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Unveiling hidden diversity: Six new species of *Stenus* Latreille, 1797 from the Philippines (Coleoptera: Staphylinidae: Steninae)

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Abstract

Six new species of the genus *Stenus* Latreille, 1797 are described from the Philippines: *Stenus martinae* spec. nov. (Mindanao, Samar), *Stenus bivestis* spec. nov. (Mindanao), *Stenus pseudofractophallus* spec. nov. (Mindanao), *Stenus uwei* spec. nov. (Mindanao: Mt. Hamiguitan), *Stenus torrenticola* spec. nov. (Mindanao: Mt. Hamiguitan) and *Stenus pumicatus* spec. nov. (Mindanao: Mt. Candalaga). New distribution data and a new island record are published for the Philippine species *Stenus nobilis* Bernhauer, 1926.

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

1 Introduction

The Staphylinid genus *Stenus* Latreille, 1797 is potentially the largest genus in the entire animal kingdom. The recent synonymisation of *Dianous* Leach, 1819 with *Stenus* increases the total number of Philippine *Stenus* species to 108 (+6 new species), including the five Philippine '*Dianous*' species of group I (Puthz 2025).

This number seems modest at first, considering the remarkable species richness of the genus throughout the Oriental region (Puthz 2013) and the Philippines' status as a biodiversity hotspot.

Some of the new species described below were discovered during a research stay on the island of Mindanao, which was made possible by the Davao Oriental State University in Mati City. Thanks to the generous invitation of the late Annalyn A. Cabras, further insights into the apparently highly diverse *Stenus* fauna of the island of Mindanao were gained. In particular, the diversity of *Stenus* living in the leaf litter of tropical rain forests appears to be higher than previously assumed. As already shown by Mainda (2024) for the endemic *azurescens*-group, this also applies to the second micropterous species group of the Philippines: the *heterocerus*-group (Mainda 2020). The newly collected material reveals, that such species have a rather small distribution area and can only be reliably identified on male sexual characters. In addition, these species illustrate the Philippines' great responsibility for preserving the biodiversity of our planet, which is only possible through nature conservation and species knowledge.

2 Material and methods

Material: The material mentioned below is deposited in the following collections: **cTM** – private collection Tobias Mainda, Greifswald, Germany; **cVP** – private collection Volker Puthz, Schlitz, Germany (deposited in **SMNS** – State Natural History Museum Stuttgart, Germany); **PNM** – National Museum of the Philippines, Manila, Philippines.

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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: *Stenus bivestis* spec. nov and *Stenus pseudofractophallus* 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; all other species – Touptek microscope camera (ToupCam 20MP 1" Sony Exmor CMOS Sensor) attached to the Euromex DZ 1105 with two SN-1 LED segments for illumination. The images of the aedeagi and spermatheca were obtained using a Touptek microscope camera (ToupCam 14MP) attached to the Euromex BB.1153.PLI. Image stacks were captured with ToupView Lite (MacOS), processed using Zerene Stacker and edited with GIMP 3.0.4 software.

The following acronyms are used: **BL** – length of body (from anterior edge of eyes); **DE** – distance between eyes (in middle of eye length); **EL** – maximal length of elytra; **EW** – maximal width of elytra; **FBL** – length of forebody (from anterior edge of eyes to posterior margin of elytra); **HW** – head width; **PL** – pronotal length; **PW** – pronotal width; **SL** – sutural length of elytra.

3 New records of described species

***Stenus nobilis* Bernhauer, 1926**
Stenus nobilis Bernhauer, 1926: 130-131.
(Figs 1, 4, 7, 10–12)

Specimens studied: Leyte Island: 1 ♂: two white labels 'Plains of NE Leyte Is., P.I., Nov '44-Jan '45, Darlington' / 'Stenus nobilis, Bh., det. V. Puthz 1977' (cTM); Mindanao Island: 4 ♂ / 3 ♀: white label 'PHILIPPINES: Mindanao Island, Davao Oriental, Cateel, Aliwagwag Falls, 60m, 7°44'23"N 126°18'07"E, shore on stones and between plants, 15.vi.2024, leg. T. Mainda'; 1 ♀: white label 'PHILIPPINES: Mindanao Island, Davao Oriental, Cateel, Aliwagwag Falls, 70m, 7°44'23"N 126°18'07"E, overflowing limescale deposits, 16.vi.2024, leg. T. Mainda'; 1 ♀: two white labels 'PHILIPPINES: Mindanao, Davao Oriental, Aliwagwag falls, Cateel R., 7.740790, 126.301046, 200m, 4.-7.v.2023, leg. A. Shavrin' / 'sifted of wet leaf litter in secondary mixed forest'; 1 ♀: white label 'PHILIPPINES: Mindanao, South Cotabato, T'Boli, Mt. Mélébingoy, vi 2023, leg. local collector'; 1 ♂: 'PHILIPPINES: Mindanao Island, Davao Oriental, Caraga, vii.2023, leg. Milton Medina'; 1 ♂: white label 'PHILIPPINES: Mindanao, Davao del Sur, Kapatagan, ii.2025, leg. local collector'; Samar Island: 2 ♀: white label 'PHILIPPINES: Samar, North. Samar, Lope de Vegas, vi.2023, leg. local collector'. All mentioned specimens from Mindanao and Samar with additional white label '*Stenus nobilis* Bernhauer, 1926, det. T. Mainda 2025' and in cTM.

Note on distribution: This species was described from Mindanao (Bernhauer 1926). L. Benick (1929) reported specimens from the islands Leyte, Mindoro and Siargao. Until now, *S. nobilis* was not known from Samar Island, although its occurrence seemed possible. An occurrence on Luzon and other islands is presumable, if the specimens reported by L. Benick (1929) from Mindoro do indeed belong to this species.

Habitat and collecting method: At the Aliwagwag Falls, the species was collected from large rocks and ferns alongside the stream (Fig. 37).

4 Description of new species

***Stenus martinae* spec. nov.**
urn:lsid:zoobank.org:act:9F3A952A-2A65-41C9-ABCE-66C019DDEACB
(Figs 2, 5, 6, 8, 13)

Type specimens: Holotype ♂: white label 'PHILIPPINES: Samar, North Samar, Lope de Vegas, vi.2023, leg. local collector' / red label '♂ – HOLOTYPE *Stenus martinae* nov. sp., design. Mainda 2025' (cTM); **3 Paratypes**: 1 ♂: with same locality label as the holotype, date: ix.2023 (PNM); 1 ♂: white label 'PHILIPPINES: Mindanao, Bukidnon, Kibulag, iii.2025, leg, local collector' (cTM); 1 ♀: white label 'PHILIPPINES: Mindanao, Bukidnon, Intavas, iii.2025, leg, local collector' (cTM); all paratypes with yellow label '♂ (or) ♀ – PARATYPE *Stenus martinae* nov. sp., design. Mainda 2025'.

Description of the holotype: Measurements in mm: BL: 6.60, DE: 0.72, FBL: 2.85, EL: 1.20, EW: 1.45, HW: 1.48, PL: 1.15, PW: 0.95, SL: 1.00.

