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# Review of the *Anotylus exasperatus* species group 1. – The species without external sexual dimorphism

## (Insecta: Coleoptera: Staphylinidae: Oxytelinae)

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**Abstract**

The sexually non-dimorphic species of the *Anotylus exasperatus* species group (formerly *Rimba* Blackwelder, 1952) are distributed in SE Asia from Nepal to Vietnam, and to the Philippines and Lombok. Twenty-four valid species are recognized in this subgroup, of which 20 are described here as new: *A. analepticus* sp.n. (Malaysia: Sabah), *A. bolmorum* sp.n. (Philippines: Luzon), *A. crepidatus* sp.n. (Malaysia: Sabah), *A. cyzicus* sp.n. (Malaysia: Sabah), *A. deductus* sp.n. (Malaysia: Sarawak), *A. erratus* sp.n. (Indonesia: Sumatra), *A. fusoideus* sp.n. (Malaysia: Sabah), *A. gagatinus* sp.n. (Indonesia: Java), *A. hauriens* sp.n. (Malaysia: Sabah), *A. intuitus* sp.n. (Indonesia: Java), *A. jaechi* sp.n. (Indonesia: Bali), *A. kurbatovi* sp.n. (Myanmar: Shan State), *A. lagreanus* sp.n. (Laos: Bolikhamxai), *A. laobianus* sp.n. (China: Yunnan), *A. loricatus* sp.n. (Malaysia: Sabah), *A. nepalensis* sp.n. (E-Nepal), *A. shavrini* sp.n. (Philippines: Mindanao), *A. tangotadosi* sp.n. (Indonesia: Sulawesi), *A. ustulosus* sp.n. (Indonesia: Sulawesi) and *A. velatus* sp.n. (Malaysia: Sabah). Lectotypes are designated for *Delopsis cornuta* Fauvel, 1895, *D. flavicornis* Cameron, 1928 and *D. microphthalma* Fauvel, 1904. In an appendix a species of problematic (possibly intermediate) affiliation, *A. pingbianus* sp.n. (China: Yunnan) is described. All the new species are illustrated by colour habitus photos, male and female genitalia and terminalia by line drawings.

**Key words:** Coleoptera, Staphylinidae, Oxytelinae, *Anotylus*, *Delopsis*, *Rimba*, taxonomy, lectotypes, new species, key, Oriental Region.

**Zusammenfassung**

Die Arten der *Anotylus exasperatus* Artengruppe ohne Sexualdimorphismus (früher *Rimba* Blackwelder, 1952) sind in Südostasien von Nepal über Vietnam bis zu den Philippinen und Lombok verbreitet. Die Gruppe enthält 24 valide Arten, von denen 20 hier neu beschrieben werden: *A. analepticus* sp.n. (Malaysia: Sabah), *A. bolmorum* sp.n. (Philippinen: Luzon), *A. crepidatus* sp.n. (Malaysia: Sabah), *A. cyzicus* sp.n. (Malaysia: Sabah), *A. deductus* sp.n. (Malaysia: Sarawak), *A. erratus* sp.n. (Indonesien: Sumatra), *A. fusoideus* sp.n. (Malaysia: Sabah), *A. gagatinus* sp.n. (Indonesien: Java), *A. hauriens* sp.n. (Malaysia: Sabah), *A. intuitus* sp.n. (Indonesien: Java), *A. jaechi* sp.n. (Indonesien: Bali), *A. kurbatovi* sp.n. (Myanmar: Shan State), *A. lagreanus* sp.n. (Laos: Bolikhamxai), *A. laobianus* sp.n. (China: Yunnan), *A. loricatus* sp.n. (Malaysia: Sabah), *A. nepalensis* sp.n. (O-Nepal), *A. shavrini* sp.n. (Philippinen: Mindanao), *A. tangotadosi* sp.n. (Indonesien: Sulawesi), *A. ustulosus* sp.n. (Indonesien: Sulawesi) und *A. velatus* sp.n. (Malaysia: Sabah). Lectotypen werden designiert für *Delopsis cornuta* Fauvel, 1895, *D. flavicornis* Cameron, 1928 und *D. microphthalma* Fauvel, 1904. Eine Art mit ungewisser Zugehörigkeit, *A. pingbianus* sp.n. (China: Yunnan) wird in einem Appendix beschrieben. Habitus, männliche und weibliche Genitalien sowie Terminalia werden durch Farbfotos und Strichzeichnungen dargestellt.

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## Introduction

The extreme diversity of the genus *Anotylus* THOMSON, 1859 was discussed in a number of articles (starting with HAMMOND 1976) and the present contribution intends to continue the series of species group treatments with a subgroup that had only three named species before the current publication, while the true species number might well be more than ten times as as high. The replacement name *Rimba* BLACKWELDER, 1952 (for the preoccupied *Delopsis* FAUVEL, 1895 of which the type species is *Delopsis cornuta* Fauvel, 1895) was synonymized with *Anotylus* by MAKRANCZY (2006). Although *A. cornutus* is a non-dimorphic species, it must be noted that the name *Delopsis* was most frequently used for the *A. exasperatus* species group (HAMMOND 1975), and *A. exasperatus* KRAATZ, 1859 is a strongly dimorphic species. The species with external sexual dimorphism will be treated in a further contribution, but the name-giving taxon is chosen to be *A. exasperatus*, because it is the oldest and was already used by HAMMOND (1975). Methodological convenience (externally different sexes require separate measurement for the sexes and habitus illustrations of both) forces the two subgroups to be treated separately (both subgroups include a rather substantial number of species), but they share almost all character states; their relationships to other species groups of *Anotylus* remain unresolved and one species is included here that as of now cannot be firmly placed in any species group.

Striking similarities like strong areolate sculpture, the use of soil crust adhered to the body as camouflage, the habitat requirements and geographical range link this group to the *A. cimicoides* group (revised by MAKRANCZY 2017) and especially the here treated subgroup as both are non-dimorphic, but after examination of a whole range of traits (especially genitalia) this relationships does not seem to be close. Some of the most obvious differences include the antennal morphology (distinctly cylindrical, never transverse, segments), the darker colour (mostly black as opposed to predominantly reddish in most species) and the more slender body (as opposed to rather stout), these allow the differentiation between them even when observed superficially.

The currently known continental distribution of this subgroup is from East Nepal to Vietnam. In the southeast, Lombok – which has a very high volcano – is the easternmost island with a record of this group. The rest of Nusa Tenggara (Lesser Sunda Islands) is very poorly explored with regard to tiny species of Staphylinidae. Timor has some higher elevations, but it is rather dry. The only humid islands with high mountains are Sumbawa and Flores. One cannot rule out the rain forests on Sumbawa, but no significant collection is known from there. The present article raises the number of species in this subgroup from three to 23. Given the nature of habitats and distribution this diversity is still somewhat surprising. The Mt. Kinabalu area has the highest number of endemic species but that could be due to comparatively more intensive collecting activity.

## Material and methods

Most of the material comes from a few collections where sifted material from the Oriental Region is abundant. Abbreviations of the depositories of the specimens are as follows:

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| AMNH | American Museum of Natural History (New York, USA) |
| BMNH | Natural History Museum, London (United Kingdom) |
| CNCI | Canadian National Collection of Insects, Arachnids, and Nematodes (Ottawa, Canada) |
| FMNH | Field Museum of Natural History (Chicago, USA) |
| HNHM | Hungarian Natural History Museum (Budapest, Hungary) |
| ISNB | Institut Royal des Sciences Naturelles de Belgique (Bruxelles, Belgium) |
| MBBJ | Museum Zoologicum Bogoriense, Cibinong Science Center (Cibinong, Indonesia) |
| MSNG | Museo Civico di Storia Naturale "Giacomo Doria" (Genova, Italy) |
| MHNG | Muséum d'histoire naturelle, Genève (Switzerland) |
| NHMB | Naturhistorisches Museum Basel (Switzerland) |
| NIBR | National Institute of Biological Resources (Incheon, South Korea) |
| NMPC | Národní muzeum (National Museum) (Prague, Czechia) |
| NHMW | Naturhistorisches Museum Wien (Vienna, Austria) |
| SDEI | Senckenberg Deutsches Entomologisches Institut (Müncheberg, Germany) |
| SEMC | Snow Entomological Collections, University of Kansas (Lawrence, Kansas, USA) |
| SMNK | Staatliches Museum für Naturkunde (Karlsruhe, Germany) |
| SMNS | Staatliches Museum für Naturkunde (Stuttgart, Germany) |
| SNUC | Insect Collection of Shanghai Normal University (Shanghai, China) |
| ZMHB | Museum für Naturkunde, Leibniz Inst. for Evol. and Biodiv. Science (Berlin, Germany) |
| ZMUC | Zoological Museum, University of Copenhagen (Denmark) |
| coll. Assing | private collection of Volker Assing (Hannover, Germany) |
| coll. Shavrin | private collection of Alexey Shavrin (Daugavpils, Latvia) |

Label data for primary types and types designated prior to this contribution are listed verbatim, "\" separates labels and ";" separates lines. Text within brackets "[...]" is explanatory and not included in the original labels. An effort was made to supplement locality data with geographical coordinates, which involves old map sheets, other published papers on the same material, modern internet resources like GoogleEarth and often information from the collectors themselves. Despite this, these should be considered as best approximation based on the available resources and not as hard data. Measurements are defined as follows: HW = head width with eyes; TW = head width at temples; PW = maximum width of pronotum; SW = approximate width of shoulders; AW = maximum width of abdomen; HL = head length from front margin of clypeus to the beginning of neck at midline; EL = eye length; TL = length of temple; PL = length of pronotum along midline; SL = length of elytra from shoulder; SC = length of elytra from hind apex of scutellum; FB = forebody length (combined length of head, pronotum and elytra); BL = approximate body length. All measured from dorsal view. For descriptions and measurements a Leica MZ 12.5 stereoscopic microscope was used. For the line drawings permanent preparations were made in Euparal mounting medium on plastic cards pinned with the specimens. The genital preparation techniques are detailed in MAKRANCZY (2006). Drawing was done with a Jenalab (Carl Zeiss, Jena) compound microscope and drawing tube (camera lucida). For the colour habitus photographs a

Nikon D4 camera and Novoflex bellows were used with a reverse mounted Rodenstock 50/2.8 Apo-Rodagon N lens; for smaller specimens and detail photos Mitutoyo 5/0.14 and 10/0.25 Apo ELWD lenses. Resulting images are focus stacks, aligned and stacked with ZereneStacker.

Because of the fact that the female genital characters clearly make *A. pingbianus* an outlier here, it is necessary to deal with it separately, although it was included in the key to species (for the reason that externally this species closely resembles members of the *A. exasperatus* group).

## Key to species

1 Body comparatively small, FB < 1.10 mm ..... 2

– Body larger, FB > 1.10 mm ..... 3

2 Colour uniformly reddish, first antennomere reddish brown like rest of antenna [China: W-Yunnan] ..... ***laobianus* sp.n.**

– Head blackish, first antennomere contrastingly black compared to rest of antenna [China: SE-Yunnan)] ..... ***pingbianus* sp.n.**

3 Forebody pitch black, pronotal side margin unbroken, gently rounded or partly straight ..... 4

– Forebody varying in colour, pronotal side margin at least slightly zigzagged ..... 5

4 Third antennomere width 0.4 × its length [Indonesia: Sulawesi] ..... ***ustulosus* sp.n.**

– Third antennomere width 0.3 × its length [Indonesia: Sulawesi] ..... ***tangotadosi* sp.n.**

5 Pronotum widest near anterior corner [Indonesia: Bali, Lombok] ..... ***jaechi* sp.n.**

– Widest point of pronotum well behind anterior corner ..... 6

6 Brachypterous, SL < PL ..... 7

– Non-brachypterous, SL > PL ..... 8

7 Tiny eyes (EL < 0.08 mm), head subquadrate, as wide in front of eyes as at temples [E-Nepal] ..... ***nepalensis* sp.n.**

– Larger eyes (EL > 0.1 mm), head elongate, width in front of eyes about 85 % of that at temples [Sabah: Mt. Kinabalu] ..... ***hauriens* sp.n.**

8 Antennomeres setose at apices ..... 9

– Antennomeres lacking conspicuous tactile setae at apices ..... 10

9 Elytra insignificantly longer than pronotum [Sabah: Mt. Kinabalu] ..... ***loricatus* sp.n.**

– Elytra almost 1/3 longer than pronotum [Sabah: Mt. Kinabalu] ..... ***crepidatus* sp.n.**

10 Antennomeres exceptionally short [Sabah: Mt. Kinabalu] ..... ***analepticus* sp.n.**

– Antennomeres 4–10 always at least 1.5 × as long as wide ..... 11

11 Body comparatively large, PW > 0.7 mm ..... 12

– Body smaller, PW < 0.7 mm ..... 20

12 Very large, PW > 1.0 mm [Sumatra: Mt. Kerinci] ..... ***erratus* sp.n.**

– Not so large, PW < 1.0 mm ..... 13

13 Temples strongly swollen, widening behind eyes [Sabah: Mt. Kinabalu] .... ***velatus* sp.n.**

– Temples more or less straight behind eyes ..... 14

14 Antennae slender at base (5th article 1.80–1.90 × as long as wide) ..... 15

– Antennae thicker at base (5th article 1.35–1.55 × as long as wide) ..... 16

15 Eyes smaller (EL = 0.09–0.10 mm) [W-Java] ..... ***microphthalmus*** (FAUVEL, 1904)

– Eyes larger (EL = 0.14–0.16 mm) [Sumatra, Java] ..... ***intuitus* sp.n.**

16 Antennae broadest in middle, base of last article conspicuously more narrow than previous articles ..... 17

– Antennae as thick in middle as near apex, base width of last article about the same that of as previous articles ..... 18

17 Middle antennomeres cylindrical (basal width > 90% of apical width). Slightly wider (SW > 0.9 mm in most cases) [Sumatra, Malaysia] ..... ***fusoideus* sp.n.**

– Middle antennomeres considerably incrassate (basal width < 90% of apical width). Slightly more slender (SW < 0.9 mm in most cases) [Philippines: SE-Mindanao] ..... ***shavrini* sp.n.**

18 Posterior pronotal corners acute-angled to right-angled [N-India (Assam, Meghalaya), S-China, Myanmar and N-Thailand] ..... ***cornutus*** (FAUVEL, 1895)

– Posterior pronotal corners obtuse-angled [Philippines: Luzon, Leyte, N-Mindanao] ..... ***bolmorum* sp.n.**

19 More or less dark, unicoloured [Java, Malaysia] ..... ***gagatinus* sp.n.**

– With light and/or contrasting colours ..... 20

20 Antennae with basal article dark, same colour as head ..... 21

– Antennae with basal article contrastingly lighter than head ..... 22

21 Pronotal margin strongly incised in middle, pronotal sculpture confused areolate (without nipples in cells) with slight setation [Myanmar, Thailand] ..... ***kurbatovi* sp.n.**

– Pronotal margin only slightly incised in middle, pronotal sculpture entirely areolate (with nipples in cells) without setation [Laos, Vietnam, S-China, India: Assam] ..... ***lagreanus* sp.n.**

22 Pronotum in posterior half still rather wide, eyes larger (EL = 0.11–0.13 mm), strongly protruding from sideline of head [Borneo] ..... ***cyzicus* sp.n.**

– Pronotum in posterior half strongly narrowing, eyes smaller (EL = 0.08–0.10 mm) and more flat, barely protruding from sideline of head ..... 23

23 Elytra at shoulders slightly wider and longer than pronotum, slightly convex. Pronotal margin more zigzagged [Sumatra, Peninsular Malaysia] ..... ***flavicornis*** (CAMERON, 1928)

– Elytra at shoulders as wide as pronotum, barely longer than pronotum, depressed, even slightly concave. Pronotal margin only slightly sinuate [Malaysia: Sarawak] ..... ***deductus* sp.n.**

## *Anotylus analepticus* sp.n.
(Figs 23, 25–31)

**Type locality:** Malaysia, Borneo, Sabah, Mt. Kinabalu National Park, deep ravine/gully near "Power Station", approx. 6°01'39"N 116°32'42"E, 1880 m.

**Type material: Holotype** ♂: "[MALAYSIA/Borneo:] Sabah; Mt. Kinabalu [National Park, Mt. Kinabalu, deep ravine in the vicinity of the "Power Station"] 1900 m [6°01'39"N 116°32'42"E, 1880 m], 26.IV.1987; [leg. D.] Burckhardt – [I.] Löbl; [underside:] 4a [sifting of mosses and dead leaves]" (MHNG). **Paratypes** (152): same data as holotype (1 ♂, 1 ♀, 68, MHNG; 1 ♂, 1 ♀, BMNH; 1 ♂, HNHM; 1 ♂, 1 ♀, SMNS; 1 ♂, 1 ♀, ZMUC; 1 ♂, 1 ♀, coll. Schülke-ZMHB; 1 ♂, 1 ♀, NHMW); Sabah, Mt. Kinabalu National Park, Mt. Kinabalu, between "Headquarters" and Liwagu River, 1500 m, 25.IV.1987, leg. I. Löbl & D. Burckhardt ("3a"), sifting of mosses, mushrooms and rotting wood near stream (2, MHNG); Sabah, Mt. Kinabalu National Park, Mt. Kinabalu, Liwagu Trail, 1750m [6°01'20"N 116°32'40"E], 27.IV.1987, leg. I. Löbl & D. Burckhardt ("5a"), sifting of bark, rotting wood and vegetational debris along trunk and at base of logs (1 ♂, 1 ♀, 38, MHNG); Sabah, Mt. Kinabalu National Park, Mt. Kinabalu, Liwagu Trail, 1580 m [6°00'50"N 116°32'40"E], 27.IV.1987, leg. I. Löbl & D. Burckhardt ("6a"), sifting of dead leaves and mosses near river (1, MHNG); Sabah, Mt. Kinabalu National Park, Mt. Kinabalu, Liwagu Trail, 1540 m [6°00'40"N 116°32'40"E], 29.IV.1987, leg. I. Löbl & D. Burckhardt ("8a"), sifting of vegetational debris in small ravine and at base of old trees (1, MHNG); Sabah, Mt. Kinabalu National Park Headquarters, 1560 m, 23.IV.1987, leg. A. Smetana ("B1"), sifting of debris at bottom of a gully in forest (1, FMNH); Sabah, Mt. Kinabalu National Park Headquarters at Liwagu river, 1500 m, 25.IV.1987, leg. A. Smetana ("B4"), primary tropical rain forest, sifting of leaf litter (1, FMNH); Sabah, Mt. Kinabalu National Park, summit trail above power plant, 1890 m, 26.IV.1987, leg. A. Smetana ("B5"), sifting of wet leaf litter, various debris and lush vegetation on a small seepage in the forest (2, FMNH; 1 ♂, 1 ♀, AMNH; 1 ♂, 1 ♀, CNCI; 1 ♂, 1 ♀, NMPC; 1 ♂, NIBR); Sabah, Mt. Kinabalu National Park, Liwagu River trail, 1500–1550 m, 27.IV.1987, leg. A. Smetana ("B8"), on fine gravel bank of the river (6, FMNH); Sabah, Mt. Kinabalu National Park Headquarters, Bukit Ular trail, 1700 m, 29.IV.87, leg. A. Smetana ("B12"), small seepage, sifting of wet leaf litter and various debris (1, FMNH); Sabah, Mt. Kinabalu National Park Headquarters at Liwagu River, 1500 m, 16.V.1987, leg. A. Smetana ("B54"), sifting of mushrooms, bark and moss around them on fallen rotting trees (1, FMNH); Sabah, Mt. Kinabalu National Park Headquarters at Liwagu River, 1500 m, 17.V.1987, leg. A. Smetana ("B57"), sifting of mouldy rotting wood and debris on huge fallen tree (6, FMNH); Sabah, Mt. Kinabalu National Park Headquarters, Liwagu river Trail, 1520 m, 11.VIII.1988, leg. A. Smetana ("B100"), sifting of layers of small fallen fleshy flowers (from a tree) on forest floor and debris underneath (1, FMNH); Sabah, Mt. Kinabalu National Park Headquarters, Liwagu river Trail, 1495 m, 12.VIII.1988, leg. A. Smetana ("B105"), huge fallen tree, sifting of fibrous bark, moss and debris underneath (2, FMNH); Sabah, Mt. Kinabalu, 5800 ft, VI.1968, leg. R.W. Taylor, humus (1, MHNG).

**Differential diagnosis:** Similar to *A. lagreanus* (both species have dark colour and relatively broad head), but distinguishable by the even shorter and thicker antennae.

**Description:** Measurements (in mm, n = 10): HW = 0.61 (0.55–0.66); TW = 0.60 (0.54–0.65); PW = 0.75 (0.70–0.79); SW = 0.80 (0.73–0.84); AW = 0.88 (0.80–0.96); HL = 0.47 (0.44–0.51); EL = 0.10 (0.09–0.11); TL = 0.23 (0.20–0.24); PL = 0.57 (0.54–0.60); SL = 0.65 (0.58–0.68); SC = 0.60 (0.53–0.63); FB = 1.72 (1.60–1.82); BL = 3.39 (3.19–3.63). Habitus as in Fig. 23. Forebody weakly shining despite strong sculpture, abdomen with granulose to imbricate sculpture, last visible tergites finely and indistinctly microsculptured at places, yet more lustrous than forebody. Forebody and abdomen dark brown, almost black with some reddish tint. Mouthparts and antennae reddish medium to dark brown, legs reddish medium brown. Head with anterior margin possessing an almost inconspicuous rim, continuing posteriorly in weak ridges besides eyes. Epistomal suture weakly impressed surrounding a mirror-shiny clypeus of almost rectangular shape slightly sticking out from the frontline of head with a slightly arcuate anterior edge. Rest of dorsal head surface strongly sculptured scabriculous on sides and somewhat strigose

in middle (with predominantly longitudinal, but short and intertwined strigae), at neck with a curved transversal ridge. Neck distinct, marked by constriction and a strong, shiny furrow, followed by a microsculptured neck. Temples gently curved anteriorly, slightly broadening then broadly rounded. Antennomere 1 fusoid and obliquely truncate on apex, tiny cylindrical article 2 obliquely truncate at base in opposite direction, article 3 club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.35–1.45 × longer than broad and 9–10 about 1.05–1.15 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with slight marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve leaving small concavities near rounded anterior corners. Laterally somewhat alatiform and gently curved posterior corners fully rounded forming almost perfect half-circle. Midline marked in posterior half with a furrow, dorsal surface rather even (slightly impressed near middle of side margin) but with areolate sculpture of rather large cells, slightly setose laterally. Elytra rather small, shoulders weakly developed but distinct. Laterally gently curved and broadening, posterior margin with slight rim and a narrow (almost indistinct) membranous lobe in outer 2/3. Posterior edge not straight but slightly oblique in outer half and gently curved in middle to continue straight to narrowly rounded sutural corners; therefore maximum elytral length not near posterior corners but around middle of each elytron. Suture marked with slight ridges, elytral dorsal surface rugose-papillate with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge barely marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with impressions in side lobes and a microsculptured median lobe, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia slighly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 25), rhomboid part of tergite X (Fig. 26), aedeagus as in Figs 27–29, accessory sclerite and spermatheca of female as in Figs 30 and 31 respectively.

**Distribution and bionomics:** The species is known from only the Mt. Kinabalu area in N-Borneo. It was collected in primary tropical rain forest by sifting of leaf litter, mosses, fungi, rotting wood and various plant debris, almost always near running water.

**Etymology:** The specific epithet (in Latin) means “empowering”, adjective referring to the Power Station of the type locality.

### ***Anotylus bolmorum* sp.n.**

(Figs 5, 16, 32–38)

**Type locality:** Philippines, Luzon, Kalinga Prov., Balbalan, approx. 17°28'N 121°07'E, 1220 m.

**Type material: Holotype** ♂: "[PHILIPPINES: Kalinga Prov.,] Balbalan; Luzon [4000', 17°28'N 121°07'E, III.1918, leg. G. Böttcher, via Staudinger & Bang-Haas] \ luzonica; Brh. Typ. \ Chicago NHMus; M. Bernhauer; Collection \ Bernhauer MS name?; Current genus:; Rimba; teste A. Newton 1994" (FMNH). **Paratypes** (6): Luzon, Balbalan, leg. Böttcher (1 ♀, FMNH; 1 ♀, SDEI; 1 ♀, NHMW); Leyte: Leyte Prov., Lake Danao, 500 m [650 m, 11°04'00"N 124°42'10"E], 19.II + 8.III.1991, leg. W. Schawaller et al., forest edge (1 Γ, SMNS); Mindanao: Lanao del Sur Prov., 30 km W Maramag, 1600 m [7°44.0'S 124°37.5'E], 28-30.XII.1990, leg. "Bolm" (1 ♀, SMNS); Mindanao, Bukidnon Prov., 5 km N Malaybalay, 900 m [8°12'30"S 125°06'40"E], 12.V.1996, leg. "Bolm" (1 ♀, NHMB).

**Differential diagnosis:** Similar to *A. cornutus* by the evenly broad antenna but distinguishable by its different pronotum. Female sternite VIII triangular but less acute on apex (Fig. 5).

**Description:** Measurements (in mm, n = 7): HW = 0.70 (0.64–0.73); TW = 0.66 (0.60–0.71); PW = 0.84 (0.80–0.88); SW = 0.94 (0.92–0.99); AW = 1.02 (0.90–1.10); HL = 0.54 (0.52–0.58); EL = 0.14 (0.13–0.15); TL = 0.25 (0.23–0.27); PL = 0.65 (0.60–0.70); SL = 0.79 (0.73–0.85); SC = 0.73 (0.69–0.79); FB = 2.01 (1.90–2.16); BL = 3.73 (3.57–4.04). Habitus as in Fig. 16. Forebody with dense and strong sculpture, weakly lustrous, abdomen with more or less granulose sculpture, last visible tergites with very faint microsculpture and dust-like setation, yet abdomen somewhat shinier than forebody. Head, elytra and antenna (except tip) blackish dark brown, pronotum and most of abdomen reddish dark brown, latter often darkening towards apex. Mouthparts, legs and apex of terminal antennomere reddish medium to dark brown. Head with anterior margin possessing slight rim continuing to the inner side of eye in a rather sharp ridge, impressed and shinier on inner side. Epistomal suture strongly impressed surrounding a slightly sculptured but mostly shiny clypeus of subrectangular shape, projecting from the frontline of head with slightly arcuate anterior edge. Rest of dorsal head surface strongly sculptured, median part mostly strigose, at supraantennal prominences strigosity following its curve, at temples rugose. Neck anteriorly constricted with shiny groove (posteriorly microsculptured), anterior to this a rather marked elevated transversal ridge separating it from vertex. Eyes rather large, protruding from the sideline of head, temples gently curved and insignificantly broadening anteriorly, more strongly rounded posteriorly. Antennomere 1 slightly swollen cylindrical and obliquely truncate on apex, small cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.35–1.55 × longer than broad and 9–10 about 1.35–1.45 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae, last article with almost the same width as penultimate one. Pronotum with marginal bead visible anteriorly but stronger posteriorly, middle of anterior margin pulled ahead in a curve forming concavities near narrowly rounded anterior corners. Laterally more arcuate anteriorly and rather alatiform posteriorly, meeting gently arched posterior margin with slight concavity before obtuse-angled corners. Midline marked with furrow, in posterior half deeply carved in, dorsal surface without setation, rather even (slightly impressed near middle of side margin) but on the most part with areolate sclupture (nipples in each cell) degrading to scabrous only on lateral parts and at furrow, without conspicuous setation. Elytra significantly longer and (together) wider than pronotum, shoulders well developed. Laterally curved (more gently anteriorly than posteriorly) and

broadening, posterior margin with slight rim, insignificantly concave near outer corners. Posterior edge slightly curved in middle, inner half almost straight, sutural corners right-angled, maximum elytral length at middle of each elytron. Suture marked with slight ridges, elytral dorsal surface rugose to slightly strigose with short setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge marked with a few stronger strigae, disc impressed alongside, otherwise almost flat, scutellum heart-shaped with impressions at apices of lateral lobes and narrow median lobe strongly microsculptured, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate, second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 32), rhomboid part of tergite X (Fig. 33), aedeagus as in Figs 34–36, accessory sclerite and spermatheca of female as in Figs 37 and 38 respectively.

**Distribution and bionomics:** The species is currently known from the Philippine islands Luzon, Leyte and the northern part of Mindanao, the only specimen with collecting details recorded was found at a forest edge.

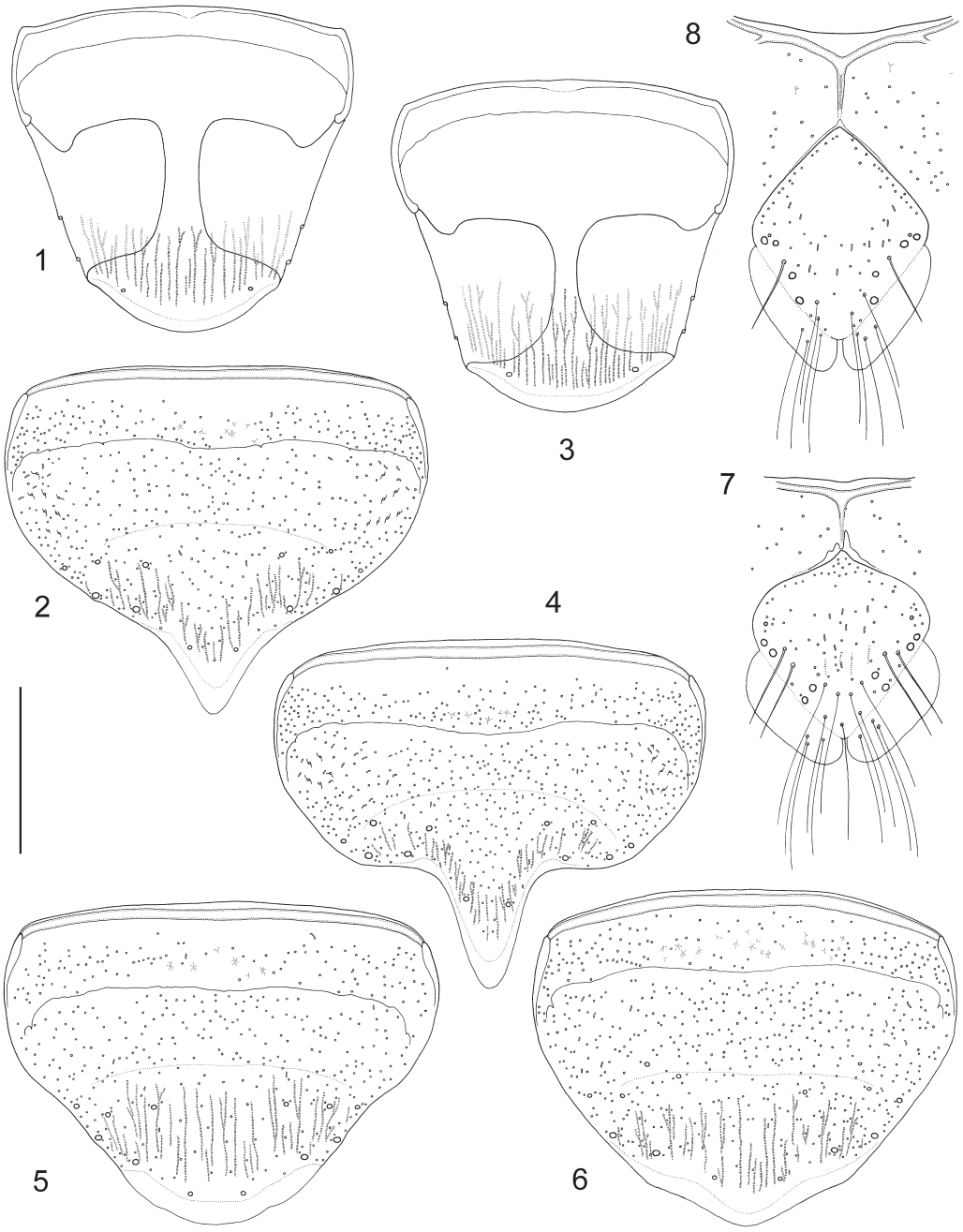
**Comment:** The material collected in the Philippines by Georg Böttcher (1890–1919) found its way to several museums, causing a rather complicated situation of split series. This species was originally named "*Delopsis luzonica*" (specific epithet now preoccupied in *Anotylus*) by Max Bernhauer, but not published and the four known specimens of the original series now belong to three different museums. Additional details about Böttcher's collecting are from LÖBL (2006) and STEHLÍK (2013).

**Etymology:** This species is named after the collectors of two of the paratypes, adjective with the suffix "-orum".

## *Anotylus cornutus* (FAUVEL, 1895)
(Figs 1–2, 17, 39–45)

*Delopsis cornuta* FAUVEL 1895: 198; CAMERON 1930: 209; CAMERON 1936: 31 (referring to misidentification from Java and the Malay Peninsula, both likely *A. fusoideus*).
*Rimba cornuta*: HERMAN 1970: 414; HERMAN 2001: 1490.
*Anotylus cornutus*: NEWTON 2017: 10. (cited as "*Delopsis cornuta* in *Anotylus*")

**Type material: Lectotype** ♂ (by present designation): "Lecto-; type [lilac margined disc, curator label] \ [MYANMAR: Kayah State,] Carin; Asciuii Chebà; 1200–1300 m. [vicinity of Bato, 19°27'N 96°58'E]; [leg.] L. Fea. I[Jan.] – [18]88. \ cornuta; Fvl. \ Ex-Typis [in red, framed] \ Coll. et det. A. Fauvel; Delopsis; cornuta Fauv.; R.I.Sc.N.B. 17.479 \ Delopsis; cornuta Fvl.; P.M. Hammond; det. 1972; Lectotype \ Lectotypus; Delopsis; cornuta Fauvel; des. Makranczy, 2018 \ Anotylus; cornutus (Fauvel); det. Makranczy, 2018" (ISNB). **Paralectotype** (♀): "Carin Ghecù; 1300–1400 m; L. Fea II-III.[18]88. \ Delopsis; cornuta Fvl. \ Typus [framed, in red] \ Delopsis n.gen.; cornuta; Fauv. [framed] \ Museo Civ.; Genova [beige label] \ Paralectotypus; Delopsis; cornuta Fauvel; des. Makranczy, 2018 \ Anotylus; cornutus (Fauvel); det. Makranczy, 2018" (MSNG).




Figs 1–8: *Anotylus cornutus* (1–2), *A. fusoideus* (3–4), *A. bolmorum* (5), *A. intuitus* (6), *A. loricatus* (7), *A. tangotadosi* (8): 1, 3) female tergite VIII; 2, 4–6) female sternite VIII; 7–8) female tergite X (rhomboid fusion). Scale bar = 0.2 mm (7–8), 0.26 mm (2, 5), 0.28 mm (4, 6), 0.34 mm (1, 3).


Figs 9–10: Habitus of *Anotylus* species. 9: *A. crepidatus*; 10: *A. loricatus*.


Figs 11–12: Habitus of *Anotylus* species. 11: *A. ustulosus*; 12: *A. tangotadosi*.


Figs 13–14: Habitus of *Anotylus* species. 13: *A. nepalensis*; 14: *A. jaechi*.


Figs 15–16: Habitus of *Anotylus* species. 15: *A. microphthalmus*; 16: *A. bolmorum*.


Figs 17–18: Habitus of *Anotylus* species. 17: *A. cornutus*; 18: *A. fusoideus*.


