New species and records of Palaearctic, Oriental, and Papuan Menephilus Mulsant (Tenebrionidae: Stenochiinae: Cnodalonini)

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RESEARCH ARTICLE

New species and records of Palaearctic, Oriental, and Papuan *Menephilus* Mulsant (Tenebrionidae: Stenochiinae: Cnodalonini)

Wolfgang Schawaller[1] & Aron Bellersheim

Abstract

Newly collected specimens of the genus *Menephilus* Mulsant, 1854 (Stenochiinae: Cnodalonini) from the Palaearctic, Oriental, and Papuan regions are presented and illustrated, and the genus is recorded from New Guinea and the Papuan Region for the first time. Two new species are described: *Menephilus grimmi* **sp. n.** (Borneo) and *Menephilus riedeli* **sp. n.** (New Guinea). Two new synonymies are proposed: *Menephilus medius* Marseul, 1876 = *Menephilus striatifrons* Fairmaire, 1896, **syn. n.** and *Menephilus orientalis* Gebien, 1912 = *Menephilus borneensis* Gebien, 1914, **syn. n.** The differentiation of *Menephilus* from the similar genus *Zophophilus* Fairmaire, 1881 should be examined in the future within the wider frame of the tribe Cnodalonini.

K e y w o r d s : Borneo, darkling beetles, Cnodalonini, distribution, New Guinea, new synonyms, taxonomy.

Zusammenfassung

Neu gesammelte Exemplare der Gattung *Menephilus* Mulsant, 1854 (Stenochiinae: Cnodalonini) aus der Paläarktischen, Orientalischen und der Papuanischen Region werden präsentiert und abgebildet. Zudem wird die Gattung zum ersten Mal für die Neuguinea und Papua-Region berichtet. Zwei neue Arten werden beschrieben: *Menephilus grimmi* **sp. n.** (Borneo) und *Menephilus riedeli* **sp. n.** (New Guinea). Zwei neue Synonyme werden vorgeschlagen: *Menephilus medius* Marseul, 1876 = *Menephilus striatifrons* Fairmaire, 1896, **syn. n.** und *Menephilus orientalis* Gebien, 1912 = *Menephilus borneensis* Gebien, 1914, **syn. n.** Die Unterscheidung von *Menephilus* von der ähnlichen Gattung *Zophophilus* Fairmaire, 1881 sollte künftig in einem größeren Rahmen innerhalb des Tribus Cnodalonini untersucht werden.

Introduction

The tenebrionid genus *Menephilus* Mulsant, 1854 (Stenochiinae: Cnodalonini) has a wide distribution in the Palaearctic, Oriental, Papuan, and Afrotropical regions, but is obviously missing in Madagascar. The European type species *Menephilus cylindricus* Herbst, 1784 occurs also in North Africa, with the subspecies *marrocanus* Thery, 1932. This subspecies is very probably synonymous with the nominate form, because their separation is mainly based on variable infraspecific characters. The purpose of the present paper is the treatment of the taxonomy of the Oriental and eastern Palaearctic species in a comprehensive way, the description of two new species, and the presentation of newly collected specimens. Included herein is also the first record of the genus from New Guinea and the Papuan Region. Single East Palaearctic and Oriental species were previously described by Gebien (1912, 1914), Kaszab (1980), Masumoto (1981), and Akita & Masumoto (2016).

Species from Australia originally assembled under the generic name *Menephilus* were assigned by Matthews & Doyen (1989) to three genera from different tribes (*Tetragonomenes* Chevrolat, 1878, *Bassianus* Matthews & Doyen, 1989, *Kaszaba* Matthews & Doyen, 1989). The species from Africa (23) were revised by Schawaller (2015).

In some species, the last ventrite is distinctly beaded, in others it is unbeaded (see remarks in taxonomic section). It is unknown yet if this character is of phylogenetic significance. Furthermore, few species have specific, sexually dimorphic anterior tibiae, whereas most species show no differences in the anterior tibiae between the sexes.

Quite similar to *Menephilus* is the genus *Zophophilus* Fairmaire, 1881, with some species described from Australia, New Guinea, Borneo, and India. The differentiation of these two genera should be further examined in the future within the wider frame of the tribe Cnodalonini. Gebien (1922) separated *Menephilus* and *Zophophilus* by the structure of the epipleura (in *Zophophilus*, "Epipleuren vollständig" [= epipleura complete]).

