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The *Copelatus doriae-masculinus* species complex in Greater Sunda, with description of three new species and a new synonymy

(Coleoptera, Dytiscidae)

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A complex of five morphologically similar *Copelatus* species from the Greater Sunda Islands is recognised here. The species belong to the *C. irinus* group, and are characterised by relatively parallel habitus and more or less reduced sutural stria on elytra (in case of *C. doriae* Sharp, 1882 usually completely absent). Two described species are assigned to the complex: *Copelatus doriae* (previously classified in the *C. pulicarius* species group) and *C. masculinus* Régimbart, 1899, and three new species are described: *Copelatus babyrousa* spec. nov. from Togian Islands and Northern Sulawesi (Indonesia), *C. brendelli* spec. nov. from Central Sulawesi (Indonesia) and *C. vancli* spec. nov. from Sabah, Sarawak (both Malaysia), Brunei, Kalimantan and Sumatra (Indonesia). The lectotype of *Copelatus masculinus* Régimbart, 1899, described from Philippine Island Luzon, is designated and a new synonymy is established: *Copelatus masculinus* Régimbart, 1899 = *Copelatus imasakai* Matsui & Kitayama, 2000, syn. nov. *Copelatus doriae* is recorded for the first time from peninsular Malaysia (Pahang); *C. masculinus* is newly recorded from China (Taiwan), Indonesia (West and East Kalimantan) and Malaysia (Sabah, Sarawak).

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Introduction

The pantropical *Copelatus* Erichson, 1832, with more than 400 described species, represents the most speciose genus of the family Dytiscidae (Nilsson & Hájek 2017). *Copelatus* species inhabit a large variety of both lotic and stagnant water – from small streams and side pools of river to small puddles, large pools, but also water tanks inside bromeliad plants (Balke et al. 2008) and one species from Brazil is troglobiont (Caetano et al. 2013).

Most species of *Copelatus* are characterised by longitudinal elytral striae, which number has been used to group the species into species groups (Sharp 1882, Guignot 1961, Guéorguiev 1968), although this character does not always delineate monophyletic groups (Balke et al. 2004). In fact, elytral striation can vary even within species and thus the use of this character contributes to chaos in the current classification of *Copelatus*. Modern larger scale revisions exist only for African species (Guignot 1961, Nilsson et al. 1997, Bilardo & Rocchi 2015), while especially the Neotropical and Oriental *Copelatus* can be identified only based on direct comparison with often old and problematically accessible types.

During our recent work on *Copelatus* from the Sunda Islands, we have recognised a complex of five putatively closely related species widely distributed

in lowlands mostly across the Greater Sunda Islands. Their comparison with extensive material deposited in various collections reveals that while two of them can be associated with already described taxa, three species were hitherto unknown to science; in addition, one new synonym has been discovered. The (re)description of all five taxa and clarification of their identity and distribution are the aims of the present paper.

Material and methods

Exact label data are cited for the type material. Author's remarks are in square brackets, separate label lines are indicated by a slash (/), separate labels by a double slash (//). The specimens included in this study are deposited in the following institutional and private collections:

BMNH The Natural History Museum [formerly British Museum (Natural History)], London, United Kingdom (C. E. Taylor, M. V. L. Barclay)
EUMH Ehime University, Matsuyama, Japan (H. Yoshitomi)
JSCL Jaroslav Šťastný collection, Liberec, Czech Republic
LHCM Lars Hendrich collection, Munich, Germany (property of NHMW)
MNHN Muséum national d'Histoire naturelle, Paris, France (A. Mantilleri)
MSNG Museo Civico di Storia Naturale "G. Doria", Genova, Italy (M. Tavano)
MZBC Museum Zoologicum Bogoriense, Cibinong, Indonesia (H. Sutrisno)
NHMW Naturhistorisches Museum Wien, Vienna, Austria (M. A. Jäch)
NMPC National Museum, Prague, Czech Republic (J. Hájek)
NUSC Lee Kong Chian Museum, National University of Singapore (H. W. Song)
SMNS Staatliches Museum für Naturkunde, Stuttgart, Germany (W. Schawaller)
ZSMG Zoologische Staatssammlung München, Munich, Germany (M. Balke)

Morphological observations

Specimens were examined using an Olympus SZX12 dissecting scope; measurements were taken with an ocular graticule. Photographs were taken with a Canon EOS 550D digital camera using Canon's MP-E 65 mm macro lens. Genitalia were photographed mounted in dimethyl hydantoin formaldehyde resin (DMHF) on the same card as the beetle. Images of the same specimen/structure at different focal planes were combined using Helicon Focus 6.3.0 software.

The following abbreviations were used in the descriptions: TL, total length, measurement of length from front of head to apex of elytra; TL-h, total length minus head length, measurement of length from anterior margin of pronotum to apex of elytra; TW, maximum width of body measured at right angle to TL.

Taxonomy

Copelatus doriae-masculinus species complex

Diagnosis. Based on the molecular phylogenetic analysis (M. Balke et al., unpublished data), the complex represents a monophyletic clade which is a sister group of the widespread Oriental-Australian *Copelatus tenebrosus* Régimbart, 1880.

Morphologically, the presence of five or six dorsal and a submarginal stria on elytron assigns the complex in the *Copelatus irinus* species group sensu Guignot (1961) (group X sensu Sharp 1882). Within the Oriental species of this group, the members of the *C. doriae-masculinus* complex can be distinguished by: 1) body medium sized, 4.6–6.3 mm; 2) elongate, often subparallel habitus; 3) sutural stria on elytron more or less (in *C. doriae* completely) reduced; 4) median lobe of aedeagus in lateral view simple (at most with small tubercle on ventral side), sickle shaped, with distinct folds in apical half; 5) presence of female form with striolate elytra (this character was not observed in single known population of *C. brendelli* spec. nov., but we consider presence of striolate female form in this species highly probable). However, neither any of these characters nor their combination can be considered as an autapomorphy of the species complex.

All species seem to be rather widespread or very widespread on several islands. They inhabit predominantly small pools or puddles in the lowland tropical forest (Figs 14–15); occasionally, they are attracted to light.

Distribution. Islands of Southeast Asia: Japan (Ryukyus), China (Taiwan), Philippines (Luzon, Mindoro, Negros, Samar), Brunei, Malaysia (Sabah, Sarawak), and Indonesia (Sumatra, Siberut, Kalimantan, Sulawesi, Togian Islands).

Checklist of included species

Copelatus babyrousa spec. nov.
Copelatus brendelli spec. nov.
Copelatus doriae Sharp, 1882
Copelatus masculinus Régimbart, 1899: 295.
= *Copelatus imasakai* Matsui & Kitayama, 2000: 95, **syn. nov.**
Copelatus vancli spec. nov.

Copelatus babyrousa spec. nov.
Figs 1–2, 9

Type locality. Indonesia, Central Sulawesi, Togian Islands, Malenge.

