New and little known species of Tenebrionidae (Coleoptera) from Borneo (4)

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Abstract

The following new genus and new species are described: *Microbolitonaeus* **n. gen.**, *Boletoxenus mixtus* **n. sp.** (E Malaysia/Sarawak), *Bolitonaeus crebrepunctaticollis* **n. sp.** (E Malaysia/Sarawak), *B. crockerensis* **n. sp.** (E Malaysia/Sabah), *B. neleae* **n. sp.** (E Malaysia/Sabah), *Byrsax parallelipennis* **n. sp.** (E Malaysia/Sabah, Sarawak), *Derosphaerus chewi* **n. sp.** (E Malaysia/Sabah), *D. reibnitzi* **n. sp.** (E Malaysia/Sabah), and *Microbolitonaeus armipes* **n. sp.** (E Malaysia/Sabah, Sarawak). *Corticeus (Cnemophloeus) capucinus* Bremer, 1999, *Corticeus (Seorsophloeus) birmanicus* (Blair, 1921), and *Uloma (Uloma) spectabilis* Perty, 1831 are recorded for the first time from Borneo. New faunistic data of other species are added. New synonym: *Bolitonaeus vacca* (Motschulsky, 1858) = *B. simpliciceps* Pic, 1922 **n. syn.**

Keywords: Tenebrionidae, Borneo, Malaysia, Sabah, Sarawak, Boletophagini, Cnodalonini, Hypophlaeini, Ulomini, new genus, new species, new records.

Zusammenfassung

Folgende neue Gattung und Arten werden beschrieben: *Microbolitonaeus* **n. gen.**, *Boletoxenus mixtus* **n. sp.** (E Malaysia/Sarawak), *Bolitonaeus crebrepunctaticollis* **n. sp.** (E Malaysia/Sarawak), *B. crockerensis* **n. sp.** (E Malaysia/Sabah), *B. neleae* **n. sp.** (E Malaysia/Sabah), *Byrsax parallelipennis* **n. sp.** (E Malaysia/Sabah, Sarawak), *Derosphaerus chewi* **n. sp.** (E Malaysia/Sabah), *D. reibnitzi* **n. sp.** (E Malaysia/Sabah) und *Microbolitonaeus armipes* **n. sp.** (E Malaysia/Sabah, Sarawak). Neunachweise für Borneo: *Corticeus (Cnemophloeus) capucinus* Bremer, 1999, *Corticeus (Seorsophloeus) birmanicus* (Blair, 1921) und *Uloma (Uloma) spectabilis* Perty, 1831. Neue Funde von weiteren Arten werden mitgeteilt. Neues Synonym: *Bolitonaeus vacca* (Motschulsky, 1858) = *B. simpliciceps* Pic, 1922 **n. syn.**

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1 Introduction

As mentioned by Grimm (2010) the species inventory of the Tenebrionidae from Borneo is far from complete. Moreover, most of the species are only known from the original descriptions, further or more exact faunistic data are lacking. This is also true for the members of the tribe Bolitophagini Kirby, 1837, whose Indomalayan representatives were treated by Gebien (1925a, b). *Bolitonaeus simpliciceps* Pic, 1922 which was described by Pic (1922) from Borneo was not taken into account in this revision. In his paper on fungivorous Tenebrionidae from Lambir Hills Park (E Malaysia/Sarawak) Ando (2010) mentioned several species of the Bolitophagini, and described a new genus and three new species belonging to this tribe. Recently Ando & Yamasako (2013) realized that *Byrsax tuberculatus* Gravely, 1915, reported from Borneo by Gebien (1925a) and Ando (2010), is a different species. In the present contribution to the Tenebrionidae of Borneo the results of the author's fieldwork in northern Borneo (Sabah, Sarawak) between 2005 and 2013 concerning the Bolitophagini are dealt with, complemented by so far unpublished material from other collections (see acronyms of depositories). Some records from Indonesia/Kalimantan Barat were communicated by Dr. O. Merkl (Budapest). A new genus and six new species are described. Additionally, two new species of the genus *Derosphaerus* Thomson, 1858 (Cnodalonini Gistel, 1856) are described, first records of *Corticeus* Piller & Mitterpacher, 1783 (Hypophlaeini Billberg, 1820), and *Uloma* Dejean, 1821 (Ulomini Blanchard, 1845) are given, and new faunistic data of several other species are added.

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Acronyms of depositories

CKA	Collection Dr. Kiyoshi Ando, Osaka, Japan
CRG	Collection Dr. Roland Grimm, Neuenbürg, Germany [will later be deposited in a public collection]
CSCA	California State Collection of Arthropods, Sacramento, U. S. A. (Dr. Andrew Cline)
HNHM	Hungarian Natural History Museum, Budapest, Hungary (Dr. Ottó Merkl)
MHNG	Muséum d'Histoire Naturelle, Genève, Switzerland (Dr. Giulio Cuccodoro, Dr. Ivan Löbl)
MNHN	Muséum National d'Histoire Naturelle, Paris, France (Dr. Antoine Mantilleri)
NHMB-F	Naturhistorisches Museum Basel, Collection Frey, Switzerland (Dr. Eva Sprecher)
NMP	National Museum, Department Entomology, Prague, Czech Republic (Dr. Jiři Hájek)
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany (Dr. Wolfgang Schawaller)
ZSMB	Collection Prof. Dr. H. J. Bremer in Zoologische Staatssammlung Munich, Germany (Dr. Michael Balke)

2 The species

2.1 Tenebrioninae Latreille, 1802
Bolitophagini Kirby, 1837

Atasthalus miles Gebien, 1914

Material studied

Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50 m, 11.–12.XII.2010, R. Grimm leg., 1 specimen (CRG).

Distribution

E Malaysia/Sarawak, Indonesia: Sumatra (Gebien 1925b).

Atasthalus spectrum Pascoe, 1871

Material studied

[Indonesia, Kalimantan Barat], Borneo occ., Pontianak, 1900, [no collector stated], 1 specimen (NHMB-F). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Sayap, 1000 m, 25.–29.XI.1996, W. Schawaller leg., 1 specimen (SMNS). – Borneo, Malaysia, Sabah, Banjaran Mattland, Sapulut, 22.–24.V.1995, I. Jeniš leg., 1 specimen (ZSMB). – Borneo, Malaysia, Sabah, 18 km NE Keningau, Crocker Range near Kimanis road, 1100 m, 28.I.2010, R. Grimm leg., 3 specimens (CRG). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Poring Hot Springs, 400 m, 10.–12.I.2010, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sabah, Mount Kinabalu Nat. Park, Headquarter, 1550 m, 7.–9.I.2010, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sabah, Crocker Range, Gunung Emas, 1500 m, 16.–17.III.2007, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Crocker Range, Gunung Emas, 1600 m, 16.III.2013, R. Grimm leg., 1 specimen (CRG). – Indonesia, Kalimantan Barat, Gunung Palung Nat. Park, Cabang Panti research site, 1°13′S 110°7′E, 18.–26.VII.1993, O. Merkl leg. & det. (HNHM, pers. comm. O. Merkl).

Distribution

W Malaysia, E Malaysia/Sarawak, Indonesia: Sumatra, Java (Ando 2010); E Malaysia/Sabah, Indonesia: Kalimantan (new records).

Boletoxenus bifurcus Pascoe, 1871

Material studied

Borneo, Malaysia, Sabah, Tenom, 10.–12.V.2005, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Danum Valley Conservation Area, Borneo Rainforest Lodge, 1.–3.IV.2013, R. Grimm leg., 3 specimens (CRG). – Borneo, Malaysia, Sarawak, Kuching, Reservoir Park, 21.–22.III.2009, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 100–250 m, 9.–12.III.2008, R. Grimm leg., 6 specimens (CRG). – Same data, but 100–300 m, 31.III.–4.IV.2009, R. Grimm leg., 1 specimen (CRG). – Same data, but 50–200 m, 8.–10.XII.2010, R. Grimm leg., 1 specimen (CRG). – Same data, but 50–300 m, 20.–23.II.2012, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 10–200 m, 11.–14.IX.2008, R. Grimm leg., 3 specimens (CRG). – Same data, but 20–150 m, 13.–15.III.2008, R. Grimm leg., 7 specimens (CRG). – Same data, but 20–23.III.2008, R. Grimm leg., 1 specimen (CRG). – Same data, but 23.–27.III.2009, R. Grimm leg., 6 specimens (CRG). – Same data, but 4.–8.IV.2009, R. Grimm leg., 3 specimens (CRG). – Same data, but 30–150 m, 24.–26.II.2012, R. Grimm leg., 3 specimens (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Santubong Mt., 6.IV.2009, R. Grimm leg., 4 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Headquarter, 250 m, 6.–8.III.2008, R. Grimm leg., 1 specimen (CRG). – Same data, but 150–300 m, 15.–17.II.2012, R. Grimm leg., 18 specimens (CRG), 9 specimens (SMNS). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 16.–17.III.2008, R. Grimm leg., 4 specimens (CRG). – Same data, but 50 m, 18.–19.II.2012, R. Grimm leg., 2 specimens (CRG). – Indonesia, E Kalimantan, 15 km N of Balikpapan, Sunga Wain Protection Forest, 01°08.1′S 116°49.9′E, 35 m, J. Hájek, J. Schneider & P. Votruba leg., 8.–11.XII.2011, 4 specimens (NMP). – Indonesia, Kalimantan Barat, Gunung Palung Nat. Park, Cabang Panti research site, 1°13′S 110°7′E, 18.–26.VII.1993, O. Merkl leg. & det. (HNHM, pers. comm. O. Merkl).