[1] Contributions to Tenebrionidae no. 183. For no. 182, see Biodiversität und Naturausstattung im Himalaya **8** (2024), Erfurt.

Material and methods

The studied specimens are deposited in the following collections:

BMNH	The Natural History Museum, London, UK;
CMLS	Collection Martin Lillig, Saarbrücken, Germany;
NHMB	Naturhistorisches Museum, Basel, Switzerland;
NKME	Naturkundemuseum, Erfurt, Germany;
NMPC	National Museum, Prague, Czech Republic;
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany.

The locality data are not given verbatim but are adjusted to a standard format, partly completed by additional geographical information for a better localisation, and translated into English when given in other languages on the labels. The designated types are provided with printed red labels. The aedeagi are mounted on cards using a water-soluble glue and pinned together with the specimens. Photographs were taken with a Visionary Digital photography system (LK Imaging System, Dun. Inc.) equipped with a Canon EOS 5DSR objective, and were subsequently processed with Helicon Focus Pro, Adobe Lightroom, and Adobe Photoshop CS6.

The species

Menephilus aborensis Gravely, 1915
(Fig. 1)

Examined specimens

India, Assam, leg. W. Doherty, no further data, 1 ex. BMNH. – India, Assam, Lohit Valley, 1000–3000 ft. (300–900 m), 15.III.1933, leg. F. Kingdon Ward & R. J. H. Kaulback, 1 ex. BMNH. – S India, Tamil Nadu, Anamalai Hills, Kadamparai, 4200 ft. (= 1280 m), VI.1980, leg. T. R. S. Nathan, 1 ex. CMLS (det. Bremer). – Myanmar (labelled as Birmah), Mandalay Region, Ruby Mines (Mogok), leg. W. Doherty, no further data, 1 ex. BMNH. – Myanmar, SW Shan State, Taunggyi, 1–18.IV.1997, leg. J. Kaláb, 1 ex. SMNS.

Remark

Last ventrite beaded.

Distribution

India (type locality: NE India), Myanmar.

Menephilus arciscelis Marseul, 1876
(Figs. 2, 10)

Examined specimens

Japan, Ehime Pref., Masaki-cho, 20 m, 4.I.1992, leg. H. Kan, 2 ex. SMNS. – Japan, Kobe, Harada, 27.II & 18.VI.1918, leg. J. E. A. Lewis, 2 ex. BMNH. – Japan, Ryukyus, Amami-Oshima Is., Mt. Miyama, 24.III.1990, leg. T. Ueno, 1 ex. SMNS (det. T. Ueno). – Japan, Ryukyus, Okinawa Is., Afuso, Onna, 29.VI.1990, leg. T. Ueno, 1 ex. SMNS (det. T. Ueno). – Japan, Ryukyus, Okinawa Is., Hama, Kunigami, 4.V.1990, leg. T. Ueno, 1 ex. SMNS. – Japan, Okinawa Is., no further data, 3 ex. NHMB (coll. Frey).

Remarks

This species is quite similar to *M. medius* Marseul, 1876, including the nearly identical aedeagus (compare Figs. 9, 10). However, the elytral intervals are nearly flat and the male protibia is regularly bent, with a short brush at the inner margin near the tip (Fig. 2) (elytral intervals convex, male protibia slightly dilated in the middle of the tibia and with a longer brush near the tip in *M. medius*; Fig. 6). Last ventrite unbeaded. See also under *Menephilus formosanus* Masumoto, 1981.

Distribution

Japan.