Habitus as in Fig. 2. Macropterous. Body black, shiny; elytra with large, longitudinal, orange-yellowish spot; maxillary palpi orange-yellowish; antennae orange-brownish; legs orange-yellowish, femora apically and tarsi slightly darkened; clypeus black; labrum black, brownish seamed. Head without, pronotum and elytra

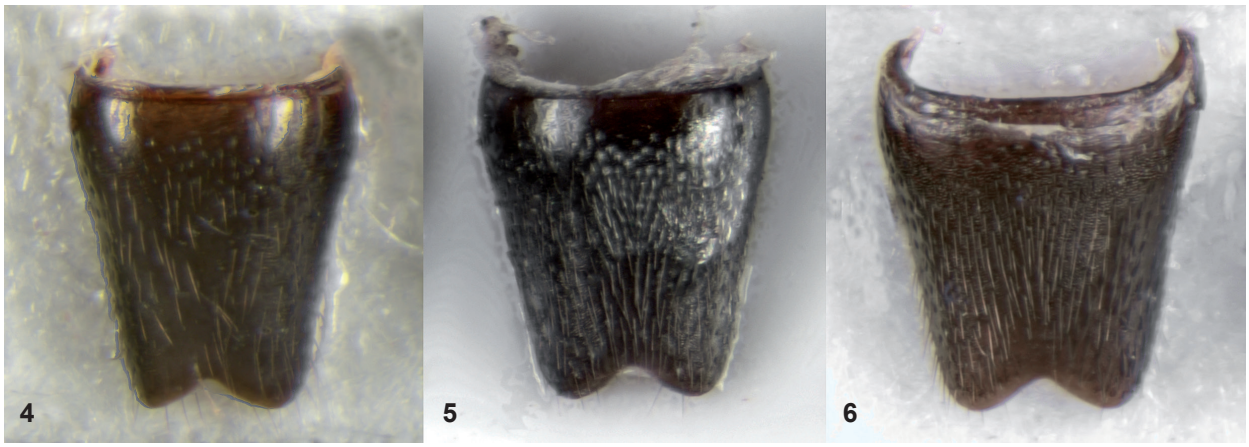
with very indistinct, abdomen (tergites) with more distinct transverse microsculpture.

Head large, 1.02 times broader than elytra; median portion moderately broad, deeply incised, separated from lateral portions; central section of median portion smooth without punctures; anterior and posterior section and lateral portions with sparse punctation; clypeus and labrum with distinct, short, yellowish pubescence. Antennae slender, antennomeres IX-XI thickened. Paraglossae oval.

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

Elytra 1.21 times broader than long, nearly as broad as head; humeral angles distinct. Punctation coarse and

Figures 1–3. Habitus of *Stenus nobilis*, Samar **(1)**; *Stenus martinae* spec. nov., holotype, Samar **(2)**; *Stenus banghaasius*, Mt. Candalaga, Mindanao **(3)**; scale = 1mm.



Figures 4–6. Sternite VIII of *Stenus nobilis*, Aliwagwag, Mindanao **(4)**; *Stenus martinae* spec. nov., Samar **(5)**; Mindanao **(6)**; without scale.

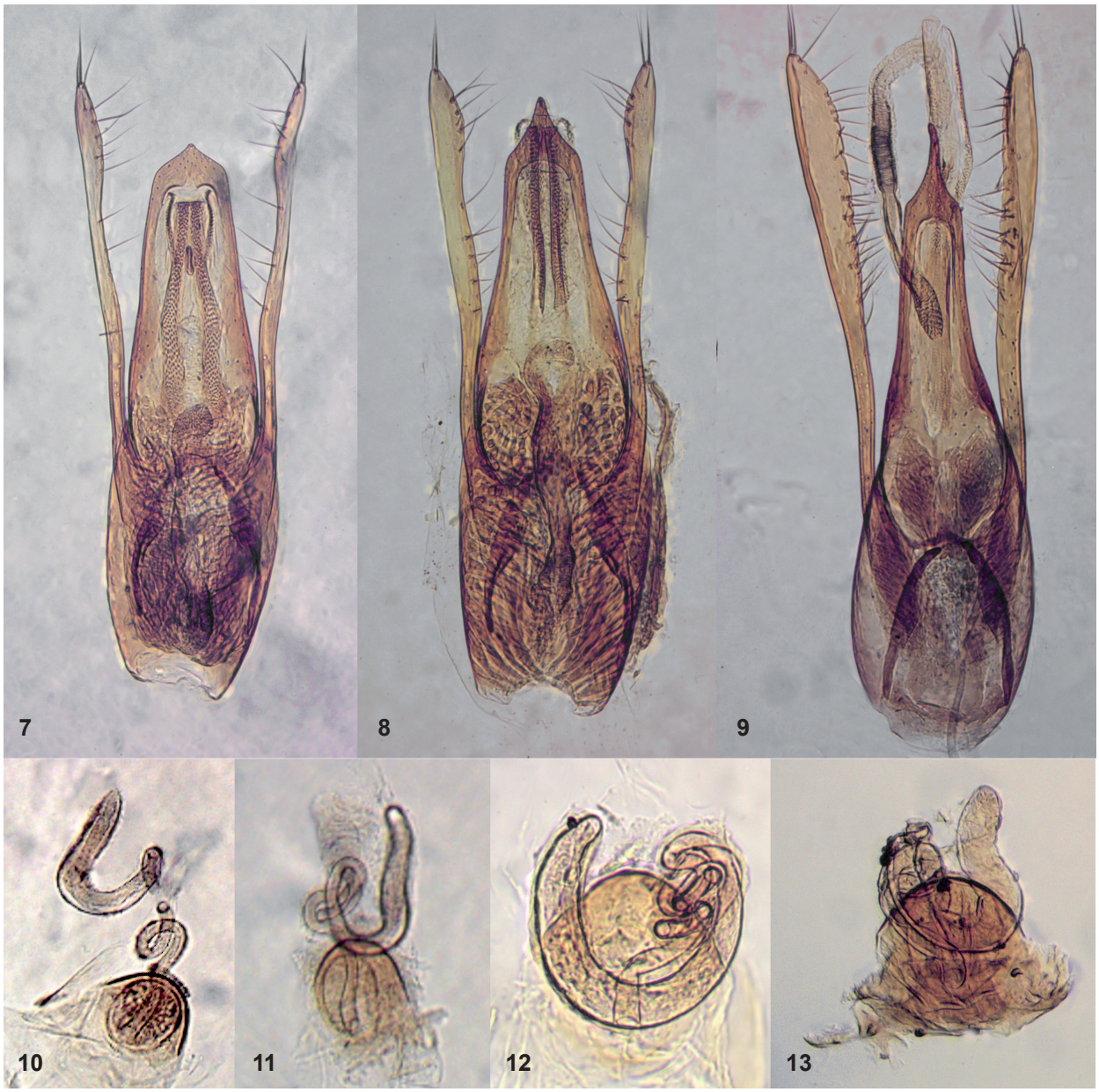
sparse, indistinctly confluent; diameter of punctures as large as on pronotum.

Abdomen cylindrical; very thin marginated; basal impressions of tergites III-V deep; punctation fine and sparse; interstices much larger than diameter of punctures; set with short, indistinct, adjacent pubescence. Tergite VII with distinct vestigial membranous fringe.

