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Review of the *azurescens*-group, with the description of six new brachypterous species of *Stenus* Latreille, 1797 from the Philippines (Coleoptera, Staphylinidae, Steninae)

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Abstract

Here, the endemic species group of the rove beetle *Stenus azurescens* L. Benick, 1929 in the genus *Stenus* Latreille, 1797 from the Philippines is reviewed. Six new species are described: *S. rolandmuelleri* spec. nov. (Negros), *S. hamiguitanensis* spec. nov. (Mindanao), *S. alexi* spec. nov. (Mindanao), *S. alexeyi* spec. nov. (Mindanao), *S. circumspector* spec. nov. (Mindanao) and *S. cuprifulgens* spec. nov. (Mindanao). In addition, an identification key is published with which all taxa of the *azurescens*-group can be identified to species level.

Keywords Insect taxonomy | beetles | entomology | biodiversity | endemism | Philippine Archipelago

1. Introduction

With more than 3,100 known species (Puthz in litt. 2024), *Stenus* Latreille, 1797 is one of the largest genera in the whole animal kingdom. *Stenus*, a genus of rove beetles, occurs worldwide with exception of New Zealand, Antarctica and some high seas islands (e.g. Betz et al. 2018). The species diversity of *Stenus* is particularly high in the tropics where species are often very similar in habitus. This also applies to the more than 500 species of the Oriental region. The Philippines represent a biodiversity hotspot within this zoogeographic region. To date, 96 (+6) species of *Stenus* are known from this archipelago, belonging to more than 20 different species groups. This number is surprisingly low when compared with Central Europe (over 100 species). Despite the great papers of my predecessors, in particular L. Benick's 'Die *Stenus*-Arten der Philippinen' / The *Stenus*-species of the Philippines (L. Benick 1929), or the numerous papers by Volker Puthz (Puthz 1974, 1995, 1998, 2013), the *Stenus* fauna of the Philippines still seems to be far from being conclusively researched!

Three of the new species described here were discovered by me during a research stay on Mindanao Island, which was generously made possible by the Davao Oriental State University in the City of Mati in the far Southeast of Mindanao, which is normally difficult for foreign scientists to access. Together with the Filipino coleopterologists Analyn Cabras & Milton Medina, the Filipino student Jessa Patalita, her husband Dexter Patalita and the carabidologist Sir Alexander Anichtchenko from the Daugavpils University in Latvia, I undertook an expedition to Southeast Mindanao in May and June 2024. The *Stenus* specimens collected during this expedition, together with additional material, formed the basis for this paper. Based on the new material, it seemed reasonable to revise the entire species group of *Stenus azurescens* L. Benick, 1929.

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After I established the *heterocerus*-group in a previous paper (Mainda 2020), the present paper deals with the second brachypterous species group of *Stenus* endemic to the Philippines. Thus, all species currently or formerly included in the *azurescens*-group are discussed below. Furthermore, an identification key is published with which all species can be identified to species level.

2. Material and methods

Material. The material mentioned below is deposited in the following collections: **BPBM** – Bernice Pauahi Bishop Museum, Honolulu, Hawaii, USA; **cVP** – private collection Volker Puthz, Schlitz, Germany (later in SMNS); **cTM** – private collection Tobias Mainda, Greifswald, Germany; **FMNH** – Field Museum of Natural History Chicago, USA; **MHMW** – Museum of Natural History Vienna, Austria; **PNM** – National Museum of the Philippines, Manila, Philippines; **SMNS** – State Natural History Museum Stuttgart, Germany; **USNM** – United States National Museum, Washington D. C., USA.

Methods. The morphological studies were carried out using a stereoscopic microscope (Euromex DZ 1105) and a compound microscope (Euromex BB.1153.PLI). Habitus images were taken using different systems: *S. rolandmuelleri* spec. nov - a Canon EOS R camera with a Mitutoyo 10x ELWD Plan Apo objective. The objective was attached to a Carl Zeiss Jena Sonnar 3.5/135 MC as focus lens. Three SN-1 LED segments from Stonemaster were used for illumination (www.stonemaster-onlineshop.de); *S. cuprifulgens* spec. nov. - Sony Alpha 7 II camera with a Canon MP-E 65 mm objective; *S. hamiguitanensis* spec. nov., *S. alexi* spec. nov., *S. alexeyi* spec. nov. and *S. circumspector* spec. nov. - BK PLUS Lab system with a customized Canon MPE 65 mm 1-5x micro-photography lens mounted on a Canon 6D camera. The stacks were fused and edited using Helicon Focus, Adobe Lightroom and Photoshop software. The images of the aedeagi were obtained using a Touptek microscope camera (ToupCam 14MP). Image stacks were captured with ToupView Lite (MacOS) and processed using Zerene Stacker.

The following acronyms are used: **BL** – length of body (except mandibles); **DE** – distance between eyes (in middle of eye length); **EL** – maximal length of elytra; **EW** – maximal width of elytra; **FBL** – length of forebody (head, pronotum, elytra); **HW** – head width; **PL** – pronotal length; **PW** – pronotal width; **SL** – sutural length of elytra.

3. Taxonomy

Puthz (2013) mentioned the *azurescens*-group as an 'embarrassment group' of species from the Philippines and one species from the Moluccas (*Stenus bucephalus* L. Benick, 1925), which are brachypterous with sternite IX being apicolaterally acute. Later, Puthz (2016) corrected the assignment of *S. bucephalus* and placed the species in the group of *Stenus gigas* L. Benick, 1931, which is exclusively distributed east of Weber's line. Differences in body size, the structure of the frons, sternites IX and the aedeagi indicate a potential polyphyletic origin of the *azurescens*-group. Four species complexes can currently be identified:

1. *azurescens*-complex: Larger or smaller species, elytra shorter than wide, frons completely concave, sternite IX with strong medium-length apicolateral tooth, blackish-blueish to metallic greenish; aedeagus peer- or bottle-shaped (*azurescens*, *chlorophanus*, *gigacephalus*, *circumspector* spec. nov., *cuprifulgens* spec. nov.);

2. *cupreomicans*-complex: Smaller species, elytra shorter than wide, frons indistinctly raised, sternite IX with extremely long apicolateral tooth, blueish-greenish or black, aedeagus arrow-shaped (*cupreomicans*, *rolandmuelleri* spec. nov.);

3. *angustipennis*-complex: Larger species, elytra longer than wide, frons very indistinctly raised, antennae long and thin, sternite IX with short apicolateral tooth, black, coarse and dense punctate, aedeagus narrow (*angustipennis*, *katangladmontis*);

4. *hamiguitanensis*-complex: Smaller species, elytra shorter than wide; frons indistinctly raised, sternite IX with short apicolateral tooth, black, aedeagus narrow (*hamiguitanensis* spec. nov., *alexi* spec. nov., *alexeyi* spec. nov.).

Based on the structure of the aedeagi, there seems to be a close relationship between the *azurescens*-and *cupreomicans*-complexes. The *angustipennis*- and *hamiguitanensis*-complexes also seem to be more closely related. Since the males of some species are still unknown and generally only a few specimens are available of each species to assess the stability of morphological characters, a larger species group should be assumed at the present time. This also facilitates identification, although species groups should of course represent the real phylogenetic relationships. Genetic analyses would be appropriate here in the future.

Apart from the *azurescens*-group, also the *heterocerus*-group of brachypterous species groups is found in the Philippines. Also this species group is endemic to the Philippines. However, this group can be easily separated from the *azurescens*-group by larger body size, an apicolaterally serrated sternite IX and the different antennal structure (Mainda 2020).

According to current knowledge, the *azurescens*-group is characterized by a combination of the following morphological characters:

Brachypterous species from the Philippines, black or with metallic coloring ranging from coppery-brown to green-blue tint; elytra without humeral angles; abdomen without paratergites or separation line; frons concave, median portion completely flat or indistinctly raised; punctation fine to coarse; pubescence short; legs yellowish, tarsomere IV distinctly bilobed; male legs without subapical tooth; sternite IX apicolaterally acute (in some species with very long apicolateral tooth), tergite X with convex or slightly concave posterior margin; aedeagus polymorphic: slender to peer- or bottle-shaped or arrow-shaped, apical portion of median lobe acutely narrowed or/and tip spatulate, parameres as long as or distinctly longer than median lobe, internal sac with flagellum.

