

Two New Tenebrionid Species (Coleoptera) from Japan

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Abstract Two new species of Japanese tenebrionid beetles are described as *Misolampidius takakuwai* sp. nov. (central area of Honshu), and *Brachyidium edentatum* sp. nov. (Iwô-tô Is.).

Introduction

First of all, I would like to dedicate this short paper to an excellent coleopterologist, the late Dr. Masatoshi TAKAKUWA, in recalling my memories of several pleasant times with him.

In the present paper, I describe two new species of Japanese Tenebrionidae. One of them belongs to the genus *Misolampidius* comprising bracypterous species. Generally, the bracypterous tenebrionid beetles have very rich infraspecific variations, which are more or less constantly changed owing to their niche requirements, and also have many hybrids with intermediate characters because of the simple structures of male genitalia and female inner reproductive organs. For those reasons, the species of this genus are very hard to identify. The characters of male genitalia are available only for the species group identification, but not for the species identification. The new species occurs in alpine zones over about 1,000 m above sea level in central Japan, and the second sexual characteristics, female inner reproductive organs and defensive glands, are quite different from the allied species. Through the courtesy of Mr. Katsumi AKITA, I examined two paratypes of *M. imasakai* AKITA et MASUMOTO, 2016 distributed in Nagano and Mie Prefectures, Honshu, Japan. The former paratype well coincided with this new species, but the type locality of *M. imasakai* is “Mt. Nonobori-yama, Kameyama-shi, Mie [Prefecture]”, the species of which area are quite different in the constructions of defensive glands and female inner reproductive organ from the specimens occurred from the alpine zone in central Japan mentioned above.

Another new species, *Brachyidium edentatum* sp. nov., occurs on Iwô-tô Is. of the Volcano Islands, living in the seaside environments, and have very rich infraspecific variations, thus is hard to be distinguished from the allied species. The new species has the unarmed protibiae, as shown in the specific name, and the unique structures of female inner reproductive organ mentioned in the following line.

Before going into further detail, my cordial thanks are due to the following colleagues for giving important materials for this study: Mr. Hiroyuki NIWA (Kasugai), Mr. Masaki ISHIGURO (Nagoya), Mr. Katsumi AKITA (Hisai), and members of the Osaka Coleopterological Society. Thanks are also due to Dr. Tatsuya NIISATO (Tokyo) for critically reading the original manuscript of this paper.

Abbreviations employed in the descriptions are as follows: CKAO – Private collection of Kiyoshi ANDO, Osaka; CMIN – Private collection of Mr. Masaki ISHIGURO, Nagoya; EUMJ – Collection of the Ehime University Museum, Japan.

Body length refers to the median length from the apex of labrum to the apices of elytra. Abbreviations of body parts in the descriptions are as follows: mCG — anterior margin of head between clypeus and genae; EL — length of elytra along midline, from anterior margin of scutellum to elytral api-

ces; EW — maximum width of elytra; IE — distance between eyes; PL — length of pronotum along midline; PW — maximum width of pronotum; TD — transverse diameter of an eye in dorsal view.

Misolampidius takakuwai sp. nov.

(Figs. 1–4, 7–8)

Misolampidius imasakai AKITA et MASUMOTO, 2016: 12 (in part).