Menephilus clypealis Kaszab, 1980
(Figs. 3, 12)

Examined specimens

NE Laos, Hua Phan Prov., Ban Saleui, Phu Phan Mt., 1500–2000 m, 26.IV–11.V.2001, leg. J. Bezděk, 1 ex. (compared with holotype). – NE Laos, Hua Phan Prov., Ban Saleui, Phu Phan Mt., 1300–1900 m, 30.IV.2014, leg. C. Holzschuh, 20 ex. NKME, 6 ex. SMNS (det. R. Grimm). – Laos, Phu Phan Mt., Sam Nuea, 1–30.IV.2012, leg. Jantal, 1 ex. SMNS. – NE Laos, Hua Phan Prov., Phou Pane Mt., 1480–1550 m, 9–16.VI.2009, leg. D. Hauck, 8 ex. NHMB, 2 ex. SMNS. – Laos, Attapeu Prov., Annam Highlands, Dong Amphan NBCA, Nong Fa, 1160 m, 30.IV–6.V.2010, leg. J. Hájek, 1 ex. NMPC. – China, Yunnan, Lancan County, Bangtang Houshan, 5–18.VI.2008, collector unknown, 1 ex. SMNS.

Remarks

Last ventrite beaded. Aedeagus: see Fig. 12.

Distribution

Vietnam (type locality), Laos, China (Yunnan).

Menephilus formosanus Masumoto, 1981

Examined specimens

None.

Remarks

This species was said by Masumoto (1981) to be closely allied to *M. arciselis* Marseul, 1876. It is unknown to us if the last ventrite is beaded or unbeaded (unbeaded in *M. arciscelis*). The characters and figure in dorsal view given by Masumoto are probably not diagnostic. The similar *M. medius* is known from Taiwan.