Species assigned to the *S. azurescens*-group:
S. azurescens L. Benick, 1929 (N Luzon)
S. chlorophanus L. Benick, 1929 (Dinagat, S Luzon)
S. cupreomicans L. Benick, 1929 (S Luzon)
S. gigacephalus Puthz, 1995 (Negros)
S. angustipennis Puthz, 1998 (Mindanao)
S. katangladmontis Puthz, 2013 (Mindanao)
S. rolandmuelleri spec. nov. (Negros)
S. hamiguitanensis spec. nov. (Mindanao)
S. alexi spec. nov. (Mindanao)
S. alexeyi spec. nov. (Mindanao)
S. circumspector spec. nov. (Mindanao)
S. cuprifulgens spec. nov. (Mindanao)

3.1 Review of described species

Stenus azurescens L. Benick, 1929

Stenus azurescens L. Benick, 1929: 274-275.
(Figs 1, 14)

Type material studied: ♂ syntype, four white labels '♂' / 'Mt Polis' / 'leg. Böttcher, 1. Los; Staudinger' / 'azurescens, Benick det., Bik, n. sp.' / red label 'COTYPUS, Stenus, azurescens, Benick' / orange label 'azurescens, Benick' / blue label 'ex coll., Scheerpeltz' (MHMW). **Additional material studied:** ♂, white label 'Mt Polis, Luzon' / reddish label 'comp. cum, ♂-Typus' / two white labels 'Stenus, azurescens, L. Bck., det.V.Puthz 196' / 'coll., PUTHZ' (cVP).

Within the *azurescens*-group, this species is easy recognizable by its distinctly microsculptured body, the completely flat broad median part of frons and the male sexual characters (habitus: Fig. 1, aedeagus: Fig. 14).

Stenus chlorophanus L. Benick, 1929

Stenus chlorophanus L. Benick, 1929: 275-276.
(Figs 2, 3)

Type material studied: photos of the two ♀ syntypes, one specimen with white label 'Mt. Isarog, S Luzon' / white label 'Typus ♀' / red label 'chlorophanus L. Bik, Typus ♀' / white label 'Field Mus. Nat. Hist., 1972, Ludwig Benick Colln, Acc. Z-14, 869' / violet label 'SYNTYPE, teste D.J.Clarke2014, GDI Imaging Project' / blue label 'PHOTOGRAPHED, Kelsey Keaton 2015, Emu Catalog' / white label 'QR Code, FMNHINS, 3047687, FIELD MUSEUM, Pinned' / red label '♀ SYNTYPE *Stenus chlorophanus* L. Benick, 1929 det. Mainda 2024'; one specimen with white label 'Dinagat, Philippin' / two blue labels 'Stenus, chlorophanus L. Bik Typus' / 'D.E.Z. 1929, S. 275' / white label 'Field Mus. Nat. Hist., 1972, Ludwig Benick Colln, Acc. Z-14, 869' / white label 'QR Code, FMNHINS, 4518588, FIELD MUSEUM, Pinned' / blue label 'PHOTOGRAPHED, Jessica Wadleigh 2024, Emu CIL Request' / red label '♀ SYNTYPE *Stenus chlorophanus* L. Benick, 1929 det. Mainda 2024' (FMNH).

Measurements of the Dinagat syntype (Fig. 2) in mm: BL: 7.00, FBL: 2.75, EL: 0.75, EW: 0.90, HW: 1.23. Measurements of the Luzon syntype (Fig. 3) in mm: BL: 7.85, FBL: 3.30, EL: 0.95, EW: 1.13, HW: 1.56.

Stenus chlorophanus is only known by the two female type specimens, which were collected on the two Philippine islands Luzon and Dinagat. Luzon is part of the Pleistocene Aggregate Island Complex of 'Greater Luzon' and Dinagat of 'Greater Mindanao', which were never connected to each other (Vallejo 2011). It is therefore questionable how a brachypterous *Stenus* species can occur on both islands. One explanation could be: The type specimens belong to two different species. Another explanation could be the incorrect labelling of one specimen. Based on the photos (Figs 2, 3), the two specimens cannot be distinguished externally. It would now be quite easy to examine both types by dissecting their spermatheca. However, this could also irreparably damage the types. The types of *S. azurescens* also come from the historical material of Staudinger/Bang-Haas, like the *chlorophanus* types (typical labels). The

azurescens specimens are hardened to such an extent that the tergites and sternites break easily during dissection and important morphological characters are easily lost. I therefore refrain from dissecting the *chlorophanus* types and hope for new material from Mt. Isarog on Luzon and Dinagat in the future. However, the name *S. chlorophanus* L. Benick, 1929 would most likely apply to the Dinagat specimen, as L. Benick mentioned it before the Luzon specimen.

Stenus cupreomicans L. Benick, 1929

Stenus cupreomicans L. Benick, 1929: 276-277.
(Figs 5, 15)

Type material studied: photo of the ♀ holotype, four white labels 'Mt. Banahao, Luzon' / 'Typus ♀' / 'Field Mus. Nat. Hist, 1972, Ludwig Benick Colln., Acc. Z-14, 869' / FMNHINS, 3047726, FIELD MUSEUM, Pinned, (QR code) / red label 'cupreo-, micans L. Bek, Typus ♀' / violet label 'SYNTYPE, teste D.J.Clarke2014, GDI Imaging Project' / blue label 'PHOTOGRAPHED, Kelsey Keaton 2015, Emu Catalog' (FMNH).

Although the specimen is labelled with a violet 'SYNTYPE'-label, the species was described based on a single specimen (L. Benick 1929: 276-277), which automatically makes it the holotype. This species is known from the two volcanos Mt. Banahao (type locality) and the neighbouring Mt. Makiling on Luzon (Puthz 1998). Here, the holotype is figured for the first time (Fig. 5). Aedeagus as in Fig. 15 (from Puthz 1998).

Stenus gigacephalus Puthz, 1995

Stenus gigacephalus Puthz, 1995: 195-197.
(Figs 4, 23)

Type material studied: photo of the ♀ holotype (USNM).

This species is still known only by the female holotype from Damaguete on Negros Island. Here, the holotype is figured for the first time (Fig. 5), spermatheca (Fig. 23, from Puthz 1995).

Stenus angustipennis Puthz, 1998

Stenus angustipennis Puthz, 1998: 123-125.
(Figs 6, 19)

Type material studied: ♀ paratype, two yellowish labels 'MINDANAO, 12 MAY, BUKIDNON Prov., 900m, 5km N of MALAYBALAY, BOLM lgt., 1996' / '♀-Paratype' / two white labels 'Stenus, angustipennis, sp. n., det. V. Puthz 1998' / 'Spermatheca lost, consisting of few thin tubes; a distinctly sclerotized membrane with some denticles (?) dorsally in the last segment. Puthz 11.8.2014' (cVP).

Within the *azurescens*-group this and the following species are easily recognizable by the elytra being longer than wide. Habitus as in Fig. 6, aedeagus (Fig. 19).

Stenus katangladmontis Puthz, 2013

Stenus katangladmontis Puthz, 2013: 1358-1359.
(Figs 7, 18)

Type material studied: photo of ♂ holotype, two white labels 'P. I. MINDANAO, Bukidnon, 1480 m, Mt. Katanglad, 27.-31.X.1959' / 'C. M. Yoshimoto, Collector' / red label '♂-Holotypus' / 'white label '*Stenus katangladmontis* spec. nov., det. V. Puthz 197 (sic!)' (BPBM).

From *S. angustipennis*, this species is best distinguished by its sparser punctation on pronotum and elytra. Here, the holotype is figured for the first time (Fig. 7), aedeagus (Fig. 18).

3.2 Description of new species

Stenus rolandmuelleri spec. nov.

urn:lsid:zoobank.org:act:FC4D095A-488C-4481-AD-FC-FC331EF2B457
(Figs 8, 16, 28, 33)

Type specimens: ♂ holotype: white label 'Philippines: Negros Occidental, Silay, Mt. Mandalagan, 23.v.1996, R.A. Müller leg' / red label '♂ – HOLOTYPE *Stenus rolandmuelleri* spec. nov. design. Mainda 2024' (cTM).

Description of the holotype: Measurements in mm: BL: 5.80, DE: 0.55, FBL: 2.50, EL: 0.68, EW: 0.83, HW: 1.13, PL: 0.88, PW: 0.75, SL: 0.43.