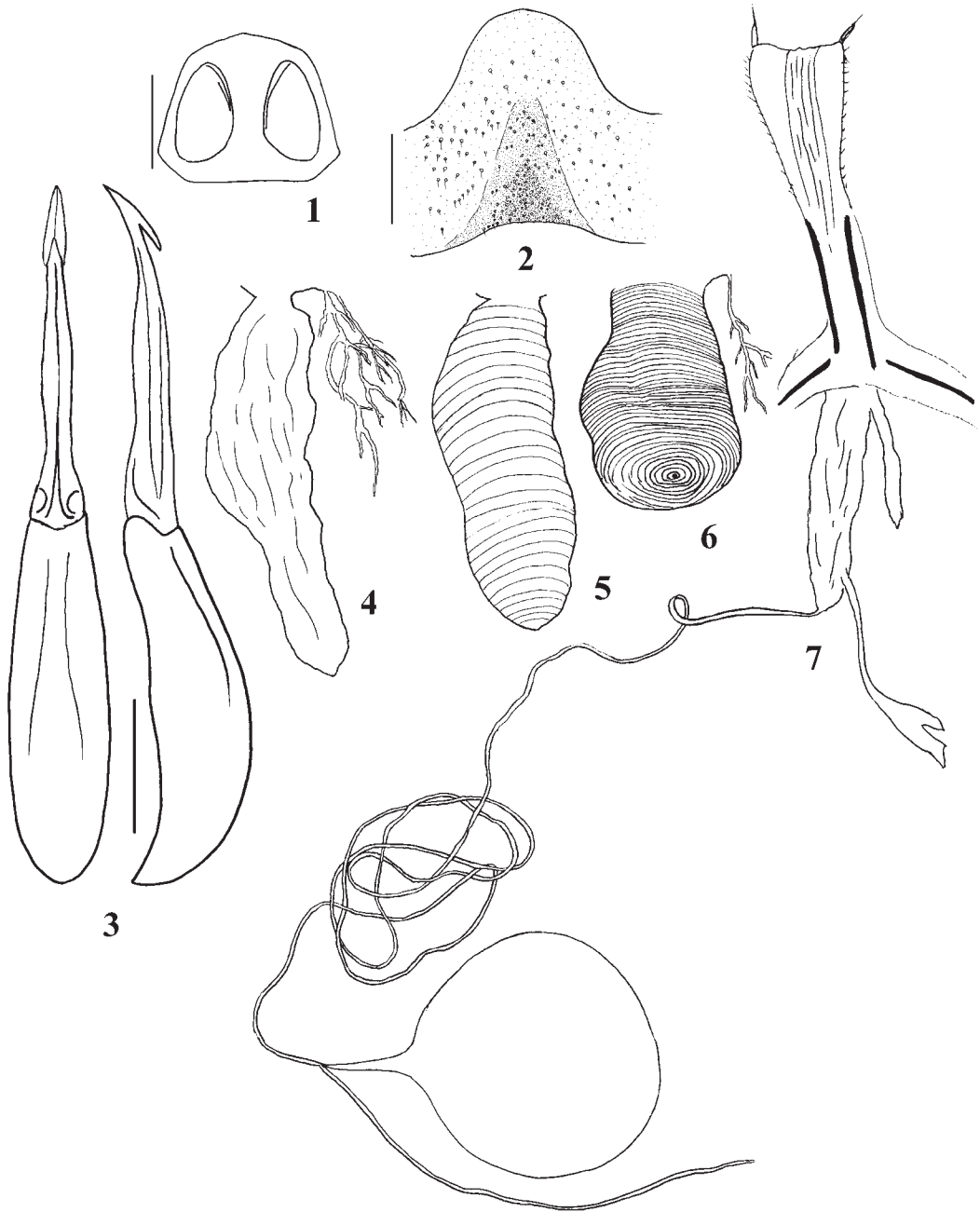
Measurements: Male (n = 13): body length: 8.6–11.5 mm; IE/TD 2.35–3.08; PL/PW 0.96–1.04; EL/EW 1.68–1.86. Female (n = 8): body length: 9.5–11.1 mm; IE/TD 2.50–3.08; PW/PL 0.97–1.09; EL/EW 1.62–1.80.

Type series. Holotype: ♂, Nagano, Tanohara, alt. 2,200 m, Ohtaki-mura Village, Kiso, 3.IX.2016, M. ISHIGURO leg. (EUMJ). Paratypes: 4 ♂♂, 7 ♀♀, same data as for the holotype (3 ♂♂ and 2 ♀♀ in CKAO, 1 ♂, 5 ♀♀ in CMIN); 1 ♂, ditto, alt. 1,900 m, 3.IX.2016, M. ISHIGURO leg. (CMIN); 1 ♂, ditto, 3.IX.2016, Hiroyuki NIWA leg. (CKAO); 3 ♂♂, Mt. Okununo, Misakubo machi, Ten'Ryu ku, Hamamatsu City, Shizuoka, Japan, alt. 1,600 m, 20.VIII.1998, Masaki ISHIGURO leg. (2 ♂♂ in CKAO, 1 ♂ in CMIN); 1 ♂, Nagano, Yatsugatake: Inagoyu, 18.VII.1956, T. HOZUMI leg., under bark (CKAO); 1 ♂, Honshu: Mt. Shiomidake (2,000 m), S. Alps, Nagano, 24.V.1983, N. KODA leg. (CKAO); 1 ♀, Gonbe'e Tôge, Ina, Nagano, 30.VIII.1997, Y. HAYASHI leg. (CKAO); 1 ♂ (a paratype of *Misolampidius imasakai*), Japan: Nagano-ken, Yamanouchi-machi, Sigakogen, Ichinose-Hoppo, 1,600–1,700 m, 26.VII.2000, Katsumi AKITA leg. (CKAO).

