily four setae (exceptionally five or only two setae may occur); antennae rather short, mostly not exceeding elytral half, with normally shaped antennomeres 1-4, and simple, narrow antennomeres 5-11, but in several species antennomeres 5-7 slightly or more notably subclavate-dilated; the above mentioned sexually dimorphic elytra are elongate with subparallel lateral margins, in male with acute or subacute apex and distinct sutural spine, or both the outer and inner margin are apically constricted to form (together with the sutural spine) a thorn-like apex, while in female the apex is truncate or shortly rounded; elytral surface glabrous except for a few, short and feeble setae usually arising from juxtaepipleural setigerous punctures posteriad of humerus; 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 three species possesses a continuous, yellow lateral band; ventral and lateral thoracic sterna glabrous, metallic shiny with various lustre, female mesepisternal coupling sulci absent; legs more or less densely setose, the whitish setae are densest on pro- and mesofemora, the setae are usually irregularly interwoven and uncinate; aedeagus large, notably voluminous, either in middle or near the base, either abruptly constricted or gradually attenuated towards the apex of various shapes; inner sac in all species possesses a flagellum with simply dilated base, its filiform, flagelliform portion is either rather short and simply bent, or very long, coiled or multicoiled, its apex often protruding from apical orifice.

Remarks. One of the distinguishing characters, the protarsomere 4 inserted dorsally into the tarsomere 5 illustrated by Kippenhan (1997, fig. 2) was first emphasized by Horn (1905) and illustrated by Horn (1915, fig. 218). It should be noted that Kippenhan (1997) erroneously mentioned that each mandible in *Oxygonia* possesses only five teeth. The variable number of 4 up to 8 submarginal labral setae in some species of *Oxygonia* is unknown in Odontocheilina genera except for *Phyllodroma* Lacordaire, 1842 where anomalous, 8-setose labrum has been observed during the present research in only one male of *P. luteomaculata* (Chaudoir, 1860) deposited in SDEI. Although the labrum in *Mesacanthina* is also uniform in both sexes, it has a very different shape than in *Oxygonia* (see Moravec & Huber 2015). The spiny femoral apices resemble those in the genus *Opisthencentrus* W. Horn, 1893), based on *Oxygonia dentipennis* Germar, 1843. However, this revision has confirmed that *Opisthencentrus dentipennis* is immediately distinguished by its elytral apex with additional, long lateromedian spine and matte elytral surface covered with irregular punctures with bumpy to tuberculate intervals (corresponding with the pattern of elytral sculptures illustrated by Moravec (2007: 42, figs. 128-129) as well as by only four teeth in each mandible (plus basal molar) and very different shape of its aedeagus and internal sac lacking a flagellum.

Biology and distribution. Most South American species occur in Andean areas of Upper Amazon Basin of Colombia, Ecuador and Peru, two penetrate to Bolivia and three occur in Colombia. They are mostly confined to water streams in mountains, but also in lowlands, spreading along small Amazon tributaries, but no record is known from Brazil. The locality labels with "Amazon" considered by Kippenhan (1997) as erroneous, mean in fact Peruvian or Ecuadorian Amazonia, as in many species of *Odontocheila* occurring there sympatrically with

several species of *Oxygonia* (see Moravec & Brzoska 2014 and other papers of the author's series). Only two species occur in Central America: *Ox. boucardi* Chevrolat, 1881 in Costa Rica and Panama, and *Ox. nigricans* W. Horn, 1926 in Panama and Colombia.

Maps of the distribution were presented by Kippenhan (1997), and after his monograph was published, *Ox. nigricans*, previously known only from Colombia, described by Horn (1926) from Isle Gorgona, a small island situated in southwest coast of Colombia, was recently found in Panama, 5 males, 2 females (DBCN) labelled: "Panama, Darien / P.N. Darien, Cana / 07°45.3´´N; 77°40.1´´W / D. Brzoska 20-21-VI-2004" (D. Brzoska, pers. com.). Previously, *Ox. nigricans* was known only from three syntypes, the male lectotype in SDEI, male and female paralectotypes in BMNH, designated by Kippenhan (1997).

Behaviour of adults of individual species of *Oxygonia* was summarized by Kippenhan (1997). Most of the species are diurnal, but some of them are attracted to light at night, others are nocturnal, all occurring along water streams, mostly on rocks and boulders along or in the streams, at night mostly roosting on overhanging vegetation.

***Oxygonia carissima* Bates, 1872**

(Figs. 1-22)

Oxygonia carissima Bates, 1872: 242.
Oxygonia annulipes Bates, 1872: 242 **syn. nov.**

Type locality. Ecuador, Macas district ("R. Morona" on the label - see Biology and distribution).

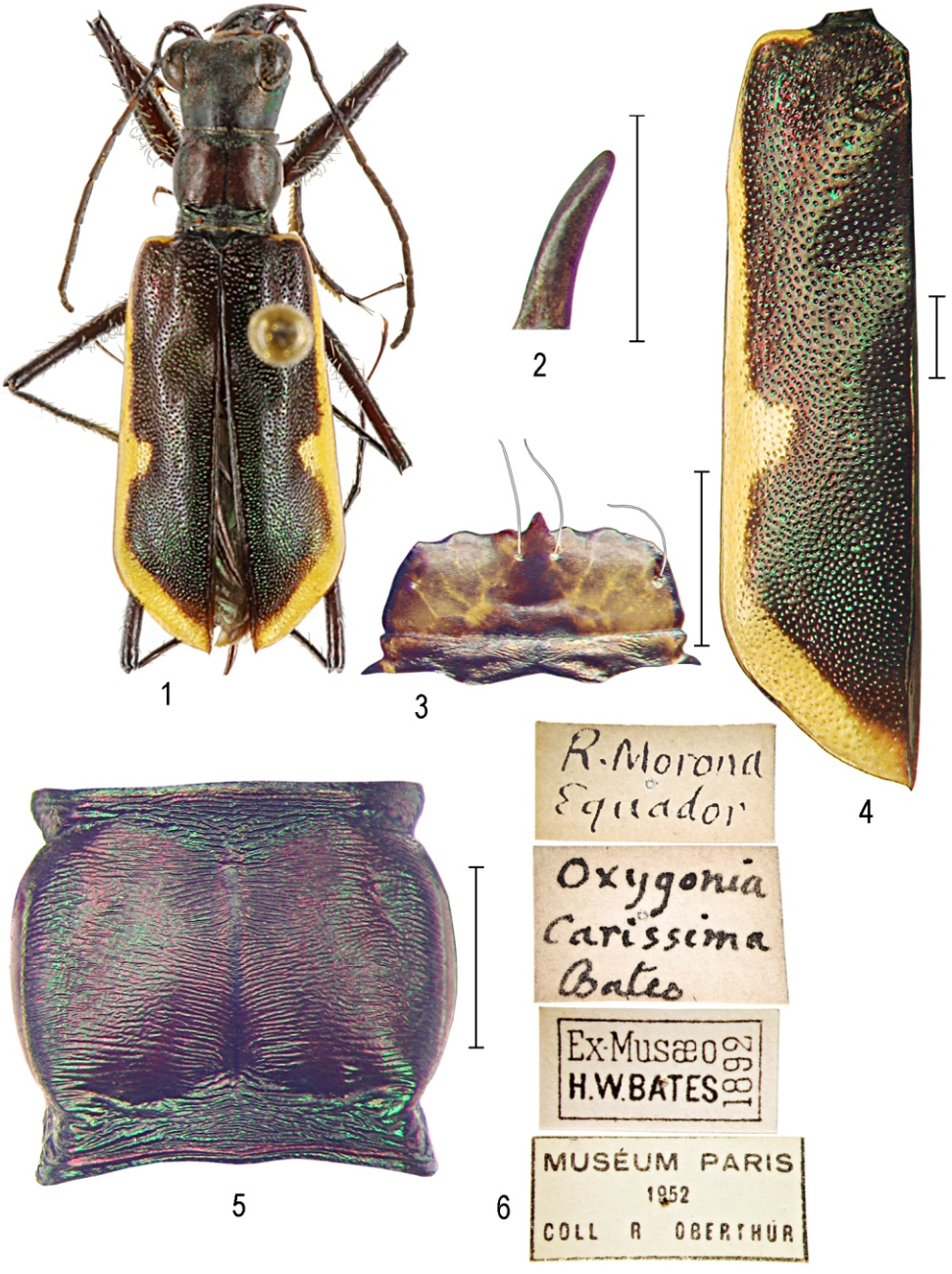
Type material. *Ox. carissima* Bates. Holotype (by monotypy), ♂ in MNHN, labelled: "R. Morona / Ecuador" [handwritten] // "Oxygonia / Carissima / Bates" [handwritten] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish, printed] // "Revision Jiří Moravec 2016: / Holotype (by monotypy) / Oxygonia / carissima / Bates, 1872" [red, printed].
Ox. annulipes Bates. Holotype (by monotypy), ♂ in MNHN, labelled: "R. Morona / Ecuador" [ochre-tarnished, handwritten] // "Oxygonia / annulipes / Bates" [ochre-tarnished, handwritten] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish, printed] // "Revision Jiří Moravec 2016: / Holotype (by monotypy) / Oxygonia / annulipes / Bates, 1872" [red, printed] // "Oxygonia / carissima Bates, 1872 / det. Jiří Moravec 2015" [printed].

Other material examined. Historical data. 1 ♂ in MNHN: "Equateur" // "Upuna / River / ♂ / Buckley" // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930". 1 ♀ in MNHN with same labels except for "♀" on the locality label. 1 ♂ in MNHN: "Ecuador / Buckley" // "Ex Musaeo / H. W. Bates / 1892" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂ in MNHN: "E quateur Or. / de Baños Canelos / M. de Mathan / IX-X.1894". 1 ♂, 1 ♀ in MNHN: "Equateur". 1 ♂ in MNHN: "Oxygonia / carissima / Bates / Equateur". 7 ♂♂, 3 ♀♀ in SDEI, ". 3 ♂♂, 3 ♀♀ in MFNB, 1 ♂ in NMPC: "Santa Inez / Ecuador / R. Haensch". 1 ♂ in MFNB: "Ecuador".
Recent data. 2 ♂♂, 2 ♀♀ in CCJM: " Ecuador / Reventador / V. 1996, leg. Brantlová & Blažíček". 4 ♂♂ in DBCN: "Ecuador - Pastaza / Puyo Baños Rd., 1300 m / 20.7 km NW - Puyo / (rocky stream) / D. Brzoska 23-IX-1995". 3 ♀♀ in DBCN: "Ecuador - Morona - / Santiago Macas Alshi / Rd., 1320 m, 5 km - W / Gen. Proaño / (small covered stream) / D. Brzoska 24-IX-1995". 1 ♀ in DBCN: "Ecuador: Morona - / Santiago - 5 km W - G. / Proano / 4200° Macas Alshi Rd. / D. Brzoska 20-IX-1993".

Redescription of male holotype of *Ox. carissima*.

Body (Fig. 1) 13.50 mm long, 4.20 mm wide.

Head with large eyes but narrower than body, 3.00 mm wide. Frons moderately convex, sloped towards clearly separated clypeus, and fluently passing into vertex; surface of frons dull purple red with metallic green limited lateral areas, very finely asperate with indistinct, extremely fine parallel striae indicated only on lateral areas; supraantennal plates black with strong metallic green lustre.



Figs. 1-6. *Oxygonia carissima* Bates, ♂, HT (MNHN): 1 - body, 13.8 mm; 2 - apex of aedeagus; 3 - labrum; 4 - elytron; 5 - pronotum; 6 - labels. Bars = 1 mm.

Vertex anteriorly merging with frons, almost flat and dull black-green in middle with shallow, indistinctly circular anteromedian impression, dull copper-red on anterior area; surface very irregularly and finely vermicular to wavy rugulose, rugae irregularly converging in middle, dense parallel striae on juxtaorbital areas become more irregular and divergent when passing onto temples; occipital area convex, with fine, irregularly transverse rugae in middle, on lateral areas the rugae become irregularly wavy and fragmented.

Genae black with strong purple-violaceous and green-blue lustre, almost smooth with barely recognizable, shallow, parallel striae.

Clypeus (Fig. 3) black with reddish-cupreous and iridescent-green lustre, with conspicuous, thorn-like lateral extensions, irregularly rugulose, with large, bluntly bulged rugae crossed in middle.

Labrum (Fig. 3) with four setae (left lateral seta broken), 0.65 mm long, 1.60 mm wide, transverse with rounded basolateral margins and a sinuous anterior margin which asymmetrically indicates lateral teeth, and four blunt anterior teeth with distinctly protruding median tooth; labral surface ochre testaceous with blackened limited basal area, margins and within deep central impression.

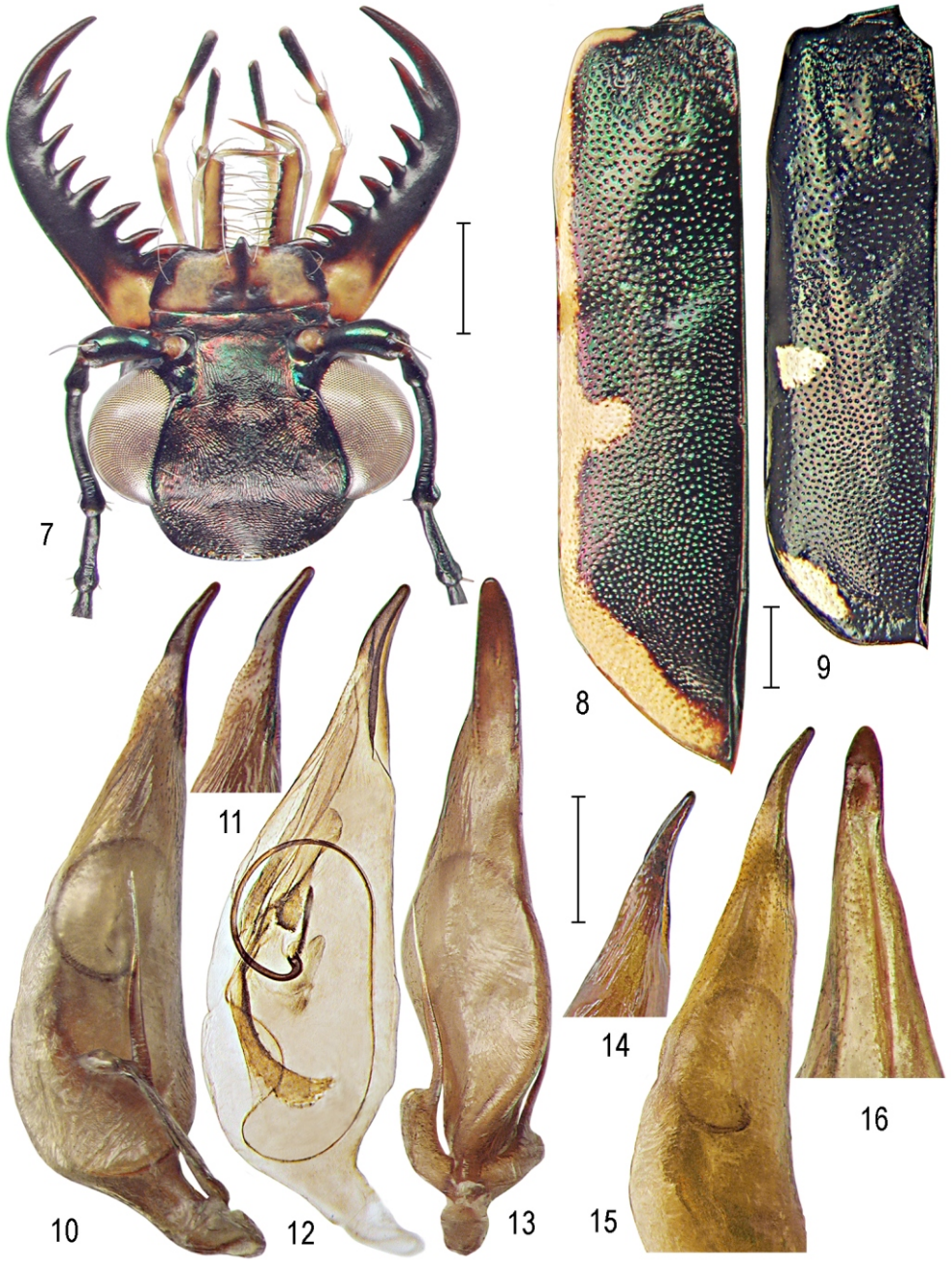
Mandibles black with brown apices of teeth and yellow-testaceous basolateral stripe, subsymmetrical, comparatively robust and lather long, each mandible with 7 teeth and basal molar (the mandibles of the holotype are firmly closed and therefore not illustrated, but their shape corresponds with those of the male in Fig. 7).

Palpi conspicuously long with elongate terminal palpomeres, testaceous with black-brown darkened apex of penultimate palpomere of maxillary palpi and black terminal palpomeres both of maxillary and labial palpi; penultimate (longest) palpomere of labial palpi testaceous, notably elongate, almost not dilated at apex.

Antennae rather short, barely reaching elytral half; scape voluminous but elongate, metallic black with feeble purple and green reflections, with only apical seta (in the holotype broken); antennomeres 2-4 metallic black with very faint greenish lustre, glabrous except for very indistinct seta at apices; antennomeres 5-11 notably wide, 5-7 brownish (paler in left antenna), 8-11 smoky-blackened; antennomere 5 notably conically dilated towards apex, remaining antennomeres gradually narrowed.

Thorax. Pronotum (Fig. 5) slightly shorter than wide, 2.20 mm long, 2.50 mm wide, reddish cupreous with greenish lustre, particularly on anterior and posterior lobe which are of almost same width; sulci well pronounced, the anterior distinctly only laterally; surface of anterior lobe rather distinctly transverse-wavy rugulose; disc with distinctly convex lateral margins of dorsally visible proepisterna and less convex notopleural sutures, discal surface very finely and shallowly striate-rugulose, more continuous, parallel and almost transverse striae along indistinct median line; rugae on sublateral areas more irregular, becoming deeper and more transverse towards the notopleural sutures; posterior lobe with moderately raised dorsolateral bulges, its surface covered with coarse, mostly transverse but very irregular rugae; proepisterna, prosternum, mesepisterna, mesosternum, metepisterna and metasternum smooth, pale ochre-testaceous with greenish lustre which is only faint on proepisterna.

