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Description of two new riffle beetle genera from Peninsular Malaysia (Coleoptera: Elmidae)

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Abstract

Two new genera and one new species of Elmidae (Macronychini) are described from Peninsular Malaysia: *Macronevia* gen.n., *Haraldaria* gen.n., *Haraldaria schillhammeri* sp.n. *Macronychus simplex* HINTON is transferred to the genus *Macronevia*. The homonym *Eonychus* JÄCH & BOUKAL, 1995 (not *Eonychus* GUTIERREZ, 1969) is replaced by *Eonychius* nom.n.

Key words: Coleoptera, Elmidae, Macronychini, new genera, new species, homonymy, *Eonychus*, *Eonychius*, replacement name, new combination, Malaysia

Introduction

Seven species of Elmidae were listed from Peninsular Malaysia by JÄCH (1993). Two species, *Stenelmis dolon* HINTON and *Ancyronyx acaroides* REITTER have to be added to that list.

One of these nine species, described as *Macronychus simplex* by HINTON (1936) and later transferred to the genus *Zaitzevia* CHAMPION by HINTON (1940), represents in fact an undescribed genus resembling *Cuspidevia* JÄCH & BOUKAL from southeastern China.

A second undescribed genus, obviously related to the southeast Chinese *Eonychius*¹ JÄCH & BOUKAL, was discovered only recently.

Both of these new genera are described below. They are - like *Hedyselmis* HINTON - obviously endemic to Peninsular Malaysia.

Acronyms:

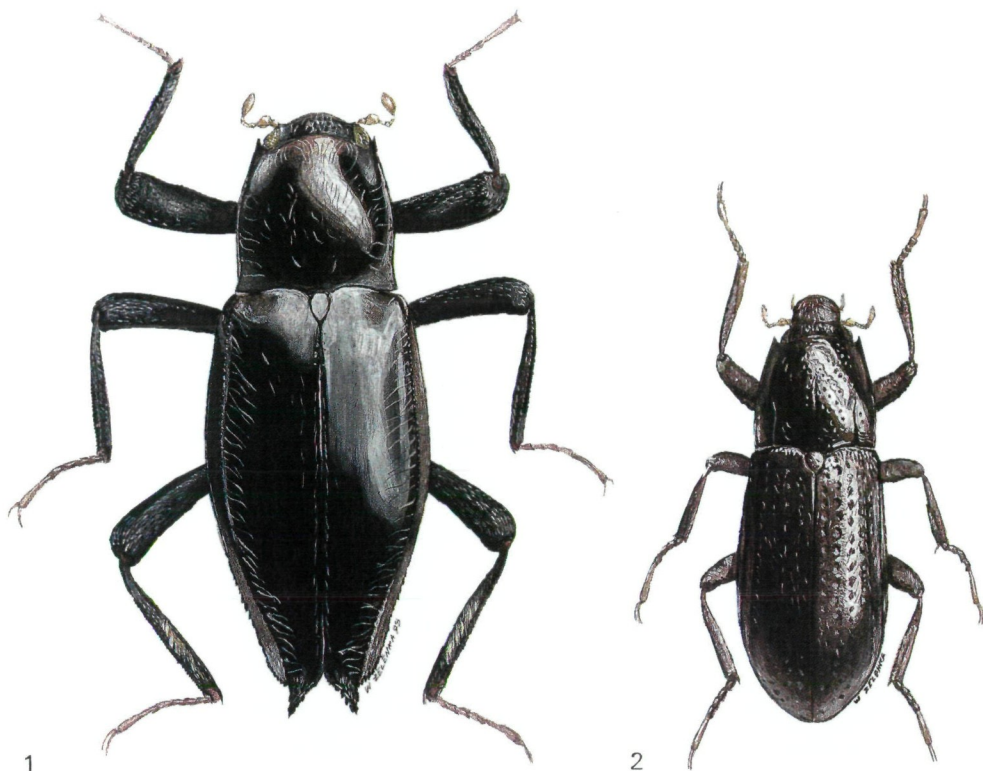
BML The Natural History Museum, London [formerly: British Museum (Natural History)]
CBB Boukal collection, České Budějovice
NMW Naturhistorisches Museum, Wien

***Macronevia* gen.n.**

TYPE SPECIES: *Macronevia simplex* (HINTON)

DESCRIPTION: Habitus (Fig. 1). Body form elongate; scarcely punctate; plastron distributed on: vertex and lateral parts of frons, around eyes, elytra between lateral margin and sublateral carina (7th interval) and on elytral projections, hypomeron, prosternum except middle, epipleura, lateral parts of meso-, metasternum and coxae, femora and medial parts of tibiae, lateral parts of abdominal sternites.

¹ As the name *Eonychus* JÄCH & BOUKAL, 1995 is in fact preoccupied by *Eonychus* GUTIERREZ, 1969, we herewith replace the junior homonym with *Eonychius* nom.n.