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

Male: Legs simple. Sternite VII with dense, thick, golden pubescence in middle of posterior half; sternite VIII with flat, blunt emargination (Figs. 5–6); sternite IX with distinct apicolateral teeth; tergite X with convex posterior margin. Aedeagus (Fig. 8), with median lobe concavely narrowed into sagittate apex; parameres broad, longer than median lobe, with three apical and around 15 inner setae.

Female: Legs simple. Sternites VI and VII with golden pubescence in middle of posterior half; sternite VIII protruding with obtuse angle towards posterior margin, middle of posterior margin slightly rounded. Valvifera apicolaterally acute. Spermatheca compact (Fig. 13), spermathecal duct short.



Figures 7–13. Aedeagi **(7–9)**; spermatheca **(10–13)** of *Stenus nobilis*, Aliwagwag, Mindanao **(7)**, Samar **(10–11)**, Aliwagwag, Mindanao **(12)**; *Stenus martinae* spec. nov., holotype, Samar **(8)**, paratype, Bukidnon, Mindanao **(13)**; *Stenus banghaasius*, Mt. Candalaga, Mindanao, endophallus everted **(9)**; without scale.

Comparative notes: This new species belongs to the group of *Stenus gestroi* Fauvel, 1895 (see Puthz 2011 for group definition). Within this group, *S. martinae* spec. nov. is most closely related to some Philippine species with spotted elytra. From *Stenus nobilis* Bernhauer, 1926 (Fig. 1), it is separated by longitudinal elytral spot, slightly wider head, slightly finer punctation on the tergites, but easily by the aedeagus: median lobe with longer pointed apex and broader parameres (compare Figs 7 and 8). Females may be distinguished from *S. nobilis* by compact instead of long spermathecal duct (compare Figs 10–12 and 13). It can be distinguished from *Stenus banghaasius* Puthz, 2025 (Fig. 3; = nom. nov. for *Stenus banghaasi* L. Benick, 1929; see Puthz 2025) by absence of transverse rugose punctation on the elytra, larger elytra marking and the aedeagus (compare Figs 8 and 9). *Stenus martinae* spec. nov. can be separated from *Stenus meyi* Puthz, 2013 (Negros Island) by larger elytral spot and the thicker apex of the median lobe of the aedeagus. From *Stenus circumflexus* Fauvel, 1895 (China, Myanmar, Thailand), with a similar aedeagus (Fig. 59, Puthz 1969), it is directly separated by shinier body and smaller elytra spots. From all other group members is can be distinguished by the combination of the characters described above.

Distribution: So far, the species is only known from the Philippine islands Samar and Mindanao.

Etymology: With the choice of the species epithet '*martinae*' (genitive), I warmly dedicate this new species to my beloved mother Martina Mainda. She encouraged my passion for collecting from an early age and tolerated all kinds of animals in the house and even on the table. Through her love of plants, she taught me to appreciate nature in its entire beauty and ultimately enabled me to become fascinated by beetles.

***Stenus bivestis* spec. nov.**
urn:lsid:zoobank.org:act:EB8DBD7D-456A-4F51-BB2B-2A72286C986A
(Figs 14, 20, 30, 36)

Type specimens: Holotype ♂: white label 'PHILIPPINES: Mindanao, Wao, Lanao del Sur, xii.2023, leg. local collector' / red label '♂ – HOLOTYPE *Stenus bivestis* nov. sp., design. Mainda 2025' (cTM); **8 Paratypes**: 1 ♂ with two white labels 'Philippines: Mindanao Isl., Barangay Baganihan, Marilog Destrict (sic.!), Eagles Ridge, 7°45'N 125°23'E, 26.-28.03.2018, Secondary broad-leaved forest' / 'sifted from wet litter near small rocks, leg. A. Shavrin' (cTM); 2 ♂: two white labels 'Philippines: Mindanao Isl., Barangay Baganihan, Marilog Destrict (sic.!), Epol River, waterfall "Epol Falls", 7°27'13"N 125°14'15"E, 27.03.2018' / 'sifted from very wet litter and debris between stones near the waterfall, leg. A. Shavrin' (cTM, cVP); 1 ♂ / 2 ♀ white label 'PHILIPPINES: Mindanao, Davao Prov., Mt. Talomo (Apo Mts.), Catigan, 800-100m (sic.!), 7°01'21.0"N 125°22'30.5"E, leg. A. V. Shavrin, 29.04.-01.05.2019' (cTM, PNM); 1 ♂: white label 'PHILIPPINES: Mindanao Island, Davao de Oro, Mt. Candalaga, 1196m, 7°20'10.0"N 126°11'02.0"E, river in secondary forest, 10.vi.2024, leg. D. & J. Patalita' (cTM); 1 ♀: white label 'PHILIPPINES: Mindanao, Dominorog, Bukidnon, 02.2020, leg. local collector' (cTM). All paratypes with yellow label '♂ (or) ♀ – PARATYPE *Stenus bivestis* nov. sp., design. Mainda 2025'.

Description of the holotype: Measurements in mm: BL: 6.40, DE: 0.63, FBL: 2.70, EL: 1.28, EW: 1.30, HW: 1.38, PL: 1.05, PW: 0.93, SL: 0.90.

Habitus as in Fig. 14. Macropterous. Body black, shiny; maxillary palpi yellowish; antennae orange-brownish, antennomeres IX-XI darkened; legs yellowish, femora apically and tarsi darkened; clypeus black; labrum black, orange-brownish seamed. With indistinct, transverse microsculpture.

Head large, slightly broader than elytra; median portion moderately broad, indistinctly raised, distinctly separated from lateral portions; anterior and posterior section of median portion and central section of lateral portions with punctures; clypeus and labrum with distinct short goldish pubescence. Antennae slender, antennomeres IX-XI thickened. Paraglossae oval.

Pronotum longer than wide, broadest in anterior third; sides convex towards anterior margin, concave towards posterior margin. Punctation coarse, dense and sometimes indistinctly confluent; interstices mostly smaller than diameter of punctures; diameter of largest punctures as large as median cross-section of antennomere I.

Elytra slightly broader than long; humeral angles distinct. Punctation coarse and sparse, indistinctly transversely confluent; diameter of punctures as large as median cross section of antennomere III; fewer punctures at lateral margins; without punctures at humeral angles.

Abdomen cylindrical; with very thin paratergites; punctation fine and sparse; interstices much larger than diameter of punctures; with short, thin, indistinct adjacent pubescence. Tergite VII with distinct vestigial membranous fringe.

Legs slender; metatarsi longer than half of metatibiae; metatarsomere I as long as combined length of metatarsomeres II-IV; tarsomere IV deeply bilobed.

Male: Legs simple. Sternite VII with dense, long, golden pubescence in middle; very indistinctly emarginate at posterior margin; sternite VIII with

obtuse emargination at posterior margin (Fig. 30); sternite IX with distinct apicolateral teeth; tergite X with convex posterior margin. Aedeagus narrow (Fig. 20), median lobe with broadly rounded apex; parameres distinctly longer than median lobe, with three long apical and ten to twelve inner setae; with small, triangular expulsion-hook.

Variation: A male from Epol Falls and a female from Dominorog have small but distinct dark orange elytral spots.

Female: Legs simple. Sternite VII with patch of goldish pubescence in middle of posterior third; sternite VIII protruding with obtuse angle towards posterior margin, middle of posterior margin slightly rounded. Valvifera apicolaterally acute. Spermatheca (Fig. 36), spermathecal duct sigmoid.