Elytra (Fig. 4) elongate, length 9.20 mm, with rounded humeri and almost parallel lateral margins, outer margin slightly dilated towards arcuate anteapical angle, then obliquely attenuated, forming subacute apex, with small sutural spine; dorsal elytral surface only moderately convex, with distinct humeral impressions and deep discal impression clearly delimiting distinct basodiscal convexity, additional, shallow impression on the area mesad of



Figs. 7-16. *Oxygonia carissima* Bates. 7 - head, ♂, Puyo Baños (DBCN); 8 - elytron, ♂, ibid. (DBCN); 9 - elytron, ♀, Macas Ashi (DBCN); 10-16 - aedeagus or its apex: 10-11 - Puyo Baños (DBCN); 12 - ditto, internal sac; 13 - ditto, ventral view; 14 - "Ecuador" (MFNB); 15 - Puyo Baños (DBCN); 16 - ditto, dorsal view. Bars = 1 mm.

yellow lateromedian protrusion; apical impression rather deep; elytral coloration on elytral base and whole sublateral area along the discal impression and behind elytral half dark shiny copper with faint, chatoyant reddish-cupreous reflections and faint green lustre on elytral base and disc, passing to stronger green lustre on large posterior area; whole elytral surface almost uniformly, rather densely and regularly punctate, larger and more spaced and only occasionally anastomosing punctures on elytral base and even more spaced punctures along discal impression, while on posterior elytral half the punctures are densest (punctures on the posterior area remain regular, although the pattern of the dense punctation may appear a rasp-like upon different angle of illumination); five indistinct, iridescent-green foveae running from elytral base along the middle of elytral disc up to the level of the yellow lateromedian protrusion; elytral maculation yellow, consisting of continuous lateral band which covers humerus and becoming wider when running from humerus along the outer elytral margin, forming rounded lateromedian protrusion and is notably dilated along anteapical-apical angle, reaching sutural spine.

Legs. Coxae pale brownish-testaceous, pro- and mesocoxae with faint green lustre, their anterior area densely covered with white, decumbent setae; metacoxae with chatoyant green and purple lustre, their discal area glabrous except for seven, clustered, erect white setae, while anterolateral coxal area is densely punctate-setose; trochanters brownish-testaceous, glabrous except for a few microsetae impressed on ventral area of metatrochanters; femora almost entirely black with indistinct greenish lustre and indistinctly browned apical area, whitish setose, setae, densest and mostly uncinate-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 dense pad of greyish-white setae on their apical half; tarsi black, first three tarsomeres distinctly subclavate-dilated, with very indistinct longitudinal grove and with usual dense pad of short greyish-rusty setae, tarsomere 4 much shorter and with two pairs of notably long apical setae; tarsomere 5 thin and conspicuously elongate; claws dark reddish-brown.

Abdomen black with strong, chatoyant green lustre on lateral areas, apical area of last ventrite and incised apical pleurite ochre-testaceous; surface of the ventrites smooth and glabrous except for usual, a few hairlike sensory setae (easily abraded) at their posterior margins.

Aedeagus. In the holotype only apex of the aedeagus (Fig. 2) is visible, but as the apex is the most important for identification, the aedeagus was not withdrawn from the abdomen in order to maintain the original shape of the holotype. The characteristic shape of the apex corresponds with examined aedeagi of both historical and recently caught males (Figs. 10-16) - see "Variability" below, and with the aedeagus of the synonymous *Ox. annulipes* Bates, 1872 (Fig. 19).

Redescription of male holotype of *Ox. annulipes* Bates, 1871 **syn. nov.**

Appearance as in the holotype of *Ox. carissima*, except for following differences (and measures) which are fully in usual variability of other specimens of *Ox. carissima* examined.

Body (Fig. 17) 12.6 mm long, 4.00 mm wide.

Head 3.1 mm wide, all portions, buccal appendages and antennae as in the holotype of *Ox. carissima*.

Labrum (Fig. 18) as in the holotype of *Ox. carissima*, but the sinuous anterior margin possesses only the median tooth, the anterolateral teeth are nearly effaced (usual variability), length 0.7 mm, width 1.50 mm.

Thorax. Pronotum (Fig. 21) 2.10 mm long, 2.20 mm wide, shape and surface as in the holotype of *Ox. carissima*.

Elytra (Fig. 20) 8.30 mm long, shape and surface as in as in the holotype and other specimens of *Ox. carissima* except for somewhat narrower yellow lateral band, and consequently more elongate lateromedian protrusion.

Legs as in the holotype of *Ox. carissima*, except for reddish-testaceous subapical area on femora (usual variability within adults of *Ox. carissima*).

Aedeagus (Fig. 19) shaped as in all other males of *Ox. carissima*, 4.80 mm long, 1.40 mm wide, notably voluminous above short and narrow base, apical half gradually attenuated towards elongate-cylindrical and moderately ventrally bent, strongly sclerotized subacute apex.

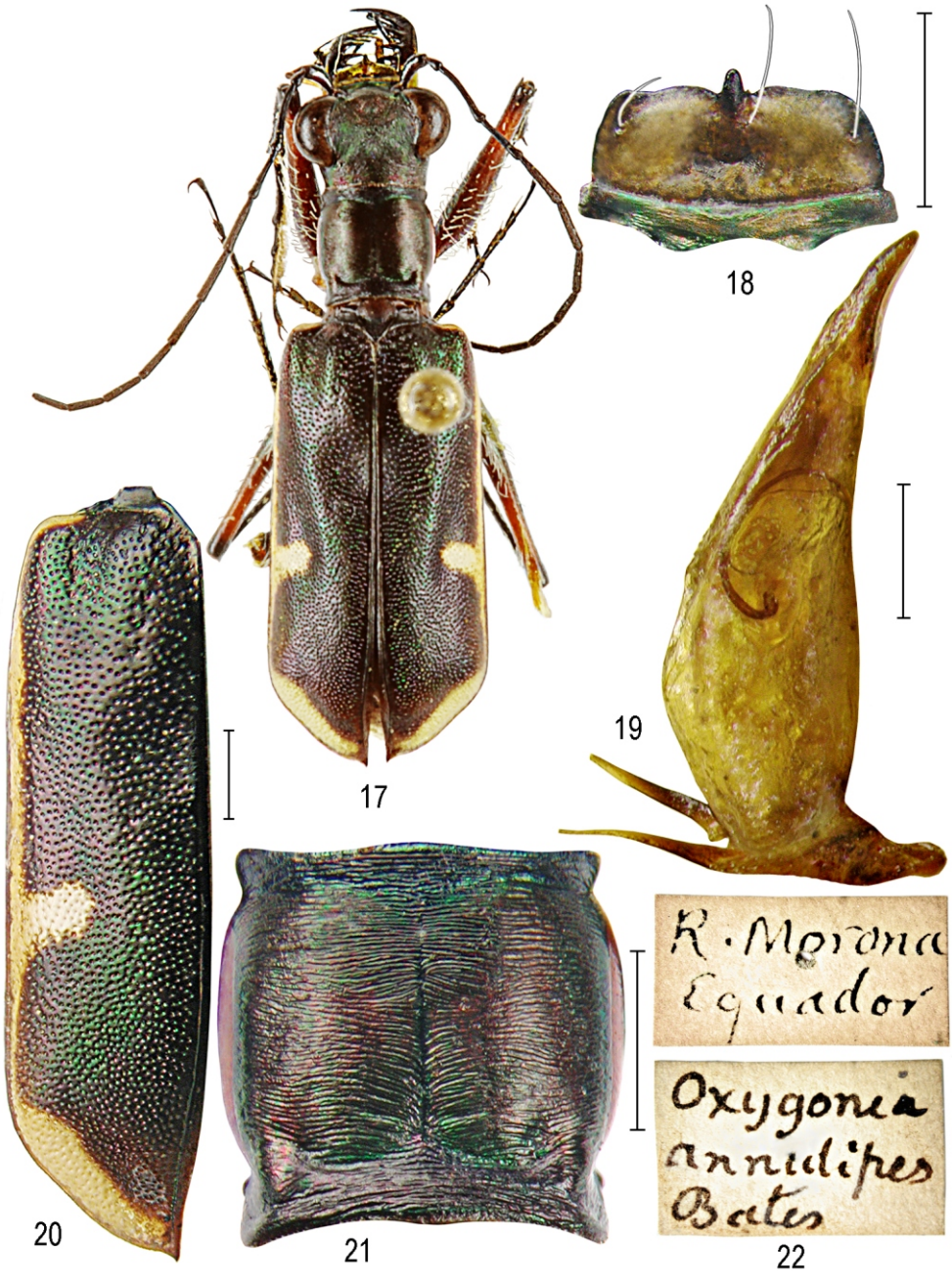
Variability. The other examined males of *Ox. carissima* correspond with the holotype (and the holotype of the synonymous *Ox. annulipes*), except for the following variability and measurements.

Body length 12.70-13.50 mm, width 4.00-4.30 mm; the body coloration in some males is predominantly dark green. The depth of the circular anteromedian impression on the vertex is variable, in the holotype and some other males is shallow.

Aedeagus (Figs. 10-16) 4.90-5.50 mm long, its lateral view as in the holotype of *Ox. annulipes* described above; in ventral view (Fig. 13) the apex is wider and rounded, with distinct lateral edges; for its dorsal view see Fig. 16; internal sac (Fig. 12) with large, moderately bent basoventral sclerite, very long flagellum with simply dilated, darker and strongly sclerotized base, associated with elongate, blackened stiffening rib and feebly sclerotized central tooth, the long flagelliform portion is arcuate coiled towards the base, then coiled upwards and running upwards, reaching dorsolateral orifice; other sclerites comprise: medioventral, semicircular sclerite with dentate, sclerotized ventral margin and attenuated into membranous, simply sinuous apical portion.

Female characters. Females of *Ox. carissima* are distinctly sexually dimorphic in following diagnostic characters: mandibles with only six teeth (and basal molar); antennae reaching only elytral quarter; elytral apex (Fig. 9) with rounded outer margin, truncate in middle and slightly emarginated towards sutural spine; elytral surface more shiny, metallic black with violet or green lustre; elytral maculation consisting of only two, usually ivory-whitish, separated maculae: transverse-triangular lateromedian macula, and ellipsoidal anteapical macula which is widely separated from apical suture; lateral and ventral thoracic sterna metallic coloured, only the proepisterna in some females with indistinct, ochre tinge; moreover, the dorsal body coloration in examined females is more unicoloured, darker, almost black on head and pronotum. Body length 12.30-13.40 mm, width 4.10-4.40 mm; head 2.90-3.10 mm wide; pronotum 2.10-2.20 mm long, 2.20-2.45 mm wide; elytra 8.40-8.60 mm long; female coupling sulci not developed, the shallowly hollowed mesepisterna are almost identical with those in male.

Differential diagnosis. Because of the continuous yellowish elytral lateral band, males of *Ox. carissima* externally resemble those of *Ox. oberthueri* W. Horn, 1896. However, 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. Moreover males of *Ox. oberthueri* can be distinguished by the very different shape of the aedeagus which is elongate with much longer and narrower base, dilated only in middle and in its apical half which is abruptly constricted into narrowly cylindric, elongate apex terminated by a helmet-like knob; females of *Ox. oberthueri* can be immediately distinguished by the additional, subhumeral-lateral



Figs. 17-22. *Oxygonia carissima* Bates, ♂, HT of *Ox. annulipes* Bates, syn. nov.: 17 - body, 12.6 mm; 18 - labrum; 19 - aedeagus; 20 - elytron; 21 - pronotum; 22 - original labels. Bars = 1 mm.

whitish macula, and both sexes of *Ox. oberthueri* also by a distinct basodorsal bulge in the first protarsomere (shared only with *Ox. kippenhani* Schüle, 2008, which differs from *Ox. oberthueri* mainly by its testaceous antennal scape; both characters emphasized by Schüle (2008) and confirmed after examination of the holotype in SDEI. Kippenhan (1997, fig. 15b) illustrated erroneously the female elytron for *Ox. oberthueri* with only two maculae.

Similar pattern of the elytral maculation as in *Ox. carissima* is shared in both sexes also with *Ox. albitaenia* Bates, 1871 stat. restit., but the continuous lateral band in male of *Ox. albitaenia* is ivory-white and dilated also in the subhumeral area, while never reaches the apex (Figs. 43, 50), its aedeagus is rather similar to that in *Ox. carissima*, differing only by wider apical portion and wider and blunter apex (Figs. 40, 51); females of *Ox. albitaenia* (= *Ox. cyanopis* Bates, 1871) have very similar elytral maculation (Figs. 44, 45, 49), as well as females of *Ox. schoenherrii* (Fig. 30), but females of *Ox. carissima*, can be distinguished by their deeper and denser elytral punctures, and less reliably by much shallower and mostly rounded anteromedian impression on the vertex.

Biology and distribution. Eastern slopes of the Andes in southern Ecuador.

When Bates (1872) described this and several other species, he mentioned only ambiguous type locality, or no locality. He generally, in an introduction to his paper, mentioned ambiguously: "*Mr. Buckley discovered the haunts of the Equadorian Oxygoniae accidentally, while bathing in the River Upano, or Upper Morona, near Macas*". In the descriptions of *Ox. carissima* and the synonymous *Ox. annulipes*, he has written: "Macas district. One example (Buckley)", but on the label of the holotypes of these two taxa there 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 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, and Macas is the capital.

As mentioned by Pearson, Brzoska & Navarrete (1995), cited also by Kippenhan (1997) and summarized by Pearson, Buestan & Navarrete (1999), primarily diurnal adults are foraging on rocks and boulders in and around forested mountain streams, above 1,200 m; at night most often found roosting on leaves of overhanging bushes and trees 2-5 m above the stream surface, occasionally some adults roost at night on rock surfaces.

Remarks. The holotype of *Ox. carissima* redescribed and illustrated here corresponds with the original description by Bates (1872). As H. W. Bates never labelled types of his taxa by a type labels, the type specimens were not recognized by Rivalier who arranged specimens gained from the collection of H. W. Bates into the boxes with *Oxygonia* in the General collection of MNHN (see the discussion in the "Introduction" above). Consequently, Kippenhan (1997), although he examined most of the historical specimens originally from the collection of H. W. Bates, he did not recognize them as well. In his review of the genus (Kippenhan 1997) he mentioned the type depository of *Ox. carissima* in MNHN with a question mark.

The aedeagus illustrated by Kippenhan (1997, fig. 53) shows an inappropriate shape of its apex, probably drawn from an aedeagus observed when turned between its lateral and dorsal position, or by an error the figure was misplaced there instead of the aedeagus of *Ox. schoenherrii* ilustrated by Kippenhan (1997, fig. 55a), which, according to the acute apex,

probably shows the aedeagus of *Ox. carrissima*. The misleading drawing is also in Pearson, Buestan & Navarrete (1999a, fig. 7H). Thus the aedeagi (Figs. 10-16) are illustrated here for the first time in their proper shape, including the internal sac.

Ox. schoenherrii Mannerheim, 1837

(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 (1872: 238, partim) - non *Ox. prodiga* (Erichson, 1847) - see "Remarks" under *Ox. prodiga* here.
Non *Oxygonia cyanopis* Bates, 1871 (female) as a junior synonym by Horn (1900: 215), which is here a junior synonym of *Ox. albitaenia* stat. restit. - see under that species below.

Type material. Holotype (by monotypy), ♂ in MZH, labelled: "♂" [handwritten] // "Antiochia / Columbia / Nisser" [handwritten] // "Schönh." [printed] // Oxygonia / schonherri / Spec. typ" [handwritten / printed] // "= albitaenia / Bat. / det. Horn" [with black frame, handwritten] // "http:id./luomus.fi/GZ2050" [with linear code, printed] // "Mus. Zool. Helsinki / Loan Nr. / C98-365" [temporarily yellow loan label, printed] // "Revision Jiří Moravec 2015: / "Holotype (by monotypy) / Oxygonia / schoenherrii Mannerheim,1837" [red, printed].

Other material examined. Historical data. 1 ♂, 1 ♀ in MNHN, 1 ♂, 1 ♀ in SDEI: "Santé Fé / de Bogota" // "Maindron". 1 ♀ in SDEI: "Peru" [sic!]. 1 ♂, 1 ♀ in MNHN: "Colombia / Pehlke[leg]". 1 ♂, 1 ♀ in SDEI: "Colombia". 1 ♂ in SDEI: "Coper" // "Ex Musaeo / Mniszech" // "R. Oberthür / Fleutiaux" // albitaenia Bates" [sic!]. 1 ♂ in MNHN [Hist. Coll. Chaudoir, standing in the box along general confusing label: "non prodiga / Erichs. / cyanopis / Bat. / New Grenada / Sindig."]: "cyanopis" [sic!] / ♂" // "♂ d'une authorées - / pène Horn 96" [sic!].

Redescription of male holotype. Body (Fig. 23) 14.3 mm long, 4.10 mm wide (coloration of this old holotype is black-tarnished, its original metallic lustre is partly faded - see "Remarks" below).

Head (Fig. 24) with large eyes but notably narrower than body, 3.20 mm wide.

Frons slightly convex and rather steeply sloped towards clearly separated clypeus, and fluently passing into vertex; surface of frons dull copper with metallic green lustre laterally, only coriaceous asperate in middle, transverse irregularly and finely rugulose on blunt frons-vertex fold, and with distinctly striate lateral areas adjacent to supraantennal plates which are black-copper with green lustre.