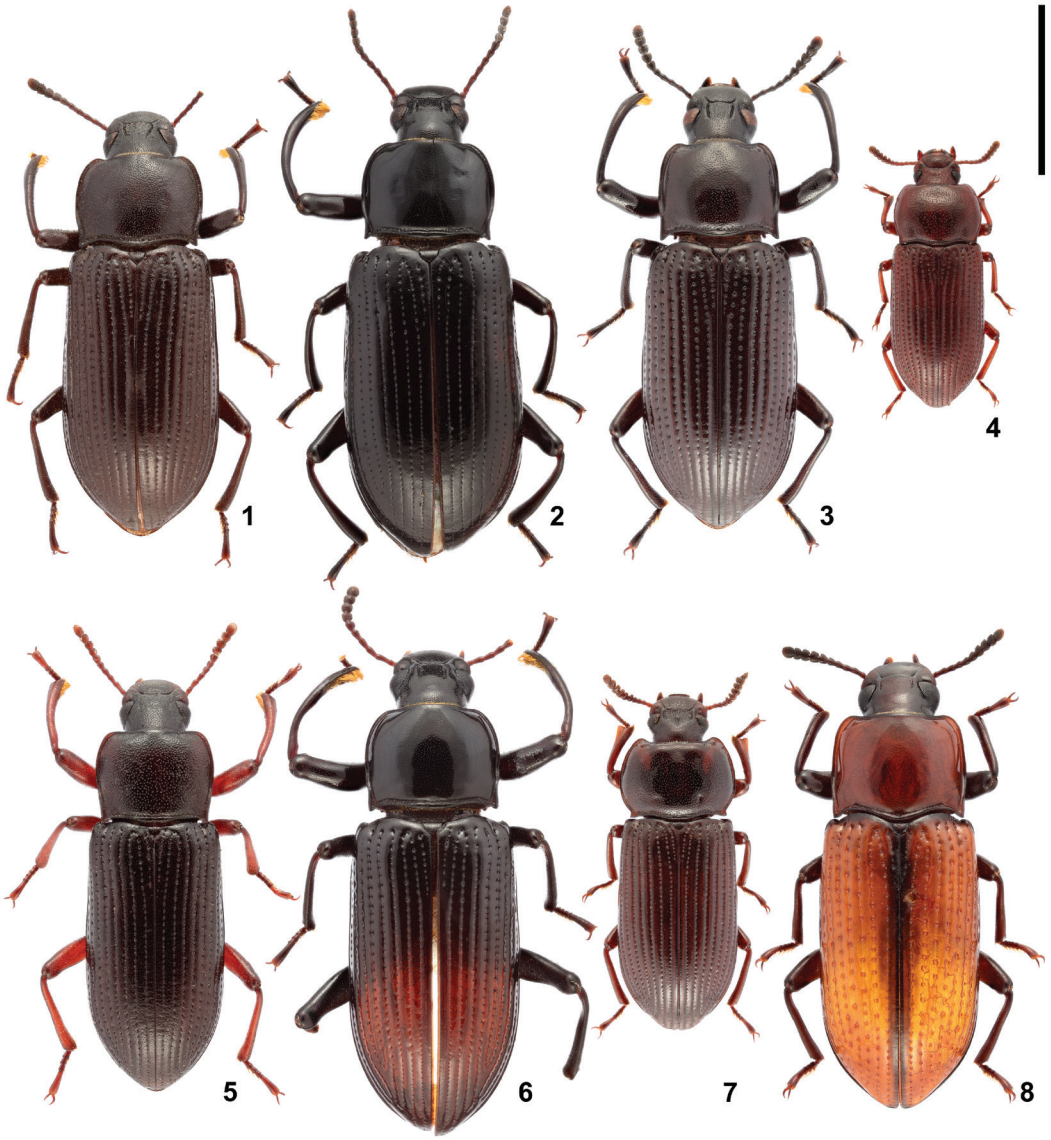
Distribution

Taiwan.

Menephilus grimmi sp. n.
(Figs. 4, 13)

Type material

Holotype (♂): Borneo, Sarawak, Gunung Gading NP, 50–200 m, 8–10.XII.2010, leg. R. Grimm, SMNS.

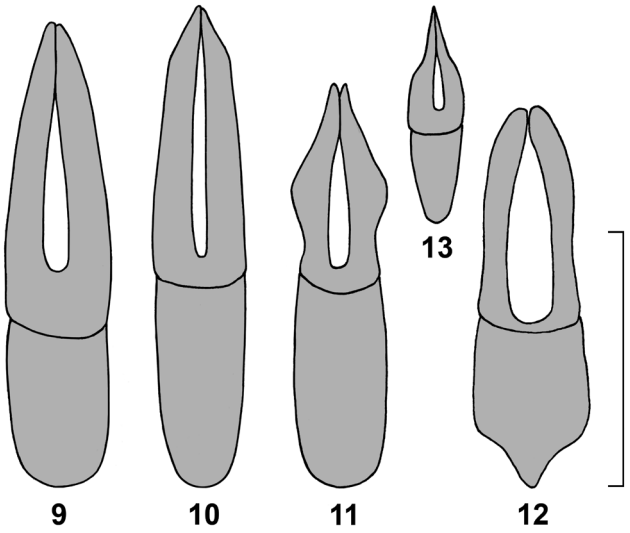


Figs. 1–8. Dorsal habitus of *Menephilus* species. **1**. *M. aborensis*, ♀ non-type, BMNH. **2**. *M. arciscelis*, ♂ non-type, BMNH. **3**. *M. clypealis*, ♂ non-type, SMNS. **4**. *M. grimmi* **sp. n.**, ♂ holotype, SMNS. **5**. *M. lucens*, ♂ non-type, BMNH. **6**. *M. medius*, ♂ non-type, SMNS. **7**. *M. orientalis*, ♂ non-type, SMNS. **8**. *M. riedeli* **sp. n.**, ♀ holotype, SMNS. Scale bar: 5.0 mm.

P a r a t y p e s : Borneo, Sarawak, Gunung Gading NP, 100–250 m, 9–12.III.2008, leg. R. Grimm, 1 ex. SMNS. – Borneo, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 30–150 m, 10–14.II.2012, leg. R. Grimm, 1 ex. SMNS.

Description

Body length 7.0–7.5 mm. Dorsal and ventral surfaces of body glabrous; dorsal cuticular surface shiny; body, antenna and legs uniformly dark brownish (Fig. 4). Head dorsally with fine punctures, punctures on clypeus finer than on frons; fronto-clypeal suture impressed, anterior margin of epistome nearly straight, frons between eyes without distinct longitudinal impressions, labrum with similar punctation as on clypeus; head ventrally with similar fine punctures as dorsally, mentum medially with longitudinal elevation; antennae reaching middle of pronotum, with the last 5 antennomeres forming a separate club, antennomere 3 only slightly longer than antennomere 4; eyes reniform, ocular sulcus not distinct. Pronotum transverse rectangular (subquadrate) and distinctly convex, widest across middle, anterior margin nearly straight, anterior angles rounded and not protruding, lateral margins rounded and excavated before rectangular posterior corners, all margins beaded except middle of anterior