Figs 19–20: Habitus of *Anotylus* species. 19: *A. shavrini*; 20: *A. intuitus*.

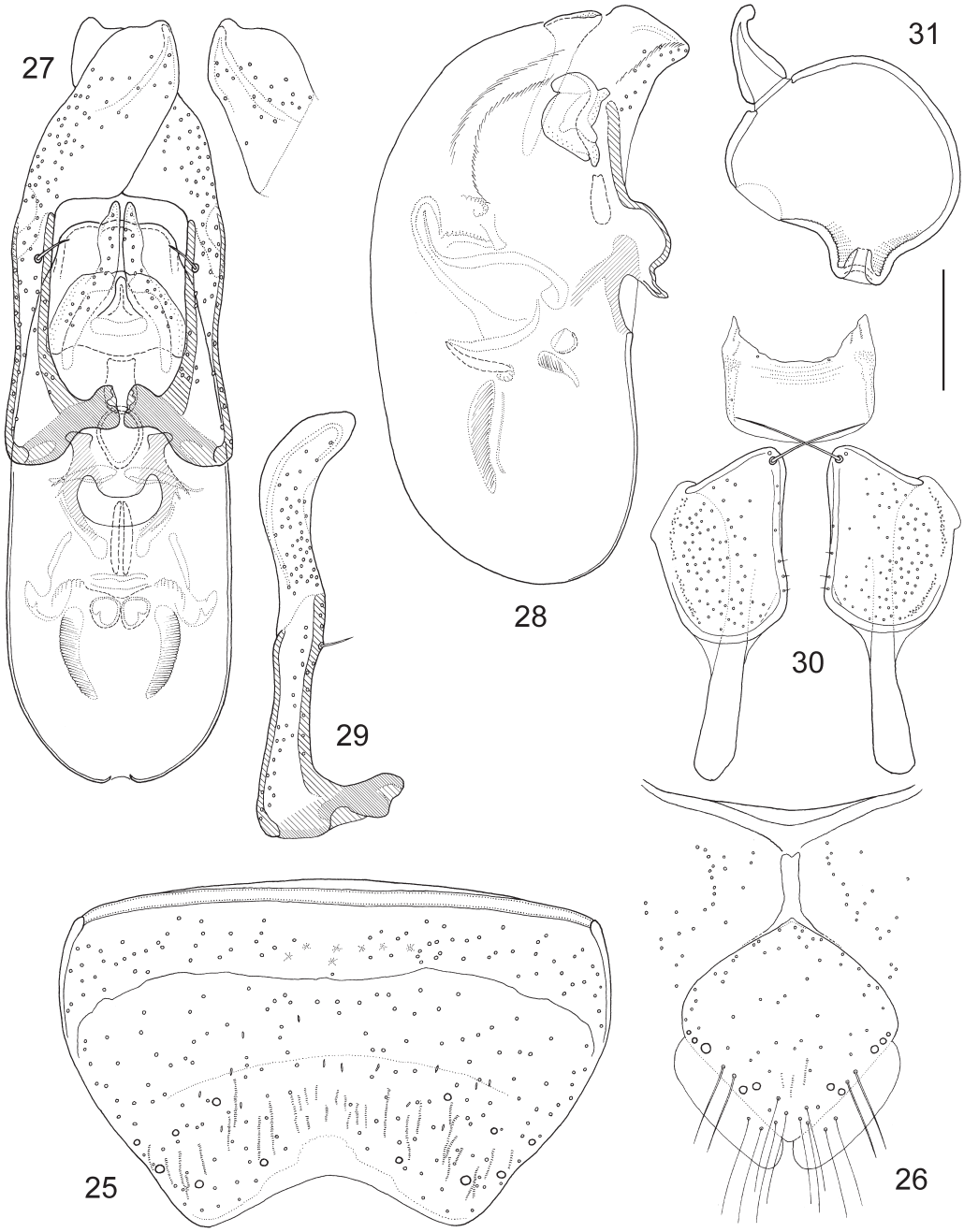

Figs 21–22: Habitus of *Anotylus* species. 21: *A. erratus*; 22: *A. hauriens*.


Figs 23–24: Habitus of *Anotylus* species. 23: *A. analepticus*; 24: *A. velatus*.

**Additional material: INDIA:** Meghalaya, Khasi Hills, Mawsynram-Balat, 1000 m, 27.X.1978, leg. C. Besuchet & I. Löbl ("30b"), sifting in forest (2, MHNG); Meghalaya, Khasi Hills, Weiloi, 1700 m [25°21'N 91°36'E], 27.X.1978, leg. C. Besuchet & I. Löbl ("31"), sifting in forest (13, MHNG); Meghalaya, Khasi Hills, above Pynursla, 1100 m, 29.X.1978, leg. C. Besuchet & I. Löbl ("34"), sifting in forest, in a small ravine (15, MHNG); Meghalaya, West Garo Hills dist., Mt. Nokrek National Park, trail Tura peak – Mt. Nokrek, 25°30'02"N; 90°14'54"E, 1200 m, 17.X.2004, leg. G. Cuccodoro, C. Carlton, R. Leschen & D. Erne ("5a"), sifting broadleaf litter in forest, Winkler extracted (1, MHNG); Assam, North Cachar Hills distr. (Dima Hasao), Mt. Barail, 25°06'43"N 93°03'11"E, 1700 m, 17.XI.1996, leg. G. Cuccodoro (#1a+10), sifting leaf litter & vegetational debris in forest, Winkler extracted (1, MHNG); Assam, North Cachar Hills distr. (Dima Hasao), Mt. Barail, 25°06'31"N 93°03'35"E, 1500 m, 28.XI.1998, leg. G. Cuccodoro (#8a+10), in forest near stream, sifting moist leaf litter & vegetational debris, Winkler extracted (1, MHNG); Assam, North Cachar Hills distr. (Dima Hasao), Mt. Barail, 25°06'31"N 93°03'35"E, 1500 m, 29.XI.1998, leg. G. Cuccodoro (#9d+10), in forest near stream, sifting leaf litter & vegetational debris, Winkler extracted (1, MHNG); Assam, North Cachar Hills dist., Mt Borail, trail Jatinga – summit, 25°07'07"N; 93°02'13"E, 650m, 28.X.2004, leg. G. Cuccodoro, C. Carlton, R. Leschen & D. Erne ("CC-029"), in mixed broadleaved forest, Berlese various litters (1, FMNH); Assam, North Cachar Hills dist., North Cachar Hills, road Umrangso – Gunjong, above New Sangbar, 25°25'22"N 92°46'06"E, 900 m, 27.X.2004, leg. G. Cuccodoro, C. Carlton, R. Leschen & D. Erne ("15a"), sifting rotted log and leaf litter with fungi in patch of mixed *Quercus* forest, Winkler extracted (1, MHNG); Assam, North Cachar Hills dist., North Cachar Hills, road Umrangso – Gunjong, below New Sangbar, 25°24'41"N 92°49'28"E, 900 m, 27.X.2004, leg. G. Cuccodoro, C. Carlton, R. Leschen & D. Erne ("15b"), sifting leaf litter and flood debris in dry bed of temporary stream in patch of mixed *Quercus* forest, Winkler extracted (3, MHNG).

**MYANMAR:** Shan State, Namhsan, 1600 m [22°58'N 97°10'E], 18.II.1996, leg. S. Kurbatov, litter (1, MHNG); Shan State, ca. 35 km N Aungban, Mintaingbin Forest Camp, primary riverine forest, extending ca. 50 – 100 m from Mintaingbin river, peripheric area cultivated, 20°55.20'N 96°33.60'E, ca. 1320 m 31.V.–8.VI.2002, leg. H. Schillhammer & U Myint Hlaing ("81d"), sifted from leaf litter at base of trees and slopes, partly with fungi (1, NHMW); Sagaing Division, Alaungdaw Katthapa NP, ca. 1.5 km SW Log Cabin Camp, along Pagoda Road, 22°18.902'N 94°28.060'E, ca. 400 m, 6.V.2003. leg. H. Schillhammer et al. ("108"), semi-evergreen forest close to Pagoda Stream; sifting of moist leaf litter in small ravines (1 ♀, 7, NHMW; 1 ♂, FMNH); Sagaing Division, Alaungdaw Katthapa NP, around Ku Mara monastery, 22°18.560'N 94°27.679'E, ca. 400 m, 8.V.2003, leg. H. Schillhammer et al. ("117"), sifting of moist leaf litter among stones in dried-up stream-bed, shaded by large bushes (6, NHMW; 1 ♂, 1 ♀, HNHM).

**CHINA:** Guangdong, Foshan City, Datang Township, 15.VI.2005, leg. Huang Hao (1, SNUC); Guangxi, Jinxiu Co., Laoshan Forest Farm, 24°07'17"N 110°11'54"E, 840 m, 18.VII.2014, leg. Z. Peng, X-B. Song, Y-M. Yu & Z-Q. Yan, beech forest, mixed leaf litter, humus, sifted (1, SNUC); Guangxi, Jinxiu Co., Laoshan Forest Farm, 24°07'02"N 110°11'51"E, 950 m, 26.VII.2014, leg. Z. Peng, X-B. Song, Y-M. Yu & Z-Q. Yan, beech forest, mixed leaf litter, humus, sifted (14, SNUC; 1 MHNG); Guangxi, Jinxiu Co., Dayao Shan N.R., "16 km" [locality name in native language, 十六公里, 24°08'56"N 110°14'55"E], 960 m, 25.VII.2014, leg. Z. Peng, X-B. Song, Y-M. Yu & Z-Q. Yan, *Rhododendron* forest, leaf litter, sifted (56, SNUC); Guangxi, Jinxiu Co., "16 km", 900 m, 31.VII.2011, leg. Zhong. Peng (1, SNUC); Guangxi, Jinxiu Co., Dayao Shan N.R., "16 km", 24°08'11"N 110°14'28"E, 1100 m, 17.VII.2014, leg. Z. Peng, X-B. Song, Y-M. Yu & Z-Q. Yan, beech forest, mixed leaf litter, humus, sifted (4, SNUC); Yunnan prov., Nabanhe Conv., Bangganghani, 22°03'47"N 100°38'06"E, 1780 m, 14.I.2004, leg. Li-Zhen Li & Liang Tang (1, SNUC); Yunnan prov., Jinghong, Nabanhe Nature Reserve, Banggangha'ni, Shanshenmiao, 1700 m, 27–30.IV.2011, leg. Zi-Wei Yin (1, SNUC), same but 27.IV.2009, leg. Jia-Yao Hu & Zi-Wei Yin (1, SNUC), same but 28.IV.2009 (1, SNUC); Yunnan prov., Nabanhe Nature Reserve, Bangganghani, Shanshenmiao, 22°08.450'N 100°35.289'E, 1700 m, 14.XI.2008, leg. Jia-Yao Hu & Liang Tang (5, SNUC); Yunnan prov., Nabanhe Conv., Xioanuoyoushangzhai, 22°02'14"N 100°36'44"E, 1300 m, 6.I.2004, leg. Li-Zhen Li & Liang Tang (2, SNUC); Yunnan, Baoshan Pref., Gaoligong Shan, 65 km NNE Tengchong, 25°35'20"N 98°40'21"E, 1750 m, 27.VIII.2009, leg. M. Schülke ("CH09-10"), secondary mixed forest, overgrown stone debris, litter and moss sifted (1 ♂, 11, coll. Schülke-ZMHB), same but 31.VIII.2009 ("CH09-10b") (19, coll. Schülke-ZMHB; 1 ♂, 1 ♀, ZMUC; 1 ♂, 1 ♀, SMNS; 1, SNUC); Yunnan, Baoshan Pref., Gaoligong Shan, W pass, 32 km SE Tengchong, 24°51'11"N 98°44'27"E, 1600 m, 28.VIII.2009, leg. M. Schülke ("CH09-14"), cleft with devastated primary forest, litter & mushrooms sifted (2, coll. Schülke-ZMHB); Yunnan, Baoshan Pref., Gaoligong Shan, mountain ridge, 22 km S Tengchong, 24°49'29"N 98°29'30"E, 1800 m,

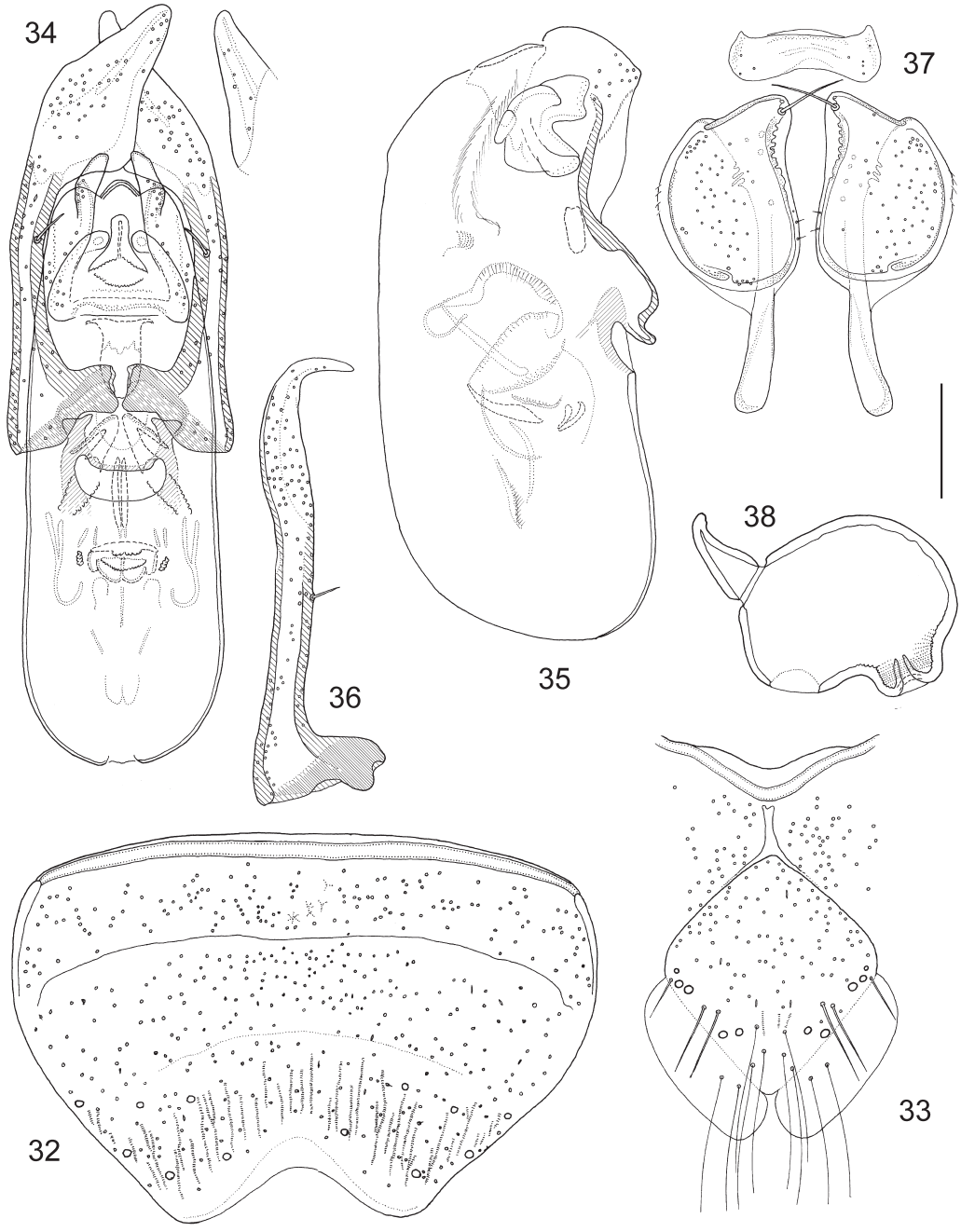



Figs 25–31: *Anotylus analepticus*: 25) male sternite VIII; 26) male tergite X (rhomboid fusion); 27) aedeagus, frontal view; 28) median lobe, lateral view; 29) left paramere, lateral view; 30) female accessory sclerites; 31) spermatheca. Scale bar = 0.08 mm (30–31), 0.1 mm (25–29).

30.VIII.2009, leg. M. Schülke ("CH09-19"), devastated primary forest, litter & mushrooms sifted (1 coll. Schülke-ZMHB); Yunnan, Lincang Pref., Bang-ma Shan, 33 km SSW Lincang, 23°35'41"N 100°00'27"E, 2150 m, 11.IX.2009, leg. M. Schülke ("CH09-42"), deciduous forest remnant, N-slope, litter & dead wood sifted (12, coll. Schülke-ZMHB; 1 ♂, 1 ♀, AMNH; 1 ♂, 1 ♀, NIBR; 1 ♂, 1 ♀, NMPC); Tibet, Medog Co., 80K, 29°39'50"N 95°29'50"E, 2111m, 11.VIII.2016, leg. Zhilin Chen (1, SNUC).

**THAILAND:** Chiang Mai Prov., Doi Pui [17°48'N 98°55'E], 14.III.1982, leg. G. de Rougemont (1, BMNH; 1, HNHM); Chiang Mai Prov., Doi Angkhang, 10 km W Fang, 1500 m [19°52'N 99°03'E], 30.X.1987, leg. P. Schwendinger (1, MHNG); Chiang Mai Prov., Doi Suthep, 18°48'N 98°55'E, 1200 m, 11.III.1992, leg. H. Maliczky (1, coll. Puthz, MHNG); Chiang Mai Prov., Doi Suthep, versant nord, 1550 m [18°50'10"N 98°53'20"E], 4.XI.1985, leg. D. Burckhardt & I. Löbl ("8"), sifting of dead leaves in small ravine with streamlet (4, MHNG); Chiang Mai Prov., Doi Suthep, N-slope, 1050 m, 5.XI.1985, leg. D. Burckhardt & I. Löbl ("10"), very wet ravine, sifting of rotting wood, bark and mushrooms (3, MHNG); Chiang Mai Prov., Doi Inthanon, 1650 m, 7.XI.1985, leg. D. Burckhardt & I. Löbl ("16"), very wet ravine, sifting of vegetational debris and mushrooms at a stream (2, MHNG); Chiang Mai Prov., Chomthong (or Jomthong) District, Doi Inthanon National Park, Ban Pha Mon, 1050 m [18°32'50"N 98°33'47"E], 23.XI.1996, leg. P. Schwendinger, patches of mixed evergreen-deciduous forest along gullies and streams (3, MHNG); Chiang Mai Prov., Doi Inthanon, Siribhum waterfall, 18°32.808'N 98°30.927'E, 1330 m, 9.I.2014, leg. "Ob" ("32"), in debris between plants (1, coll. Assing); Chiang Mai Prov., Doi Inthanon, Khun Huay Hang, 18°34.371'N 98°31.211'E, 1290 m, 11.I.2014, leg. "Ob" ("37"), arable land, litter along rocky stream (2, coll. Assing); Chiang Mai Prov., Doi Pha Hom Pok, Mae Hang waterfall, 20°02.928'N 99°09.887'E, 1480 m, 23.I.2014, leg. "Ob" ("56"), leaf litter sifted (2, coll. Assing; 2, HNHM); Nan Prov., Pua District, Doi Phu Kha National Park, 1700 m [19°11'N 101°06'E], 6.X.1991, leg. P. Schwendinger, evergreen hill forest (7, MHNG).

**Redescription:** Measurements (in mm, n = 10): HW = 0.72 (0.68–0.76); TW = 0.68 (0.65–0.73); PW = 0.85 (0.81–0.91); SW = 0.00 (0.94–1.05); AW = 0.00 (0.98–1.12); HL = 0.57 (0.54–0.60); EL = 0.14 (0.13–0.15); TL = 0.27 (0.25–0.28); PL = 0.69 (0.64–0.75); SL = 0.83 (0.79–0.89); SC = 0.78 (0.74–0.84); FB = 2.14 (2.05–2.29); BL = 4.18 (3.96–4.50). Habitus as in Fig. 17. Forebody with dense and strong sculpture, weakly lustrous, abdomen with more or less granulose sculpture, last visible tergites with very faint microsculpture and dust-like setation, yet abdomen somewhat shinier than forebody. Forebody, abdomen and antenna dark brown, almost black with some reddish tint, especially pronotum, Sutural corners and along apical margin of elytra sometimes lighter. Mouthparts, legs and apex of terminal antennomere reddish medium to dark brown. Head with anterior margin possessing slight rim continuing to the inner side of eye in a rather sharp ridge. Epistomal suture strongly impressed surrounding a slightly sculptured but mostly shiny clypeus of subhexagonal shape, projecting from the frontline of head with truncate anterior edge. Rest of dorsal head surface strongly sculptured, posterior half mostly areolate (with tiny nipple in each cell), but in centre a bit confused and laterally rather scabrous. Anterior half strigose, medially longitudinal, laterally, however, oblique and more or less following the ridge of supraantennal prominence. Neck anteriorly constricted with shiny groove (posteriorly microsculptured), anterior to this a rather marked elevated transversal ridge separating it from vertex. Eyes rather large, protruding from the sideline of head, temples gently curved and insignificantly broadening anteriorly, more strongly rounded posteriorly. Antennomere 1 slightly swollen cylindrical and obliquely truncate on apex, small cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.6–1.8 × longer than broad and 9–10 about 1.5–1.7 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae, last article with almost the same




Figs 32–38: *Anotylus bolmorum*: 32) male sternite VIII; 33) male tergite X (rhomboid fusion); 34) aedeagus, frontal view; 35) median lobe, lateral view; 36) left paramere, lateral view; 37) female accessory sclerites; 38) spermatheca. Scale bar = 0.08 mm (38), 0.1 mm (33, 37), 0.11 mm (34–36), 0.12 mm (32).

width as penultimate one. Pronotum with marginal bead visible anteriorly but stronger posteriorly, middle of anterior margin pulled ahead in a curve forming concavities near narrowly rounded anterior corners. Laterally rather alatiform (zigzagged, about four teeth variously developed) and curved, posterior corners acute-angled by meeting with gently arched (and ridged) posterior margin. Midline marked with furrow, in posterior half deeply carved in, dorsal surface rather even (slightly impressed near middle of side margin) but on the most part with areolate sclupture degrading to scabrous on extreme lateral parts and at furrow, without conspicuous setation. Elytra significantly longer and (together) wider than pronotum, shoulders well developed. Laterally gently curved and somewhat broadening, posterior margin with slight rim and a narrow (almost indistinct) membranous lobe at around outer 2/3. Posterior edge slightly curved, maximum elytral length slightly outwards middle of each elytron. Sutural corners almost right-angled, inner half of posterior margin only slightly oblique. Suture marked with slight ridges, elytral dorsal surface rugose to slightly strigose with visible (short) setae in the most lateral areas at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge marked only with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with microsculptured impressions at apices of lateral lobes and indistinct median lobe strongly microsculptured, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 39), rhomboid part of tergite X (Fig. 40), aedeagus as in Figs 41–43, accessory sclerite and spermatheca of female as in Figs 44 and 45 respectively.

**Distribution and bionomics:** This species is ranging from N-India (Meghalaya, Assam), S-China, Myanmar and N-Thailand and was usually collected from litter in forest.

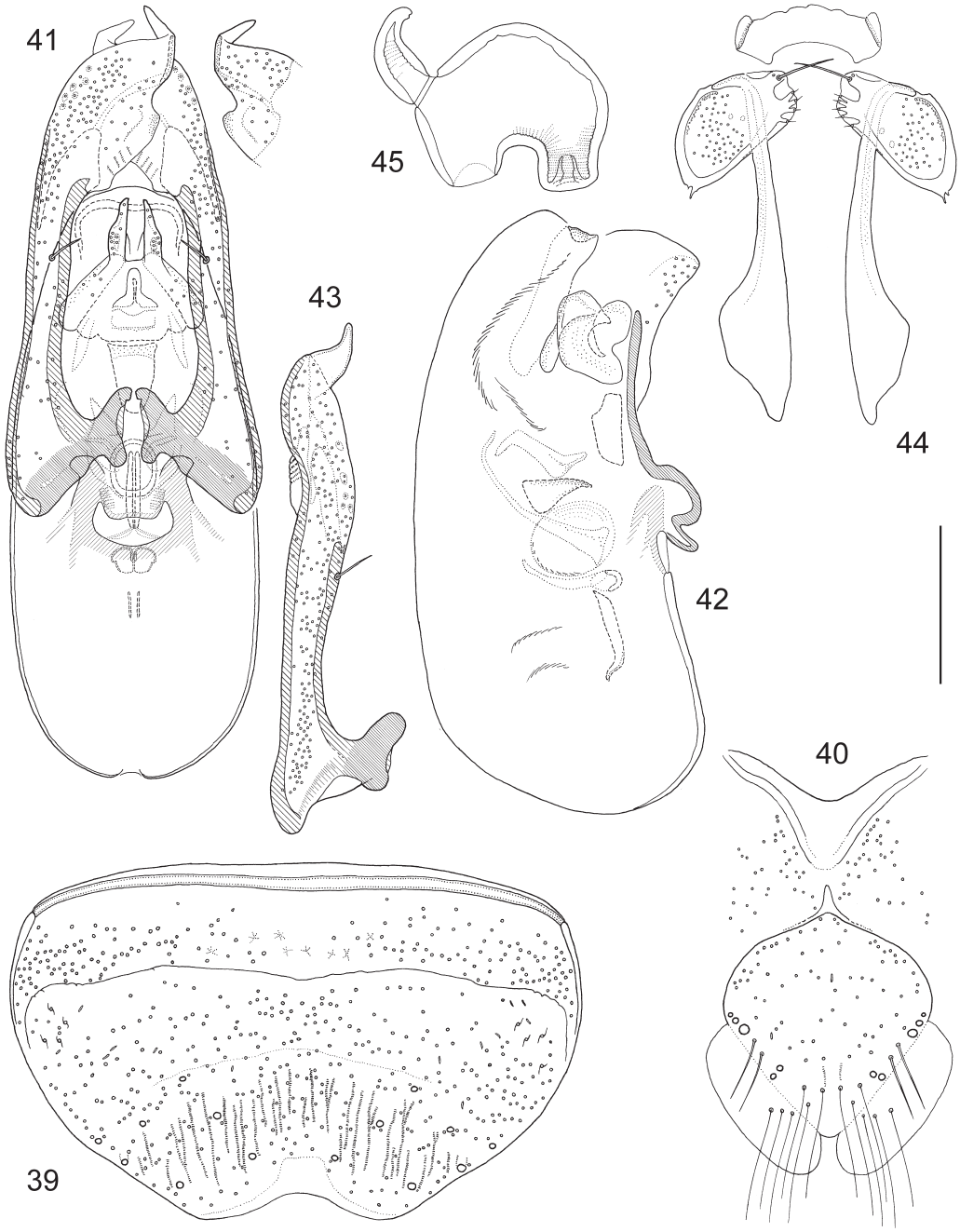
### *Anotylus crepidatus* sp.n.
(Figs 9, 46–52)

**Type locality:** Malaysia, Borneo, Sabah, Mt. Kinabalu National Park, Mt. Kinabalu summit trail above power plant, approx. 6°01'44"N 116°32'48"E, 1870 m.

**Type material: Holotype** ♂: "[MALAYSIA/] Borneo: Sabah, Mt. Kinabalu N.P.,; Summit tr. above power plant, 1890 m,; 26.IV.1987, leg. A. Smetana (B5), sif-; ting of wet leaf litter, various debris + lush; vegetation on small seepage in the forest \ Borneo Sabah Mt.; Kinabalu N.P. Sum-; mit Trail 1890m; A. Smetana \ Field Museum; ex collection of; H.G. Nelson \ Delo 8 [A. Smetana's handwriting] \ Anotylus; det. Newton 2001" (FMNH). **Paratypes** (2): same data as holotype (1 ♀, FMNH; 1 ♀, MHNG).

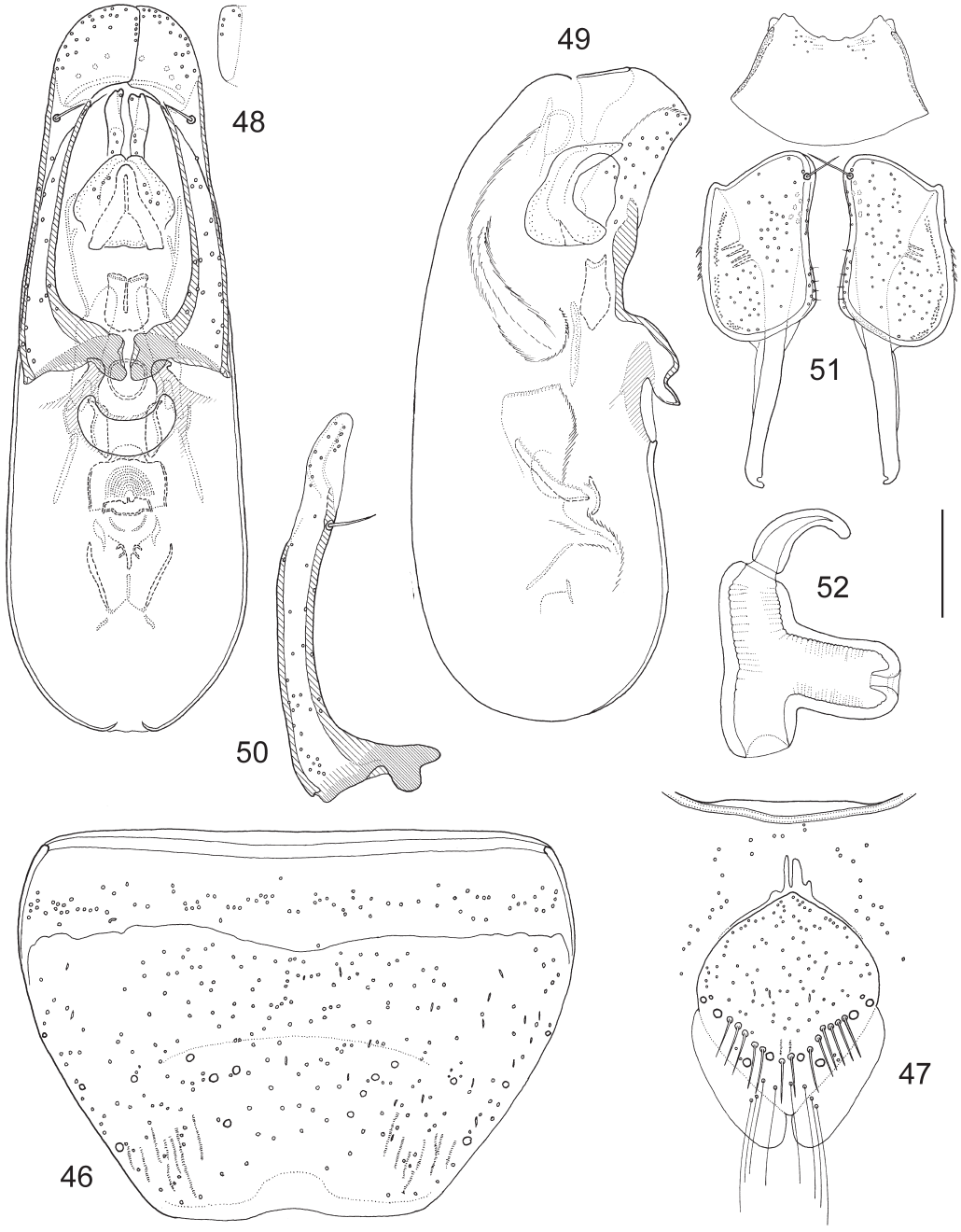
**Differential diagnosis:** Similar to *A. loricatus*, but distinguishable by the longer elytra.

**Description:** Measurements (in mm, n = 3): HW = 0.74 (0.73–0.75); TW = 0.72 (0.71–0.73); PW = 0.86 (0.85–0.87); SW = 0.94 (0.92–0.96); AW = 1.04 (1.00–1.07); HL = 0.50 (0.49–0.50); EL = 0.15 (0.14–0.15); TL = 0.24 (0.24–0.25); PL = 0.66 (0.65–0.67);




Figs 39–45: *Anotylus cornutus*: 39) male sternite VIII; 40) male tergite X (rhomboid fusion); 41) aedeagus, frontal view; 42) median lobe, lateral view; 43) left paramere, lateral view; 44) female accessory sclerites; 45) spermatheca. Scale bar = 0.09 mm (40), 0.1 mm (39, 41–43), 0.13 mm (45), 0.16 mm (44).

SL = 0.81 (0.80–0.82); SC = 0.75 (0.74–0.76); FB = 2.02 (2.00–2.05); BL = 4.00 (3.84–4.11). Habitus as in Fig. 9. Forebody weakly shining despite strong sculpture, abdomen with granulose to imbricate sculpture, but bases of tergites with less sculpture and shinier in general than forebody. Forebody and abdomen dark brown, almost black, pronotum, elytra and abdomen with slight reddish tint. Antenna almost black, except first article medium to dark brown, second, third and apex of terminal one dark brown. Mouthparts and legs medium to dark brown. Head with anterior margin without distinct rim, but with slightly elevated margin from tip of supraantennal prominences to eyes. Epistomal suture strongly impressed surrounding a shiny, but anteriorly sculptured clypeus of nearly hexagonal shape, pulled forward from the frontline of head with truncate anterior edge. Rest of dorsal head surface strongly sculptured, predominantly strigose in middle (laterally directionality turning from longitudinal to oblique) and more rugose on sides, posterior middle of vertex divided by narrow midlongitudinal furrow connected to shiny anterior neck (posterior neck microsculptured) and posteriorly bordered by conspicuous ridge, neck marked by constriction. Eyes relatively large and protruding from sideline of head, temples posteriorly broadening and evenly rounded. Antenna with first segment not sculptured, shiny, from fourth dark tactile setae on apices of each article, antennomeres 2 and 4–10 with rather conspicuous basal dish. First antennomere fusoid, somewhat swollen, small article 2 obliquely truncate at base, article 3 more elongate club-shaped, articles 4–10 incrassate, cylindrical (antennomeres 4–5 about 1.3–1.4 × longer than broad and 9–10 about 1.15–1.25 × longer than broad). Terminal antennomere apically constricted and less broad than previous ones, antennomere 7 but 8–10 even more with lighter apical crown of setae. Pronotum with thin marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve forming concavities near narrowly rounded anterior corners. Laterally rather evenly arched but posterior corners still marked (albeit not sharp) by meeting with gently bent posterior margin. Midline marked in posterior half with indistinct furrow, dorsal surface rather even (slightly impressed near middle of side margin) but with rugulose sculpture only forming a few discernible cells (areolate), for the most part a mesh without directionality (except going around the median furrow), slightly setose laterally. Elytral length well exceeding length of pronotum (at least 1/4 longer), shoulders well formed. Laterally only slightly curved and broadening, posterior margin with slight rim and no membranous lobe. Posterior edge slightly curved, maximum elytral length slightly outwards middle of each elytron. Suture marked with ridges, elytral dorsal surface rugose-strigose with visible (short) setae at the bases of protuberant wrinkles. Elytral epipleural ridge barely marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped and shiny with microsculptured impressions anteriorly, also a small median lobe, shinier impressed area towards shoulders following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate, second segment with paratergites broadening posteriorly (abdomen appearing somewhat constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 46), rhomboid part of tergite X (Fig. 47), aedeagus as in Figs 48–50, accessory sclerite and spermatheca of female as in Figs 51 and 52 respectively.