Distribution

W Malaysia, E Malaysia/Sarawak, Indonesia: Sumatra (Ando 2010); E Malaysia/Sabah, Indonesia: Kalimantan (new records).

Boletoxenus gibber Motschulsky, 1858

Material studied

Borneo, Malaysia, Sabah, Banjaran Mattland, Batu Punggul, 25.–27.V.1995, I. Jeniš leg., 1 specimen (CRG), 1 specimen (ZSMB).

Distribution

S India, Myanmar, W Malaysia, E Malaysia/Sarawak, Indonesia: Sumatra (Ando 2010); E Malaysia/Sabah (new record).

Boletoxenus inouei Ando, 2010

Material studied

Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 30–150 m, 24.–26.II.2012, R. Grimm leg., 5 specimens (CRG).

Remarks

Until know, *B. inouei* Ando was only known from the type locality, Lambir Hills National Park in Sarawak (Ando 2010).

Distribution

E Malaysia/Sarawak.

Boletoxenus mixtus **n. sp.**
(Figs. 8, 8a)

Holotype ♂: Borneo, Malaysia, Sabah, 18 km NE Keningau, Crocker Range near Kimanis road, 1100 m, 28.I.2010, R. Grimm leg. (CRG).

Paratypes: Indonesia, E Kalimantan, 55 km W of Balikpapan, PT Fajar Surya Swadaya, 01°16.4′S 116°21.1′E, 82 m, J. Hájek, J. Schneider & P. Votruba leg., 23.XI.–1.XII.2011, 1 ♂ (NMP). – Borneo, Malaysia, Sabah, Mt. Kinabalu Nat. Park, Poring Hot Springs area, Langanan Crk., 915 m, 18.VIII.1988, A. Smetana leg. [B123], 1 ♂ (MHNG).

Etymology

Mixtus (Lat.) = mixed. The new species has the epistomal horn similar to *B. spathifer* Gebien, 1925 and the pronotal horns similar to *B. spectabilis* (Gebien, 1914).

Description

Oblong, robust, black, matt; palpi, antennae, and legs paler, brownish. Body length 9.0 mm, body width 4.8 mm.

Head shallowly concave, coarsely punctured with punctural interspaces raised. Middle of epistoma in males (female unknown) with long vertical, apically strongly widened horn with truncate apex; back of widened apical part slightly concave. Genae concave with outline emarginate. Eyes separated by genae till somewhat behind the middle. Head with distinct supraocular ridge. Antennae long, antennomeres 5–9 dentate, with pointed sharp distal border at inner side.

Pronotum widest at base, subtrapezoidal, width/length ratio (measured transversally at base, longitudinally along midline) 1.72–2.02; basal border slightly bisinuate, lateral borders slightly explanate and coarsely serrate, anterior border nearly straight; posterior angles rectangular, anterior angles acute, projecting forward. Surface with tubercles, between them with larger, finely punctured parts without tubercles; males in the centre with two long, closely fitted, tuberculated, obliquely forward projecting, nearly straight horns, apically fringed with fulvous hairs. Propleura distinctly punctured, distances between punctures as their diameters or somewhat smaller. Prosternal apophysis bluntly carinate, apex with weak corner.

Elytra subquadrate, length/width ratio 1.1; transversely convex with rows of deep punctures; intervals at places with large, irregular, oblong nodules. Base denticulate, the lateral borders strongly serrate and visible in dorsal view.

Mesoventrite V-shaped excavate, behind excavation carinate between mesocoxae; in the middle behind the anterior border with two transversely oval pits. Metaventrite impressed along midline. Abdominal ventrites with coarse setigerous punctures. In males anterior process of 1st abdominal ventrite between metacoxae with rising, coarse, transversely rugose posterior elevation.

Legs without modifications. Posterior femora only slightly protruding beyond lateral borders of elytra.

Aedeagus see Fig. 8a.

Differential diagnosis

Boletoxenus mixtus n. sp. shares with *B. spectabilis* (Gebien, 1914) the subquadrate hind body and the closely fitted pronotal horns, but lacks the epistomal horn. *B. spathifer* Gebien, 1925 has a similar spathulate epistomal horn, but the pronotal horns are widely separated, and the hind body is more elongate (length/width ratio 1.30–1.38). In both, *B. spathifer* and *B. spectabilis*, the anterior process of the 1st abdominal ventrite between the metacoxae is normally flat and not posteriorly rising. The three species can also be distinguished by the different shapes of the aedeagi (compare Figs. 8a, 9–10).

Boletoxenus recticornis Gebien, 1925

Material studied

Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50 m, 18.–19.II.2012, R. Grimm leg., 1 specimen (CRG). – Indonesia, Kalimantan Barat, Gunung Palung Nat. Park, Cabang Panti research site, 1°13′S 110°7′E, 18.–26.VII.1993, O. Merkl leg. & det. (HNHM, pers. comm. O. Merkl).

Distribution

E Malaysia/Sarawak, Indonesia: Sumatra (Ando 2010); Indonesia/Kalimantan (new record).

Boletoxenus serratus (Gebien, 1913)

Material studied

Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 100–300 m, 23.–29.IX.2008, R. Grimm leg., 2 specimens (CRG).

Remarks

Until now, in Borneo *B. serratus* was only known from Lambir Hills National Park in Sarawak (Ando 2010).

Distribution

Philippines, E Malaysia/Sarawak (Ando 2010).

Boletoxenus spathifer Gebien, 1925 (Fig. 10)

Material studied

Borneo, Malaysia, Sabah, Mt. Kinabalu S, 28.V.1999, Z. Smřr leg., 1 ♀ (ZSMB). – Borneo, Malaysia, Sabah, Mount Kinabalu Nat. Park, Headquarter, 1550 m, 7.–9.I.2010, R. Grimm leg., 1 ♂, 1 ♀ (CRG). – Borneo, Malaysia, Sabah, 18 km NE Keningau, Crocker Range near Kimanis road, 1100 m, 28.I.2010, R. Grimm leg, 2 ♀♀ (CRG).

Remarks

B. spathifer Gebien was described on the basis of a single male from Sarawak (Gebien 1925b). So far the female is unknown, thus the attribution of the above mentioned females is preliminary. The females have like the male a more elongate hind body (length/width ratio 1.3–1.38) than in *B. mixtus* n. sp.; the femora are more slender and longer than in *B. mixtus* n. sp., the posterior femora are surpassing distinctly beyond the lateral borders of the elytra. The females are without clypeal horn and the pronotal horns are replaced by distinct bulges densely covered with denticulate granules. The ovipositor is in all above mentioned females of the same shape.

Distribution

E Malaysia/Sarawak (Gebien 1925b), E Malaysia/Sabah (new record).

Boletoxenus spectabilis (Gebien, 1914) (Fig. 9)

Material studied

Borneo, Malaysia, Sarawak, Kubah Nat. Park, Headquarter, 150–200 m, 13.–14.X.2010, R. Grimm leg., 1 specimen (CRG).

Distribution

W Malaysia, E Malaysia/Sarawak, Indonesia: Sumatra (Gebien 1925b).

Bolitonaeus crebrepunctaticollis **n. sp.** (Figs. 1, 1a)

Holotype ♂: Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 16.–17.III.2008, R. Grimm leg. (CRG).

Paratypes: Same data as holotype, 1 ♂, 2 ♀♀ (CRG), 1 ♂ (SMNS).

Etymology

Creber (Lat.) = dense, punctatus (Lat.) = punctate, collum (Lat.) = neck (referring to the pronotum in this case).

Description

Oblong, subcylindrical, black, matt; antennae, palpi and sometimes legs and lateral borders of pronotum paler reddish-brown; winged. Body length 5.0–5.5 mm, body width 2.2–2.5 mm.

Head sloping forwards, with frons densely, coarsely, umbilicately punctured, punctures separated by small ridges. Clypeus somewhat more finely punctured, in females anteriorly with minutely granulated transversal bulge. Frontoclypeal suture weak. Eyes divided by genal canthus in anterior half. Supraocular ridge ill-defined. Antennae short, antennomeres 8–11 forming a club, antennomere 11 embedded in 10. Underside of head with antennal groove. Mentum cordate with longitudinal median carina.

Pronotum transverse, strongly convex transversely, laterally declivous, widest near the middle, longer in females (width/length ratio 1.4–1.48) than in males (width/length ratio 1.73); in males with a pair of incurved horns, covered with irregular longitudinal rugosities and tiny tubercles on upper and outer surface, smooth on inner and under surface, apices fringed with hairs which are denser and more extensive in males with longer horns; surface punctured as on head, punctures intermingled with scattered, small tubercles, between horns tubercles lacking and punctures only weakly marked. Anterior border between horns shallowly, roundly emarginate; lateral borders dentate, shallowly arcuate anteriorly and nearly straight basally; basal border slightly bisinuate, explanate; anterior angles tooth-like, moderately projecting; posterior angles ill-defined, obtuse. Females without horns. Propleura coarsely, anteriorly confluently punctured. Prosternal apophysis declivous behind coxae, terminating in a sharp tubercle.