Figs. 1 - 2: Habitus of 1) *Macronevia simplex* and 2) *Haraldaria schillhammeri*.

Head (Figs. 19 - 20) partly retractable; labrum, clypeus and frons moderately densely covered with adpressed or semi-erect, yellowish, moderately long hairs; labrum short, distinctly wider than long; clypeus distinctly broader and distinctly longer than labrum, lateral margin arcuately produced and slightly upturned; fronto-clypeal suture very slightly arched; anterior angles of frons conspicuously produced and rounded posterior to antennal insertion; antenna (Fig. 6) eight-segmented, terminal segment large and elongate; eyes large, with more than 50 facets; mandible (Fig. 5), labium (Fig. 4) and maxilla more or less as in *Cuspidevia*.

Pronotum approximately as wide as long, widest near basal third; disc moderately densely covered with semi-erect hairs, lateral parts moderately densely covered with adpressed hairs, middle of anterior margin with a group of rather densely arranged, comparatively long, erect, yellowish hairs; lateral margin rimmed, subcrenulate, narrowly explanate; posterior angles slightly acute, anterior angles strongly acuminate produced anteriorly; sublateral grooves absent or vestigial, never distinct; disc more or less regularly convex, median groove absent.

Scutellum subtriangular. Elytra (Figs. 1, 7) elongate, widest near middle or near anterior third; lateral margin crenulate in apical half; elytral striae more or less obsolete, a row of small sutural punctures is present, additional rows of small to very small punctures are occasionally found; intervals I - IV smooth, opaque or glabrous; fifth interval with a row of conspicuously long, semi-erect or adpressed, yellowish hairs; sutural interval with a similar row of distinctly shorter hairs; additional rows of moderately long, semi-erect hairs are occasionally found; fifth interval conspicuously carinate and crenulate, carina not reaching elytral base; shoulders with a very short

carina, representing the sixth interval; traces of additional carinae may be present on the elytral apex; elytral apices densely granulate, separately acuminate produced near suture (projections variable), lateral parts of elytral apices subtruncate; epipleura wide, apically truncate. Of the 64 specimens examined, only 7 are winged; hind wing (Fig. 3) very similar to that of *Cuspidevia*; medial vein short, but clearly visible; anal veins shorter than in *Cuspidevia*.

Prosternum (Fig. 21) distinctly produced anteriorly; prosternal process distinctly longer than broad, apex acuminate rounded; mesosternum (Fig. 21), middle of mesosternum deeply grooved for reception of prosternal process; metasternum (Fig. 21) impressed along margin of mesocoxae, median longitudinal suture only very shallowly impressed.

Legs moderately long; surface of tibiae and femora rather densely covered with small granules; femora with golden setae on inner surface; pro- and metafemora strongly enlarged, clavate; mesofemora only moderately enlarged; tibiae with cleaning fringes; claws simple.

Abdomen (Fig. 22) with five ventrites; posterior angle of second and third ventrite distinctly acuminate produced, posterior angle of fourth ventrite less distinctly produced; fifth ventrite distinctly produced apically.

Aedeagus (Figs. 8 - 11): Long and slender; fibula and corona absent; ejaculatory duct with numerous spines and sometimes with indistinct basal sclerotizations; ventral sac well-developed apically, sclerotized teeth lacking; parameres short, flattened, fused to penis, apices with 0 - 4 setae; phallobasis distinctly shorter than penis, cylindrical.

Ovipositor (Fig. 12) essentially as in *Cuspidevia*.

DIFFERENTIAL DIAGNOSIS: *Macronevia* belongs to a group of genera which includes *Cuspidevia*, *Urumaelmis* SATO and *Zaitzevia*. *Macronevia* differs from these genera in the following (apomorphic) characters: 1) conspicuous setation of pronotum and elytra, 2) absence of pronotal impressions (median and sublateral grooves).

Cuspidevia, being externally rather similar to *Macronevia*, differs also in the position of the elytral carina and in the morphology of the aedeagus. *Urumaelmis* differs also in having unmodified hind femora.

DISTRIBUTION: This genus is known only from Peninsular Malaysia.

ETYMOLOGY: *Macronevia* is a combination of *Zaitzevia* and *Macronychus* MÜLLER. The type species of the genus was originally described in the genus *Macronychus* and later transferred to *Zaitzevia*.

Macronevia simplex HINTON comb.n.

Macronychus simplex HINTON 1936: 433.

Zaitzevia simplex, HINTON 1940: 113.

TYPE LOCALITY: Pond near Ulu Klang, Selangor, Peninsular Malaysia.

TYPE MATERIAL: Holotype ♀, by monotypy (BML): "MALAY PENIN: Selangor F.M.S. dirty pond near Ulu Klang \ EX COLL: F.M.S. \ Sept..... 1st.....1926 C. DOVER. \ MUSEUM. \ Type *Macronychus simplex* 35' Hntn. \ Type \ HOLOTYPE simplex \ *Macronevia simplex* HINTON det.M.Jäch 1996 \ re-prepared by M.Jäch 1996".