Figs 46–52: *Anotylus crepidatus*: 46) male sternite VIII; 47) male tergite X (rhomboid fusion); 48) aedeagus, frontal view; 49) median lobe, lateral view; 50) left paramere, lateral view; 51) female accessory sclerites; 52) spermatheca. Scale bar = 0.07 mm (52), 0.08 mm (51), 0.1 mm (48–50), 0.12 (46–47).

**Distribution and bionomics:** The species is only known from its type locality and was collected at Mt. Kinabalu (N-Borneo) by sifting of leaf litter and debris at seeping water in tropical rainforest.

**Etymology:** The name of the species in Latin means "wearing sandals", adjective referring to the camouflage of the species treated here.

## *Anotylus cyzicus* sp.n.

(Figs 53–59, 172)

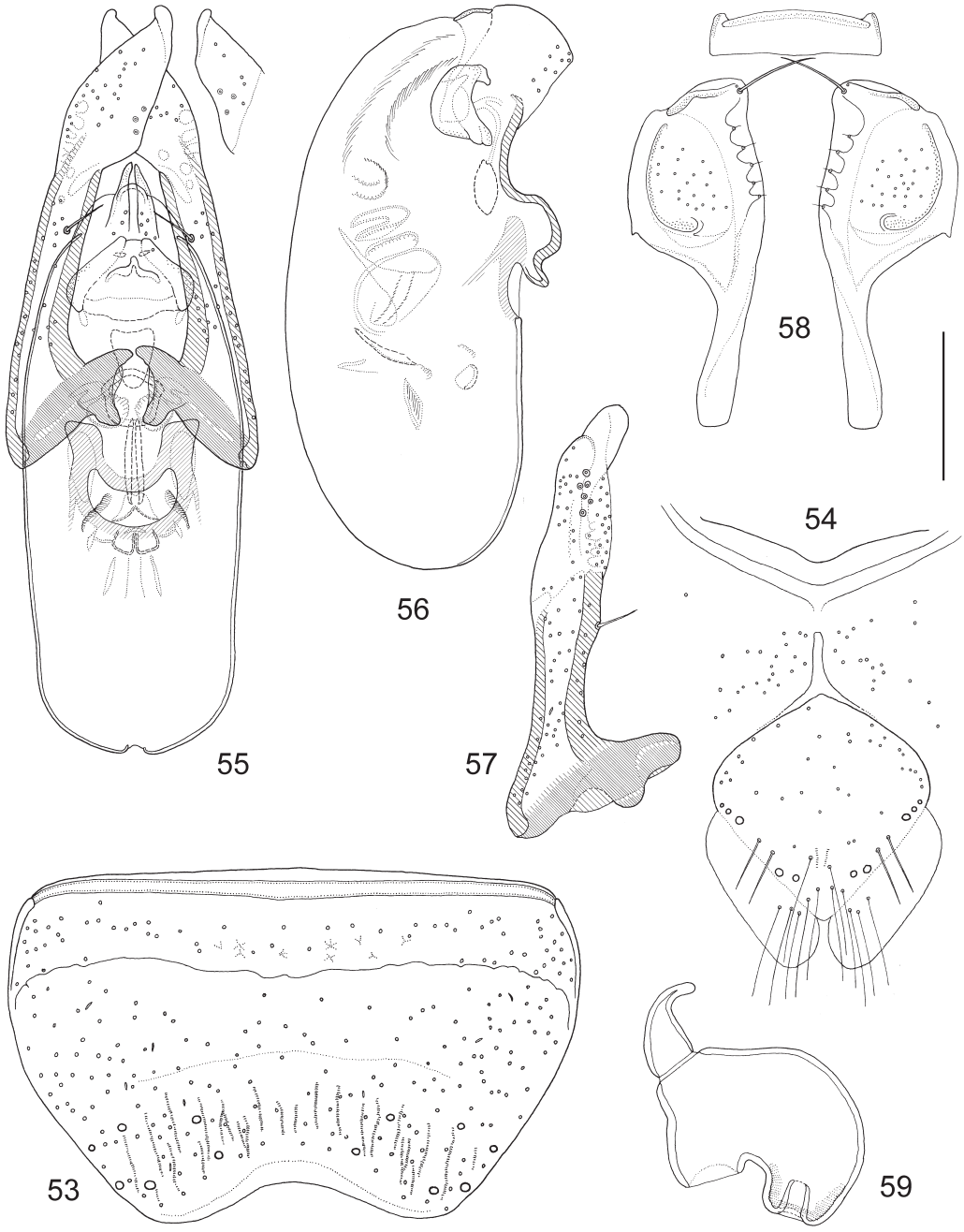
**Type locality:** Malaysia, Borneo, Sabah, Sepilok Forest Reserve, approx. 5°51'N 117°57'E, 20 m.

**Type material: Holotype** ♂: "[MALAYSIA:] Borneo Sabah; Sepilok Forest Res.; nr. Sandakan [5°51'N 117°57'E] 10.6[VI].[19]68, [leg.] R. W. Taylor \ Rimba; ? flavicornis (Cam.); P.M. Hammond; det. 1974 ♂" (MHNG). **Paratypes** (154): same data as holotype (1, MHNG); Sabah, Batu Punggul Resort env. [4°38'20"N 116°36'40"E], 24.VI.–1.VII.1996, leg. J. Kodada ("11c"), vegetation debris and forest floor litter accumulated around large trees near river (5, MHNG), Sabah, Crocker Range, Mawar waterfall env. [5°47'49"N 116°24'30"E], 17.VI.1996, leg. J. Kodada ("9c"), vegetation debris and forest litter around fallen trees (7, NHMW); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, relatively dry Dipterocarpaceae forest, ca. 500 m, 6.V.1987, leg. I. Löbl & D. Burckhardt ("14a"), sifting of rotting wood with mushrooms at edge of forest, and dead leaves at base of trees in forest (10, MHNG); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, relatively humid Dipterocarpaceae forest, ca. 500 m, 7.V.1987, leg. I. Löbl & D. Burckhardt ("15a"), sifting in forest (1 ♂, 12, MHNG; 1, HNHM; 1 ♂, 1 ♀, SMNS; 1 ♂, 1 ♀, BMNH; 1 ♂, 1 ♀, coll. Schülke-ZMHB); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, relatively dry Dipterocarpaceae forest, 550–600 m [6°02.5'N 116°42.0'E], 9.V.1987, leg. I. Löbl & D. Burckhardt ("18a"), sifting of dead leaves and rotting wood, especially around bamboo (1 ♂, 1 ♀, 4, MHNG, 1 ♀, SDEI, 1 ♀, NIBR); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, below Bat or Kipungit Cave, ca. 600 m [6°03'10"N 116°42'00"E], 10.V.1987, leg. I. Löbl & D. Burckhardt ("19a"), sifting of vegetable debris in a ravin in the vicinity of the river (1 ♂, 6, MHNG; 1 ♂, HNHM; 1 ♂, 1 ♀, AMNH; 1 ♂, 1 ♀, ZMUC; 1 ♂, NIBR; 1 ♂, SDEI); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, Mamut River in the vicinity of the "Headquarters", ca. 500 m [6°02'50"N 116°42'10"E], 11.V.1987, leg. I. Löbl & D. Burckhardt ("20"), sifting vegetational debris (1, MHNG); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, Dipterocarpaceae forest, ca. 500 m, 11.V.1987, leg. I. Löbl & D. Burckhardt ("21"), sifting at bases of old trees and on mushrooms in the vicinity of a stream (12, MHNG); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, Langanan Falls, 900–950 m [6°03'50"N 116°41'20"E], montane Dipterocarpaceae forest, 12.V.1987, leg. I. Löbl & D. Burckhardt ("22a"), sifting vegetational debris near stream (8, MHNG); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, Dipterocarpaceae forest near "Headquarters", ca. 500 m, 13.V.1987, leg. I. Löbl & D. Burckhardt ("24a"), sifting of rotting wood and dead leaves (3, MHNG); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, Langanan river, 850 m [6°03'40"N 116°41'40"E], 14.V.1987, leg. I. Löbl & D. Burckhardt ("25a"), sifting of dead leaves and mosses in the vicinity of a stream (1 ♂, 1 ♀, 18, MHNG; 1 ♂, HNHM; 1 ♂, NHMB); Sabah, Mt. Kinabalu National Park, above Poring Hot Springs, 520 m, 9.V.1987, leg. A. Smetana ("B36"), sifting of leaf litter, twigs and debris on forest floor (1, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs 480 m, 10.V.1987, leg. A. Smetana ("B39"), sifting of leaf litter, debris and fermenting fruits on forest floor (1, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, 500 m, 10.V.1987, leg. A. Smetana ("B40"), sifting of wet leaf litter and debris along a small creek (1, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs area below Langanan Fall, 850 m, 12.V.1987, leg. A. Smetana ("B45"), sifting of mouldy mushrooms and detritus around them on large fallen tree (1, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs area, Kipungit Creek "2", 540 m, 15.VIII.1988, leg. A. Smetana ("B113"), sifting leaf litter and humus under it, mainly around bases of large trees in tropical rain forest (12, FMNH); Sabah, Mt. Kinabalu National Park, above Poring Hot Springs, 520 m, 15.VIII.1988, leg. A. Smetana ("B115"), sifting of layers of fermenting fruits (under *Ficus* sp.) on forest floor and debris underneath (4, FMNH; 1 ♂, 1 ♀, ISNB; 2, NMPC); Sabah, Mt. Kinabalu National Park, Poring Hot Springs area, Langanan Creek "2", 885 m, 22.VIII.1988, leg. A.

Smetana (“B137”), sifting of leaf litter and various debris, mainly around bases of large trees and along fallen trees in tropical rain forest (1, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, 495 m, 23.VIII.1988, leg. A. Smetana (“B140”), sifting of layers of fallen fruits in primary tropical rain forest (1, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, 480 m, 24.VIII.1988, leg. A. Smetana (“B143”), freshly fallen tree, sifting of aromatic green leaves, twigs plus debris under and around the tree (1, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, 495 m, 25.VIII.1988, leg. A. Smetana (“B148”), sifting of moldy leaf litter and various debris on forest floor (1, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs area, Eastern Ridge Trail, 850 m, 28.VIII.1988, leg. A. Smetana (“B158”), sifting of old, partly fermenting aromatic fruits of a tree, accumulated on forest floor in tropical rain forest (3, FMNH); Sabah, Mt. Kinabalu National Park, Poring Hot Springs, 510 m, 30.VIII.1988, leg. A. Smetana (“B162”), sifting of moldy leaf litter and various debris on forest floor (4, FMNH; 1 ♂, 1 ♀, CNCI); Sabah, Tawau, Quoin Hill, 750 ft [4°24'40"N 118°01'10"E, 400 m], 16.–18.VI.1968, leg. R.W. Taylor, ex humus (2, MHNG); INDONESIA: Kalimantan Tengah, Central Borneo, Murung Raya, Busang / Rekut confluence, 0°03'S 113°59'E, VIII.2001, leg. M. Brendell & H. Mendel (“Barito Ulu 2001”, FIT2) (1, BMNH); BRUNEI: Belait Distr., Sungai Topi [4°10'N 114°43'E], XI.1991, leg. D. Roubik (1, SEMC) Bukit Sulang, near Lamunin [4°41'N 114°43'E, leg. P.M. Hammond], 7.IX.1982, flood plain leaf litter (2, BMNH).

**Differential diagnosis:** Similar to *A. kurbatovi*, but can be distinguished by the different pronotal sculpture.

**Description:** Measurements (in mm, n = 10): HW = 0.57 (0.53–0.60); TW = 0.54 (0.50–0.58); PW = 0.65 (0.60–0.69); SW = 0.74 (0.70–0.79); AW = 0.76 (0.70–0.82); HL = 0.47 (0.44–0.49); EL = 0.12 (0.11–0.13); TL = 0.22 (0.21–0.24); PL = 0.53 (0.50–0.58); SL = 0.62 (0.58–0.67); SC = 0.58 (0.54–0.63); FB = 1.64 (1.55–1.76); BL = 3.16 (2.87–3.44). Habitus as in Fig. 172. Forebody with dense and strong sculpture, weakly lustrous, abdomen with more or less granulose-imbricate sculpture smoothening a bit posteriorly, last visible tergites with more microsculpture and dust-like setation, still a bit shinier than forebody. Head blackish dark brown, basal part of antenna and abdomen (except apex) reddish medium brown, rest of antenna, last visible tergites, pronotum and elytra reddish dark brown, legs and mouthparts light to medium brown. Head with anterior margin possessing a weak rim, slightly visible around supraantennal prominences continuing in ridges besides eyes, head surface impressed at its inner side, before fading. Epistomal suture impressed surrounding lightly sculptured, shiny clypeus of slightly trapezoid shape, somewhat pulled forward from the frontline of head with truncate anterior edge. Rest of dorsal head surface with confused areolate sculpture forming some cells (with tiny nipples) but laterally and medially degrading to rugososity. Posterior vertex transversally impressed anteriad ridge before shiny neck (posterior neck microsculptured) connected to infraocular ridge (obscured by rugosity) and inside surface slightly impressed in arcuate fashion. Eyes moderate sized and rather flat less protruding from the sideline of head, temples insignificantly widening in anterior half, only posteriorly rounded. Antennomere 1 slightly swollen cylindrical and obliquely truncate on apex, extremely short cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.8–2.0 × longer than broad and 9–10 about 1.65–1.85 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible anteriorly but very strong posteriorly, middle of anterior margin pulled ahead in a curve forming small concavities near rounded anterior corners. Lateral margin moderately curved and rather uneven with traces of marginal bead, at middle slightly




Figs 53–59: *Anotylus cyzicus*: 53) male sternite VIII; 54) male tergite X (rhomboid fusion); 55) aedeagus, frontal view; 56) median lobe, lateral view; 57) left paramere, lateral view; 58) female accessory sclerites; 59) spermatheca. Scale bar = 0.08 mm (58), 0.1 mm (59), 0.12 mm (53–57).

incised, with slight concavity before meeting obtuse-angled posterior corners. Posterior margin gently (but not evenly) arched, very slightly concave next to corners. Midline marked with a median furrow, in posterior half carved in deep, dorsal surface rather even, sides somewhat depressed along margin, on almost entire surface maintaining areolate sculpture, with slight nipples in each cell, without setation. Elytra longer and (together) wider than pronotum, shoulders well developed. Laterally gently curved and somewhat broadening, posterior margin with slight rim and without membranous lobe. Posterior edge slightly curved in outer half, maximum elytral length at middle of each elytron. Sutural corners almost right-angled, inner part of posterior margin straight and only slightly oblique. Suture marked with slight ridges, elytral dorsal surface rugose to slightly strigose with short setation. Elytral epipleural ridge marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with impressions in apices of lateral lobes, median lobe elongate, microsculptured, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 53), rhomboid part of tergite X (Fig. 54), aedeagus as in Figs 55–57, accessory sclerite and spermatheca of female as in Figs 58 and 59 respectively.

**Distribution and bionomics:** The species is only known from Sabah and Brunei (N-Borneo) and was most frequently collected at relatively low altitudes (400–950 m) by sifting of wet, sometimes fungusy leaf litter in montane Dipterocarpaceae forests often in vicinity of mossy streams. It was found occasionally in montane Dipterocarpaceae forest or even *Lithocarpus-Podocarpus* forest at 1500 m.

**Etymology:** The specific epithet is basically a fantasy word, noun in apposition, but it is also the name of an ancient city near Edincik (Aidindzik), mysian trade city on the south coast of the Sea of Marmara.

### *Anotylus deductus* sp.n.
(Figs 60–64, 177)

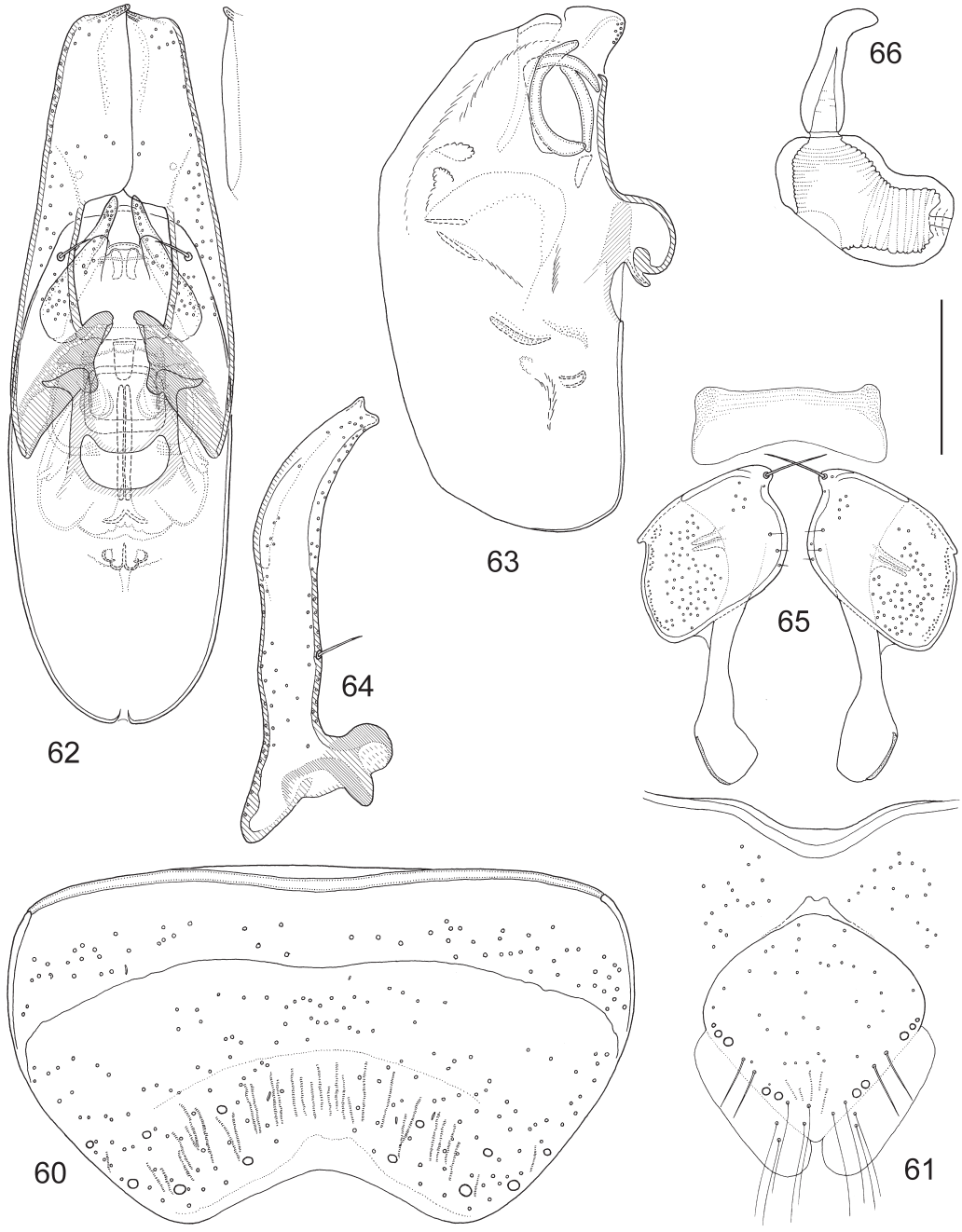
**Type locality:** Malaysia, Borneo, Sarawak, Tutoh River near Gunung Mulu N.P., approx. 3°52.5'N 114°59.5'E, 190 m.

**Type material: Holotype** ♂: "[MALAYSIA/Borneo] Sarawak:; 4th Division; nr.; Gn. Mulu NP. [underside:] Tutoh; R.[iver, 3°52.5'N 114°59.5'E] \ P.M. Hammond &; J.E. Marshall; v-viii.1978; B.M.1978-49; [underside:] debris; by; stream \ Rimba; flavicornis (Cam.); P.M. Hammond; det. 1978" (BMNH).

**Differential diagnosis:** Similar to *A. flavicornis*, but distinguishable by the different pronotal shape.

**Description:** Measurements (in mm, n = 1): HW = 0.59; TW = 0.58; PW = 0.69; SW = 0.70; AW = 0.84; HL = 0.46; EL = 0.09; TL = 0.22; PL = 0.54; SL = 0.54; SC = 0.50; FB = 1.57; BL = 3.19. Habitus as in Fig. 177. Forebody weakly shining despite strong sculpture,

abdomen with granulose to imbricate sculpture, last visible tergites finely and indistinctly microsculptured at places, yet more lustrous than forebody. Forebody reddish medium to dark brown, head being darkest, except around sutural corners slightly lighter. Abdomen light to medium brown, last full segments being darkest. Mouthparts and legs reddish light brown, antennae reddish medium brown. Head with anterior margin possessing a weak rim, but rather inconspicuous medially (anteclypeus), continuing posteriorly in a ridge to inner side of eye. Epistomal suture strongly impressed surrounding a more shiny but sculptured clypeus of almost rectangular shape, slightly projecting from the frontline of head (conxex, slightly curved anterior edge). Rest of dorsal head surface strongly rugose (slightly areolate) sculptured with an area mediad eyes impressed and lacking sculpture, neck with a strong transversal ridge meeting this sculpture (and somewhat stronger then them). Neck distinct, marked by strong constriction and a furrow, rather shiny anteriorly, transverse coriaceous microsculptured posteriorly. Eyes small, slightly protruding from the sideline of head, temples slightly widening anteriorly, broadly rounded anteriorly. Antennomere 1 cylindrical and truncate on apex, rather short cylindrical article 2 obliquely truncate at base in opposite direction, article 3 club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 2.2–2.3 × longer than broad and 9–10 about 1.6–1.8 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with thin marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve leaving small concavities near moderately broadly rounded anterior corners. Laterally slightly sinuate margin, gently curved to obtuse-angled posterior corners and slightly arched posterior margin. Midline marked in posterior half with a furrow, dorsal surface rather even (slightly impressed near middle of side margin) but with areolate sculpture of larger cells, usually with a slight nipple in each of the larger cells. Elytra longer than pronotum, together at well-formed shoulders about as wide as pronotum. Laterally moderately curved and slightly broadening, posterior margin with slight rim and an inconspicuously narrow membranous lobe in slight concavity of the outer 2/5. Posterior edge gently arched in inner 3/5 to narrowly rounded (almost right-angled) sutural corners; therefore maximum elytral length not near posterior corners but around middle of each elytron. Suture feebly marked with narrow ridges, elytral dorsal surface less densely but strongly rugose-papillate with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge marked with several stronger longitudinal strigae (connected row of protuberances), disc depressed, even slightly concave, scutellum heart-shaped with shinier and more pressed together lateral lobes, with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides moderately arcuate, second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 60), rhomboid part of tergite X (Fig. 61), aedeagus as in Figs 62–64.




Figs 60–66: *Anotylus deductus* (60–64), *A. loricatus* (65–66): 60) male sternite VIII; 61) male tergite X (rhomboid fusion); 62) aedeagus, frontal view; 63) median lobe, lateral view; 64) left paramere, lateral view; 65) female accessory sclerites; 66) spermatheca. Scale bar = 0.06 mm (66), 0.08 mm (62–64), 0.01 mm (65), 0.14 mm (60–61).

**Distribution and bionomics:** The species was collected only in Sarawak (N-Borneo) from debris by a stream.

**Comment:** The female is unknown. A second male specimen in NHMW (also from Sarawak) has a rather distorted aedeagus and different parameres, it cannot be decided whether it is a kind of teratology or an externally very similar but different species.

**Etymology:** The specific name is a Latin adjective and means "withdrawn" or "bent in", partially referring to the fact that this species misses some character states compared to its sibling, *A. flavicornis*.

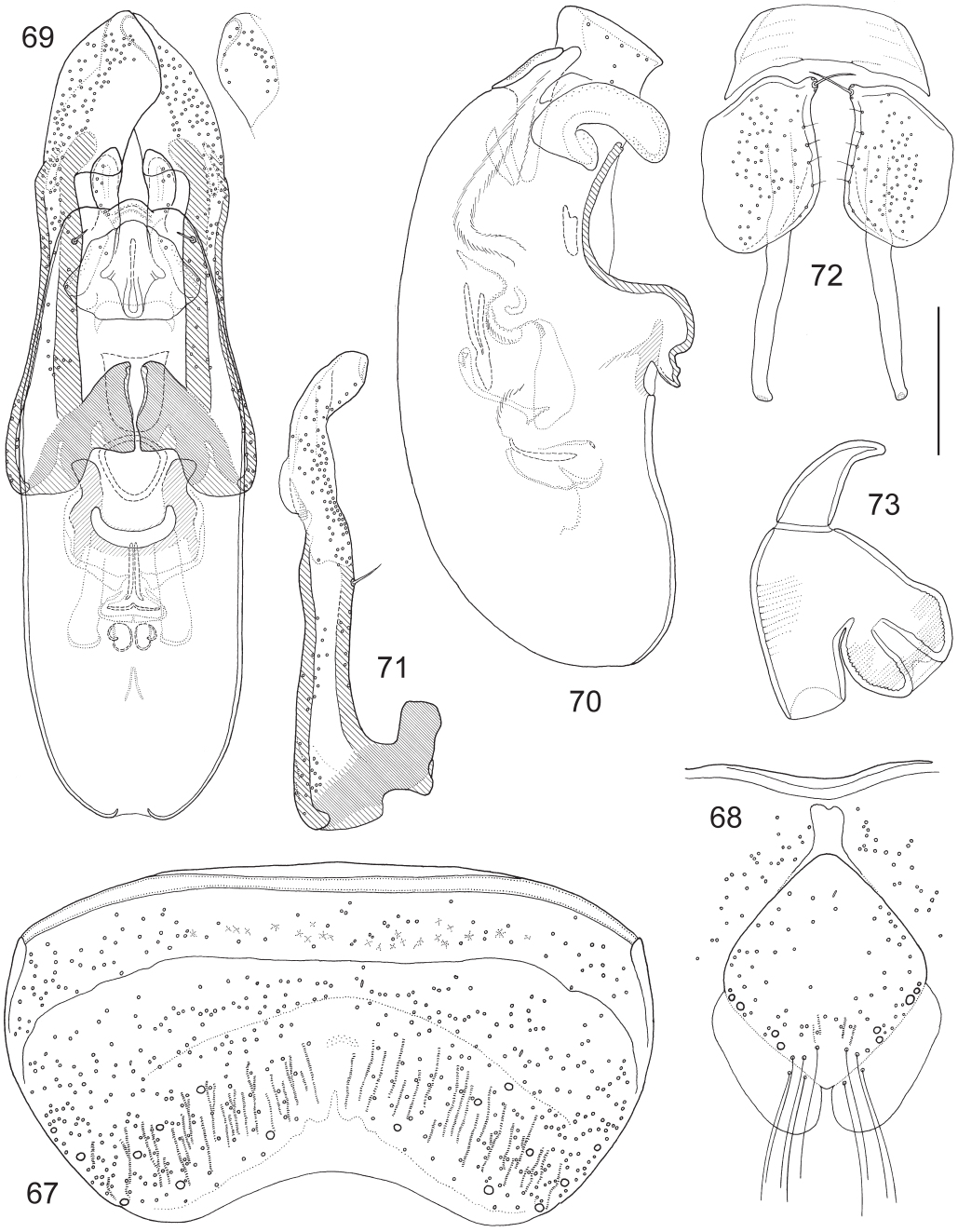
### *Anotylus erratus* sp.n.
(Figs 21, 67–71)

**Type locality:** Indonesia, Sumatra, Mt. Kerinci (Shelter 3), approx. 1°42'20"S 101°16'00"E, 3300 m.

**Type material: Holotype** ♂: "[INDONESIA/] Sumatra: Jambi; Mt Kerinci, 3300 m [low Ericaceae scrub]; 12.XI.1989; [leg. D.] Agosti, [I.] Löbl; [D.] Burckhardt #12a [sifting of vegetational debris]" (MHNG).

**Differential diagnosis:** Similar to *A. intuitus*, but significantly larger.

**Description:** Measurements (in mm, n = 1): HW = 0.82; TW = 0.77; PW = 1.01; SW = 1.17; AW = 1.20; HL = 0.62; EL = 0.16; TL = 0.29; PL = 0.80; SL = 0.94; SC = 0.88; FB = 2.40; BL = 4.98. Habitus as in Fig. 21. Forebody with dense and strong sculpture, abdomen with more or less granulose sculpture, whole body possessing greasy lustre (tergite bases somewhat shinier). Forebody and abdomen dark brown, almost black with some reddish tint. Mouthparts and legs reddish medium to dark brown, antennae dark brown. Head with anterior margin possessing insignificant rim somewhat apparent only besides eyes. Epistomal suture strongly impressed surrounding a slightly sculptured but mostly shiny clypeus of subrectangular shape, sticking out from the frontline of head with truncate anterior edge. Rest of dorsal head surface strongly sculptured strigose medially (more lateral strigae slightly oblique) but more scabriculous on sides and before neck where forming a transversal (elevated) ridge. Neck distinct, marked by strong constriction and a slight furrow, rather shiny anteriorly. Eyes rather large, protruding from the sideline of head, temples gently curved and insignificantly broadening anteriorly, more strongly rounded posteriorly. Antennomere 1 fusoid and obliquely truncate on apex, small cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.9–2.4 × longer than broad and 9–10 about 1.4–1.6 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with traces of marginal bead visible anteriorly but very strong posteriorly, middle of anterior margin pulled ahead in gentle curve forming small concavities near narrowly rounded anterior corners. Laterally somewhat alatiform and anteriorly more strongly, posteriorly rather gently curved, posterior corners marked by meeting with gently arched (and ridged) posterior margin. Midline marked in posterior half with narrow and deep furrow, dorsal surface rather even (slightly impressed near middle of side margin) but on the most part with areolate sculpture degrading to scabrous both laterally




Figs 67–73: *Anotylus erratus* (67–71), *A. tangotadosi* (72–73): 67) male sternite VIII; 68) male tergite X (rhomboid fusion); 69) aedeagus, frontal view; 70) median lobe, lateral view; 71) left paramere, lateral view; 72) female accessory sclerites; 73) spermatheca. Scale bar = 0.09 mm (73), 0.1 mm (72), 0.2 mm (67–71).

and medially (anterior to furrow), traces of slight setation only on most lateral parts. Elytra rather large, significantly longer and (together) wider than pronotum, shoulders well developed. Laterally gently curved and somewhat broadening, posterior margin with slight rim and a narrow (almost indistinct) membranous lobe in outer 2/3. Posterior edge slightly curved, maximum elytral length slightly outwards middle of each elytron. Sutural corners almost right-angled, inner half of posterior margin only slightly oblique. Suture marked with slight ridges, elytral dorsal surface rugose to slightly strigose with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge barely marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with roundish impressions on sides, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 67), rhomboid part of tergite X (Fig. 68), aedeagus as in Figs 69–71.

**Distribution and bionomics:** The holotype is from a high elevation locality on Mt. Kerinci collected by sifting of vegetational debris in low Ericaceae scrub.

**Comment:** As regards the type locality, the paratype of *Anotylus jambi* MAKRANCZY, 2017 (in the *A. cimicoides* species group) with the collecting event "12a" in MAKRANCZY (2017) has data erroneously listed (correctly 3300 m instead of 1750–1850 m and 12.XI. instead of 11.–12.XI. – also raising the elevational range of that species to 2100–3300 m) – so in fact that specimen is from the same locality as the holotype of *A. erratus*.

**Etymology:** The name of the species is a Latin adjective referring to the error made by me regarding the locality, explained above.

### *Anotylus flavicornis* (CAMERON, 1928)
(Figs 74–80, 176)

*Delopsis flavicornis* CAMERON 1928: 100; CAMERON 1936: 31 (referring to misidentification from Java, probably *A. gagatinus*).
*Rimba flavicornis*: HERMAN 1970: 414; HERMAN 2001: 1490.