Elytra transversely strongly convex, longitudinally slightly convex, subparallel-sided; with rows of densely set deep punctures, distance between punctures as small as or smaller than puncture diameters; intervals with a dense row of minute, setigerous granules. Serrulate lateral borders basally explanate and only here distinctly visible in dorsal view.

Meso- and metaventrite coarsely punctured. Mesoventrite V-shaped excavate with distinct tubercle in

the middle of anterior border. Abdominal ventrites 1–3 densely, rugosely punctured; ventrites 4–5 coarsely punctured as meso- and metaventrite.

Legs without modifications.

Aedeagus see Fig. 1a. Apices of apical piece bent ventrad and broadly rounded.

Differential diagnosis

Bolitonaeus crebrepunctaticollis n. sp. is somewhat similar to *B. vacca* (Motschulsky, 1858), but in the latter the males are equipped with a foliate cranial horn, and the apices of the pronotal horns are not fringed with hairs. The pronotal punctures are distinctly larger; the interspaces are smaller than in *B. crebrepunctaticollis* n. sp. and have a reticular structure, and the aedeagi are different (compare Figs. 1a, 3).

Bolitonaeus crockerensis **n. sp.**
(Figs. 2, 2a)

Holotype ♂: Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Headquarter, 25.–28.III.2013, 1500–1800 m, R. Grimm leg. (CRG).

Paratypes: Same data as holotype, R. Grimm leg., 13 specimens (CRG), 5 specimens (SMNS). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Poring Hot Springs, 525 m, 8.–10.IV.2013, R. Grimm leg., 4 specimens (CRG). – Borneo, Malaysia, Sabah, Gunung Emas, 1600 m, 16.III.2013, R. Grimm leg., 13 specimens (CRG), 4 specimens (SMNS), 1 specimen (HNHM), 3 specimens (CKA). – Borneo, Malaysia, Sabah, Crocker Mts., Gunung Emas, 1600 m, 8.V.2005, R. Grimm leg., 5 specimens (CRG). – Same data, but 13.V.2005, R. Grimm leg., 1 specimen (CRG). – Same data, but 8.V.2005, R. Grimm leg., 3 specimens (CRG). – Same data, but 1550 m, 4.–5.I.2010, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sabah, Crocker Mts., Gunung Emas, 500–1900 m, 6.–21.V.1995, I. Jeniš leg., 3 specimens (CRG), 1 specimen (HNHM), 37 specimens (ZSMB). – Borneo, Malaysia, Sabah, Crocker Mt., Gunung Emas, 15.–27.IV.1993, Jeniš & Štrba leg., 2 specimens (ZSMB). – Malaysia/Sabah, Gunung Emas Resort, 52 km road Kota Kinabalu to Tambunan, 23.–29.V.1998, P. Hlaváč leg., 4 specimens (HNHM).

Etymology

The species name refers to the Crocker Range where the type series was collected.

Description

Oblong, subcylindrical, dark brownish-black to black; antennae, palpi and sometimes legs paler reddish-brown; matt, pronotum and elytra with shining tubercles; apterous. Body length 4.0–5.5 mm, body width 2.0–2.9 mm.

Head sloping forwards with frons coarsely, laterally rugosely punctured, clypeus much more finely punctured; frons flat, clypeus shallowly concave. Frontoclypeal suture distinct. Clypeus in males raised anteriorly or slightly carinate with several minute tubercles, reduced in females to a small rim or only some minute tubercles. Eyes completely divided by genal canthus. Supraocular ridge ill-defined. Antennae short, antennomeres 8–11 forming a club, antennomere 11 embedded in 10. Underside of head with antennal groove along eyes. Mentum cordate with longitudinal median carina.

Pronotum transverse, strongly convex transversely, laterally declivous, widest before the middle, width/length ratio 1.68–2.02; in males with a pair of horns which are incurved in males with longer horns, horns covered with irregular longitudinal punctures and tiny tubercles; surface coarsely punctured, punctures intermingled with small shining tubercles, apices devoid of hairs; surface between horns depressed and both punctures and tubercles inconspicuous. Anterior border between horns shallowly, roundly emarginate; lateral borders crenulate, shallowly arcuate and weakly emarginate basally; basal border bisinuate; anterior angles moderately projecting, posterior angles obtuse. In females without horns, sometimes replaced by shallow convexities. Propleura mostly smooth, particularly laterally and posteriorly with some very coarse punctures. Prosternal apophysis declivous behind coxae, terminating in a sharp tubercle.

Elytra transversely convex, subparallel-sided to slightly divergent apically; with rows of deep punctures; intervals with irregular, shining, sometimes large, oblong tubercles or nodules. Serrate lateral borders visible in dorsal view.

Meso- and metaventrite coarsely punctured. Mesoventrite V-shaped excavate with a distinct tubercle in the middle of the anterior border. Metaventrite medially shorter than metacoxae. Abdominal ventrites coarsely punctured, ventrites 1 and 5 on whole surface, ventrites 2–4 along anterior border.

Legs without modifications.

Aedeagus see Fig. 2a. Apices of parameres bent dorsad.

Differential diagnosis

B. crockerensis n. sp. is easily to distinguish from its congeners. It coincides nearly in all characters given by Gebien (1925b) in his redescription of the genus, but differs by the eyes which are completely divided by genal canthus and by the apterism. According to Miyatake (1964) the type species *Bolitonaeus mergae* Lewis, 1894 from Japan (Kyushu) is also wingless, but *B. crockerensis* n. sp. is the first known species with completely divided eyes. In the shape of body and the structure of elytra *Bolitonaeus crockerensis* n. sp. resembles *B. nasalis* (Pascoe, 1871), but the latter is winged and the eyes are not completely divided by genal canthus, the males are equipped with a foliate cranial horn, and the pronotal horns are of different shape.

Bolitonaeus dentipes Gebien, 1925

Material studied

Borneo, Malaysia, Sabah, Crocker Range, Gunung Alab, 23.–29.V.1998, 1700 m, Kodada & Ciampor leg., 1 specimen (SMNS). – Borneo, Malaysia, Sabah, Danum Valley Conservation Area, Borneo Rainforest Lodge, 1.–3.IV.2013, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Headquarter, 250 m, 6.–8.III.2008, R. Grimm leg., 1 specimen (CRG). – Same data, but 160–300 m, 15.–17.II.2012, R. Grimm leg., 6 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 16.–17.III.2008, R. Grimm leg., 2 specimens (CRG). – Same data, but 18.–19.II.2012, R. Grimm leg., 7 specimens (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 30–150 m, 24.–26.II.2012, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 50–300 m, 20.–23.II.2012, R. Grimm leg., 5 specimens (CRG).

Remarks

Until now, in Borneo *B. dentipes* was only known from Lambir Hills National Park in Sarawak (Ando 2010).

Distribution

E Malaysia/Sarawak, Indonesia: Sumatra (Ando 2010); E Malaysia/Sabah (new record); Indonesia: Bali (based on specimen in CRG and SMNS), Lombok (based on specimens in SMNS), Java (based on specimens in CRG and ZSMB).

Bolitonaeus exiguus Ando, 2010

Material studied

Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 50–300 m, 20.–23.II.2012, R. Grimm leg., 1 ♂, 1 ♀ (CRG).

Remarks

Until now, *B. exiguus* Ando was only known from the type locality, Lambir Hills National Park in Sarawak (Ando 2010).

Distribution

E Malaysia/Sarawak.

Bolitonaeus nasalis (Pascoe, 1871)

Material studied

Borneo, Malaysia, Sabah, Crocker Mts., Gunung Emas, 1600 m, 25.V.2005, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Poring Hot Springs, 525 m, 8.–10.IV.2013, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Danum Valley Conservation Area, Borneo Rainforest Lodge, 1.–3.IV.2013, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 20–150 m, 13.–15.III.2008, R. Grimm leg., 23 specimens (CRG), 7 specimens (SMNS). – Same data, but 21.III.2008, R. Grimm leg., 1 specimen (CRG). – Same data, but 10–200 m, 23.–27.III.2009, R. Grimm leg., 18 specimens (CRG). – Same data, but 30–150 m, 24.–26.II.2012, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Santubong Mt., 6.IV.2009, R. Grimm leg., 6 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 16.–17.III.2008, R. Grimm leg., 16 specimens (CRG). – Same data, but 50 m, 11.–12.XII.2010, R. Grimm leg., 1 specimen (CRG). – Same data, but 50 m, 18.–19.II.2012, R. Grimm leg., 4 specimens (CRG).

Remarks

Until now, in Borneo *B. nasalis* was only known from Lambir Hills National Park in Sarawak (Ando 2010).

Distribution

W Malaysia, E Malaysia/Sarawak, Indonesia: Mentawei, Sumatra (Ando 2010); E Malaysia/Sabah (new record).

Bolitonaeus neleae **n. sp.**
(Figs. 4, 4a)

Holotype ♂: Borneo, Malaysia, Sabah, Crocker Range Park, Mahua Waterfall, 12.IV.2013, R. Grimm leg. (CRG).

Paratypes: Same data as holotype, 2 ♂♂, 5 ♀♀ (CRG), 1 ♂, 1 ♀ (SMNS). – Borneo, Malaysia, Sabah, Mt. Kinabalu Nat. Park above poring Hot Springs, 520 m, 15.VIII.1988, A. Smetana leg. [B115], 1 ♀ (MHNG).