Vertex black-copper with faint green lustre laterally, passing from frons over the blunt frons-vertex fold which is covered with very irregular vermicular sculpture which passes from the upper-median area of the frons, and indistinctly separated by two arcuate-transverse anterior rugae, which anteriorly demarcate deep, V-shaped anteromedian impression; the anteromedian area including the impression is covered with dense but rather distinct, irregularly vermicular-wavy rugae, forming an conspicuous ornament; lateral and large juxtaorbital areas distinctly longitudinal-parallel striate, postero-lateral striae passing onto temples, while posteromedian area is covered with shallow, irregularly vermicular rugae passing towards occipital area to transverse and more spaced, shallow striae, which become denser and partly fragmented on occipital lateral areas.

Genae black with purple-violaceous and green-blue lustre, with shallow parallel striae.

Labrum (Fig. 25) originally with three setae (with three setigerous pits but only left anterior seta present), entirely smoky black-brown tarnished, 0.65 mm long, 1.60 mm wide, transverse with rounded lateral margins, anterior margin which five teeth: three blunt-angled anterior teeth of

almost same size, and rounded anterolateral teeth; labral surface within wide central impression.

Mandibles (Fig. 24) entirely black-brown, rather long and robust with arcuate lateral margins, each mandible with six teeth and basal molar.

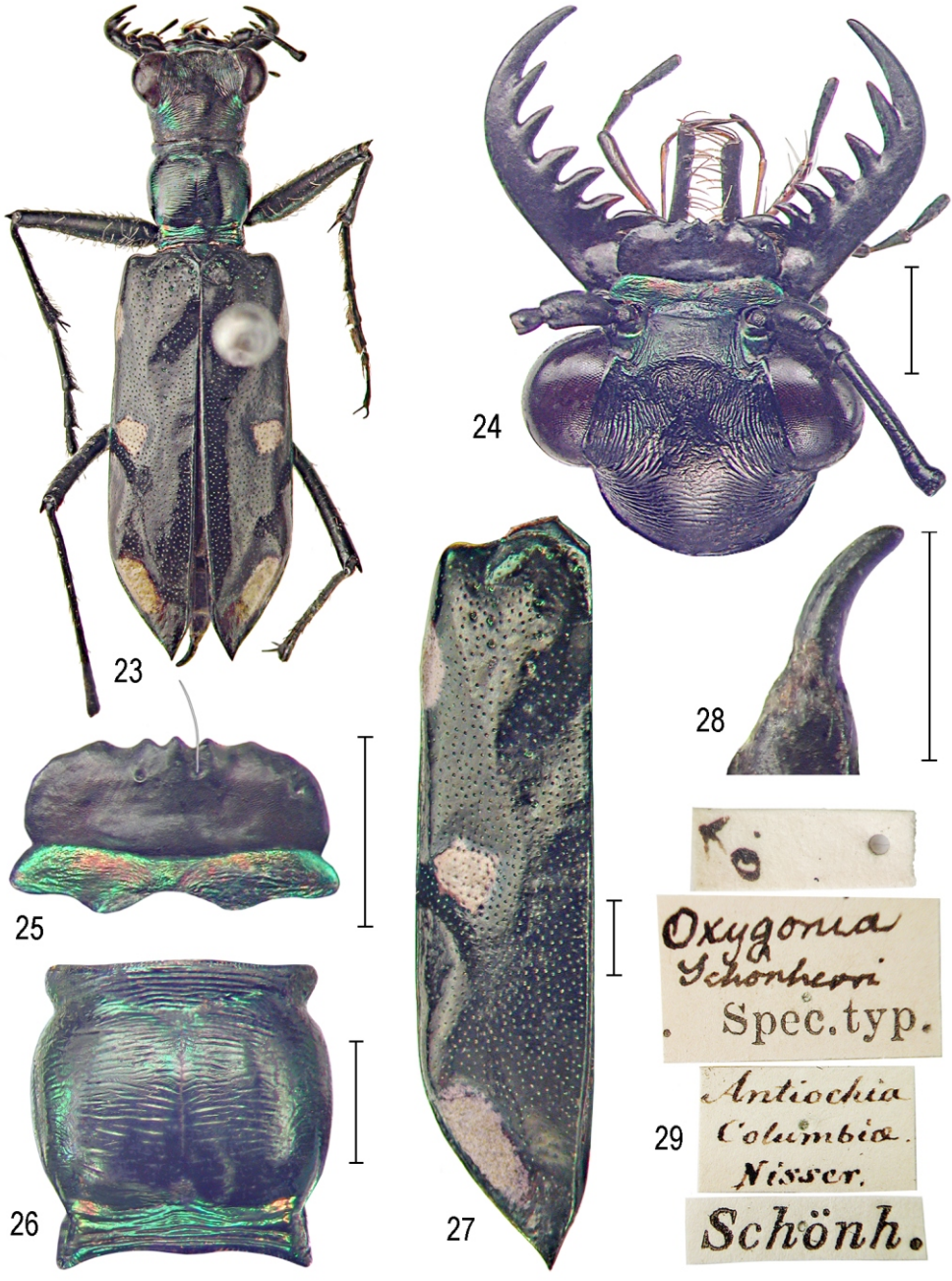
Palpi (Fig. 24) long, the longest palpomere of maxillary palpi brownish with testaceous base, penultimate palpomere black-brown, terminal palpomere black, moderately elongate; penultimate (longest) palpomere of labial palpi brownish-testaceous with yellowish setae, terminal palpomere black, notably elongate.

Antennae. Only left antennomeres 1-2 and right antennomeres 1-3 preserved (in other specimens the antennae are as in "Variability" below).

Thorax. Pronotum (Fig. 26) as long as wide wide, length and with 2.50 mm, shiny dark copper with chatoyant greenish lustre particularly on anterior and posterior lobe; anterior lobe rather distinctly wider than the posterior one, but narrower than disc; sulci well pronounced; surface of anterior lobe covered with distinct, deep transverse rugae which become wavy towards the disc; lateral margins of dorsally visible proepisterna distinctly convex, giving the disc subglobose shape; dorsally visible notopleural sutures slightly less convex; discal surface covered with distinct but shallow, mostly transverse and rather widely spaced rugae; rugae on sublateral areas towards notopleural sutures deeper, slightly surpassing them; median line shallow but distinct; posterior lobe with moderately raised dorsolateral bulges, surface covered with coarse rugae which are arcuate on anteromedian area, becoming continuous and transverse along the posterior margin; proepisterna metallic green with strong reddish-cupreous lustre, mesepisterna and metepisterna lustrously reddish-cupreous; prosternum iridescent green, metasternum metallic black with greenish and cupreous lustre.

Elytra (Fig. 27) elongate, length 9.50 mm, with rounded humeri and almost parallel lateral margins, with arcuate anteapical angle, then obliquely attenuated when outer and inner margins are apically constricted to form (together with the sutural spine) a thorn-like apex; dorsal elytral surface rather distinctly convex on whole elytral disc except for moderately deep but wide discal impression which together with rather shallow humeral impressions clearly demarcate distinct basodiscal convexity; additional, shallow impression on the area mesad of sublateral-median macula; apical impression rather deep; elytral coloration shiny black-copper with only indistinct greenish reflection, more intense green lustre on basal and apical area; whole elytral surface almost uniformly, rather sparsely and regularly punctate, more spaced punctures on elytral base and along discal impression and along the sublateral-median macula, smaller, but still spaced punctures on posterior elytral half; six iridescent-green foveae within the humeral impression and behind it, and other seven foveae running from elytral base along the middle of elytral disc up to the elytral half; elytral maculation dirtily ochraceous (faded and tarnished in this old holotype), consisting of four maculae: small humeral macula only partly visible from above as a thin stripe because placed below the anterior callus of the humerus; semicircular subhumeral-lateral macula; irregularly circular sublateral-median macula; wide anteapical macula extended along the margin towards apex, but not reaching it.

Legs. Pro- and meso-coxae iridescent green, densely setose; metacoxae metallic black-green, smooth and glabrous in middle, their whole lateral area cupreous and densely punctate-setose; trochanters brown, glabrous; femora almost entirely black with indistinct cupreous and greenish lustre, rather sparsely whitish setose (setae probably partly abraded), setae sparser on metafemora (middle legs in the holotype missing); tibiae with much sparser, shorter and stiffer, semierect dirtily white setae; protibiae with denser setae on their apical third; tarsi black, (only protarsi preserved in the holotype) first three protarsomeres distinctly subclavate-dilated and with



Figs. 23-29. *Oxygonia schoenherrii* Mannerheim, ♂, HT (MZH): 23 - body, 14.3 mm; 24 - head. 25 - labrum; 26 - pronotum; 27 - elytron; 28 - apex of aedeagus; 29 - labels. Bars = 1 mm.

usual dense pad of short greyish-rusty setae, tarsomere 4 much shorter and with two pairs of notably long apical setae; tarsomere 5 thin and elongate; claws brown.

Abdomen. Ventrites metallic black to olivaceous green with strong reddish-cupreous lustre, their surface glabrous, with only two sensory setae at margins of the ventrites.

Aedeagus. Only its apical portion with rather wide, cylindric, blunt apex (Fig. 28) penetrating from the abdomen; the characteristic shape of the apex corresponds with examined aedeagi of other historical male specimens both in their lateral view (Fig. 32) and ventral and dorsal view (Figs. 33-34) - see "Variability" below.

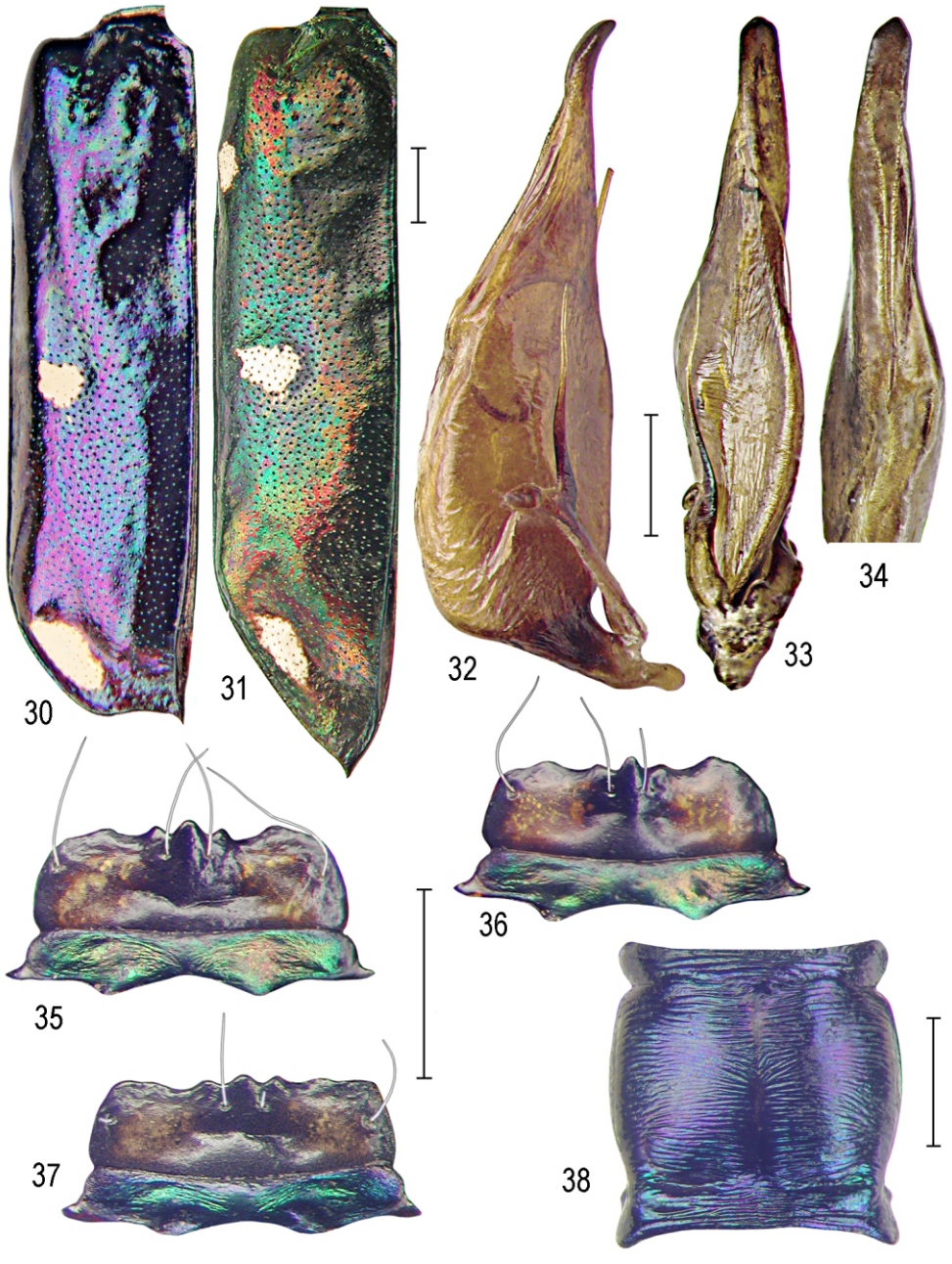
Variability. The other examined males of *Ox. schoenherrii* corresponds with the holotype, except for notably brighter coloured and shiny dorsal body surface with strong red and green lustre, particularly on the elytra (Fig. 31) and ochre-testaceous labrum (Figs. 35-36) with only blackened area of central impression (as usually in very old specimens, the labrum of the holotype black-tarnished - see "Remarks" below). Body length 14.30-15.10 mm, width 4.10-4.50 mm; pronotum 2.50-2.55 mm long, 2.50-2.60 mm wide; head 3.20-3.25 mm wide; elytra 9.50-10.00 mm long. The aedeagus in its lateral aspect (Fig. 32) is 5.50 mm long, 1.70 mm wide; it has its bent basal portion very short, is distinctly voluminous above the base, its apical portion conically attenuated towards cylindric, ventrally slightly delimited apex, which is moderately arcuate-bent, strongly sclerotized and rounded on its top; in its ventral (Fig. 33) and dorsal (Fig. 34) view the apex is straight, much wider and with right-angled roof-like top.

Female characters. Females of *Ox. schoenherrii* are distinctly sexually dimorphic in following diagnostic characters: the body coloration in examined females is with strong blue, violet or purple-red lustre which is more distinct and extended on elytral sublateral and anteapical areas; ivory-whitish elytral maculation (Fig. 30) consists of only two separated maculae: irregularly circular sublateral-median macula, and ellipsoidal anteapical macula; elytral apex (Fig. 30) with rounded outer angle, truncate in middle to shallowly emarginate towards small sutural spine. Body length 13.50-14.20, width 4.30-4.40 mm; head 3.00-3.20 mm wide; pronotum (Fig. 38) 2.40-2.50 mm long, 2.30-2.40 mm wide; elytra 8.50-9.30 mm long.

Differential diagnosis. *Ox. schoenherrii* has remarkable shape of the male elytra with the acute, thorn-like apex formed by both the outer and sutural angles (Figs. 27, 31), as well as the shape of the aedeagus (Figs. 28, 32-34), Both these characters are shared within the genus with only *Ox. albitaenia*, of which the males clearly differ in the pattern of the elytral maculation, but females of these two species are mutually unrecognizable. In addition, both these closely related taxa can be distinguished from other related species by much finer and spaced elytral punctures, and the deep, triangular anteromedian impression on their vertex, but the latter character is rather variable and much less reliable.

The aedeagi of these two taxa are somewhat similar to that in *Ox. carissima*, but despite some variability, the apical portion of the aedeagus in *Ox. schoenherrii* is with notably delimited, wider, arcuate bent and rounded apex; females, because of their elytra with only two whitish maculae are very similar to females of *Ox. carissima*, but can be distinguished from them by their finer and more spaced elytral punctures, less reliably also by the deep impression on the vertex.

Biology and distribution. *Oxygonia schoenherrii* is obviously a very rare species, its occurrence confirmed only in Colombia.



Figs. 30-38. *Oxygonia schoenherrii* Mannerheim. 30 - elytron, ♀, Santé Fé de Bogota (MNHN); 31 - elytron, ♂, ibid. (SDEI); 32-34 - aedeagus, ibid. (SDEI): 32 - left lateral view, 33 - ditto, ventral view; 34 - ditto, dorsal view; 35-37 - labrum: 35 - ♂, ibid (SDEI); 36 - ♂, "Columbia" (MNHN); 37 - ♀, Santé Fé de Bogota (MNHN); 38 - pronotum, ♀ ibid. (MNHN). Bars = 1 mm.

The type locality "Antiochia" (derived from Hellenistic Greek), means a large department of Antioquia with the capital Medelin, covering the central northwestern Colombia, mostly comprising Andean mountainous area. The locality Santé Fé de Bogota is a part of the city of Bogotá, the capital of Colombia, one of the most urban areas. Thus the locality was probably a forested area east of the city, a part of the Chingaza National Park. The "Colombia, Pehlke" on the labels means the collector Ernst Pehlke who collected in the area of the very long Colombian river Magdalena which flows along the vast area between Medelin and Bogotá.

Only the holotype and several historical specimens listed above were found in collections during this revision. The female in SDEI labelled: "Peru" is very probably mislabelled, because occurrence in Peru is very improbable.

As no recent record has been published, nothing in fact is known of the behaviour of adults. Therefore, no map of distribution was provided for this species by Kippenhan (1997). Some unelaborated data in literature, last by (Erwin & Pearson 2008) should be considered mere speculations.

Remarks. When Kippenhan (1997) published his review of *Oxygonia*, the holotype of *Oxygonia schenherrii* was not examined by him, because he was not aware of its depository. For the redescription he used the specimens in MNHN and SDEI, labelled "Santé Fé de Bogota". He later (Kippenhan 1999) examined the male holotype (MZH) and mentioned that except of the body coloration, the holotype corresponds with his concept of this species except for "slight dorsal colour variations". He, however, did not mention the entirely black labrum of the holotype. Examination of the holotype (MZH), redescribed above, has revealed that the body of the male holotype is tarnished, blackened, and its labrum entirely black. Supposedly, also the labrum was blackened by a wrong consequent treatment, probably by acetic acid. This supposition may be in accordance with Horn (1900), who mentioned that the holotype was entirely discolored due to bad conservation.