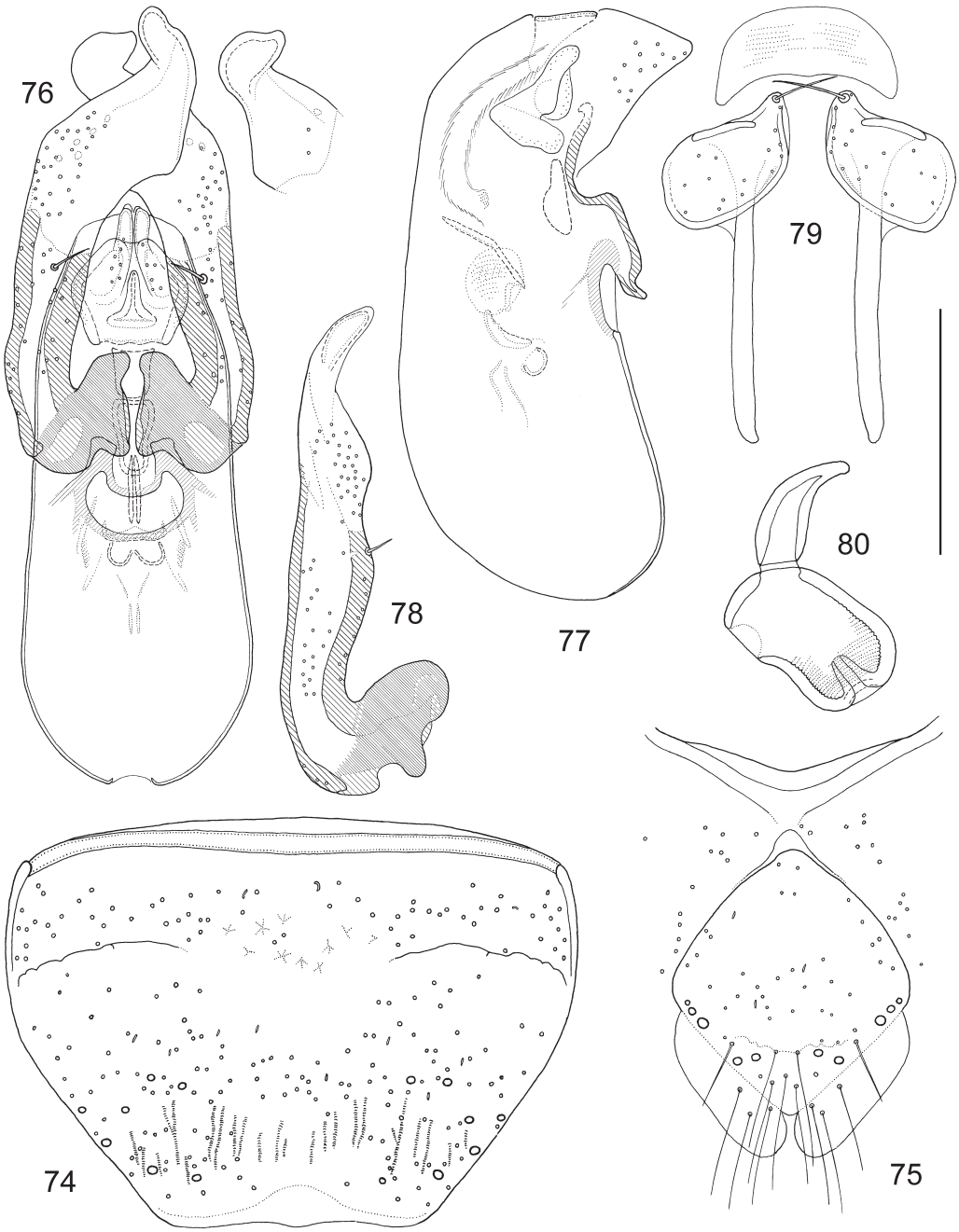
**Type material: Lectotype** ♂ (by present designation): "Lecto-; type [lilac margined disc, curator label] \ Type [red margined disc, curator label] \ Fort de Kock [West Sumatra, Bukittinggi, 0°19'S 100°22'E]; (Sumatra) 920 M.; 1926; leg. E. Jacobson \ Fort de Kock,; Sumatra.; E. Jacobson.; B.M. 1928-247. \ Delopsis; flavicornis; Type Cam. \ Delopsis; flavicornis Cam.; P.M. Hammond; det. 1970; Lectotype ♂ \ Lectotypus; Delopsis; flavicornis Cameron; des. Makranczy, 2018 \ Anotylus; flavicornis (Cameron); det. Makranczy, 2018" (BMNH). **Paralectotypes** (11): "Para-; lecto-; type [light blue margined disc, curator label] \ Type [red margined disc, curator label] \ Fort de Kock; (Sumatra) 920 M. \ 1926; leg. E. Jacobson. \ Delopsis; flavicornis; Type [in maroon] Cam. \ M. Cameron.; Bequest.; B.M. 1955-147. \ Delopsis; flavicornis Cam.; P.M. Hammond; det. 1970; Paralectotype \ Paralectotypus; Delopsis; flavicornis Cameron; des. Makranczy, 2018 \ Anotylus; flavicornis (Cameron); det. Makranczy, 2018" (1 ♀, BMNH); "Para-; lecto-; type [light blue margined disc, curator label] \ Fort de Kock; (Sumatra) 920 M. \ 1926; leg. E. Jacobson \ M. Cameron.; Bequest.; B.M. 1955-147. \ Delopsis; flavicornis Cam.; P.M. Hammond; det. 1970; Paralectotype \ Paralectotypus; Delopsis; flavicornis Cameron; des. Makranczy, 2018 \ Anotylus; flavicornis

(Cameron); det. Makranczy, 2018" (1 ♂, 1 ♀, BMNH), same but also "E.1.101 \ Delopsis; flavicornis; Cam." (1 ♀, BMNH), same but "E.1.122" (1 ♀, BMNH); "Para-; lecto-; type [light blue margined disc, curator label] \ Fort de Kock; (Sumatra) 920 M.; 1926; leg. E. Jacobson \ M. Cameron.; Bequest.; B.M. 1955-147. \ Delopsis; flavicornis Cam.; P.M. Hammond; det. 1970; Paralectotype \ Paralectotypus; Delopsis; flavicornis Cameron; des. Makranczy, 2018 \ Anotylus; flavicornis (Cameron); det. Makranczy, 2018" (3 ♂♂, BMNH); "Fort de Kock; (Sumatra) 920 M.; 1926; leg. E. Jacobson \ D.; flavicornis; Cam \ Delopsis; flavicornis; Cam. Cotypus [lilac card] \ Chicago NHMus; M. Bernhauer; Collection \ Delopsis; flavicornis Cam.; P.M. Hammond; det. 1970; Paralectotype \ Paralectotypus; Delopsis; flavicornis Cameron; des. Makranczy, 2018 \ Anotylus; flavicornis (Cameron); det. Makranczy, 2018" (1 ♀, FMNH); "Fort de Kock; (Sumatra) 920 M.; 1926; leg. E. Jacobson \ Cotype [in box, red card] \ Delopsis; flavicornis; Cam. \ det. M. Cameron; 1928 \ E. Jacobson; donavit \ ex. coll.; Scheerpeltz [light blue label] \ Cotypus; Delopsis; flavicornis; Cameron [pink card] \ flavicornis; Cam. [orange card] \ Delopsis; flavicornis Cam.; P.M. Hammond; det. 1970; Paralectotype \ Paralectotypus; Delopsis; flavicornis Cameron; des. Makranczy, 2018 \ Anotylus; flavicornis (Cameron); det. Makranczy, 2018" (1 ♀, NHMW); "Fort de Kock; (Sumatra) 920 M.; 1926; E. Jacobson \ Cotype [pink card] \ Delopsis; flavicornis; Cam \ Delopsis; flavicornis; Cameron \ Coll. W. Chapman; in Coll. P. Griveau; MHNG–2007 \ flavicornis; Cam. [yellow framed] \ Paralectotypus; Delopsis; flavicornis Cameron; des. Makranczy, 2018 \ Anotylus; flavicornis (Cameron); det. Makranczy, 2018" (1 ♂, MHNG).

**Additional material: INDONESIA**/Sumatra: West Sumatra, Lubuksulasih, ca. 30 km E Padang, 1100 m, 8.XI.1987, leg. I. Löbl, D. Agosti & D. Burckhardt ("7"), sifting of vegetational debris in secondary forest on steep slope (1 ♀, MHNG; 1 ♀, HNHM); North Sumatra, 5 km W Brastagi, Tongkoh, 1450 m, 3.XII.1989, leg. I. Löbl, D. Agosti & D. Burckhardt ("29a"), mixed pine forest with many epiphytes, sifting of vegetational debris (1 ♂, 1 ♀, 66, MHNG); Jambi, km 15 on road from Sungaipenuh to Tapan, 1450 m [2°02'16"S 101°19'49"E], 9.XI.1987, leg. I. Löbl, D. Agosti & D. Burckhardt ("10"), sifting of vegetational debris in degraded montane *Lithocarpus*-*Castanopsis* forest (1 ♂, MHNG).

**MALAYSIA:** West Malaysia, Pahang, Ringlet, 1250 m [4°24'15"N 101°21'55"E] 26.III.1993, leg. I. Löbl & F. Calame ("20"), sifting of decaying leaves and wood in ravine and at edge of degraded forest (41, MHNG; 1, AMNH; 1, BMNH; 1, CNCI; 1, FMNH; 1, ISNB; 1, NIBR; 1, NMPC; 1, SMNS; 1, ZMUC).

**Redescription:** Measurements (in mm, n = 10): HW = 0.50 (0.47–0.54); TW = 0.49 (0.44–0.54); PW = 0.61 (0.57–0.64); SW = 0.63 (0.59–0.66); AW = 0.70 (0.63–0.77); HL = 0.40 (0.37–0.41); EL = 0.09 (0.08–0.10); TL = 0.20 (0.18–0.21); PL = 0.46 (0.44–0.49); SL = 0.50 (0.47–0.52); SC = 0.46 (0.43–0.48); FB = 1.38 (1.30–1.44); BL = 2.77 (2.63–2.97). Habitus as in Fig. 176. Forebody weakly shining despite strong sculpture, abdomen with granulose to imbricate sculpture, last visible tergites finely and indistinctly microsculptured at places, yet more lustrous than forebody. Forebody dark brown, except around sutural corners slightly lighter. Abdomen medium to dark brown. Mouthparts, antennae and legs reddish medium brown. Head with anterior margin possessing a weak rim, but rather inconspicuous medially (anteclypeus), continuing posteriorly in a ridge at inner side of eye vanishing in strong sculpture at temples. Epistomal suture strongly impressed surrounding a more shiny but sculptured clypeus of almost rectangular shape, slightly projecting from the frontline of head (truncate anterior edge). Rest of dorsal head surface strongly areolate-rugose sculptured on sides and only slightly longitudinally strigose in (anterior) middle, neck with a strong transversal ridge meeting this sculpture (and somewhat stronger then them). Neck distinct, marked by strong constriction and a furrow, rather shiny anteriorly, transverse coriaceous microsculptured posteriorly. Eyes small, slightly protruding from the sideline of head, temples slightly widening anteriorly, broadly rounded anteriorly. Antennomere 1 cylindrical and truncate on apex, rather short cylindrical article 2 obliquely truncate at base in opposite direction, article 3 club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 2.0–2.2 × longer than broad and 9–10 about 1.5–1.6 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter




Figs 74–80: *Anotylus flavicornis*: 74) male sternite VIII; 75) male tergite X (rhomboid fusion); 76) aedeagus, frontal view; 77) median lobe, lateral view; 78) left paramere, lateral view; 79) female accessory sclerites; 80) spermatheca. Scale bar = 0.09 mm (80), 0.1 mm (79), 0.16 mm (74–78).

apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with traces of marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve leaving small concavities near narrowly rounded anterior corners. Pronotal margin laterally strongly alatiform (zigzagged), gently curved to angular posterior corners and slightly arched posterior margin. Midline marked in posterior half with a furrow, dorsal surface rather even (slightly impressed near middle of side margin) but with areolate sculpture of smaller cells (laterally more rugose than areolate), usually with a slight nipple in each of the larger cells. Elytra longer than pronotum, together at well-formed shoulders slightly wider than pronotum. Laterally gently curved and slightly broadening, posterior margin with slight rim and an inconspicuously narrow membranous lobe in slight concavity of the outer 2/5. Posterior edge gently arched in inner 3/5 to narrowly rounded (almost right-angled) sutural corners; therefore maximum elytral length not near posterior corners but around middle of each elytron. Suture feebly marked with narrow ridges, elytral dorsal surface densely rugose-papillate with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge marked with several stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with rather extensive but less bordered central lobe, with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides moderately arcuate, second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 74), rhomboid part of tergite X (Fig. 75), aedeagus as in Figs 76–78, accessory sclerite and spermatheca of female as in Figs 79 and 80 respectively.

**Distribution and bionomics:** No collecting details were recorded with the original series from Sumatra, the exemplars subsequently identified extending its range to Peninsular Malaysia. The additional specimens were collected by sifting leaf litter or rotten wood at the edge of degraded forest.

### *Anotylus fusoideus* sp.n.
(Figs 3–4, 18, 81–87)

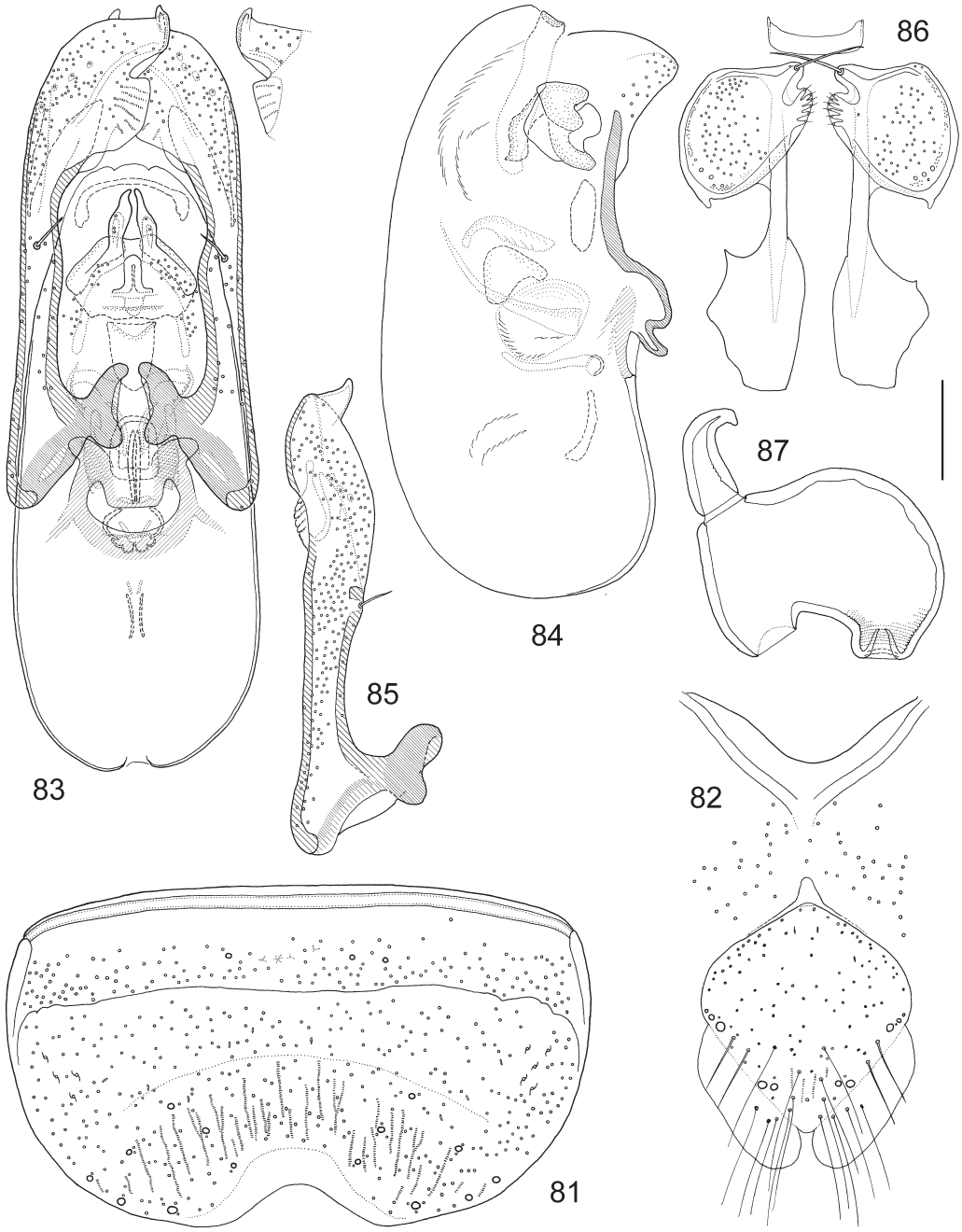
**Type locality:** Malaysia, Borneo, Sabah, Crocker Range, E-slope, km 60 on road from Kota Kinabalu to Tambunan, approx. 5°46'23"N 116°20'43"E, 1350 m.

**Type material: Holotype** ♂: "[MALAYSIA/Borneo] Sabah: Crocker Ra.; 1350m, km 60 Kota; Kinabalu-Tambunan; 17.V.1987, [leg. D.] Burckhardt – [I.] Löbl; [underside:] 28a [ravine with stream, *Lithocarpus-Castanopsis* forest, sifting of dead leaves and bark]" (MHNG). **Paratypes** (121): same data as holotype (2 ♀♀, MHNG); MALAYSIA: Sabah, Crocker Range, Mawar waterfall env. [5°47'49"N 116°24'30"E], 17.VI.1996, leg. J. Kodada ("9c"), vegetation debris and forest litter around fallen trees (1 ♂, NHMW); Sabah, Crocker Range, around km 56 of road Kota Kinabalu – Tambunan, Sunsuron waterfall env., 1100–1200 m [5°51'15"N 116°17'30"E], 8.V.1996, leg. J. Kodada ("5c") (1 ♂, MHNG); Sabah, Mt. Kinabalu National Park, Mt. Kinabalu, Liwagu trail, section 2, *Lithocarpus-Podocarpus*, forest, 1500 m [6°00'40"N 116°32'40"E], 21.V.1987, leg. I. Löbl & D. Burckhardt ("34a"), sifting of vegetational debris on partly cleared slope (1 ♂, 1

♀, 54, MHNG; 1 ♂, 1 ♀, AMNH; 1 ♂, 1 ♀, BMNH; 1 ♂, 1 ♀, 1, HNHM; 1 ♂, 1 ♀, NIBR; 1 ♂, 1 ♀, NMPC; 1 ♂, SDEI; 1 ♂, 1 ♀, SMNS; 1 ♂, 1 ♀, ZMUC; 1 ♂, 1 ♀, coll. Schülke-ZMHB; 1 ♂, 1 ♀, NHMW); Sabah, Mt. Kinabalu National Park, Mt. Kinabalu, Liwagu river, 1450–1550 m [6°00'30"N 116°33'00"E], 23.V.1987, leg. I. Löbl & D. Burckhardt ("37a"), in mosses on rocks in the river (6, MHNG); Sabah, Mt. Kinabalu National Park, Mt. Kinabalu, between "Headquarters" and Liwagu River, 1500 m, 25.IV.1987, leg. I. Löbl & D. Burckhardt ("3a"), sifting of mosses, mushrooms and rotting wood at stream (1, MHNG); Sabah, Mt. Kinabalu National Park, Mt. Kinabalu, Silau-Silau trail, 1560 m, 28.IV.1987, leg. I. Löbl & D. Burckhardt ("7b"), sifting of dead leaves and mosses (3, MHNG); Mt. Kinabalu National Park, Mt. Kinabalu, Liwagu Trail, 1540 m, 29.IV.1987, leg. I. Löbl & D. Burckhardt ("8a"), sifting of vegetational debris in small ravine and at bases of old trees (3, MHNG); Sabah, Mt. Kinabalu National Park Headquarters, 1560–1660 m, river Silau Silau, 24.IV.1987, leg. A. Smetana ("B2"), sifting of old flood debris (1, FMNH); Sabah, Mt. Kinabalu National Park Headquarters at Liwagu river, 1500 m, 4.VIII.1988, leg. A. Smetana ("B80"), sifting of leaf litter and various debris (some mouldy) (2, FMNH); Sabah, Mt. Kinabalu National Park Headquarters, Liwagu river, 1490 m, 5.VIII.1988, leg. A. Smetana ("B84"), sifting of fermenting fruits and fallen flowers of a "kerosene tree" (*Pittosporum resiniferum*) in rain forest (1, FMNH); Sabah, Mt. Kinabalu National Park Headquarters, Liwagu river Trail, 1520 m, 12.VIII.1988, leg. A. Smetana ("B106"), sifting of fermenting fruits and fallen flowers of a "kerosene tree" (*Pittosporum resiniferum*) in rain forest (1, FMNH); Sabah, Crocker Range National Park, Hwy A3, km 48, ca. 1000 m [5°51'30"N 116°16'20"E], 5.IX.1988, leg. A. Smetana ("B178"), sifting of small mushrooms and bark under them on a fallen tree, in disturbed forest (7, FMNH; 1 ♂, 1 ♀, CNCI); Sarawak, 11 mi SW Kuching, Semengoh Forest [2 km S 10th mile Bazaar, on road Kuching – Penrissen, 1°23'N 110°14'E], [28.–31.]V.1968, leg. R.W. Taylor (1 ♀, MHNG); Sarawak, Gunung Matang [Serapi], 20 km W Kuching, 800[650] m [1°35.5'N 110°11.5'E], 13.V.1994, leg. I. Löbl & D. Burckhard ("2a"), submontane forest, sifting of vegetational debris near creek (1 ♀, MHNG); MALAYSIA: Pahang Prov., "Gap" – Fraser Hill, between km 3 and 4, 1050 m [3°41'50"N 101°44'14"E], 7.II.1992, leg. H. Schillhammer ("17b"), larger accumulation of leaves along small streams, sifted (1 ♀, NHMW); Pahang Prov., "Gap" – Fraser Hill, at km 1, 1180 m [3°41'35"N 101°44'23"E], 11.II.1992, leg. H. Schillhammer ("20"), sifting of leaf litter (1 ♀, NHMW); Selangor, Ulu Gombak near Kuala Lumpur, ca. 900 ft [3°19.5'N 101°45.0'E], 13.VII.1968, leg. R.W. Taylor, in forest near stream, sifting dry leaf litter & vegetational debris, Winkler extracted (1, MHNG); INDONESIA: Sumatra, Bengkulu Prov., Lembah; Sungai Ketahun Hulu,; ca. 70 km NW Curup [waterfall above Ketenong = Ketepung, 2°57'53"S 102°07'40"E],; 23.II.2000 Sum-00/17; 710 m [leg.] P. Schwendinger [evergreen rain forest, sifting] (2 ♂♂, 4 ♀♀, MHNG, 1 ♂, 1 ♀, NHMW); Sumatra, Jambi, km 15 on road from Sungaipenuh to Tapan, 1450 m, 9.XI.1989, leg. I. Löbl, D. Agosti & D. Burckhardt ("10"), sifting of vegetational debris in degraded montane *Lithocarpus-Castanopsis* forest (1 ♂, MHNG).

**Differential diagnosis:** Similar to *A. shavrini* and *A. intuitus* but different from both by the exceptionally broad and perfectly cylindrical middle antennomeres. In female tergite VIII side flaps not wrapping around ventrally (Fig. 3) as opposed to those in *A. cornutus* that are completely wrapping (Fig. 1), sternite VIII strongly pulled out in middle (Fig. 4) as opposed to that in *A. cornutus* less pulled out (Fig. 2).

**Description:** Measurements (in mm, n = 10): HW = 0.71 (0.65–0.78); TW = 0.68 (0.61–0.76); PW = 0.88 (0.76–0.95); SW = 0.98 (0.85–1.05); AW = 1.05 (0.94–1.13); HL = 0.58 (0.53–0.62); EL = 0.14 (0.13–0.15); TL = 0.27 (0.24–0.30); PL = 0.69 (0.60–0.75); SL = 0.82 (0.74–0.88); SC = 0.77 (0.69–0.82); FB = 2.15 (1.92–2.30); BL = 4.23 (3.59–4.69). Habitus as in Fig. 18. Forebody weakly shining despite strong sculpture, abdomen with granulose to imbricate sculpture, last visible tergites finely and indistinctly microsculptured bearing dust-like setation, only slightly more lustrous than forebody. Forebody and antennae blackish dark brown with only a slight reddish tint, legs, mouthparts, extreme apex of last antennomere and abdomen reddish medium to dark brown, latter apically darkening. Head with anterior margin possessing a weak rim, continuing posteriorly in sharp ridges besides eyes, apparent because of shiny, impressed inner side. Epistomal suture impressed surrounding anteriorly sculptured but posteriorly more shiny clypeus of subrectangular shape, pulled forward from the frontline of head




Figs 81–87: *Anotylus fusoideus*: 81) male sternite VIII; 82) male tergite X (rhomboid fusion); 83) aedeagus, frontal view; 84) median lobe, lateral view; 85) left paramere, lateral view; 86) female accessory sclerites; 87) spermatheca. Scale bar = 0.07 mm (83–85), 0.1 mm (82, 86), 0.13 mm (81).

with truncate anterior edge. Rest of dorsal head surface with rugulose (mostly at sides) and elongate areolate (mostly posterior median part of disc) sculpture, latter if well expressed with slight nipples in each cell, no setation, tiny strigae near supraantennal prominences oblique, following edge. Posterior part of disc bordered by ridge before shiny neck (posterior neck microsculptured) connected to infraocular ridge and inside surface slightly impressed in arcuate fashion. Eyes rather small and moderately flat, slightly protruding from the sideline of head, temples slightly widening and very gently curved in anterior half, more strongly rounded posteriorly. Antennomere 1 fusoid and obliquely truncate on apex, extremely short cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate reverse cone-shaped, articles 4–6 slightly incrassate, cylindrical, articles 7–10 cylindrical (antennomere 4 about 1.4–1.5 × longer than broad and 8 about 1.3–1.4 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible slightly anteriorly and strongly posteriorly, middle of anterior margin pulled ahead in strong curve leaving concavities near narrowly rounded anterior corners. Laterally slightly alatiform and more curved anteriorly than posteriorly, before slightly obtuse-angled posterior corners (slightly elevated, from side view like a bump) with conspicuous concavity. Midline marked with a shallow furrow anteriorly but posterior half carved in, dorsal surface without setation. Disc surface mostly areolate (with tiny nipple in each cell), but in centre a bit confused, surface widely impressed near middle of side margin. Elytra broader and longer than pronotum, shoulders well developed, laterally gently curved and broadening. Posterior margin with slight rim and insignificant concavity near outer corner, slightly curved in middle, oblique in inner half to obtuse-angled sutural corners, maximum elytral length slightly outside middle of each elytron. Suture marked with slight ridges, elytral dorsal surface rugose-papillate to slightly longitudinally strigose laterally with short setae at the base of small protuberances connected by wrinkles. Elytral epipleural ridge marked with a few stronger longitudinal strigae, disc flat, slightly depressed, scutellum heart-shaped with wide lateral lobes impressed on apices with a microsculptured median lobe, often concealed together with somewhat less sculptured impressed area towards shoulders, following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate, second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 81), rhomboid part of tergite X (Fig. 82), aedeagus as in Figs 83–85, accessory sclerite and spermatheca of female as in Figs 86 and 87 respectively.

**Distribution and bionomics:** The species is known from Borneo, Peninsular Malaysia and Sumatra. Primarily collected from leaf litter in higher altitude rainforest (*Lithocarpus*, *Podocarpus*, *Castanopsis*), but also from flood debris near streams and rivers, sometimes mosses, mouldy wood and fermenting fruits.

**Etymology:** The specific epithet is a Latin adjective and refers to the particular antennal shape.

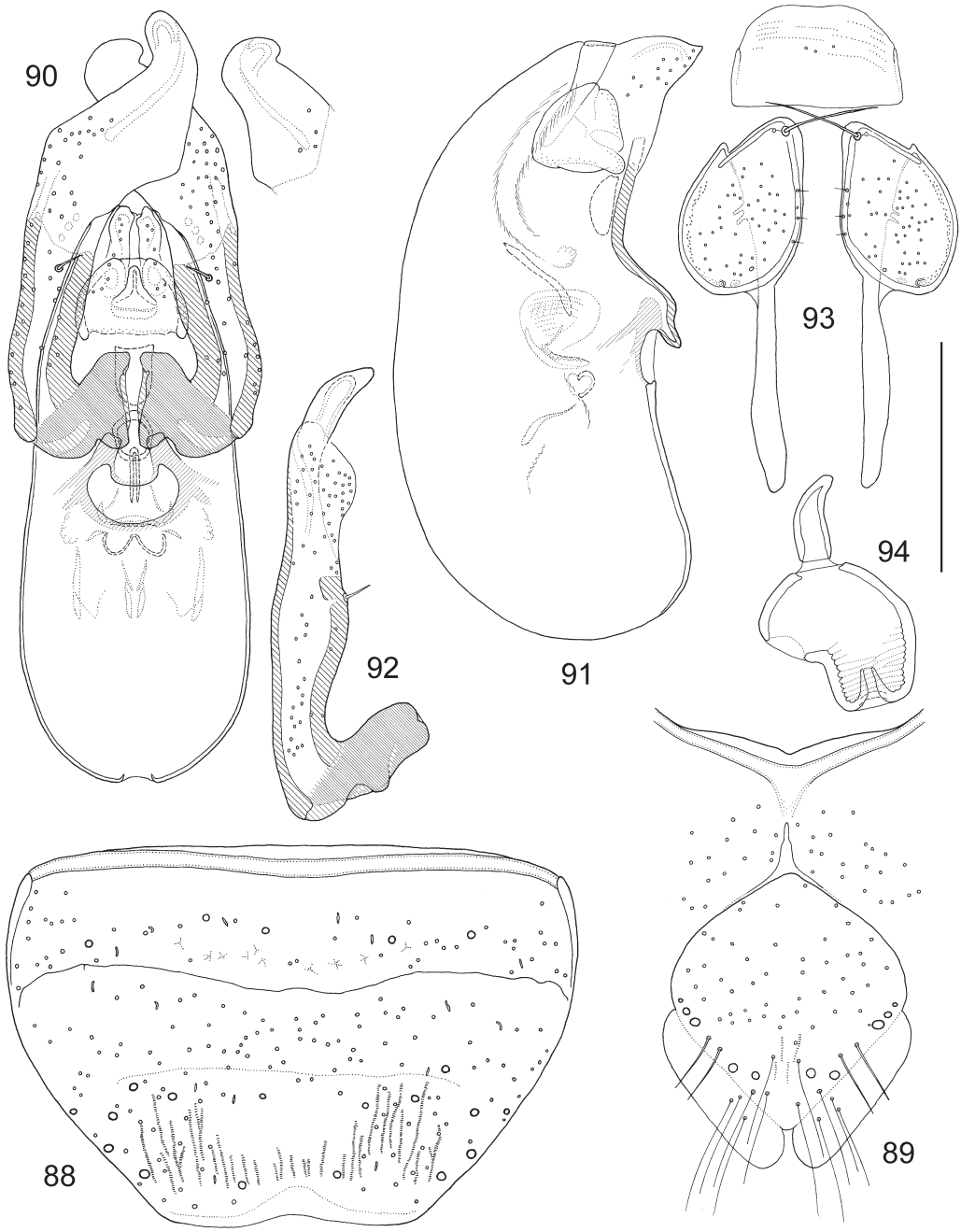
## *Anotylus gagatinus* sp.n.
(Figs 88–94, 175)

**Type locality:** Indonesia, Java, 20 km NW Sukabumi, approx. 6°45'S 106°48'E, 630 m.

**Type material: Holotype** ♂: "[INDONESIA/W-] Java-Preanger; 4[IV] Tjigembong [19]'15; [leg.] J.B. Corporaal \ Chicago NHMus; M. Bernhauer; Collection \ Rimba; det. Newton 1994" (FMNH). **Paratypes** (63): C-Java, N-slopes of Dieng Plateau, Petungkriyono, mountain N Tinalum, 7°06.418'S 109°44.514'E, 1115 m, 22.VIII.2006, leg. A. Riedel, sample 1, sifted (2 ♀♀, SMNK; 1 ♀, MBBJ; 1 ♀, SMNS); C-Java, Kroyaan, roadside between Petungkriyono and Pekalongan, 7°04.665'S 109°43.429'E, 425 m, 23.VIII.2006, leg. A. Riedel, sample 1, sifted (1 ♀, SMNK); Mt. Halimun, Halimun Salak N.P. [6°43′S 106°27′E], 19.–25. VIII.2009, leg. J.D. Majer (3 ♀♀, coll. Assing); Java, West Java, Batoerraden [= Baturaden], G[unung] Slamet [7°13'S 109°13'E], 11.VII.1926, leg. F.C. Drescher, cultus ex gezeefd bamboeboschje [sifted bamboo thicket] (3, BMNH); MALAYSIA: Perak, Maxwell Hill (Bukit Larut, 6 km ENE Taiping, 12 km S Batu Kurau), 1150 m [4°51'46.9"N 100°47'56.5"E], 24.XI.1999, leg. G. Cuccodoro ("14a"), evergreen broadleaf montane rain forest, decaying grass cutting along trail (1, MHNG); Perak, Maxwell Hill, 1150 m [4°51'44.4"N 100°47'56.6"E], 25.XI.1999, leg. G. Cuccodoro (#15a), evergreen broadleaf montane rain forest, vegetational debris along road (3 ♀♀, 5, MHNG), same but (#15b) forest leaf litter (1, MHNG); Pahang, Cameron Highlands, 1500 m, trails 4 and 13 [4°28-28.5'N, 101°22.5-23'E], 23.III.1993, leg. I. Löbl & F. Calame ("15"), sifting of dead leaves and roots near trunk (17, MHNG); Pahang, Cameron Highlands, Gunung Jasar, trail 11, 1550 m [4°28'28"N, 101°21'47"E], 24.III.1993, leg. I. Löbl & F. Calame ("18b"), sifting of dead leaves (20, MHNG); Pahang Prov. Cameron Highlands, Gunung Jasar, Junglewalk Nr. 11, 1450 m [4°28'22"N 101°21'44"E], 24.–25.I.1992, leg. H. Schillhammer ("5c"), small creek, 50–70 cm wide, partly flowing subterranean, sifted (4, NHMW); Pahang Prov. Cameron Highlands, Sungei Jasar (stream), stretch in forest at foot of Gunung Jasar, at the edge of Tanah Rata, 1400 m [4°28'26"N 101°22'01"E], 25.–26.I.1992, leg. H. Schillhammer ("6"), 1.0–1.5 m wide stream, slow current (1, NHMW).

**Differential diagnosis:** Similar to *A. lagreanus* but distinguishable from both by the more elongate antennae, in its distribution range also confusable with *A. flavicornis*, but the latter has smaller eyes and also less elongate antennae.

**Description:** Measurements (in mm, n = 10): HW = 0.53 (0.50–0.56); TW = 0.52 (0.49–0.55); PW = 0.65 (0.62–0.69); SW = 0.70 (0.66–0.75); AW = 0.77 (0.72–0.82); HL = 0.43 (0.41–0.45); EL = 0.10 (0.09–0.11); TL = 0.20 (0.19–0.22); PL = 0.48 (0.45–0.52); SL = 0.57 (0.53–0.60); SC = 0.53 (0.49–0.56); FB = 1.51 (1.42–1.59); BL = 2.83 (2.54–3.10). Habitus as in Fig. 175. Forebody strongly sculptured, abdomen with granulose to imbricate sculpture, tergites finely and indistinctly microsculptured and with dust-like setation, the whole body very weakly, greasy lustered. Forebody, abdomen and most of antenna (apical half except tip) dark brown, almost black with some reddish tint. Mouthparts, legs and basal part of antenna plus tip reddish medium to dark brown. Head with anterior margin possessing an almost inconspicuous rim (almost absent on anteclypeus), continuing posteriorly in ridges besides eyes, on inner side impressed with somewhat loosened sculpture. Epistomal suture impressed surrounding a lightly sculptured and predominantly shiny clypeus of subhexagonal shape slightly sticking out from the frontline of head with a slightly arcuate anterior edge. Rest of dorsal head surface strongly rugose in middle with only traces of longitudinal strigosity, on temples scabrous. Before neck with a transversal elevated ridge, slightly connected to the infraocular ridge and impressed inside in an arcuate fashion. Neck distinct, marked by constriction and a strong, shiny furrow anteriorly, posteriorly microsculptured. Temples gently curved anteriorly, straight or slightly broadening then broadly rounded. Antennomere 1 fusoid and obliquely truncate on apex, tiny cylindrical article 2 obliquely truncate at base in opposite direction, article 3 club-shaped, articles 4–10 slightly incrassate, cylindrical




Figs 88–94: *Anotylus gagatinus*: 88) male sternite VIII; 89) male tergite X (rhomboid fusion); 90) aedeagus, frontal view; 91) median lobe, lateral view; 92) left paramere, lateral view; 93) female accessory sclerites; 94) spermatheca. Scale bar = 0.1 mm (93–94), 0.13 mm (90–92), 0.16 mm (88–89).

(antennomeres 4–5 about 2.35–2.55 × longer than broad and 9–10 about 1.5–1.7 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible anteriorly but stronger posteriorly, middle of anterior margin pulled ahead in a curve forming concavities near narrowly rounded anterior corners. Laterally more arcuate anteriorly and rather alatiform posteriorly, meeting gently arched posterior margin with slight concavity before obtuse-angled corners. Midline marked with furrow, in posterior half deeply carved in, dorsal surface without setation, rather even (slightly impressed near middle of side margin) but on the most part with areolate sclupture (nipples in each cell) degrading to scabrous only on lateral parts and at furrow, without conspicuous setation. Elytra rather small, shoulders weakly developed but distinct. Laterally gently curved and broadening, posterior margin with slight rim and a narrow (almost indistinct) membranous lobe in outer 2/3. Posterior edge not straight but slightly oblique in outer half and gently curved in middle to continue straight to narrowly rounded sutural corners; therefore maximum elytral length not near posterior corners but around middle of each elytron. Suture marked with slight ridges, elytral dorsal surface rugose-papillate with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge barely marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with impressions in lateral lobes and a microsculptured median lobe, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia slighly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 88), rhomboid part of tergite X (Fig. 89), aedeagus as in Figs 90–92, accessory sclerite and spermatheca of female as in Figs 93 and 94 respectively.

**Distribution and bionomics:** The species is known from Malaysia and the Indonesian island Java. Specimens were collected in evergreen broadleaf (*Lithocarpus*, *Castanopsis*) montane rain forest by sifting various plant debris, fungi or decaying fruits but also at a river (flood debris and from gravel bank).

**Comment:** Additional details about the type locality from Corporaal (1939). Preanger = Priangan highlands, it appears that he was near the Dinewatie Estate (some 20 km S of Sukabumi city). The collecting locality is Cigombong at the foot (west side) of Gn. Gede (Gn. Pangerango to be precise), NW of Sukabumi, 6°45'S 106°48'E. The Dutch labels are in a very old spelling (before 1947), "boschje" is in the current spelling "bosje" and could be translated as scrub or thicket.