Etymology

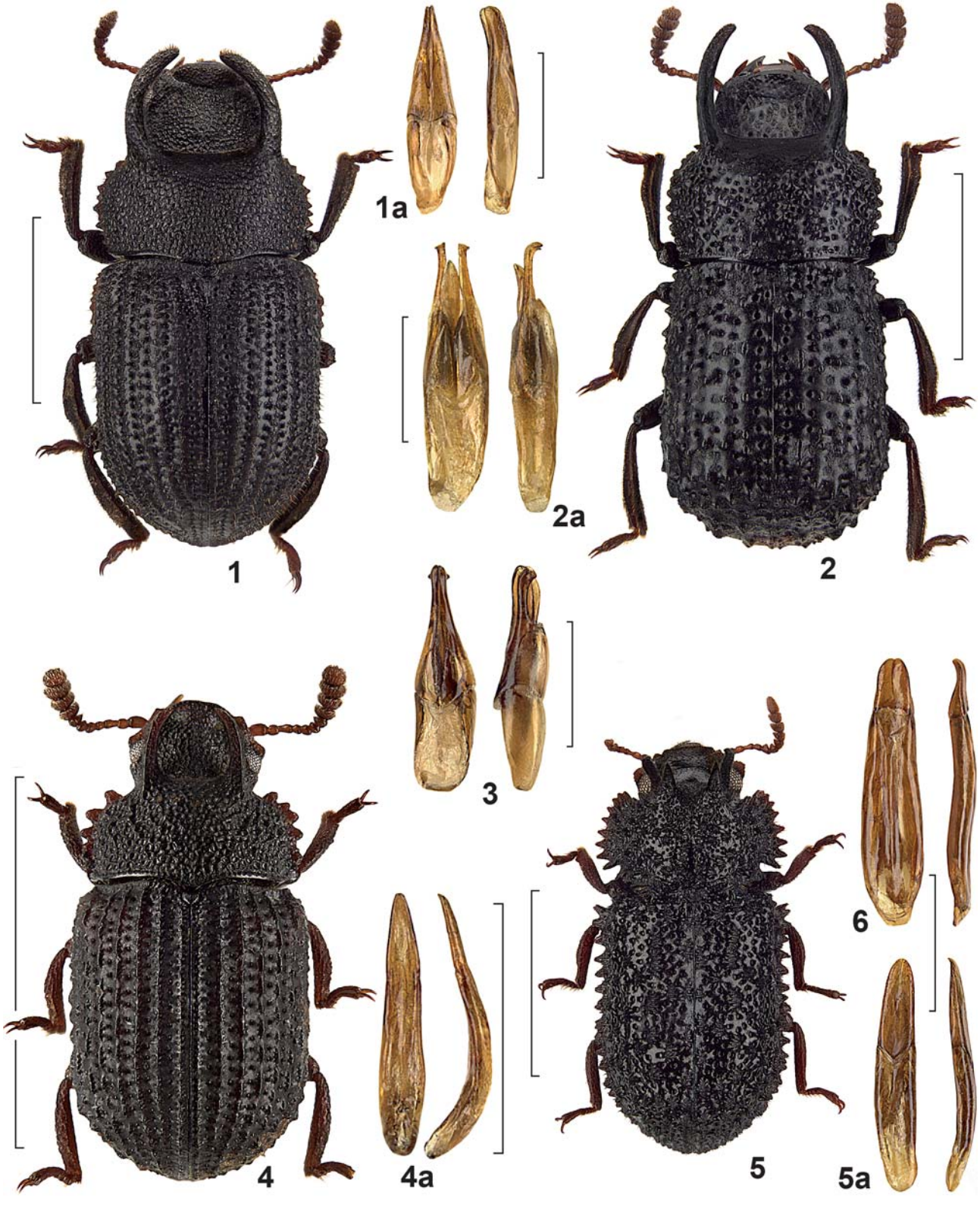
This species is named after Nele Lechleiter (Neuenbürg-Rotenbach), the daughter of the author's good friends.

Description

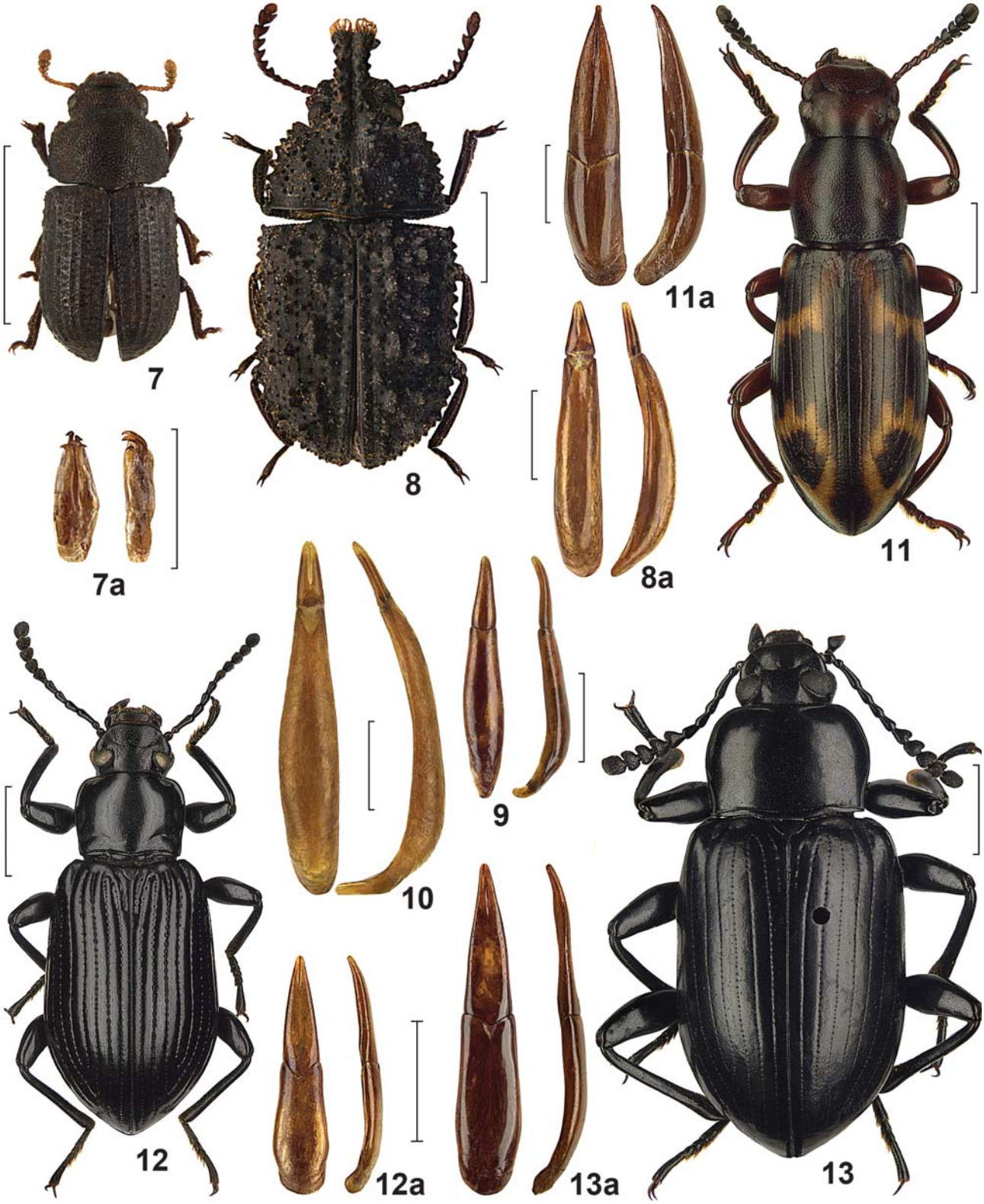
Oblong, black, matt; antennae, palpi and sometimes legs and lateral borders of pronotum paler reddish-brown; winged. Body length 2.5–3.0 mm, body width 1.3–1.5 mm.

Head sloping forwards, densely, coarsely, and rugosely punctured, punctures separated by small ridges. Clypeus somewhat finer punctured, with anterior border slightly arcuate and in males crested. Frontoclypeal suture weak. Lateral borders of genae slightly emarginate. Eyes divided by genal canthus in anterior half. Supraocular ridge ill-defined. Antennae 11-segmented, antennomeres 8–11 forming a club, antennomere 11 broadly oval and not embedded in antennomere 10. Underside of head with antennal groove. Mentum subcordate with longitudinal median carina.

Pronotum transverse, convex transversely, longer in females (width/length ratio 1.46–1.55) than in males (width/length ratio 1.9–2.1); in males with a pair of horns incurved toward apices and devoid of apical hairs. Surface



Figs. 1–6. Tenebrionidae spp., dorsal views (1, 2, 4, 5), aedeagi, ventral (left) and lateral (right) views (1a, 2a, 3, 4a) or dorsal (left) and lateral (right) views (5a, 6). – **1**, **1a**. *Bolitonaeus crebrepunctaticollis* n. sp. ♂ holotype. **2**, **2a**. *B. crockerensis* n. sp. ♂ holotype. **3**. *B. vacca* Motschulsky. **4**, **4a**. *B. neleae* n. sp. ♂ holotype. **5**, **5a**. *Byrsax parallelipennis* n. sp. ♂ holotype. **6**. *B. egenus* Pascoe. – Scales: 2 mm (dorsal views), 0.5 mm (aedeagi).