Head, one antenna, left elytron and prothorax were glued separately by Hinton. These pieces (except head and antenna) were re-connected by the senior author and glued on a new cardboard.

ADDITIONAL MATERIAL EXAMINED:

KEDAH: 1 ex., ca. 60 km E Gerik, 2.II.1992, leg. Jäch (NMW).

KELANTAN: 6 exs., 100 km E Gerik, 3.II.1992, leg. Jäch (NMW).

PAHANG: 2 exs., Fraser Hill, Gap, 1050 m a.s.l., 7.II.1992, leg. Schillhammer (NMW); 1 ex., Cameron Highlands, Jasar River, 25./26.I.1992, leg. Schillhammer (NMW); 3 exs., Cameron Highlands, 2 km E

Brinchang, 31.VII.1993, leg. Schuh (NMW); 1 ex., Cameron Highlands, 22.VIII.1988, leg. Schödl (NMW); 1 ex., Tioman Island, Tekek-Juara, 80 m a.s.l., 28.I.1992, leg. Schillhammer (NMW).

PERAK: 26 exs., Pangkor Isl., 25.I.1992, leg. Jäch (NMW, CBB); 9 exs., Kuala Woh, ca. 10 km NE Tapah, 1.VIII.1993, leg. Schuh (NMW).

SELANGOR: 13 exs., Gombak River, 1969, leg. Bishop (BML, NMW).

DIAGNOSIS: Length (pronotum + elytra): 2.05 - 2.50 mm; width: 0.90 - 1.05 mm.

Colour dark brown or almost black; labrum, mouthparts, antennae, tarsi and anterior margin of pronotum paler yellowish brown.

Pronotal disc rather sparsely or very sparsely punctate, punctures small, separated by several puncture diameters; lateral margin sinuous.

Elytra long, distinctly acuminate apically; intervals 1 - 4 flat.

Aedeagus (Figs. 8 - 11): 0.95 - 1.05 mm long; penis very long and thin, tapering apically, twice as long as phallobasis; paramere positioned approximately in apical 0.3.

Ovipositor as in Fig. 12.

VARIABILITY: Morphologically, *Macronevia simplex* is a most variable species. Both external and aedeagal characters are considerably variable between populations. Specimens from the same locality are variable too, but to a lesser extent. Despite the pronounced inter-populational variability we were unable to work out significant distinguishing features which would have enabled us to postulate specific or subspecific demarcations.

Specimens from Pangkor Island are small (2.05 - 2.30 mm long); elytra and basis of pronotum distinctly microreticulate, mat.

The single specimen from Tioman Island resembles specimens from Pangkor Island in size, body form and microreticulation; its elytral tips are almost entirely reduced.

Specimens from the Cameron Highlands and Fraser Hill are large (2.35 - 2.50 mm long); elytra more elongate than in the Pangkor specimens; microreticulation slightly less markedly pronounced; middle of elytral disc roof-like.

Specimens from "100 km E Gerik" resemble those from the Cameron Highlands and Fraser Hill, but they differ in the slightly smaller size and the more evenly convex (not roof-like) elytral disc.

Specimens from Kuala Woh (2.20 - 2.40 mm long) are characterized by a rather smooth surface (microreticulation more superficial, only rarely more distinctly pronounced), and by the comparatively well developed row of setiferous punctures on the 3rd interval.

Specimens from the Gombak River are somewhat intermediate between the specimens from Pangkor Island and the Cameron Highlands.

Size and shape of the elytral apices are generally variable, even within populations. These appendages can be well developed and long (as in Fig. 1), almost straight or strongly curved, or short and almost obsolete with only a minute tip projecting (holotype and specimen from Tioman).

The admedian impression on the pronotal disc, which HINTON (1936) described in the holotype is found in one specimen from the Cameron Highlands, in one specimen from Kuala Woh and in one specimen from the Gombak river. Obviously, the presence or absence of this character has no bearing on taxonomy.

The aedeagus (Figs. 8 - 11) is as variable as the external characters: the apex of the penis may be straight or curved (in both ventral and lateral view); length and position of paramere remarkably variable, even in specimens from the same locality; apex of parameres with 0 - 4 setae, but usually two are developed.

DISTRIBUTION: Known only from Peninsular Malaysia.

Haraldaria gen.n.

Type species: *Haraldaria schillhammeri* sp.n.

DESCRIPTION: Habitus (Fig. 2). Body form elongate, subparallel; surface moderately densely covered with yellowish, adpressed or semi-erect hairs; plastron distributed on: head around eyes, elytra between lateral margin and sublateral carina (7th interval), hypomera, prosternum medio-laterally, epipleura, lateral parts of meso-, metasternum and coxae, femora and medial parts of tibiae, lateral parts of abdominal sternites.