Habitus as in Fig. 8. Brachypterous, body black, moderately shiny. Head distinctly, pronotum, elytra and tergites indistinctly microsculptured. Maxillary palpi yellow; antennae brownish yellow. Legs and tarsi yellowish, femora apically and tibiae basally brownish. Clypeus blackish; labrum brownish-black, light brown seamed.

Head large, 1.36 times broader than elytra; median portion indistinctly raised, not separated from lateral portions; median portion nearly without punctures, lateral portions with series of punctures along inner eye margin; clypeus and labrum with distinct white pubescence; antennae robust, antennomeres IX-XI thickened.

Pronotum longer than wide, broadest in middle; sides slightly convex towards anterior margin, distinctly concave towards posterior margin. Punctation coarse, dense and regular; punctures separated, interstices mainly smaller than diameter of punctures; diameter of largest punctures as large as apical cross-section of antennomere III.

Elytra trapezoidal, much narrower than head, 1.22 times as broad as long, humeral angles absent, posterior margin strongly emarginate. Punctation coarse and dense, diameter of punctures near suture as large as apical cross-section of antennomere III, posterior angles without punctures.

Abdomen cylindrical; without paratergites or margin; punctation fine and sparse, interstices much larger than diameter of punctures; with short, adjacent pubescence. Tergite VII without membranous fringe.

Legs slender, metatarsi slightly longer than half as metatibiae; metatarsomere I longer as combined length of metatarsomeres II-IV; tarsomere III indistinctly and tarsomere IV distinctly bilobed.

Female. Unknown.

Male. Legs simple. Sternite VIII with broad, pointed emargination (Fig. 28); sternite IX with extremely long apicolateral tooth, reminiscent of a Batman mask (Fig. 33); tergite X with convex posterior margin. Aedeagus arrow-shaped (Fig. 16), median lobe with narrow, pointed tip; flagellum long, broad; parameres broad, longer than median lobe, with around 10 subapical/apical setae.

Comparative notes: *Stenus rolandmuelleri* spec. nov. can be distinguished from the probably closely related *S. cupreomicans* by blackish coloration, longer apicolateral tooth of sternite VIII, longer median lobe of aedeagus and longer subapical setae of parameres. From the other species of the *azurescens*-group, this new species is best distinguished by its male sexual characters and as indicated in the identification key.

Etymology: With the choice of the species epithet '*rolandmuelleri*', this new species is dedicated to its collector, the naturalist and explorer Roland A. Müller † (1936-2016, St. Gallen, Switzerland). With the 'Roland Müller Zoological Expeditions to the Philippines' (Hämäläinen & van Tol 2017), Roland made an extraordinary contribution to research on Philippine biodiversity, which also took him to Mt. Mandalagan on Negros Island in 1996. He was a very good friend and an inspiration to me, which is why I would like to express my deep gratitude with this dedication.

Stenus hamiguitanensis spec. nov.

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(Figs 9, 20, 29, 34)

Type specimens: ♂ holotype: white label 'PHILIPPINES: Mindanao Island, San Isidro, Davao Oriental, Mt. Hamiguitan, 1350m, 6°42'46"N 126°11'10"E, mossy pygmy forest, sifting leaf litter, 25.V.2024, leg. T. Mainda, D. & J. Patalita' / red label '♂ – HOLOTYPE *Stenus hamiguitanensis* spec. nov. design. Mainda 2024' (cTM); three ♂ paratypes with same locality label as holotype / yellow label '♂ – PARATYPE *Stenus hamiguitanensis* spec. nov. design. Mainda 2024' (two specimens in cTM, one specimen in PNM).

Description of the holotype: Measurements in mm: BL: 5.20, DE: 0.50, FBL: 2.35, EL: 0.75, EW: 0.76, HW: 1.03, PL: 0.88, PW: 0.68, SL: 0.44.

Habitus as in Fig. 9. Brachypterous, body black, very shiny, without microsculpture. Maxillary palpi yellow; antennae brownish yellow. Legs yellowish, femora apically and tarsi slightly darkened. Clypeus blackish; labrum dark brown, yellowish seamed.

Head large, 1.36 times broader than elytra; median portion slightly raised, not reaching the high of inner eye margin, distinctly separated from lateral portions; with fine and sparse punctation on median portion and on lateral portions; clypeus and labrum with distinct white-yellowish pubescence. Antennae slender, antennomeres IX-XI thickened.

Pronotum longer than wide, broadest in middle; sides convex towards anterior margin, concave towards posterior margin. Punctation coarse, dense and on anteromedian portion confluent; punctures more distinctly separated on sides, interstices on sides larger than diameter of punctures, smaller on median portion; diameter of largest punctures as large as apical cross-section of antennomere III.

Elytra trapezoidal, much narrower than head, humeral angles absent, posterior margin emarginate. Punctation coarse and sparse, interstices on sides much larger than diameter of punctures, denser near suture, diameter of punctures on sides as large as cross-section of antennomere II; without punctures near lateral margin, at humeral angles and over entire area of posterior angles.

Abdomen cylindrical; without paratergites or margin; punctation fine and sparse, interstices much larger than diameter of punctures; with short, indistinct adjacent pubescence. Tergite VII with indistinct vestigial membranous fringe.

Legs slender, metatarsi slightly longer than half as metatibiae; metatarsomere I nearly as long as combined length of metatarsomeres II-V; tarsomere III indistinctly and tarsomere IV distinctly bilobed.

Male. Legs simple, femora slightly thickened. Sternite VII ventrally flattened, with denser punctation and longer distinct pubescence in posterior third; sternite VIII with narrow, deep, blunt emargination (Fig. 29); sternite IX with short apicolateral tooth (Fig. 34); tergite X with convex posterior margin. Aedeagus narrow (Fig. 20), median lobe concavely narrowed to tip; flagellum long, thin; parameres distinctly longer than median lobe; expulsion tube very long, narrowed just before tip.

Variation (*n* = 4): Measurements in mm: BL: 5.20–5.40 mm, DE: 0.50–0.55 mm, FBL: 2.27–2.43 mm, EL: 0.70–0.75 mm, EW: 0.76–0.80 mm, HW: 1.03–1.09 mm, PL: 0.80–0.90 mm, PW: 0.68–0.73 mm, SL: 0.44–0.48 mm.

Female. Unknown.

Comparative notes: *Stenus hamiguitanensis* spec. nov. is best distinguished from *S. alexi* spec. nov. and *S. alexeyi* spec. nov. of the *hamiguitanensis*-complex by absence of microsculpture on head and abdomen, and by male sexual characters. From the other species of the *azurescens*-group, this new species is separated by its shorter apicolateral tooth on sternite IX, male sexual characters and as further indicated in the identification key.

Habitat and collecting method: All type specimens of *S. hamiguitanensis* spec. nov. were sifted from leaf litter in the mossy primary pygmy forest of Mt. Hamiguitan, Mindanao at elevations of 1,350m (Fig. 38).

Etymology: The species epithet is a toponym referring to the type locality, Mt. Hamiguitan on Mindanao Island, in whose unique primary mossy pygmy forest the new species was discovered (Fig. 38).

Stenus alexi spec. nov.

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(Figs 10, 21, 24, 30, 35)

Type specimens: ♂ holotype: white label 'PHILIPPINES: Mindanao Island, San Isidro, Davao Oriental, Mt. Hamiguitan, 1000m, 6°43'58.0"N 126°10'10.0"E, trail from camp 3 to 4, under leaves of *Pandanus* sp., 26.v.2024, leg. T. Mainda' / red label '♂ – HOLOTYPE *Stenus alexi* spec. nov. design. Mainda 2024' (cTM); ♀ paratype with same locality label / yellow label '♀ – PARATYPE *Stenus alexi* spec. nov. design. Mainda 2024' (cTM); ♂ paratype: 'PHILIPPINES: Mindanao, Davao Oriental, Barangay Tumalite, San Isidro, 9 vii 2016, leg. P. A. Buenavente' / yellow label '♂ – PARATYPE *Stenus alexi* spec. nov. design. Mainda 2024' (PNM).

Description of the holotype: Measurements in mm: BL: 5.30, DE: 0.53, FBL: 2.40, EL: 0.75, EW: 0.81, HW: 1.13, PL: 0.90, PW: 0.73, SL: 0.44.

