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A New Species of the Genus *Malthinellus* (Coleoptera, Cantharidae) from Okinawa Island, Southwest Japan, with Notes on the Genus *Malthinellus*

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Abstract A new cantharid of the genus *Malthinellus* is described from Okinawa Island Southwest Japan under the name of *M. masatakai* sp. nov. *Malthinus crenulatus* WITTMER, 1979 and *Malthinus crenulatomimus* WITTMER, 1984 are transferred to the genus *Malthinellus*. Additional characters to define the genus *Malthinellus* and a key to the Japanese and Taiwanese species of the genus are given in the text line.

Introduction

The cantharid genus *Malthinellus* is a small genus belonging to the Malthininae, and comprises only four species up to the present, that is, *M. bicolor* KIESENWETTER, 1874 from Nagasaki, Kyushu, *M. chujoi* (WITTMER, 1961) from Amami-Ôshima Island, Ryukyu Islands, *M. chinensis* WITTMER, 1956 from Lichuan Distr., W. Hupeh, China, and *M. malickyi* WITTMER, 1997 from Chiangmai, Thailand. The genus has been defined by a combination of several characters as follows: tibiae provided with distinct spur; elytra completely covering abdomen (KIESENWETTER, 1874); gular suture not sharply visible, fairly distant from each other; absence of apodeme on the gula (BRANCUCCI, 1980). However, BRANCUCCI (1980) pointed out that the genus would require more complete definition.

In the course of our study on cantharid beetles, we found a unique species probably belonging to the genus in question. This species generally resembled *M. chujoi* (WITTMER, 1961), but was easily distinguished from it by a combination of color pattern. After a careful examination, it became clear that it belonged to the genus *Malthinellus* and was new to science. Therefore, we are going to describe it as a new

species in the present paper, and give some additional notes on the genus and a key to the species of Japan and Taiwan.

Before going further, we wish to express our deep gratitude to Dr. Masatoshi TAKAKUWA of the Kanagawa Prefectural Museum of Natural History, Odawara for his critically reading the manuscript of this paper. Cordial thanks are also due to Mr. Yukihiko HIRANO of Odawara, Dr. Yûichi OKUSHIMA of the Kurashiki Museum of Natural History, the late Dr. Masataka SATÔ, and Mr. Haruo TAKIZAWA of Hasuda for their kind help in providing us with valuable materials.

This paper is dedicated to the memory of the late Dr. Masataka SATÔ for his continuous guidance and encouragement extended to us in the course of the study of cantharid beetles.

Material and Method

The male genitalia examined were treated with 10% KOH solution at 90°C for about 10 minutes, and sketched in 50% glycerin.

The abbreviations used in the text are as follows: HW – width of head; PW – width of pronotum; PL – length of pronotum; EW – width of elytra; EL – length of elytra.

Description

Genus *Malthinellus* KIESENWETTER, 1874

Malthinellus KIESENWETTER, 1874, Berl. ent. Z., **18**: 280. Type species: *Malthinellus bicolor* KIESENWETTER, 1874.

M a l e. Body small; color consisting of a combination of brownish black and yellow to reddish yellow.

Head rather broad, densely covered with small punctures, gradually narrowed posteriad, not so constricted. Antennae filiform. Eyes prominent. Mandible provided with a distinct inner tooth. Terminal segments of maxillary palpus and labial palpus simple, not extended apicad. Gular suture relatively obscure; gula narrow and not concave (Fig. 4).

Pronotum nearly rectangular and broad; surface rather convex, densely covered with small punctures. Legs slender; tibia provided with a distinct spur; each claw simple. Elytra not so abbreviated, densely covered with punctures; each puncture almost lined longitudinally; several obscure carinae present.

Abdomen with eighth sternite rather elongate, with apex slightly emarginate. Male genitalia not elongate; conformation very complicate; basal piece thin and not so heavily sclerotized, nearly leaf-shaped, though lacking basal shaft. Inner basal piece with base projected inwards, showing a peculiar formation. Centrophysis of very complicated structure, usually provided with two distinct lateral lobes, inner lateral lobe sometimes prolonged and covered with penis (Fig. 1).