Head (Figs. 28 - 29) partly retractable; labrum distinctly wider than long; clypeus slightly wider than labrum and approximately as long as labrum, lateral margin explanate and slightly upturned; fronto-clypeal suture very slightly arched, almost straight; eyes (Fig. 29) very small, with ca. 10 facets (!) only; antenna (Figs. 16, 29) 9-segmented, as in *Eonychius*², apical segment with a very faint, incomplete suture; mandible (Fig. 14) deeply excised, prostheca large; labium (Fig. 13) and maxilla essentially as in *Eonychius*.

Pronotum slightly wider than long, widest in basal third, slightly constricted towards base, more distinctly constricted towards apex; lateral margin rimmed, very slightly explanate in apical half; posterior angles rectangular, anterior angles distinctly acuminate produced anteriorly; sublateral grooves bordered by a sublateral carina, reaching pronotal middle; disc more or less regularly convex, with a faintly impressed, longitudinal, median groove extending from posterior declivity to about apical 0.2.

Scutellum subtriangular. Elytra elongate, subparallel, evenly constricted in apical third; distinctly punctate-striate in basal half; punctures moderately deeply to shallowly impressed; faintly developed carinae are present on intervals 5 and 7, both carinae effaced before apex; interval 6 occasionally subcarinate in basal third; epipleura well-developed, progressively narrowing from base to apex. Hind wings absent.

Prosternum (Fig. 31) distinctly produced anteriorly; prosternal process longer than broad, apex rounded; mesosternum (Fig. 31), middle of mesosternum deeply grooved for reception of prosternal process; metasternum as in Fig. 31, coarsely punctate along mesocoxae and posterior margin, disc only superficially punctate, distinctly impressed in posterior half.

Legs moderately long; femora with golden setae on inner surface; tibiae with cleaning fringes; claws simple.

Abdomen (Fig. 32) with five ventrites; admedian carinae of first ventrite complete; first ventrite with a row of coarse, indistinct punctures along anterior margin; second and third ventrite distinctly produced postero-laterad, fourth ventrite only feebly, acuminate produced postero-laterad.

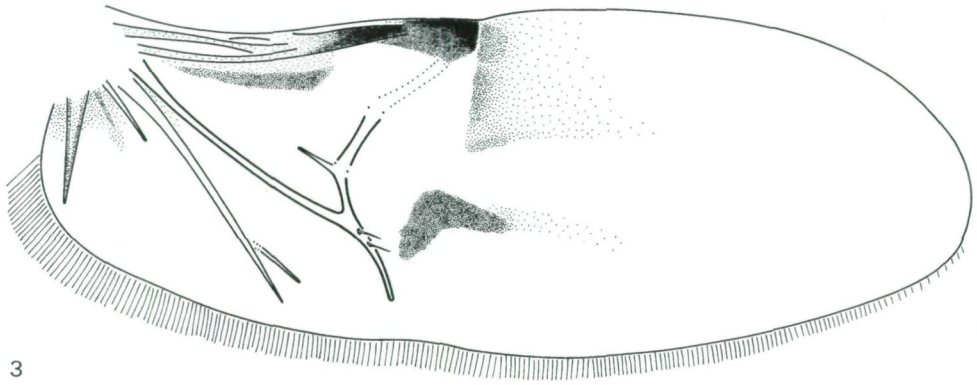
Aedeagus (Figs. 17, 18): Long and slender, acuminate rounded apically; fibula absent; corona present [a weakly sclerotized corona is also present in *Eonychius dudgeoni* JÄCH & BOUKAL - although it was not depicted by JÄCH & BOUKAL (1995, Fig. 14)]; ventral sac well-developed in the apical third of the penis, ejaculatory duct with weakly sclerotized spines and weakly sclerotized bands. Parameres absent. Phallobasis short and cylindrical.

Ovipositor (Fig. 15): very similar to that of *Eonychius dudgeoni*.

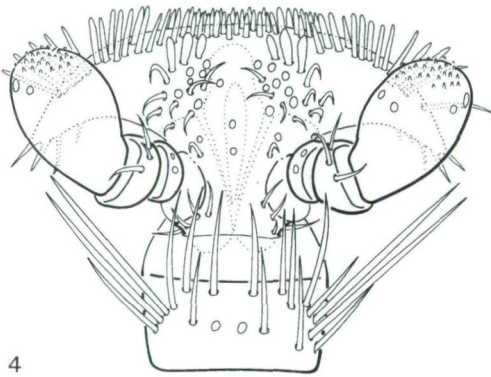
DIFFERENTIAL DIAGNOSIS: *Haraldaria* differs from *Eonychius* by a number of significant characters: 1) dorsal elytral plastron present; 2) eyes very small; 3) median groove of pronotum very short; 4) carina on 8th elytral interval lacking; 5) surface structures of metasternum deviating; 6) aedeagus without parameres.