Habitus as in Fig. 10. Brachypterous, body black, shiny. Head and abdomen microsculptured. Maxillary palpi yellow; antennae brownish yellow. Legs yellowish, femora apically and tarsi slightly darkened. Clypeus blackish; labrum black, yellowish seamed.

Head large, 1.40 times broader than elytra; median portion slightly raised, not reaching the high of inner eye margin, separated from lateral portions; with few, fine and sparse punctures on median portion and several punctures on lateral portions; clypeus and labrum with distinct yellowish pubescence. Antennae slender, antennomeres IX-XI thickened.

Pronotum longer than wide, broadest in anterior third; sides convex towards anterior margin, concave towards posterior margin. Punctation coarse, dense and on posteromedian portion indistinctly confluent; punctures more distinctly separated on sides, interstices on sides larger than diameter of punctures, smaller on median portion; diameter of largest punctures as large as apical cross-section of antennomere III.

Elytra trapezoidal, much narrower than head, humeral angles absent, posterior margin emarginate. Punctation coarse and sparse, interstices on sides larger than diameter of punctures, denser near suture, diameter of punctures on sides as large as cross-section of antennomere II; without punctures near lateral margin, at humeral angles and over entire area of posterior angles.

Abdomen cylindrical; without paratergites or margin; regular punctation fine and sparse, interstices much larger than diameter of punctures; with short, indistinct adjacent pubescence. Tergite VII with indistinct vestigial membranous fringe.

Legs slender, metatarsi slightly longer than half as metatibiae; metatarsomere I nearly longer as combined length of metatarsomeres II-IV; tarsomere III indistinctly and tarsomere IV distinctly bilobed.

Male. Legs simple, femora slightly thickened. Sternite VII ventrally flattened, with denser punctation and pubescence in posterior third; sternite VIII with broad, moderately deep emargination (Fig. 30); sternite IX with short apicolateral tooth (Fig. 35); tergite X with convex posterior margin. Aedeagus narrow (Fig. 21), median lobe concavely narrowed to widely rounded tip; parameres longer than median lobe, with around 5 long apical setae; medium-length expulsion tube, apical side narrowed by half, with parallel sides; indistinctly visible flagellum.

Variation (*n* = 3): Measurements in mm: BL: 5.20–5.30 mm, DE: 0.53–0.60 mm, FBL: 2.40–2.53 mm, EL: 0.75 mm, EW: 0.81–0.88 mm, HW: 1.05–1.17 mm, PL: 0.90–0.98 mm, PW: 0.73–0.78 mm, SL: 0.44–0.46 mm.

Female. Legs simple. Sternite VIII with slightly protruding rounded margin. Spermatheca (Fig. 24,

artefact?) indistinctly sclerotized, small; spermathecal duct coiled approx. 3 times, with intertwined collum.

Comparative notes: *Stenus alexi* spec. nov. is best distinguished from *S. hamiguitanensis* spec. nov. by microsclupture on head and abdomen as well as male sexual characters (compare figs 20/21 and 29/30). From *Stenus alexeyi* spec. nov., it can only be separated by male (compare figs 21/22 and 30/31) and female sexual characters (compare figs 24 and 25). From the other species of the *azurescens*-group, this new species is separated by shorter apicolateral tooth on sternite IX, and as further indicated in the identification key.

Habitat and collecting method: Both type specimens of *S. alexi* spec. nov. were collected in front of the hiking trail of Mt. Hamiguitan, Mindanao at elevations of around 1,000m. The female paratype was discovered before the holotype, crawling under a *Pandanus* sp. leaf that was lying on the hiking trail. The male holotype was then sifted at the same locality using a heavy-duty beetle sieve (made by bioform in Franconia, Germany). The surrounding forest vegetation consists largely of secondary rainforest with interspersed primary forest patches.

Etymology: With the choice of the species epithet '*alexi*', I dedicate this new species to my friend, the carabidologist Sir Alexander Anichtchenko (Daugavpils, Latvia), with whom I had an interesting and instructive time on Mindanao.

Stenus alexeyi spec. nov.

urn:lsid:zoobank.org:act:97857C41-EB09-4412-A843-C57C711F0310

(Figs 11, 22, 25, 31, 36)

Type specimens: ♂ holotype: two white labels 'PHILIPPINES: Mindanao, Davao Oriental, Ugwad falls (Kapuka), Caraga, 260m, 7.44N, 126.434E, 29.-30. iv.2023, leg. A. Shavrin' / 'sifting of leaf litter, humus and debris, on wet slope near waterfall' / red label '♂ – HOLOTYPE *Stenus alexeyi* spec. nov. design. Mainda 2024' (cTM); one ♀ paratype with same locality label / yellow label '♀ – PARATYPE *Stenus alexeyi* spec. nov. design. Mainda 2024' (cTM).

Description of the holotype: Measurements in mm: BL: 5.60, DE: 0.58, FBL: 2.57, EL: 0.75, EW: 0.84, HW: 1.18, PL: 0.88, PW: 0.73, SL: 0.45.

Habitus as in Fig. 11. Brachypterous, body black, shiny. Head and abdomen with indistinct microsculpture. Maxillary palpi yellow; antennae brownish yellow. Legs yellowish, femora apically indistinctly darkened. Clypeus blackish; labrum black, brownish seamed.

Head large, 1.40 times broader than elytra; median portion slightly raised, not reaching the high of inner eye margin, separated from lateral portions, nearly without punctures; lateral portions with several fine punctures; clypeus and labrum with distinct yellowish-white pubescence. Antennae slender, antennomeres IX-XI thickened.

Pronotum longer than wide, broadest in middle; sides convex towards anterior margin, concave towards posterior margin. Punctation coarse, dense and on posteromedian portion indistinctly confluent; punctures more distinctly separated on sides, interstices on sides larger than diameter of punctures; diameter of largest punctures as large as apical cross-section of antennomere III.

Elytra trapezoidal, much narrower than head, humeral angles absent, posterior margin emarginate. Punctation coarse and sparse, interstices on sides larger than diameter of punctures, denser near suture, diameter of punctures on sides as large as cross-section of antennomere II; without punctures near lateral margin, at humeral angles and over entire area of posterior angles.

Abdomen cylindrical; without paratergites or margin; regular punctation fine and sparse, interstices much larger than diameter of punctures; with short, indistinct adjacent pubescence. Tergite VII with indistinct vestigial membranous fringe.

Legs slender, metatarsi slightly longer than half as metatibiae; metatarsomere I as long as combined length of metatarsomeres II-IV; tarsomere III indistinctly and tarsomere IV distinctly bilobed.

Male. Legs simple, femora slightly thickened. Sternite VII ventrally flattened, with denser punctation and pubescence in posterior third; sternite VIII with broad, flat, blunt emargination (Fig. 31); sternite IX with short apicolateral tooth (Fig. 36); tergite X with slightly concave posterior margin. Aedeagus narrow (Fig. 22), median lobe concavely narrowed to narrowly rounded tip; parameres distinctly longer than median lobe, only with few short apical setae; with very long, narrow expulsion tube, gradually narrowed towards tip; with indistinctly visible flagellum.

Female. Legs simple. Sternite VIII with slightly protruding rounded margin. Spermatheca (Fig. 25, artefact?) sclerotized, small; spermathecal duct coiled approx. 3 times, with straight collum. Measurements of the female paratype in mm: BL: 5.20, DE: 0.58, FBL: 2.27, EL: 0.73, EW: 0.78, HW: 1.10, PL: 0.83, PW: 0.68, SL: 0.44.

Comparative notes: *Stenus alexeyi* spec. nov. is best distinguished from *S. hamiguitanensis* spec. nov. by indistinct microsclupture on head and abdomen as well as male sexual characters (compare figs 20/22 and 29/31). From *S. alexi* spec. nov., it can only be separated by male (compare figs 21/22 and 30/31) and female

sexual characters (compare figs 24 and 25). From the other species of the *azurescens*-group, this new species is separated by shorter apicolateral tooth on sternite IX, and as further indicated in the identification key.

Etymology: With the choice of the species epithet '*alexeyi*', this new species is dedicated to the Omaliinae specialist Alexey Shavrin (Daugavpils, Latvia), who discovered it on one of his collecting trips to Mindanao.