Comparative notes: This new species belongs to the *gestroi*-group and is mostly reminiscent of *Stenus pernobilis* Puthz, 1998 from Sulawesi. From this species, *S. bivestis* spec. nov. can be separated by the larger size, coarser and sparser punctation of the tergites. Moreover, it can easily be separated by the broader rounded apex of the median lobe of the aedeagus and the distinct triangular expulsion-hook and longer parameres (compare Figs 20 and 21). The new species can be distinguished from *Stenus boettcheri* L. Benick, 1929 (Fig. 15), one of two Philippine species of the *gestroi*-group with uniformly blackish elytra, by the longer elytra, broader median portion of the head, coarser and sparser punctation of the tergites, and by an aedeagus without capitate apex of the median lobe (compare Figs 20 and 22). The new species is separated from the second uniform Philippine species, *Stenus patruelis* L. Benick, 1929 (probably a subspecies of *S. gestroi* or even a synonym, Puthz 2011) by the more rugose punctation and larger interstices of the pronotum and the elytra, coarser and sparser punctation of the tergites, and by an aedeagus without narrow elongated apex (compare Fig. 23). It is separated from all other species of the *gestroi*-group by the male sexual characters.

Distribution: So far, the species is only known from Mindanao Island.

Habitat and collecting method: Paratypes of this new species were collected near streams and sieved from moist leaf litter, for example at the Epol Waterfalls (Epol = Everlasting Power of Love) in the Marilog district. I was unsuccessful in my attempts to collect more specimens of the species at this locality in 2024, but was able to photograph the habitat (Fig. 38).

Etymology: The species epithet '*bivestis* (lat. *bi-* + lat. *vestis* = the one with two dresses) refers to the elytra of the new species, which can be with or without orange spots.

***Stenus pseudofractophallus* spec. nov.**
urn:lsid:zoobank.org:act:BCDF6F08-1E59-4686-AE41-36EAA06B4B02
(Figs 16, 27, 28, 31, 35)

Type specimens: Holotype ♂: white label 'PHILIPPINES: Mindanao, Sandayong, Zamboanga Del Norte, leg. local collector, Nov. 2019' / red label '♂ – HOLOTYPE *Stenus pseudofractophallus* nov. sp., design. Mainda 2025' (cTM); **16 Paratypes**: 7 ♂ / 9 ♀ with same locality label as the holotype but different dates: 1 ♂ (Oct.2019), 2 ♂ / 2 ♀ (Nov.2019), 2 ♀ (Dec.2019), 1 ♂ (06.2020), 1 ♂ / 3 ♀ (07.2020), 1 ♂ (08.2020), 1 ♀ (11.2020), 1 ♂ (01.2021) and 1 ♀ (10.V.2021). All paratypes with yellow label '♂ (or) ♀ – PARATYPE *Stenus pseudofractophallus* nov. sp., design. Mainda 2025' (cTM, cVP and PNM).

Description of the holotype: Measurements in mm: BL: 5.00, DE: 0.53, FBL: 2.20, EL: 0.80, EW: 1.00, HW: 1.18, PL: 0.88, PW: 0.84, SL: 0.53.

Habitus as in Fig. 16. Micropterous. Body black, shiny; maxillary palpi orange yellowish; antennae orange-brownish, antennomeres IX-XI darkened; legs yellowish, femora apically darkened; clypeus black; labrum orange-brownish, yellowish seamed. With indistinct microsculpture.

Head large; 1.18 times broader than elytra; median portion moderately broad, raised, distinctly separated from lateral portions; median and lateral portions with coarse punctures; diameter of punctures as large as apical cross section of antennomere III; clypeus and labrum with distinct white pubescence. Antennae slender; antennomeres IX-XI thickened. Paraglossae coniform.

Pronotum longer than wide, broadest in middle; sides convex towards anterior margin, distinctly concave towards posterior margin. Punctation coarse, dense, always separated; interstices mostly smaller than diameter of punctures; diameter of largest punctures as large as median cross-section of antennomere I.

Elytra trapezoidal; 1.25 times broader than long, narrower than head; humeral angles absent; posterior margin emarginate. Punctation coarse and dense as on pronotum; without punctures at humeral angles.

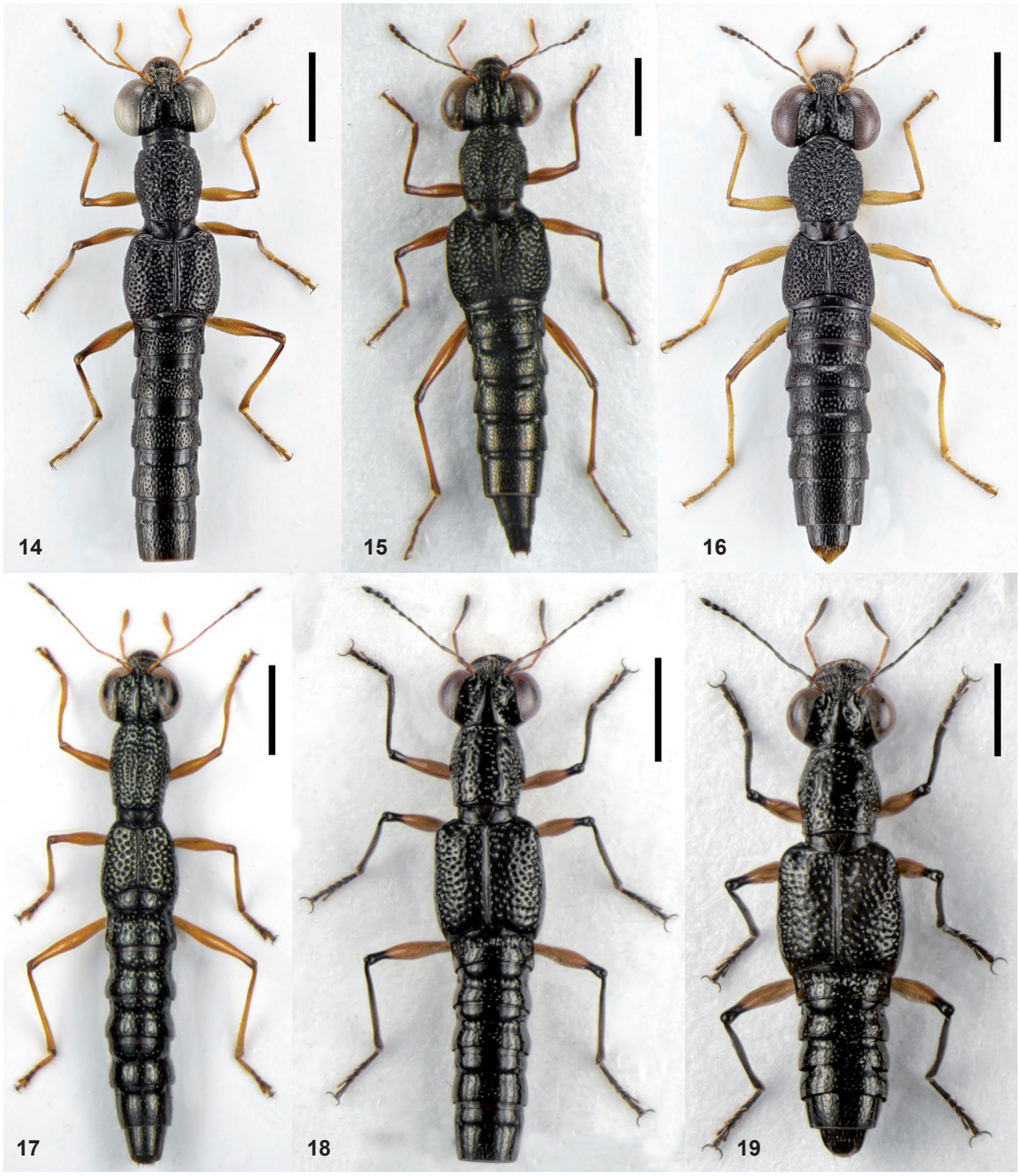
Abdomen cylindrical; with extremely thin lateral margin; punctation fine and sparse; interstices much larger than diameter of punctures; with very short, thin indistinct, adjacent pubescence. Tergite VII with indistinct vestigial membranous fringe.