**Etymology:** The name of the species is an adjective referring to its dark colouration ("jet black") – the root of the name is the ancient town of Gagae (ruins now in Antalya, Kumluca district) from which Gagates lapis (bituminous brown coal) derived its name, so practically it means "like gagas stone".

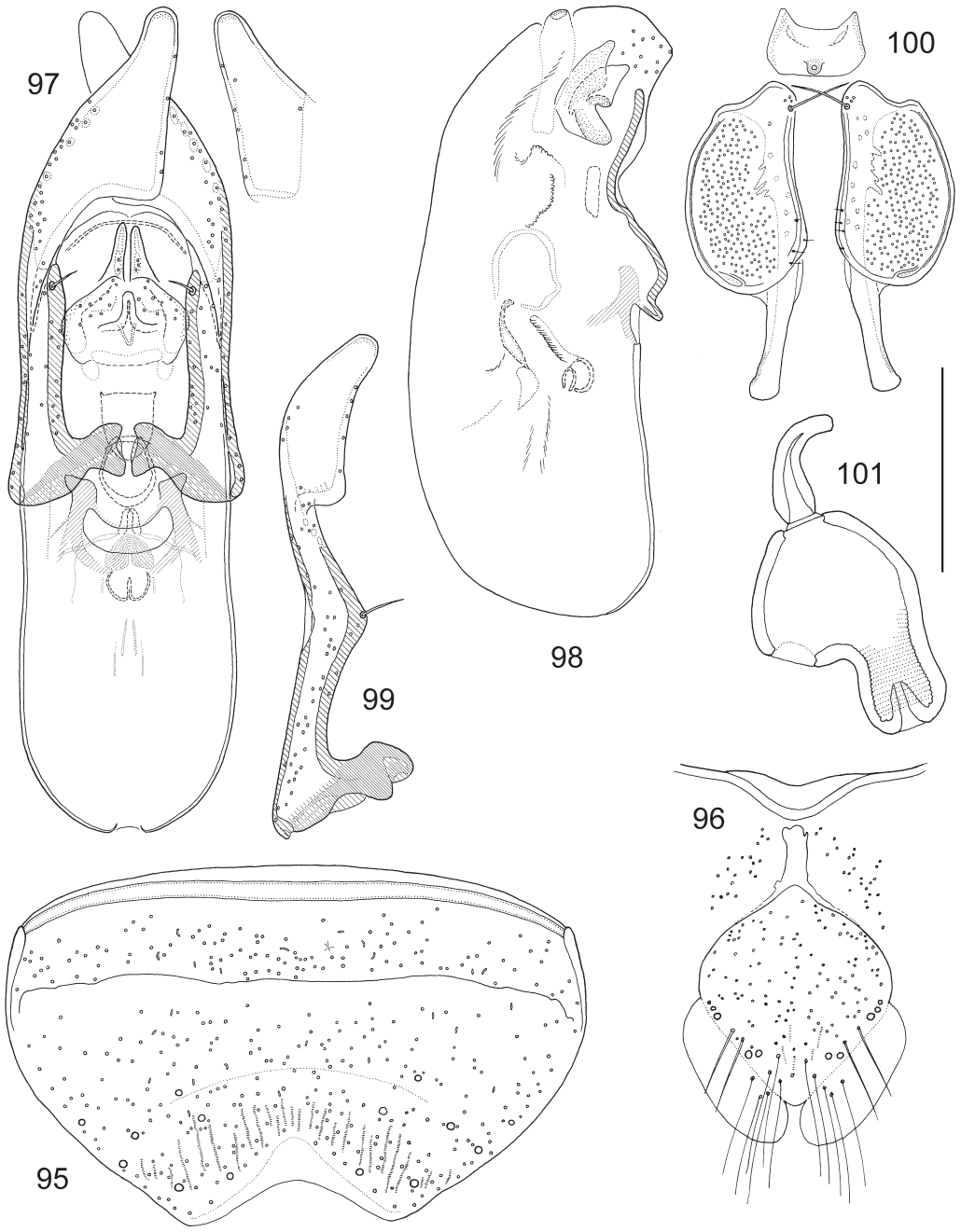
### *Anotylus hauriens* sp.n.
(Figs 22, 95–101)

**Type locality:** Malaysia, Borneo, Sabah, Mt. Kinabalu National Park, 6 km NNW Kundasang, Mt. Kinabalu, below Layang Layang, approx. 6°02'35"N 116°33'29"E, 2590 m.

**Type material: Holotype** ♂: "[MALAYSIA/Borneo:] Sabah; Mt. Kinabalu; 2600 m [wet valley below Layang Layang, 6°02'35"N 116°33'29"E], 1.V.1987; [leg. D.] Burckhardt – [I.] Löbl; [underside:] 10a [cloud forest, sifting of vegetational debris in wet ravine]" (MHNG). **Paratypes** (152): same data as holotype (3 ♀♀, 113, MHNG; 1 ♂, 1 ♀, AMNH; 1 ♂, 1 ♀, BMNH; 1 ♂, 1 ♀, HNHM; 1 ♂, 1 ♀, NIBR; 1 ♂, 1 ♀, SDEI; 1 ♂, 1 ♀, SMNS; 1 ♂, 1 ♀, ZMUC; 1 ♂, 1 ♀, coll. Schülke-ZMHB; 1 ♂, 1 ♀, NHMW); Sabah, Mt. Kinabalu National Park, summit trail, Pondok Lowii, 2300–2400 m, 28.IV.1987, leg. A. Smetana ("B11"), sifting moist moss on ground and on fallen trees (5, FMNH; 1 ♂, 1 ♀, CNCI); Sabah, Mt. Kinabalu National Park, below Layang Layang, 2590 m, 1.V.1987, leg. A. Smetana ("B17"), moss forest, sifting leaf litter and other debris under ferns (9, FMNH; 1 ♂, 1 ♀, NMPC).

**Differential diagnosis:** Unique species by its elongate head and pronotal shape but a brachypterous, local endemic species in this respect similar to *A. nepalensis* from Nepal.

**Description:** Measurements (in mm, n = 10): HW = 0.65 (0.62–0.68); TW = 0.64 (0.61–0.69); PW = 0.81 (0.77–0.85); SW = 0.78 (0.73–0.83); AW = 1.00 (0.93–1.09); HL = 0.57 (0.55–0.60); EL = 0.12 (0.11–0.13); TL = 0.30 (0.29–0.32); PL = 0.70 (0.67–0.73); SL = 0.62 (0.58–0.65); SC = 0.57 (0.53–0.60); FB = 1.94 (1.84–2.01); BL = 4.00 (3.68–4.36). Habitus as in Fig. 22. Forebody weakly shining despite strong sculpture, abdomen with granulose to imbricate sculpture, last visible tergites finely and indistinctly microsculptured at places, yet more lustrous than forebody. Forebody and abdomen dark brown, almost black with some reddish tint. Mouthparts and antennae reddish medium to dark brown, legs reddish medium brown. Head with anterior margin possessing a weak rim, but continuing posteriorly in strong ridges besides eyes. Epistomal suture very strongly impressed surrounding a mirror-shiny clypeus of trapezoid (almost rectangular) shape, strongly sticking out from the frontline of head (concave laterad, anteclypeus slightly curved anteriorly). Rest of dorsal head surface strongly sculptured scabriculous on sides and more longitudinally strigose in middle, before neck with a transversal ridge meeting the longitudinal strigae (but not stronger then them). Neck distinct, marked by strong constriction and a slight furrow, rather shiny anteriorly. Eyes small, protruding from the sideline of head, temples rather straight anteriorly, slightly broadening then broadly rounded. Antennomere 1 fusoid and obliquely truncate on apex, tiny cylindrical article 2 obliquely truncate at base in opposite direction, article 3 club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.8–1.9 × longer than broad and 9–10 about 1.35–1.45 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with slight marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve leaving small concavities near rounded anterior corners. Laterally somewhat alatiform and gently curved posterior corners fully rounded forming almost perfect circle arch. Midline marked in posterior half with a furrow, dorsal surface rather even (slightly impressed near middle of side margin) but with areolate sculpture of rather large cells, slightly setose laterally. Elytra rather small, shoulders weakly developed but




Figs 95–101: *Anotylus hauriens*: 95) male sternite VIII; 96) male tergite X (rhomboid fusion); 97) aedeagus, frontal view; 98) median lobe, lateral view; 99) left paramere, lateral view; 100) female accessory sclerites; 101) spermatheca. Scale bar = 0.1 mm (100–101), 0.19 mm (97–99), 0.22 mm (95–96).

distinct. Laterally gently curved and broadening, posterior margin with slight rim and a narrow (almost indistinct) membranous lobe in outer 2/3. Posterior edge not straight but slightly oblique in outer half and gently curved in middle to continue straight to narrowly rounded sutural corners; therefore maximum elytral length not near posterior corners but around middle of each elytron. Suture marked with slight ridges, elytral dorsal surface rugose-papillate with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge barely marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with roundish impressions on sides, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 95), rhomboid part of tergite X (Fig. 96), aedeagus as in Figs 97–99, accessory sclerite and spermatheca of female as in Figs 100 and 101 respectively.

**Distribution and bionomics:** This species seems to be confined to high elevation (2300–2600 m) moss forest habitats in Mt. Kinabalu and most specimens were apparently collected from moss or vegetable debris and litter around mossy trees. Most likely it is endemic to this area.

**Etymology:** The name of the species in Latin means “absorbant”, adjective referring to moss (that seems to be a habitat for this species) absorbing a lot of water.

### *Anotylus intuitus* sp.n.
(Figs 6, 20, 102–108)

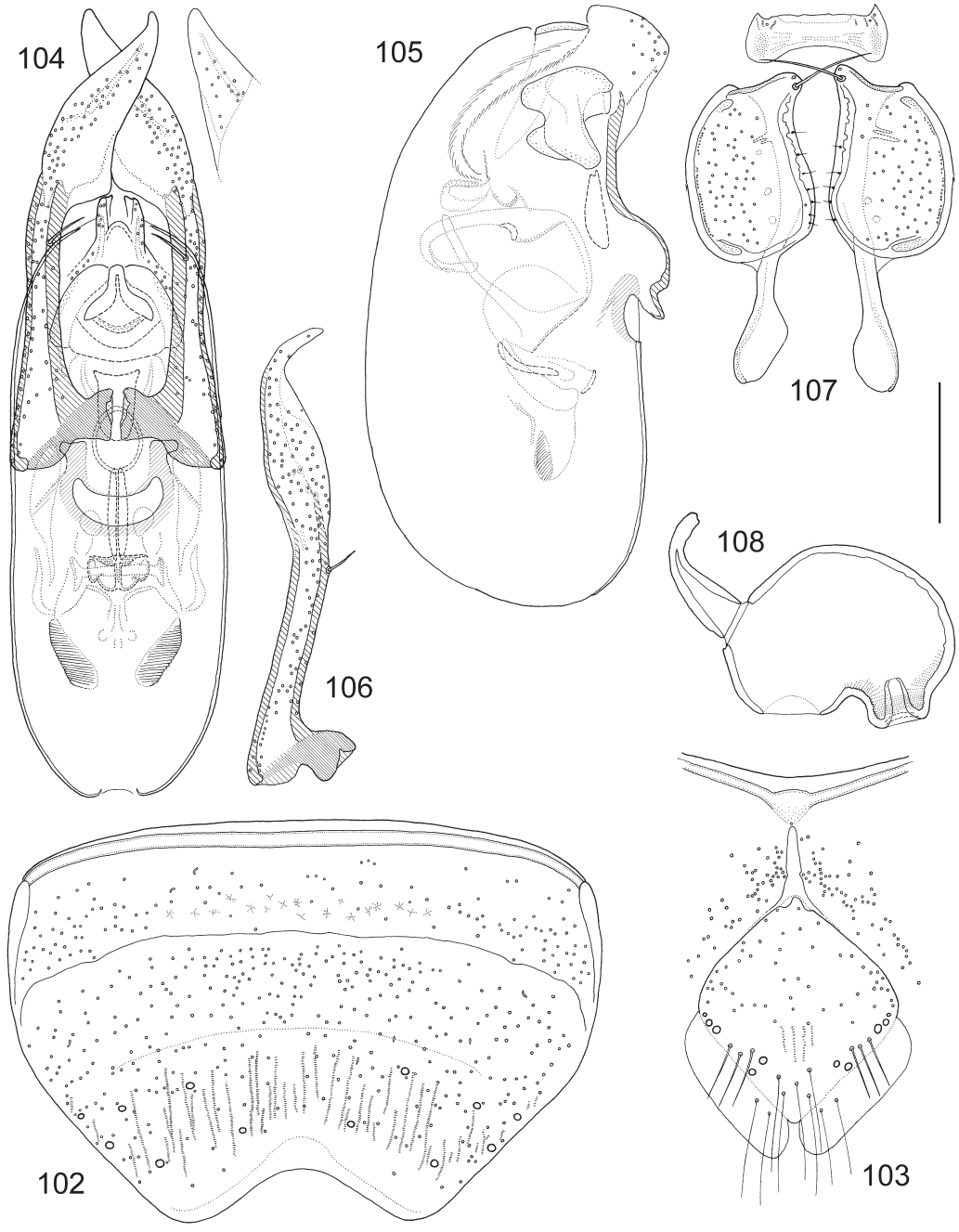
**Type locality:** Indonesia, West Java, ca. 30 km SW Bandung, Telaga Patengan, 7°10'15"S 107°21'39"E, 1630 m.

**Type material: Holotype** ♂: “INDONESIA: W Java; Telaga Patengan, 1400m [1630 m]; 2 km SE Rancabali; (40 km SSW Bandung); lg. Schuh 6.8[VIII].1994 [sifted in forest]” (NHMW). **Paratypes** (172): West Java, Cianjur, above Kebun Gede, Gn. Gede, 06°47.715'S 107°01.337'E, 1546 m, 4.VIII.2006, leg. A. Riedel, sample 1, sifted (1 ♂, 1 ♀, SMNK); West Java, Telaga Warna, between Puncak and Cipanas, 6°42.097'S, 106°59.833'E, 1480 m, 6.VIII.2006, leg. A. Riedel, sample 2, sifted (1 ♂, 3 ♀♀, SMNK, 1 ♀, 1, MBBJ, 1 ♀, SMNS); East Java, Col Puncak et Cibodas, lac Telaga Varna, 12.VIII.1985, leg. J. Robert (1 ♀, MHNG); INDONESIA/Sumatra: Jambi, Mt. Kerinci, footpath to summit, W of Kersik Tua, 1800–1980 m [1°44'S 101°16'E], 16.II.2000, leg. P. Schwendinger (“Sum-00/12”), evergreen montane rainforest, sifting (1 ♂, 1 ♀, MHNG); Jambi, km 15 on road from Sungaipenuh to Tapan, 1450 m, 9.XI.1989, leg. I. Löbl, D. Agosti & D. Burckhardt (“10”), sifting of vegetational debris in degraded montane *Lithocarpus-Castanopsis* forest (1, MHNG); Jambi, Mt. Kerinci, 1750–1850 m, 11.–12.XI.1989, leg. I. Löbl, D. Agosti & D. Burckhardt (“11”), sifting of vegetational debris in montane *Lithocarpus-Castanopsis* forest (2 ♂♂, 1 ♀, 42, MHNG); Jambi, Mt. Kerinci, 1900 m, 13.XI.1989, leg. I. Löbl, D. Agosti & D. Burckhardt (“15a”), sifting of vegetational debris in montane *Lithocarpus-Castanopsis* forest (43, MHNG; 1 ♂, 1 ♀, AMNH; 1 ♂, 1 ♀, BMNH; 1 ♂, 1 ♀, CNCI; 1 ♂, 1 ♀, FMNH; 1 ♂, 1 ♀, HNHM; 1 ♂, 1 ♀, NIBR; 1 ♂, 1 ♀, NHMB; 1 ♂, 1 ♀, NMPC; 1 ♂, 1 ♀, SDEI; 1 ♂, 1 ♀, SMNS; 1 ♂, 1 ♀, Schülke, ZMHB; 1 ♂, 1 ♀, ZMUC); Jambi, Mt. Kerinci, 2100 m, 14.XI.1989, leg. I. Löbl, D. Agosti & D. Burckhardt (“16”), sifting of vegetational debris, transition upper

montane *Lithocarpus-Castanopsis* to moss forest (23, MHNG); Jambi, W Mt. Tujuh Lake, 1400 m [1°42.5'S 101°22.0'E], 14.XI.1989, leg. I. Löbl, D. Agosti & D. Burckhardt ("17"), sifting of vegetational debris in montane *Lithocarpus-Castanopsis* forest (1, MHNG); Aceh, Mt. Leuser National Park, Ketambe Research Station, 300–500m [3°41'N 97°39'E], 23.–30.XI.1989, leg. I. Löbl, D. Agosti & D. Burckhardt ("25a"), lowland dipterocarp forest, sifting of vegetational debris (1 ♂, 1 ♀, MHNG); West Sumatra, Bukittinggi, Gunung Singgalang, 2100–2600 m [1°23.5'S 100°20.5'E], 16.X.1990, leg. A. Riedel (22, NHMW).

**Differential diagnosis:** Similar to *A. microphthalmus*, but larger and easily separated by the size of the eyes. Other species it might be confused with are *A. fusoideus* and *A. cornutus*, both with thicker antennae. Female sternite VIII with curved apex and rather blunt in middle (Fig. 6).

**Description:** Measurements (in mm, n = 10): HW = 0.69 (0.65–0.73); TW = 0.67 (0.62–0.71); PW = 0.86 (0.84–0.91); SW = 0.97 (0.92–1.02); AW = 1.08 (1.01–1.15); HL = 0.54 (0.52–0.57); EL = 0.15 (0.14–0.16); TL = 0.24 (0.23–0.26); PL = 0.68 (0.64–0.72); SL = 0.82 (0.77–0.86); SC = 0.78 (0.73–0.82); FB = 2.07 (1.98–2.17); BL = 4.08 (3.80–4.37). Habitus as in Fig. 20. Forebody with dense and strong sculpture, weakly lustrous, abdomen with imbricate sculpture strong microsculpture and dust-like setation so whole body with weak lustre. Forebody and antennae dark brown, almost black with some reddish tint, often abdomen somewhat lighter at base. Mouthparts and legs reddish medium brown, sometimes first two antennomeres also. Head with anterior margin possessing slight rim continuing to the inner side of eye (and a little bit beyond) in a ridge. Epistomal suture strongly impressed surrounding a slightly sculptured but mostly shiny clypeus of subhexagonal shape, projecting from the frontline of head with slightly arcuate anterior edge. Rest of dorsal head surface strongly sculptured, median part mostly strigose, laterally turning to slightly areolate (with even nipples in a few cells), at supraantennal prominences strigosity following its curve, at temples rugose. Neck anteriorly constricted with thin, shiny groove, posteriorly strongly microsculptured, anteriad a rather marked elevated transversal ridge separating it from vertex, vertex impressed before this ridge in arcuate fashion. Eyes quite large, but only moderately protruding from the sideline of head, temples gently curved and insignificantly broadening anteriorly, more strongly rounded posteriorly. Antennomere 1 slightly swollen cylindrical and obliquely truncate on apex, small cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.9–2.2 × longer than broad and 9–10 about 1.4–1.6 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae, last article with almost the same width as penultimate one. Pronotum with marginal bead slightly visible anteriorly but stronger posteriorly, middle of anterior margin pulled ahead in a curve forming concavities near narrowly rounded anterior corners. Laterally more arcuate anteriorly and rather alatiform posteriorly, meeting gently arched posterior margin with slight concavity before obtuse-angled corners. Midline marked with furrow, in posterior half deeply carved in, dorsal surface without setation, rather even (slightly impressed near middle of side margin) but on the most part with areolate sclupture (nipples in each cell) degrading to scabrous only on extreme lateral parts and at furrow. Elytra longer and (together at shoulders) wider than pronotum, shoulders well developed. Laterally gently curved and somewhat broadening, posterior margin with thin rim and without perceptible membranous lobe.




Figs 102–108: *Anotylus intuitus*: 102) male sternite VIII; 103) male tergite X (rhomboid fusion); 104) aedeagus, frontal view; 105) median lobe, lateral view; 106) left paramere, lateral view; 107) female accessory sclerites; 108) spermatheca. Scale bar = 0.1 mm (108), 0.13 mm (107), 0.16 mm (102–106).

Posterior edge slightly curved, maximum elytral length slightly outwards middle of each elytron, margin slightly concave before outer corners. Sutural corners almost right-angled, inner half of posterior margin nearly straight. Suture marked with slight ridges, elytral dorsal surface rugose to slightly strigose with short setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge marked only with indistinct longitudinal strigae, disc slightly impressed alongside, scutellum heart-shaped with impressions at apices of lateral lobes and indistinct median lobe strongly microsculptured, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal third. Abdomen with sides moderately arcuate, second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 102), rhomboid part of tergite X (Fig. 103), aedeagus as in Figs 104–106, accessory sclerite and spermatheca of female as in Figs 107 and 108 respectively.

**Distribution and bionomics:** The species is known from Java and Sumatra, collected by sifting litter in vegetational debris of evergreen montane rainforests at rather high elevations (1400–2600 m).

**Etymology:** The specific name in Latin means “view” or “sight”, noun in apposition. The choice of name refers to eye size as primary distinguishing feature between species in this area.

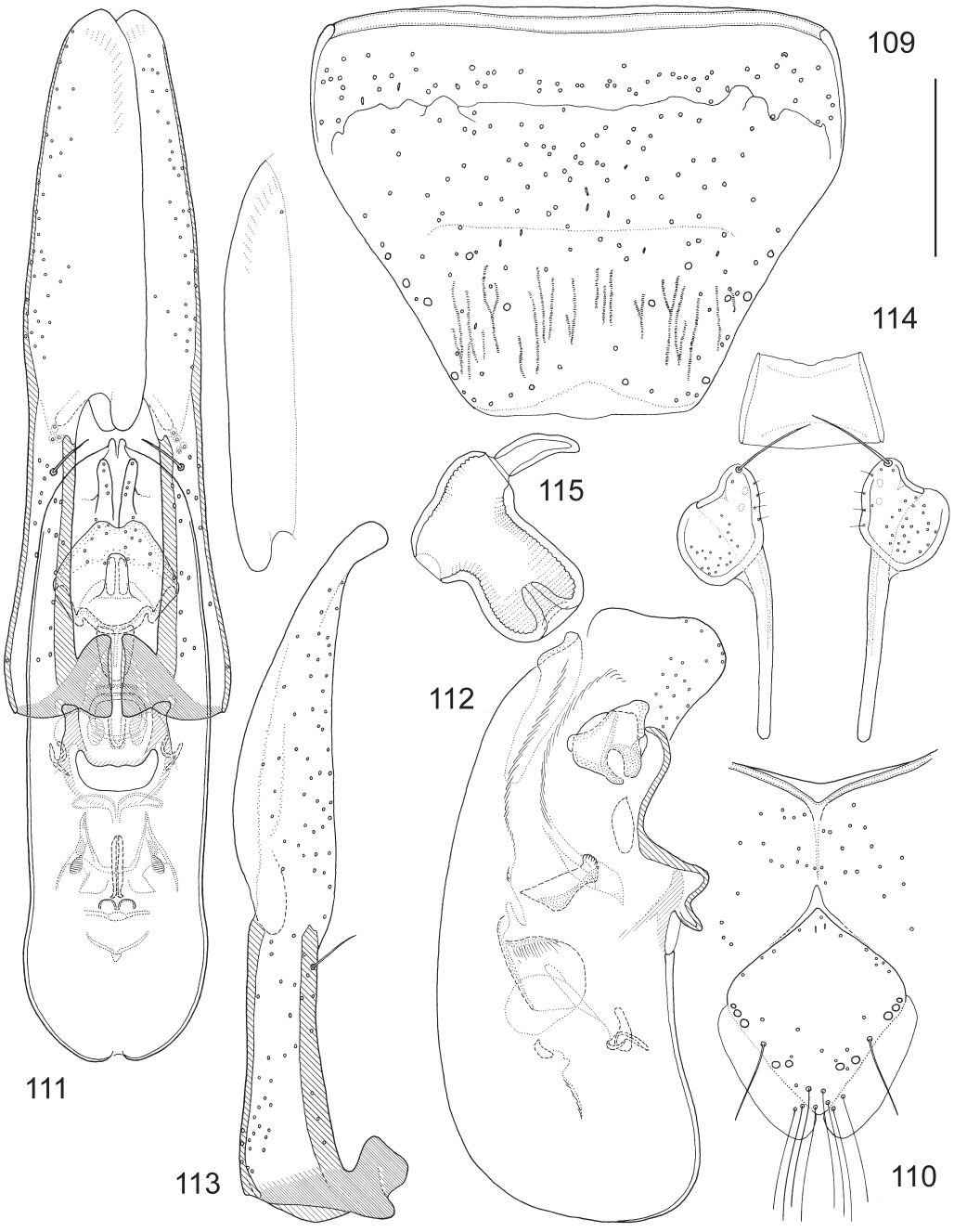
### *Anotylus jaechi* sp.n.
(Figs 14, 109–115)

**Type locality:** Indonesia, Bali, Bedugul, slopes of Tapak Hill, approx. 8°16'40"S 116°08'50"E, 1400 m.

**Type material: Holotype** ♂: “[INDONESIA:] Bali 30.I.[19]88; Bedugul [Bali Botanic Garden (= Kebun Raya Bali), 1400 m, 08°16'40"S 116°08'50"E]; leg. [M.A.] Jäch (8) [small spring, about 30 cm wide]” (NHMW). **Paratypes** (31): Bali, Kebun Raya, 1320 m, 08°16.186'S 115°09.368'E, 11.VII.2014, leg. J. Pedersen & A. Schomann, sifted litter in forest (3, ZMUC; 1 ♂, 1 ♀, BMNH; 1, NIBR); Bali, Gunung Catur, 8°14.464'S 115°09.523'E, 1400 m, 9.VII.2014, leg. J. Pedersen & A. Schomann, hand collected from vegetation in forest (1 ♂, 1 ♀, 1, ZMUC); INDONESIA/Lombok: Gunung Rinjani, 1640 m [8°21'10"S 116°23'50"E], 16.III.1991, leg. D. Agosti (“9”), montane forest with *Pandanus* and palms, ferns dominant [1650 m, trees up to 30 m high] (“F91559”) (3, MHNG; 1 ♂, HNHM); Gunung Rinjani, 1000 m [8°19'50"S 116°24'03"E], 18.III.1991, leg. D. Agosti (“10”), montane rainforest, at the base of a *Ficus* sp. with high infection of Mycorrhiza in a thick leaf litter layer, Winkler extracted (“F91562”) (1 ♂, 1 ♀, 3, MHNG; 1 ♂, 1 ♀, FMNH; 1 ♀, SMNS; 1 ♀, coll. Schülke-ZMHB); Batu Koq (N of Gunung Rinjani), 500 m, 12.III.1991, leg. D. Agosti (“5”), secondary forest in gorge with very steep walls, along river, Winkler extracted (“F91527-91531”) (1, MHNG; 1 ♂, 1 ♀, NHMW).

**Differential diagnosis:** Similar to *A. ustulosus* in the very slender antennae but distinguishable by a number of features, most importantly the pronotal shape and body colour.

**Description:** Measurements (in mm, n = 10): HW = 0.51 (0.46–0.55); TW = 0.50 (0.46–0.53); PW = 0.59 (0.54–0.63); SW = 0.66 (0.57–0.70); AW = 0.75 (0.65–0.83); HL = 0.43 (0.39–0.45); EL = 0.09 (0.08–0.10); TL = 0.21 (0.19–0.23); PL = 0.46 (0.43–0.48); SL = 0.54 (0.44–0.59); SC = 0.51 (0.41–0.56); FB = 1.46 (1.31–1.55); BL = 2.89 (2.66–3.12). Habitus as in Fig. 14. Forebody conspicuously setose and weakly shining despite strong sculpture, abdomen with granulose to imbricate sculpture, last visible tergites finely and indistinctly microsculptured bearing dust-like setation, with about the same lustre as forebody. Forebody and abdomen as well as legs and mouthparts reddish medium to dark brown, head usually darkest, antenna blackish. Head with anterior margin possessing a weak rim, but continuing posteriorly in sharp ridges besides eyes, apparent because of shiny, impressed inner side. Epistomal suture impressed surrounding sculptured but predominantly shiny clypeus of semirectangular shape, strongly pulled forward from the frontline of head with truncate anterior edge. Rest of dorsal head surface with setation and rugulose sculpture. Posterior midline of head with narrow but deep groove originating from shiny constricted part of neck (posterior neck microsculptured), this groove abruptly widening in middle of disc into shallow and more shiny impression towards supraantennal prominences, gradually fading. Posteriorly divided vertex slightly elevated before neck with roundish impressions on both sides of dividing groove. Eyes very small and rather flat, not protruding from the sideline of head, temples straight in anterior half, only posteriorly rounded. Antennomere 1 fusoid and obliquely truncate on apex, cylindrical article 2 obliquely truncate at base in opposite direction, article 3 very elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 2.9–3.1 × longer than broad and 9–10 about 1.8–2.1 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible slightly anteriorly and strongly posteriorly, middle of anterior margin pulled ahead in strong curve leaving concavities near narrowly rounded anterior corners. Laterally alatiform (zigzagged with about 4 teeth) and gently curved so that with posterior edge forming an imperfect half-circle – posterior corners with inwards bent marginal bead (obtuse-angled) being the fifth tooth – thereby anterior corners the widest point of pronotum. Midline marked with a deep, almost complete furrow that is slightly fading before anterior edge, dorsal surface setose and with rugose sculpture, confused around anterior part of furrow, surface widely impressed near middle of side margin. Elytra often rather small (beware of brachypterous morph), shoulders weakly developed but distinct. Laterally gently curved and broadening, posterior margin with slight rim and a narrow (almost indistinct) membranous lobe in outer 2/3. Posterior edge slightly curved in outer half, insignificantly oblique in inner half to slightly obtuse-angled sutural corners; therefore maximum elytral length slightly outwards middle of each elytron. Suture marked with slight ridges, elytral dorsal surface rugose-papillate with short setae at the base of small protuberances connected by wrinkles. Elytral epipleural ridge marked with a few stronger longitudinal strigae, disc flat, slightly depressed, scutellum heart-shaped with wide lateral lobes impressed on apices, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal




Figs 109–115: *Anotylus jaechi*: 109) male sternite VIII; 110) male tergite X (rhomboid fusion); 111) aedeagus, frontal view; 112) median lobe, lateral view; 113) left paramere, lateral view; 114) female accessory sclerites; 115) spermatheca. Scale bar = 0.07 mm (114–115), 0.1 mm (111–113), 0.12 mm (109–110).

ctenidium of spinules in distal half. Abdomen with sides arcuate, second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 109), rhomboid part of tergite X (Fig. 110), aedeagus as in Figs 111–113, accessory sclerite and spermatheca of female as in Figs 114 and 115 respectively.

**Distribution and bionomics:** The species occurs on two neighbouring Indonesian islands, Bali and Lombok. It was collected from fungusy leaf litter in montane rain forest habitats influenced by flowing water.

**Comment:** This species seems to have a brachypterous form. In Lombok the specimens from 500 m elevation belong entirely to the macropterous morph, in the 1000 m elevation set two exemplars are brachypterous, while at 1640 m all but one belong to the brachypterous morph (the remaining specimen is somewhat transitional between the two morphs).

**Etymology:** The species is named after the collector of the holotype, Manfred A. Jäch.

### *Anotylus kurbatovi* sp.n.
(Figs 116–122, 173)

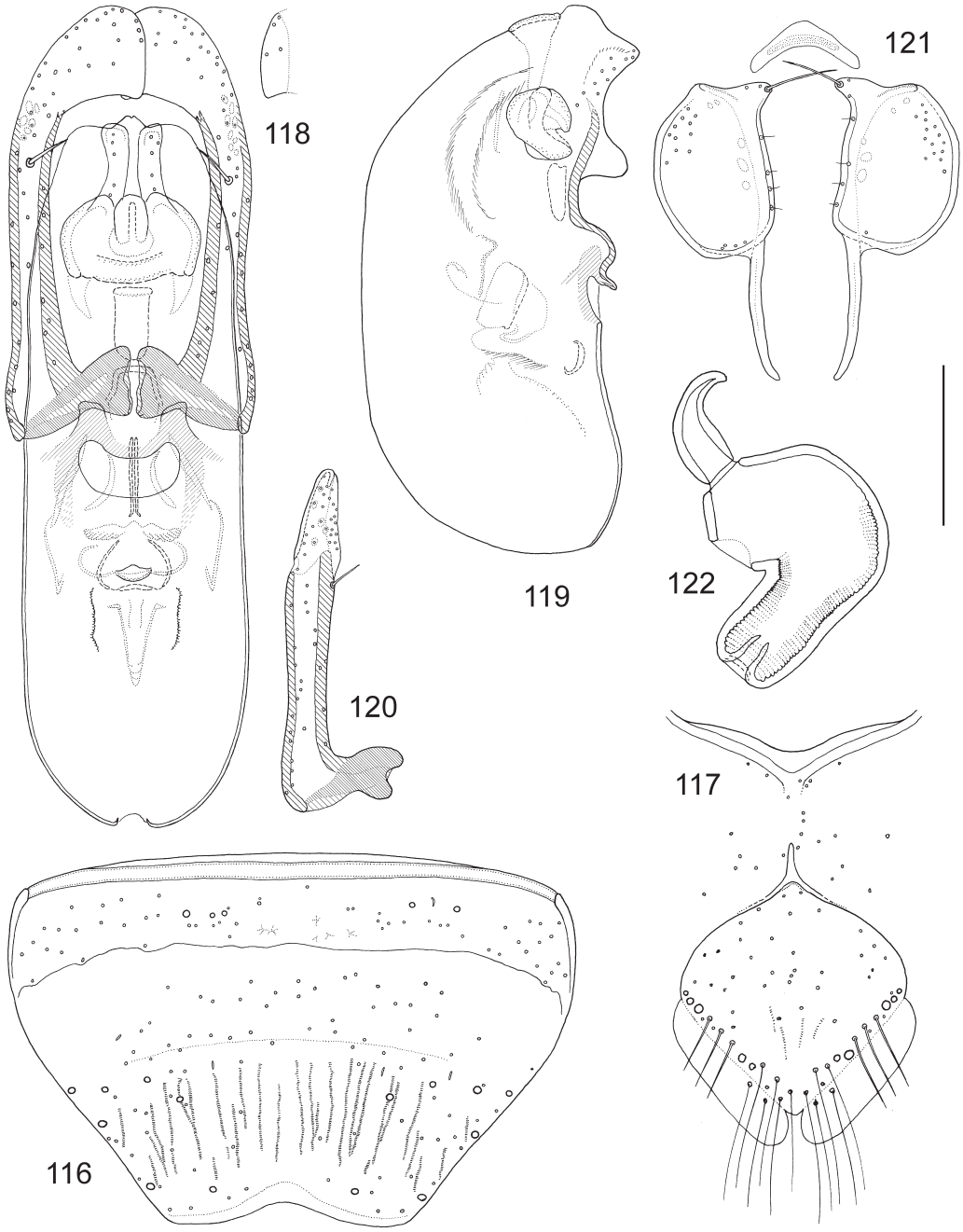
**Type locality:** Myanmar, Shan State, Namhsan, approx. 22°58'N 97°10'E, 1600 m.