Figs. 7–13. Tenebrionidae spp., dorsal views (7, 8, 11–13), aedeagi, ventral (left) and lateral (right) views (7a) or dorsal (left) and lateral (right) views (8a, 9, 10, 11a, 12a, 13a). – **7**, **7a**. *Microbolitonaeus armatus* n. sp. ♂ holotype. **8**, **8a**. *Boletoxenus mixtus* n. sp. ♂ holotype. **9**. *B. spectabilis* (Gebien). **10**. *B. spathifer* Gebien. **11**, **11a**. *Gauromaia erotyloides* Ando. **12**, **12a**. *D. reibnitzi* n. sp. ♂ holotype. **13**, **13a**. *Derosphaerus chewi* n. sp. – Scales: 2 mm (dorsal views), 0.5 mm (aedeagi).

densely, coarsely punctured, intermingled with scattered, small tubercles; slightly depressed between the horns, where tubercles are lacking and the punctation is less distinct; punctures separated by small ridges forming a reticulation. Anterior border between horns shallowly, roundly emarginate; lateral borders strongly dentate, explanate; basal border slightly bisinuate; anterior angles strongly projecting, tooth-like, posterior angles obtuse. In females horns replaced by fine oblique elevations and middle of anterior border nearly straight. Propleura coarsely punctured. Prosternal apophysis declivous behind coxae, terminating in a sharp tubercle.

Elytra subparallel-sided; with rows of fine punctures becoming somewhat coarser in lateral rows, distances between punctures as large as or larger than puncture diameters; intervals with narrow, longitudinal tubercles appearing together as a fine interrupted carina. Serrulate lateral borders not visible in dorsal view.

Mesoventrite flat, V-shaped excavate with carina between mesocoxae. Metaventrite and abdominal ventrites 1–4 coarsely punctured; abdominal ventrite 5 more finely punctured.

Legs without modifications.

Aedeagus see Fig. 4a.

Differential diagnosis

In shape of pronotum and structure of elytra, *Bolitonaeus neleae* n. sp. is similar to *B. yamashitai* Ando, 2010, but the latter is larger (body length 3.3–4.1 mm, body width 1.6–1.8 mm), the males of *B. yamashitai* are equipped with a cranial horn, and the antennae are 10-segmented. The new species is somewhat similar also to *B. exiguus* Ando, 2010, but in males of this species the clypeus is raised anteriorly, the outer margins of the mesotibiae are distinctly spinose in the middle, and the last antennomere is subtriangular and distinctly embedded in the 10th antennomere. Additionally, the three species differ in the shape of the aedeagus (compare Fig. 4a with Ando 2010: figs. 9, 18).

Bolitonaeus quadridentatus (Candèze, 1861)

Material studied

Borneo, Malaysia, Sabah, Mt. Kinabalu Nat. Park, Poring Hot Springs area, Langanan Fall, 900 m, 14.V.1987, A. Smetana leg., 2 specimens (SMNS). – Borneo, Malaysia, Sabah, Crocker Mts., Gunung Emas, 500–1900 m, 6.–21.V.1995, I. Jeniš leg., 2 specimens (ZSMB). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 10–200 m, 23.–27.III.2009, R. Grimm leg., 4 specimens (CRG). – Same data, but 30–150 m, 24.–26.II.2012, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Headquarter, 160–300 m, 15.–17.II.2012, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sabah, Crocker Range, Gunung Alab, 23.–29.V.1998, 1700 m, Kodada & Ciampor leg., 1 specimen (SMNS). – Indonesia, Kalimantan Barat, Gunung Palung Nat. Park, Cabang Panti research site, 1°13′S 110°7′E, 18.–26.VII.1993, O. Merkl leg, 1 specimen (HNHM).

Remarks

As in Ando (2010) the species identification of the Bornean specimens is somewhat uncertain. The specimens from Borneo are much smaller than those from Sri Lanka and Thailand. But apart from that no significant distinction could be detected by the author of the present paper. Until now, in Borneo *B. quadridentatus* was only known from Lambir Hills National Park in Sarawak (Ando 2010).

Distribution

Sri Lanka, E Malaysia/Sarawak (Ando 2010); E Malaysia/Sabah, Indonesia: Kalimantan (new records); Thailand (based on specimens in CRG).

Bolitonaeus vacca (Motschulsky, 1858) (Fig. 3)

Bolitonaeus simpliciceps Pic, 1922 **n. syn.**

Type material studied

3 (1 ♂, 2 ♀♀) syntypes (MNHN) of *Bolitonaeus simpliciceps* Pic, 1922 with following labels: Martapura, S. E. Borneo, Doherty 1891 [printed]; *Bolitonaeus simpliciceps* M. Pic [only the ♂; handwritten]; Syntype [red label, printed]; Museum Paris, Coll. M. Pic [printed]. The ♂ is designated herewith as lectotype, the other specimens with same data are consequently paralectotypes.

Additional material studied

3 (2 ♂♂, 1 ♀) plesiotypes (NHMB-F) of *B. vacca* (Motschulsky, 1858) labeled as follows: N. O. Sumatra, Tebbing-tinggi, Dr. Schultheiss [printed]; 352 (1 ♂, 1 ♀), 287c (1 ♂) [handwritten]; Plesiotype! No [red label printed] 1174 [handwritten by Gebien]; *Bolitonaeus vacca* Motsch. [handwritten by Gebien]; Sammlung H. Gebien [printed]. –Borneo, Malaysia, Sabah, Mt. Kinabalu Nat. Park, Poring Hot Springs area, Langanan Fall, 900 m, 14.V.1987, A. Smetana leg., 3 specimens (MHMG). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Poring, 500 m, 23.–24.XI.1996, W. Schawaller leg., 1 specimen (SMNS). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Headquarter, 1550 m, 11.–13.III.2006, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Headquarter, 1500–1800 m, 25.–28.III.2013, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Poring, 380 m, 9.–11.III.2007, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Sapulut, 23.VI.1998, Kodada & Ciampor leg., 1 specimen (ZSMB). – Borneo, Malaysia, Sabah, Danum Valley Conservation Area, Borneo Rainforest Lodge, 1.–3.IV.2013, R. Grimm leg., 9 specimens (CRG). – Borneo, Malaysia, Sabah, Crocker Mt., Gunung Emas, 15.–27.IV.1993, Jeniš & Štrba leg., 1 specimen (ZSMB). – Borneo, Malaysia, Sabah, Crocker Mts., Gunung Emas, 500–1900 m, 6.–21.V.1995, I. Jeniš leg., 4 specimens (ZSMB). – Borneo, Malaysia, Sabah,

Crocker Mts., Gunung Emas, 1600 m, 8.V.2005, R. Grimm leg., 1 specimen (CRG). – Same data, but 25.V.2005, R. Grimm leg., 1 specimen (CRG). – Same data, but 16.III.2013, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Crocker Range near Kimanis road, 18 km NE Keningau, 1100 m, 28.X.2001, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Crocker Range, Gunung Alab, 1400 m, 1.IV.2007, R. Grimm leg., 1 specimen (CRG). – Same data, but 5.–6.I.2010, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Crocker Range Park, Mahua Waterfall, 12.IV.2013, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Keningau Crocker Range Park, 950 m, 21.III.2013, R. Grimm leg., 10 specimens (CRG). – Borneo, Malaysia, Sabah, Banjaran Mattland, Batu Punggul, 25.–27.V.1995, I. Jeniš leg., 1 specimen (ZSMB). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 20–150 m, 13.–15.III.2008, R. Grimm leg., 4 specimens (CRG). – Same data, but 21.III.2008, R. Grimm leg., 4 specimens (CRG). – Same data, but 10–200 m, 23.–27.III.2009, R. Grimm leg., 4 specimens (CRG). – Same data, but 30–210 m, 30.XI.–5.XII.2010, R. Grimm leg., 1 specimen (CRG). – Same data, but 30–150 m, 24.–26.II.2012, R. Grimm leg., 12 specimens (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Santubong Mt., 6.IV.2009, R. Grimm leg., 5 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Headquarter, 150–250 m, 13.–14.X.2010, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 16.–17.III.2008, R. Grimm leg., 4 specimens (CRG). – Same data, but 50 m, 11.–12.XII.2010, R. Grimm leg., 4 specimens (CRG). – Same data, but 18.–19.II.2012, R. Grimm leg., 8 specimens (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 100–250 m, 9.–12.III.2008, R. Grimm leg., 1 specimen (CRG). – Same data, but 100–300 m, 31.III.–4.IV.2009, R. Grimm leg., 6 specimens (CRG). – Same data, but 50–300 m, 20.–23.II.2012, R. Grimm leg., 2 specimens (CRG). – Indonesia, E Kalimantan, 15 km N of Balikpapan, Sunga Wain Protection Forest, 01°08.1′S 116°49.9′E, 35 m, J. Hájek, J. Schneider & P. Votruba leg., 8.–11.XII.2011, 2 specimens (NMP). – Indonesia, Kalimantan Barat, Gunung Palung Nat. Park, Cabang Panti research site, 1°13′S 110°7′E, 18.–26.VII.1993, O. Merkl leg. & det. (HNHM, pers. comm. O. Merkl).