Slender, somewhat calabash bottle-shaped (Fig. 8), moderately convex dorsally, shiny. Colour dark reddish brown to blackish brown; mouthparts, antennae, gula, basal half of femora, and tarsi more or less lighter.

Male. Head hexagonal, distinctly convex posteriorly, finely microsculptured, with hair-bearing punctures; mGC distinctly notched; clypeus almost flat to slightly convex, gently produced forwards, truncate at apex in median two-thirds, with fine and moderate punctures in density; fronto-clypeal suture U-shaped, tenuous and distinctly engraved, suddenly and evenly raised behind the suture; genae strongly raised laterad, a little longer than wide, roundly tumid on sides in basal two-thirds, evenly and steeply narrowed in the rest, with punctures nearly as large as those on clypeus; frons moderately convex towards vertex, obscurely depressed in middle, with large, coarse and more or less dense punctures, which are distinctly larger than those on clypeus; tempora evenly narrowed posteriad, with dense and very coarse punctures, which are as large as those on frons; eyes transverse in dorsal view, weakly convex; inner ocular-sulci rather shallow, irregular in depth. Antennae slender and long, reaching beyond the basal angles of pronotum; distal five antennomeres weakly dilated and bead-shaped; 11th oval, pointed at apex. Ultimate maxillary palpomere conical, weakly dilated apically. Mentum (Fig. 1) linguiform, rounded at apex, weakly, broadly raised in middle, distinctly concave at sides. Submentum short and strongly transverse, weakly convex, finely punctate posteriorly.

Pronotum oblong-rounded, nearly as long as wide, divergent forwards, widest at apical third, with fine isodiametric microsculpture; disc gently convex, steeply descendent laterally, with obscure and smooth longitudinal median depression visible in apical half, and with a pair of short transverse lines before basal margin; punctures coarse and dense, but mingled with smaller ones in lower density, as large as or larger than those on frons; anterior margin almost straight or feebly produced forwards, not beaded; lateral margins vestigial, not beaded, weakly rounded forwards and unevenly convergent backwards from the widest point, faintly constricted before base; basal margin straight, not



Figs. 1–7. *Misolampidius* spp. — 1–4 & 7, *M. takakuwai* sp. nov.; 5, *M. imasakai* AKITA et MASUMOTO, 2016; 6, *M. okumurai* NAKANE, 1968. — 1, Mentum; 2, first abdominal ventrite; 3, male genitalia (light: lateral; left: dorsal); 4–6, defensive glands; 7, sclerotised structure of female reproductive tube. Scales: 0.25 mm for Fig. 1; 0.50 mm for Figs. 2 & 3; no scales for Figs. 4–7.

beaded; apical and basal angles quite obtuse. Scutellum transverse, almost twice as wide as long (15 : 8), moderately convex, rounded at apex, with some fine punctures.

Elytra elongate, moderately convex above, widest at middle, weakly and roundly emarginate at base, covered with fine microsculpture, and devoid of humeral calli; sides weakly ridged in basal third and not beaded; striae fine and tenuous, irregular behind base; stria punctures fine and sparse, irregular in size and density, somewhat serrate on 5th to 8th striae, becoming minuter on apical declivity; intervals strongly convex, moderately so on apical declivity, with hair-bearing punctures, which are minute and very sparse; epipleuron flat and unevenly oblique, impunctate and finely microsculptured.