**Type material: Holotype** ♂: "BURMA Shan prov.; Namhsan 1600 m [22°58'N 97°10'E]; litter 18.02[II]. [19]96; leg. S. Kurbatov" (MHNG). **Paratypes** (95): same data as holotype (1 ♀, MHNG); THAILAND: Chiang Mai Prov., Doi Inthanon, 1780 m, 17.XII.1986, leg. P. Schwendinger (9, MHNG; 1 ♂, 1 ♀, NHMW), same but 3.III.1987 (1, MHNG), same but 3.III.1987 (1, MHNG), same but 1630 m, 25.II.1987 (2, MHNG); Doi Inthanon, Meaum, 18°32'N 98°31'E, 1560 m, 18.XII.2013, leg. "Ob", sifted near stream (1, coll. Assing); Chiang Mai Prov., Doi Inthanon N.P., 1300 m, 28.IV.–11.V.1990, leg. E. Fuller ("90055b"), pine forest, yellow pitfalls (1, FMNH); Chiang Mai Prov., Doi Suthep, S-slope, 1450 m, 4.XI.1985, leg. D. Burckhardt & I. Löbl ("5"), sifting of vegetational debris in rather wet ravine (1 ♀, 16, MHNG); Chiang Mai Prov., Doi Inthanon, 1650 m, steep slope in forest, 7.XI.1985, leg. D. Burckhardt & I. Löbl ("14"), sifting of vegetational debris (1 ♂, 1, MHNG); Chiang Mai Prov., Doi Inthanon, 1720 m, ravine in forest, 7.XI.1985, leg. D. Burckhardt & I. Löbl ("15"), sifting of vegetational debris (9, MHNG); Chiang Mai Prov., Doi Inthanon, 1650 m, very wet ravine, 7.XI.1985, leg. D. Burckhardt & I. Löbl ("16"), sifting of vegetational debris and mushrooms near a streamlet (1 ♀, 27, MHNG; 1 ♂, 1 ♀, AMNH; 1 ♂, 1 ♀, NMPC; 1 ♂, 1 ♀, SMNS; 1 ♂, 1 ♀, coll. Schülke-ZMHB); Chiang Mai Prov., Doi Inthanon, 2450 m, 9.XI.1985, leg. D. Burckhardt & I. Löbl ("19"), sifting of dead leaves at forest edge, on steep slope (4, MHNG; 1 ♂, 1 ♀, BMNH;, 1 ♂, 1 ♀, ZMUC).

**Differential diagnosis:** Similar to *A. cyzicus*, but can be distinguished by the different pronotal sculpture. In the same area *A. lagreanus* occurs and can be confusingly similar, but with shorter antennae.

**Description:** Measurements (in mm, n = 10): HW = 0.58 (0.56–0.61); TW = 0.56 (0.52–0.59); PW = 0.66 (0.63–0.69); SW = 0.72 (0.68–0.75); AW = 0.84 (0.81–0.90); HL = 0.48 (0.46–0.50); EL = 0.10 (0.09–0.11); TL = 0.23 (0.22–0.25); PL = 0.51 (0.48–0.53); SL = 0.59 (0.55–0.63); SC = 0.55 (0.51–0.59); FB = 1.62 (1.55–1.68); BL = 3.31 (3.15–3.44). Habitus as in Fig. 173. Forebody with dense and strong sculpture, thus with weak lustre, abdomen with more shallow granulose-imbricate sculpture, predominantly shiny, but last visible tergites with more microsculpture and dust-like setation. Head and first

antennomere dark brown (with slight reddish tint), rest of antenna and pronotum reddish medium to dark brown. Elytra medium brown with suture and hind margin even lighter, abdomen in general medium brown but more yellowish at base and more blackish at apex. Legs, mouthparts and tip of last antennomere light to medium brown. Head with anterior margin possessing a weak rim, slightly visible around supraantennal prominences continuing in ridges besides eyes, head surface impressed at its inner side (shinier for loosened sculpture). Epistomal suture impressed surrounding lightly sculptured, shiny clypeus of slightly trapezoid shape, somewhat pulled forward from the frontline of head with truncate anterior edge. Rest of dorsal head surface with rugose sculpture not forming cells. Posterior vertex transversally impressed anteriad ridge before shiny neck (posterior neck microsculptured) connected to infraocular ridge (obscured by rugosity) and inside surface slightly impressed in arcuate fashion. Eyes moderate sized and rather flat, less protruding from the sideline of head, temples insignificantly widening in anterior half, only posteriorly rounded. Antennomere 1 slightly swollen cylindrical and obliquely truncate on apex, very small cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.75–1.95 × longer than broad and 9–10 about 1.5–1.7 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible both anteriorly and posteriorly, middle of anterior margin pulled ahead in a curve forming concavities near rounded anterior corners. Lateral margin moderately curved and rather alatiform, conspicuously incised in middle, with slight concavity before meeting obtuse-angled posterior corners, posterior margin gently arched. Midline marked with a median furrow, in posterior half carved in deep, dorsal surface rather even, middle of sides somewhat depressed, surface with rugulose sculpture turning to areolate but forming few cells (without nipple in middle), with slight setation. Elytra longer and (together) wider than pronotum, shoulders well developed. Laterally gently curved and somewhat broadening, posterior margin with slight rim and with some concavity and trace of a membranous lobe in outer 1/3. Posterior edge insignificantly curved, maximum elytral length slightly outside middle of each elytron, sutural corners almost right-angled. Suture marked with slight ridges, elytral dorsal surface rugose to slightly strigose with short setation. Elytral epipleural ridge marked with a few stronger longitudinal strigae, inside of them strigae somewhat vanishing and disc impressed, otherwise almost flat, scutellum heart-shaped with shallow and shiny impressions in apices of lateral lobes, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 116), rhomboid part of tergite X (Fig. 117), aedeagus as in Figs 118–120, accessory sclerite and spermatheca of female as in Figs 121 and 122 respectively.




Figs 116–122: *Anotylus kurbatovi*: 116) male sternite VIII; 117) male tergite X (rhomboid fusion); 118) aedeagus, frontal view; 119) median lobe, lateral view; 120) left paramere, lateral view; 121) female accessory sclerites; 122) spermatheca. Scale bar = 0.09 mm (122), 0.1 mm (118–120), 0.11 mm (117, 121), 0.14 mm (116).

**Distribution and bionomics:** The species is known from Myanmar and Thailand, collected by sifting of litter in (mostly) forested habitats, frequently near streams.

**Etymology:** The species is named after the collector of the holotype, Sergey A. Kurbatov.

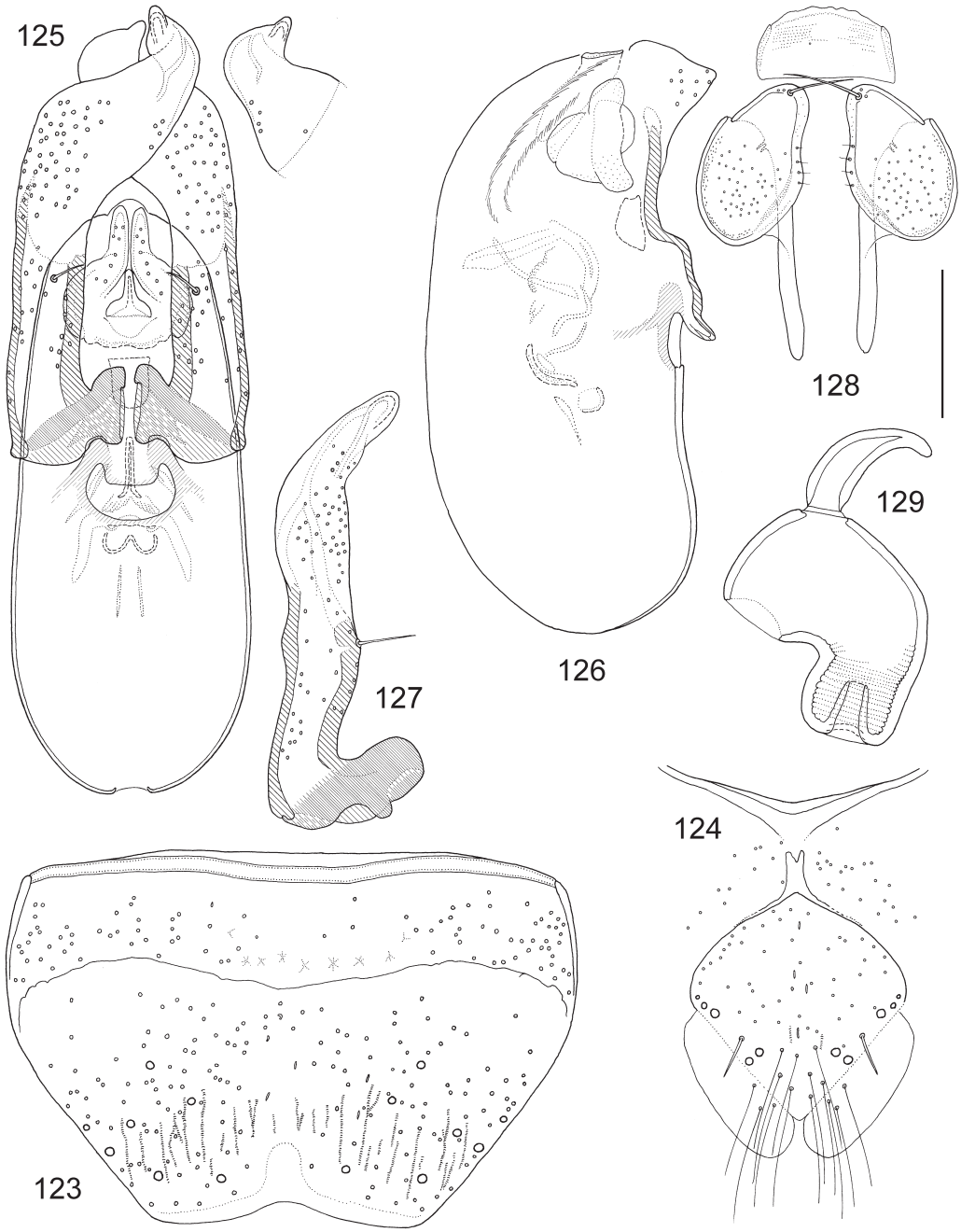
### *Anotylus lagreanus* sp.n.
(Figs 123–129, 174)

**Type locality:** Laos, Bolikhamxai Prov., 2 km SW Kaew Nua Pass, 18°22.292'N 105°09.152'E, 700 m.

**Type material: Holotype** ♂: "LAOS: Bolikhamxai Pr.:; Nakai-Nam Theun NBCA; (N end), ca. 2 km SW Kaew; Nua Pass, 690–710 m,; 18°22.292'N, 105°09.152'E; 5.vi.2008, hardwood &; bamboo forest w/tree \ ferns; FMHD#2008-029,; Berl., litter incl. bamboo &; under flowers *Mesua*; *ferrea* (Clusiaceae),; A. Newton & M. Thayer;; ANMT site 1227 ex. 95%; Field Mus. Nat. Hist." (FMNH). **Paratypes** (103): same data as holotype (5, 1 in alcohol, FMNH; 1 ♂, 1 ♀, ZMUC; 1 ♂, 1 ♀, NHMW); LAOS: Champasak Prov., Bolaven Plateau, Ban Thôngvay (=Xékatam) vic., old logging road N of village, 1170m, 15°14.494'N 106°31.807'E, 12.VI.2008, leg. A. Newton & M. Thayer (FMHD#2008-046), selectively logged forest, Winkler extract, log & leaf litter, much on boulders, ANMT site 1232 (1 ♀, FMNH); THAILAND: Nakhon Nayok Prov., Khao Yai Nat. Park in surroundings of "Headquarters" [near Haew Narok waterfall, 14°26'N 101°22'E], 750–850 m, 26.XI.–3.XII.1985; leg. D. Burckhardt & I. Löbl ("28b"), sifting of vegetational debris (1 ♂, 1 ♀, 9, MHNG; 1 ♂, 1 ♀, NHMW); Nakhon Ratchasima Prov., Khao Yai National Park, Hills E of Heo Suwat Waterfalls, 900 m [14°26'21"N 101°26'08"E], 1.XII.1985, leg. D. Burckhardt & I. Löbl ("30b"), sifting in a rather dry forest (1, MHNG); Chantaburi, Khao Sabap National Park, vicinity of Phliu Waterfalls, 150–300 m [12°31'53"N 102°11'16"E], 23.–24.XI.1985, leg. D. Burckhardt & I. Löbl ("27a"), sifting of vegetable debris and mosses near the course of water (1, MHNG); CHINA: Guizhou prov., Leigong Mt., Xiaodanjiang, 650–700 m [26°20'17"N, 108°20'39"E], 14.IX.2005, leg. Li-Long Zhu (1, SNUC); Guangxi, Jinxiu Co., Laoshan Forest Farm, 24°07'02"N 110°11'51"E, 950 m, 26.VII.2014, leg. Z. Peng, X-B. Song, Y-M. Yu & Z-Q. Yan, beech forest, mixed leaf litter, humus, sifted (1, SNUC); Sichuan, Baoxing Co., Fengtongzhai Nature Reserve, Dengchigou, 30°32'N 102°56'E, 1870 m, 1.VIII.2016, leg. Zhou, Jiang, Liu & Gao (1, SNUC); Yunnan, Gongshan Co., Qiqi, 1980m, 25.V.2009, leg. Jian-Qing Zhu (1, SNUC); Yunnan, Nabanhe N. R., Bengganghani, Shanshenmiao, 22°08.450'N 100°35.289'E, 1700 m, 11.XI.2008, leg. Jia-Yao Hu & Liang Tang (1, SNUC); Yunnan, Nabanhe N. R., Mengsong town, Nanmugahe, 22°07'07"N 100°35'08"E, 1700 m, 27–30.IV.2008, leg. Zi-Wei Yin & Jia-Yao Hu, flight intercept trap (1, SNUC); Yunnan, Lincang Pref., Mekong valley, small creek cleft, 38 km SSE Lincang, 23°33'13.2"N 100°09'56.8"E, 854 m, 11.IX.2009, leg. M. Schülke ("CH09-44a"), wet litter & flood debris under waterfall (1 ♂, 1 ♀, 24, coll. Schülke-ZMHB; 1 ♂, 1 ♀, BMNH; 1 ♂, 1 ♀, ISNB; 1 ♂, 1 ♀, NIBR; 1 ♂, 1 ♀, NMPC; 1 ♂, 1 ♀, SMNS; 1 ♀, SNUC); Yunnan, Mengla, Wangtianshu Scenic Area, 21°37'39.4"N 101°35'16.2"E, 717 m, sifted from litter under banana trees, 27.IX.2012, leg. D. Rédei ("2") (1 ♂, 3 ♀♀, HNHM); Yunnan, Xishuangbanna, Mengla, 21°29'45.0"N 101°32'59.4"E, 875 m, 24.IX.2012, leg. D. Rédei ("4"), dead bamboo leaves & stems, sifted & Winkler extracted (1, HNHM); Yunnan, Baoshan Pref., 32 km SE Tengchong, Gaoligong Shan, W Pass, 24°51'11"N 98°44'27"E, 1600 m, 28.VIII.2009, leg. M. Schülke ("CH09-14"), cleft with devastated primary forest, litter & mushrooms sifted (3 ♂♂, 1 ♀, 3, coll. Schülke-ZMHB; 1 ♀, SNUC); Yunnan, Baoshan Pref., mountain range 14 km E Tengchong, Gaoligong Shan, W Pass, 25°00'28"N 98°38'07"E, 1850 m, 1.VI.2007, leg. D.W. Wrase ("16"), secondary mixed forest, field edge, litter, debris sifted (1 ♀, coll. Schülke-ZMHB); INDIA: Assam, North Cachar Hills dist., Mt Borail, trail Jatinga – summit, 25°07'07"N; 93°02'13"E, 650m, 28.X.2004, leg. G. Cuccodoro, C. Carlton, R. Leschen & D. Erne ("CC-029"), in mixed broadleaved forest, Berlese various litters (1 ♀, FMNH); VIETNAM: Lào Cai Prov., Lào cai, 30.XI.1971, leg. Gy. Topál ("174"), Berlese (1, HNHM); Yen Bai Prov., An phú [21°59'50"N 104°50'00"E, 300 m], 3.XII.1971, leg. Gy. Topál ("209"), sifted from bamboo (2 ♂♂, 2 ♀♀, HNHM); Yen Bai Prov., Muong son [valley with agricultural fields and secondary bush vegetation surrounded by densely forested range, 250m, around 21°32'N 104°30'E], 8.XII.1971, leg. Gy. Topál ("268"), sifted litter (4, HNHM); Hanoi Prov., Ba Vi Distr, Mt. Ba Vi, 21°04'35"N 105°22'13"E, 500–750 m, 15.–17.V.2012, leg. P. Schwendinger & A. Schulz (#04c), evergreen forest (1 ♀, MHNG); Lai Chau Prov., 10 km NW Sa Pa, 22°22'26"N 103°45'27"E, 1850 m, 8.VIII.2013, leg. V. Assing ("9+2"), sifted from roots and moist leaf litter in a steep stream valley with deciduous trees (1 ♂, 2 ♀♀, 4, coll. Assing; 1 ♂, 1 ♀, NMPC; 1 ♀, NIBR).

**Differential diagnosis:** Similar to *A. gagatinus* but with shorter antenna. Colouration can be rather variable, but in most cases lighter than *A. gagatinus*.

**Description:** Measurements (in mm, n = 10): HW = 0.55 (0.50–0.60); TW = 0.53 (0.48–0.58); PW = 0.65 (0.60–0.71); SW = 0.69 (0.63–0.77); AW = 0.79 (0.71–0.86); HL = 0.44 (0.41–0.46); EL = 0.10 (0.09–0.11); TL = 0.20 (0.18–0.23); PL = 0.49 (0.45–0.55); SL = 0.57 (0.52–0.64); SC = 0.53 (0.49–0.60); FB = 1.53 (1.42–1.70); BL = 3.14 (2.97–3.47). Habitus as in Fig. 174. Forebody strongly sculptured, abdomen with granulose to imbricate sculpture, tergites finely and indistinctly microsculptured and with dust-like setation, the whole body very weakly, greasy lustered. Forebody, abdomen and most of antenna (apical half except tip) dark brown, almost black with some reddish tint. Mouthparts, legs and basal part of antenna plus tip reddish medium to dark brown. Head with anterior margin possessing an almost inconspicuous rim (almost absent on anteclypeus), continuing posteriorly in ridges besides eyes, on inner side impressed with somewhat loosened sculpture. Epistomal suture impressed surrounding a lightly sculptured and predominantly shiny clypeus of subhexagonal shape slightly sticking out from the frontline of head with a truncate anterior edge. Rest of dorsal head surface strongly rugose in middle with almost no trace of longitudinal strigosity, on temples scabrous. Before neck with a transversal elevated ridge, slightly connected to the infraocular ridge and impressed inside in an arcuate fashion. Neck distinct, marked by constriction and a strong, shiny furrow anteriorly, posteriorly microsculptured. Temples gently curved anteriorly, straight or slightly broadening then broadly rounded. Antennomere 1 fusoid and obliquely truncate on apex, tiny cylindrical article 2 obliquely truncate at base in opposite direction, article 3 club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.75–1.95 × longer than broad and 9–10 about 1.3–1.5 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible anteriorly but stronger posteriorly, middle of anterior margin pulled ahead in a curve forming concavities near narrowly rounded anterior corners. Laterally more arcuate anteriorly and rather alatiform posteriorly, meeting gently arched posterior margin with slight concavity before obtuse-angled corners. Midline marked with furrow, in posterior half deeply carved in, dorsal surface without setation, rather even (slightly impressed near middle of side margin) but on the most part with areolate sclupture (nipples in each cell) degrading to scabrous only on lateral parts and at furrow, without conspicuous setation. Elytra rather small, shoulders weakly developed but distinct. Laterally gently curved and broadening, posterior margin with slight rim and a narrow (almost indistinct) membranous lobe in outer 2/3. Posterior edge not straight but slightly oblique in outer half and gently curved in middle to continue straight to narrowly rounded sutural corners; therefore maximum elytral length not near posterior corners but around middle of each elytron. Suture marked with slight ridges, elytral dorsal surface rugose-papillate with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge barely marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with impressions in lateral lobes and a microsculptured median lobe, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia slighly




Figs 123–129: *Anotylus lagreanus*: 123) male sternite VIII; 124) male tergite X (rhomboid fusion); 125) aedeagus, frontal view; 126) median lobe, lateral view; 127) left paramere, lateral view; 128) female accessory sclerites; 129) spermatheca. Scale bar = 0.06 mm (129), 0.1 mm (125–128), 0.13 mm (123–124).

broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 123), rhomboid part of tergite X (Fig. 124), aedeagus as in Figs 125–127, accessory sclerite and spermatheca of female as in Figs 128 and 129 respectively.

**Distribution and bionomics:** The known distribution range includes S-China, Laos, India (Assam), N-Thailand and N-Vietnam, specimens were acquired from sifted litter in hardwood and bamboo forest with tree ferns, wet leaf litter and flood debris.

**Comment:** The localities in Vietnam of the 1971 expedition of György Topál and István Matskási (HNHM) are quite difficult to identify, especially as literature places some of these sites completely wrong. With the help and memory of I. Matskási, one set was collected near a famous marble mine in the Luc Yen area where they lived in small stilt-legged bamboo houses and collected extensively in the surroundings including the small city Yen Bai. These were war times and they were not allowed to travel to far distances, especially to the south. Dávid Rédei's collecting events refer to one particular day (i. e. not consequential for the whole trip).

**Etymology:** The species is named after Ernest Doudart de Lagrée (March 31, 1823 – March 12, 1868) entomologist and the leader of the French Mekong Expedition of 1866–1868, adjective formed from his name with the suffix -anus.

### *Anotylus laobianus* sp.n.
(Figs 130–136, 178)

**Type locality:** China, Yunnan Prov., 2 km SSE Shihuidi, 24°08'16"N 99°42'53"E, 2375 m.

**Type material: Holotype** ♂: "CHINA: Yunnan, Lincang Pref.,; Laobie Shan, Wei Bo Shan Pass,; 24°08'16"N, 99°42'53"E, 2375 m,; creek valley, devastated second.[ary]; decid.[uous] forest, litter & moss sifted,; 8.IX.2009, leg. M. Schülke (CH09-35) \ II.; det. M. Schülke 2012" (ZMHB). **Paratypes** (9): same data as holotype (1 ♂, 1 ♀, 2, coll. Schülke-ZMHB; 1 ♂, 1 ♀, FMNH; 1 ♂, 1 ♀, NHMW; 1 ♂, SNUC).

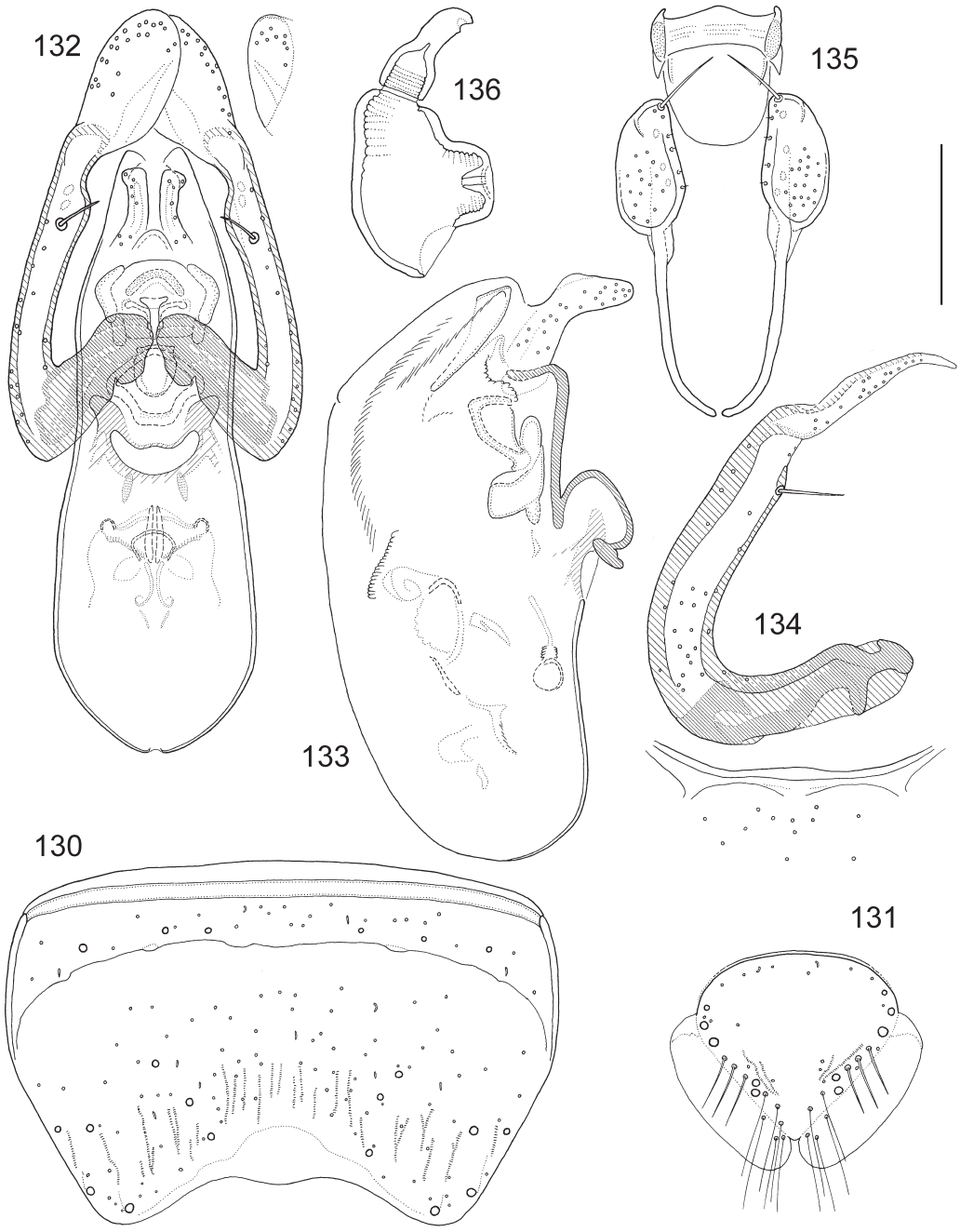
**Differential diagnosis:** The smallest known species in this group by far. Similar also to *A. pingbianus*, but distinguishable by its smaller size and lighter first antennomere.

**Description:** Measurements (in mm, n = 10): HW = 0.33 (0.32–0.35); TW = 0.35 (0.33–0.37); PW = 0.39 (0.38–0.42); SW = 0.38 (0.36–0.41); AW = 0.47 (0.43–0.51); HL = 0.29 (0.27–0.30); EL = 0.06 (0.055–0.065); TL = 0.14 (0.13–0.15); PL = 0.32 (0.31–0.33); SL = 0.31 (0.29–0.33); SC = 0.29 (0.27–0.31); FB = 0.94 (0.90–0.98); BL = 1.82 (1.66–1.99). Habitus as in Fig. 178. Forebody with dense and strong sculpture, abdomen with more or less granulose sculpture, whole body possessing greasy lustre (tergite bases somewhat shinier). Body medium to dark brown, head and first antennomere slightly reddish dark brown, with clypeal area darkest. Mouthparts, legs and rest of antenna reddish light to medium brown. Head with anterior margin possessing a weak rim, but rather inconspicuous medially (anteclypeus), continuing posteriorly in a ridge to inner side of eye. Epistomal suture strongly impressed surrounding anteriorly sculptured

but posteriorly shiny clypeus of hexagonal shape, strongly pulled forward from the frontline of head with truncate anterior edge. Rest of dorsal head surface strongly sculptured, finely rugose-costulate, direction mostly longitudinal in middle and more rugose on sides, posterior middle of vertex marked by shallow longitudinal impression and posteriorly bordered by slight ridge, before that surface obliquely and indistinctly impressed, connected to impressions mediad eyes (middle of temple with tiny bristle), anteriorly shiny neck marked by constriction. Eyes small and very flat, not considerably protruding from sideline of head, temples anteriorly slightly dilating and gently curved, posteriorly broadly (but not evenly) rounded. Antennomere 1 strongly sculptured fusoid and swollen, obliquely truncate on apex, small ovoid article 2 obliquely truncate at base in opposite direction, article 3 very short club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.15–1.25 × longer than broad and 9–10 about 1.05–1.15 × longer than broad) with basal dish. Antennomeres with rather short setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except elongate terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with slight marginal bead visible all around, middle of anterior margin pulled ahead in gentle curve leaving only insignificant concavities near rather broadly rounded anterior corners. Lateral margin only slightly uneven, gently curved anteriorly, posteriorly almost straight, broadly rounded posterior corners marked by meeting with gently arched posterior margin. Midline marked by shallow midlongitudinal furrow, dorsal surface rather even (slightly impressed near middle of side margin) but on the most part with confused rugulose sculpture without setation, anterior margin with tiny bristles. Elytra small, about the same length as pronotum, at shoulders about the same width, shoulders moderately developed. Laterally gently curved and somewhat broadening, posterior margin with slight rim and almost truncate (only slightly oblique) without membranous lobe. Sutural corners almost right-angled, inner half of posterior margin only slightly oblique. Suture not marked with ridges, elytral dorsal surface roughly granulate-papillate with small protuberances slightly arranged along oblique lines, laterally turning strigose (thereby marking elytral epipleural ridge) without conspicuous setation. Disc flat and even, depressed (concave) sometimes, scutellum heart-shaped with impressions in apices of side lobes, often concealed together with less sculptured (shinier) impressed area towards shoulders slightly oblique. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 130), rhomboid part of tergite X (Fig. 131), aedeagus as in Figs 132–134, accessory sclerite and spermatheca of female as in Figs 135 and 136 respectively.

**Distribution and bionomics:** The species is only known from W-Yunnan, collected only once in deciduous forest, by sifting of litter and moss in a creek valley.

**Comment:** This species is uniquely interesting for being so small (without a known close relative or any other taxon being in its proximity in terms of size) and yet with presence of all the features that characterize the group.




Figs 130–136: *Anotylus laobianus*: 130) male sternite VIII; 131) male tergite X (rhomboid fusion); 132) aedeagus, frontal view; 133) median lobe, lateral view; 134) left paramere, lateral view; 135) female accessory sclerites; 136) spermatheca. Scale bar = 0.05 mm (136), 0.06 mm (135), 0.08 mm (132–134), 0.09 mm (131), 0.1 mm (130).

**Etymology:** The name of the species is an adjective derived from its only known locality, Laobie Shan in Yunnan (China).

### *Anotylus loricatus* sp.n.
(Figs 7, 10, 65–66)

**Type locality:** Malaysia, Borneo, Sabah, Mt. Kinabalu National Park, Mt. Kinabalu summit trail, Pondok Lowii, approx. 6°02'30"N 116°33'07"E, 2280 m.

**Type material: Holotype** ♀: "[MALAYSIA/] Borneo Sabah Mt.; Kinabalu N.P. Sum-; mit Tr. Pondok Lo-; wii, 2300–2400m; 28.IV.[19]87 [leg.] A. Smetana [(B11), sifting moist moss on ground and on fallen trees] \ Field Museum; ex collection of; H.G. Nelson \ Delo 9 [A. Smetana's handwriting] \ Anotylus; det. Newton 2001" (FMNH). **Paratype** (1): same data as holotype (1 ♀, MHNG).

**Differential diagnosis:** Similar to *A. crepidatus*, but distinguishable by the shorter elytra.

**Description:** Measurements (in mm, n = 2): HW = 0.69 (0.68–0.70); TW = 0.66 (0.65–0.67); PW = 0.77 (0.77–0.78); SW = 0.80 (0.79–0.81); AW = 1.08 (1.06–1.10); HL = 0.50 (0.49–0.51); EL = 0.13 (0.13–0.13); TL = 0.24 (0.23–0.25); PL = 0.64 (0.63–0.65); SL = 0.67 (0.66–0.68); SC = 0.62 (0.60–0.63); FB = 1.85 (1.84–1.86); BL = 3.83 (3.80–3.86). Habitus as in Fig. 10. Forebody weakly shining despite strong sculpture, especially head with shinier parts, abdomen with granulose to imbricate sculpture, in general with about the same lustre as forebody. Forebody and abdomen dark brown, head being darkest, almost black, pronotum, elytra and abdomen somewhat lighter with some reddish tint. Mouthparts, legs and first 3 antennomeres medium brown, after 4th article antenna turning black. Head with anterior margin without distinct rim, but with slightly elevated margin from tip of supraantennal prominences to eyes. Epistomal suture strongly impressed surrounding an almost mirror-shiny clypeus of hexagonal shape, strongly pulled forward from the frontline of head (convex, slightly curved anterior edge). Rest of dorsal head surface strongly sculptured, predominantly strigose in middle and more rugose on sides, posterior middle of vertex divided by midlongitudinal furrow connected to shiny anterior neck (posterior neck microsculptured) and posteriorly bordered by slight ridge, neck marked by constriction. Eyes relatively large and strongly protruding from sideline of head, temples rather straight anteriorly then broadly (but not evenly) rounded posteriorly. Antenna with basal 3 segments not sculptured, shiny (traces of eculpture only at apex of third article) From fourth strong papillate sculpture present and strong, dark tactile setae on apices of each antennomere. First antennomere fusoid, somewhat swollen, small article 2 obliquely truncate at base, article 3 elongate club-shaped, articles 4–10 incrassate, cylindrical (antennomeres 4–5 about 1.0–1.2 × longer than broad and 9–10 about 0.9–1.0 × longer than broad) with mostly rather conspicuous basal dish. Terminal antennomere apically constricted and less broad than previous ones. Antennomeres 8–10 with lighter apical crown of setae and more clyindrical than previous ones. Pronotum with thin marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve leaving insignificant concavities near narrowly rounded anterior corners. Laterally rather strongly arched and even but posterior corners still discernible albeit weak, not forming unbroken arch with gently bent posterior margin. Midline marked in posterior half with indistinct furrow, dorsal surface rather even (slightly impressed near middle of side margin) but with rugulose sculpture not forming cells and for the most part lacking directionality, slightly setose. Elytra rather short (just

slightly exceeding length of pronotum), shoulders distinct. Laterally gently curved and slightly broadening, posterior margin with slight rim and no membranous lobe. Posterior edge slightly curved, maximum elytral length slightly outwards middle of each elytron. Suture marked with ridges, elytral dorsal surface rugose-papillate with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge barely marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped and mirror-shiny with slight microsculpture anteriorly, shinier impressed area towards shoulders following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate anteriorly but more arched posteriorly, second segment with paratergites broadening posteriorly (abdomen appearing somewhat constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, accessory sclerite and spermatheca of female as in Figs 65 and 66 respectively, tergite X with rhomboid fusion as in Fig. 7.

**Distribution and bionomics:** The species was collected only once on Mt. Kinabalu (N-Borneo) by sifting of moist moss on ground around fallen trees.

**Comment:** The male is unknown.

**Etymology:** The specific epithet is a Latin adjective and refers to being "loricated" (clothed in mail) with a crust of soil this and most other species in this article use as camouflage.