***Oxygonia albitaenia* Bates, 1871 stat. restit.**

(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 cyanopis Bates, 1871: 377 - synonymy by Kippenhan 1997: 329 - see "Remarks" below.
Oxygonia cyanopsis: Fleutiaux 1892: 29 (incorrect subsequent spelling) - see "Remarks" below.

Misinterpretation. "*Oxygonia schoenherrii cyanopis* var. *albitaenia*" misinterpretation and incorrect citation of the German text and acts by Horn (1900: 215) by Kippenhan 1997: 329 - see "Remarks" below.

Type material of *Ox. albitaenia*. Holotype (by monotypy), ♂ in MNHN, labelled: "New / Grenada" [ochre-tarnished, handwritten] // "Oxygonia / albitaenia / Bates" [ochre-tarnished, handwritten] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [pale greenish, printed] // "Revision Jiří Moravec 2016: / Holotype (by monotypy) / Oxygonia / albitaenia Bates, 1871" [red, printed].
Ox. cyanopis. Holotype (by monotypy), ♀ in MNHN, labelled: "New / Grenada" [ochre-tarnished, handwritten] // "Oxygonia / cyanopis / Bates" [ochre-tarnished, handwritten] // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [pale greenish, printed] // "Revision Jiří Moravec 2016: / Holotype (by monotypy) / Oxygonia / cyanopis Bates, 1871" [red, printed].

Other material examined (all specimens standing in collections under the name *Ox. cyanopis*). 2 ♂, 1 ♀ in MNHN:

"Colombia [and illegible word] // "Muséum Paris / 1952 / Coll. R. Oberthür". 2 ♂♂, 2 ♀♀ in MNHN: "Coper" // "Ex Musaeo / E. Steinheil" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♀ in MNHN: "Ecuador" // "Ex Musaeo / Mniszech" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♀ in MNHN [Hist. Coll. Chaudoir]: "New Grenada / Solski". 1 ♀ in BMNH: "N. Grenada" // "cyanopsis[sic!] / Arm: Bates".

Redescription of male holotype of *Ox. albitaenia*.

Body (Fig. 39) 14.3 mm long, 4.40 mm wide.

Head with large eyes but distinctly narrower than body, 3.10 mm wide.

Frons as in *Ox. schoenherrii*, but almost black and with somewhat smother surface.

Vertex as in *Ox. schoenherrii* but almost black and with wider and shallower anteromedian impression which is less distinctly delimited from vertex by finer rugae.

Genae with strong green lustre, rather distinctly parallel striate.

Labrum (Fig. 42) originally with three setae (right lateral seta broken) ochre-testaceous except for blackened margins and basomedian area, 0.70 mm long, 1.70 mm wide, transverse, with rounded but irregularly sinuate lateral margins, sinuous anterior margin forms only widely rounded, nearly effaced anterolateral teeth, and two anterior teeth with a gap between them; median tooth only indicated as sunken below the margin, not protruding from it; labral surface uneven near anterior margins and with only shallow, transverse central impression.

Mandibles almost entirely black except for brown apices of teeth and rather short, testaceous basolateral area; teeth as in *Ox. schoenherrii*.

Palpi. Both maxillary and labial palpi shaped as in *Ox. schoenherrii*, but much paler, testaceous except fir black terminal palpomeres.

Antennae rather short, not reaching elytral half, scape, pedicel and antennomeres 3-4 entirely black, remaining antennomeres black-brown.

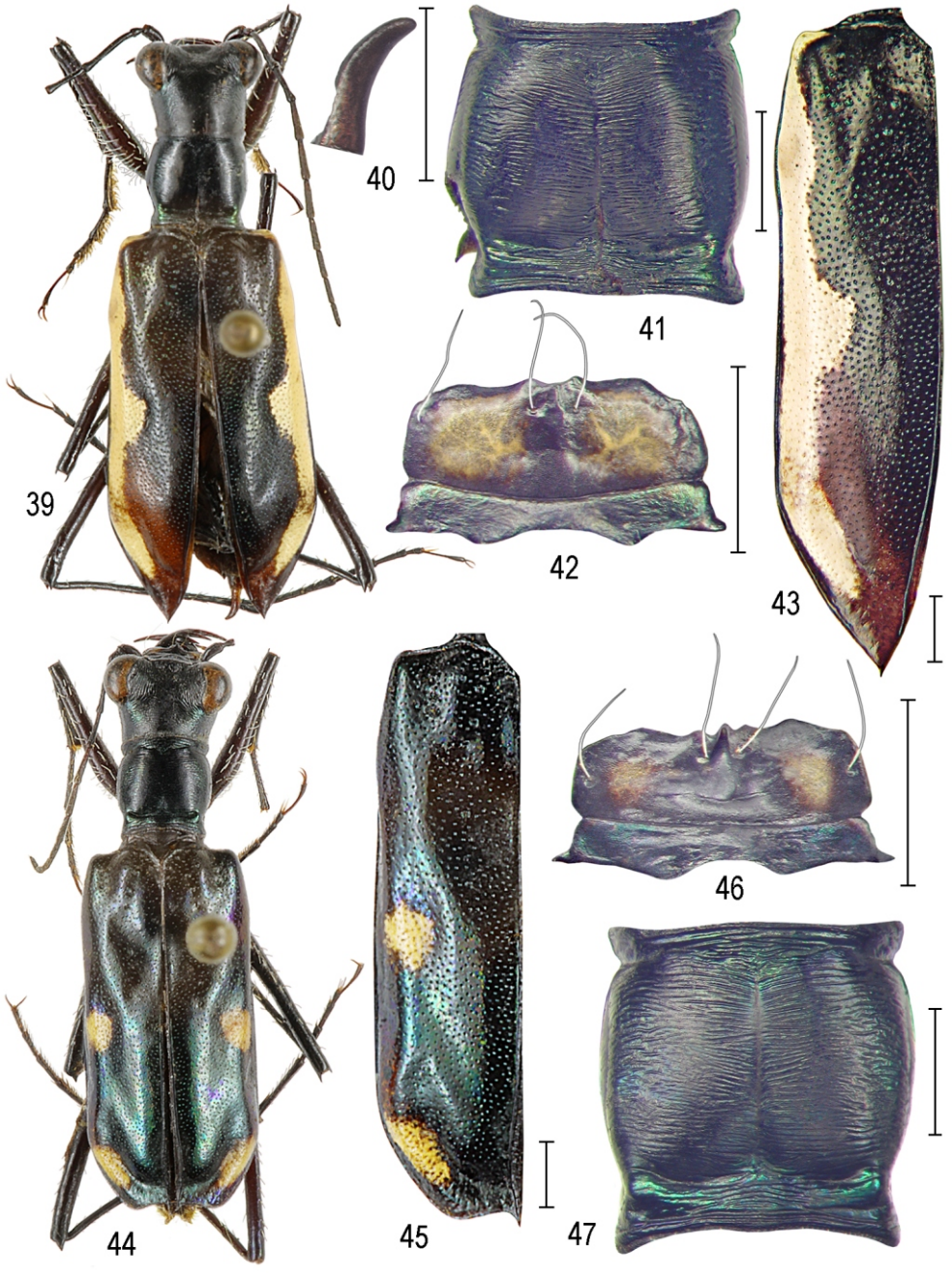
Thorax (its left lateral side crashed). Pronotum (Fig. 41) nearly as long as wide, 2.40 mm long, 2.50 mm wide, shiny dark copper-blue with greenish lustre only on posterior lobe; anterior lobe only indistinctly wider than posterior one, but narrower than disc; sulci well pronounced, the anterior very shallow in middle; the anterior lobe notably low, covered with a few, coarse, transverse and almost continuous rugae; disc with margins of dorsally visible proepisterna distinctly convex, but somewhat dilated posteriad, giving the disc nearly subtrapezoid shape, but dorsally visible notopleural sutures are almost subparallel; discal surface covered with rather dense and fine stria-like rugae (much finer and denser than in the holotype of *Ox. schoenherrii*), the rugae are irregular-wavy on sublateral areas, but more continuous and parallel-transverse in either side of distinct median line; rugae on lateral areas towards notopleural sutures become deeper, slightly surpassing them; posterior lobe with moderately raised dorsolateral bulges, lateral and posterior areas covered with coarse, transverse rugae, median area very irregularly finely rugulose; all lateral thoracic sterna metallic green with purple-red lustre; ventral thoracic sterna black-copper with only faint greenish lustre on prosternum and mesosternum.

Elytra (Fig. 43) of the same shape and pattern of elytral punctation as in *Ox. schoenherrii*, but whitish elytral maculation consists of notably wide and continuous lateral band, starting along humerus, then dilated and with wide protrusion in middle, then the band runs along the anteapical angle, but does not reach the thorn-like elytral apex.

Legs as in *Ox. schoenherrii*, but pro- and mesofemora more densely covered with rather long, uncinate white setae which are commonly interwoven;

Abdomen. Ventrites metallic black to with faint reddish and golden lustre, their surface glabrous, with only two sensory marginal setae.

Aedeagus. Only its apex (Fig. 40) penetrating from the abdomen, corresponding with that in *Ox. schoenherrii* and other examined males (Fig. 51) - see "Variability" below.



Figs. 39-47: *Oxygonia albitaenia* Bates, stat. restit. 39-43 - ♂, HT (MNHN): 39 - body, 14.3 mm; 40: apex of aedeagus; 41 - pronotum (damaged); 42 - labrum; 43 - elytron. 44-47 - ♀, HT of synonymous *Ox. cyanopis* (MNHN): 44 - body, 13 mm; 45 - elytron; 46 - labrum; 47 - pronotum. Bars = 1 mm.

Variability. The other examined males of *Ox. albitaenia* have the same elytral maculation (Fig. 50) as in the holotype. Only one male in MNHN has the band disconnected before the anteapical angle as illustrated by Kippenhan (1997, fig. 18c).

Female characters. As obvious from the redescription of the female holotype of the synonymous *Ox. cyanopis* below, females of *Ox. albitaenia* are distinctly sexually dimorphic in the shape of the elytral apex truncate or emarginated towards small sutural spine (Figs. 45, 49), and in elytral maculation consisting of only two maculae; female characters are very similar to those in females of *Ox. schoenherrii*, variably with prevailing green, blue, or purple lustre. Palpi in female darker than in male, in some females with maxillary palpi entirely black (Fig. 48).

Redescription of female holotype of synonymous *Ox. cyanopis* Bates. Body (Fig. 44) 13.00 mm long, 4.00 mm wide.

Head 3.05 mm wide, all portions as in the male holotype of *Ox. abitaenia*.

Labrum (Fig. 46) 0.60 mm long, 1.70 mm wide, shape as in the male holotype of *Ox. abitaenia*, but with small, protruding median tooth, and more extended blackened areas.

Palpi shaped as in male holotype of *Ox. abitaenia*, but maxillary palpi notably darker with both penultimate and terminal palpomeres black.

Antennae rather short, barely reaching elytral quarter, black with indistinct greenish lustre on antennomeres 1-4.

Mandibles as in male holotype of *Ox. abitaenia*, but teeth paler, reddish-brown.

Pronotum (Fig. 47), almost as long as wide, 2.30 mm long, 2.25 mm, anterior and posterior lobe with strong green lustre; disc black with only indistinct greenish lustre, lateral margins regularly and moderately convex, notopleural sutures clearly visible from above, narrower and subparallel; surface sculpture as in the male holotype of *Ox. abitaenia*, but somewhat finer, rugae partly almost effaced; proepisterna and mesepisterna black with faint green-blue lustre, female mesepisternal coupling sulci not developed; metepisterna with violaceous lustre, prosternum and mesosternum with shiny green-blue lustre, metasternum almost entirely black.

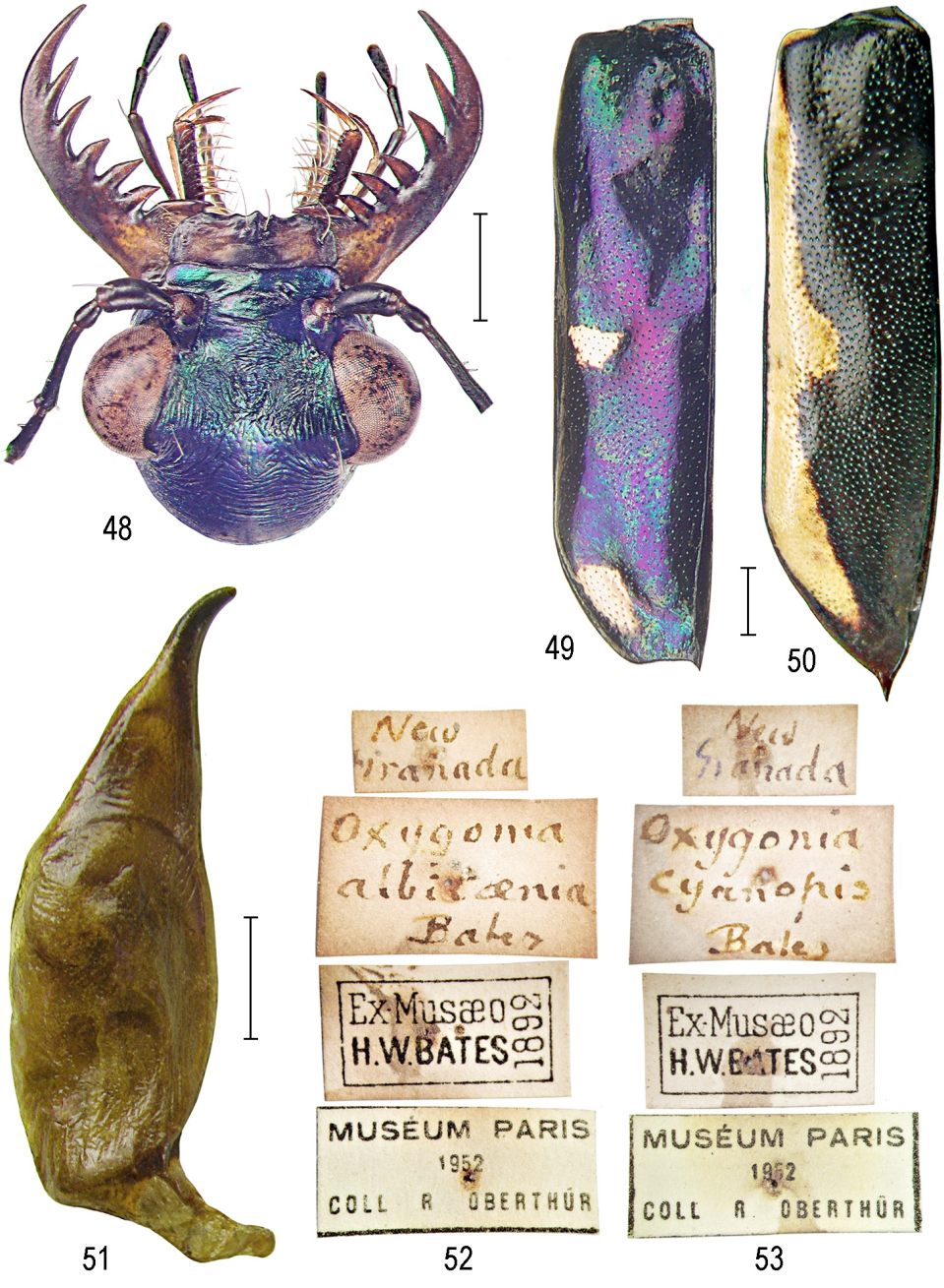
Elytra (Fig. 45) 8.45 mm long, black with chatoyant blue, green and faint gold-bronze lustre (depending on angle of illumination), lateral margins subparallel, with arcuate anteapical angle, then obliquely sloped towards rounded outer margin of apex which is truncate-emarginated towards small but distinct sutural spine; elytral surface almost regularly punctate, but punctures on posterior elytral half somewhat denser than in the male holotype of *Ox. abitaenia*, and in *Ox. schoennherrii*.

Legs as in the male holotype of *Ox. abitaenia*.

Abdomen metallic black with faint green-blue lustre.

Differential diagnosis. Males of *Ox. abitaenia* may resemble males of *Ox. carissima* and *Ox. oberthueri*, but are clearly distinguished, as well as females - see in the "Differential diagnosis" under *Ox. carissima* above.

Biology and distribution. Colombia and Ecuador. The type locality both of *Ox. albitaenia* and the synonymous *Ox. cyanopis* is ambiguous, because New Grenada (Nueva Granada), was a republic established after the dissolution of "Gran Colombia", and consisted of today's Colombia, Panama and small areas of Ecuador and Venezuela. Therefore, no specimen of *Ox. albitaenia* comes from an exact locality. Nothing is known of the behaviour of adults. When Bates



Figs. 48-53. *Oxygonia albitaenia* Bates, stat restit. 48 - head, ♀, "Ecuador" (MNHN); 49 - elytron, ♀, ibid. (MNHN); 50 -elytron, ♂, "Colombia" (MNHN); 51 - aedeagus, ibid. (MNHN); 52 - labels, ♂, HT of *Ox. albitaenia*; 53 - labels, ♀, HT of synonymous *Ox. cyanopis*. Bars = 1 mm.

(1871) described these two taxa, he noted that nothing is recorded of their habitats. As no recent record has been published, some unelaborated data in literature regarding behaviour of adults are mere speculations.

Remarks. Kippenhan (1997) treated *Ox. albitaenia* as a subspecies of *Ox. schoenherrii*. However, he simultaneously and erroneously mentioned that Horn (1900) incorrectly placed *Ox. albitaenia* as a variety of *Ox. cyanopis*, under an unavailable name (trinomen) "*Ox. schoenherrii cyanopis* var. *albitaenia* (sic!)". However, Kippenhan evidently misinterpreted the German text, because Horn (1900) in fact treated the female holotype of *Ox. cyanopis* as a synonym of *Ox. schoenherri*, while *Ox. albitaenia* as a variety (subspecies) of *Ox. schoenherri*!