Figs. 9–13. Aedeagi of *Menephilus* species. **9**. *M. medius*, ♂ non-type, SMNS. **10**. *M. arciscelis*, ♂ non-type, SMNS. **11**. *M. orientalis*, ♂ non-type, SMNS. **12**. *M. clypealis*, ♂ non-type, SMNS. **13**. *M. grimmi* **sp. n.**, ♂ holotype, SMNS. Scale bar: 1.0 mm.

margin; disc without impression; surface with larger and more separate punctures than on head; prothoracic hypomera with similar punctures. Elytra elongate parallel with prominent humeral angle, punctato-striate, punctures of inner rows somewhat smaller than those of outer rows and of rounded shape, some punctures with microsetae, intervals with fine punctures; epipleura without punctures but wrinkled. Hind wings present. Prosternal process not prominent and declivous; ventrites 1–3 with similar punctures to pronotum, ventrites 4–5 with nearly invisible fine punctures as on elytral intervals, ventrites 2–3 with row of large punctures along anterior margin, last ventrite distinctly beaded and without impression, surface of all ventrites shiny. Legs without specific characters, anterior tibiae in males without sexual characters. Aedeagus: see Fig. 13.

Diagnosis

Menephilus grimmi **sp. n.** is similar to *M. orientalis* Gebien, 1912 in having pronotum convex with rounded lateral margins and a beaded last ventrite, but can be distinguished by the smaller body size (9.5–11.0 mm in *M. orientalis*), by ventrites 2–3 with a row of large punctures along the anterior margin (no such row in *M. orientalis*), and by a completely different aedeagus with narrow, acute apicale (dilated in *M. orientalis*) (compare Figs. 11, 13).

Etymology

Named in honour of Roland Grimm (1948–2021), collector of the type series and well-known explorer of the tenebrionid fauna of Borneo, for his long-term cooperation.

Menephilus lucens Marseul, 1876

(Fig. 5)

Examined specimens

Japan, without further data, 2 ex. BMNH (coll. Lewis). – Japan, Tokyo, 30.X.1973, leg. Baum, 1 ex. SMNS.

Remarks

See also under *M. taiwanus* Masumoto, 1981. Last ventrite beaded.

Distribution

Japan, East Siberia, South Korea.

Menephilus medius Marseul, 1876

(Figs. 6, 9)

Nyctobates striatifrons Fairmaire, 1896
Menephilus striatifrons (Fairmaire, 1896), **syn. n.**

Examined specimens

S China, Yinfa (not located), no further data, 1 ex. NHMB (coll. Frey). – China, Guangxi, Guigang, Zhen Longshan, 1140 m, 1–15.V.2009, leg. L. Jingke, 1 ex. SMNS. – China, Zejiang, Ningpo (historical name of Ningbo), no further data, 1 ex. NHMB (coll. Frey). – China, Zhejiang, Wenchow (historical name of Wenzhou), no further data, 1 ex. SMNS (det. Gebien, as *M. medius*). – China, Zhejiang, Wenchow, no further data, 1 ex. BMNH (det. Kulzer, as *M. medius*). – China, Fujian, Foochow, 1922, leg. S. F. Light, 1 ex. BMNH (det. Blair, as *M. medius*). – China, Fujian, Amoy (historical name of Xienmen), no further data, 2 ex. BMNH. – Japan, 1910, leg. G. Lewis, no further data, 4 ex. BMNH. – N Vietnam, 160 km NNW Hanoi, Tuyen Quang, 3 km NE Na Hang, Pac Ban, 900 m, 22.V–14.VI.1996, leg. A. Napolov, 1 ex. SMNS. – Vietnam, Quang Ninh Prov., 10 km SE Tien Yen, 1–14.IV.2004, leg. H. Mühle, 1 ex. SMNS (det. Grimm, as *M. medius*). – Vietnam, Hanoi (labelled as Tonkin), V.1915, leg. R. Vitalis de Salvaza, 1 ex. BMNH. – N Vietnam, Vinh Phu, Tam Dao, XII.1991, collector unknown, 2 ex. CMLS (det. Bremer, as *M. medius*). – Laos (labelled as Indochina), Luang Prabang, Ban Samang, 20.X.1918, leg. R. Vitalis de Salvaza, 1 ex. BMNH. – Laos, Vientiane, V.1964, leg. A. Baudon, 1 ex. NHMB (coll. Frey; det. Ardoin, as *M. striatifrons*). – W Malaysia, Perak, 40 km SE Ipoh, Banjaran Titi Wangsa, Ringlet, 900 m, 29.III–15.IV.2004, leg. P. Čechovský, 1 ex. SMNS. – W Malaysia, Kelantan, Kampong Raja, 10–16.IV.1999, leg. V. Kabourek, 1 ex. NMPC. – Taiwan, Taitung Prov., Taiyuan, 250 m, 11–12.V.2012, leg. P. Kučera, 1 ex. NMPC.