Type material. Holotype ♂ (NMPC), labelled: "SULAWESI C / Togean isl. Malenge / 13.–15.10.2001 pools in / prim.forest J.Šťastný lgt. [printed]". – Paratypes: 4♀♀, same label data as holotype (JSCL, NMPC); 1♀, same label data as holotype and additional label: "108 / M Balke [green label, printed]" (MZBC); 1♂, "Indonesia: Sulawesi, Togian Isl, / Malenge, 13–15X2001, Stastny, / M Balke: MB 109 [printed] // 109 / M Balke [green label, printed]" (ZSMG); 1♂, "SULAWESI N / Bogani Nani Wartabone / Kosinggolan env. / 19.X.2001 J.Šťastný lgt. [printed]" (JSCL); 1♀, "Indonesia: Sulawesi Togean / Islands, Kadidiri Island interior, / 30m, 28.viii.2011, 00 21.531S / 121 50.959E, Balke (SUL005) [printed] // M. BALKE / 4836 [printed, green typing]" (MZBC).

Description

Holotype. Male. In dorsal view elongate oblong oval, almost parallel-sided, broadest in midlength of elytra, moderately convex. Body outline continuous, with only indistinct discontinuity between pronotum and elytra. Head moderately broad, trapezoidal; anterior margin of clypeus truncate. Pronotum broadest between posterior angles, lateral margins moderately curved. Base of elytra as broad as pronotal base; lateral margins of elytra subparallel in basal two thirds, curved in apical third (Fig. 1). Whole surface shiny.

Colouration. Body colour pitchy brown, head and sides of pronotum paler – ferrugineous; base of elytra with distinct transverse testaceous band; appendages testaceous; ventral part brown blackish.

Surface sculpture. Head uniformly microreticulated, reticulation composed of moderately deeply impressed isodiametric meshes. Punctation composed of coarse setigerous punctures, and very small punctures spread sparsely on surface; rows of coarse punctures present around inner margin of eyes and in two transverse depressions – first at frontal level of eyes and second anterolaterally to eyes. Antenna with antennomeres long and slender.

Pronotum transverse, width/length ratio = 2.40. Sides with lateral beading very thin and indistinct. Microreticulation similar to that of head. Punctation similar to that of head; row of coarse setigerous punctures present along anterior margin, basal margin (except for basomedially), and laterally close to sides.

Elytra with microreticulation similar to that of head and pronotum, but less impressed. Punctation consists of very fine sparse punctures. Six discal and one submarginal longitudinal striae present on each elytron: stria 1 (sutural) absent at base, begins approximately at level of posterior margin of transverse basal testaceous band and continues to apex; striae 2–4 begin at base and end shortly before apex; stria 5 absent at base similarly to stria 1, ends before apex; stria 6 begins at base and ends at posterior fourth of elytral length; submarginal stria starts at about elytral midlength.

Legs. Protibia modified, angled near base, distinctly broadened anteriorly – club shaped. Protarsomeres and mesotarsomeres 1–3 distinctly broadened, with adhesive setae on their ventral side.

Ventral part. Finely microreticulated, with intermixed, sparsely distributed very small punctures. Meshes isodiametric, except for metacoxae and abdominal ventrites I–II (longitudinal), abdominal ventrite III (diagonal), and abdominal ventrites IV–VI (transverse). Prosternum obtusely keeled medially. Prosternal process shortly lanceolate, convex, apex obtuse; distinctly bordered laterally. Lateral parts of metaventrite ("metasternal wings") tongue-shaped, slender. Metacoxal lines incomplete – absent in ca. anterior fourth of metacoxal plates. Metacoxae and abdominal ventrites I–III with numerous fine, longitudinal or oblique, striae.

Genitalia. Median lobe of aedeagus sickle shaped in lateral view, regularly sinuate on dorsal side, broadened in third fourth on ventral side and then attenuated to obtusely pointed apex (Fig. 9). Lateral lobes (parameres) moderately broad, D-shaped.

Female. Similar to male in habitus. Protibia simple, not angled basally and only slightly broadened distally; pro- and mesotarsomeres not broadened, without adhesive setae. All females from the type locality densely striolate and thus matt (Fig. 2). Striolae present on head between eyes, on whole surface of pronotum and in basal two thirds of elytra. Striolae shorter and sparser on head (striolae oblique laterally and more transverse medially), while long and dense longitudinal, often confluent striolae present on pronotum and elytra. Due to striolation, reticulation badly perceptible on pronotum (meshes of reticulation elongate) and almost imperceptible on elytra; six dorsal striae almost imperceptible between strioles on elytra.

Single female from Kadidiri Island lacks striolae, except for several longitudinal striolae on posterior corners of pronotum – this specimen differs from male only by more impressed pronotal reticulation.

Variability. No considerable variability was observed in the limited number of type specimens. Thus, the most remarkable variability remains the presence of two – striolate and non-striolate – forms of females.

Measurements. TL: 4.55–5.00 mm (holotype 5.00 mm); TL-h: 4.05–4.45 mm (holotype 4.45 mm); TW: 2.00–2.15 mm (holotype 2.15 mm).

Differential diagnosis. Within the *doriae-masculinus* complex, *C. babyrousa* spec. nov. is characterised with smaller body size (up to 5.0 mm) and habitus with more strongly subparallel sides; it seems to be the most closely related to another species from Sulawesi – *C. brendelli* spec. nov. The unambiguous identification of the new species is only possible based on the shape of median lobe of aedeagus. The median lobe of *C. babyrousa* spec. nov. is shorter than that of *C. brendelli* spec. nov., more distinctly broadened in central part, and the apex is not distinctly bent dorsally, see Figs 9–10.

Collection circumstances. Specimens from Malenge (Togian Islands) were collected in small ponds with clayey bottom, made by babirusas in lowland primary forest (J. Šťastný, pers. comm. 2016).

Etymology. The new species is named after babirusas (Latin *Babyrousa*), an endemic Indonesian pig, in which pond beetles were collected. The name is a noun in the nominative case, standing in apposition.

Distribution. The new species is known from several localities in Togian Islands and one locality in Northern Sulawesi, Indonesia.

Copelatus brendelli spec. nov.
Figs 3, 10

Type locality. Indonesia, Central Sulawesi, Morowali Regency, Ranu River Area.

Type material. Holotype ♂ (BMNH), labelled: "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Lowland rain forest. [printed] // Malaise / trap [printed] // M.J.D.Brendell / B.M.1980-280 [printed]". – Paratypes: 7♂♂ 7♀♀, same label data as holotype (BMNH, MZBC, NMPC, ZSMG); 6♂♂ 6♀♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // At / light [printed] // M.J.D.Brendell / B.M.1980-280 [printed]" (BMNH, MZBC, NMPC); 1♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 1m.actinic / code: [printed] 14.ii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 1♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 30m actinic / code: [printed] 13.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 2♂♂, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 1m.actinic / code [printed] 14.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 1♂ 1♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 10m actinic / code [printed] 14.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 3♀♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 20m . actinic / code [printed] 14.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 1♂ 1♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 30m . actinic / code: [printed] 14.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 1♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 1m.actinic / code: [printed] 15.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 1♂ 3♀♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 20m.actinic / code: [printed] 15.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 1♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 30m.actinic / code: [printed] 15.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 1♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 10m.actinic / code: [printed] 16.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH); 1♀, "SULAWESI TENGAH: [yellow underlined] / Nr. Morowali, / Ranu River Area. / 27.i.–20.iv.1980 [printed] // Vert. Series / 30m . actinic / code: [printed] 16.iii.80 [handwritten] // S.L.Sutton / C.J.Rees / B.M.1980-281 [printed]" (BMNH).