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

Male: Legs simple, femora dilated. Sternites IV-VII ventrally flattened, with sparse, long pubescence in

middle; sternite VIII with deep, triangular emargination at posterior margin (Fig. 31); sternite IX with small apicolateral teeth; tergite X with convex posterior margin. Aedeagus peculiar (Fig. 27, 28), median lobe absent (!), apically opened; when everted, endophallus reminiscent of a slender narrow median lobe (Fig. 27), with distinct triangular expulsion clasp; parameres very long, with around five short apical and few long inner setae.

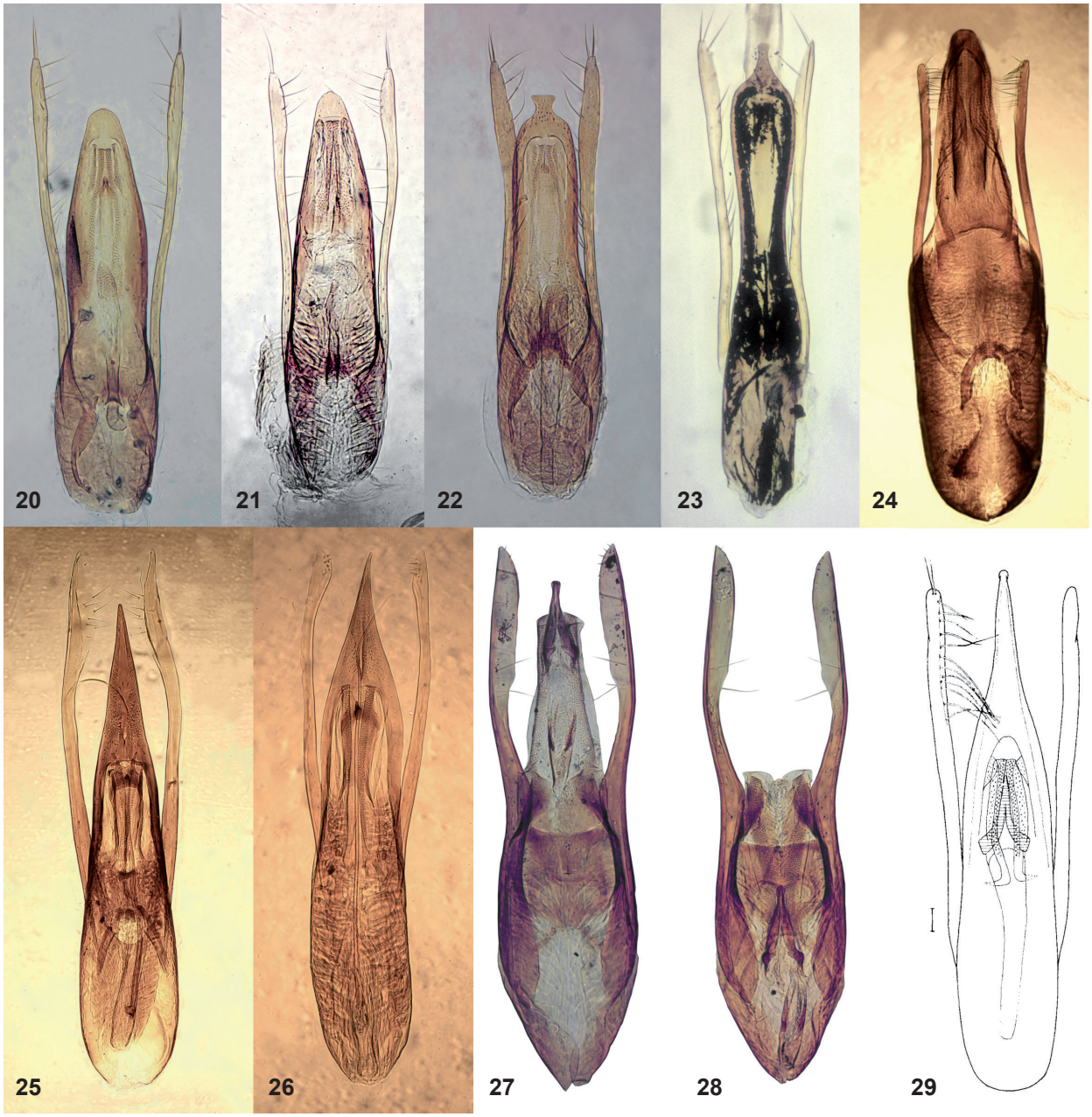
Female: Legs simple, femora thickened. Sternite VII ventrally indistinctly flattened, with sparse long pubescence in middle of posterior third; sternite VIII



Figures 14–19. Habitus of *Stenus bivestis* spec. nov., male paratype, Mt. Talomo, Mindanao **(14)**; *Stenus boettcheri*, Dominorog, Mindanao **(15)**; *Stenus pseudofractophallus* spec. nov., female paratype **(16)**; *Stenus uwei* spec. nov., female paratype **(17)**; *Stenus torrenticola* spec. nov., holotype **(18)**; *Stenus pumicatus* spec. nov., female paratype **(19)**; scale = 1mm.

protruding with obtuse angle towards posterior margin. Valvifera apicolaterally acute. Spermatheca (Fig. 35), spermathecal duct arcuate.

Comparative notes: This new species is closely related to the *gestroi*-group and the group of *Stenus guttalis* Fauvel, 1895 (see Puthz 2011 for group definitions). However, species of the *guttalis*-group have oval paraglossae and males have preapical metatibial spurs, which is not the case for the new species. Therefore, the species could also belong to the *gestroi*-group (no preapical metatibial spurs), but the coniform paraglossae and internal structure of the peculiar aedeagus and the shape of the spermatheca rather contradicts this. A revision of these two species groups would therefore be appropriate. Within both groups, the new species is most similar to *Stenus sandakanensis* Bernhauer, 1926, a micropterous species from Borneo (Sabah). From this species, *S. pseudofractophallus* spec. nov. can be separated by the sparser punctured head and by the peculiar aedeagus (compare Figs 27, 28 and 29).