Synonymy

Bolitonaeus vacca was described by Motschulsky (1858) in the genus *Bolitophagus* [under *Boletophagus*] Illiger, 1798, based on specimens from Birma (Myanmar), and not as *Bolitoplegus* [misspelling in Gebien (1925b)]. Due to the short description by Motschulsky (1858), Gebien (1925b) redescribed *vacca* after the comparison with types of *Bolitonaeus vacca* (Motschulsky) and designated plesiotypes on the basis of specimens from Sumatra. The comparison of these plesiotypes with syntypes of *Bolitonaeus simpliciceps* Pic, 1922 revealed that Pic's (1922) *B. simpliciceps* is a synonym of Motschulsky's *B. vacca*.

Remarks

Bolitonaeus vacca (Motschulsky) is very variable in body size and in the development of male horns. The body length ranges from 3.1–5.5 mm, the male clypeal horn may be almost totally reduced to a transversal ridge.

Distribution

South India, Sri Lanka, Myanmar, Thailand, W Malaysia, Sumatra, Borneo, Philippines, Sulawesi (Ando & Yamasako 2013).

Bolitonaeus yamashitai Ando, 2010

Material studied

E Malaysia, Sarawak, Sebadai Park, 9 km SW Kapit, 50 m, secondary mixed Dipterocarp forest, 20.V.1994, I. Löbl & D. Burckhardt leg., 1 specimen (MHNG). – Borneo, Malaysia, Sarawak, Bako Nat. Park, 6.–7.XII.2010, R. Grimm leg., 4 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Headquarter, 160–300 m, 15.–17.II.2012, R. Grimm leg., 7 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50 m, 11.–12.XII.2010, R. Grimm leg., 1 specimen (CRG). – Same data, but 100–300 m, 27.–28.III.2009, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 20–150 m, 21.III.2008, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Sayap, 1000 m, 25.–29.XI.1996, W. Schawaller leg., 17 specimens (SMNS), 1 specimen (CRG).

Remarks

Until now, *B. yamashitai* Ando was only known from the type locality, Lambir Hills National Park in Sarawak, and was described on the basis of a single male (Ando 2010). In females the short clypeal horn is lacking, and pronotal horns are reduced to narrow oblique, longitudinal carinae.

Distribution

E Malaysia/Sarawak (Ando 2010), E Malaysia/Sabah (new record).

Byrsax gibbifer Wesmael, 1836

Material studied

Borneo, Malaysia, Sabah, Mt. Kinabalu Nat. Park, Poring Hot Springs area, Langanan Fall, 900 m, 14.V.1987, A. Smetana leg., 1 specimen (SMNS). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Poring Hot Springs, 400 m, 10.–12.I.2010, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sabah, 18 km NE Keningau, Crocker Range near Kimanis road, 1100 m, 28.I.2010, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 10–200 m, 27.–28.IX.2008, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Santubong Mt., 6.IV.2009, R. Grimm leg., 7 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Headquarter, 100–300 m, 15.–18.IX.2008, R. Grimm leg., 2 specimens (CRG). – Same data, but 50 m, 11.–12.XII.2010, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 28.–31.III.2009, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading

Nat. Park, 100–250 m, 9.–12.III.2008, R. GRIMM leg., 2 specimens (CRG). – Same data, but 100–300 m, 31.III.–3.IV.2009, R. GRIMM leg., 13 specimens (CRG). – Same data, but 50–200 m, 8.–10.XII.2010, R. GRIMM leg., 4 specimens (CRG). – Same data, but 50–300 m, 20.–23.II.2012, R. GRIMM leg., 4 specimens (CRG). – Indonesia, Kalimantan Barat, Gunung Palung Nat. Park, Cabang Panti research site, 1°13′S 110°7′E, 18.–26.VII.1993, O. MERKL leg. & det. (HNHM, pers. comm. O. MERKL).

Distribution

Sri Lanka, W Malaysia, Singapore, E Malaysia/Sarawak, Indonesia: Java, Sumatra (ANDO 2010); E Malaysia/Sabah, Indonesia: Kalimantan (new records).

Byrsax parallelipennis **n. sp.**
(Figs. 5, 5a)

Holotype ♂: Borneo, Malaysia, Sarawak, Kuching, Reservoir Park, 50 m, 4.–5.III.2008, R. GRIMM leg. (CRG).

Paratypes: Same data as holotype, R. GRIMM leg., 2 ♀♀ (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 50–300 m, 20.–23.II.2012, R. GRIMM leg., 1 ♀ (CRG). – Borneo, Malaysia, Sabah, Gaya Island, 22.–23.XI.1996, W. SCHAWALLER leg., 1 ♂ (SMNS).

Etymology

Parallelus (Lat.) = parallel, penna (Lat.) = wing (referring to elytron in this case).

Description

Elongate, subparallel-sided, transversely convex, shining, black; antennae, palpi and sometimes legs paler reddish-brown to dark brown. Body length 3.9–4.5 mm, body width 1.9–2.1 mm.

Head with clypeus transversely rugose and in males with a pair of perpendicular horns slightly incurved apically. Clypeus with anterior border nearly straight to slightly arcuate. Outline of head between clypeus and genae notched. Genae slightly emarginate with genal canthus distinctly angulately protruding. Frontoclypeal suture between horns distinct, straight. Frons micro-reticulated, supraocular ridges distinct. Antennae 11-segmented: antennomere 1 elongate, subcylindrical; 3 somewhat longer than 2 and 4 which is about as long as 2; 5–7 subtriangular, 8–10 with somewhat pointed distal border at inner side, 11 longer than wide with rounded apex. Underside of head with antennal groove. Mentum cordate with longitudinal median carina.

Pronotum transverse, widest behind the middle, width/length ratio 1.56–1.83. Disc strongly convex transversely, declivous anteriorly; surface densely, coarsely punctured, and irregularly equipped with conical-like tubercles; in males before the middle with a pair of large conical tubercles, equipped with smaller tubercles as on disc. Sides broadly explanate, strongly serrate, with 7–9 teeth and a deeper U-shaped emargination between the basal two teeth. Anterior border weakly bisinuate, posterior border slightly arcuate. Anterior angles distinctly projecting, posterior angles obtuse. Propleura and prosternum coarsely punctured, prosternum anteriorly weakly carinate. Prosternal apophysis declivous behind coxae, terminating in a sharp tubercle.

Elytra strongly convex transversely, subparallel-sided, elongate (length/width ratio 1.25–1.53); irregularly, densely and coarsely punctured, and with indistinct rows of elongate, on top sharply chamfered tubercles, becoming smaller laterally and apically. Lateral borders narrowly explanate, horizontally, and distinctly dentate laterally, becoming more and more denticulate apically.

Meso- and metaventrite coarsely punctured. Mesoventrite weakly, V-shaped excavate, with a distinct tubercle in the middle of the anterior border. Abdominal ventrites coarsely punctured.

Legs. Tarsal formula 4-4-4.

Aedeagus see Fig. 5a.

Differential diagnosis

Byrsax parallelipennis n. sp. is distinguished by its elongate, subparallel-sided body shape and the tarsal formula 4-4-4, and coincides herein with the Australian *B. egenus* Pascoe, 1866. But in *B. egenus* the explanate border of the pronotum is broader with longer teeth, and the elytra are somewhat wider (length/width ratio 1.15–1.25) and on top more flattened. Both species differ distinctly in the shape of the aedeagus (compare Figs. 5a, 6).

Byrsax prolifericornis Gebien, 1925

Material studied

Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 28.–31.III.2009, R. GRIMM leg., 6 specimens (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 100–250 m, 9.–12.III.2008, R. GRIMM leg., 3 specimens (CRG).

Remarks

B. prolifericornis was described by GEBIEN (1925a) on the basis of a single male from Sarawak, with a body length of 6 mm. The body size of the newly collected specimens ranges from 5.4 to 6.1 mm. The apices of the characteristic pronotal horns as described by GEBIEN (1925a) may be reduced in smaller males like in females to two teeth. Females without epistomal horns.

Distribution

Borneo, Sulawesi (ANDO & YAMASAKO 2013).

Byrsax merkli Ando & Yamasako, 2013

Material studied

Borneo, Malaysia, Sarawak, Bako Nat. Park, 6.–7.XII.2010, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sarawak, Kuching, Santubong, 8.–9.III.1990, A. Riedel leg., 23 specimens (SMNS). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Santubong Mt., 6.IV.2009, R. Grimm leg., 2 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, 200–400 m, 6.–8.III.2008, W. Schawaller leg., 1 specimen (SMNS). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Headquarter, 250 m, 6.–8.III.2008, R. Grimm leg., 1 specimen (CRG). – Same data, but 100–300 m, 27.–28.III.2009, R. Grimm leg., 21 specimens (CRG). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 15.–16.III.2008, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 50–300 m, 20.–23.II.2012, R. Grimm leg., 7 specimens (CRG).

Distribution

Thailand, W Malaysia, Borneo, Sumatra, Bali, Sulawesi (Ando & Yamasako 2013).