Description

Holotype. Male. In dorsal view elongate oblong oval, broadest in basal third of elytra, moderately convex. Body outline continuous, with only indistinct discontinuity between pronotum and elytra. Head relatively broad, trapezoidal; anterior margin of clypeus truncate. Pronotum broadest between posterior angles, lateral margins moderately curved. Base of elytra as broad as pronotal base; lateral margins of elytra moderately curved (Fig. 3). Whole surface shiny.

Colouration. Body colour pitchy brown, head frontally and sides of pronotum paler – ferrugineous; base of elytra with distinct transverse testaceous band; appendages testaceous; ventral part brown blackish.

Surface sculpture. Head uniformly microreticulated, reticulation composed of moderately

Figs 1–4. Habitus of *Copelatus*. **1.** *C. babyrousa* spec. nov. (holotype); **2**. *C. babyrousa* spec. nov. (female paratype, 4.5 mm); **3.** *C. brendelli* spec. nov. (holotype); **4.** *C. doriae* Sharp (male from Sumatra, 5.5 mm).

deeply impressed isodiametric meshes. Punctation composed of coarse setigerous punctures, and very small punctures spread sparsely on surface; rows of coarse punctures presented around inner margin of eyes and in small depression anterolaterally of eyes. Antenna with antennomeres long and slender.

Pronotum transverse, width/length ratio = 2.60. Sides with lateral beading very thin and indistinct. Microreticulation similar to that of head. Punctation similar to that of head; row of coarse setigerous punctures present along anterior margin, basal margin (except for basomedially), and laterally close to the sides.

Elytra with microreticulation similar to that of head and pronotum, but less impressed. Punctation consists of very fine sparse punctures. Six discal and one submarginal longitudinal stria present on each elytron: stria 1 (sutural) absent at base, begins approximately at level of posterior margin of transverse basal testaceous band and continues close to apex; striae 2–4 begin at base and end shortly before apex; stria 5 absent at base similarly to stria 1, ends before apex; stria 6 begins at base and ends at posterior fourth of elytral length; submarginal stria starts at about elytral midlength.

Legs. Protibia modified, angled near base, distinctly broadened anteriorly – club shaped. Protarsomeres and mesotarsomeres 1–3 distinctly broadened, with adhesive setae on their ventral side.

Ventral part. Finely microreticulated, with intermixed, sparsely distributed, very small punctures. Meshes isodiametric, except for metacoxae and abdominal ventrites I–II (longitudinal), abdominal ventrite III (diagonal anteriorly, transverse posteriorly), and abdominal ventrites IV–VI (transverse). Prosternum obtusely keeled medially. Prosternal process shortly lanceolate, convex, apex obtuse; distinctly bordered laterally. Lateral parts of metaventrite ("metasternal wings") tongue-shaped, slender. Metacoxal lines incomplete – absent in ca. anterior third of metacoxal plates. Metacoxae and abdominal ventrites I–III with numerous fine, longitudinal or oblique, striae.

Genitalia. Median lobe of aedeagus sickle shaped in lateral view, almost regularly sinuate on dorsal side, with small protuberance in midlength on ventral side, attenuated to obtusely pointed apex which is distinctly bent dorsally (Fig. 10). Lateral lobes (parameres) rather narrow, crescent shaped.

Female. Similar to male in habitus. Protibia simple, not angled basally and only slightly broadened distally; pro- and mesotarsomeres not broadened, without adhesive setae. Pronotum basolaterally with several short longitudinal strioles.

Variability. The specimens vary slightly in dorsal surface colouration: the dark colouration of elytra ranges from light brown to brown-blackish; basal transverse pale band on elytra varies in thickness. The length of elytral stria 1 (sutural) varies among specimens – it may be fragmented or even absent in whole basal half of elytra.

Measurements. TL: 4.70–5.70 mm (holotype 5.10 mm); TL-h: 4.30–5.00 mm (holotype 4.60 mm); TW: 2.20–2.50 mm (holotype 2.30 mm).

Differential diagnosis. The new species can only be reliably identified based on the shape of median lobe of aedeagus. It is most similar to *C. babyrousa* spec. nov. from Togian Islands and Northern Sulawesi, however, in *C. brendelli* spec. nov., the median lobe is longer, with only a small protuberance in midlength on ventral side, and the apex is distinctly bent dorsally, see Figs 9–10.

Collection circumstances. Specimens of type series were collected with malaise traps and at light in lowland rain forest.

Etymology. The new species is named after its collector – Martin J.D. Brendell, retired curator of Coleoptera collection in BMNH. The name is a noun in the genitive case.

Distribution. The species is so far known only from the type locality in Central Sulawesi, Indonesia.

Copelatus doriae Sharp, 1882
Figs 4, 11

Copelatus doriae Sharp, 1882: 578.

Type localities. "Borneo, (Sarawak)".

Type material. Holotype ♀ (MSNG), labelled: "Borneo / Sarawak / 1865–66. / Coll.G.Doria [printed pink label with black frame] // TYPUS [printed in red, label with red frame] // Doriae / Sharp [handwritten] // C. Doriae / Sharp / 2874. Typus! [handwritten] // HOLOTYPUS [printed] ♀ [handwritten] / Copelatus / doriae Sharp, 1882 [handwritten, red label] // Copelatus / Doriae Sharp [handwritten] / teste D. Sharp [printed] // Museo Civico / di Genova [printed]".

Additional material examined. INDONESIA: E Kalimantan: 1♂ 4♀♀, 55 km W of Balikpapan, PT Fajar Surya Swadaya, 01°16.4'S, 116°21.1'E, 82 m, 23.xi.–1.xii.2011, J. Hájek, J. Schneider & P. Votruba leg. (NMPC, ZSMG); 1♀, ca. 15 km N of Balikpapan, Sungai Wain Protection Forest, 01°08.1'S, 116°49.9'E, 35 m, 8.–11.xii.2011, J. Hájek, J. Schneider & P. Votruba leg. (NMPC). **Sumatra:** 1♂, Riau Prov., Bukit Tigapuluh NP, 0°50'S, 102°26'E, 18.–25.i.2000, J. Bezděk leg. (NMPC); 17 specimens, Riau Prov., Indragiri Hilir env., coastal area, 0–50 m, iii.2006, S. Jákl leg. (NMPC); 1♀, Riau Prov., nr.