The original species status of *Ox. albitaenia* is restored here, because of the very different pattern of the elytral maculation in male, as well as that these two taxa can hardly by subspecies for their probably sympatric occurrence in Colombia, and because no syntopic adults caught recently from an exact locality exist. Moreover, there are several species within the genus which mutually differ in much less distinct diagnostic characters. On the other hand, if both patterns of the elytral maculation are in future found in syntopic adults, *Ox. albitaenia* should be considered a junior synonym of *Ox. schenherrii*, because all other characters of males, including their aedeagi, and all characters of females, are almost identical. *Ox. cyanopis* is here treated as a junior synonym of *Ox. albitaenia*, following thus Kippenhan (1997) who treated it as a synonym of "*Ox. schoenherrii albitaenia*".

Fleutiaux (1892) probably tried to emend the species name *cyanopis* to *cyanopsis* because of a typo error by Bates (1871); the "*cyanopsis*" is correct in meaning, while *cyanopis* means nothing in Latin or ancient Greek. However, as there is no exact proofs for the typo error by Bates, the spelling by Fleutiaux (1892) should be considered as incorrect subsequent spelling.

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

(Figs. 54-68)

Cicindela (*Phyllodroma*) *prodiga* Erichson, 1847: 68.
Oxygonia prodiga: Fleutiaux 1892: 29.

Type locality. "Peru".
Non *Oxygonia prodiga* sensu Chaudoir (1869: 25), nec Bates (1872: 238, partim), which is *Ox. schoenherrii* Mannerheim, 1837.
Oxygonia schaumi W. Horn, 1893: 194, **syn. nov.**
Oxygonia Batesi W. Horn, 1893: 195 - synonymy by Kippenhan 1997: 333 (synonymy with "*Ox. prodiga schaumi*" by Horn 1900: 214).
Oxygonia prodiga schaumi: Horn 1900: 214.

Type material of *Oxygonia prodiga*. Lectotype ♂ (designated here) in MFNB, labelled: "3654" [printed] // "prodiga / Erichs.* / Peru. V. Tschudi" // "Zool Mus. / Berlin" // "Lectotype / Cicindela (Phyllodroma) / prodiga / design. Jiří Moravec 2015" // Oxygonia / prodiga (Erichson, 1847) / det. Jiří Moravec 2015" [printed].
Oxygonia schaumi. Holotype (by monotypy) in SDEI, labelled: "Peru mont" [handwritten] // "Type! / Coll W. Horn" [printed] // "Holotypus" [red, printed] // "f. / schaumi / mihi" [greenish with black frame, handwritten] // "Revision Jiří Moravec 2015: / Holotype (by monnotypy) / Oxygonia / schaumi W. Horn, 1893" [red, printed].
Oxygonia batesi. Holotype (by monotypy) in SDEI, labelled: "Peru" [handwritten] // "Type! / Coll W. Horn" [printed] // "Holotypus" [red, printed] // "Batesi / mihi" [green with black frame, handwritten] // "Revision Jiří Moravec 2015: / Holotype (by monotypy) / Oxygonia / batesi W. Horn, 1893" [red, printed].

Other material examined. Specimens standing as *Ox. prodiga*. Invalid syntypes: 1 ♀ in SDEI: "Staudinger / Cumbase Peru" [printed/handwritten] // "f / Type! Dr. W. Horn" [handwritten/printed] // "Syntypus" [red, printed] // "Coll W. Horn / DEI Eberswalde" [printed] // "prodiga / Er." [green-blue, handwritten] // "Lectotype / Oxygonia / prodiga / (Erichson) /

by M. Kippenhan 1995" [red, printed]. 1 ♀ in SDEI with same labels except for: "Paralectotype" [sic!]. 1 ♀ in MNHN: "Staudinger / Cumbase, Peru" // "Ex Musaeo / W. Rotschild / 1898" // "Oxygonia / prodi- / ga Erichs. ♀ (mihi)) dterminaevit Dr. W. Horn" [sic!] // "♀ Type / Dr. W. Horn" [sic!] // "Ex Musaeo / H. W. Bates / 1892" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♀ in MNHN: "Staudinger / Cumbase, Peru" // "Mus. Paris / Pérou / W. Horn 138-96" // Oxygonia / prodiga ♀ // "♀ Type / Dr. W. Horn" [sic!]. Other historical data. ♂ in NMPC: "Cumbase Peru". 1 ♂ in SDEI: "Staudinger / Marcapata ".1 ♂ in SDEI: "Staudinger / Cumbase / Peru". 1 ♂ in SDEI: "Staudinger / 89 Peru". 5 ♂♂, 6 ♀♀ in MNHN: "Pérou / Chanchamayo / Ch. O. Schunke 1892" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂, 1 ♀ in MNHN: "Chanchamayo, Peru / A. Heyne" // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930". 2 ♂♂, 1 ♀ in MNHN: "Pérou / Tarapoto / M. de Mathan" 7 ♂♂, 4 ♀♀ in MNHN: "Pérou / Moyobamba / M. de Mathan / 1888" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂ in CCJM, 1 ♂ in SDEI, 1 ♂, 1 ♀ in MNHN: "Peru / Chanchamayo". 1 ♀ in MFNB: "Peru / Chanchamayo / M. Freymann G.". 1 ♀ in MFNB: "Peru" // "Bates Hrn". 2 ♂♂ in SDEI: "Peru" // "Col. Lenhard". 1 ♂, 1 ♀ in SDEI: "Rio Toro / Peru". Other data. 2 ♂♂, 1 ♀ in SDEI: "Peru". 1 ♂, 2 ♀♀ in SDEI: "Hoge / Peru". 1 ♂ in SDEI: "Marcel / Peru". 1 ♂ in SDEI: Quiroz, Rio / Paucartambo / Peru". 1 ♂, 1 ♀ in MFNB: "Mt. Alegre, Rio / Pachytea O. Peru / G. Tessmann". 5 ♂♂ in MNHN: "Pérou / La Merced / C. O. Schunke / Reçu Novembre 1904" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂ in MNHN: "Juanfué" // "Muséum Paris / 1952 / Coll. R. Oberthür". Recent data. 2 ♂♂ in DBCN: "Peru - Dept. Junin / Pampa Hermosa Lodge / 22 km N - San Ramon, 1220 m / 10°59.3´S, 75°25.5´W / D. Brzoska 24-27-XI-2007". 2 ♂♂, 2 ♀♀ in DBCN: "Peru - Dept, Cuzco / 15 km NE - Cock of the / Rock Lodge (NE - / Paucartambo), 1030 m / 13°01.6´S, 71°30.0´W" / D. Brzoska 8-XI-2007". 2 ♂♂ in DBCN: "Peru: Ucayali / Tingo Maria Pucalpa Rd. / Km 205 - P. Chino - 1300m / 09°08.2´S;75°47.3´W" / D. Brzoska 11-X-1999". 1 ♂ in MFNB: "New Grenada" // "82490" // Coll. H. C. Vogel".// "Oxygonia / prodiga / (Erichson) / det. Kippenhan 1994". 1 ♂ in CCJM "Bolivia".
Specimens standing as "*Ox. prodiga schaumi*". 1 ♀ in MNHN: "Pérou / Staudinger" // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault" // "O. Schaumi / W. Horn ex Typis" [sic!]. 52 ♂♂, 14 ♀♀ in MFNB: "Peru / Rio Toro". 1 ♂, 1 ♀ in NMPC: "Peru / Rio Toro / La Merced / Chanchamayo". 1 ♂ in MFNB: "Sud Peru". 1 ♂ in NMPC: "Chanchamago[Chanchamayo] / Peru / Ex Coll. F. Schneider".

Redescription of male lectotype. Body (Fig. 54) 14.80 mm long, 4.30 mm wide, bright multicoloured.

Head (Fig. 57) with large eyes but notably narrower than body, 3.55 mm wide.

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

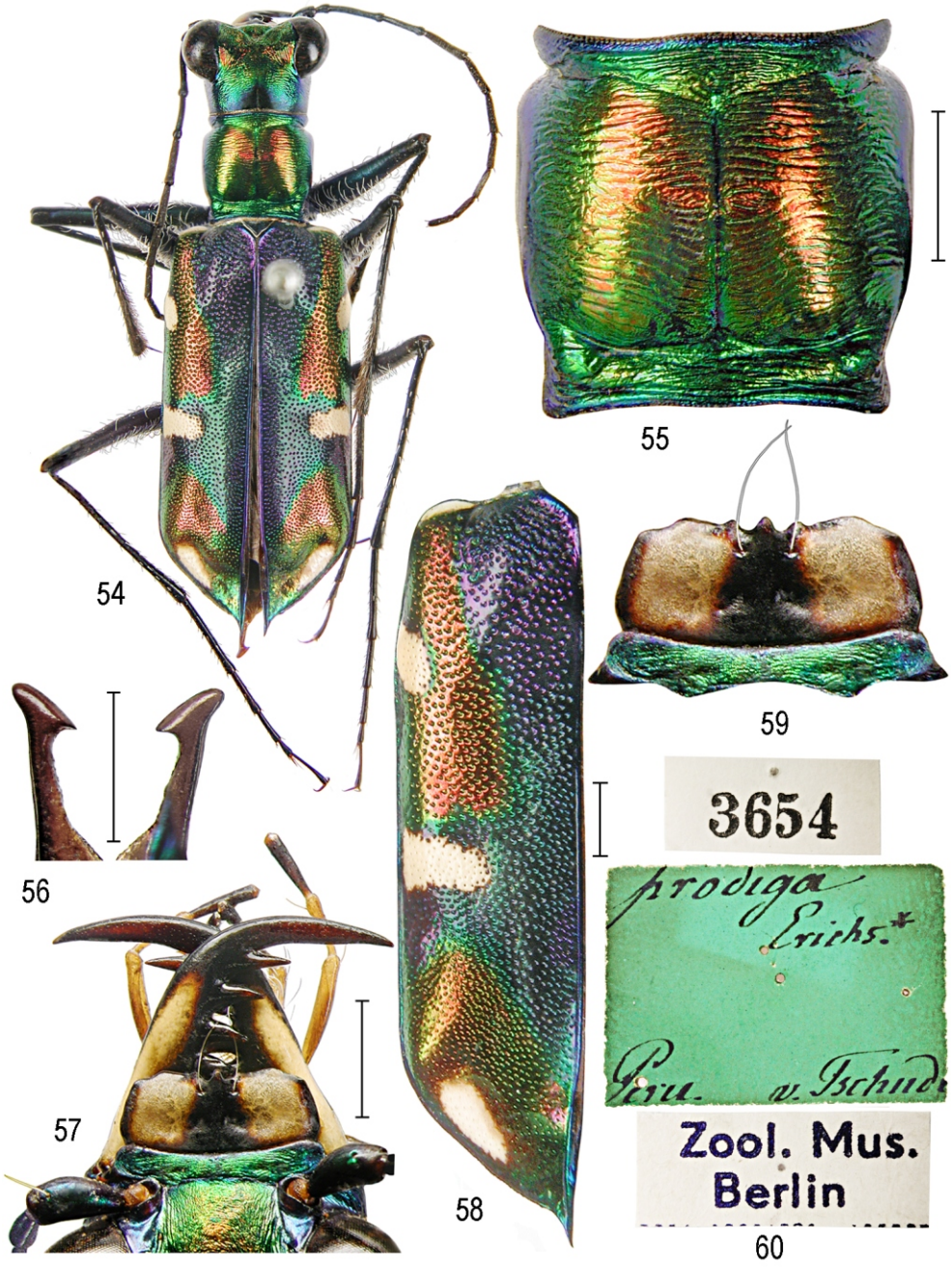
Vertex reddish cupreous with chatoyant green lateral areas, separated from frons by rounded frons-vertex fold, finely transverse-wavy rugulose on anteromedian area (the same sculpture passing from frons) passing to a vermicular rugosity present also within a conspicuous, deep V-shaped anteromedian impression; sublateral areas densely, but distinctly obliquely parallel-striate, striae converging in central area which is covered with a few, longitudinal, then irregular rugae; juxtaorbital areas rather densely covered with distinct, longitudinally parallel striae; striae on posterolateral areas become irregularly fragmented diverging towards bright green templar area, and even more fragmented on the temples; occipital area metallic-green, darkened in middle, finely and very irregularly transverse-rugulose.

Genae metallic green, covered with shallow, parallel striae.

Clypeus (Fig. 59) with thorn-like shaped lateral extensions, metallic green with faint reddish-cupreous reflections, finely irregularly rugulose.

Labrum (Fig. 59) with only two setae (other two probably broken), 0.70 mm long, 1.60 mm wide, transverse with rounded basolateral margins and a sinuous anterior margin which indicates blunt lateral teeth, two rounded anterolateral teeth, and three more distinct anterior teeth of which the median tooth is subacute and more protruding; labral surface ochre testaceous except for blackened outer margins, limited basal area and whole median area including deep central impression.

Mandibles (Fig. 57) with large yellow-ochre lateral areas and black-brown teeth with indistinct cupreous tinge, subsymmetrical, each mandible with 6 teeth and basal molar.



Figs. 54-60. *Oxygonia prodiga* (Erichson), ♂, LT (MFNB): 54 - body, 16.8 mm; 55 - pronotum; 56 - apex of aedeagus in its right and left lateral view; 57 - part of head with buccal appendages; 58 - elytron; 59 - labrum; 60 - original labels. Bars = 1 mm.

Palpi (Fig. 57) conspicuously long with elongate terminal palpomeres, yellow-testaceous except for black terminal palpomeres in both of maxillary and labial palpi.

Antennae rather short, reaching only elytral quarter; scape rather wide but elongate, metallic black with green and blue reflections; antennomeres 2-4 metallic black with indistinct greenish lustre, 5-11 rather wide, black- brown, gradually narrowed and smoky-blackened.

Thorax. Pronotum (Fig. 55) as long as wide, length and width 2.50 mm, shiny green on anterior and posterior lobe and within well pronounced sulci, bright reddish cupreous with gold-bronze lustre on median area of disc; anterior lobe slightly wider than posterior one, surface covered with irregularly transverse, rather coarse rugae; lateral margins of disc subparallel in middle, running almost in the same line as dorsally visible notopleural sutures; discal surface covered with irregularly transverse, rather shallow 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 with rather distinctly raised dorsolateral bulges, its surface covered with coarse, very irregular rugae; lateral and ventral thoracic sterna shiny metallic green with faint chatoyant blue and bronze reflections.

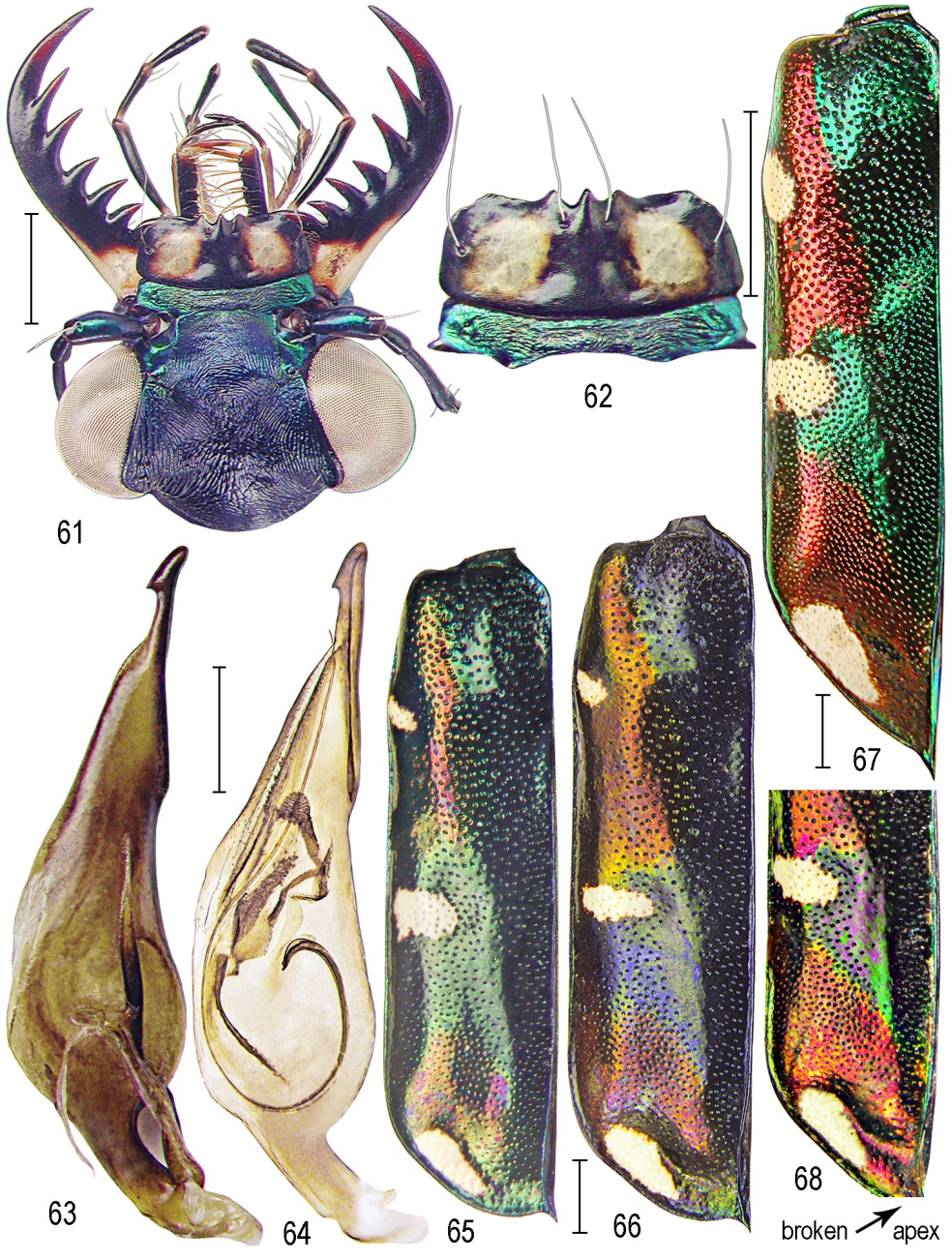
Elytra (Fig. 58) oblong, 10.0 mm long, with rounded humeri and almost parallel lateral margins moderately dilated along the subhumeral macula, with arcuate anteapical angle, then obliquely attenuated towards acute apex with long sutural spine; dorsal elytral surface with comparatively shallow but large discal impression, together with humeral impressions clearly delimiting distinct basodiscal convexity; additional, shallow impression on the area of sublateral-median macula and discal area mesad this macula distinctly longitudinally raised; apical impression rather deep; elytral coloration on basodiscal convexity purple-violaceous, while reddish-cupreous on large sublateral areas and area of outer anteapical angle, except for bright green discal area extended around the lateromedian macula, thus the green area, mutually on both elytra, imitates a wide cross (the coloration is changeable depending on angle of illumination); elytral maculation ivory-white, consisting of four distinct maculae: humeral macula only partly visible from above, its larger part placed below the anterior callus of the humerus; semicircular subhumeral-lateral macula; transverse, usually wide lateromedian macula; wide, elongate anteapical macula; whole elytral surface rather densely and coarsely punctate, larger and more spaced punctures on elytral base and within and along discal impression and on the longitudinal convexity along the sublateral-median macula, but rather dense punctures surrounding the macula and almost whole anteapical area except for more spaced punctures surrounding the elongate anteapical macula., and occasionally narrow, elongate impunctate area mesad of the lateromedian macula.