Microatasthalus hadrocerus Ando, 2010

Material studied

[Borneo, Malaysia], Sarawak, Kapit dist., Sebong Baleh riv., 9.–21.III.1994, J. Horák leg., 3 specimens (CRG), 1 specimen (SMNS). – Borneo, Malaysia, Sarawak, Kubah Nat. Park, 250 m, 6.–8.III.2008, R. Grimm leg., 2 specimens (CRG). – E Malaysia, Sarawak, E Kapit, confl. Sun Oyan and Mujong riv., 50 m, 18.V.1994, I. Löbl & D. Burckhardt leg., 3 specimens (MHNG). – Indonesia, E Kalimantan, 55 km W of Balikpapan, PT Fajar Surya Swadaya, 01°16.4′S 116°21.1′E, 82 m, J. Hájek, J. Schneider & P. Votruba leg., 23.XI.–1.XII.2011, 2 specimens (NMP), 1 specimen (SMNS).

Remarks

M. hadrocerus Ando was described on the basis of two males. In females the clypeal horn is absent, and the pronotal horns are reduced to small, oblique ridges.

Distribution

E Malaysia/Sarawak (Ando 2010).

Microbolitonaeus **n. gen.**

Diagnosis

Oblong, subcylindrical, winged; small, body length about 3 mm, body width about 1.5 mm. Eyes completely divided by genal canthus. Antennae 10-segmented, antennomeres 7–10 forming a moderate club. Underside of head with antennal groove. Lateral borders of pronotum not explanate. Outer border of tibiae toothed. Head without epistomal and pronotal horns.

Similar to the genus *Bolitonaeus* Lewis, 1894, but different in the combination of the above mentioned characters.

Complete division of eyes in the tribe Bolitophagini is used by Gebien (1925a) for definition of genus-groups, and is also present in *Bolitophagus* Illiger, 1798 (Europe and Palaearctic Asia), *Microatasthalus* Ando, 2010 (Borneo, Sulawesi) and *Parabolitophagus* Miyatake, 1964 (Japan, South Korea), but these genera distinctly differ in the structure of head and pronotum (Ando 2010; Gebien 1925a, b; Miyatake 1964). In *Bolitophagus* and *Parabolitophagus* the genae are strongly dilated, and the pronotum is laterally broadly explanate, and in *Microatasthalus* the males are horned. *Bolitonaeus crockerensis* n. sp. is so far the only known member of the genus with completely divided eyes, but otherwise similar to its congeners in other characters of the genus.

Type species: *Microbolitonaeus armatus* n. sp.

Etymology

Μίκρός (Greek) = small and *Bolitonaeus*.

Microbolitonaeus armatus **n. sp.**
(Figs. 7. 7a)

Holotype ♂: Borneo, Malaysia, Sarawak, Kubah Nat. Park, Matang Wildlife Centre, 50–100 m, 16.–17.III.2008, R. Grimm leg. (CRG).

Paratype: Malaysia, Sabah, Batu Punggul Resort env., 24.VI.–1.VII.1996, 11c. vegetation debris and forest floor litter accumulated around large trees near river, [no collector stated], 1 specimen (MHNG).

Etymology

Armatus (Lat.) = armed (referring to the tibiae in this case).

Description

Oblong, subcylindrical, brown, matt; antennae, palpi and sometimes clypeus, and legs paler reddish-brown; winged. Body length 3.0–3.2 mm, body width 1.4–1.5 mm.

Head coarsely punctured, punctures larger than interspaces. Clypeus padded, elevated and granulated. Frontoclypeal suture moderately distinct. Eyes completely divided by genal canthus. Supraocular ridge weak. Antennae 10-segmented, antennomeres 7–10 forming a moderate club. Underside of head with antennal groove. Mentum subcordate with longitudinal median carina.

Pronotum transverse, width/length ratio 1.3–1.4, strongly convex transversely, widest near the middle, without horns. Surface densely, coarsely punctured, punctures separated by small ridges forming a reticulation; punctures intermingled with a few scattered, small tubercles. Anterior border nearly straight, slightly emarginate before anterior angles; lateral borders shallowly

arcuate, crenulate; basal border weakly bisinuate; anterior angles tooth-like, moderately projecting; posterior angles obtusely rounded. Propleura coarsely punctured. Prosternal apophysis declivous behind coxae, terminating in a sharp tubercle.

Elytra transversely convex, subparallel-sided, with rows of coarse punctures. Crenulated lateral borders only basally visible in dorsal view.

The whole underside coarsely punctured. Mesoventrite weakly excavate with indistinct tubercle in the middle of the anterior border.

Legs. Outer margin of meso- and metatibiae with distinct tooth near middle; protibiae only bluntly toothed.

Aedeagus see Fig. 7a.

Remarks

Dentate tibiae are also found in *Bolitonaeus dentipes* Gebien, 1925, but the latter is distinguished by the characters of the genus, especially in the epistomal and pronotal horns of males.

Rhipidandrus speculifrons (Gebien, 1922)

Material studied

Borneo, Malaysia, Sabah, Danum Valley Conservation Area, Borneo Rainforest Lodge, 1.–3.IV.2013, R. Grimm leg., 3 specimens (CRG). – E Malaysia, Sarawak, Sebadai Park, 9 km SW Kapit, 50 m, secondary mixed Dipterocarp forest, 20.V.1994, I. Löbl & D. Burckhardt leg., 2 specimens (MHNG). – Borneo, Malaysia, Sabah, 24 km NE Keningau (Apin Apin), 500 m, 18.II.2006, R. Grimm leg., 3 specimens (CRG). – Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 10–200 m, Lux, 11.–14.IX.2008, R. Grimm leg., 2 specimens (CRG). – Same data, but 30–150 m, 24.–26.II.2012, R. Grimm leg.1 specimen (CRG).

Distribution

Seychelles, Sri Lanka, Thailand, W Malaysia, Vietnam, Japan (Ryukyu Is.), Indonesia (Borneo, Sumatra, Sulawesi), Micronesia (Guam, Palau, Ponape), Philippines, Papua New Guinea, Australia (Queensland) (Merkl & Kompantzeva 1996); Taiwan (Ando & Yamasako 2013).

Ulomini Blanchard, 1845

Uloma (Uloma) spectabilis Perty, 1831

Material studied

Borneo, Malaysia, Sabah, Mt. Kinabalu Nat. Park, 1550–1700 m, N06°00.701′ E116°32.352′, 5.–11.IV.2000, M. Hiermeier leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Headquarter, 1550 m, 18.–25.V.2005, R. Grimm leg., 3 specimens (CRG). – Same data, but 11.–13.II.2006, 3 specimens (CRG). – Same data, but 27.III.2007, 3 specimens (CRG). – Borneo, Malaysia, Sabah, Sepilok, 12.–13.III.2007, R. Grimm leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Keningau, 10.II.2006, R. Grimm leg., 1 specimen (CRG).

Remarks

Schawaller (2000), who treated the genus *Uloma* Dejean in Borneo and Sumatra, did not mention *U. spectabilis*.

Distribution

Java (Gebien 1940), Borneo (new record).

2.2 Diaperinae Latreille, 1802
Hypophlaeini Billberg, 1820

Corticeus (Cnemophloeus) capucinus Bremer, 1999

Material studied

Borneo, Malaysia, Sabah, Tambunan, 500 m, 14.–17.III.2013, R. Grimm leg., 1 specimen (CRG).

Distribution

W Malaysia (Bremer 1999), E Malaysia/Sabah (new record).

Corticeus (Seorsophloeus) birmanicus (Blair, 1921)

Material studied

Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Headquarter, 1500–1800 m, 25.–28.III.2013, R. Grimm leg., 1 specimen (CRG).

Distribution

Burma, Thailand, Vietnam, W Malaysia, Indonesia (Sumatra, Palawan) (Bremer 1999); E Malaysia/Sabah (new record).

2.3 Stenochiinae Kirby, 1837
Cnodalonini Gistel 1856

Bradymerus crockerensis Schawaller, 2006

Material studied

Borneo, Malaysia, Sabah, Crocker Range, Gunung Alab, 1500 m, 16.–18.III.2013, R. Grimm leg., 1 specimen (CRG).

Remarks

So far only the holotype from Keningau Crocker Range Park was known (Schawaller 2006).

Distribution

E Malaysia/Sabah.

Derosphaerus chewi **n. sp.**
(Figs. 13, 13a)

Holotype ♂: [Borneo], Malaysia, Sabah, Ranau, 05°58′00″N 116°41′00″E, III.–VI.2005, S. Chew leg. (CSCA).

Etymology

D. chewi n. sp. is named in honor of Dr. Steven Chew (Kota Kinabalu), the collector of the holotype.

Description

Elongate oval, black, shining. Body length 11.9 mm, body width 5.2 mm.

Head with fine and uniform punctation; genae not widened, fronto-clypeal suture deep; eyes constricted by genal canthus, distance between eyes on frons narrower than anterior border of clypeus, the latter straight; frons without impressions or other modifications; supraocular groove deep; shape of antennomeres see Fig. 13, last antennomeres broader, but not forming a distinctly separated club. Mentum reversed subtrapezoidal, with elevated, anteriorly narrowing middle-section, coarsely punctured, hirsute; submentum transverse, subsemicircular.