Pekan Baru, swamp, 00°21.988'S, 101°25.680'E, 20 m, 3.x.2009, M. Balke & D. Amran leg. (MZBC); 1♀, same data, but 31.iii.2011, M. Balke leg. (ZSMG); 1♀, W Sumatra Prov., Harau Canyon, swamp, 00°04.986'S, 100° 38.244'E, 520 m, 27.x.2009, M. Balke & D. Amran leg. (ZSMG). **MALAYSIA: Pahang:** 1♀, Sg. Baging, 14.x. 1983, Comm. Inst. Ent. (BMNH).

Description

Male. In dorsal view elongate oblong oval, broadest in basal third of elytra, moderately convex. Body outline continuous, without discontinuity between pronotum and elytra. Head relatively broad, trapezoidal; anterior margin of clypeus truncate. Pronotum broadest between posterior angles, lateral margins moderately curved. Base of elytra as broad as pronotal base; lateral margins of elytra moderately curved (Fig. 4). Whole surface shiny.

Colouration. Body colour black, clypeus, sides of pronotum and elytra laterally (including epipleura) paler – ferrugineous; appendages testaceous; ventral part brown blackish.

Surface sculpture. Head uniformly microreticulated, reticulation composed of moderately deeply impressed isodiametric meshes. Punctation composed of coarse setigerous punctures, and very small punctures spread sparsely on surface; rows of coarse punctures present around inner margin of eyes and in small depression anterolaterally of eyes. Antenna with antennomeres long and slender.

Pronotum transverse, width/length ratio = 2.45. Sides with lateral beading very thin and indistinct. Microreticulation similar to that of head. Punctation similar to that of head; row of coarse setigerous punctures present along anterior margin, basal margin (except basomedially), and laterally close to sides.

Elytra with microreticulation similar to that of head and pronotum, but less impressed. Punctation consists of very fine sparse punctures. Five discal and one submarginal longitudinal striae present on each elytron: stria 1 (sutural) absent, thus interval between suture and first stria (stria 2) twice as broad as other interstrial intervals; striae 2–4 begin at base and end shortly before apex; striae 5–6 begin little bit after base, stria 5 ends before, stria 6 ends at posterior fourth of elytral length; submarginal stria starts at about elytral midlength.

Legs. Protibia modified, angled near base, distinctly broadened anteriorly – club shaped. Protarsomeres and mesotarsomeres 1–3 distinctly broadened, with adhesive setae on their ventral side.

Ventral part. Finely microreticulated, with intermixed, sparsely distributed, very small punctures. Meshes isodiametric, except for metacoxae and abdominal ventrites I–II (longitudinal), abdominal ventrite III (diagonal anteriorly, transverse posteriorly), and abdominal ventrites IV–VI (transverse). Prosternum obtusely keeled medially. Prosternal process shortly lanceolate, convex, apex obtuse; distinctly bordered laterally. Lateral parts of metaventrite ("metasternal wings") tongue-shaped, slender. Metacoxal lines incomplete – absent in ca. anterior fourth of metacoxal plates. Metacoxae and abdominal ventrites I–III with numerous fine, longitudinal or oblique, striae.

Genitalia. Median lobe of aedeagus sickle shaped in lateral view, almost regularly sinuate on dorsal side, with indistinct incision after midlength on ventral side, distinct folding present in apical third; apex obtuse, slightly bent dorsally (Fig. 11). Lateral lobes (parameres) moderately broad, D-shaped.

Female. Similar to male in habitus. Protibia simple, not angled basally and only slightly broadened distally; pro- and mesotarsomeres not broadened, without adhesive setae. Pronotum basolaterally with numerous short longitudinal strioles. Elytra between striae and side with numerous short longitudinal strioles; strioles longer laterally and apically.

Variability. All specimens studied are rather uniform and vary only in body length. In two females, we have found in posterior half of elytra traces of "missing" sutural stria. Females vary also in extent of elytral striolae – in most females, striolae present only laterally from elytral stria 3; however in some females, striolae present between all striae and elytral side; or even on whole surface of elytra, although striolae longer and deeper laterally.

Measurements. TL: 5.00–5.85 mm; TL-h: 4.45–5.30 mm; TW: 2.40–2.80 mm.

Collection circumstances. The habitat of *Copelatus doriae* is largely unknown. However, it seems that it is a lowland species inhabiting puddles and small pools. In East Kalimantan, it was collected in small puddles with sparse vegetation, near degraded stream; it was associated with *Hydaticus concolor* Sharp, 1882 and *Hydrovatus maai* Biström, 1997 (both Dytiscidae).

Notes to classification. Based on five striae on elytral disc and a submarginal stria, *Copelatus dorie* was classified in group IX of Sharp (1882) or *C. pulicarius* group sensu Guignot (1961). However, based on morphological similarity and our molecular analyses, *C. doriae* is actually closely related to some species within the *C. irinus* species group. The absence of sutural elytral stria seems to be secondary loss and autapomorphy of the species.

Distribution. Malaysia – described from Sarawak; subsequently recorded also from Indonesia: West Kalimantan (Régimbart 1899) and North Sumatra (Zimmermann 1927); first records from East Kalimantan and Sumatra: Riau province and West Sumatra, and from continental Malaysia (Pahang).

Copelatus masculinus **Régimbart, 1899**
Figs 5–6, 12

Copelatus masculinus Régimbart, 1899: 295.
Copelatus imasakai Matsui & Kitayama, 2000: 95, **syn. nov.**

Type localities. *Copelatus masculinus*: "Philippines: Luçon (Semper)". *Copelatus imasakai*: "Nakamagawa-Rindo, Iriomote Is., Ryukyus".

Type material. *Copelatus masculinus*: Lectotype ♂ by present designation (MHNH), labelled: "Semper [white label with black frame, handwritten] // Luzon [yellow label with black frame, handwritten] // masculinus / Reg. ♂ [Régimbart's handwriting] // Dr Régimbt / vidit 1898 [printed]". Paralectotype: 1♀, labelled: "Philippines / Luzon / Ch.Semper [white label with black frame, printed] // masculinus / Reg. ♀ [Régimbart's handwriting] // Dr Régimbt / vidit 1898 [printed]" (MNHN); 1♂ 1♀, labelled: "Philippines / Luzon / Ch.Semper [white label with black frame, printed] // Dr Régimbt / vidit 1898 [printed]" (MNHN).

Copelatus imasakai: Paratypes: 1♂, "Nakamagawa-Rindô / Iriomote-jima, Okinawa [prefecture] / 30 XII 1997 / I. Matoba leg. [printed, transliteration from Japanese] // Paratype / *Copelatus imasakai* / Matsui et Kitayama,2000 [red label, printed]" (EUMH) [according to the original description, the specimen with these locality data should be the holotype!]; 1♀, "Urauchi / Is.Iriomote / 28. III. 1989 / Shimohata [handwritten] // Paratype / *Copelatus imasakai* / Matsui et Kitayama,2000 [red label, printed]" (EUMH); 1♀, "Nakamagawa rindo / Iriomote-jima Is. / Okinawa Pref. / (Ryukyu, JAPAN) / 3 v. 1998 / Kenshi Otsuka leg. [printed] // Paratype / *Copelatus imasakai* / Matsui et Kitayama,2000 [red label, printed]" (EUMH); 1♀, "Ishigakijima Is. / Okinawa, JAPAN / 15–20, Dec., 1987 / leg., Y. & T. Abe [printed] // Paratype / *Copelatus imasakai* / Matsui et Kitayama,2000 [red label, printed]" (EUMH).