Figures 20–29. Aedeagi of *Stenus bivestis* spec. nov., Mt. Talomo, Mindanao **(20)**; *Stenus pernobilis*, N Sulawesi **(21)**; *Stenus boettcheri*, Dominorog, Mindanao **(22)**; *Stenus patruelis*, Palawan **(23)**; *Stenus pumicatus* spec. nov., holotype **(24)**; *Stenus uwei* spec. nov. **(25)**; *Stenus ernstjuengeri* **(26)**; *Stenus pseudofractophallus* spec. nov., endophallus everted **(27)**, not everted **(28)**; *Stenus sandakanensis,* from Puthz (1973) **(29)**; without scale.

From all other Oriental *Stenus* species, it is separated by its unique aedeagus and the character combination described above.

Distribution: So far, the new species is only known from the Zamboanga Peninsula on Mindanao.

Etymology: The species epithet '*pseudofractophallus*' (gr. *pseudo-* + lat. *fracto* = seemingly broken and lat. *phallus* from gr. *phallós* = penis) refers to the aedeagus of the new species, which at first glance looks as if the median lobe has broken off. The grand master of Stenine taxonomy, Volker Puthz, joked during a visit to him about my unsteady hand when he saw the first dissected aedeagus of this species, as he assumed that I had broken off the median lobe during dissection. Prepared for this, I gave him an unmounted male of the species which he genitalised on his own. Afterwards we both laughed heartily and were once again delighted at the variety of forms within the genus *Stenus*, where there are always surprises to be discovered!

Stenus uwei spec. nov.

urn:lsid:zoobank.org:act:D2AABF18-1DF8-4238-B287-32B1573419C9

(Figs 17, 25, 32, 34)

Type specimens: Holotype ♂: white label 'PHILIPPINES: Mindanao Island, San Isidro, Davao Oriental, Mt. Hamiguitan, trail Stampa – Camp 4, 600-900m, on leaf litter in secondary forest, 23.v.2024, leg. Mainda, Patalita, Anichtchenko & Medina' / red label '♂ – HOLOTYPE *Stenus uwei* nov. sp., design. Mainda 2025' (cTM); **14 Paratypes**: 2 ♂ / 5 ♀: with same locality label as the holotype (cTM, cVP, PNM); 2 ♂: white label 'PHILIPPINES: Mindanao Island, San Isidro, Davao Oriental, Mt. Hamiguitan, 630m, 6°43'45"N 126°9'21"E, Putting Bato, 27.v.2024, leg. D. & J. Patalita' (cTM, PNM); 1 ♀: white label 'PHILIPPINES: Mindanao Island, San Isidro, Davao Oriental, Mt. Hamiguitan, 670m, 6°43'41"N 126°9'20"E, montane dipterocarp forest, 27.v.2024, leg. D. Patalita' (cTM); 1 ♀: white label 'PHILIPPINES: Mindanao Island, San Isidro, Davao Oriental, Mt. Hamiguitan, 1280m, 6°42'38"N 126°11'26"E, mossy forest, on leaf litter, trail to Tinagong Dagat, 25.v.2024, leg. D. Patalita' (cTM); 2 ♀: white label 'PHILIPPINES: Mindanao Island, San Isidro, Davao Oriental, Mt. Hamiguitan, 630m, 6°43'47"N 126°9'22"E, Putting Bato, 27.v.2024, leg. Mainda & Anichtchenko' (cTM); 1 ♀: two white labels (misidentified paratype of *Stenus praedator* Mainda, 2020) 'Philippines: Mindanao Isl., Mount Hamiguitan Range Wildlife Sanctuary, 6°43'48.0"N 126°08'24.0"E, 500m, 30.III-2.IV.2018' / 'sifted from wet litter and debris near stream, leg. A. Shavrin' / yellow label '♀ – PARATYPUS, *Stenus praedator* spec. nov., design. Mainda 2020' (cTM). All paratypes with additional yellow label '♂ (or) ♀ – PARATYPE *Stenus uwei* nov. sp., design. Mainda 2025'.

Description of the holotype: Measurements in mm: BL: 7.40, DE: 0.54, FBL: 4.20, EL: 1.18, EW: 1.15, HW: 1.21, PL: 1.28, PW: 0.88, SL: 0.80, antennomere IX: 0.16, antennomere X: 0.21, antennomere XI: 0.13.

Habitus as in Fig. 17. Micropterous. Body black, very shiny; maxillary palpi, antennae and legs yellowish; labrum blackish, brownish seamed. Without microsculpture.

Head as broad as elytra; median portion moderately broad, raised, completely shiny except tiny puncture in centre; distinctly separated from lateral portions by series of punctures; lateral portions with few punctures; diameter of punctures very small, smaller than apical cross section of antennomere III; with indistinct short pubescence; clypeus and labrum with long pubescence. Antennae long and slender; antennomere X 1.7 times as long as antennomere XI and 1.3 times as long as antennomere IX.

Pronotum 1.45 times long as broad, broadest in middle; sides narrowed slightly convex towards anterior margin, slightly concave towards posterior margin. Punctation coarse and largely sparse; except on median portion and in lateral posterior third; interstices larger than diameter of punctures; largest punctures as large as maximal cross-section of antennomere III; lateral punctation somewhat less coarse.

Elytra trapezoidal, 1.03 times as long as broad; humeral angles absent; posterior margin emarginate. Punctation very coarse and dense as on pronotum; punctures mostly separated, sometimes indistinctly confluent; interstices mostly much larger than diameter of punctures.

Abdomen cylindrical; basal impressions of tergites III-V deep; punctation very fine and sparse; interstices much larger than diameter of punctures; with short indistinct erect pubescence. Tergite VII with indistinct vestigial membranous fringe.

Legs slender, metatarsi less than half as lang as metatibiae; metatarsomere I nearly as long as combined length of metatarsomeres II-IV; tarsomere II and III indistinctly, tarsomere IV very deeply bilobed.

Male: Legs simple, femora dilated. Sternite V ventrally flattened; sternite VI flattened in posterior third and elevated at posterior margin, set with goldish pubescence (Fig. 34); sternite VII ventrally flattened; sternite VIII with deep emargination at posterior margin (Fig. 32); sternite IX serrate apicolaterally; tergite X with convex posterior margin. Aedeagus narrow (Fig. 25), median lobe with narrowly pointed apex, expulsion-clasp with two long 'horns'; with long flagellum;

parameres distinctly extending beyond apex of median lobe, apically dilated, apically with around 10 setae.

Female: Legs simple, femora thickened. Sternite VI ventrally flattened in posterior third; sternite VII ventrally flattened, with dense pubescence in posterior third, with shallow emargination at posterior margin; sternite VIII without special characters; Valvifera (sternite IX) apicolaterally serrate.