Pronotum slightly convex transversely, transverse, subrectangular, width/length ratio 1.53, widest in the middle; lateral sides arcuately narrowing toward apex, basally slightly emarginate. Lateral borders and apical border distinctly margined, apical margin broadly interrupted in the middle; basal border with broad margin, especially in the middle. Apical angles broadly rounded, basal angles rectangular. Punctured as on head. Propleura minutely punctured. Prosternum and prosternal apophysis hirsute, the latter with apex rounded.

Elytra elongate-oval, subparallel-sided, with nine striae and additional scutellar stria; punctures of striae distinctly larger than those on pronotum, without setae; elytral intervals flat with minute punctation. Epipleura complete, continuously narrowing to apex.

Mesoventrite weakly excavate, basal half hirsute. Metaventrite medially with longitudinal furrow, surface rugosely punctured medially, finely punctured laterally. Abdominal ventrites 1–3 basally rugosely, 4–5 finely punctured; membranes between last three ventrites exposed, last ventrite not bordered.

Legs long, with minutely punctured surface, femora clavate, anterior femora of males (females unknown) on underside with pubescent spot in the middle. Tibiae long and narrow, apically thickened, thickened part ventrally and latero-basally with dense, short setation; tibial spurs short and inconspicuous. Anterior tarsomeres in males not dilated, tarsomere 5 of anterior tarsus distinctly longer than tarsomeres 1–4 combined, tarsomere 4 of posterior tarsus somewhat shorter than tarsomeres 1–3 combined, tarsomere 1 of posterior tarsus prolonged.

Aedeagus see Fig. 13a.

Differential diagnosis

Derosphaerus chewi n. sp. is distinguished by its strong sheen and the shape of the pronotum. A review of the species of the genus *Derosphaerus* Thomson, 1858 from Borneo was provided by Schawaller (2011). The so far known black species are *D. fuscatus* (Fairmaire, 1893), *D. morio* (Gebien, 1914), and *D. vicinus* (Pic, 1923). All are less shining, the pronotum is of roundish shape (compare Fig. 13 with Schawaller 2011: figs. 6, 8–9), the distal antennomeres are narrower, and the tibiae are not thickened apically. *D. vicinus* differs also in subylindrical body shape, and *D. fuscatus* and *D. morio* are distinctly larger in body size (body length 17–20 mm). The species can be separated by the shape of the aedeagus (compare Fig. 13a with Schawaller 2011: figs. 11, 15, 17).

Derosphaerus reibnitzi **n. sp.**
(Figs. 12, 12a)

Holotype ♂: Borneo, Malaysia, Sabah, Tenom, 19.–20.III.2013, R. Grimm leg. (CRG).

Paratypes: Same data as holotype, 1 ♂, 3 ♀♀ (CRG), 1 ♀ (SMNS). – Indonesia, E Kalimantan, 55 km W of Balikpapan, PT Fajar Surya Swadaya, 01°16.4′S 116°21.1′E, 82 m, J. Hájek, J. Schneider & P. Votruba leg., 23.XI.–1.XII.2011, 2 ♂♂, 2 ♀♀ (NMP), 1 ♂ (SMNS).

Etymology

D. reibnitzi n. sp. is named in honor of Johannes Reibnitz (Stuttgart), in appreciation of the professional producing of the photographs and assembling the plates in several of my papers.

Description

Elongate oval, black, shining. Body length 9.0–9.9 mm, body width 3.8–4.1 mm.

Head with fine and equal punctation; genae not widened, fronto-clypeal suture deep; eyes constricted by genal canthus, distance between eyes on frons in both sexes nearly as wide as anterior border of clypeus, the latter straight; frons without impressions or other modifications; supraocular groove deep; shape of antennomeres see Fig. 12, last antennomeres broader, but not forming a distinctly separated club. Mentum subcordate with roof-like carina along longitudinal midline, coarsely punctured, hirsute; submentum reversed triangular.

Pronotum slightly convex transversely, transverse, subrectangular, width/length ratio 1.23–1.30, widest before the middle; in anterior half slightly arcuate, in basal half towards posterior angles slightly emarginate. Lateral borders and apical border distinctly margined, apical margin broadly interrupted in the middle; basal border with broad margin, especially in the middle. Apical angles obtusely rounded, basal angles subrectangular. Punctured as on head, but a little finer and less dense; disc before posterior border with oblique, weakly arcuate impressions, extending from

lateral border until shortly before the middle, broadest at lateral border and continuously narrowing towards the middle. Propleura smooth, without punctation. Prosternum and prosternal apophysis hirsute, the latter with truncate apex.

Elytra elongate, sides somewhat diverging posteriorly towards about two thirds of elytral length; disc before apical declivity depressed. Surface with nine striae and an additional scutellar stria; punctures of striae distinctly larger than those of pronotum, without setae; elytral intervals convex with minute punctation. Epipleura complete, continuously narrowing to apex.

Mesoventrite not excavated, basal half hirsute. Metaventrite medially with longitudinal furrow, surface smooth. Abdominal ventrites with shining, wrinkled surface and distinct punctation, membranes between last three ventrites exposed, last ventrite not bordered.

Legs long and with minutely punctured surface, femora clavate, anterior femora of males on underside basally with pubescent spot; tibiae long and narrow without modifications; tibial spurs short and inconspicuous; anterior tarsomeres in males not dilated, tarsomere 5 of anterior tarsus somewhat longer than tarsomeres 1–4 combined, tarsomere 4 of posterior tarsus somewhat shorter than tarsomeres 1–3 combined, tarsomere 1 of posterior tarsus prolonged.

Aedeagus see Fig. 12a.

Differential diagnosis

Derosphaerus reibnitzi n. sp. is similar to *D. chewi* n. sp. in the shining body and the pubescent spot on the underside of the male anterior femora, but the latter species is of broader body size, the pronotum has no impressions, the elytral intervals are flat, and the tibiae are thickened apically. Both are also distinguished by the shape of the aedeagus (compare Figs. 12a, 13a).

Gauromaia (Falsogauromaia) erotyloides Ando, 1989 (Figs. 11, 11a)

Material studied

Borneo, Malaysia, Sabah, Kinabalu Nat. Park, Headquarter, 1500–1800 m, 25.–28.III.2013, R. GRIMM leg., 1 ♂ (CRG).

Remarks

This species is distinguished by the elytral pattern, and was described by ANDO (1989) by a single female from the same locality.

Distribution

E Malaysia/Sabah.

3 References

ANDO, K. (1989): Studies on the Tenebrionidae of SHIBATA collection mainly from S. E. Asia. I. – Entomological Review of Japan **44**: 105–110.

ANDO, K. (2010): Fungivorous Tenebrionidae (Coleoptera) collected in Lambir Hills National Park, Sarawak, Malaysia by Dr. YAMASHITA. – Entomological Review of Japan **65**: 151–182.

ANDO, K. & YAMASAKO, J. (2013): Study of Tenebrionidae Fauna of Sulawesi, I. Tribes Bolitophagini, Trachyscelini, and subtribe Heterocheirina of Opatrini (Coleoptera, Tenebrionidae). – Elytra **3**: 275–294.

BREMER, H. J. (1999): Revision der orientalischen *Corticeus*-Arten (Col., Tenebrionidae, Hypophloeini). II. Teil. – Acta coleopterologica **15**: 31–92.

GEBIEN, H. (1925a): Die Tenebrioniden (Coleoptera) des indomalayischen Gebietes, unter Beruecksichtigung der benachbarten Faunen, I. Einleitung sowie die Gattung *Byrsax* Pascoe. – The Philippine Journal of Science **26**: 67–94, pl. 1.

GEBIEN, H. (1925b): Die Tenebrioniden (Coleoptera) des indomalayischen Gebietes, unter Beruecksichtigung der benachbarten Faunen, II. Die Gattungen *Atasthalus*, *Bolitoxenus*, *Bolitonaeus*, und *Sumbawia*. – The Philippine Journal of Science **26**: 423–444, pls. 1–2.

GRIMM, R. (2010): New and little known species of Tenebrionidae (Coleoptera) from Borneo. – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **3**: 257–267.

MERKL, O. & KOMPANTZEVA, T. V. (1996): Old world *Rhipidandrus* Leconte: Synonymies, faunistics, identification key and description of two new species from Australia (Coleoptera: Tenebrionidae). – Acta Zoologica Academiae Scientiarum Hungaricae **42**: 89–109.

MIYATAKE, M. (1964): Notes on the tribe Bolitophagini of Japan, with the descriptions of four new genera and two new species (Coleoptera: Tenebrionidae). – Transactions of the Shikoku Entomological Society **8**: 59–84.

MOTSCHULSKY, V. DE (1858): Insectes des Indes orientales. 1ière Série. – Études Entomologiques **7**: 20–122.

PIC, M. (1922): Nouveautés diverses. – Mélanges exotico-entomologiques **35**: 1–32.

SCHAWALLER, W. (2000): The genus *Uloma* Dejean (Coleoptera: Tenebrionidae) in Borneo and Sumatra. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **605**: 23 pp.

SCHAWALLER, W. (2006): Revision of the Oriental species of the genus *Bradymerus* Peroud, with descriptions of 29 species (Coleoptera: Tenebrionidae). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **694**: 64 pp.

SCHAWALLER, W. (2011): The genus *Derosphaerus* Thomson (Coleoptera: Tenebrionidae: Cnodalonini) in Borneo, with description of a new species. – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **4**: 289–296.

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