Notes. *Copelatus masculinus* was described from an unknown number of syntypes. As so far existing information does not allow its unambiguous identification, we designate the lectotype to fix its identity.

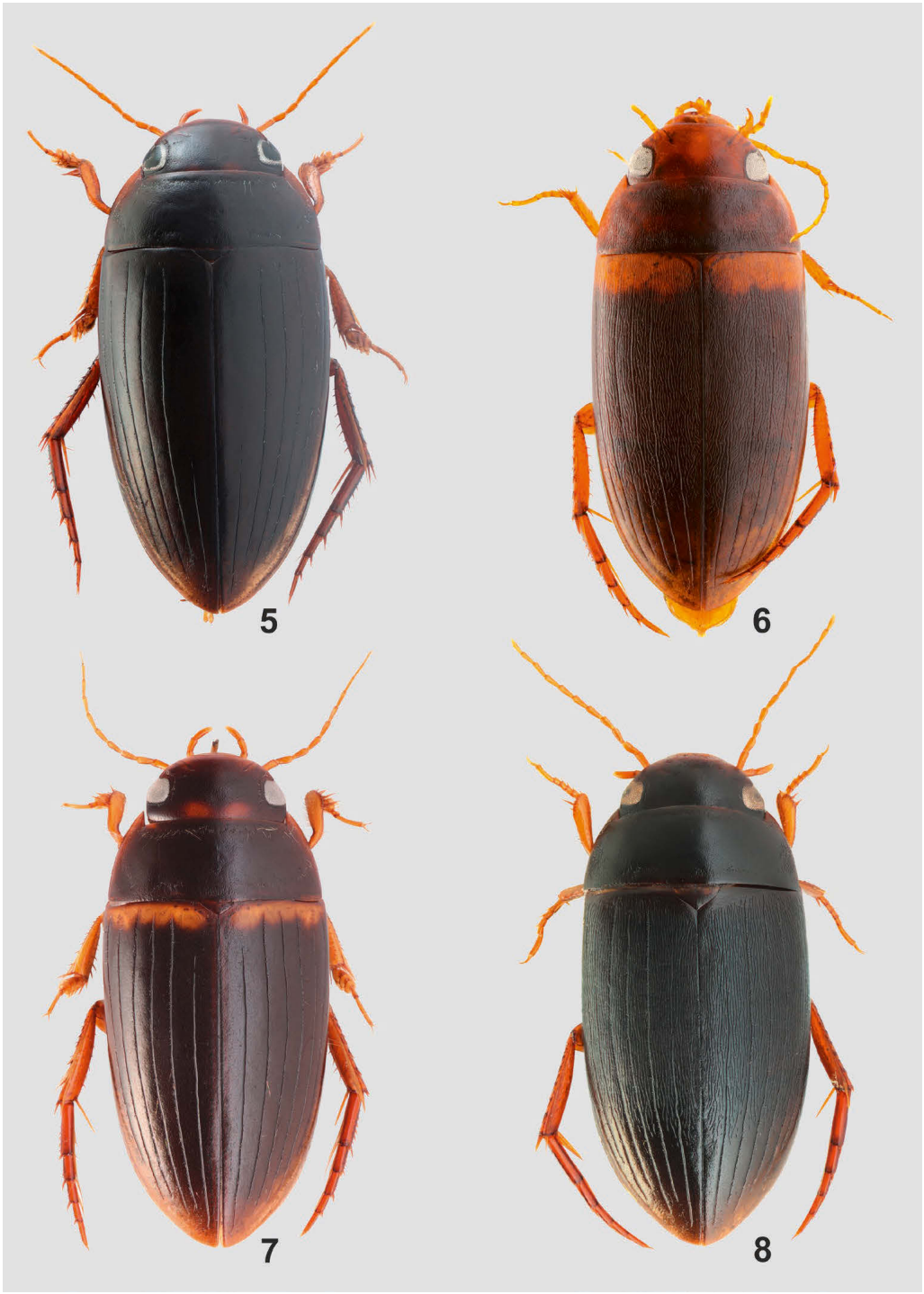
Additional material examined. CHINA: **Taiwan**: 3♂♂, Pingtung County, Eluanbi Park, near lighthouse, 21°54.075' N, 120°51.076' E, 1.viii.2008, H. Mendel & M.V.L. Barclay leg. (BMNH, NMPC). **INDONESIA: W Kalimantan:** 1♂, foot of Gunung Bawang, 00°51.151' N, 109°21.564' E, 100 m, M. Balke leg. (ZSMG). **E Kalimantan:** 58 specimens, 55 km W of Balikpapan, PT Fajar Surya Swadaya, 01°18.3' S, 116°21.0' E, 100 m, 24.–25.+29. xi.2011, J. Hájek, J. Schneider & P. Votruba leg. (MZBC, NMPC, ZSMG). **MALAYSIA: Sabah:** 2♂♂ 1♀, R.[iver] Karamuak, 7 m[iles] SSE Telupid, 200 ft, at light, 1.–7. ix.1977, M.E. Bacchus coll. (BMNH); 1♂ 2♀♀, Sook, 17 m[iles] SW Keningau, grassy pool, 1500 ft, 15.viii.1977, M.E. Bacchus coll. (BMNH); 17 specimens, 5 m[iles] S Mt. Trus Madi, clear pool, 1800 ft, 18.–28.viii.1977, M.E. Bacchus coll. (BMNH); 1♂, Banjaran Maitland, Batu Pungul, 22.–24.v.1993, J. Stolarczyk leg. (LHCM); 1♀, Sg. Kinabatangan, Safoda, stream nr. Kg. Bata, 8.iv.1994, H.K. Lua & C.Y. Chang leg. (NUSC); 1♀, Crocker Range, Taman Bandukan, small stream in primary forest, 24.v.1998, J. Kodada & F. Čiampor leg. (NHMW); 2♂♂ 2♀♀, Kampung Takala env., branch of Kinabatangan river, 5.vi.1998, J. Kodada & F. Čiampor leg. (NHMW); 21 spec., ca. 25 km SE Sapulut, Sabalangan river, 26. vi.1998, J. Kodada & F. Čiampor leg. (NHMW); 1♂, Kampung Pisang Pisang env., tributary of Kuamut river, 29.vi.1998, J. Kodada & F. Čiampor leg. (NHMW); 1♂, ca. 25 km SE Sapulut, Batu Punggul, 23.v.2001, F. Čiampor leg. (ZSMG); 3♂♂ 2♀♀, Kinabatangan river, Uncle Tan's camp, 8.–15.vi.2003, J. Šťastný leg. (JSCL); 5♂♂ 2♀♀, Gum Gum env. 7.vi.2003, J. Šťastný leg. (JSCL); 5♂♂ 2♀♀, Sepilok, 50 m, 12.–13.iii.2007, W. Schawaller leg. (SMNS); 1♀, Tambunan, 500 m, 4.–8.ii.2014, R. Grimm leg. (ZSMG). **Sarawak:** 1♂, Belaga, 14.–16. iii.1990, A. Riedel leg. (LHCM); 1♂ 2♀♀, Kapit Distr., Sebong, Baleh river, 9.–21.iii.1994, S. Bílý leg. (NMPC); 2♀♀, Bario env., Pa Umor, 23.vi.2003, J. Šťastný leg. (JSCL, ZSMG); 1♂ 1♀, Kubah NP, Matang Wildlife Centre env., 50–100 m, 28.–31.iii.2009, R. Grimm leg. (SMNS); 1♂, same data, but: 50 m, 8.–11.iv.2016 (SMNS). **PHILIPPINES: Luzon:** 1♂, Manilla, C.R. Jonas, ex coll. A. Zimmermann (ZSMG).