Comparative notes: This new species belongs to the group of *Stenus heterocerus* L. Benick, 1929 (see Mainda 2020 for group definition). The key to species in Mainda (2020) would lead to number 5, *Stenus ernstjuengeri* Puthz, 1984 or *Stenus praedator* Mainda, 2020. The new species is separated from *S. ernstjuengeri* by more punctures in posterior half of the lateral portions of the head, longer pronotum, sparser punctation of the elytra, finer and sparser punctation of the abdomen, antennomere X 1.7 (instead of 1.6) times as long as antennomere XI and 1.3 (instead of 1.4) times as long as antennomere IX, much deeper emargination of the male sternite VIII (compare Figs 32 and 33) and by the aedeagus (compare Figs 25 and 26). *Stenus uwei* spec. nov. is distinguished from *S. praedator* by more punctures in posterior half of the lateral portions of the head, sparser punctation of pronotum and elytra, coarser punctation of the abdomen, antennomere X 1.7 (instead of 1.3) times as long as antennomere XI and 1.3 (instead of 1.2) times as long as antennomere IX, deeper emargination of the male sternite VIII (compare Figs 25 and Fig. 19 Mainda (2020)) and by the aedeagus (compare Figs 25 and Fig. 7 Mainda (2020)). The new species is separated from the other species of the *hetecocerus*-group as indicated in the key of Mainda (2020).

Distribution: So far, the new species is only known from the Mt. Hamiguitan, Mindanao.

Habitat and collecting method: The type specimens of this new species were collected at altitudes between 500 and 1280 m on Mt. Hamiguitan. Most specimens were found walking on the moist leaf litter on or along the hiking trails (Fig. 39). The first specimen was discovered by Alexander Anichtchenko when it was crawling around on my backpack during a hiking break!

Etymology: With the choice of the species epithet '*uwei*' (genitive), I hereby respectfully dedicate this interesting new species to my esteemed father Uwe Mainda. With affection and great craftsmanship, my father encouraged my interest in entomology from an early age by taking me on walks in the woods and fields and constructing my first entomological equipment. Even today, he still collects interesting insects for me and helps me with the handicraft implementation of every new idea.

Note: Mainda (2020) proposed the group of *Stenus heterocerus* L. Benick, 1929, and described *Stenus praedator* Mainda, 2020. This taxon is based on a male holotype from the Marilog District (Central Mindanao) and a female paratype from Mt. Hamiguitan (Southern Mindanao: Pujada Peninsula). Even back then, this distribution seemed unusual to me. It appeared possible that the locality was mistaken. Species of the *heterocerus*-group are micropterous, i.e. they cannot fly and are therefore presumed to be local endemics. After collecting the type specimens of the new species myself on Mt. Hamiguitan, this problem has been resolved: the female paratype of *S. praedator* belongs to *S. uwei* spec. nov., whose females are similar to *S. praedator*. The female paratype of *S. praedator* is therefore designated as a paratype of the new species (Art. 72.6 ICZN 1999).

Stenus torrenticola sp. nov.

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(Fig. 18)

Type specimen: Holotype ♀: white label 'PHILIPPINES: Mindanao Island, San Isidro, Davao Oriental, Mt. Hamiguitan, 630m, 6°43'47"N 126°9'22"E, Putting Bato, between stones in creek, 27.v.2024, leg. Mainda & Anichtchenko' / red label '♀ – HOLOTYPE, *Stenus torrenticola* nov. sp., design. Mainda 2025' (cTM).

Description of the holotype: Measurements in mm: BL: 5.30, DE: 0.58, FBL: 2.70, EL: 1.28, EW: 1.16, HW: 1.08, PL: 0.88, PW: 0.80, SL: 1.05.

Habitus as in Fig. 18. Macropterous. Body black, very shiny; maxillary palpomeres I and II orange brownish; palpomere III darker brownish in apical half; antennae orange-brownish; apical third of antennomeres III-VI darkened; antennomeres VII-XI predominantly brown; legs bicolored; femora predominantly yellowish-orange, apically dark brown; tibiae and tarsi brown; clypeus black; labrum black, indistinctly thin orange-brownish seamed. Without microsculpture.

Head narrower than elytra; median portion narrower than lateral portions without punctures, very shiny, distinctly raised, reaching high of inner eye margin, separated from lateral portions; lateral portions with scattered punctures, shiny; clypeus and labrum with long goldish pubescence. Antennae slender, antennomeres IX-XI thickened.

Pronotum slightly longer than wide, broadest in anterior third; sides convex towards anterior margin, distinctly concave towards posterior margin. Punctation irregularly fine and very sparse; interstices predominantly larger than diameter of punctures; dorsally and laterally

with shiny areas without punctures; diameter of punctures ranges from basal to apical cross-section of antennomere III.

Elytra slightly longer than broad; humeral angles distinct. Punctation coarse and sparse, very indistinctly transversely confluent; diameter of punctures as large as apical cross section of antennomere III; interstices dorsally much larger, laterally smaller than diameter of punctures, dorsally with shiny areas without punctures; without punctures near lateral margin, at humeral angles and over entire area of posterior angles and margin.

Abdomen cylindrical; without paratergites or lateral margin; basal impressions of tergites III-VI deep; punctation very fine and sparse, slightly denser on tergite VII, interstices much larger than diameter of punctures; with short, thin indistinct adjacent goldish pubescence. Tergite VII with distinct vestigial membranous fringe.

Legs slender, metatarsi nearly as long as half of metatibiae; metatarsomere I nearly as long as combined length of metatarsomeres II-IV (ratio 1:1.14); tarsomere IV very deeply bilobed.

Male: Unknown.

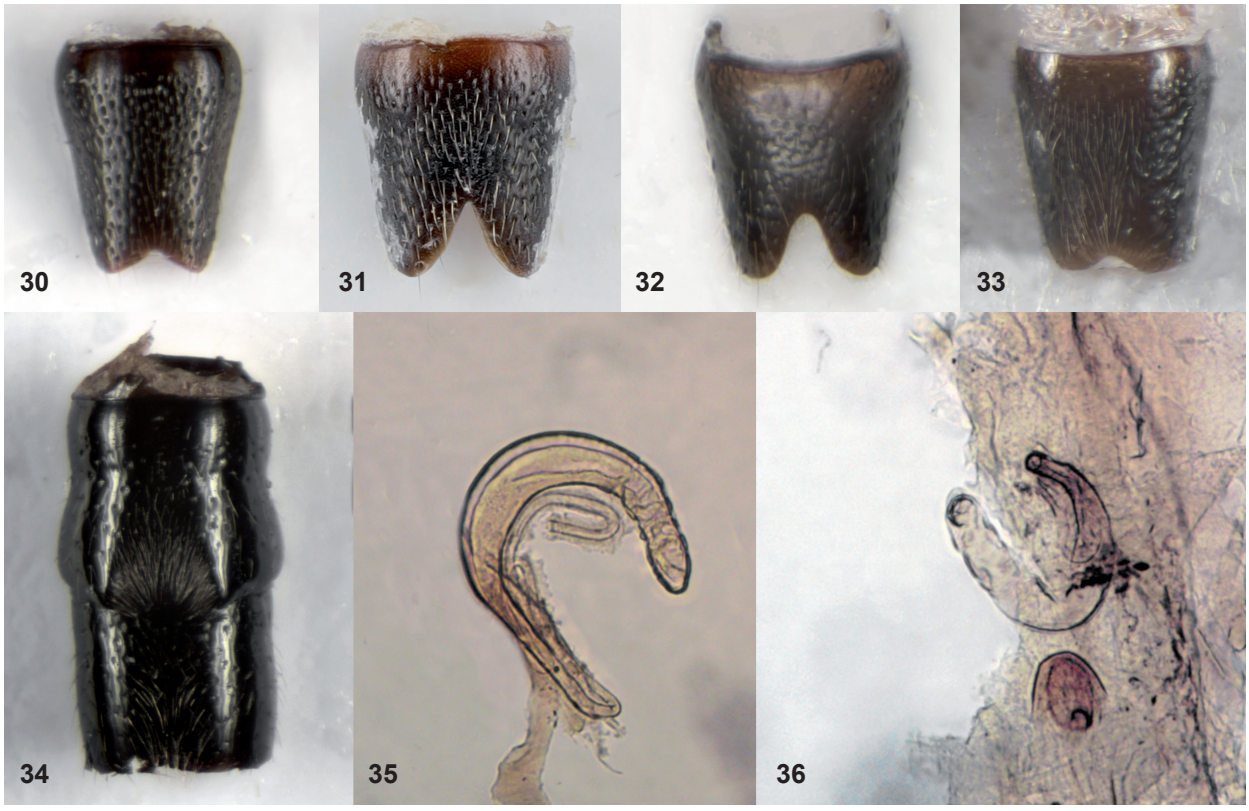
Female: Legs simple, metafemora slightly dilated. Sternite VIII rounded at posterior margin. Valvifera apicolaterally rounded, with long setae.