### *Anotylus microphthalmus* (FAUVEL, 1904)
(Figs 15, 137–143)

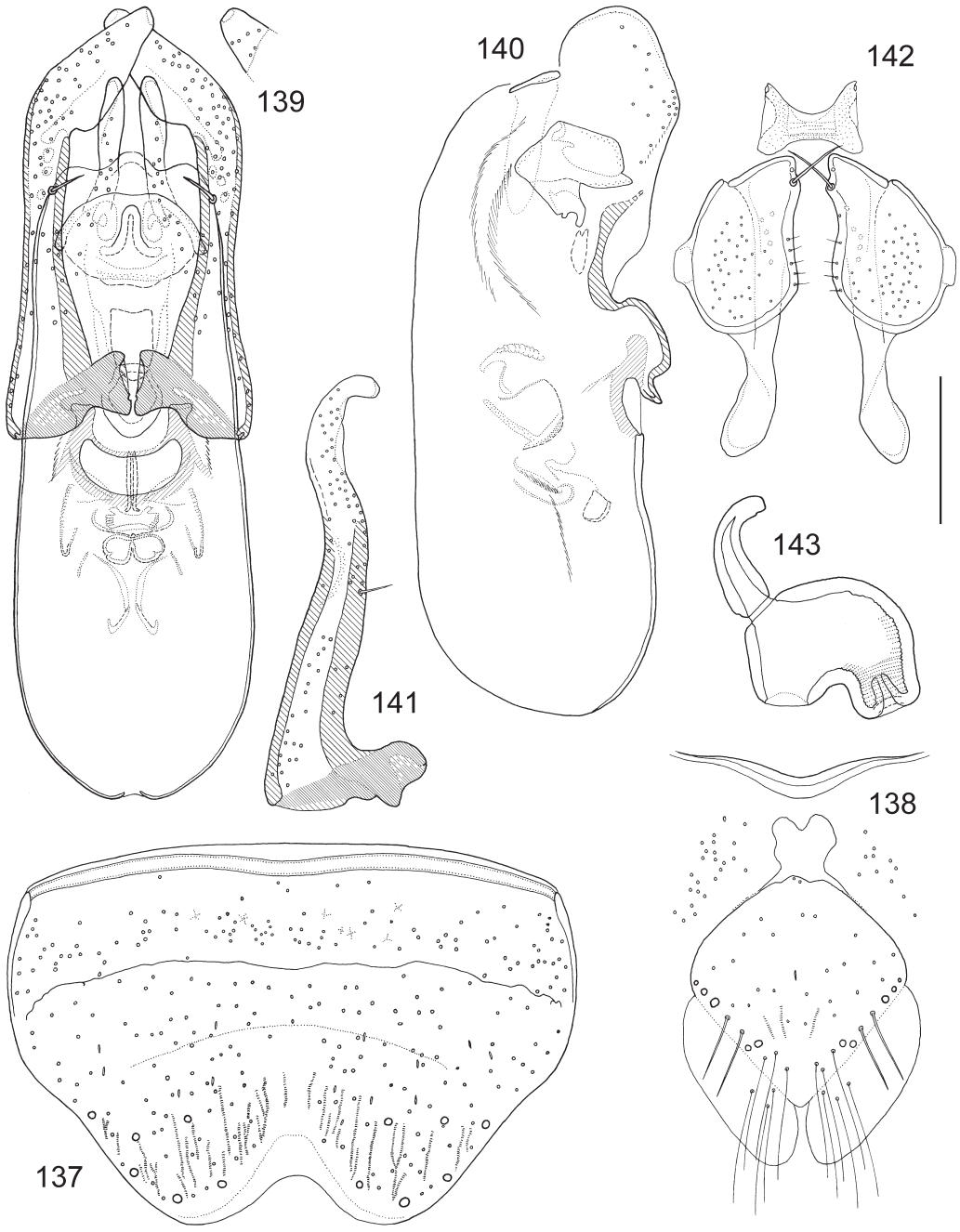
*Delopsis microphthalma* FAUVEL 1904: 95; BERNHAUER 1927: 7.
*Delopsis microphthalma* BERNHAUER 1905: 12 (preoccupied).
*Rimba microphthalma*: HERMAN 1970: 414; HERMAN 2001: 1490.

**Type material: Lectotype** ♂ (by present designation): "Pengalengan; Java occ. 1300 m [7°10.5'S 107°34.0'E] \ microphthalma; Fvl. \ R.I.Sc.N.B. 17.479; Delopsis; Coll. et det. A. Fauvel \ Lecto-; type [lilac margined disc, curator label] \ Delopsis; microphthalma Fvl.; P.M. Hammond; det. 1972; Lectotype \ Lectotypus; Delopsis; microphthalma Fauvel; des. Makranczy, 2018 \ Anotylus; microphthalmus (Fauvel); det. Makranczy, 2018" (ISNB). **Paralectotypes** (18): "Para-; lecto-; type [light blue margined disc, curator label] \ Java occident.; Mons Gede; 8000' Aug. 1892; H. Fruhstorfer. \ Coll. et det. A. Fauvel; Delopsis; microphthalma; Fauv.; R.I.Sc.N.B. 17.479 \ Syntype [in red, framed] \ Delopsis; microphthalma Fvl.; P.M. Hammond; det. 1972; Paralectotype \ Paralectotypus; Delopsis; microphthalma Fauvel; des. Makranczy, 2018 \ Anotylus; microphthalmus (Fauvel); det. Makranczy, 2018" (2, ISNB); "Para-; lecto-; type [light blue margined disc, curator label] \ Java occident.; Mons Gede; 8000' Aug. 1892; H. Fruhstorfer. \ feuilles humides; hautes montagnes \ Coll. et det. A. Fauvel; Delopsis; microphthalma; Fvl; R.I.Sc.N.B. 17.479 \ Syntype [in red, framed] \ Delopsis; microphthalma Fvl.; P.M. Hammond; det. 1972; Paralectotype \ Paralectotypus; Delopsis; microphthalma Fauvel; des. Makranczy, 2018 \ Anotylus; microphthalmus (Fauvel); det. Makranczy, 2018" (1 ♂, ISNB); "Java occident.; Mons Gede; 8000' Aug. 1892; H. Fruhstorfer. \ R.I.Sc.N.B.; 17.479 Coll. et; det. A. Fauvel \ Paralectotypus; Delopsis; microphthalma Fauvel; des. Makranczy, 2018 \ Anotylus; microphthalmus (Fauvel); det. Makranczy, 2018" (1, ISNB) same but also "Delopsis; microphthalma; Fvl. [Fauvel's handwriting]" (1, ISNB); "Java occident.; Mons Gede; 8000' Aug. 1892; H. Fruhstorfer. \ Delopsis micro-; cephala Fvl.; ded. Ganglb.; determ. Bernh \ microphthalma; Bernh.; Typus. [beige card] \ Chicago NHMus; M. Bernhauer; Collection \ Delopsis; microphthalma Fvl.; P.M.

Hammond; det. 1972; Paralectotype \ Paralectotypus; Delopsis; microphthalma Fauvel; des. Makranczy, 2018 \ Anotylus; microphthalmus (Fauvel); det. Makranczy, 2018" (1, FMNH); "Java occident.; Mons Gede; 8000' Aug. 1892; H. Fruhstorfer. \ Delopsis; microphthalma Fvl.; P.M. Hammond; det. 1972; Paralectotype \ Paralectotypus; Delopsis; microphthalma Fauvel; des. Makranczy, 2018 \ Anotylus; microphthalmus (Fauvel); det. Makranczy, 2018" (5, BMNH), same but also "Delopsis; microphthalmus; Fvl. [not Fauvel's handwriting] \ Chicago NHMus; M. Bernhauer; Collection" (1, FMNH); "[pink square paper] \ Java occident.; Mons Gede; 8000' Aug. 1892; H. Fruhstorfer. \ Delopsis; microphthalma; Fauv. [Eppelsheim's handwriting] \ Delopsis; microphthalma Fvl.; P.M. Hammond; det. 1972; Paralectotype \ Paralectotypus; Delopsis; microphthalma Fauvel; des. Makranczy, 2018 \ Anotylus; microphthalmus (Fauvel); det. Makranczy, 2018" (1, NHMW); "[pink square paper] \ Java occident.; Mons Gede; 8000' Aug. 1892; H. Fruhstorfer. \ microphthalma; det. Bernhauer \ Delopsis; microphthalma Fvl.; P.M. Hammond; det. 1972; Paralectotype \ Paralectotypus; Delopsis; microphthalma Fauvel; des. Makranczy, 2018 \ Anotylus; microphthalmus (Fauvel); det. Makranczy, 2018" (4, NHMW), same but without pink square paper but "Dr M. Bernhauer; 4.12 donavit 1936 \ ex coll.; Scheerpeltz [blue card] \ microphthalma; Fauv. [orange card]" (1, NHMW) (note: *Delopsis microphthalma* Bernhauer is based on part of the same series as *microphthalma* Fauvel, so types of the former – preoccupied – name are also types of the latter).

**Additional material: INDONESIA**/Java: (W-), Cianjur, above Kebun Gede, Gn. Gede, 6°47.735'S 107°00.658'E, 2005 m, 4.VIII.2006, leg. A. Riedel, sample 2, sifted (4, SMNK; 1, MBBJ); Cianjur, above Kebun Gede, Gn. Gede, 6°47.743'S 107°00.700'E, 1965 m, 4.VIII.2006, leg. A. Riedel, sample 3, sifted (1, SMNK); Cianjur, above Kebun Gede, Gn. Gede, 6°47.788'S 107°00.844'E, 1865 m, 4.VIII.2006, leg. A. Riedel, sample 4, sifted (11, SMNK; 5, MBBJ; 1 ♂, 1 ♀, AMNH; 1 ♂, 1 ♀, CNCI; 1 ♂, 1 ♀, MHNG; 1 ♂, 1 ♀, NIBR; 1 ♂, 1 ♀, NMPC; 1 ♀, HNHM); Cianjur, above Kebun Gede, Gn. Gede, 6°47.805'S 107°00.968'E, 1770 m, 4.VIII.2006, leg. A. Riedel, sample 5, sifted (1, SMNK); SW Bandung, Ciwidey, Gn. Patuha, 7°09.669'S 107°24.377'E, 2100 m, 6.IX.2006, leg. A. Riedel, sample 2, sifted (8, SMNK; 1, MBBJ; 1 ♂, 1 ♀, HNHM), same but 7°09.336'S 107°24.260'E, 2015 m, sample 3 (16, SMNK; 6, MBBJ; 1 ♂, HNHM; 1 ♂, SMNS; 1 ♂, NHMW); Maja, Argamukti, Gn. Ciremai, 6°54.784'S 108°23.514'E, 2005 m, 19.VIII.2006, leg. A. Riedel, sample 2, sifted (8, SMNK; 3, MBBJ; 1 ♂, SDEI; 1 ♂, 1 ♀, ZMUC; 1 ♂, 1 ♀, coll. Schülke-ZMHB); West Java, 10 km S Ciwidey, "Ranca Upas", ca. 1300 m [Ranca Upas: a ranch ca. 25 km SW Bandung, ca. 7°7'45"S 107°23'32"E, 1800 m], 9.VIII.1994, leg. R. Schuh, forest litter [sifted] (1 ♂, 1 ♀, NHMW; 1 ♀, HNHM).

**Redescription:** Measurements (in mm, n = 10): HW = 0.61 (0.55–0.65); TW = 0.60 (0.54–0.65); PW = 0.76 (0.70–0.79); SW = 0.79 (0.71–0.85); AW = 0.92 (0.82–0.99); HL = 0.52 (0.48–0.54); EL = 0.09 (0.09–0.10); TL = 0.25 (0.22–0.27); PL = 0.59 (0.53–0.62); SL = 0.60 (0.54–0.64); SC = 0.55 (0.49–0.59); FB = 1.75 (1.60–1.83); BL = 3.48 (3.09–3.66). Habitus as in Fig. 15. Forebody with dense and strong sculpture, weakly lustrous, abdomen with more or less granulose sculpture, last visible tergites with very faint microsculpture and dust-like setation, yet abdomen somewhat shinier than forebody. Forebody and antennae dark brown, almost black, often pronotum somewhat lighter, reddish, abdomen dark brown with reddish tint. Mouthparts and legs and apex of terminal antennomere reddish medium to dark brown. Head with anterior margin possessing slight rim continuing to the inner side of eye in a rather sharp ridge. Epistomal suture strongly impressed surrounding a slightly sculptured but mostly shiny clypeus of subhexagonal shape, projecting from the frontline of head with truncate anterior edge. Rest of dorsal head surface strongly sculptured, median part mostly strigose, laterally turning to rugulose or scabrous (at temples). Neck anteriorly constricted with shiny groove (posteriorly microsculptured), anteriad a rather marked elevated transversal ridge separating it from vertex, vertex impressed before this ridge. Eyes quite small, but protruding from the sideline of head, temples gently curved and insignificantly broadening anteriorly, more strongly rounded posteriorly. Antennomere 1 slightly swollen cylindrical and obliquely truncate on apex, small cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles




Figs 137–143: *Anotylus microphthalmus*: 137) male sternite VIII; 138) male tergite X (rhomboid fusion); 139) aedeagus, frontal view; 140) median lobe, lateral view; 141) left paramere, lateral view; 142) female accessory sclerites; 143) spermatheca. Scale bar = 0.08 mm (143), 0.1 mm (142), 0.11 mm (139–141), 0.13 mm (138), 0.19 mm (137).

4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.9–2.1 × longer than broad and 9–10 about 1.5–1.7 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae, last article with almost the same width as penultimate one. Pronotum with marginal bead slightly visible anteriorly but stronger posteriorly, middle of anterior margin pulled ahead in a curve forming strong concavities near narrowly rounded anterior corners. Laterally rather alatiform (zigzagged) and curved, posterior corners right-angled by meeting with gently arched (and ridged) posterior margin. Midline marked with furrow, in posterior half deeply carved in, slightly setose dorsal surface rather even (slightly impressed near middle of side margin) but on the most part with areolate sclupture degrading to scabrous on extreme lateral parts and at furrow. Elytra insignificantly longer and (together at shoulders) wider than pronotum, shoulders well developed. Laterally gently curved and somewhat broadening, posterior margin with thin rim and without perceptible membranous lobe. Posterior edge slightly curved, maximum elytral length slightly outwards middle of each elytron, margin slightly concave before outer corners. Sutural corners almost right-angled, inner half of posterior margin nearly straight. Suture marked with slight ridges, elytral dorsal surface rugose to slightly strigose with short setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge marked only with indistinct longitudinal strigae, disc depressed (concave), scutellum heart-shaped with microsculptured impressions at apices of lateral lobes and indistinct median lobe strongly microsculptured, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal third. Abdomen with sides moderately arcuate, second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 137), rhomboid part of tergite X (Fig. 138), aedeagus as in Figs 139–141, accessory sclerite and spermatheca of female as in Figs 142 and 143 respectively.

**Distribution and bionomics:** This species is only known from the western half of the Indonesian island Java, sifted from forest litter at elevations 1800–2100 m, only occasionally found at lower sites.

**Comment:** The lectotype locality elevation was probably 4000 ft, on the handwritten label rounded down to 1300 m (= 4265 ft). The eye size reduces significantly with the elevation, usually the specimens from above 2000 m have very small eyes.

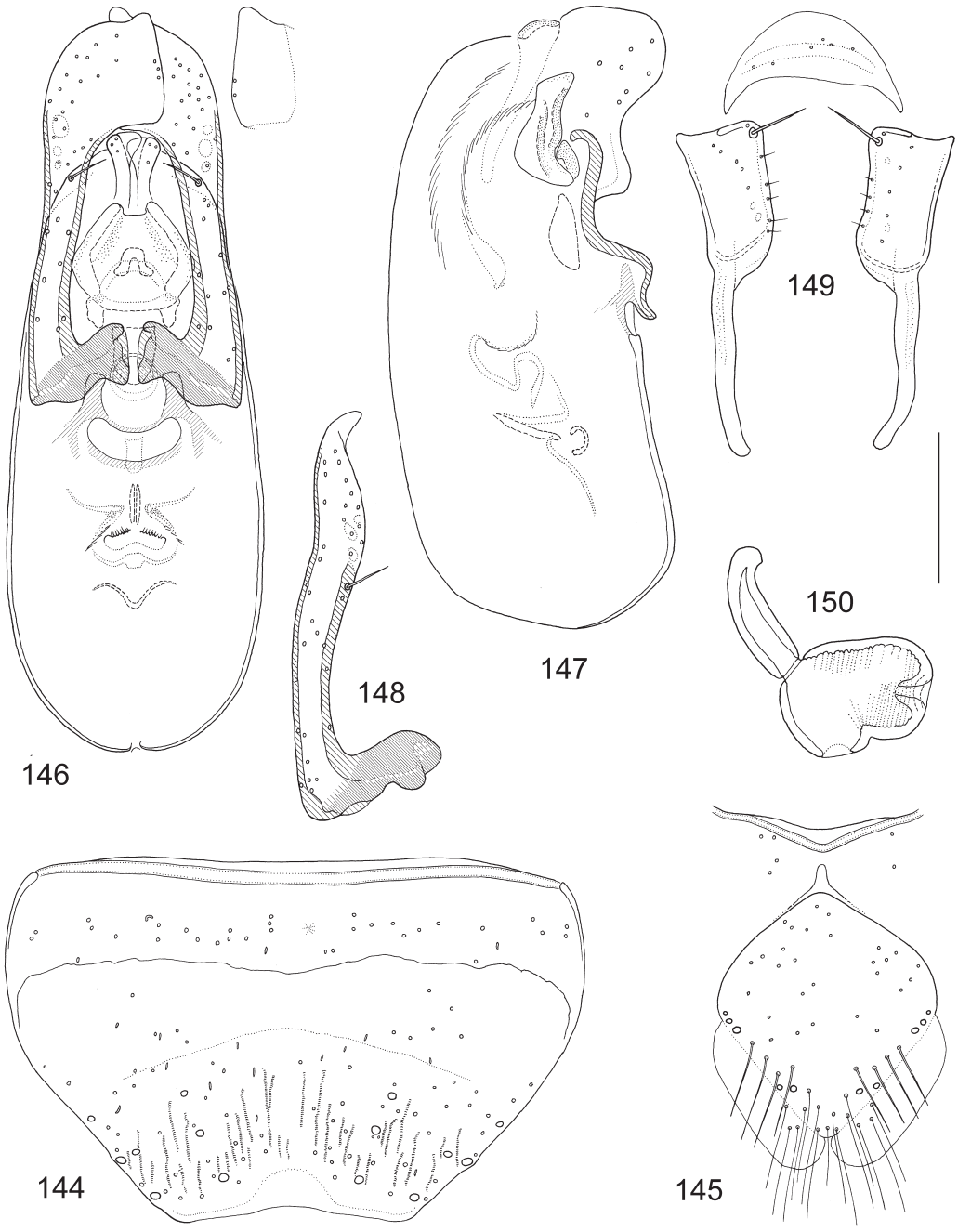
### ***Anotylus nepalensis*** **sp.n.**
(Figs 13, 144–150)

**Type locality:** Nepal, Taplejung District, Mewa Khola, near Sanghu, approx. 27°19'N 87°31'E, 2750 m.

**Type material: Holotype** ♂: "NEPAL: [Mewa Khola] 9350'; nr. Sanghu; 27°19'N 87°31'E; 26.X.1961 [leg. K.H. Hyatt] \ oak forest; litter at tree; base. no.177 \ Holo-; type [red margined disc] \ Rimba; nepalensis sp.n. \ P.M. Hammond; det. 1975; Holotype" (BMNH). **Paratype** (♀): Mewa Khola near Sanghu, 9350', 26.X.1961, leg. K.H. Hyatt (no.147), oak forest litter & soil (BMNH).

**Differential diagnosis:** This species is not similar to any of the others treated here and can be easily recognized by its small size, slender antennae and exceptionally short elytra. In this article, *A. hauriens* is another true high elevation brachypterous endemic, but beyond that these two species hardly seem allied by any shared apomorphic feature.

**Description:** Measurements (in mm, n = 2): HW = 0.51 (0.49–0.52); TW = 0.49 (0.47–0.50); PW = 0.60 (0.58–0.61); SW = 0.59 (0.55–0.62); AW = 0.76 (0.71–0.80); HL = 0.44 (0.43–0.45); EL = 0.06 (0.06–0.07); TL = 0.23 (0.22–0.24); PL = 0.43 (0.42–0.44); SL = 0.36 (0.35–0.37); SC = 0.33 (0.32–0.34); FB = 1.26 (1.23–1.29); BL = 2.86 (2.73–2.98). Habitus as in Fig. 13. Forebody with dense and strong sculpture making it rather dull, abdomen with more or less granulose sculpture and thereby greasy lustre. Head and first two antennomeres black, pronotum almost the same colour but with a bit more of the reddish tint, elytra and abdomen dark brown, apices of tergites often darker. Rest of antenna, mouthparts and legs reddish medium to dark brown. Head with anterior margin possessing insignificant rim somewhat apparent only besides eyes in the form of a sharp ridge. Epistomal suture as a U-shaped impression surrounding a sculptured clypeus embedded in the slightly pulled ahead frontline of head with truncate or slightly arched anterior edge. Rest of dorsal head surface with traces of setation and strongly strigose medially but more scabriculous on sides, before anteriorly shiny, constricted neck with a transversal (elevated) ridge. Frons as broad as temples (making head shape remarkably square) eyes tiny, protruding from the sideline of head, temples straight in anterior half, only posteriorly rounded. Antennomere 1 fusoid and obliquely truncate on apex, small ovoid article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 2.0–2.2 × longer than broad and 9–10 about 1.65–1.85 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with traces of marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve forming slight concavities near narrowly rounded anterior corners. Laterally only slightly uneven and with posterior margin forming an arch only slightly broken at insignificant posterior corners. Midline marked in posterior half with narrow and deep furrow, dorsal surface rather even (slightly impressed near middle of side margin) but on the most part with strigose sculpture turning to scabrous laterally, with sparse but discernible setation on whole surface. Elytra extremely short, together only slightly wider than pronotum, one elytron about as wide as its length from shoulders, latter moderately developed. Laterally gently curved and moderately broadening, posterior margin with slight rim and a narrow (almost indistinct) membranous lobe in outer half. Posterior edge curved in middle, maximum elytral length slightly outwards middle of each elytron. Sutural corners gently obtuse-angled, inner half of posterior margin straight but slightly oblique. Suture marked with slight ridges, elytral dorsal surface papillate to rugose to with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge strongly marked with one or a few stronger longitudinal strigae, disc flat or even depressed (concave), scutellum heart-shaped with impressions in side




Figs 144–150: *Anotylus nepalensis*: 144) male sternite VIII; 145) male tergite X (rhomboid fusion); 146) aedeagus, frontal view; 147) median lobe, lateral view; 148) left paramere, lateral view; 149) female accessory sclerites; 150) spermatheca. Scale bar = 0.05 mm (149–150), 0.09 mm (146–148), 0.1 mm (144–145).

lobes, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 144), rhomboid part of tergite X (Fig. 145), aedeagus as in Figs 146–148, accessory sclerite and spermatheca of female as in Figs 149 and 150 respectively.

**Distribution and bionomics:** This species is only known from its type locality, the specimens were collected in the SW part of Taplejung District in Nepal, from litter in oak forest.

**Comment:** The formation of the clypeus is somewhat reminiscent of the *A. cimicoides* species group.

**Etymology:** The specific name was given by P. M. Hammond (but unpublished) who found it in the material of the British Museum Nepal Expedition of 1961. The specific epithet is an adjective formed from the name of the country.

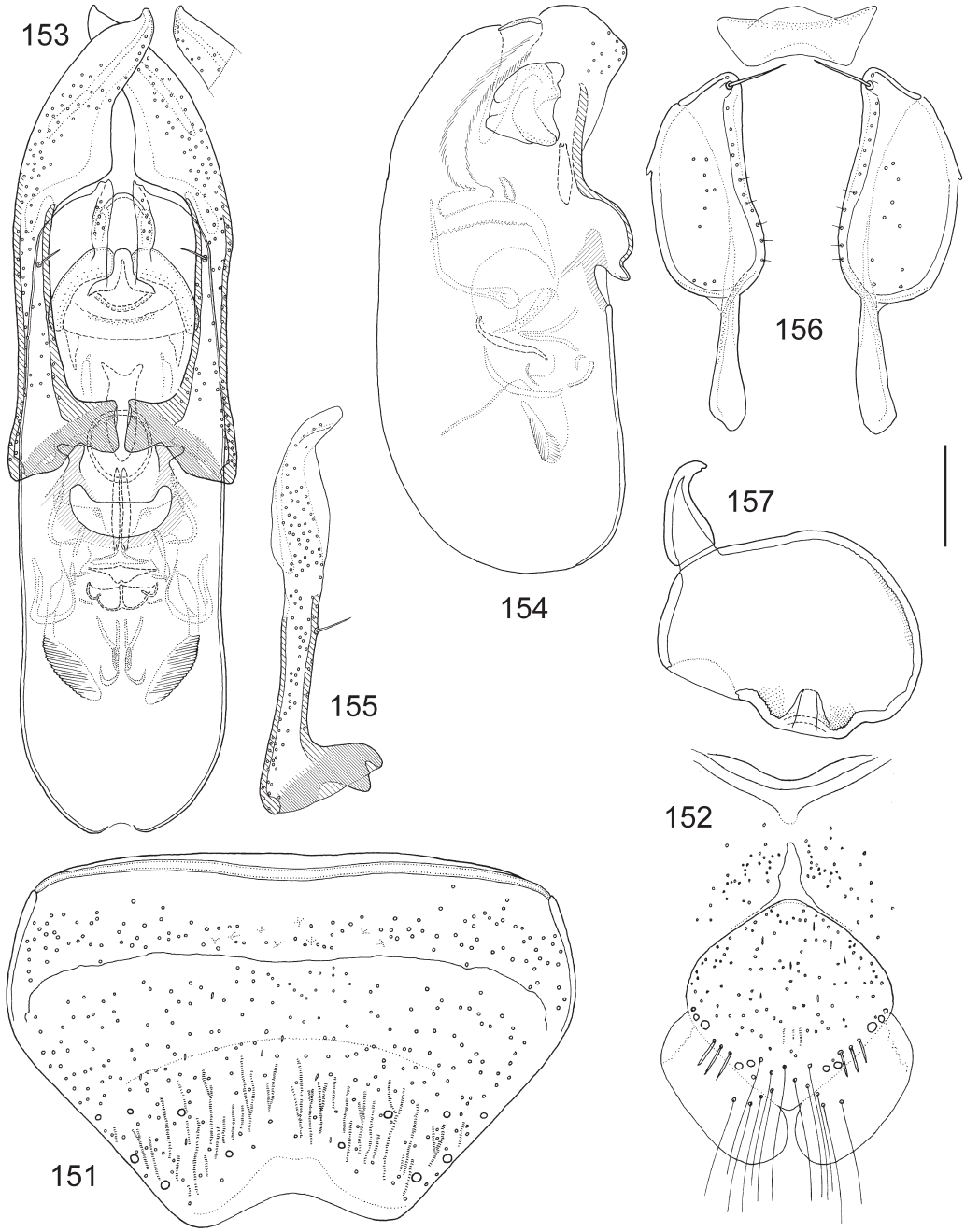
### *Anotylus shavrini* sp.n.
(Figs 19, 151–157)

**Type locality:** Philippines, Mindanao, Cotabato Prov., 2 km W Buyo Buyo Campsite, Epol Falls, 7°27'13"N 125°14'15"E, 1150 m.

**Type material: Holotype** ♂: "PHILIPPINES: Mindanao Isl.,; Barangay Baganihan, Marilog; District, Epol River, waterfall 'Epol; Falls', 7°27'13"N, 125°14'15"E \ 27.III.2018. leg. A. Shavrin #6; Sifted from very wet litter and; debris between stones near; the waterfall" (NHMW). **Paratypes** (17): same data as holotype (1 ♀, coll. Shavrin; 1 ♀, NHMW); Mindanao I., Davao Prov., E slope of Mt. McKinley [Mt. Talomo], 5200 ft [1585 m, 7°02'20"N 125°19'50"E], 21.VIII.1946, leg. F.G. Werner (Chicago Nat. Hist. Mus. – Philippine Zool. Exped., FMHD#46-3020), humus (1 ♂, 2, FMNH); Mindanao Isl., Davao Prov., E slope of Mt. McKinley, 3000 ft [915 m, 7°04'10"N 125°22'20"E], 29.VIII.1946, leg. H. Hoogstraal (Chicago Nat. Hist. Mus. – Philippine Zool. Exped., FMHD#46-3012), humus in primary forest (1 ♂, 1, FMNH); Mindanao I., Davao Prov., E slope of Mt. McKinley, 3300 ft [1005 m, 7°03'30"N 125°22'00"E], 20.IX.1946, leg. F.G. Werner (Chicago Nat. Hist. Mus. – Philippine Zool. Exped., FMHD#46-3031), dead *Abaca petiole* (1, FMNH); Mindanao Isl., Davao Prov., E slope of Mt. McKinley, 3000 ft, 1.X.1946, leg. F.G. Werner (Chicago Nat. Hist. Mus. – Philippine Zool. Exped.), debris on agricultural land (2, FMNH); Mindanao I., Davao Prov., Mt. Talomo (Mts. Apo), Catigan, 800–1000 m, 7°01'21.0"N 125°22'30.5"E, 29.IV.–1.V.2019, leg. A.V. Shavrin, narrow shady valley with a stream; sifted from wet litter at banks near the stream, and in dried and wet leaves under bushes (1 ♂, 1 ♀, coll. Shavrin, 1 ♂, MHNG; 1 ♂, ZMUC); Mindanao I., Davao Prov., Mt. Talomo (Mts. Apo), 1200–1300m, 7°04'40.9"N 125°20'08.3"E, 27.–28.IV.2019, leg. A.V. Shavrin, sifted from wet litter and debris at banks near the river and in wet litter near bamboo thickets (1 ♀, coll. Shavrin); Mindanao I., Araibo Prov, Pantukan, Candalaga Mts., Compostela Valley, 900 m, 7°16'35.3"N 126°10'12.8"E, 4.V.2019, leg. A.V. Shavrin, secondary broad-leaved forest, sifted from wet litter near the river and under wet leaves near rocks (1 ♀, coll. Shavrin; 1 ♀, MHNG; 1 ♀, ZMUC).

**Differential diagnosis:** Similar to *A. fusoideus* and *A. intuitus* but distinguishable from the former by the middle antennomeres being incrassate and the latter by the slightly smaller size and the antenna being much thicker in basal half.

**Description:** Measurements (in mm, n = 10): HW = 0.67 (0.64–0.71); TW = 0.65 (0.62–0.69); PW = 0.80 (0.76–0.84); SW = 0.86 (0.80–0.91); AW = 0.96 (0.90–1.00); HL = 0.55 (0.51–0.59); EL = 0.11 (0.10–0.12); TL = 0.27 (0.24–0.31); PL = 0.63 (0.60–0.67); SL = 0.70 (0.63–0.76); SC = 0.64 (0.58–0.70); FB = 1.92 (1.84–2.02); BL = 3.96 (3.68–4.34). Habitus as in Fig. 19. Forebody weakly shining despite strong sculpture, abdomen with granulose to imbricate sculpture, last visible tergites finely and indistinctly microsculptured bearing dust-like setation, only slightly more lustrous than forebody. Forebody, abdomen and antennae blackish dark brown with only a slight reddish tint, legs, mouthparts and very apex of last antennomere reddish medium to dark brown. Head with anterior margin possessing a weak rim, continuing posteriorly in sharp ridges besides eyes, apparent because of shiny, impressed inner side. Epistomal suture impressed surrounding anteriorly sculptured but posteriorly more shiny clypeus of subrectangular shape, slightly pulled forward from the frontline of head with arcuate anterior edge. Rest of dorsal head surface with rugulose (mostly at sides) and somewhat strigose (mostly posterior median part of disc) and no setation, tiny strigae near supraantennal prominences oblique, following edge. Posterior midline of head with insignificant groove dissolved in strigae, ridge before shiny neck (posterior neck microsculptured) connected to infraocular ridge and inside surface slightly impressed in arcuate fashion. Eyes small but somewhat protruding from the sideline of head, temples slightly widening or straight in anterior half, only posteriorly rounded. Antennomere 1 slightly swollen cylindrical and obliquely truncate on apex, very short cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate and reverse cone-shaped, articles 4–5 strongly, 6–10 slightly incrassate, cylindrical (antennomere 4 about 1.5–1.6 × longer than broad and 8 about 1.4–1.5 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible slightly anteriorly and strongly posteriorly, middle of anterior margin pulled ahead in strong curve leaving concavities near narrowly rounded anterior corners. Laterally slightly alatiform and more curved anteriorly than posteriorly, before slightly obtuse-angled posterior corners slightly concave. Midline marked with a shallow furrow anteriorly but posterior half carved in, dorsal surface without setation. Disc surface mostly areolate (with tiny nipple in each cell), but in centre a bit confused, surface widely impressed near middle of side margin. Elytra often rather small (beware of brachypterous morph), shoulders mostly well developed, laterally gently curved and broadening. Posterior margin with slight rim and a small concavity near outer corner, slightly curved in middle, oblique in inner half to obtuse-angled sutural corners; therefore maximum elytral length at middle of each elytron. Suture marked with slight ridges, elytral dorsal surface rugose to slightly longitudinally strigose with short setae at the base of small protuberances connected by wrinkles. Elytral epipleural ridge marked with a few stronger longitudinal strigae, disc flat, slightly depressed, scutellum heart-shaped with wide lateral lobes impressed and microsculptured on apices with a microsculptured median lobe, often concealed together with somewhat less sculptured impressed area towards shoulders, following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate, second segment




Figs 151–157: *Anotylus shavrini*: 151) male sternite VIII; 152) male tergite X (rhomboid fusion); 153) aedeagus, frontal view; 154) median lobe, lateral view; 155) left paramere, lateral view; 156) female accessory sclerites; 157) spermatheca. Scale bar = 0.06 mm (157), 0.07 mm (156), 0.09 mm (152), 0.1 mm (151, 153–155)

with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 151), rhomboid part of tergite X (Fig. 152), aedeagus as in Figs 153–155, accessory sclerite and spermatheca of female as in Figs 156 and 157 respectively.

**Distribution and bionomics:** The species is known only from the Philippine island Mindanao and was sifted from debris and litter between stones at waterfall, humus in primary forest, it probably lives in decaying vegetable matter in habitats influenced by flowing water.

**Comment:** The collecting localities of the 1946/47 expedition are explained in HOOGSTRAAL (1951).

**Etymology:** The species is named after the collector of the holotype, Alexey V. Shavrin (Daugavpils, Latvia) who conducts regular coleopterological research in the Philippines.

### *Anotylus tangotadosi* sp.n.
(Figs 8, 12, 72–73)

**Type locality:** Indonesia, Sulawesi, West Sulawesi, 8 km W Mamasa, Kampong Tawalian, approx. 3°00'S, 119°16'E, 1200 m.

**Type material: Holotype** ♀: "INDON.[ESIA]: Sulawesi; Selatan Kampong [Tawalian]; W of Mamasa; 13.iv.1991, degraded; forest, Agosti F91759" (MHNG). **Paratype** (♀): Kampong (W of Mamasa), 1200 m, 13.IV.1991, leg. D. Agosti ("20"), degraded forest, leaf litter and hand collecting ("F91759") (FMNH).