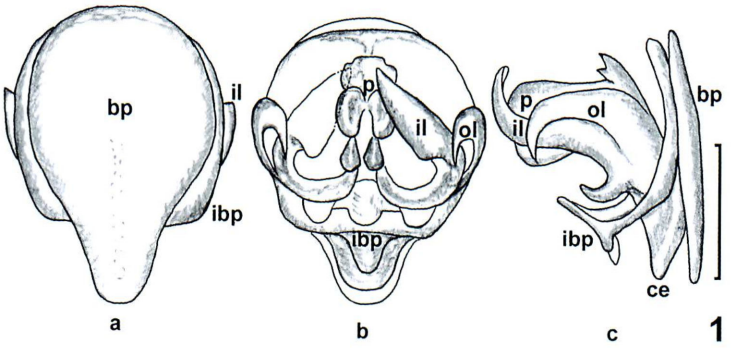

Fig. 1. Male genitalia of *Malthinellus bicolor* KIESENWETTER. —— a, Ventral view; b, dorsal view; bp, basal piece; c, lateral view; ce, centrophysis; ibp, inner basal piece; il, inner lateral lobe; ol, outer lateral lobe; p, penis. (Scale: 0.25 mm.)

F e m a l e. Similar to male though the body is wider and larger; eyes smaller; antennae shorter than those of male.

Genitalia with coxite separated into two portions, one piece connected with base of paraproct. Paraproct trapezoidal, though apical margin is deeply emarginate, furnished with many hairs. Valvifer slender and not so sclerotized (Fig. 6).

Remarks. In the present study, we found several additional characters to define the genus. They are as follows: in female genitalia, coxites divided; in male genitalia, inner basal piece provided with well developed hooked apparatus at the base; centrophysis provided with two pieces of lateral lobes; basal piece not so heavily sclerotized and lacking basal shaft. These characters are regarded as additional synapomorphies of the genus. Therefore, the genus *Malthinellus* is definitely considered as an independent genus of the subfamily Malthininae.

Malthinellus masatakai sp. nov.

(Figs. 2–6)

M a l e. Body largely yellowish orange; head somewhat darkened; elytra dark brown; antennal segments 1st and 2nd dark yellowish orange, 3rd and 4th dark brown, 5th to 11th blackish brown.

Head weakly convex on dorsal aspect, densely covered with small punctures, and somewhat rugulose. Antennae filiform, slightly shorter than elytral apices; comparative lengths of each segment as follows: 1.75 : 1.00 : 1.14 : 1.27 : 1.34 : 1.39 : 1.42 : 1.44 : 1.29 : 1.27 : 1.49. Eyes prominent; inter-ocular distance broad, 3.47 (3.44–3.63) times as wide as eye. Mandible provided with a distinct inner tooth. Gular suture obscure; gula narrow and not concave (Fig. 4).

Pronotum nearly rectangular, distinctly broader than long, widest near the base; anterior margin almost straight, posterior one slightly protuberant; PW/HW 0.89 (0.88–

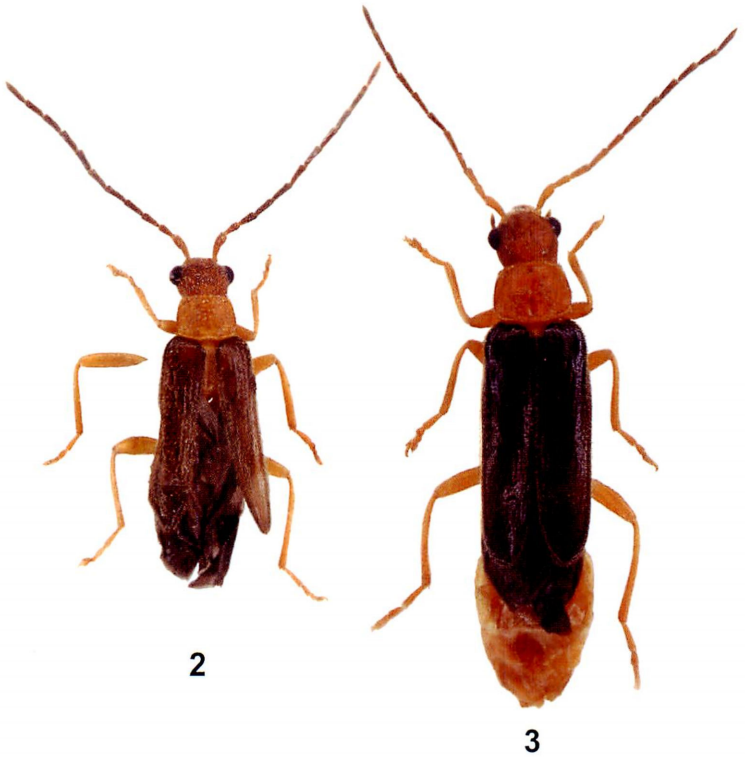

Fig. 2–3. Habitus of *Malthinellus masatakai* sp. nov.; 2, male (holotype); 3, female.