Prothoracic hypomeron finely microsculptured, with dense and coarse punctures, which are continuous from the dorsal part of pronotum. Prosternum broad, weakly convex, densely microsculptured, weakly beaded at apex, with sparse and fine hair-bearing punctures; prosternal process elongate linguiform, constricted in middle and strongly bent inwards behind coxae, rounded at apex, shallowly and longitudinally sulcate in middle. Mesoventrite coarsely punctate and obliquely rugose, with a fine and tenuous longitudinal carina; posterior V-shaped ridge very weakly raised, lower than coxae, with fine hair-bearing punctures, and without anterior angles. Metaventrite short, distinctly convex, finely microsculptured, finely and moderately punctate, the punctures hair-bearing. Abdominal ventrites weakly convex and finely microsculptured, with dense and hair-bearing punctures; 1st ventrite (Fig. 2) with a distinct triangular depression at middle before posterior margin, where the hair-bearing punctures becoming smaller and denser; 5th ventrite evenly narrowed apicad in a straight line, weakly depressed posteriorly, truncate at apex, with hair-bearing punctures, which are extremely dense in apical third; defensive glands transparent (Fig. 4), not annulate, with a few longitudinal rugosities.

Male genitalia slender (Fig. 3); basale short, elongate, 0.99 times as long as parameres; parameres slender, strongly carinate in medio-longitudinally, narrowly sagittal at apices.

Legs slender. Femora distinctly funiculate; profemoral teeth short, trapezoidal, weakly truncate at apex. Protibiae gently incurved, moderately dilated apicad; mesotibiae almost straight; metatibiae slightly curved outwards at middle. Tarsi long and thin, simple.

F e m a l e. Abdominal ventrites more convex, 1st ventrite with a very weak median triangular depression scarcely recognised, apex of 5th ventrite rounded, not truncate; female genital tube (Fig. 7) rather reduced, vagina devoid of bursa copulatrix, connected with balloon-shaped spermatheca by long spermathecal accessory gland, a well sclerotised tube present between vagina and spermathecal accessory gland.

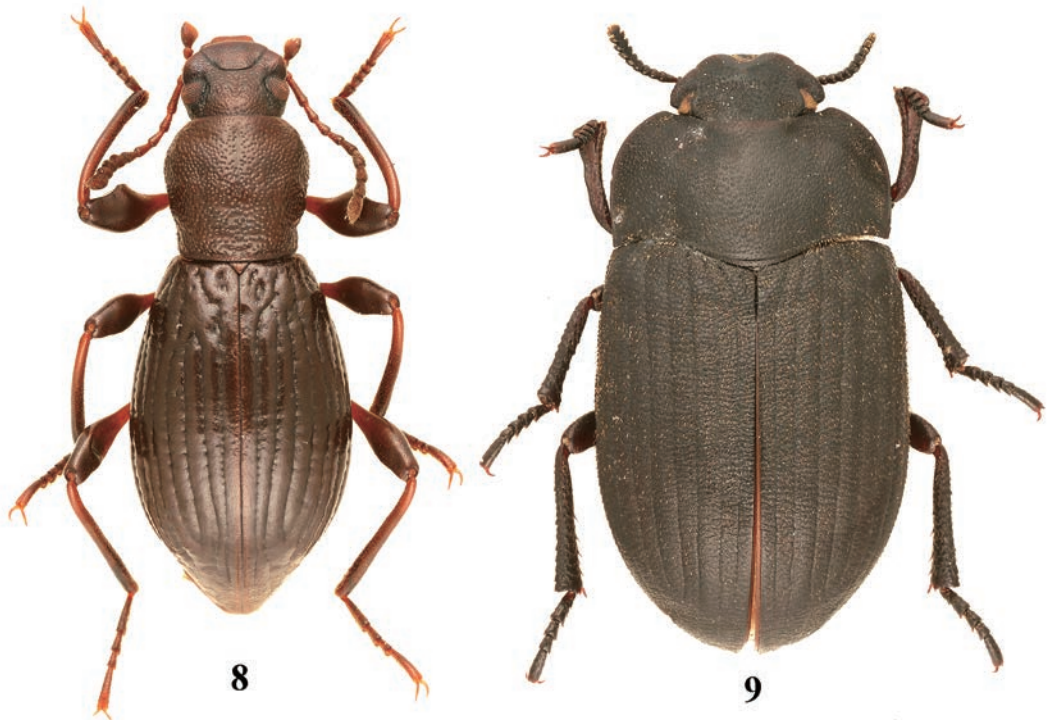
Diagnosis. The new species is similar to *Misolampidius okumurai* NAKANE, 1968 and *M. imasakai* AKITA et MASUMOTO, 2016, but readily separable from them in having the first abdominal ventrite that is distinctly depressed in the male and weakly so in the female, non-annulate defensive glands, and female genital tube with a well sclerotised tube between vagina and spermathecal accessory gland. It is recognisable that the phylogenetic lineage containing the new species is quite different from that containing *M. okumurai* and *M. imasakai*.