Legs. Coxae metallic green pro- and mesocoxae densely covered with white, decumbent setae; metacoxae with lateral coxal area densely punctate-setose; trochanters black-brown, glabrous; femora, tibiae and tarsi black with faint greenish lustre, femora with comparatively indistinct, short apical thorns, surface whitish setose, setae, densest and mostly uncinate-interwoven on ventral area of femoral basal half, sparser on dorsal area and much sparser on apical area; tibiae with setal vesture as in *Ox. carissima* above.

Abdomen metallic green with reddish and gold-bronze lustre on lateral areas; surface of the ventrites smooth and glabrous except for usual, a few hairlike sensory setae (easily abraded) at their posterior margins.

Aedeagus. In the lectotype only apex of the aedeagus (Fig. 56) visible, corresponding with examined aedeagi of both historical and recently caught males (Fig. 63) - see "Variability" below.

Variability. The other males examined, including the holotype of *Ox. schaumi* syn. nov. differ



Figs. 61-68. *Oxygonia prodiga* (Erichson). 61 - head, ♀, Peru, Cusco, Paucartambo (DBCN); 62 - labrum, ♀, ibid. (DBCN); 63 - aedeagus, Peru, Junin, San Ramon (DBCN); 64 - ditto, internal sac; 65-68 - elytron: 65 - ♀, Paucartambo (DBCN); 66 - ♀, HT of synonymous *Ox. batesi* W. Horn (SDEI); 67 - ♂, "Nova Grenada" (MFNB); 68 - ♂, HT of *Ox. schaumi* W. Horn, syn. nov. (SDEI). Bars = 1 mm.

only in the intensity of the dorsal coloration, rarely elytra in males with prevailing violaceous areas and gold-bronze areas instead of the reddish; some of them have elytra with small impunctate areas in variable extent.

Ox. schaumi **syn. nov.** was described by Horn (1893) as differing in the impunctate area along the sublateral-median elytral macula and smaller anteapical area. However the present revision has confirmed results presented by Kippenhan (1997) that this character varies. Nevertheless, he followed Horn (1900) and treated this taxon as *Ox. prodiga schaumi*. In some of syntopic males the smooth areas are even larger than in the male holotype of *Ox. schaumi* syn. nov. (Fig. 68) which has the impunctate areas paradoxically less indistinct; rarely, in only a few males, also subhumeral-lateral area is impunctate (as in all females); elytra of numerous adults from Rio Tore (MFNB) possess the impunctate areas almost consistently, but also among them the variability occurs. As no other difference exists, as well as for the obviously sympatric or even syntopic occurrence, *Ox. schaumi* is synonymized here with *Ox. prodiga*.

Body length 12.90-14.90, width 3.80-4.40 mm. Aedeagus (Fig. 63) is 5.20-5.60 mm long, 1.50 mm wide, voluminous above the base, apical half conically attenuated towards elongate-cylindric apex terminated with rounded, dorsally obliquely sloped and excised knob of a crochet hook-like shape; internal sac (Fig. 64) containing long, flagellum with rather narrow, sclerotized base and long flagelliform portion which is basally widely coiled, then running towards apex and protruding from the apical orifice; other sclerites comprises: long, arciform basodorsal sclerite, large, central piece associated with stick-like sclerite turned in middle, cranked, ventrally placed sclerite, and central-upper sclerite with circular, densely microtuberculate head.

Female characters. The sexual dimorphism in this species is mainly in the different shape of the apex in female elytra (Figs. 65-66), which is rounded and shallowly emarginated towards small sutural spine; elytral humeri mostly slightly to more distinctly anteriad-protruding; body similarly coloured as in male, but generally darker, basal coloration metallic black, particularly on the head and pronotum, the extent of purple-violaceous, green and blue areas on basically metallic-black elytra varies; humeral macula is in smaller and invisible from above; elytral punctation is effaced on lateral areas (besides the variably impunctate areas which occur also in some males); palpi in female much darker, maxillary palpi entirely black; mandibles black with only short basolateral testaceous area (Fig. 61); female labrum as in male, but generally with more extended black areas, shape of the anterior teeth varies in both sexes.

The female holotype of synonymous *Ox. batesi* (elytron Fig. 66) does not diagnostically differ from other females of *Ox. prodiga* (see "Variability" above). Body length up to 13.50 mm, width up to 4.50 mm.

Differential diagnosis. *Ox. prodiga* is distinguished from the similarly coloured species, *Ox. gloriola* Bates, 1872, *Ox. floridula* Bates, 1872 and *Ox. buckleyi* Bates, 1872, by its larger and more transverse-elongated elytral lateral-median macula (close to epipleuron); males of *Ox. prodiga* can be distinguished from these species by their elytral surface which is either entirely punctate, or with only small impunctate areas, and by the aedeagus with distinctly elongate apex (Figs. 57, 63); elytra of *Ox. floridula* and *Ox. gloriola* possess much larger smooth areas (although never so extended as illustrated by Kippenhan (1997) and female elytra of the former are bright violaceous-blue coloured throughout, of the latter entirely shiny green.

Ox. buckleyi immediately differs in having the labrum in both sexes metallic coloured

(Figs. 72, 82, 88); *Ox. erichsoni* W. Horn, 1896, hitherto known only from the lectotype and three paralectotypes (designated by Kippenhan 1997) and examined within this revision in SDEI, differs in having much narrower sublateral-median macula (distant from the epipleuron), and its aedeagus has shorter and much wider apex.

Biology and distribution. As obvious from the examined specimens listed above, most specimens of this common species come from Peru, only one (MFNB) is probably from Colombia (New Grenada is rather ambiguous locality - see "Biology and distribution" under *Ox. albitaenia* above), and one from Bolivia (CCJM). Pearson, Guerra & Brzoska (1999) and Kippenhan (1997) listed 11 additional specimens from Bolivia (all from La Paz district) and one from Ecuador. The type locality "Peru" means probably the Upper Huallaga, as mentioned by Bates (1872) who also correctly mentioned that the type was collected by Tschudi.

Adults in Bolivia are diurnal, occurring in and along small streams on boulders covered with moss at elevation 1140 m (D. Brzoska pers. com.).

Remarks. According to the short but highly pertinent original description of *Cicindela prodiga* by Erichson (1847), it is clear that he described male sex only, and probably only one. Nevertheless, as he did not mention a number of specimens, the lectotype is designated here in order to assure the stability of this taxon, and because the previous lectotype designation by Kippenhan (1997) is invalid as based on non-type specimens in SDEI. Kippenhan did not recognize the genuine type in the Berlin Museum (now MFNB). Although he had borrowed it from MFNB as "holotype", he listed it (Kippenhan 1997) among non-type specimens with wrongly spelled name of the collector. The error was partly caused by the female specimens in the collection of Walther Horn (SDEI), incorrectly labelled as types, and with red labels "Syntype". The red labels were probably added there subsequently by Döbler when she worked on the list of type specimens deposited in the SDEI collection (formerly DEI), as she listed in her catalogue (Döbler 1973) two female syntypes when she mentioned: "Mehrere Syntypen, Peru, DEI" and "Peru, Cumbase durch Staudinger". The confusion can have been caused by the erroneous note by Bates (1872) when he cited Chaudoir (1869) who erroneously considered a female to be the type of *Ox. prodiga*, but he obviously confused it with a female of *Ox. schoenherrii*. Accordingly, Lorenz (2005a,b) listed *Ox. prodiga* sensu Chaudoir (1869) under *Ox. schoenherrii*. The error was explained by Horn (1893) who wrote that the true *Ox. prodiga* was unknown both to Chaudoir and Bates, and that Erichson (1847) described a male, not a female. Therefore, Horn (or partly somebody else) possibly labelled the females in SDEI and other specimens in collections as types (see "Other material examined") before he was aware of the true type in the Museum Berlin.

***Oxygonia buckleyi* Bates, 1872**

(Figs. 69-90)

Oxygonia buckleyi Bates, 1872: 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.

Type material of *Ox. buckleyi*. Lectotype (designated here) ♂ in MNHN [Coll. Fleutiaux], labelled: "R. Upano / Ecuador" // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Buckleyi / Bates " [with black line and border, handwritten] // "Lectotype / Oxygonia / buckleyi / Bates, 1872 / design. Jiří Moravec 2015" [red, printed]. Paralectotypes. 1 ♂ in MNHN with same first three labels and: "Oxygonia / Buckleyi / Bates ♂" [handwritten]. 1 ♀ in MNHN: "R. Upano / Macas / Ecuador" // "Oxygonia / Buckleyi / Bates ♀" // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish, printed]. 1 ♀ in BMNH: "Upuna / River / ♀ / Buckley" [circular, handwritten] // "Buckleyi / Bates" [handwritten] // "F. Bates Coll. / 1911-248" [printed]. 1 ♂ in BMNH with same labels except for: "♂" on the first label. 5 ♂♂ in BMNH (two of them numbered: "101" and "102"): "Ecuador / Buckley" [handwritten] // "Oxygonia / Buckleyi / Bates ♂" [handwritten] // "F. Bates Coll. / 1911-248" [printed]. 1 ♀ in BMNH with same labels except for: "202". 1 ♀ in BMNH "Ecuador / Buckley" [handwritten]. 1 ♂, 1 ♀ in BMNH: "Buckley" // "Ecuador / Macas" // "Fry Coll. / 1905-100" [printed, the male with additional: "41484"]. 1 ♀ in MNHN [Coll. Fleutiaux]: "Macas / Ecuador" // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed]. 1 ♂ in SDEI: "Oxygonia / Buckleyi / Bates / Ecuador / ex cab. / Buckley" [handwritten] // "Coll. W. Horn / DEI Eberswalde" [printed] // "Coll. Ehlers / V. de Poll" [printed]. 1 ♂ in SDEI: "Macas / Ecuador" // "Buckleyi Bat. / ♂" // "Coll. W. Horn / DEI Eberswalde" [printed]. 1 ♂ in MFBB: "Ecuador / Buckley Bt.". 1 ♂ in SDEI: "Ecuador" // "Coll. Badal". 1 ♀ in NMPC no locality label.

Type material of synonymous *Ox. elongata*. Holotype (by monotypy) ♂ in SDEI: "Ecuador" [with black border, handwritten] // ex coll. / Fleutiaux" [with red and blue vertical lines, handwritten] // "♂ Type! / Dr. W. Horn" [printed] // "Holotypus" [red, printred] // "Coll. W. Horn / DEI Eberswalde" [printed] // "f. elongata / mihi" [green-blue with black frame and border, handwritten].

Other material examined. Historical data. 1 ♂, 1 ♀ in MNHN [in Coll. Fleutiaux]: "Ecuador / Oxygonia / Buckleyi / Bates". 1 ♂ in MNHN: "Ex Musaeo / A. Sallé / 1897" // "Muséum Paris / 1952 / Coll. R. Oberthür".1 ♀ in SDEI: "Staudinger / Ecuador". 1 ♀ in SDEI: "Ecuador / Ex Coll. Dokthorow". 1 ♂ in MFBB: "Peru mont. / Thamm" // "44115". 1 ♂, 1 ♀ in MNHN "Ecuador". 1 ♀ in SDEI: "Buckley ♀". Recent data. 1 ♂, 2 ♀♀ in DBCN: "Ecuador: Morona / Santiago, 5.2 km S Patuca, 820m / 0.2°46´08´´S;78°15´00´´W / D. Brzoska 28-XI-1996". 5 ♂♂ in DBCN with same label except for: "23-X-1997. 1 ♀ in MNHN: "Oxygonia / Buckleyi / Bates / Amazones".

Redescription, male. Body (Figs. 69, 85), elongate, 14.30-16.50 mm long, 4.45-5.10 mm wide (lectotype 16.10 mm long, 5.00 mm wide (lectotype of synonymous *Ox. elongata* 14.40 mm long, 4.50 mm wide), multicoloured.

Head (Figs. 70, 86) conspicuously narrower than body, 3.20-3.50 mm wide.

Frons and vertex with surface as in *Ox. prodiga*, but supraantennal plates shiny green; the deep V-shaped anteromedian impression on vertex more distinctly pronounced.

Genae metallic green with strong red and golden lustre, covered with shallow, parallel striae.

Clypeus (Figs. 72, 88) bright reddish-cupreous with green lateral reflections, with small thorn-like lateral extensions, finely irregularly wrinkled.

Labrum (Figs. 72, 88) primarily with four setae (lectotype with only two setae, other two broken), transverse-oblong but comparatively long, length 0.75-0.90 mm, width 1.75-1.90 mm, shape as in *Ox. prodiga* (also of similar variability) but coloration chatoyant metallic-green with red and golden reflections, or red to purple with green reflections, or almost entirely blue-green, mostly with blackened area of central impression.

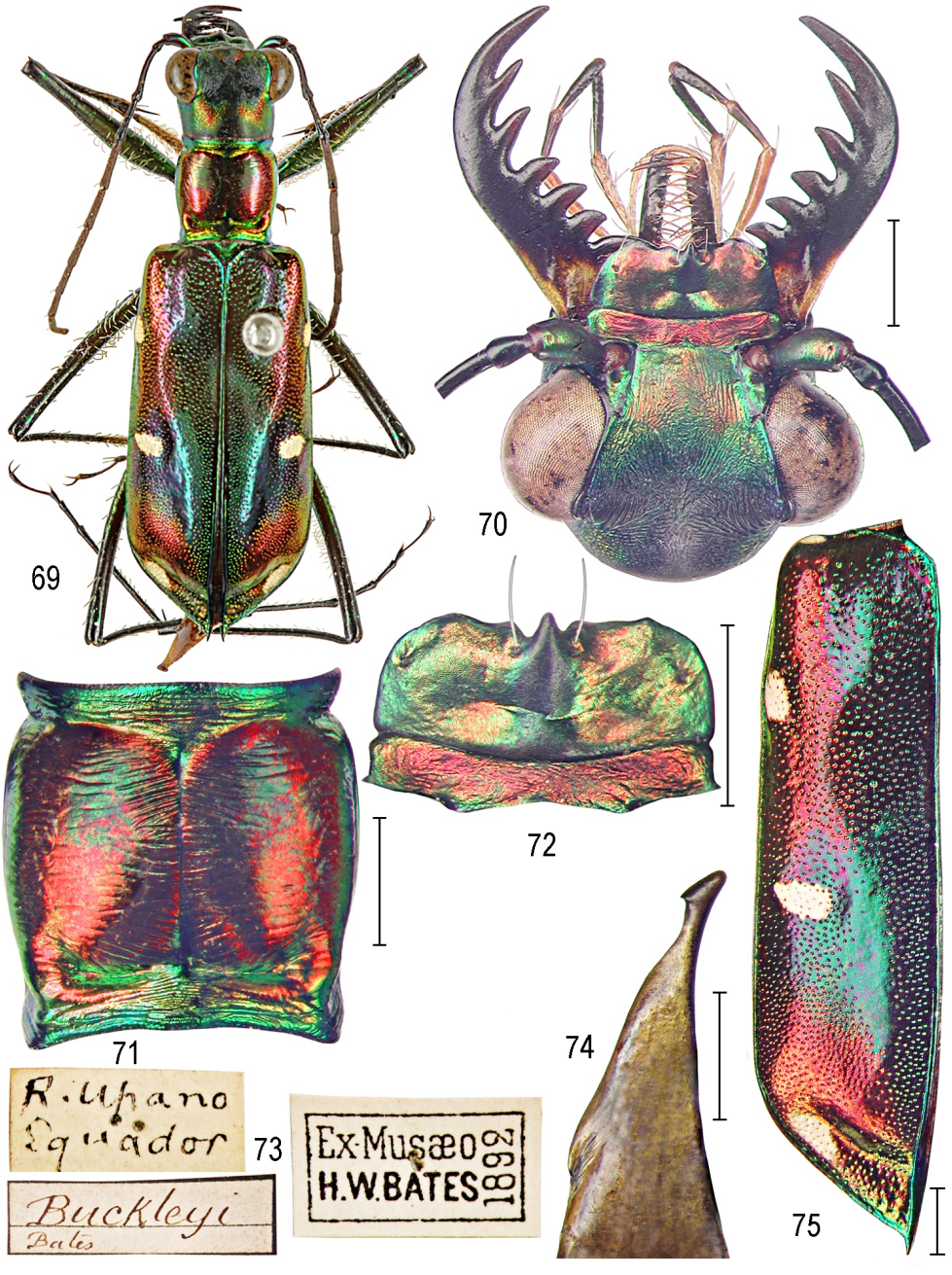
Mandibles (Figs. 70, 86) almost entirely black to black brown except for small basolateral testaceous areas, subsymmetrical, each mandible with 6 comparatively wide teeth and basal molar.