Redescription of male lectotype

In dorsal view elongate oblong oval, almost ovoid – broadest in basal third of elytra and distinctly attenuated towards apex, moderately convex. Body outline continuous, without discontinuity between pronotum and elytra. Head relatively broad, trapezoidal; anterior margin of clypeus truncate. Pronotum broadest between posterior angles, lateral margins moderately curved. Base of elytra as broad as pronotal base; lateral margins of elytra moderately curved (cf. Fig. 5). Whole surface shiny.

Colouration. Body colour pitchy brown, head in front of eyes, sides of pronotum, appendages, and elytra laterally (including epipleura) paler – ferrugineous; ventral part brown blackish.

Surface sculpture. Head uniformly microreticulated, reticulation composed of moderately deeply impressed isodiametric meshes. Punctation composed of coarse setigerous punctures, and very small punctures spread sparsely on surface; rows of coarse punctures presented around inner margin of eyes and in small depression anterolaterally of eyes. Antenna with antennomeres long and slender.



Figs 5–8. Habitus of *Copelatus*. **5.** *C. masculinus* Régimbart (male from E Kalimantan, 5.7 mm); **6**. *C. masculinus* (female paratype of *C. imasakai* Matsui & Kitayama, 5.3 mm); **7.** *C. vancli* spec. nov. (male paratype, E Kalimantan, 5.7 mm); **8.** *C. vancli* spec. nov. (female paratype, E Kalimantan, 5.5 mm).

Pronotum transverse, width/length ratio = 2.60. Sides with lateral beading very thin and indistinct. Microreticulation similar to that of head. Punctation similar to that of head; row of coarse setigerous punctures presented along anterior margin, basal margin (except for basomedially), and laterally close to sides.

Elytra with microreticulation similar to that of head and pronotum, but less impressed. Punctation consists of very fine sparse punctures. Six discal and one submarginal longitudinal striae present on each elytron: stria 1 (sutural) absent in basal two thirds of elytral length; stria 2 complete, although somewhat fragmented on base; stria 3 split in basal third into several short striolae and punctures; stria 4 complete; stria 5 complete but slightly shortened on elytral base; stria 6 complete; submarginal stria starts at about elytral midlength.

Legs. Protibia modified, angled near base, distinctly broadened anteriorly – club shaped. Protarsomeres and mesotarsomeres 1–3 distinctly broadened, with adhesive setae on their ventral side.

Ventral part. Finely microreticulated, with intermixed, sparsely distributed, very small punctures. Meshes isodiametric, except for metacoxae and abdominal ventrites I–II (longitudinal), abdominal ventrite III (diagonal anteriorly, transversal posteriorly), and abdominal ventrites IV–VI (transverse). Prosternum obtusely keeled medially. Prosternal process shortly lanceolate, convex, apex obtuse; distinctly bordered laterally. Lateral parts of metaventrite ("metasternal wings") tongue-shaped, slender. Metacoxal lines incomplete – absent in ca. anterior fourth of metacoxal plates. Metacoxae and abdominal ventrites I–III with numerous fine, longitudinal or oblique, striae.

Genitalia. Median lobe of aedeagus sickle shaped in lateral view, broader in basal half and very thin, bisinuous, in apical part; near midlength with distinct protuberance on ventral side (Fig. 12). Lateral lobes (parameres) rather narrow, crescent shaped.

Female

Similar to male in habitus. Protibia simple, not angled basally and only slightly broadened distally; pro- and mesotarsomeres not broadened, without adhesive setae. Elytral stria 3 never abbreviated basally. In prevailing shiny form (similar to male), pronotum basolaterally with several short longitudinal strioles. Striolate form due to dense striolation submatt (Fig. 6). Striolae present on pronotum, except for centre of disc – strioles short on disc, longer along margins, especially laterally; and in basal three fourths of elytra – strioles longitudinal, often confluent, making net-like structure.

Variability. The specimens vary considerably in dorsal surface colouration: most of recently collected specimens are darker than types, almost brown-blackish. The basal transverse yellow band on elytra, typical for type specimens of *C. imasakai* is missing in most specimens from Philippines, Taiwan and Kalimantan – we have seen it in mostly immature specimens – one from Manila, and four specimens from Kalimantan. There is also a variability in the development of elytral striae: the abbreviation of stria 3 at the base of elytra in males – character mentioned by Régimbart (1899) – is less apparent or even missing in some specimens from Taiwan and Kalimantan and it is not mentioned by Matsui & Kitayama (2000) for *C. imasakai*; on the other hand, in the male from Manila, the stria 5 is abbreviated basally, similarly to stria 3.

Measurements. TL: 5.05–5.90 mm (lectotype 5.75 mm); TL-h: 4.55–5.40 mm (lectotype 5.30 mm); TW: 2.40–2.90 mm (lectotype 2.70 mm).

Collection circumstances. The habitat of *Copelatus masculinus* is largely unknown. In East Kalimantan, it was collected in shallow newly emerged pools with clayey bottom and without any vegetation at the border of forest and *Acacia mangium* plantation (Fig. 14). At the locality, the species was associated with *Cybister tripunctatus temnenkii* Aubé, 1838, *Eretes griseus* (Fabricius, 1781), *Hydaticus bipunctatus* Wehncke, 1876, *H. fabricii* (Macleay, 1825), *Hyphydrus lyratus* (Swartz, 1808), *Laccophilus parvulus* Aubé, 1838 and *L. ritsemae* Régimbart, 1880 (all Dytiscidae).