Synonymy

The specimen from Laos, identified by Ardoin as *M. striatifrons* (compared with the type of *striatifrons* Fairmaire, 1896), fully agrees in external characters with specimens of *M. medius* from Japan and southern China (both with unbeaded last ventrite). Therefore, we consider *M. striatifrons* (Fairmaire, 1896) as a junior synonym of *M. medius* Marseul, 1876, **syn. n.**

Remarks

Last ventrite unbeaded; aedeagus: see Fig. 9. See also under *M. arciscelis*. Ando (2015) proposed *M. atronitens* (Kulzer, 1957) from the Ogasawara Islands as a subspecies of *M. medius* Marseul, 1876. It differs from the nominate subspecies by the sligthly different male protibiae, somewhat different pronotum, and more closely and distinctly punctate elytral striae. Probably these are only infraspecific variations.

Distribution

SE China (Fujian, type locality of *M. medius*; Jiangxi, type locality of *M. striatifrons* **syn. n.**; Guangxi; Zhejiang), Taiwan, Japan, Vietnam, Laos, West Malaysia.

Menephilus nodai Akita & Masumoto, 2016

Examined specimens

None.

Remarks

It is unknown to us if the last ventrite is beaded or unbeaded. From the Ryukyus Archipelago also *M. arciscelis* Marseul, 1876 is known (last ventrite unbeaded), but we consider it unlikely for the small islands to harbour two different species of *Menephilus*.

Distribution

Japan (Ryukyus).

Menephilus orientalis Gebien, 1912
(Figs. 7, 11)

Menephilus borneensis Gebien, 1914, **syn. n.**

Examined type specimens

Java, without further data, 2 syntypes of *M. orientalis* Gebien, 1912, NHMB (coll. Frey). – Borneo, without further data, 2 syntypes of *M. borneensis* Gebien, 1914, NHMB (coll. Frey).

Other examined specimens

Java, without further data, 3 ex. BMNH. – Java, Prehanger, without date, leg. F. W. Sijthoff, 8 ex. NHMB (coll. Frey). – Thailand, Chumphon Prov., Pha To, 1–20.III.1996, leg. K. Majer, 1 ex. SMNS. – Vietnam (labelled as "Annam"), Dalat, 27.III & 2.IV.1924, leg. R. Vitalis de Salvaza, 2 ex. BMNH. – Borneo, Sarawak, Mt. Dulit, 3500 ft. (= 1050 m), without date, leg. E. Mjoberg, 1 ex. BMNH (det. Blair, as *M. orientalis*). – Borneo, Sabah, Kinabalu NP, Poring, 380 m, 9–11.III.2007, leg. R. Grimm, 1 ex. SMNS. – Borneo, Sabah, Kinabalu NP, headquarters, 1500–1650 m, 23–26.III.2015, leg. R. Grimm, 1 ex. SMNS. – Borneo, Sabah, NE Kota Kinabalu, 20.II.2015, leg. S. Bosuang, 1 ex. SMNS. – Borneo, Sabah, Crocker Range, Gunung Alab, 1700 m, 23–29.V.1998, leg. J. Kodada & F. *Čiampor*, 1 ex. SMNS. – Borneo, Sabah, Crocker Range, Gunung Emas, 500–1900 m, 6–21.V.1991, leg. I. Jeniš, 1 ex. SMNS. – Sumatra, Lemba Harau, 550–770 m, 28.II–2.III.2003, leg. R. Gerstmeier & T. Romig, 1 ex. SMNS. – Sumatra, Bengkulu Prov., Manna, without date, leg. M. Knappert, 1 ex. NHMB (coll. Frey) (det. Gebien, as *M. orientalis*). – W Malaysia, Pahang, 30 km E Ipoh, Cameron Highlands, Tanah Rata, 1500 m, 22–26.I.1999, leg. P. Čechovský, 1 ex. SMNS.