DISTRIBUTION: So far known only from Peninsular Malaysia (Pahang).

² The antenna of *Eonychius* must be considered as 9-segmented, not 10-segmented as described by JÄCH & BOUKAL (1995). The faint suture on the 9th antennal segment is incomplete.



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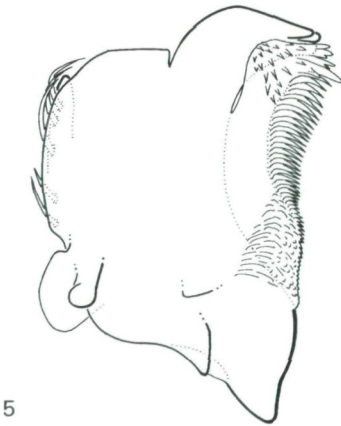


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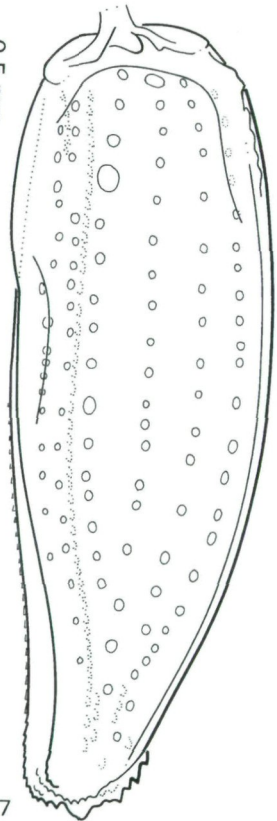
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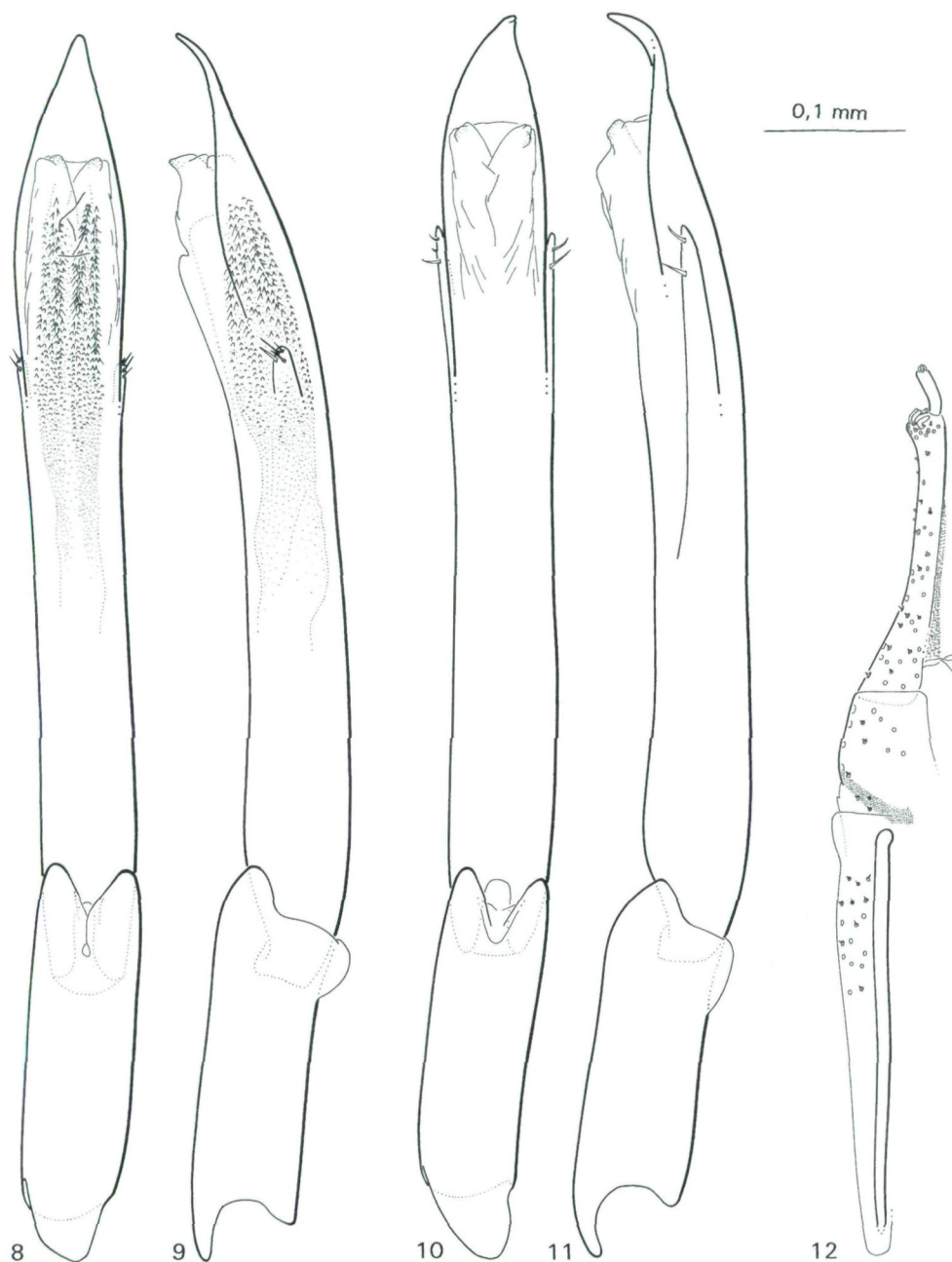