Etymology. The specific name of this species is dedicated to the late Dr. Masatoshi TAKAKUWA, who made an eminent contribution to the families Cerambycidae and Mordellidae in the Oriental Region.

***Brachyidium edentatum* sp. nov.**

(Figs. 9–13 & 15–16)

Type series. Holotype: ♂, Iwo-jima Is. [= Iwô-tô Is.], Volcano Isls., Ogasawara, Tokyo, Japan,



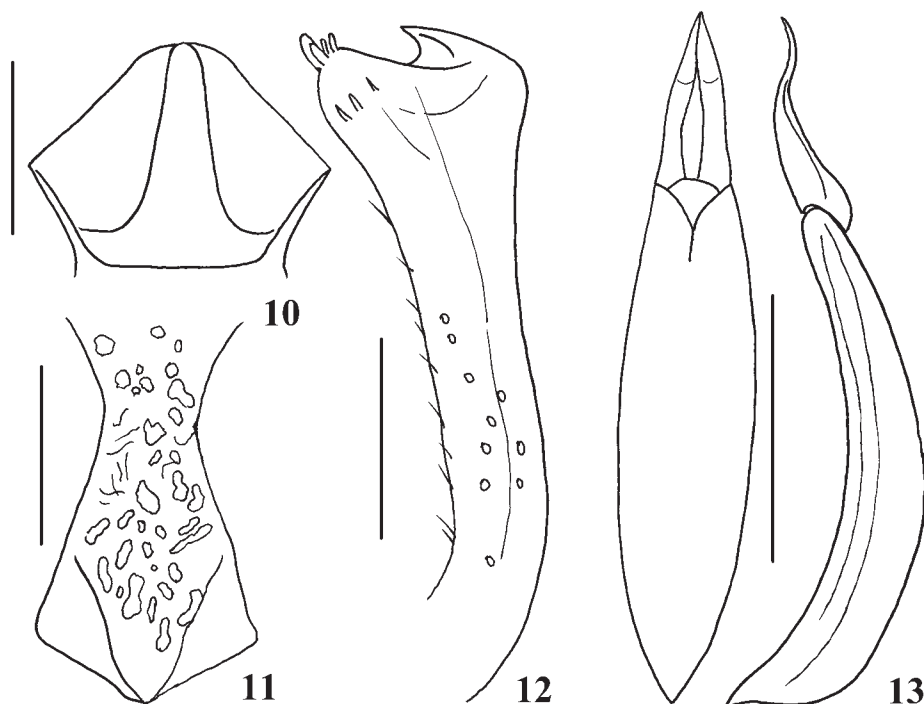
Figs. 8–9. Habitus of Tenebrionidae spp. — 8, *Misolampidius takakuwai* sp. nov.; 9, *Brachyidium edentatum* sp. nov.

18.II.1995, Y. ICHIKAWA leg. (EUMJ). Paratypes: 3 ♂♂, 3 ♀♀, same data as for the holotype except for the date as 11.II.1995. (CKAO).

Measurements. Male (n = 4): body length: 7.7–8.9 mm. IE/TD 5.33–6.67; PW/PL 1.92–1.97; EL/EW 1.23–1.29. Female (n = 3): body length: 7.9–8.6 mm. IE/TD 5.71–6.67; PW/PL 1.97–2.03; EL/EW 1.24–1.26.