Palpi (Fig. 70) as in *Ox. prodiga*, but the black terminal palpomeres somewhat more elongate, and penultimate palpomeres of maxillary palpi brown-darkened.

Antennae as in *Ox. prodiga*.

Thorax. Pronotum (Figs. 71, 87) very slightly longer than wide, length 2.65-3.00 mm, width 2.60-2.90 mm, shape and surface sculpture as in *Ox. prodiga*, mostly with prevailing red coloration, striae mostly somewhat coarser on anterior area when obliquely converging towards the median line; lateral and ventral thoracic sterna as in *Ox. prodiga*.

Elytra (Figs. 75, 90) oblong, 9.00-11.10 mm long, shape and coloration basically as in *Ox.*



Figs. 69-75. *Oxygonia buckleyi* Bates. 69 - body, ♂, 16.1 mm, LT (MNHN). 70 - head, ♂, "Ecuador" ex Buckley, PLT (SDEI); 71 - pronotum, ♂, LT (MNHN); 72 - labrum, ♂, LT (MNHN); 73 - labels, ♂, LT (MNHN); 74 - aedeagus, LT (MNHN); 75 - elytron, ♂, LT (MNHN). Bars = 1 mm.

prodiga, but the elytral apex is slightly shorter; the ivory white maculation as in *Ox. prodiga*, but the sublateral-median transverse macula is shorter and distinctly distant from outer elytral margin; pattern of elytral punctures with conspicuously large, elongate smooth area on elytral disc mesad of the sublateral-median macula; sparser punctures on basolateral area, and partly or entirely effaced on small area mesad of anteapical macula.

Legs as in *Ox. prodiga*.

Abdomen as in *Ox. prodiga*, with prevailing reddish-cupreous lustre as in *Ox. prodiga*.

Aedeagus (Figs. 74, 76-77, 89) 5.20-5.40 mm long, 1.40-1.50 mm wide, voluminous above the base, then conically attenuated towards short, cylindric apex terminated with rounded, dorsally obliquely sloped and excised knob similar to that in *Ox. prodiga*, but notably wider; internal sac (Figs. 78-79) containing flagellum with only slightly dilated and sclerotized base and very long flagelliform portion which is basally widely coiled, then running towards apex and protruding from apical orifice; other sclerites comprises: long, arciform basodorsal sclerite, two membranous central pieces and central-upper snaky-bent piece terminated with short, wide tooth.

Variability. Except for the variable coloration stressed in the redescription, some males have the striate pronotal sculpture finer (also the holotype of the synonymous *Ox. elongata* Fig. 87), and the size of the elytral subhumeral macula considerably varies, in some males is very small and brownish-testaceous darkened, and entirely absent in the holotype of the synonymous *Ox. elongata* (Figs. 85, 90).

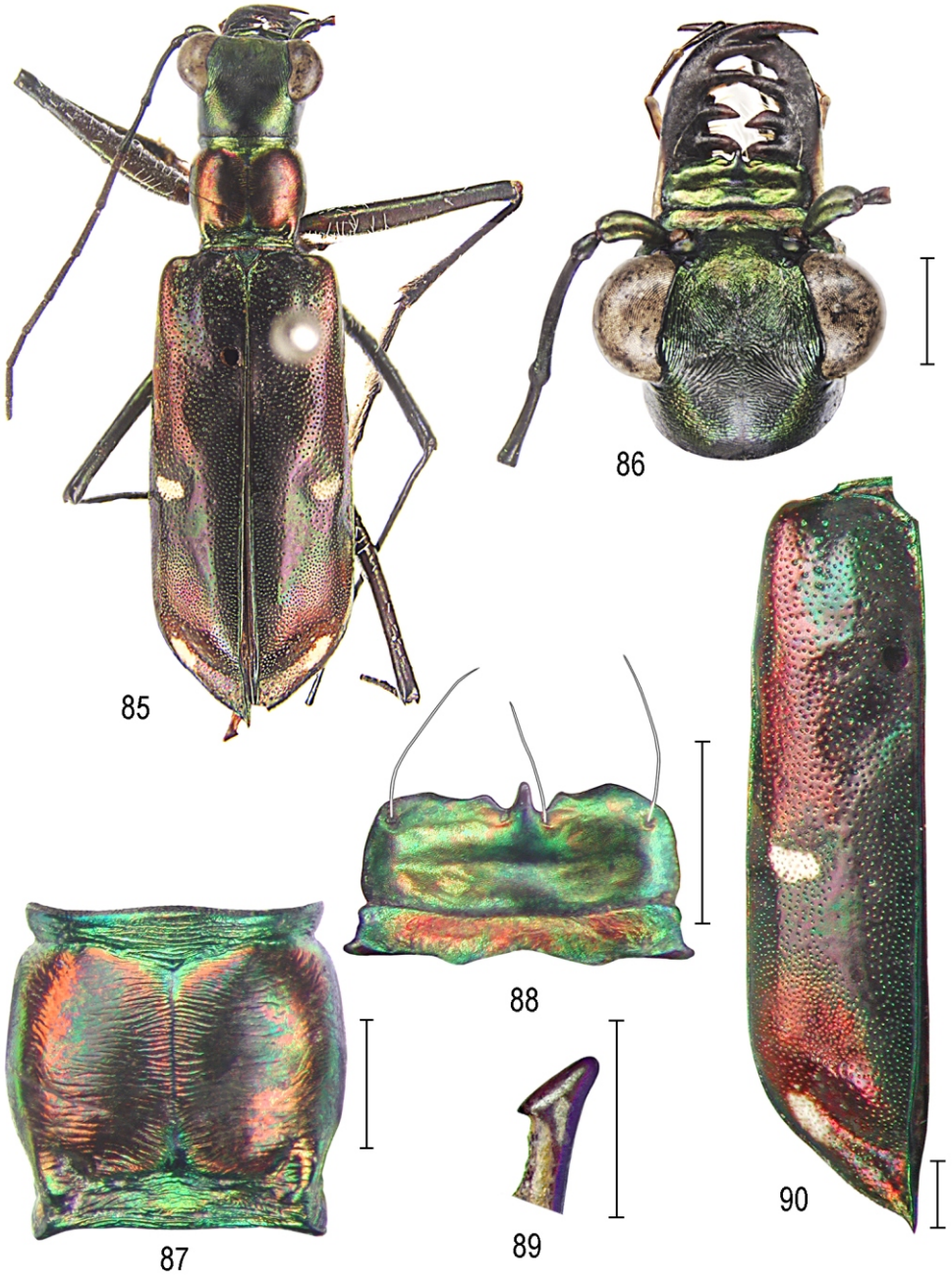
Female characters. The sexual dimorphism is particularly in the different shape of the apex in female elytra (Fig. 83), which is rounded and only shallowly emarginated towards small sutural spine; also female body coloration conspicuously differs, being mostly almost uniformly shiny metallic green-blue with either indistinct or extended purple-violaceous areas; ivory-white humeral macula is on female elytron smaller and invisible from above and also the sublateral-median macula is much smaller, sometimes indistinct as ochre-testaceous darkened; elytral punctation is partly effaced also on lateral areas; (besides the large smooth area mesad of the sublateral-median macula); maxillary palpi entirely black; labrum (Fig. 82) as in male, but mostly with only median tooth and sometimes with 6, rarely 7 or 8 setae, mostly uniformly blue-green coloured. Body length 14.90-16.10 mm, width 4.70-5.30 mm.

Differential diagnosis. Despite the variabilty mentioned above, *Ox. buckleyi* is immediately distinguished from all other species of the genus by the metallic coloured labrum in both sexes (Figs. 72, 82, 88).

Biology and distribution. Andean areas of Upper Amazon Basin in Ecuador and Peru. The type locality was not specified in the original description by Bates (1872) who only generally and ambiguously mentioned for the specimens caught by Buckley in Ecuador: "River Upano, Upper Morona near Macas". Thus for *Ox. buckleyi* the type locality is according to the labels of the lectotype the Upano River near Macas, in the Ecuadorian province of Morona Santiago. All other syntypes in MNHN, BMNH and SDEI come from the same area near Macas, and also recently caught adults from Patuca are from the same province. Only a few specimens come from Peru (Moyamba). The male in MNHN labelled "Amazones" means Andean part of Upper Amazonia in Ecuador or Peru.

As mentioned by Pearson, Brzoska & Buestán (1995), cited by Kippenhan (1997) and

Figs. 76-84. *Oxygonia buckleyi* Bates. 76-79 - aedeagi: 76 - "Ecuador" ex Buckley, PLT (SDEI); 77 - Patuca (DBCN); 78-79 - ditto, internal sac in left and right lateral view; 80 - label ♂, PLT (SDEI); 81-84 - ♀, "R. Upano, Macas", PLT (MNHN): 81 - pronotum; 82 - labrum; 83 - elytron; 84 - labels. Bars = 1 mm.



Figs. 85-90. *Oxygonia buckleyi* Bates, ♂, HT of synonymous *Ox. elongata* W. Horn (SDEI): 85 - body, 14.4 mm; 86 - head; 87 - pronotum; 88 - labrum; 89 - apex of aedeagus; 90 - elytron. Bars = 1 mm.

summarized by Pearson, Buestan & Navarrete (1999), adults are diurnal, occurring along small mountain streams (650-950 m), usually on moist, shaded cliffs and waterfall areas, as also confirmed by D. Brzoska (pers. com.) who caught recently this species in the Ecuadorian province of Morona Santiago, near Patuca, 820 m.

Remarks. In the original description, Bates (1872) described *Ox. buckleyi* from both sexes and mentioned that he examined numerous series of this species. Therefore, the lectotype is designated here in order to assure a better stability of the taxon; all other specimens from Buckley are considered syntypes and listed above as paralectotypes.

Ox. elongata W. Horn, 1896 was later treated by Horn (1915) as a subspecies of *Ox. buckleyi*, and Kippenhan (1997) synonymized it with this species. The male holotype of *Ox. elongata* examined in SDEI (Figs. 85-90) differs from the lectotype and most other specimens of *Ox. buckleyi* examined within this present revision in having even more elongate elytra and missing subhumeral elytral macula (Figs. 85, 90). Kippenhan (1997, fig. 24a) illustrated elytra for *Ox. buckleyi* with the same unusual absence of the subhumeral macula, but he did not refer to any exact specimen on which he based his line drawings. In the redescription of *Ox. buckleyi* he mentioned a small subhumeral macula and he also argued that the elytral maculation is variable. As *Ox. elongata* is known only from the holotype, and as its other characters, including its metallic coloured labrum and apex of its aedeagus, are shared with *Ox. buckleyi*, the synonymy by Kippenhan (1997) is accepted here.

***Oxygonia moronensis* Bates, 1872**

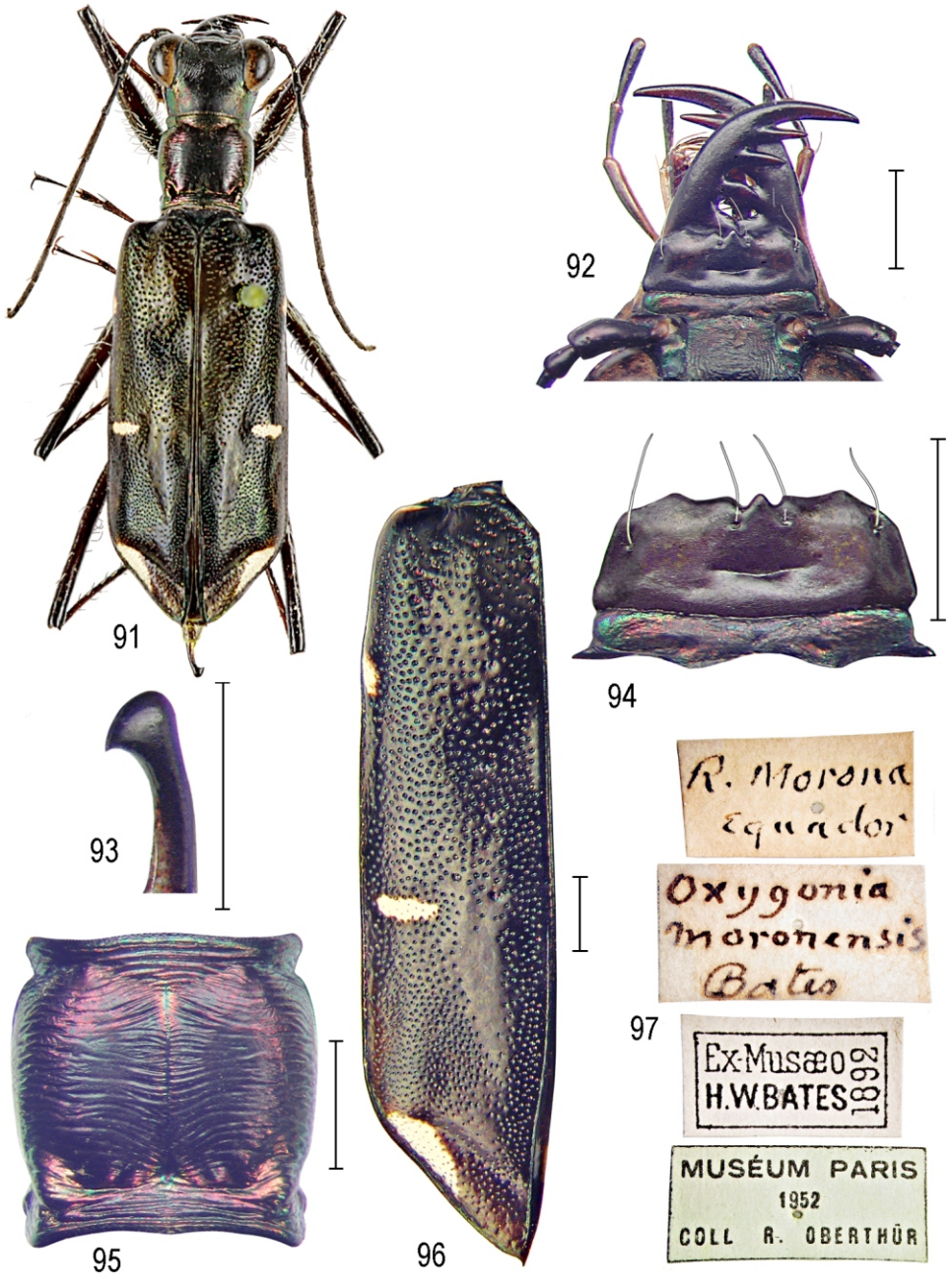
(Figs. 91-109)

Oxygonia moronensis Bates, 1872: 242.

Type locality. Ecuador: Upper Morona. (Bates1872 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" below.

Type material. Lectotype (designated here) ♂, labelled: "R. Morona / Equador" // "Oxygonia moronensis / Bates" // "Ex Musaeo / H. W. Bates / 1892" [with black frame, printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish, printed] // "Lectotype / Oxygonia / moronensis / Bates, 1872 / design. Jiří Moravec 2015" [red, printed]. Paralectotypes. 1 ♀ in MNHN: "Equateur" [green, handwritten] // "Upuna / ♀ River / Buckley" [semicircular, handwritten] // "Moronensis / ♀" // [semicircular, handwritten] // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930" [greenish, printed]. 1 ♂, 1 ♀ in MNHN: "Equateur / Buckley" [printed] // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish, printed]. 3 ♀♀ in MNHN: "Equador" // "Equador / Buckley" // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930" [greenish, printed]. 1 ♀ in MNHN: "Macas / Ecuador" // "Muséum Paris / 1952 / Coll. R. Oberthür" [greenish, printed]. 7 ♂♂, 12 ♀♀ in BMNH: "Ecuador / Buckley" [handwritten] // "F. Bates Coll. / 1911-248" [printed]. 2 ♂♂, 1 ♀ in BMNH: "Buckley" [handwritten] // "Equador / Macas" // "Fry Coll / 1905-100" [printed]. 1 ♂ in BMNH with same labels and: "41853". 1 ♀ in BMNH: "Buckley" [handwritten] // "Ecuador" [handwritten] // "Fry Coll / 1905-100" [printed].

Other material examined. Historical data. 3 ♂♂, 2 ♀♀ in MNHN: "Ecuador" // "Muséum Paris / Ex. Coll. M. Maindron / Coll. G. Babault 1930". 1 ♂ in MNHN: "Ex Musaeo / A. Sallé / 1897" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂, 2 ♀♀ in MNHN: "Ecuador" // "Ex Musaeo / Mniszech". 1 ♀ in SDEI: "Ecuador / Heyne[leg.]. 1 ♂ in SDEI: "Ecuador / Heyne [leg.].
Other data. 1 ♂, 1 ♀ in SDEI: "Balzan Mts. / Ecuador". 1 ♀ in MNHN: "Ecuador / Loja / Abys Cajon". 1 ♂, 1 ♀ in MNHN: "Ecuador" // "Muséum Paris / 1952 / Coll. R. Oberthür". 1 ♂ in MNHN: "Guy Babault[leg.]" [no locality] / 11.X.1913". 3 ♂♂ in MNHN: "Muséum Paris / 1952 / Coll. R. Oberthür"[no locality]. 1 ♂ in MFNB: "Oxygonia moronensis / Bates"[no locality]. 3 ♂♂, 2 ♀♀ in MFNB: "Ecuador" [one with "63284"]. 1 ♀ in MFNB: "moronensis / Bates / Amazon Pauc" // "57008". 1 ♀ in NMPC no locality label.



Figs. 91-97. *Oxygonia moronensis* Bates, ♂, LT (MNHN): 91 - body, 15 mm; 92 - part of head with buccal appendages; 93 - apex of aedeagus; 94 - labrum; 95 - pronotum; 96 - elytron; 97 - labels. Bars = 1 mm.

Redescription, male. Body (Figs. 91, 98) elongate, 14.90-16.20 mm long, 4.40-4.70 mm wide (lectotype 15.00 mm long, 4.60 mm wide), almost black with faint metallic reddish or greenish lustre.

Head (Fig. 99) with large eyes but notably narrower than body, 3.30-3.50 mm wide.