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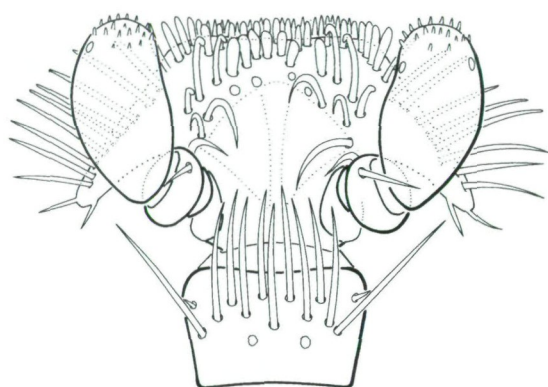


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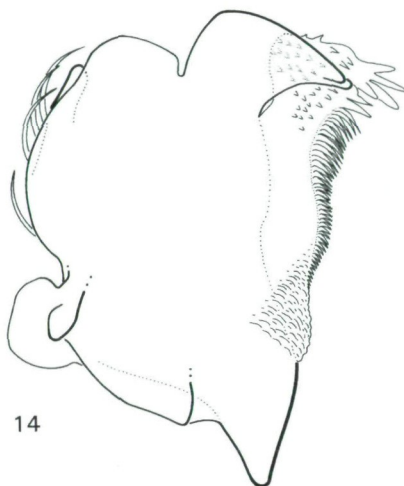
Figs. 3 - 7: *Macronevia simplex*; 3) hind wing, 4) labium, 5) mandible, 6) antenna, 7) elytron, ventral aspect. Short scale = Fig. 3, intermediate scale = Figs. 4 - 6, long scale = Fig. 7.



Figs. 8 - 12: *Macronevia simplex*; 8) aedeagus, ventral aspect, Gombak River, 9) same, lateral aspect, 10) aedeagus, ventral aspect, Fraser Hill, sclerotizations of ejaculatory duct not depicted, 11) same, lateral aspect, 12) ovipositor.