Stenus circumspector spec. nov.

urn:lsid:zoobank.org:act:E6026627-388A-4283-9132-39B673D57684

(Figs 12, 17, 27, 32, 37)

Type specimens: ♂ holotype, white label 'PHILIPPINES: Mindanao Island, Boston, Davao Oriental, in front of Logimit cave, 7°53'39"N 126°18'01"E, 440 m, running on leaf litter between stones, 17.vi.2024, leg. Mainda, D. Patalita & Anichtchenko' / red label '♂ – HOLOTYPE *Stenus circumspector* spec. nov. design. Mainda 2024' (cTM); one ♀ paratype with same locality label as holotype / yellow label '♀ – PARATYPE *Stenus circumspector* spec. nov. design. Mainda 2024' (cTM).

Description of the holotype: Measurements in mm: BL: 5.20, DE: 0.63, FBL: 2.60, EL: 0.78, EW: 0.85, HW: 1.14, PL: 0.93, PW: 0.75, SL: 0.50.

Habitus as in Fig. 12. Brachypterous, body black, shiny. Head, pronotum and abdomen with microsculpture. Maxillary palpi yellow; antennae yellow, antennomeres IX-XI darkened. Legs yellowish, femora apically indistinctly darkened. Clypeus blackish; labrum black, broadly yellowish-brown seamed.

Head large, 1.34 times broader than elytra; median portion flat, distinctly separated from lateral portions, only with few punctures; lateral portions with several fine punctures along inner eye margin; clypeus and labrum with distinct yellowish-white pubescence. Antennae slender, antennomeres IX-XI thickened.

Pronotum longer than wide, broadest in middle; sides convex towards anterior margin, distinctly concave towards posterior margin. Punctation coarse, dense and sometimes indistinctly confluent; interstices larger than diameter of punctures; diameter of largest punctures as large as apical cross-section of antennomere III.

Elytra trapezoidal, narrower than head, humeral angles absent, posterior margin emarginate. Punctation coarse and sparse, interstices on sides larger than diameter of punctures, denser near suture, diameter of punctures on sides as large as cross-section of antennomere III; without punctures near lateral margin, at humeral angles and over entire area of posterior angles.

Abdomen cylindrical; without paratergites or margin; punctation fine and sparse, interstices much larger than diameter of punctures; with short, indistinct adjacent pubescence. Tergite VII with indistinct vestigial membranous fringe.

Legs slender, metatarsi slightly longer than half as metatibiae; metatarsomere I as longer as combined length of metatarsomeres II-IV; tarsomere III indistinctly and tarsomere IV distinctly bilobed.

Male. Legs simple, femora slightly thickened. Sternite VII ventrally flattened, with denser punctation and pubescence in posterior third; sternite VIII with a wide, moderately deep pointed emargination (Fig. 32); sternite IX with strong, medium length apicolateral tooth (Fig. 37); tergite X with slightly concave posterior margin. Aedeagus bottle-shaped (Fig. 17), with spatulate tip; parameres slightly longer than median lobe; medium-length expulsion tube, narrowed towards tip; with indistinctly visible flagellum.

Female. Legs simple. Sternite VIII with slightly protruding rounded margin. Spermatheca (Fig. 27) sclerotized; spermathecal duct coiled approx. 5 times, with thickened collum. Measurements of the female paratype in mm: BL: 5.30, DE: 0.63, FBL: 2.57, EL: 0.80, EW: 0.85, HW: 1.13, PL: 0.95, PW: 0.78, SL: 0.49.

Comparative notes: *Stenus circumspector* spec. nov. can be distinguished from the probably closely related *S. cuprifulgens* spec. nov. by absence of coppery tint, denser punctation of elytra, separated median portion of frons and by less often coiled spermatheca with thicker collum (compare figs 26 and 27). From the other species of the *azurescens*-group, this new species is best distinguished as indicated in the identification key.

Habitat and collecting method: Both type specimens of *S. circumspector* spec. nov. were collected in front of the entrance of the Logimit cave near Boston in the province Davao Oriental, Mindanao. The beetles crawled around on the leaf litter - presumably in search of prey. The cave entrance is slightly lower than the surrounding landscape in a steep depression. The vegetation is dense (Fig. 40) and could possibly be the remains of a primary rainforest.

Etymology: This new species was discovered in front of the Logimit cave (Fig. 19A Anichtchenko & Medina 2024), the type locality of the first cave-dwelling ground beetle genus of the Philippines, *Kweba* Anichtchenko & Medina, 2024. Therefore, this *Stenus* species is like a guardian (lat. *circumspector*) of the entrance to the realm of the *Kweba*.

***Stenus cuprifulgens* spec. nov.**
urn:lsid:zoobank.org:act:EB025C27-9811-48B7-8B1E-B19CE101E560
(Figs 13, 26)

Type specimens: ♀ holotype: white label 'Philippines: Mindanao, San Luis, Agusan Del Sur' / red label '♀ – HOLOTYPE *Stenus cuprifulgens* spec. nov., design. Mainda 2024' (cTM).

Description of the holotype: Measurements in mm: BL: 5.25, DE: 0.57, FBL: 2.60, EL: 0.75, EW: 0.80, HW: 1.13, PL: 0.90, PW: 0.70, SL: 0.48.

Habitus as in Fig. 13. Brachypterous, body blackish-brown with coppery tint, shiny, indistinctly microsculptured. Maxillary palpi yellow; antennae brownish yellow. Legs and tarsi yellowish, femora apically darkened. Clypeus blackish; labrum brownish-black, light brown seamed.

Head large, 1.41 times broader than elytra; median portion flat, not separated from lateral portions; median portion only with few punctures, lateral portions with more punctures along inner eye margin; clypeus and labrum with distinct pubescence. Antennae robust, antennomeres IX-XI thickened.

Pronotum longer than wide, broadest in middle; sides convex towards anterior margin, concave towards posterior margin. Punctation coarse; punctures sometimes slightly confluent, interstices larger than diameter of punctures; diameter of largest punctures as large as apical cross-section of antennomere III.

Elytra trapezoidal, much narrower than head, 1.07 times as broad as long, humeral angles absent, posterior margin strongly emarginate. Punctation near suture coarse and dense, coarser and sparser on sides; without punctures near lateral margin and posterior angles.

Abdomen cylindrical; without paratergites or margin; punctation fine and sparse, interstices much larger than diameter of punctures; with short, adjacent pubescence. Tergite VII with indistinct vestigial membranous fringe.

Legs slender, metatarsi slightly longer than half as metatibiae; metatarsomere I nearly as long as combined length of metatarsomeres II-V; tarsomere III indistinctly and tarsomere IV distinctly bilobed.

Male. Unknown.

Female. Legs simple. Sternite VIII with slightly protruding rounded margin; sternite IX with strong, moderately long, inwardly curved apicolaterally tooth. Spermatheca (Fig. 26) sclerotized; spermathecal duct coiled intertwined approx. 8 times, with long, narrow collum.

Comparative notes: *Stenus cuprifulgens* spec. nov. can be distinguished from the probably closely related *S. circumspector* spec. nov. by coppery tint, sparser punctation of elytra, by having completely flat frons without separated lateral portions and by spermatheca with more coils (compare figs 26 and 27). From the other species of the *azurescens*-group, this new species is best distinguished as indicated in the identification key.

Etymology: By choosing the species epithet '*cuprifulgens*', genitive noun, (lat. *cuprum* = copper and lat. *fulgēns* = shiny) the new species is named after its shiny, coppery appearance.

3.3 Notes on two other species

***Stenus ellipticollis* L. Benick, 1929**
Stenus ellipticollis L. Benick, 1929: 249-250.

Type specimen. photo of ♀ holotype: 'Polillo, Philipp.' / 'ellipti-, collis L. Bik, Typus ♀' (FMNH).

From *S. ellipticollis*, which was formerly assigned to the *bispinus*-group (Puthz 1985) and later to the *azurescens*-group (Puthz 2013), the male is still unknown. The study of high resolution photos of the female holotype revealed, that tergite VIII has a posteromedian patch of dense shiny setae. In addition, the habitus of *S. ellipticollis* indicates a macropterous species - different to all members of the *azurescens*-group which are all brachypterous. Based on the appropriate combination of morphological characters, *S. ellipticollis* should be excluded from the *azurescens*-group.

***Stenus cupreosplendens* Bernhauer, 1926**
Stenus cupreosplendens Bernhauer, 1926: 124-125.

Type specimen: photo of ♀ holotype: 'Island, Samar, Baker' / 'cupreosplendens Bernh. Typus un.' (FMNH).