Oblong, subparallel-sided or weakly divergent posteriorly, weakly convex above, subshiny. Colour black, dark reddish brown in part.

Male. Head transversely rhombical, unevenly flat, with large, dense and shallow punctures, which are sometimes contact with each other, a little smaller and obscure on clypeus, and the smallest on genae; clypeus strongly and roundly produced forwards, deeply notched in middle of apex, distinctly elevated behind notched bottom; fronto-clypeal suture fine and obscure; genae distinctly produced posteriad, overlapping on eyes; frons weakly depressed, shallowly foveolate as honeycomb structure, bearing some narrow and irregular lines between the foveae; supraorbital canthus roundly and strongly produced laterally, roof-shaped; tempora slightly convex, steeply convergent posteriad. Ultimate maxillary palpomere small, weakly conical. Antennae short, reaching before middle of pronotum, weakly dilated in 4th to 6th antennomeres, distinctly transverse in five distal ones, sparsely setiferous; 11th transversely elliptical, strongly with dense setae. Mentum (Fig. 10) transversely pentagonal, rounded at apex, with a longitudinal median carina, unevenly depressed at sides, and with a pair of thick and short setae at both sides of the carina.

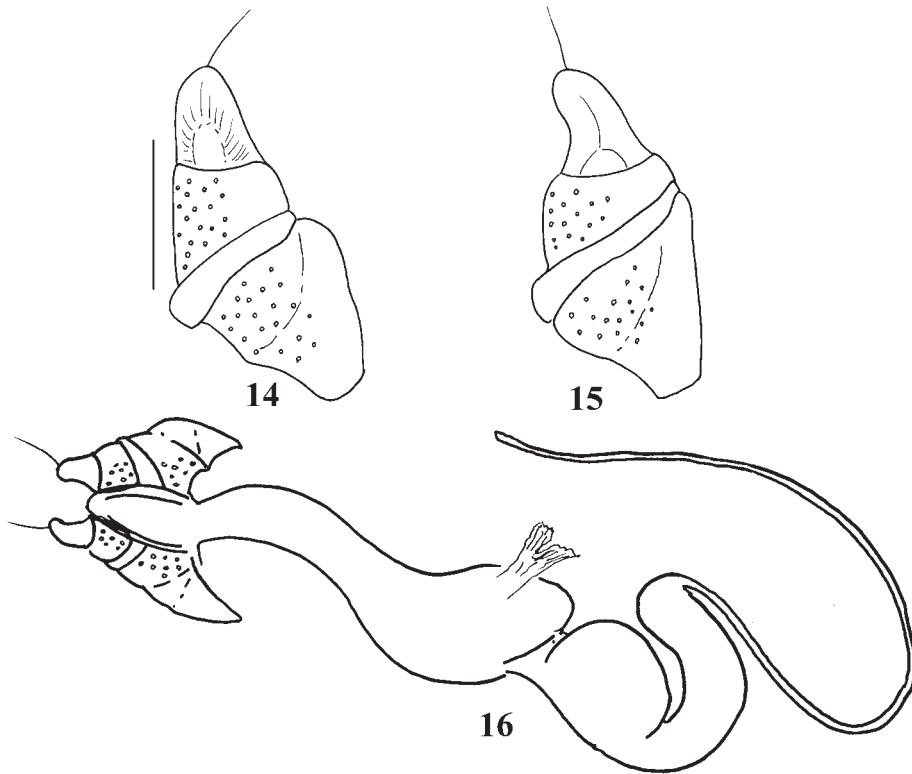


Figs. 10–13. *Brachyidium edentatum* sp. nov. — 10, Mentum; 11, prosternal process; 12, protibia in male; 13, male genitalia (light: lateral; left: dorsal). Scales: 0.25 mm for Fig. 10; 0.50 mm for Figs. 11–12; 1.00 mm for Fig. 13.