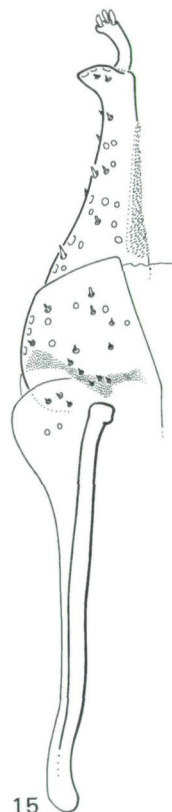
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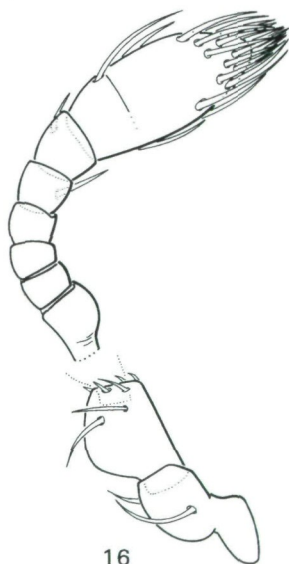
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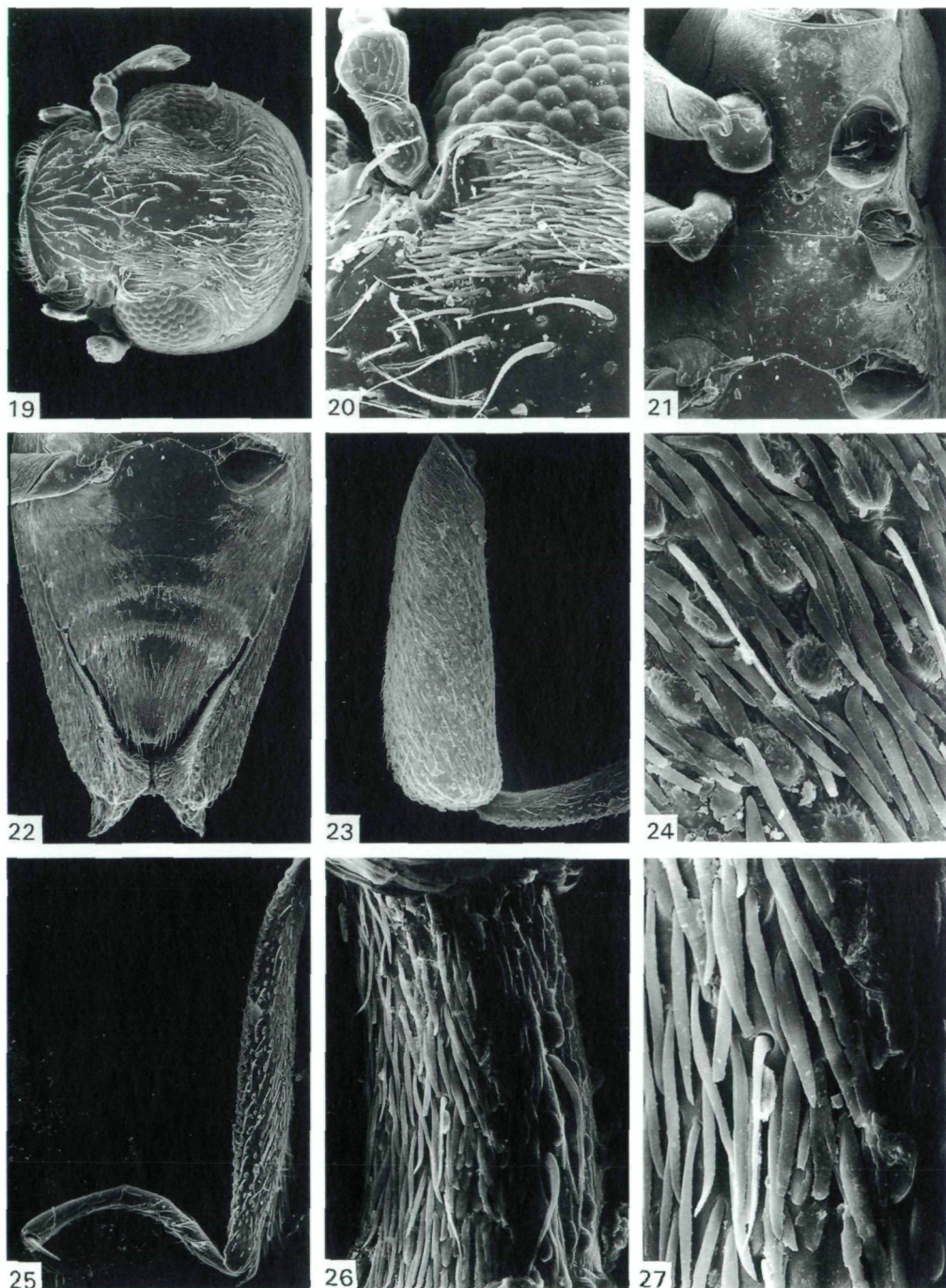