Notes to classification. Within Oriental members of the *Copelatus irinus* species group, *C. masculinus* is characterised with elongate habitus, elytral stria 1 distinctly abbreviated at basal two thirds of elytral length, and the characteristic shape of the median lobe. The study of the type material of *C. imasakai* from Ryukyus revealed that this population falls within the intraspecific variability of the widespread *C. masculinus*; the key characters as reduction of elytral stria 1 and the shape of the median lobe are exactly the same. Therefore, we establish their synonymy and consider *Copelatus imasakai* Matsui & Kitayama, 2000 as a junior subjective synonym of *Copelatus masculinus* Régimbart, 1899.

Distribution. Philippines – described from Luzon, Freitag et al. (2016) mentioned also Mindoro, Negros and Samar; Japan (Ryukyus); first record from China (Taiwan), Indonesia (West and East Kalimantan) and Malaysia (Sabah, Sarawak).

Copelatus vancli spec. nov.

Figs 7–8, 13

Type locality. Malaysia, Sabah, Kinabatangan river, Uncle Tan's camp, ca. 05°26.0'N, 117°45.0'E.

Type material. Holotype ♂ (NMPC), labelled: "Malaysia, Sabah / Kinabatangan riv. 8.– / 15.6.03, uncle Tan's / camp, J. Šťastný lgt. [printed]". – Paratypes: 2♂♂ 1♀, same label data as holotype (JSCL); 1♂, labelled: "Malaysia, Sabah / Gum Gum env. / 7.6.2003 / J. Šťatsný lgt. [printed]" (JSCL); 10♂♂ 3♀♀, labelled: "Malaysia, Sabah, Kampung Takala / env., branch of Kinabatangan river, / 5.06.1996, J.Kodada & F.Čiampor Lgt. [printed]" (NHMW, NMPC); 2♀♀, labelled: "LHK # 234: Sabah, off sg. / Kinabatangan, muddy / puddles near Danau / Blandum Besar, 11.4.1994, / H.K. Lua & C.Y. Chang leg. [printed]" (LHCM, NUSC); 2♂♂, labelled: "Malaysia, Sarawak, J. Stastny, / M Balke: MB 624 [625 respectively] [printed] // MB624 [MB625 respectively] [green label, printed]" (ZSMG); 1♂ 2♀♀, labelled: "BRUNEI, i.–ii.2015 / Ulu Temburong NP / Zdeněk Mačát leg. [printed]" (NMPC); 1♂ 2♀♀, labelled: "INDONESIA, E KALIMANTAN / PT Silva Rimba Lestari [area] / camp Limbang / 00°07.4'N, 116°18.1'E, 60 m / J. Hájek, J. Schneider & / P. Votruba leg. 3–4+6.xii.2011 // open oligotrophic wetland on / sand ground, surrounded with / shrub; collecting in shallow pools, / stream, on vegetation, + light trap [printed]" (NMPC); 1♂ 2♀♀, labelled: "INDONESIA, E KALIMANTAN, PT / Silva Rimba Lestari [area] 35m / 4.xii.2011, 00°13.5'N / 116°06.7'E, J. Hájek, J. / Schneider & P. Votruba / (KAL-Jiri06) [printed] // M. Balke / 5610 [5631 and 5632 respectively] [printed, green typing]"; 4♂♂ 5♀♀, labelled: "INDONESIA, E KALIMANTAN / ca. 15 km N of Balikpapan / Sungai Wain Protection Forest / 01°08.1'S, 116°49.9'E, 35 m / J. Hájek, J. Schneider & / P. Votruba leg. 8–11.xii.2011 // primary rainforest; individual / collecting in stream, puddles and / swamp, on vegetation and dead / wood; light trap at border of forest [printed]" (MZBC, NMPC); 2♂♂ 2♀♀, labelled: "Indonesia: E Kalimantan, ca. 15 km N / of Balikpapan Sungai Wain Protection / Forest, 5m, 8–11.xii.2011, 01°08.1'S / 116°49.9'E, J. Hájek, J. Schneider & / P. Votruba (KAL-Jiri09) [printed]" (ZSMG); 1♂, labelled: "SUMATRA: / Bengkhulu: 20km / südl. Muko Muko [printed] // Urwald, 20 m / Lichtfang / 16.8.91, ERBER [printed]" (NMPC); 1♀, labelled: "SUMATRA: Bengkhulu / 20km südl. Muko Muko / 16.8.1991,ERBER leg. [printed] // Urwald, 20 m, / Lichtfang [printed]" (NMPC); 2♂♂, labelled: "INDONESIA, W Sumatera / Mentawai Isls., N SIBERUT / Mt. Malancan, 150–300 m / S. Jákl leg. 18.–21.i.2005 [printed]" (NMPC); 2♀♀, labelled: "Indonesia: Sumatra Barat, Panti / 260m, 29.ix.2009, 0 20.960S 100 / 04.047E, Balke & Amran / (SUM013) [printed] // M. Balke / 3897 [3898 respectively] [green label, printed]" (ZSMG, MZBC).

Description

Holotype. Male. In dorsal view elongate oblong oval, broadest in basal third of elytra, moderately convex. Body outline continuous, without discontinuity between pronotum and elytra. Head relatively broad, trapezoidal; anterior margin of clypeus truncate. Pronotum broadest between posterior angles, lateral margins moderately curved. Base of elytra as broad as pronotal base; lateral margins of elytra moderately curved (Fig. 7). Whole surface shiny.

Colouration. Body colour pitchy brown, head frontally and sides of pronotum paler – ferrugineous; base of elytra with distinct transverse testaceous band; appendages testaceous; ventral part brown blackish.

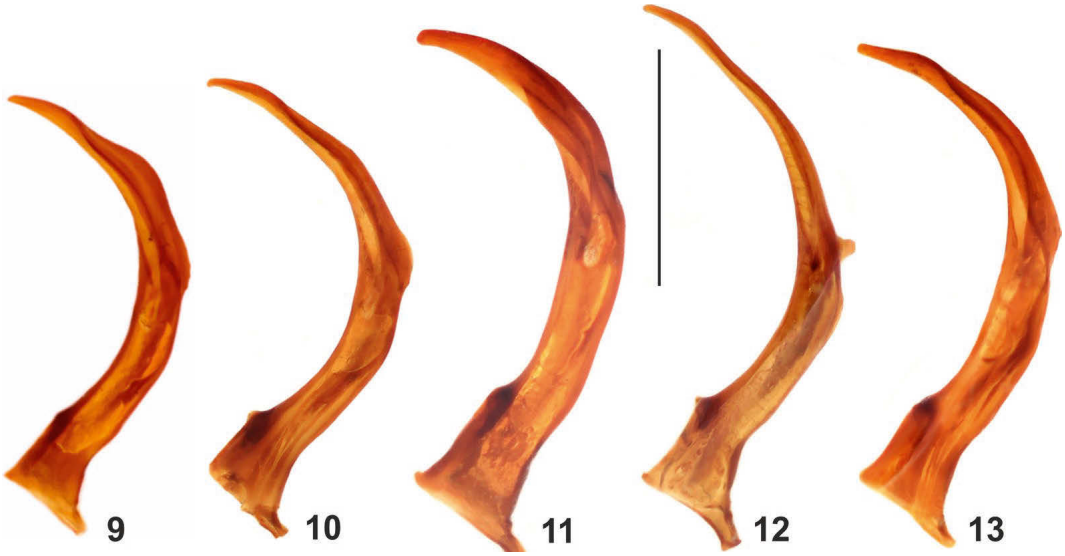
Surface sculpture. Head uniformly microreticulated, reticulation composed of moderately deeply impressed isodiametric meshes. Punctation composed of coarse setigerous punctures, and very small punctures spread sparsely on surface; rows of coarse punctures present around inner margin of eyes and in two transverse depressions – first at frontal level of eyes and second anterolaterally of eyes. Antenna with antennomeres long and slender.