The male of this species is still unknown. Formerly, it was assigned to the *azurescens*-group (Puthz 2013). Here, however, it would be isolated with the above mentioned species, as the other representatives of the *azurescens*-group are all brachypterous. Without knowledge of the male characters, the combination of characters of this species currently does not allow assignment to a known species group, which is why the species should be removed from the *azurescens*-group.

3.4 Key to the species of the Philippine *Stenus azurescens*-group

1 Frons deeply concave, median portion completely flat or median portion flat but separated from lateral portions; more robust species **2**
- Frons less deeply concave, median portion indistinctly raised (viewed obliquely from the front!), less robust species **6**

2 Species with metallic green tint (Figs 2, 3); punctation of tergites fine and sparse; sternum IX with a narrow, long, nearly straight apicolateral tooth; ♂: unknown. Dinagat and S-Luzon (Mt. Isarog) ..... ***chlorophanus***
- Blackish species, at least with indistinct blue or coppery tint **3**

3 Punctation of pronotum and elytra more or less rugosely confluent (Fig. 1); abdomen conspicuously robust; sternum IX with long apicolateral tooth; ♂: metafemora and tibiae apically conspicuously narrowed, aedeagus pear-shaped (Fig. 14), parameres shorter than median lobe. N-Luzon (Mt. Polis) ..... ***azurescens***
- Punctation of pronotum and elytra more distinctly separated, more shiny **4**

4 Punctation of entire insect very fine and sparse, especially on the pronotum; Head large (HW:EW=1.27); ♀: spermatheca (Fig. 23); ♂: unknown. Negros ..... ***gigacephalus***
- Punctation of pronotum and elytra coarser and denser; Head larger (HW:EW=1.33-1.36) **5**

5 Median portion of frons flat but clearly separated from lateral portions; HW:EW = 1.33-1.35; punctation of pronotum confluent; punctation of elytra evenly coarse; ♂: aedeagus bottle-shaped with spatulate tip; parameres slightly longer than median lobe; medium-length expulsion tube, narrowed towards tip (Fig. 17), sternite VIII with a wide, moderately deep pointed emargination (Fig. 32). Mindanao; ♀: spermatheca (Fig. 27). (Davao Oriental: Boston) .... ***circumspector*** **spec. nov.**
- Median portion of frons completely flat, not separated from lateral portions; HW:EW = 1.36; punctation of pronotum not distinctly confluent; punctation of elytra distinctly sparse on sides; EL:EW = 0.88; entire body with indistinct coppery tint; ♀: spermatheca (Fig. 26); ♂: unknown. Mindanao (Agusan del Sur) ..... ***cuprifulgens*** **spec. nov.**

6 Elytra longer than wide, EL:EW=1.09-1.14 ..... **7**
- Elytra wider than long, EL:EW=0.85-0.93 ..... **8**

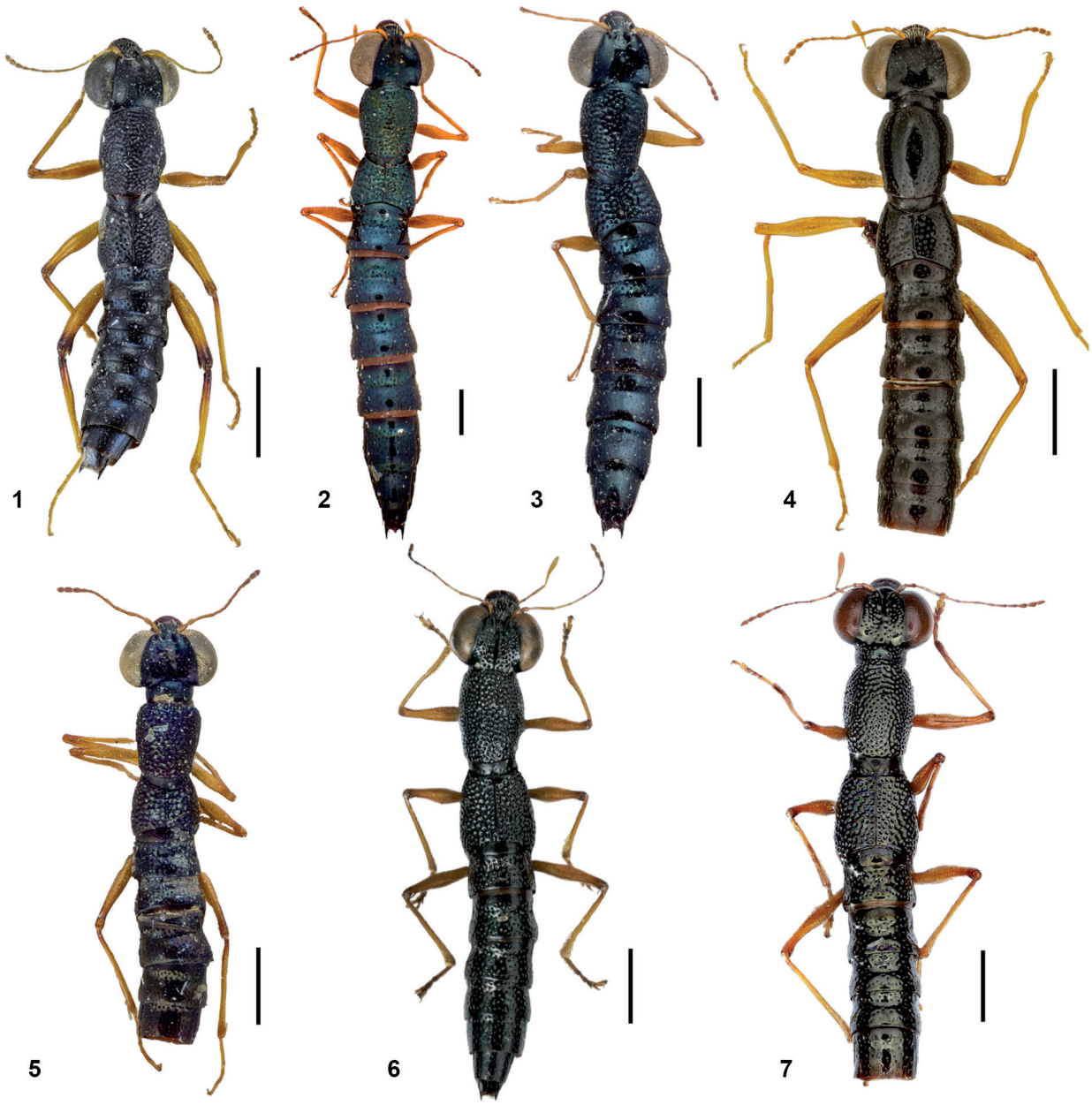
7 Pronotum very densely punctate, interstices smaller than diameter of one puncture; EL:EW=1.11-1.14; ♂: aedeagus (Fig. 19). Mindanao (Bukidnon: Malaybalay, Maramag) ..... ***angustipennis***
- Pronotum less densely punctate, interstices as wide as one puncture; EL:EW=1.09; ♂: aedeagus (Fig. 18). Mindanao (Bukidnon: Mt. Kitanglad/ Katanglad) ..... ***katangladmontis***

8 Species with metallic blue or green tint; punctation of tergites coarser and denser; sternum IX with a strong, long, slightly inwardly curved apicolateral tooth; HW:EW=1.42; EL:EW=0.84 (female holotype), HW:EW=1.35; EL:EW=0.85 (female from Mt. Makiling); ♂: aedeagus (Fig. 15). S-Luzon (Mt. Banahao & Mt. Makiling) ..... ***cupreomicans***
- Blackish species without metallic tint **9**

9 Sternum IX with an extremely long apicolateral tooth (Fig. 33); HW:E =1.40; EL:EW=0.90; ♂: aedeagus (Fig. 16). Negros . ***rolandmuelleri*** **spec. nov.**
- Sternum IX with a short apicolateral tooth (Figs 34-36) **10**

10 Head and tergites without microsculpture, shiny; ♂: aedeagus narrow; median lobe concavely narrowed to tip; parameres distinctly longer than median lobe; expulsion tube very long, narrowed just before tip (Fig. 20); sternite VIII with narrow, deep, blunt emargination (Fig. 29); ♀: unknown. Mindanao (Davao Oriental: Mt. Hamiguitan) ..... ***hamiguitanensis*** **spec. nov.**
- Head and tergites with indistinct microsculpture **11**