Synonymy

In the syntypes of *M. borneensis* and other specimens from Borneo (type locality) the pronotum has smaller and more separated punctures, whereas in the syntypes of *M. orientalis* from Java (type locality) and other localities the punctures on the pronotum are somewhat larger and denser. All other characters coincide, also the shape of the aedeagus (Fig. 11) and beaded last ventrite. Therefore, we consider the different pronotal punctation as infraspecific variation only, and *M. borneensis* Gebien, 1914 as a junior synonym of *M. orientalis* Gebien, 1912, **syn. n.**

Distribution

Java (type locality of *M. orientalis*), Borneo (type locality of *M. borneensis* **syn. n.**), Sumatra, Thailand, W Malaysia, Vietnam.

Menephilus riedeli sp. n.
(Fig. 8)

Type material

Holotype (♀): West Papua (labelled as Irian Jaya), Testega, 1200 m, 31.III–12.IV.1993, leg. A. Riedel, SMNS.

Description

Body length 13.5 mm. Dorsal and ventral surfaces of body glabrous; dorsal cuticular surface shiny; head, ventral surface of body, antenna, and legs dark brownish, pronotum reddish with dark margins, elytra yellow-brown (not teneral) with narrow dark lateral margins and with broader darker suture (Fig. 8). Head dorsally with fine punctures, similar on frons and clypeus; fronto-clypeal suture impressed, anterior margin of epistome feebly excavated, frons besides eyes with weak longitudinal impressions, labrum with coarser punctures; head ventrally with rough but separate punctures, mentum medially with longitudinal elevation; antennae reaching first third of pronotum, with the last 5 antennomeres forming a separate club, antennomere 3 only slightly longer than antennomere 4; eyes reniform, ocular sulcus not distinct. Pronotum transverse rectangular (subquadrate), widest across middle, anterior margin nearly straight, anterior angles rounded and not protruding, lateral margins regular and not excavated before rectangular posterior angles, all margins beaded except middle of anterior margin; disc without impression; surface with regular, smaller, nearly invisible punctures, as on frons and clypeus; prothoracic hypomera with similar punctures. Elytra elongate parallel with prominent humeral angle, punctato-striate, punctures of inner rows somewhat smaller than those of outer

rows and of rounded shape, most punctures with short adpressed setae, intervals without punctures; epipleura without punctures. Hind wings present. Prosternal process prominent, hook-like, up-bent; ventrites with fine, nearly invisible punctures as on pronotum, ventrites 2–3 wrinkled at anterior margin, last ventrite distinctly beaded and without impression, surface of all ventrites shiny. Legs without specific characters, possible sexual characters of male anterior tibiae unknown (only female available). Aedeagus unknown.

Diagnosis

The species can be easily recognized by the specific dorsal colour pattern, which is uniformly blackish in all other known Oriental species. Frons between eyes only with weak longitudinal impressions.

Remark

This is the first record of the genus *Menephilus* from New Guinea and the Papuan Region.

Etymology

Named in honour of Alexander Riedel (Karlsruhe), collector of the holotype, specialist of Curculionidae and well-known explorer of the Coleoptera fauna of New Guinea.

Menephilus striatipennis Kaszab, 1980

Examined specimens

None.

Remarks

Characterized by the elytra with distinct striae and without punctural rows. Last ventrite beaded.

Distribution

Vietnam.

Menephilus taiwanus Masumoto, 1981

Examined specimens

None.

Remarks

This species was said by Masumoto (1981) to be closely allied to *M. lucens* Marseul, 1876. It is unknown to us if the last ventrite is beaded or unbeaded (beaded in *M. lucens*). The characters and figure in dorsal view of *M. taiwanus* given by Masumoto are probably not diagnostic.

Distribution

Taiwan.

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