0.9), PW/PL 1.34 (1.32–1.39); surface convex, somewhat rugulose, densely covered with small punctures. Legs slender; each claw simple. Elytra almost covering abdomen, densely covered with large punctures; each puncture rather lined longitudinally from base to near apices; six obscure carinae present; EW/PW 1.42 (1.32–1.42); EL/EW 2.28 (2.28–2.46).

Abdomen with eighth sternite relatively short and broad, with apex slightly emarginate. Male genitalia nearly circular in outline, with very complicated inner conformation; basal piece thin and not so heavily sclerotized, nearly leaf-shaped, though lacking basal shaft; inner basal piece with base strongly projected; apex widely extended and largely emarginate. Centrophysis with very complicated structure; outer lateral lobe very well developed, slightly projected from the outline of inner basal piece, extended vertically, its posterior portion slightly notched; inner lateral lobe hardly developed; penis divided into two pairs of apparatuses, having complicate depressions on posterior ones (Fig. 5).

Length: 4.9 (4.1–5.4) mm; breadth: 1.4 (1.1–1.5) mm.

F e m a l e. Similar to male, though the body is wider and larger; eyes smaller; antennae shorter than in male. Body almost orange, elytra blackish brown.

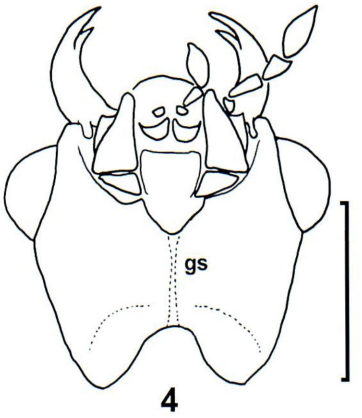

Fig. 4. Head of *Malthinellus masatakai* sp. nov., female, ventral view; gs, gular suture. (Scale: 0.5 mm.)

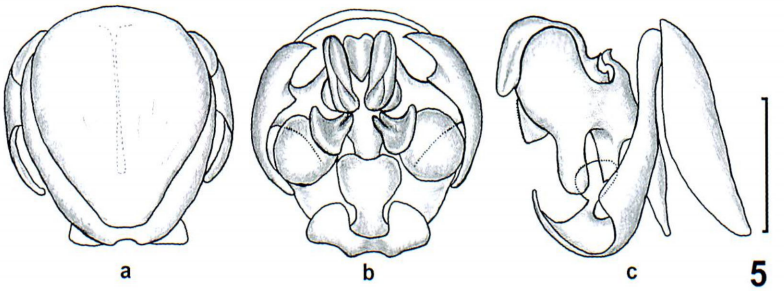

Fig. 5. Male genitalia of *Malthinellus masatakai* sp. nov. —— a, Ventral view; b, dorsal view; c, lateral view. (Scale: 0.5 mm.)

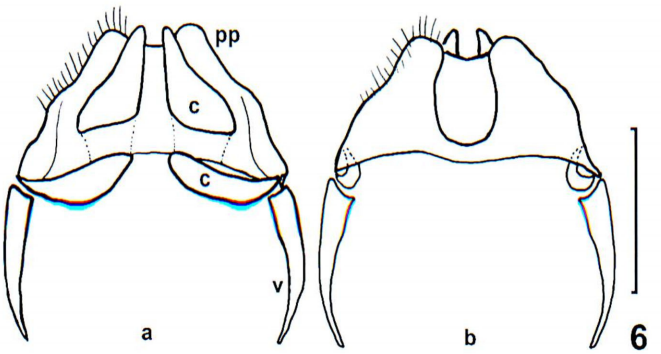

Fig. 6. Female genitalia of *Malthinellus masatakai* sp. nov.; pp, paraproct; c, coxite; v, valvifer. (Scale: 0.25 mm.)

Genitalia as shown in Fig. 6. Coxite separated into two portions; apical one rather triangular; basal one broad and thin, connected with base of paraproct. Paraproct trapezoidal, though the apical margin is deeply emarginate and furnished with many hairs. Valvifer slender and not much sclerotized.

Length: 4.4–6.3 mm; breadth: 1.3–1.9 mm.