Frons clearly separated from clypeus, only moderately convex, sloping towards clearly separated clypeus, variably entirely black or with faint cupreous tinge (also in lectotype), very finely asperate to wrinkled in middle, with a few parallel, short coarser striae on lateral areas adjacent to smooth, shiny green triangular supraantennal plates; anteromedian area very finely transverse-wavy rugulose.

Vertex either black-copper, with faint chatoyant greenish lustre, or reddish lustre in middle and iridescent green lateral and juxtaorbital areas, separated from frons by rounded frons-vertex fold, finely transverse-wavy rugulose on anteromedian area (sculpture passing from frons) passing to a vermicular rugosity within moderate, wide V-shaped anterior impression with fine coverging striae, surrounded by distinct parallel-striate which converge towards the centre of the vertex where the striae diverge towards the lateral areas, while irregularly longitudinal striae in middle run posteriad; large juxtaorbital areas rather densely covered with distinct, longitudinally parallel striae; striae on posterolateral areas become irregularly fragmented diverging towards templar area; occipital area usually with reddish-cupreous lustre, finely and very irregularly transverse-wavy rugulose.

Genae iridescent metallic green, often with red or purple red lustre, covered with parallel striae which are distinct anteriorly, shallow to effaced on posterior area.

Clypeus (Fig. 94) with thorn-like shaped lateral appendages, metallic black-copper to reddish-cupreous, lateral areas with green lustre, surface irregularly rugulose, rugae usually coarser on lateral areas.

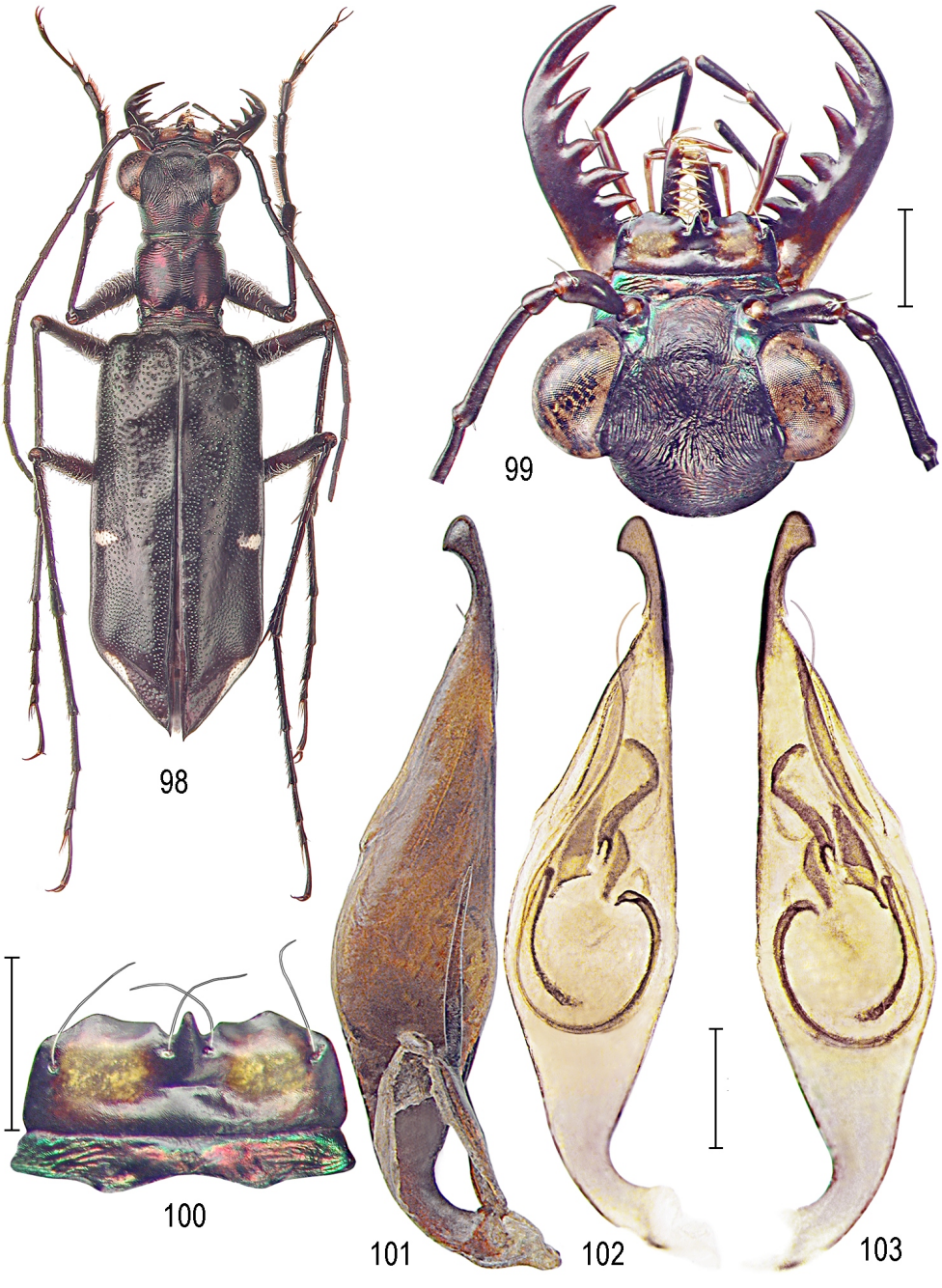
Labrum (Figs. 94, 100) variably with 4-8 setae (independently of sex, although in male mostly only 4 setae occur), 0.60-0.80 mm long, 1.80-1.85 mm wide, transverse with rounded lateral margins and a sinuous anterior margin which indicates rounded, but usually distinct anterolateral teeth, and three anterior teeth of which the median tooth is longer, conical, subacute, protruding, but usually in the level of the rounded anterolateral teeth; labral surface usually ochre testaceous with blackened outer margins, limited basal area, and whole median area including deep central impression, the metallic black area in some males prevailing, and in the holotype (Fig. 94) the labrum is almost entirely metallic black with only dark reddish-brown sublateral areas.

Mandibles (Figs. 92, 99) black-brown with only small yellow-ochre basolateral areas, subsymmetrical, each mandible with 6 teeth and basal molar.

Palpi (Figs. 92, 99) shaped as *Ox. buckleyi*; maxillary palpi with longest palpomere dark-testaceous with brown to blackened margins, penultimate and terminal palpomeres black; labial palpi with penultimate (longest) palpomere testaceous, terminal palpomeres black.

Antennae reaching elytral half, scape, pedicel and antennomeres 3-4 black or with faint mahogany or green lustre, remaining antennomeres black-brown.

Thorax. Pronotum (Fig. 95) mostly slightly longer then wide, 2.60-2.70 mm long, 2.50-2.60 mm wide, black with usually deep red-copper lustre (also in lectotype) on anterior, lateral and posterior areas, rarely with faint green lustre, more usually on anterior and posterior lobe; sulci well pronounced; anterior lobe indistinctly wider than posterior one, surface covered with irregularly transverse, coarse rugae; lateral margins of disc mostly moderately convex and subparallel in middle, running almost in the same line as dorsally barely visible notopleural sutures; discal surface covered with irregularly transverse, rather shallow but distinct stria-like



Figs. 98-103. *Oxygonia moronensis* Bates, ♂, Ecuador ex Buckley, PLT (MNHN): 98: body, 16 mm; 99 - head; 100 - labrum; 101 - aedeagus; 102-103 - ditto, showing internal sac in left and right lateral view. Bars = 1 mm.

rugae, which are on anteromedian area more parallel and oblique-anteriad directed when converging towards thin median line, while they are usually parallel-transverse on median area and oblique-posteriad directed when converging towards the median line on posterior discal area; rugae on lateral areas coarser and more irregular, not or only slightly surpassing the notopleural sutures; posterior lobe with rather distinct dorsolateral bulges, its surface covered with rather finer, mostly transverse rugae; lateral and ventral thoracic sterna shiny black with strong, chatoyant reddish-cupreous lustre, or also green lustre, mostly on metasternum.

Elytra (Figs. 96, 104, 107) elongate, 10.50-10.70 mm long, with rounded humeri and almost parallel lateral margins, with arcuate anteapical angle, then obliquely attenuated towards acute apex with usually small sutural spine; dorsal elytral surface rather distinctly convex on posterior half of elytral disc, with rather deep humeral impressions and deep and large discal impression clearly delimiting distinct basodiscal convexity; additional, shallow impression on the area of sublateral-median macula while discal area mesad of this macula is distinctly longitudinally raised; apical impression rather deep; elytral coloration shiny metallic black with, sometimes with very faint reddish-cupreous iridescence; whitish elytral maculation consisting of four, mostly rather small maculae: humeral macula only partly visible from above, its larger part placed below the anterior callus of the humerus; subhumeral-lateral macula small, slightly elongate to very small and usually indistinct; sublateral-median macula transverse, usually narrow; anteapical macula elongate and wider; whole elytral surface rather densely punctate, larger and more spaced punctures on elytral base, area mesad of the sublateral-median macula impunctate and this smooth, posteriad elongate area is mostly conspicuous (Fig. 107); much smaller impunctate area usually occurs mesad of the anteapical macula.

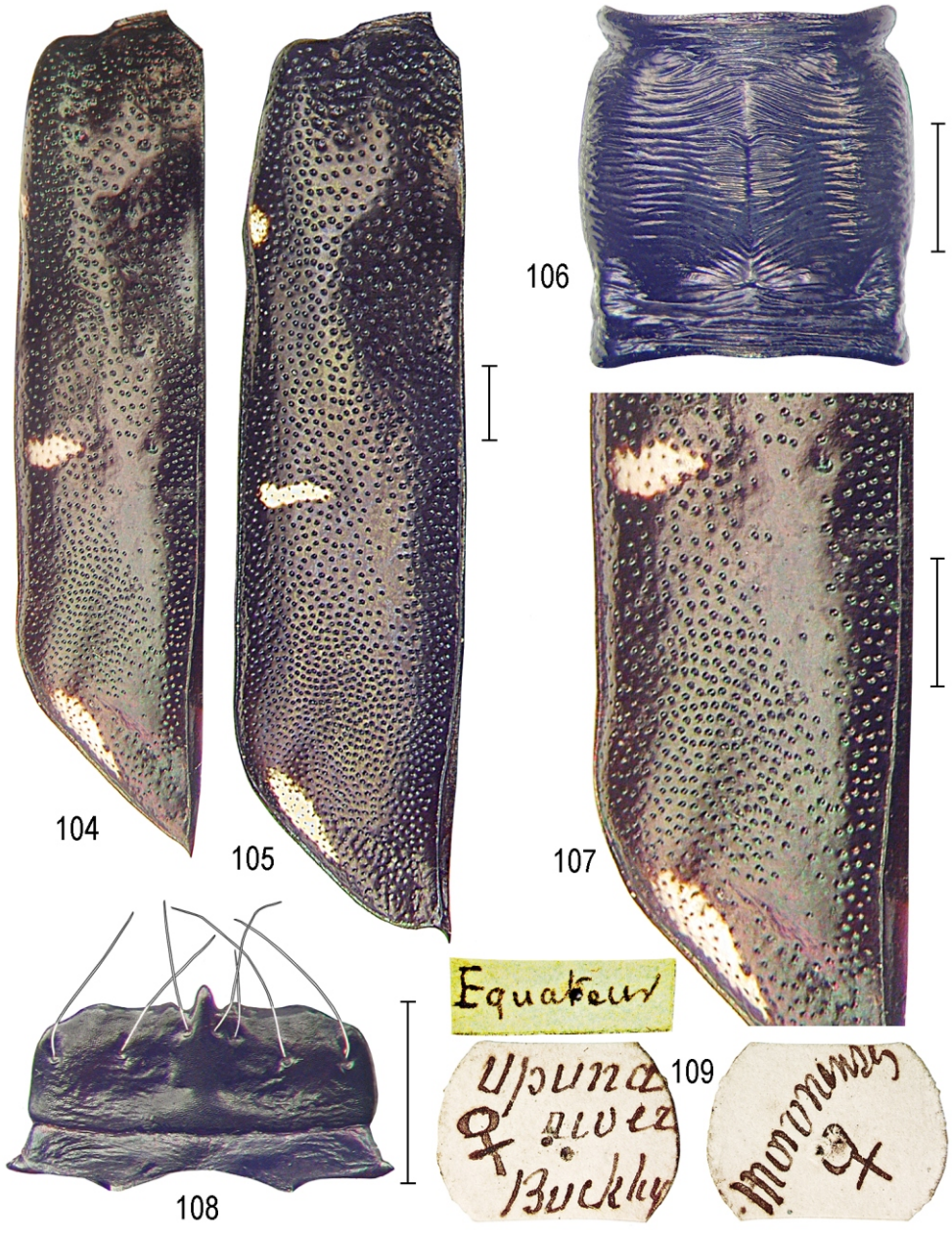
Legs as in *Ox. prodiga* and *Ox. buckleyi*, sometimes with more intense green lustre on femora.

Abdomen metallic black-green with reddish-cupreous lustre on lateral areas; surface of the ventrites smooth and glabrous except for usual, a few hairlike sensory setae (easily abraded) at their posterior margins.

Aedeagus (Figs. 93, 101-103) notably long and less voluminous than it other species treated here, 6.30-6.65 mm long, 1.40-1.50 mm wide, apical half almost regularly conically attenuated towards narrowly elongate moderately dorsally hooked apex terminated with dilated, rounded, dorsally shallowly emarginated knob; internal sac (Figs. 102-103) containing very long flagellum with rather narrow, sclerotized base and long flagelliform portion which is basally widely coiled, then running towards apex, but in examined aedeagi never reached it; other sclerites comprises: long, arciform basodorsal sclerite, two membranous central pieces and central-upper snaky-bent piece with two, long basal spines.

Variability. Males of *Ox. moronensis* are less variable than other species. Apart from the indistinct variability in the intensity of the reddish-cupreous and faint green lustre, and in the size and shape of the whitish elytral maculae, the variability comprises more or less convex lateral margins of the pronotum, variable roughness of the pronotal surface sculpture, and extent of the smooth areas on the elytra, as well as the extent of the blackened areas on the labrum; the most unusual is the variable number of labral setae.

Female characters. The sexual dimorphism is not so distinct as in other species treated here. It comprises particularly the only slightly different shape of the apex in female elytra, which is less acute than in males, shortly rounded towards small sutural spine (Fig. 105); the body, including head and pronotum is in female almost entirely black, as well as the always entirely black-labrum



Figs. 104-109. *Oxygonia moronensis* Bates. 104 - elytron, ♂, Ecuador ex Buckley, PLT (MNHN). 105 - elytron, ♀, "Upuna River", PLT, (MNHN); 106 - pronotum, ♀, ibid., PLT (MNHN); 107 - elytron, ♂, detail of surface, Ecuador ex Buckley, PLT (MNHN); 108 - labrum, ♀, "Upuna River", PLT, (MNHN); 109 - labels, ♀, PLT (MNHN). Bars = 1 mm.

(which posses variably 4-8 setae as in males); elytra in female possess usually smaller impunctate areas than those in males.

Differential diagnosis. *Ox. moronensis* is clearly distinguished from some unusually dark-coloured males of *Ox. schoenherrii* by its size and pattern of the whitish elytral maculation, and by the shape of its aedeagus; females can be distinguished by their black body and pattern of the elytral maculation.

Ox. nigrovenator Kippenhan, 1997 is almost identical, differing only in its larger and uniformly black body, and generally larger impunctate elytral 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 here in the lectotype (Fig. 96) and paralectotype (Figs. 104, 107); the aedeagus in these two taxa is identical.

Biology and distribution. Known from Andean areas of Ecuadorian Amazonia, inhabiting eastern slopes of the Andes near Macas. Bates (1872) mentioned the type localities of species he received from Buckley ambiguously (see "Biology and distribution under *Ox. carissima* and *Ox. buckleyi* above) as Ecuador: "River Upano, Upper Morona near Macas", but obviously the syntypes, after distributed to other collections, were additionally variously labelled "Ecuador, Buckley" or "Macas", or R. Morona, Ecuador". It is obvious that "Upper Morona (a part of the province of Morona Santiago)" is wrongly interpreted as the Morona River, written as "R. Morona" on the labels. Although Bates (1872) has written as the type locality "Rio Upano", Macas the rivers are in the province of Morona Santiago. As Bates based the original description of *Ox. moronensis* on many specimens received from the collector Buckley, but no male labelled "Rio Upano" has been found in the relevant MNHN and BMNH collections (only one female in MNHN labelled "Upuna River"), the lectotype labelled "R. Morona" comes evidently from the same locality. The male in MNHN labelled "Amazones" also very probably means the Andean part of Upper Amazonia in Ecuador. As summarized by Pearson, Buestan & Navarrete (1999) adults are active on the rocks of small mountain streams during both the day and night, occupying the same area as the diurnal *Ox. buckleyi*.

Remarks. As the original description by Bates (1872) was based on "many examples" the male lectotype is designated here to assure the stability of this taxon.

ADDITIONAL LECTOTYPE DESIGNATION

Oxygonia boucardi Chevrolat, 1881

Oxygonia boucardi Chevrolat, 1881: 7.

Type material. Lectotype (designated here) ♂ in MNHN, labelled: "Oxygonia / Boucardi / Chevrol. / 1881 / Panama" [green, handwritten] // "Ex Musaeo / W. Rotschild 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., I (1) / Oxygonia / Boucardi, Chevr." [handwritten] // "Panama / Boucard" [handwritten] // "Lectotype [sic!] ♂ / Oxygonia / Boucardi, Chev. / by Erwin '76" [printed, red and black ink]. 1 ♀ in MNHN: "Ex Musaeo / W. Rotschild" [printed] // "Ex Mus. / A. Boucard" [printed] "Muséum Paris / 1952 / Coll. R. Oberthür" [pale greenish, printed] // "Revision Jiří Moravec 2016: Paralectotype / Oxygonia / boucardi Chevrolat, 1881" [red, printed].

Remarks. 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 lectotype is designated here in order to 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.). *Ox. boucardi* is the only species lacking elytral maculation, thus immediately recognizable.

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