**Differential diagnosis:** Similar to *A. ustulosus*, but can be distinguished by its thicker antenna.

**Description:** Measurements (in mm, n = 2): HW = 0.63 (0.62–0.64); TW = 0.61 (0.60–0.62); PW = 0.74 (0.72–0.76); SW = 0.88 (0.86–0.90); AW = 1.00 (0.98–1.02); HL = 0.51 (0.50–0.52); EL = 0.13 (0.12–0.14); TL = 0.25 (0.25–0.25); PL = 0.62 (0.60–0.64); SL = 0.66 (0.66–0.66); SC = 0.61 (0.61–0.61); FB = 1.84 (1.81–1.87); BL = 4.02 (3.80–4.23). Habitus as in Fig. 12. Forebody with dense and strong sculpture making it rather dull, abdomen not only with granulose sculpture but fine rugulose microsculpture so whole body very weakly lustrous. Body uniformly black or blackish dark brown with tibiae, tarsi, second antennomere and mouthparts dark brown. Head with anterior margin possessing insignificant rim somewhat apparent only besides eyes in the form of a sharp ridge. Epistomal suture impressed surrounding anteriorly sculptured but posteriorly shiny clypeus of semirectangular shape, strongly pulled forward from the frontline of head with arcuate anterior edge. Rest of dorsal head surface with setation and rugulose-strigose (more rugulose on sides). Posterior midline of head with narrow but deep groove originating from shiny constricted part of neck (posterior neck microsculptured), this groove abruptly widening in middle of disc into shallow impression towards supraantennal prominences, gradually fading. Posteriorly vertex slightly impressed anteriad a transversal elevation before neck. Eyes quite large but rather flat, not protruding from the sideline of head, temples straight in anterior half, only posteriorly rounded. Antennomere 1 fusoid and obliquely truncate on apex, short club-shaped article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles

4–10 incrassate, cylindrical (antennomeres 4–5 about 2.15–2.35 × longer than broad and 9–10 about 1.45–1.55 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve forming slight concavities near narrowly rounded anterior corners. Lateral margin gently bent anteriorly, almost straight posteriorly, posterior corners still discernible albeit weak, not forming unbroken arch with gently bent posterior margin. Midline marked with a full, narrow and deep furrow, dorsal surface rather even (slightly impressed near middle of side margin) but on the most part with rugulose sculpture turning to scabrous laterally, with sparse but discernible setation on whole surface. Elytra together wider and longer than pronotum, shoulders well developed. Laterally gently curved and moderately broadening, posterior margin with extremely narrow rim and without membranous lobe, straight but somewhat oblique, sutural corners very slightly obtuse-angled. Suture marked with slight ridges, elytral dorsal surface papillate to rugose to with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge weakly marked with faint longitudinal strigae, disc flat or even depressed (concave), scutellum heart-shaped with impressions in side lobes, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate, second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, accessory sclerite and spermatheca of female as in Figs 72 and 73 respectively, tergite X with rhomboid fusion as on Fig. 8.

**Distribution and bionomics:** This species was collected by sifting of leaf litter only once in the Indonesian island Sulawesi, at a locality not easily determined because of labelling errors and an irresponsive collector. It can be speculated that this species used to live at lower elevations and its original habitats now almost all gone, survives in fragmented habitats and should be classified as "threatened".

**Comment:** The male of this species is unknown.

**Etymology:** The species should have been named after the collector, but his attitude towards my efforts is pure ignorance, so instead I used an anagram of his name to show my response.

### *Anotylus ustulosus* sp.n.
(Figs 11, 158–164)

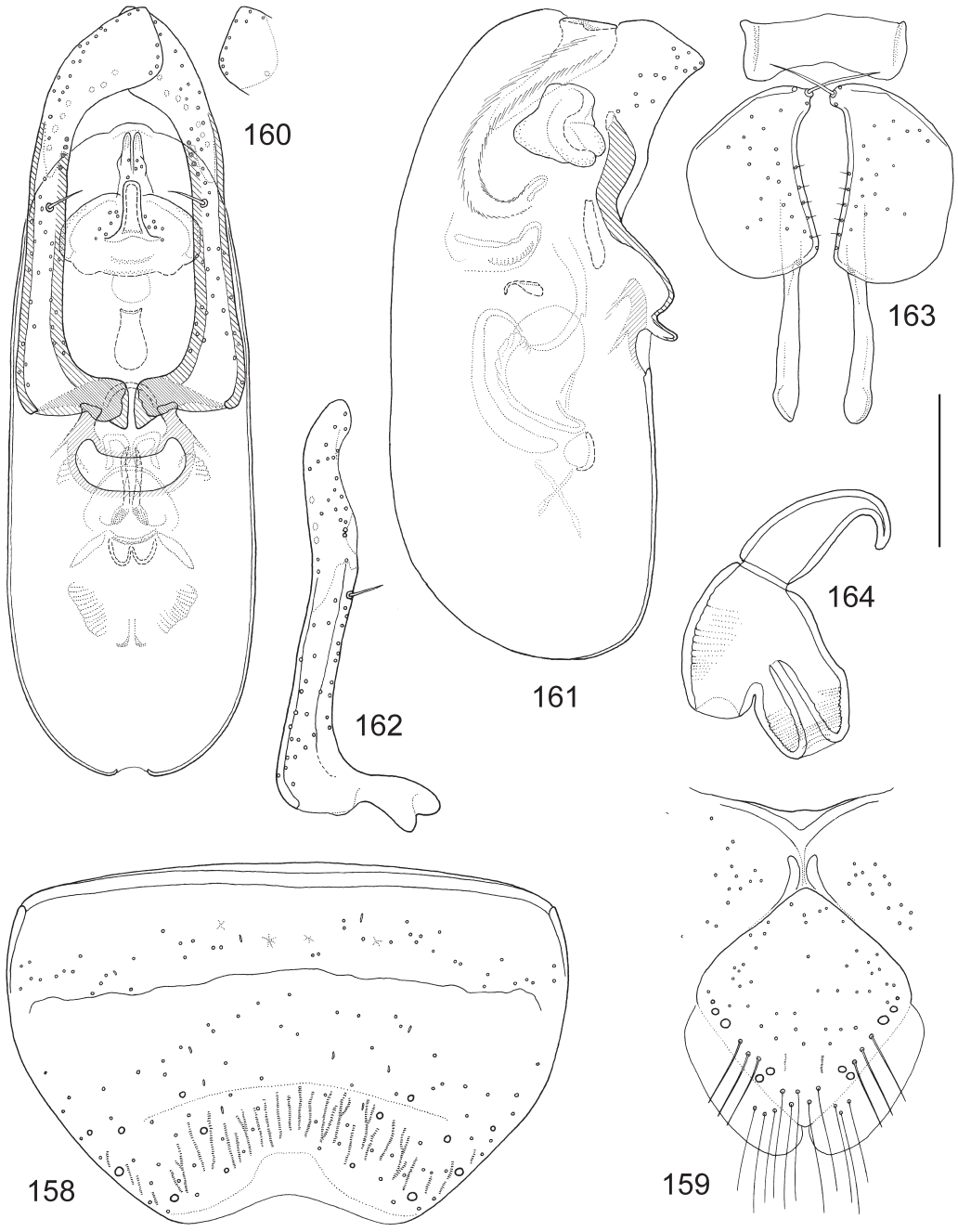
**Type locality:** Indonesia, Sulawesi, West Sulawesi, 8 km NW Mamasa, Penanang, approx. 02°54'38"S 119°18'30"E, 1600 m.

**Type material: Holotype** ♂: "INDONESIA/Sulawesi: Penanang, W of Mamasa, 02°54'38"S, 119°18'30"E, 1600m, 13.IV.1991, leg. D. Agosti (19), montane primary rainforest, leaf litter (F91756)" (MHNG).

**Paratypes** (25): same data as holotype (5, MHNG; 1 ♂, ZMUC; 1 ♀, NMPC; 1 ♂, NHMW), same but ("F91765") Winkler extracted (1 ♂, 4, MHNG; 1 ♀, AMNH), same but 9.IV.1991 (16) ("F91724") (6, MHNG; 1 ♂, 1 ♀, FMNH; 1 ♂, SMNS; 1 ♀, NIBR), same but ("F91722") (1, MHNG); Mt. Tambusisi, 4000'[1220 m], 1°39"S 121°21"E, 3.–13.IV.1980, leg. M.J.D. Brendell, forest floor litter (1 ♀, BMNH).

**Differential diagnosis:** Similar to *A. tangotadosi*, but easily distinguished by the more slender antenna.

**Description:** Measurements (in mm, n = 10): HW = 0.51 (0.47–0.54); TW = 0.52 (0.48–0.55); PW = 0.62 (0.58–0.65); SW = 0.67 (0.62–0.70); AW = 0.83 (0.77–0.87); HL = 0.43 (0.39–0.45); EL = 0.10 (0.09–0.11); TL = 0.21 (0.20–0.22); PL = 0.51 (0.48–0.53); SL = 0.56 (0.51–0.59); SC = 0.53 (0.48–0.56); FB = 1.52 (1.41–1.59); BL = 3.23 (2.95–3.58). Habitus as in Fig. 11. Forebody with dense and strong sculpture making it rather dull, abdomen not only with granulose sculpture but fine rugulose microsculpture so whole body very weakly lustrous. Body uniformly black or blackish dark brown with tibiae, tarsi, second antennomere and mouthparts dark brown. Head with anterior margin possessing insignificant rim somewhat apparent only besides eyes in the form of a sharp ridge. Epistomal suture impressed surrounding anteriorly sculptured but posteriorly shiny clypeus of semirectangular shape, strongly pulled forward from the frontline of head with arcuate anterior edge. Rest of dorsal head surface with sparse setation and rugulose sculpture. Posterior midline of head sometimes with faint (incomplete, short and shallow) not visibly connected to anterior shiny and constricted part of neck (posterior neck microsculptured). Posteriorly vertex slightly impressed anteriad a transversal elevation before neck. Eyes quite large but rather flat, not protruding strongly from the sideline of head, temples either straight or very slightly dilating in anterior half, only posteriorly rounded. Antenna extremely slender, article 1 fusoid and obliquely truncate on apex, short club-shaped article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 incrassate, cylindrical (antennomeres 4–5 about 3.15–3.35 × longer than broad and 9–10 about 2.0–2.2 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible anteriorly and posteriorly, middle of anterior margin pulled ahead in gentle curve forming slight concavities near narrowly rounded anterior corners. Lateral margin gently bent anteriorly, almost straight posteriorly, posterior corners still discernible albeit weak, not forming unbroken arch with gently bent posterior margin. Midline marked only with a shallow groove, dorsal surface rather even (slightly impressed near middle of side margin) but on the most part with rugulose sculpture turning to scabrous laterally, with sparse but discernible setation on whole surface. Elytra together wider and longer than pronotum, shoulders well developed. Laterally gently curved and moderately broadening, posterior margin with extremely narrow rim and without membranous lobe, slightly curved in outer half, straight and oblique in inner half, sutural corners slightly obtuse-angled. Suture marked with slight ridges, elytral dorsal surface papillate to rugose with visible (short) setae at the bases of small protuberances connected by wrinkles. Elytral epipleural ridge weakly marked with a few more discernible longitudinal strigae, disc flat or even depressed (concave), scutellum heart-shaped with microsculptured impressions in side lobes, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised




Figs 158–164: *Anotylus ustulosus*: 158) male sternite VIII; 159) male tergite X (rhomboid fusion); 160) aedeagus, frontal view; 161) median lobe, lateral view; 162) left paramere, lateral view; 163) female accessory sclerites; 164) spermatheca. Scale bar = 0.09 mm (164), 0.1 mm (160–163), 0.13 mm (158–159).

before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate, second segment with paratergites broadening posteriorly (abdomen appearing constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 158), rhomboid part of tergite X (Fig. 159), aedeagus as in Figs 160–162, accessory sclerite and spermatheca of female as in Figs 163 and 164 respectively.

**Distribution and bionomics:** This species is currently known only from the Indonesian island Sulawesi (Celebes), where it appears to be widespread and was obtained (at higher elevation than its rare sibling species) by sifting of leaf litter in primary montane rain forest.

**Comment:** Donat Agosti's collecting had been rather poorly labelled at MHNG. The usual "collection list" exists but it was compiled from the collector's notes and his own numbering system (from which MHNG event numbers were created by grouping a sequence of Agosti's five digit numbers), with either version on the label or both. In several cases the list is in disagreement with the labels or labels of the same event (printed at different times) have non-matching data or misspelling and some are even hard to read.

**Etymology:** The name of the species in Latin means "soot-coloured", adjective referring to the exceptionally dark colouration of the species.

### *Anotylus velatus* sp.n.
(Figs 24, 165–171)

**Type locality:** Malaysia, Borneo, Sabah, Crocker Range, E-slope, km 60 on road from Kota Kinabalu to Tambunan, approx. 5°46'23"N 116°20'43"E, 1350 m.

**Type material: Holotype** ♂: "[MALAYSIA/Borneo] Sabah: Crocker Ra. [E-side]; 1350m, km 60 [route] Kota; Kinabalu – Tambunan [5°46'23"N 116°20'43"E]; 17.V.1987; [leg. D.] Burckhardt – [I.] Löbl; [underside:] 28a [ravine with stream, *Lithocarpus-Castanopsis* forest, sifting of dead leaves and bark]" (MHNG). **Paratypes** (3): same data as holotype (1 ♀, MHNG); Sabah, Mt. Kinabalu National Park Headquarters, 1560–1660 m, river Silau Silau [6°01'00"N 116°32'15"E], 24.IV.1987, leg. A. Smetana ("B2"), sifting of old flood debris (1 ♂, FMNH); Sabah, Mt. Kinabalu National Park Headquarters at Liwagu river, 1500 m [6°00'30"N 116°32'50"E], 25.IV.1987, leg. A. Smetana ("B4"), primary tropical rain forest, sifting of leaf litter (1 ♀, FMNH).

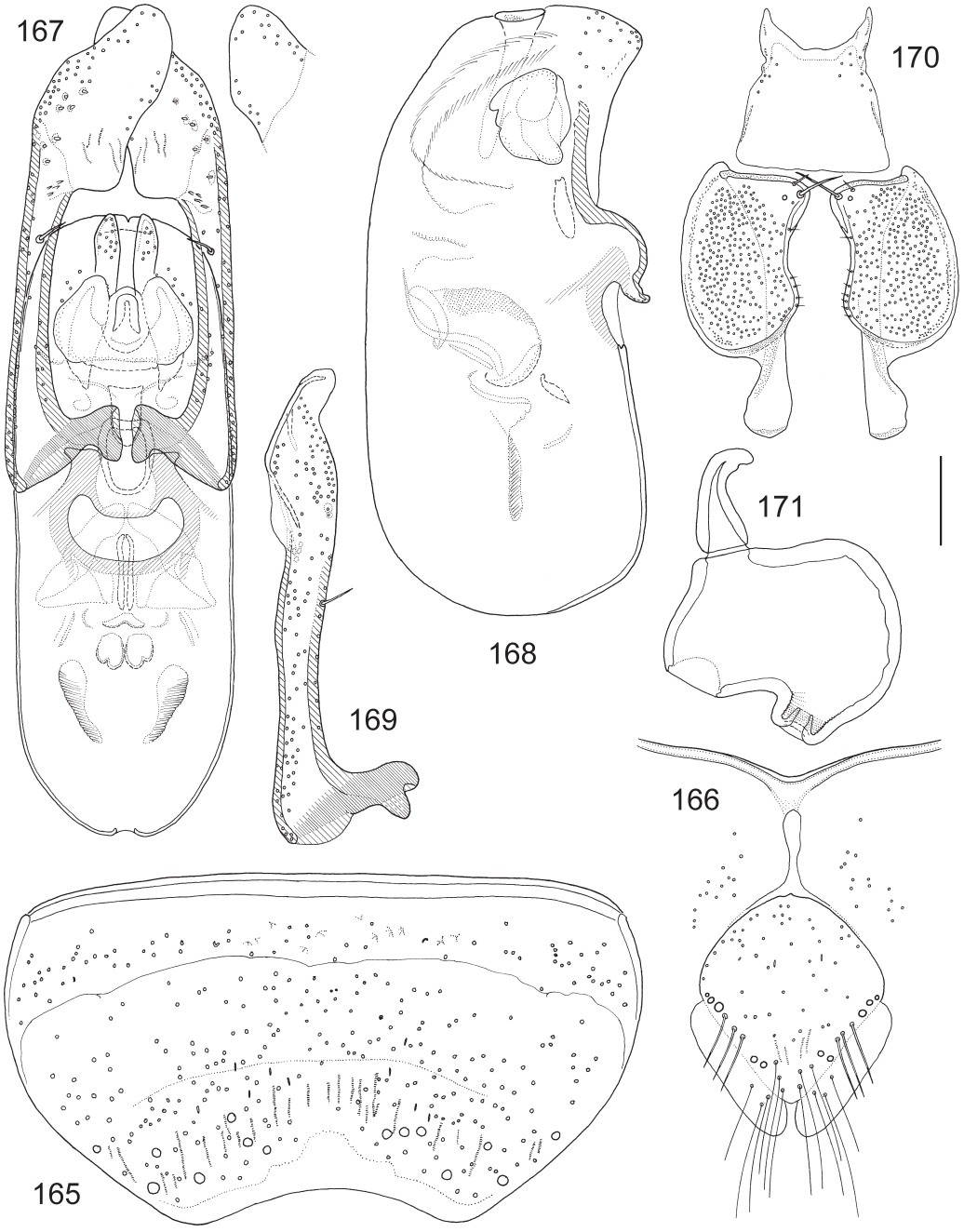
**Differential diagnosis:** Similar to *A. cornutus*, but distinguishable by the strongly widening (swollen) temples.

**Description:** Measurements (in mm, n = 4): HW = 0.75 (0.71–0.79); TW = 0.75 (0.71–0.79); PW = 0.89 (0.83–0.95); SW = 1.00 (0.94–1.06); AW = 1.06 (1.01–1.10); HL = 0.55 (0.53–0.58); EL = 0.15 (0.15–0.16); TL = 0.26 (0.22–0.29); PL = 0.70 (0.64–0.75); SL = 0.87 (0.80–0.94); SC = 0.82 (0.75–0.89); FB = 2.17 (2.01–2.34); BL = 4.15 (4.03–4.49). Habitus as in Fig. 24. Forebody with dense and strong sculpture and weak lustre, abdomen with more or less granulose sculpture, possessing greasy lustre (tergite bases somewhat shinier). Forebody blackish dark brown, abdomen and antennae (except tip) dark brown with reddish tint. Apices of terminal antennomeres, legs and mouthparts medium to dark brown. Head with anterior margin possessing slight rim (except truncate anteclypeus) continuing besides eyes and bordering a large, oblique depressed area of vertex to roundish

impressions at both sides of shallow (and sometimes indistinct) midline groove dividing posterior vertex. Epistomal suture strongly impressed surrounding a slightly sculptured but mostly shiny clypeus of subrectangular shape, sticking out from the frontline of head. Rest of dorsal head surface with rugulose (medially turning to strigose) sculpture. Posteriorly vertex with elevated transversal ridge bordering narrow, shiny constricted groove of neck (posteriorly neck microsculptured). Eyes moderately large and rather flat, not protruding strongly from the sideline of head, temples broadening posteriorly and broadly (almost evenly) rounded. Antennomere 1 slightly swollen club-shaped and obliquely truncate on apex, small cylindrical article 2 obliquely truncate at base in opposite direction, article 3 elongate club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 2.0–2.2 × longer than broad and 9–10 about 1.55–1.75 × longer than broad) with weak and inconspicuous basal dish. Antennomeres with very short albeit dense setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except terminal one constricted at apex and with more conspicuous tactile setae. Pronotum with marginal bead visible anteriorly but very strong posteriorly, middle of anterior margin pulled ahead in gentle curve forming small concavities near rounded anterior corners. Laterally moderately curved and somewhat uneven (but not alatiform), posterior corners marked by meeting with gently arched (and ridged) posterior margin with slight concavity (but corners obtuse-angled). Midline marked with a median furrow in posterior half carved in deep, dorsal surface rather even (slightly impressed near middle of side margin), but on the most part with areolate sculpture slightly degrading to scabrous both laterally and medially (in furrow), without setation. Elytra rather large, significantly longer and (together) wider than pronotum, shoulders well developed. Laterally gently curved and somewhat broadening, posterior margin with slight rim and without membranous lobe. Posterior edge slightly curved with slight concavity near outer corners, maximum elytral length slightly outwards middle of each elytron. Sutural corners almost right-angled, inner part of posterior margin straight and only slightly oblique. Suture marked with slight ridges, elytral dorsal surface rugose to slightly strigose with insignificant setation. Elytral epipleural ridge marked with a few stronger longitudinal strigae, disc almost flat, scutellum heart-shaped with microsculptured impressions in apices of lateral lobes, middle lobe with an obscure microsculptured area, often concealed together with less sculptured (shinier) impressed area towards shoulders but following the curve of hind pronotal edge. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII (Fig. 165), rhomboid part of tergite X (Fig. 166), aedeagus as in Figs 167–169, accessory sclerite and spermatheca of female as in Figs 170 and 171 respectively.

**Distribution and bionomics:** The species is known from the Crocker Range and Mt. Kinabalu in N-Borneo and was sifted from flood debris and leaf litter in primary tropical rain forest.

**Etymology:** The species name is a Latin adjective meaning “covered”.




Figs 165–171: *Anotylus velatus*: 165) male sternite VIII; 166) male tergite X (rhomboid fusion); 167) aedeagus, frontal view; 168) median lobe, lateral view; 169) left paramere, lateral view; 170) female accessory sclerites; 171) spermatheca. Scale bar = 0.07 mm (171), 0.09 mm (167–170), 0.1 mm (165–166).

## Appendix

Because of the fact that the female genital characters clearly make the following species an outlier here, it is necessary to deal with it separately, although it was included in the key to species (for the reason that externally this species closely resembles the non-dimorphic members of the *A. exasperatus* group).

### *Anotylus pingbianus* sp.n.
(Figs 179–186)

**Type locality:** China, Yunnan Prov., Dawei Shan, 8 km S Pingbian, 22°54'31"N 103°41'44"E, 2100 m.

**Type material: Holotype** ♂: "CHINA: Yunnan, [Honghe Hani and Yi Aut. Pref., Pingbian Miao Aut. Co.,] SE [S] Pingbian,; 22°54'31"N, 103°41'44"E, 2100 m; primary subtropical broad-leaved; forest, litter sifted, 28.VIII.2014, leg. M. Schülke (CH14-22a)" (ZMHB). **Paratypes** (58): same data as holotype (22, 1 ♀, coll. Schülke-ZMHB; 1 ♂, 1 ♀, BMNH; 1 ♂, 1 ♀, MHNG; 1 ♂, 1 ♀, SMNS; 1 ♂, 1 ♀, ZMUC; 1 ♂, 1 ♀, NHMW; 1, NIBR), same but 27.VIII.2014 ("CH14-22") (21, coll. Schülke-ZMHB; 1 ♂, 1 ♀, FMNH; 1 ♀, SNUC).

**Differential diagnosis:** Similar to *A. laobianus*, but distinguishable by its larger size and the black first antennomere.

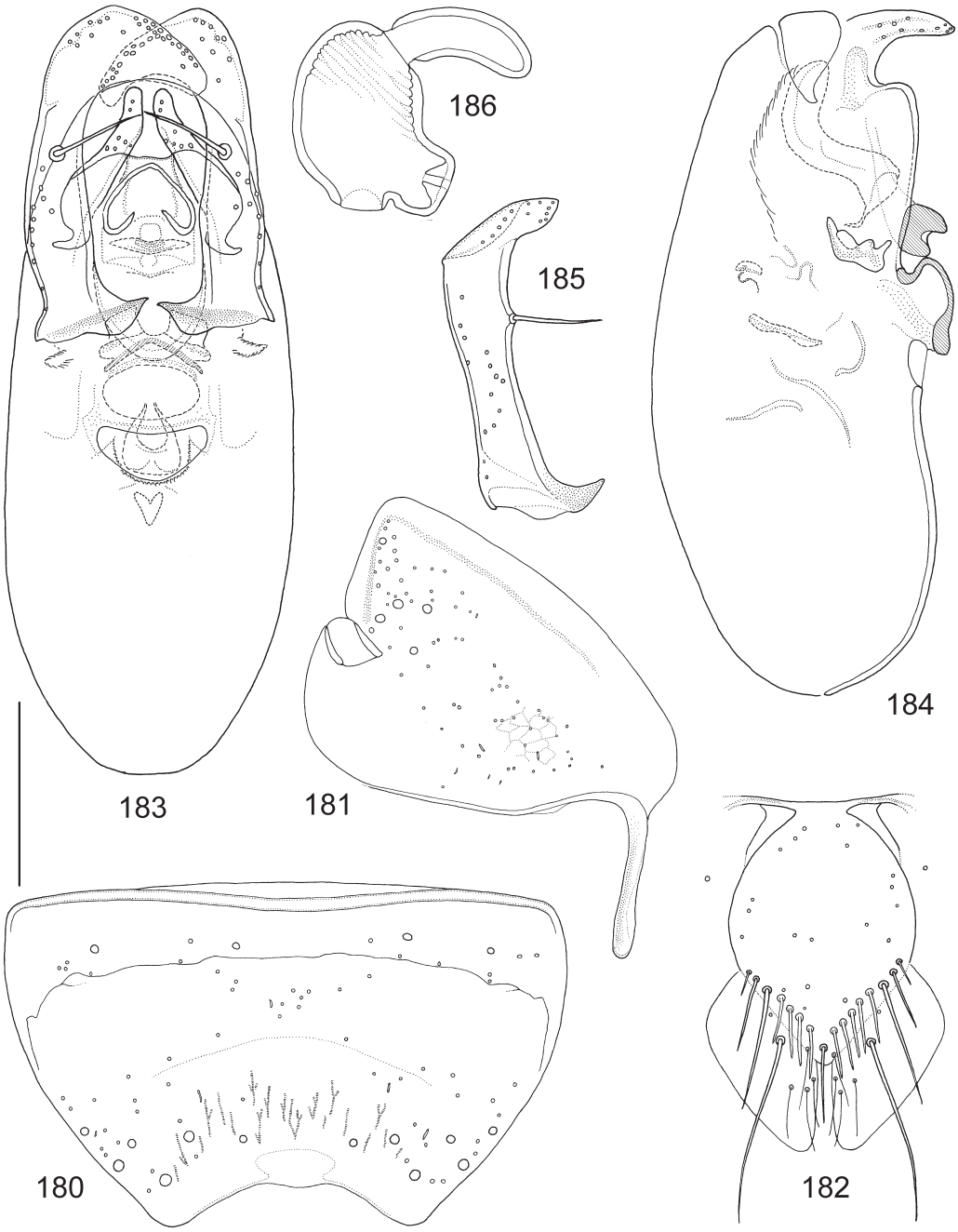
**Description:** Measurements (in mm, n = 10): HW = 0.38 (0.32–0.41); TW = 0.38 (0.33–0.41); PW = 0.45 (0.40–0.49); SW = 0.47 (0.42–0.49); AW = 0.54 (0.47–0.59); HL = 0.30 (0.27–0.32); EL = 0.08 (0.07–0.09); TL = 0.14 (0.13–0.15); PL = 0.35 (0.32–0.37); SL = 0.39 (0.34–0.42); SC = 0.37 (0.32–0.40); FB = 1.05 (0.95–1.10); BL = 2.05 (1.84–2.18). Habitus as in Fig. 179. Forebody with dense and strong sculpture, rather dull, abdomen with less strong granulose sculpture and greasy lustre. Head, abdomen and first antennomere black, pronotum and elytra dark brown with some reddish tint, latter somewhat lighter. Rest of antenna dark brown, with apices of terminal antennomere, legs and mouthparts medium brown. Head with anterior margin possessing a weak rim, but rather inconspicuous medially (anteclypeus), continuing posteriorly in a sharp ridge to inner side of eye and a little posteriad. Epistomal suture strongly impressed surrounding anteriorly sculptured but posteriorly shiny clypeus of hexagonal shape, strongly pulled forward from the frontline of head with truncate anterior edge. Rest of dorsal head surface strongly sculptured, finely rugose and slightly costulate, directionality (oblique) discernible only around supraantennal prominences. Posterior middle of vertex marked by shallow longitudinal impression and posteriorly bordered by slight ridge, before that surface obliquely and indistinctly impressed, connected to impressions mediad eyes (middle of temple with tiny bristle), anteriorly shiny neck marked by constriction. Eyes small and very flat, not considerably protruding from sideline of head, temples anteriorly slightly dilating and gently curved, posteriorly broadly (but not evenly) rounded. Antennomere 1 strongly sculptured fusoid and strongly swollen, obliquely truncate on apex, small ovoid article 2 obliquely truncate at base in opposite direction, article 3 very short club-shaped, articles 4–10 slightly incrassate, cylindrical (antennomeres 4–5 about 1.35–1.55 × longer than broad and 9–10 about 1.15–1.25 × longer than broad) with slight basal dish. Antennomeres with rather short setae, most apparent as lighter apical crown of setae on each article (progressively in distal half) except elongate terminal one constricted at apex and with more conspicuous tactile


Figs 172–173: Habitus of *Anotylus* species. 172: *A. cyzicus*; 173: *A. kurbatovi*.


Figs 174–175: Habitus of *Anotylus* species. 174: *A. lagreanus*; 175: *A. gagatinus*.


Figs 176–177: Habitus of *Anotylus* species. 176: *A. flavicornis*; 177: *A. deductus*.


Figs 178–179: Habitus of *Anotylus* species. 178: *A. laobianus*; 179: *A. pingbianus*.




Figs 180–186: *Anotylus pingbianus*: 180) male sternite VIII; 181) male tergite IX; 182) male tergite X; 183) aedeagus, frontal view; 184) median lobe, lateral view; 185) paramere, lateral view; 186) spermatheca. Scale bar = 0.05 mm (186), 0.07 mm (183–185), 0.09 mm (182), 0.1 mm (180), 0.11 mm (181).

setae. Pronotum with slight marginal bead visible all around, middle of anterior margin pulled ahead in gentle curve leaving only insignificant concavities near rather broadly rounded anterior corners. Lateral margin only slightly uneven, gently curved anteriorly, posteriorly almost straight, broadly rounded posterior corners marked by meeting with gently arched posterior margin. Midline marked by shallow midlongitudinal furrow, dorsal surface rather even (slightly impressed near middle of side margin) but with strong and dense rugulose sculpture without setation, anterior and posterior margins with small bristles. Elytra significantly longer than pronotum, at shoulders slightly wider, shoulders well developed. Laterally insignificantly curved (almost straight) and very slightly broadening, posterior margin with slight rim and almost truncate (only slightly oblique) without membranous lobe. Sutural corners almost right-angled, inner half of posterior margin only slightly oblique. Suture marked with slight ridges, elytral dorsal surface roughly granulate-strigose with small protuberances arranged along slightly oblique lines, laterally more strigose (thereby marking elytral epipleural ridge) without conspicuous setation. Disc almost flat, scutellum heart-shaped with impressions in apices of side lobes and a significant median lobe, often concealed together with less sculptured (shinier) impressed area towards shoulders slightly oblique. Legs moderately short, pro- and mesotibia strongly broadening apically and somewhat swollen, former not incised before apex, both with several spinulose rows, metatibia slightly broadening apically with longitudinal ctenidium of spinules in distal half. Abdomen with sides gently arcuate (almost straight), second segment with paratergites broadening posteriorly (abdomen appearing slightly constricted at base), lateral paratergites of segments III–VI thin, mesal paratergites broad, paratergites of segment VII constricted and not reaching posterior margin with thin palisade fringe, male sternite VIII as in Fig. 180, tergite IX (Fig. 181), X (Fig. 182), aedeagus (Figs 183–185), spermatheca (Fig. 186).

**Distribution and bionomics:** The species is only known from China (SE Yunnan province) and was collected by sifting of litter in primary subtropical broad-leaved forest.

**Etymology:** The name of the species is an adjective derived from the locality Pingbian in SE-Yunnan.

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## References

BERNHAUER, M. 1905: Neue exotische Staphyliniden. – Deutsche entomologische Zeitschrift 1905: 9–21.

BERNHAUER, M. 1927: Dr. E Mjöberg's Zoological Collections from Sumatra. 8. Staphylinidae. – Arkiv för Zoologi (A) 19 (19): 1–28.

CAMERON, M. 1928: Fauna sumatrensis. (Beitrag No. 54). Staphylinidae (Col.). – Entomologische Mitteilungen (Berlin-Dahlem) 17 (2): 90–110.

Cameron, M. 1930: The fauna of British India including Ceylon and Burma. Coleoptera. Staphylinidae. Vol. I. – London: Taylor and Francis, i–xvii + 471 pp.

Cameron, M. 1933: Staphylinidae (Col.) from Mount Kinabalu. – Journal of the Federated Malay States Museums 17 (2): 338–360.

Cameron, M. 1936: Fauna Javanica. The Staphylinidae (Col.) collected by Mr. F. C. Drescher. – Tijdschrift voor Entomologie 79 (1–2): 25–54.

Corporaal, J.B. 1939: Revision of the Thaneroclerinae (Cleridae, Col.). – Bijdragen tot de Dierkunde, 27: 347–359, pls. 9–11.

Fauvel, A. 1895: Staphylinides nouveaux de l'Inde et de la Malaisie. – Revue d'Entomologie (Caen) 14: 180–286.

Fauvel, A. 1904: Staphylinides exotiques nouveaux. 2e Partie. – Revue d'Entomologie (Caen) 23: 76–112.

Hammond, P.M. 1975: Coleoptera: Staphylinidae Oxytelini from Ceylon. Report No. 34 from the Lund University Ceylon Expedition in 1962. – Entomologica Scandinavica Supplementum 4 (1973–75): 141–178.

Hammond, P.M. 1976: A review of the genus *Anotylus* C. G. Thomson (Coleoptera: Staphylinidae). – Bulletin of the British Museum (Natural History), Entomology 33 (2): 137–187.

Herman, L.H. 1970: Phylogeny and reclassification of the genera of the rove-beetle subfamily Oxytelinae of the World (Coleoptera, Staphylinidae). – Bulletin of the American Museum of Natural History 142 (5): 343−454.

Herman, L.H. 2001: Nomenclatural changes in the Staphylinidae (Insecta: Coleoptera). – Bulletin of the American Museum of Natural History 264: 1–83.

Hoogstraal, H. 1951: Philippine Zoological expedition 1946–1947. Narrative and itinerary. – Fieldiana Zoology 33 (1): 1–86.

Löbl, I. 2006: On the Philippine species of Cypariini and Scaphidiini (Coleoptera: Staphylinidae: Scaphidiinae). – Revue suisse de Zoologie 113 (1): 23–49.

Makranczy, Gy. 2006: Systematics and phylogenetic relationships of the genera in the *Carpelimus* group (Coleoptera: Staphylinidae: Oxytelinae). – Annales historico-naturales Musei nationalis hungarici 98: 29−119.

Makranczy, Gy. 2017: Review of the *Anotylus cimicoides* species group (Coleoptera: Staphylinidae: Oxytelinae). – Acta Zoologica Academiae Scientiarum Hungaricae 63 (2): 143−262.

Newton, A.F. 2017: Nomenclatural and taxonomic changes in Staphyliniformia (Coleoptera). – Insecta Mundi 0595: 1−52.

Stehlík, J.L. 2013: Review and reclassification of the Old World genus *Physopelta* (Hemiptera: Heteroptera: Largidae). – Acta Entomologica Musei Nationalis Pragae 53 (2): 505−584.