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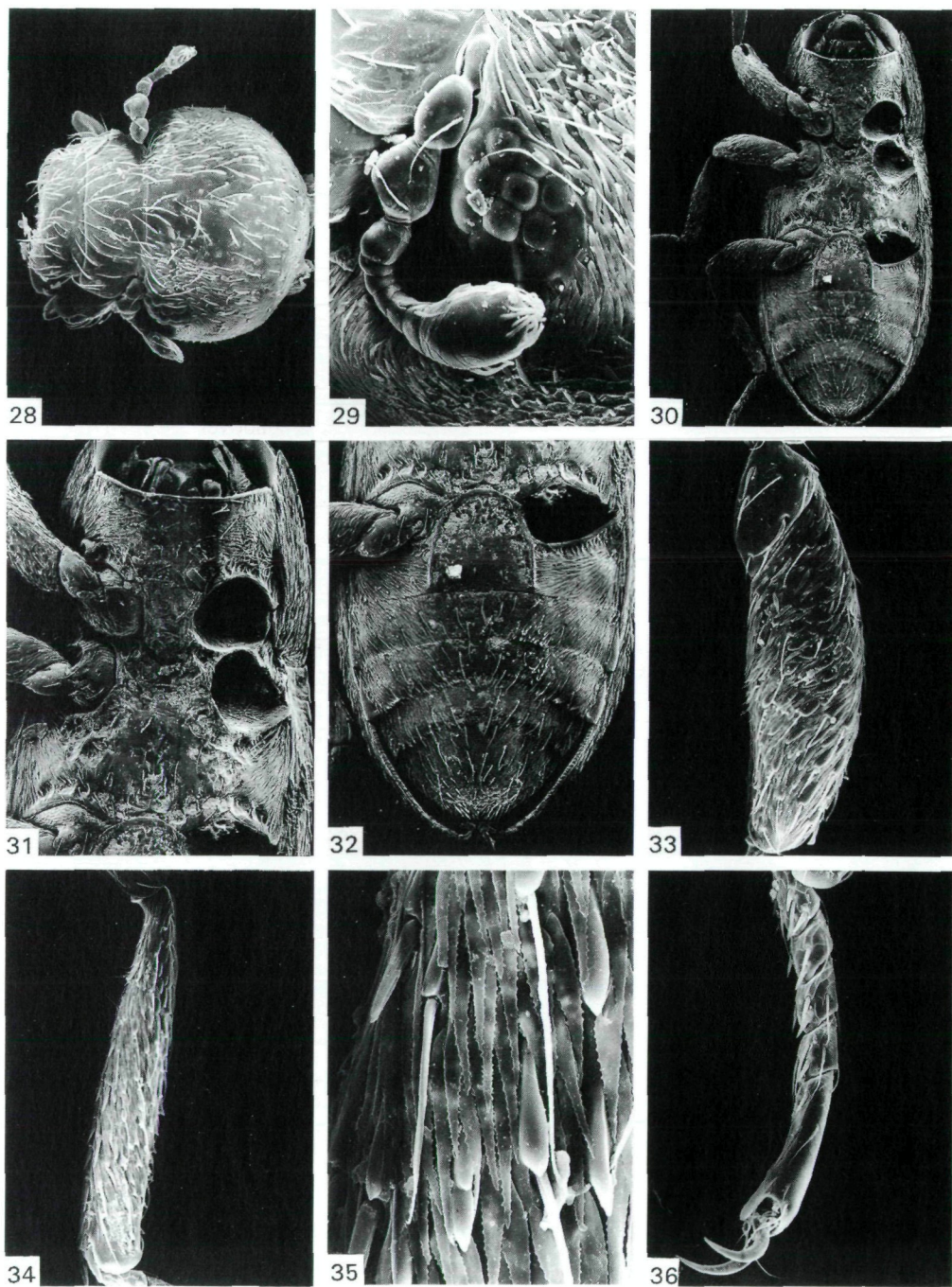


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Figs. 13 - 18: *Haraldaria schillhammeri*; 13) labium, 14) mandible, 15) ovipositor, 16) antenna, 17) aedeagus, ventral aspect, 18) same, lateral aspect. Short scale = Fig. 15, 17, 18, long scale = Figs. 13, 14, 16.



Figs. 19 - 27: *Macronevia simplex*; 19) head, dorsal aspect, 20) same, enlarged, 21) thorax, ventral aspect, 22) abdomen, ventral aspect, 23) profemur, lateral aspect, 24) plastron of profemur, 25) protibia, lateral aspect, 26) same, enlarged, 27) protibial plastron.



Figs. 28 - 36: *Haraldaria schillhammeri*; 28) head, dorsal aspect, 29) antenna and eye, dorso-lateral aspect, 30) ventral side, 31) thorax, ventral aspect, 32) abdomen, ventral aspect, 33) metafemur, lateral aspect, 34) metatibia, lateral aspect, 35) metatibial plastron, 36) metatarsus, lateral aspect.

ETYMOLOGY: The genus and the type species are named after our friend Harald Schillhammer, Staphylinidae specialist, and highly experienced water beetle collector.

***Haraldaria schillhammeri* sp.n.**

TYPE LOCALITY: Jasar River, ca. 1 - 1.5 m wide, slowly flowing through a forest near the village of Tanah Rata, ca. 1400 m a.s.l., Cameron Highlands, Pahang, Peninsular Malaysia.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Prov. PAHANG (6a) Cam. HL 25./26.1. Gg. Jasar 1400m \ MALAYSIA 1992 leg. Schillhammer". **Paratypes** (NMW, CBB, BML): 30 exs., same label data as holotype; 2 exs.: "Prov. PAHANG (6a) Cam. HL 25./26.1. Gg. Jasar 1400m \ MALAYSIA 1992 leg. Schillhammer".

DIAGNOSIS: Length (pronotum + elytra), 1.2 - 1.4 mm; width, ca. 0.5 mm.

Colour brown; labrum, mouthparts and antennae usually paler yellowish brown.

Clypeus and frons moderately densely punctate; interstices glabrous and shining.

Pronotum more sparsely punctate than frons, punctures moderately large, usually separated by 2 - 3 puncture diameters, interstices smooth and glabrous; sublateral carina not very prominent.

Scutellum coarsely or superficially punctate, interstices glabrous. Elytra evenly convex in cross section; elytral striae more or less straight, punctures moderately large, not very deeply impressed; intervals flat, very superficially microreticulate.

Abdominal ventrites sparsely punctate discally; interstices smooth and glabrous.

Aedeagus (Figs. 17, 18): Penis more than three times as long as phallobasis.

Ovipositor as in Fig. 15.

DISTRIBUTION: So far known only from the type locality.

Acknowledgements

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