Comparative notes: This new species belongs to the group of *Stenus lampros* L. Benick, 1929 (see Puthz 2013 for group definition). *Stenus torrenticola* spec. nov. is directly distinguished from *Stenus satoi* Puthz, 1991 and *Stenus andreas* Puthz, 1998 by the yellowish femora. It can be separated from *S. lampros* by the less punctured head and distinctly sparsely, not confluent punctured pronotum and elytra. The new species is separated from *Stenus sulcaticeps* L. Benick, 1929 and *Stenus pangantihoni* Puthz, 2013 by its smaller size, sparser punctation on the elytra and shorter darkened apical area of the femora. Finally, the new species can be distinguished from *Stenus pumicatus* spec. nov. by its smaller size, brighter coloured antennae and finely punctured abdomen.

Distribution: So far, the new species is only known from the Mt. Hamiguitan, Mindanao.

Habitat and collecting method: The holotype was found among overflown stones in the stream at the Puting Bato waterfall at an altitude of 630 m in the tropical rainforest of Mt. Hamiguitan.

Etymology: The species epithet '*torrenticola*' (derived from lat. *torrentis* = mountain stream, torrent + lat. suffix *-cola* = dweller = dweller of torrents), referring to the habitat in which the type specimen was collected, in the torrent of Putting Bato at Mt. Hamiguitan.



Figures 30–36. Sternites VIII **(30–33)**; sternites VI and VII **(34)** and spermatheca **(35–36)** of *Stenus bivestis* spec. nov., Mt. Talomo, Mindanao **(30, 36)**; *Stenus pseudofractophallus* spec. nov. **(31, 35)**; *Stenus uwei* spec. nov. **(32, 34)**; *Stenus ernstjuengeri* **(33)**; without scale.

***Stenus pumicatus* sp. nov.**
urn:lsid:zoobank.org:act:D4826676-040F-4438-B529-E8B6BA084C5C
(Figs 19, 24)

Type specimens: Holotype ♂: white label 'PHILIPPINES: Mindanao Island, Davao de Oro, Mt. Candalaga, 913m, 7°16'34"N 126°10'2"E, Mapawa Falls, 05.vi.2014, leg. D. & J. Patalita' / red label '♂ – HOLOTYPE *Stenus pumicatus* nov. sp., design. Mainda 2025' (cTM); **4 paratypes**: 1 ♂ / 3 ♀ with same locality label as the holotype / yellow label '♂ (or) ♀ – PARATYPE *Stenus pumicatus* nov. sp., design. Mainda 2025' (cTM, cVP, PNM).

Description of the holotype: Measurements in mm: BL: 6.40, DE: 0.65, FBL: 3.10, EL: 1.50, EW: 1.40, HW: 1.20, PL: 1.03, PW: 0.96, SL: 1.15.

Habitus as in Fig. 19. Macropterous. Body black, very shiny (name!); maxillary palpi orange brownish, palpomere III slightly darker brownish in apical half; antennae predominantly brownish, antennomeres I-II orange-brownish, antennomeres III- XI dark brown; legs bicolored, femora predominantly yellowish-orange, apically dark brown; tibiae and tarsi dark brown; clypeus black; labrum brownish-black, thin orange-brownish seamed. Without microsculpture.

Head narrower than elytra; median portion distinctly narrower than lateral portions, without punctures, with transverse, median impression, very shiny, raised, not reaching height of inner eye margin, separated from lateral portions; lateral portions with scattered punctures, shiny; diameter of largest punctures as large as basal cross-section of antennomere III. Clypeus and labrum with long, silvery 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 irregular and sparse; dorsally and laterally with shiny areas without punctures, outside these areas interstices smaller than diameter of punctures; diameter of punctures ranges from basal to apical cross-section of antennomere III.

Elytra longer than broad; humeral angles distinct. Punctation coarse, sparse near suture and laterally, sublaterally denser and indistinctly, transversely confluent; diameter of punctures ranges from median to apical cross-section of antennomere III; without punctures right at lateral margin, at humeral angles and over entire area of posterior angles and margin.

Abdomen cylindrical; without paratergites or lateral margin; basal impressions of tergites III-VI deep; punctation fine and sparse; interstices much larger than diameter of punctures; with indistinct, adjacent, silvery pubescence. Tergite VII with distinct vestigial membranous fringe.

Legs slender, metatarsi nearly as long as half of metatibiae; metatarsomere I shorter than combined length of metatarsomeres II-IV (ratio 1:1.47); tarsomere IV very deeply bilobed.

Male: Legs simple, metafemora distinctly dilated. Sternites IV-VI ventrally broadly flattened; sternite VII ventrally indistinctly flattened; sternite VIII with very deep posterior emargination, reaching half sternite length; sternite IX apicolaterally rounded, with long

Figures 37–39. Collecting sites of *Stenus nobilis*, Aliwagwag Falls **(37)**; *Stenus bivestis* spec. nov., stream below Epol Falls **(38)**; *Stenus uwei* spec. nov., Stampa, Mt. Hamiguitan **(39)**.

setae. Aedeagus narrow (Fig. 24), median lobe with spatulate tip; parameres distinctly shorter than median lobe, apically with around 20 setae.

Female: Legs simple, metafemora slightly dilated. Sternite VIII rounded at posterior margin. Valvifera apicolaterally rounded, with long setae.

Comparative notes: This new species also belongs to the *lampros*-group. *Stenus pumicatus* spec. nov. is directly distinguished from *S. satoi* and *S. andreas* by the yellowish femora and the aedeagus. From *S. lampros*, the new species is separated by the less punctured head, the distinctly sparsely, not confluent punctured pronotum and elytra and by the structure of the aedeagus. The new species is separated from *S. sulcaticeps* and *S. pangantihoni* by sparser punctation on the elytra, smaller darkened apical area of the femora and by the aedeagus. Finally, the new species can be distinguished from *S. torrenticola* spec. nov. by its larger size, darker coloured antennae and coarser punctures on the abdomen.

Distribution: So far, the new species is only known from Mt. Candalaga, Mindanao.

Etymology: The species epithet '*pumicatus*' is derived from the Latin *pumicare* (to smooth with pumice stone), referring to the polished appearance of the new species.

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