11 HW:EW=1.35-1.40; EL:EW=0.86-0.92; ♂: aedeagus narrow; median lobe concavely narrowed to widely rounded tip; parameres longer than median lobe, with around 5 long apical setae; medium-length expulsion tube, apical side narrowed by half, but with parallel sides (Fig. 21); sternite VIII with broad, moderately deep emargination (Fig. 30); ♀: spermatheca (Fig. 24). Mindanao (Davao Oriental: Mt. Hamiguitan) ..... ***alexi*** **spec. nov.**
- HW:EW=1.40-1.42; EL:EW=0.91; ♂: aedeagus narrow; median lobe concavely narrowed to narrowly rounded tip; parameres distinctly longer than median lobe, only with few short apical setae; a very long, narrow expulsion tube, gradually narrowed towards tip (Fig. 22); sternite VIII with broad, flat, blunt emargination (Fig. 31); ♀: spermatheca (Fig. 25). Mindanao (Davao Oriental: Ugwad Falls) ..... ***alexeyi*** **spec. nov.**



Figures 1–7. *Stenus azurescens*, syntype from Mt. Polis, Luzon **(1)**; *Stenus chlorophanus*, syntype from Dinagat, photo: FMNH **(2)**; *Stenus chlorophanus*, syntype from Mt. Isarog, Luzon, photo: FMNH **(3)**; *Stenus gigacephalus*, holotype from Negros, photo: USNM **(4)**; *Stenus cupreomicans*, syntype from Mt. Banahao, Luzon, photo: FMNH **(5)**; *Stenus angustipennis* from Bukidnon, Mindanao, photo: SMNS **(6)**; *Stenus katangladmontis* from Bukidnon, Mindanao, photo: BPBM **(7)**; scale = 1mm.

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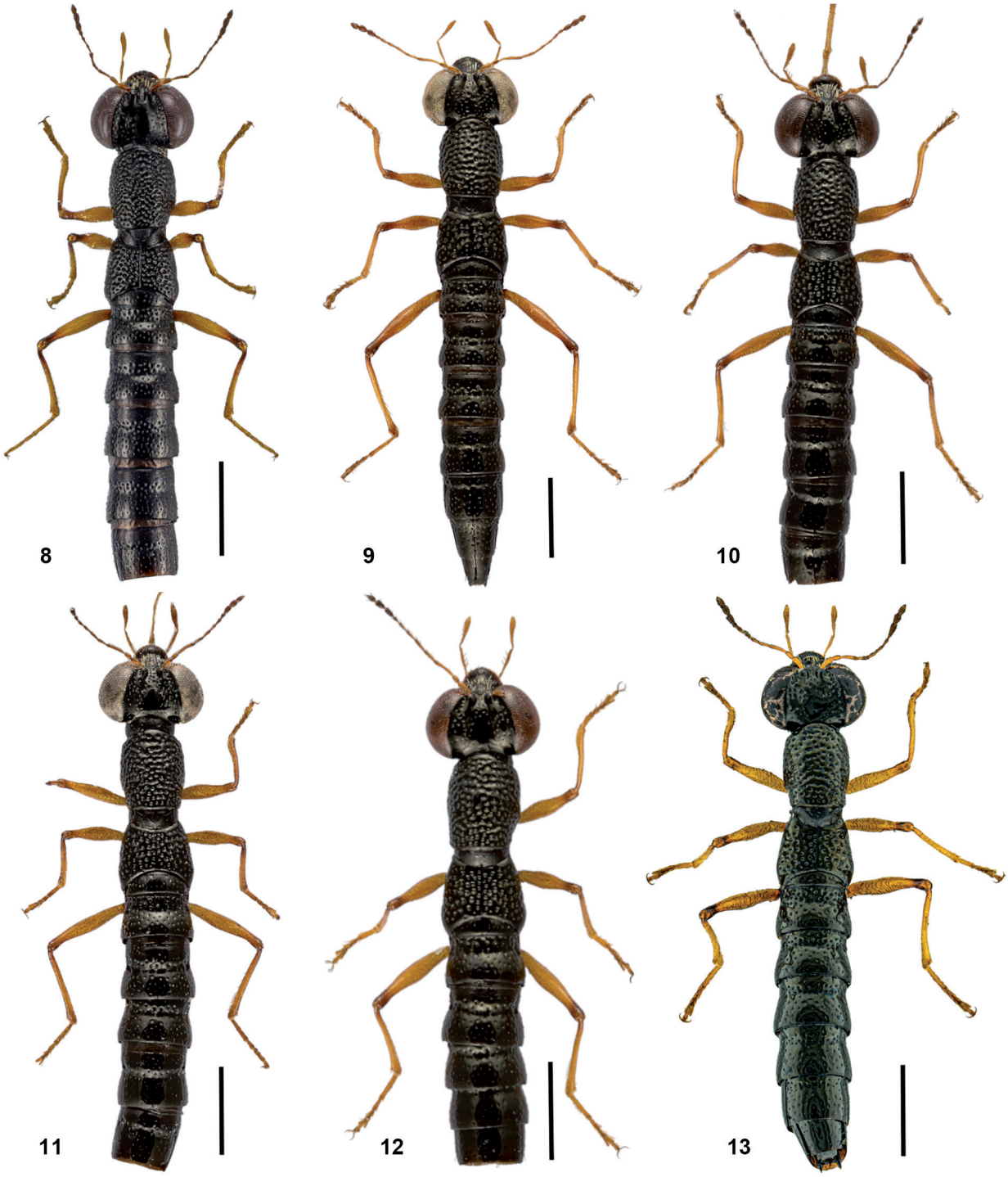
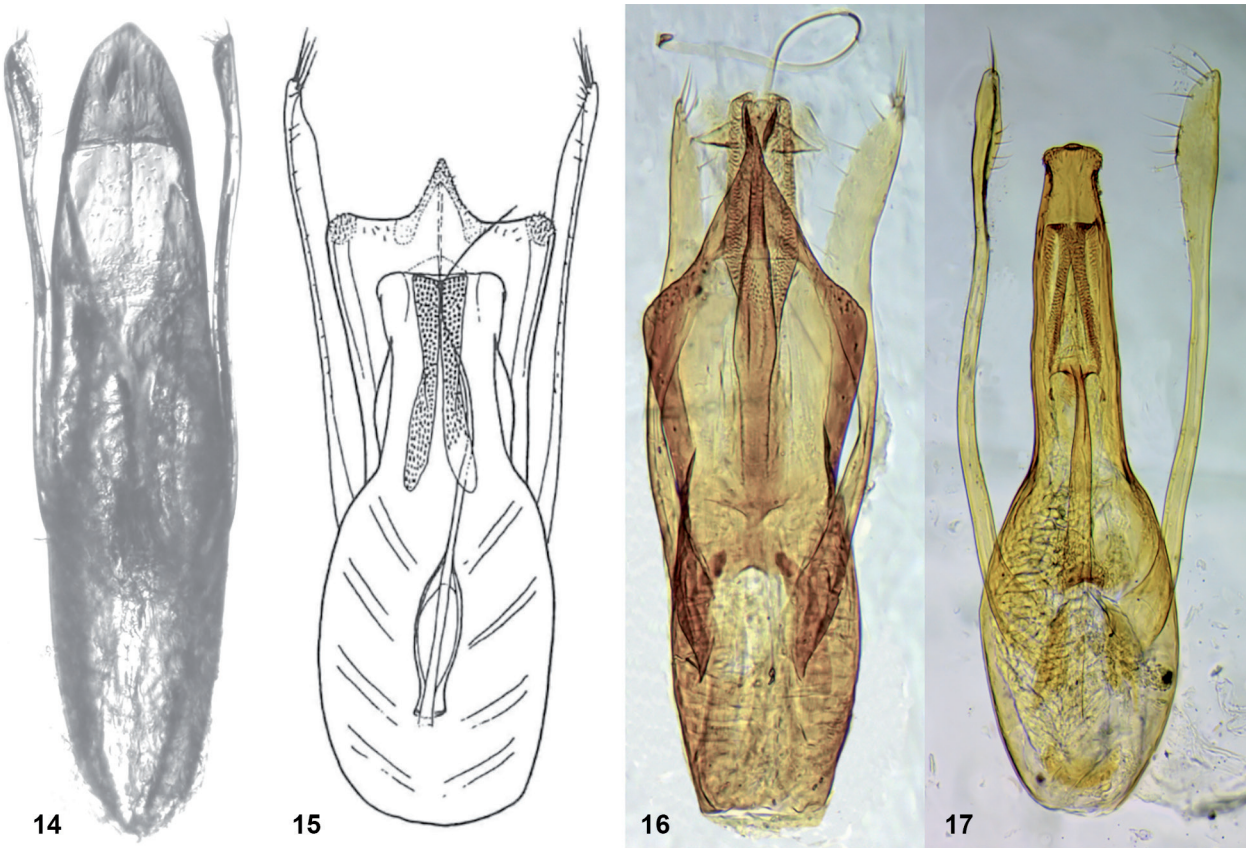