Type series. Holotype: ♂, Nago-take, Okinawa Is., Okinawa Pref., 9–IV–2000, Yukihiko HIRANO leg. Paratypes: Yona, Kunigami-son, Okinawa Pref.: 1♂, 22–IV–1962, T. ARITA leg.; 1♂ Yona, 23–III–1989, T. UENO leg.; 1♀, 28–IV–1989, Y. OKUSHIMA leg.; 1♂, 5–IV–1990, Y. OKUSHIMA leg.; 1♂, 5–IV–1990, T. NONAKA leg.; 1♀, 2–V–1990, M. SAITO leg.; 1♂, 18–III–1991, T. UENO leg.; 3♀♀, 15–IV–1991, Y. OKUSHIMA leg.; 2♀♀, 25–III–2003, K. TAKAHASHI leg., Mt. Yonahadake, Kunigami-son, Okinawa Pref.: 1♂, 2♀♀, 4–IV–1990, Y. OKUSHIMA leg.; 1♂, 2♀♀, 6–IV–1990, Y. OKUSHIMA leg.; 1♀, 6–IV–1990, C. KUWABARA leg.; 1♀, 16–IV–1991, Y. OKUSHIMA leg.; 1♀, Mt. Nekomachiji, Ôgimi, Okinawa Pref., 9–IV–1997, T. TOYOGUCHI leg.; 1♀, Aha, Okinawa Pref., 29–IV–1989, T. AKABANE leg.; 1♂, Afuso, Onna-son, Okinawa Pref., 3–IV–1991, Y. OKUSHIMA leg.; 2♂♂, Mt. Nago, Okinawa Is., Ryukyu, 21–IV–2006, N. TAKAHASHI leg.; 1♂, 1♀, Mt. Tamatsuji, Okinawa Is., Ryukyu, 22–IV–2006, N. TAKAHASHI leg.

Type depositories. The holotype is deposited in the collection of the Kanagawa Prefectural Museum of Natural History, Odawara. The paratypes are preserved in the collection of the Entomological Laboratory, College of Agriculture, Ehime University, the Kurashiki Museum of Natural History and ours.

Distribution. Japan (Okinawa Is.).

Malthinellus crenulatus (WITTMER, 1979), comb. nov.

Malthinus crenulatus WITTMER, 1979, Ent. basil., **4**: 335. Type locality: Fenchihu, Taiwan.

Malthinellus crenulatus was described as a species of the genus *Malthinus*. Judging from the original description and a specimen shown below, however, it should be regarded as a member of the genus *Malthinellus*.

Specimen examined. 1♂, Tongpo, Nantou, Taiwan, 16～18–VII–1995, Haruo TAKIZAWA leg.

Malthinellus crenulatomimus (WITTMER, 1984), comb. nov.

Malthinus crenulatomimus WITTMER, 1984, Ent. Rev. Japan, **39**: 154. Type locality: Mt. Nanfengshan, Kaohsiung Hsien, Taiwan.

Malthinellus crenulatomimus was also described as a species of the genus *Malthinus*. However, it should be regarded as a member of the genus *Malthinellus* for the same reason as for *M. crenulatus*.

Specimen examined. 1♂, Wukongshan, Liukuei, Taiwan, 23–III–1995, Haruo

TAKIZAWA leg.

Key to the Japanese and Taiwanese Species of the Genus *Malthinellus*

1. Body except for legs entirely brownish black .....*M. bicolor* KIESENWETTER, 1874.
— At least pronotum yellowish orange to orange .....2.
2. Head blackish brown .....*M. chujoi* (WITTMER, 1961).
— Head yellowish orange to orange .....3.
3. Scutellum largely brownish black.....*M. crenulatus* (WITTMER, 1979).
— Scutellum largely yellowish orange.....4.
4. Tarsi darkened, centrophysis of male genitalia with inner lateral lobes well developed .....*M. crenulatomimus* (WITTMER, 1984).
— Tarsi not darkened, centrophysis of male genitalia with inner lateral lobes not developed .....*M. masatakai* sp. nov.

要　約

高橋和弘・高橋直樹：沖縄島産の *Malthinellus* 属の 1 新種. —— 沖縄島産の標本に基づき，ジョウカイボン科の 1 新種 *Malthinellus masatakai* sp. nov. を記載した．本種は，沖縄島から初めて記録される *Malthinellus* 属の種で，色彩と雄交尾器の構造から，*Malthinellus* 属の他種とは区別できる．あわせて，*Malthinellus* 属に新たな定義を与えるとともに，*Malthinus* 属で記載された台湾産の 2 種を本属に含め，日本および台湾産の種についての検索表を作成した．

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