Pronotum transverse, width/length ratio = 2.55. Sides with lateral beading very thin and indistinct. Microreticulation similar to that of head. Punctation similar to that of head; row of coarse setigerous punctures present along anterior margin, basal margin (except for basomedially), and laterally close to the sides.

Elytra with microreticulation similar to that of head and pronotum, but less impressed. Punctation consists of very fine sparse punctures. Six discal and one submarginal longitudinal striae present on each elytron: stria 1 (sutural) absent at base, begins approximately at level of posterior margin of transverse basal testaceous band and continues close to apex; striae 2–4 begin at base and end shortly before apex; stria 5 absent at base similarly to stria 1, ends before apex; stria 6 begins at base and ends at posterior fourth of elytral length; submarginal stria rather long, starts after basal third of elytral length.

Legs. Protibia modified, angled near base, distinctly broadened anteriorly – club shaped. Protarsomeres and mesotarsomeres 1–3 distinctly broadened, with adhesive setae on their ventral side.

Ventral part. Finely microreticulated, with intermixed, sparsely distributed, very small punctures. Meshes isodiametric, except for metacoxae and abdominal ventrites I–II (longitudinal), abdominal ventrite III (diagonal anteriorly, transverse posteriorly), and abdominal ventrites IV–VI (transverse). Prosternum obtusely keeled medially. Prosternal process shortly lanceolate, convex, apex obtuse; distinctly bordered laterally. Lateral parts of metaven-



Figs 9–13. Median lobe of *Copelatus* in lateral view. **9.** *C. babyrousa* spec. nov.; **10.** *C. brendelli* spec. nov.; **11.** *C. doriae* Sharp; **12.** *C. masculinus* Régimbart; **13.** *C. vancli* spec. nov. Scale bar = 0.5 mm.

trite ("metasternal wings") tongue-shaped, slender. Metacoxal lines nearly complete – absent only close to metaventrite. Metacoxae and abdominal ventrites I–III with numerous fine, longitudinal or oblique, striae.

Genitalia. Median lobe of aedeagus sickle shaped in lateral view, regularly sinuate on dorsal side, slightly narrowing in midlength on ventral side, then broadened again and continuously attenuated to obtuse apex (Fig. 13). Lateral lobes (parameres) rather narrow, crescent shaped.

Female. Similar to male in habitus. Protibia simple, not angled basally and only slightly broadened distally; pro- and mesotarsomeres not broadened, without adhesive setae. In shiny form (similar to male), pronotum basolaterally with several short longitudinal strioles. Striolate form due to dense striolation partly submatt (Fig. 8). Striolae present laterally on pronotum (in higher number than in shiny form), and in basal two thirds of elytra – strioles longitudinal, usually very long, only rarely confluent.

Variability. The specimens vary considerably in dorsal surface colouration: generally, the form with basal transverse testaceous band on elytra prevails across the area of distribution, although the thickness of the band varies among specimens; however, in East Kalimantan, there exist also completely black specimens of both sexes (see Fig. 8). The length of elytral stria 1 (sutural) varies among specimens – in two males from Siberut, it is absent in basal half of elytra.

Measurements. TL: 5.30–6.15 mm (holotype 5.80 mm); TL-h: 4.80–5.55 mm (holotype 5.25 mm); TW: 2.45–2.80 mm (holotype 2.65 mm).

Differential diagnosis. The typical form of *Copelatus vancli* spec. nov. is similar to *C. brendelli* spec. nov. from Central Sulawesi. It can be distinguished from this taxon based on less parallel habitus and longer submarginal stria which begins already after basal third of elytral length (the submarginal stria starts at about elytral midlength in *C. brendelli* spec. nov.). However, the only reliable identification of the new species is based on the shape of median lobe of aedeagus, which is in lateral view slightly narrowed in midlength on ventral side, and has straight obtuse apex (Fig. 13).

Collection circumstances. At the type locality, *Copelatus vancli* spec. nov. was collected in primary lowland forest in a shallow oxbow of the river Kinabatangan. They inhabited muddy water near the banks of small drains flowing to the oxbow; the substrate was silty with accumulated decaying leaves (Hájek & Šťastný 2005). In East Kalimantan, the new species was collected in a swampy pool in primary tropical forest; completely shaded, with thick layer of decaying leaves at the bottom (Fig. 15); at this locality, the species was associated with *Copelatus doriae*, *C. irinus* Régimbart, 1899, *C. oblitus* Sharp, 1882, *Hydaticus platteeuwi* Severin, 1890 and *Laccophilus ritsemae* (all Dytiscidae).

Fig. 14. Habitat of *Copelatus masculinus* Régimbart in E Kalimantan. Temporary pool at the border of forest and *Acacia* plantation.

Fig. 15. Habitat of *Copelatus doriae* Sharp and *C. vancli* spec. nov. in E Kalimantan. Swampy pool in primary tropical forest.

Etymology. The new species is dedicated to an enthusiastic amateur entomologist Zdeněk Vancl (Police nad Metují, Czech Republic), for his constant help with mounting of beetle material.

Distribution. Widely distributed in lowlands of Borneo – Sabah and Sarawak (Malaysia), Brunei, East Kalimantan (Indonesia), and Sumatra – West Sumatra, including Siberut Island (Indonesia).

Acknowledgements

We are obliged to all colleagues mentioned in the list of collections for the possibility to study the material in their care. Special thanks are due to Jaroslav Šťastný (Liberec, Czech Republic) for information about habitats of the species and for donation of the holotypes to NMPC. We are grateful to Helena Shaverdo (Vienna, Austria) and Michaël Manuel (Paris, France) for valuable comments to the manuscript. The collection in Eastern Kalimantan would have not been possible without the co-operation of the PT Agra Bareksa group, represented by Mr Frankie Legawa, who permitted entomological research in their concession areas. Thanks are offered also to the personnel of the PT Fajar Surya Swadaya and PT Silva Rimba Lestari areas for their support and assistance with collecting. The work of J. Hájek was partly supported by the Ministry of Culture of the Czech Republic (DKRVO 2017/14, National Museum, 0002327201). The work of M. Balke was supported by DFG grants BA2152/11-1 and 11-2. For this project, two foreign research permits were issued by the Indonesian ministry of research and technology.

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