Figures 8–13. *Stenus rolandmuelleri* spec. nov., holotype from Negros **(8)**; *Stenus hamiguitanensis* spec. nov., paratype from Mt. Hamiguitan, Mindanao **(9)**; *Stenus alexi* spec. nov., holotype from Mt. Hamiguitan, Mindanao **(10)**; *Stenus alexeyi* spec. nov., holotype from Ugwad Falls, Mindanao **(11)**; *Stenus circumspector* spec. nov., holotype from Logimit cave, Mindanao **(12)**; *Stenus cuprifulgens* spec. nov. from Agusan, Mindanao **(13)**; scale = 1mm.

►**Figures 14–22.** Aedeagi of *Stenus azurescens*, Mt. Polis, Luzon **(14)**; *Stenus cupreomicans*, Mt. Makiling, Luzon, from Puthz 1998 **(15)**; *Stenus rolandmuelleri* spec. nov., holotype from Negros **(16)**; *Stenus circumspector* spec. nov., holotype from Logimit cave, Mindanao **(17)**; *Stenus katangladmontis* from Bukidnon, Mindanao, from Puthz 2013 **(18)**; *Stenus angustipennis* from Bukidnon, Mindanao, photo: SMNS **(19)**; *Stenus hamiguitanensis* spec. nov., holotype from Mt. Hamiguitan, Mindanao **(20)**; *Stenus alexi* spec. nov., holotype from Mt. Hamiguitan, Mindanao **(21)**; *Stenus alexeyi* spec. nov., holotype from Ugwad Falls, Mindanao **(22)**; without scale.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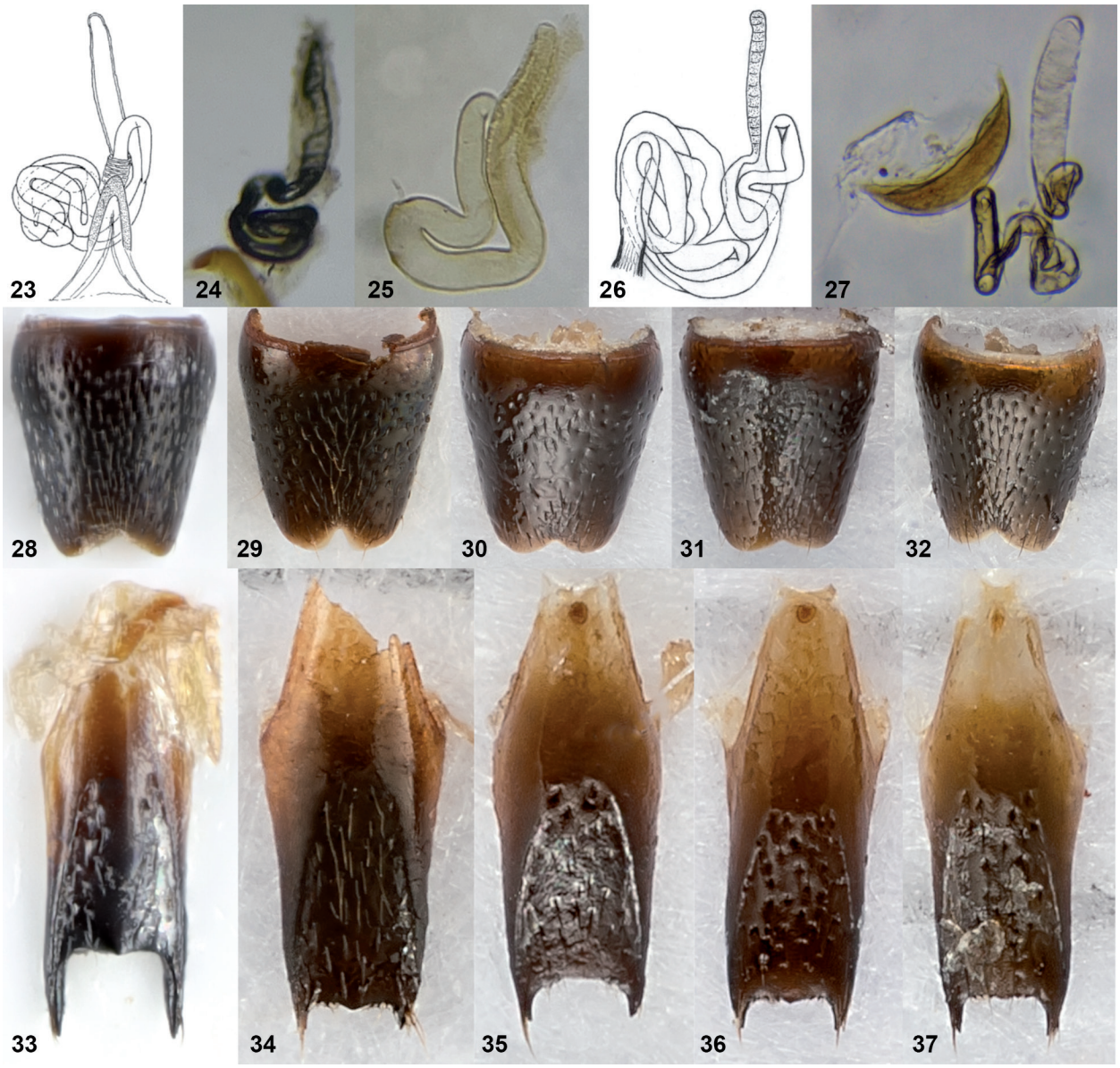

Figures 23–37. Spermathecae **(23–27)**; sternites VIII **(28–32)** and sternites IX **(33–37)** of *Stenus gigacephalus*, holotype from Negros, from Puthz 1995 **(23)**; *Stenus rolandmuelleri* spec. nov., holotype from Negros **(28, 33)**; *Stenus hamiguitanensis* spec. nov., holotype from Mt. Hamiguitan, Mindanao **(29, 34)**; *Stenus alexi* spec. nov., paratype from Mt. Hamiguitan, Mindanao **(24, 30, 34)**; *Stenus alexeyi* spec. nov., paratype from Ugwad Falls, Mindanao **(25, 31, 36)**; *Stenus cuprifulgens* spec. nov. from Agusan, Mindanao **(26)**; *Stenus circumspector* spec. nov., paratype from Logimit cave, Mindanao **(27, 32, 37)**; without scale.

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Figures 38–40. Collecting sites of *Stenus hamiguitanensis* spec. nov., Mt. Hamiguitan, Mindanao, mossy pygmy forest, 1,350 m **(38)**; *Stenus alexi* spec. nov., Mt. Hamiguitan, Mindanao, *Pandanus* leaves on the hiking trail between camps 3 and 4, 1,000 m **(39)**; *Stenus circumspector* spec. nov., vegetation in front of the entrance of the Logimit cave, the realm of *Kweba*, Boston, Mindanao, 440 m **(40)**.

Washington D. C. for the photo of the holotype of *Stenus gigacephalus*. I also want to thank Nicolai Wendlandt (Berlin, Germany) for his great help with the exemption of the habitus photos. Special thanks also to Jürgen Schmidl (bioform company, Nuremberg, Germany) for kindly providing a new robust heavy-duty version of a beetle sieve for this expedition. Two anonymous reviewers are thanked for their helpful comments on an earlier version of the manuscript. Finally, I would like to thank Peter Michalik and Lara Lopardo (Zoological Museum Greifswald, Germany) not only for photographing some of the new species described here. But also for the broad support during my time at the University of Greifswald, which enabled me to gain a professional foothold in entomology.

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