Pronotum transversely quadrate, widest behind middle; disc weakly convex in middle, gently descendent laterally, with dense, reticulate and confluent acne-scars; apical margin broadly and arcuately emarginate, finely beaded in lateral fifth; lateral margins roundly and distinctly narrowed forwards and weakly so backwards from the widest point, very finely beaded; basal margin gently bisinuate, almost not beaded; anterior angles obtuse, posterior angles acutely pointed posteriad. Scutellum flat and very transverse, visible only posterior corner.

Elytra oblong, slightly divergent posteriorly, widest behind middle, weakly convex above, with lateral margins weakly ridged, setaceous in part; striae weakly impressed throughout; strial punctures sparse and very small, scarcely visible; intervals weakly convex, covered with minute tuberculate punctures, each puncture directed posteriad, with a scale-like short seta; humeral calli weakly elevated; epipleuron broad, flat and oblique, densely with setiferous punctures.

Prothoracic hypomeron depressed, densely and irregularly rugose, moderately covered with setiferous punctures. Prosternum asperate, distinctly sloping forwards, moderately with setiferous punctures; prosternal process short (Fig. 11), curved inwards posteriorly, distinctly divergent behind coxae, obtusely angulate at apex, with asperate surface and some short setae. Mesoventrite longitudinally rugose and densely punctate, the punctures hair-bearing; posterior ridge weak, gently sloping forwards and devoid of anterior angles. Metaventricle distinctly convex, flattened in median third, where the surface is unevenly scaled. Metepisternum depressed, asperate, sparsely covered with setiferous punctures.



Figs. 14–16. *Brachyidium* spp. — 14, *B. iwojimanum* MASUMOTO, 1991; 15 & 16, *B. edentatum* sp. nov. — 14 & 15, Right coxites in dorsal view; 16, sclerotised structure of female reproductive tube. Scale: 0.50 mm for Figs. 14 & 15; no scale for Fig. 16.

Abdomen weakly convex, weakly depressed beside lateral margins, densely and irregularly punctate; each puncture with a thick seta which is truncate at apex; defensive glands rather small, transparent, suddenly narrowed before apex, with a few rugosities.

Male genitalia fusiform (Fig. 13); parameres elongate, gently convergent to apices, strongly reflexed dorsad before middle, and longitudinally excavate in middle of basal half.

Legs robust. Profemora robust; anterior margin ancipital, depressed, armed with a shallow rounded pit near middle; the pit covered with short and sparse pubescence; posterior margin of metafemora moderately setiferous basally. Protibiae slightly incurved (Fig. 12), whose outer margins smooth, very feebly bi- or trisinate, and unarmed; meso- and metatibiae almost straight, with dense, somewhat conical setiferous punctures. Tarsi with setiferous punctures not only ventrally but also dorsally.

F e m a l e. Profemora without pit; sclerotised structure of the female reproductive tube (Fig. 16) very delicately membranous in vagina and oviduct; ovipositor forming a typical primitive configuration in Opatrini, coxite 2–4 lobes short (Fig. 15), apical lobe large and flattened with reduced gonostyli, strongly reflexed ventrad, angulate in outer margin and distinctly emarginate in inner margin; vagina with primary bursa copulatrix.

Diagnosis. The new species is similar to *Brachyidium palauense* (KULZER, 1957) and *B. iwojimanum* MASUMOTO, 1991, but clearly different from the latter two in having the following features:

outer margins of protibiae slightly sinuous, not dentate; anterior margins of profemora deplanate from apex to just behind setiferous pit, not covered with long setae; mentum clear pentagonal, instead of elongate trapezoidal or triangular in *B. palauense* and *B. iwojimanum*; supraorbital canthus roundly and strongly produced; female genital tube different in shape, with spermathecal tube bears at inverted side from those in *B. palauense* and *B. iwojimanum*, ovipositor with lobes of coxite different in shape (Fig. 15), in which apical lobe is strongly reflexed ventrad, angulately narrowed apicad in outer margin, and distinctly emarginate in inner margin instead of almost straight in *B. palauense* and *B. iwojimanum*.

Etymology. The specific name is derived from the untoothed protibiae of this new species.

要 約

安藤清志：日本産ゴミムシダマシの2新種(鞘翅目ゴミムシダマシ科)。———日本産ゴミムシダマシ2新種を記載した。ゴミムシダマシ科の後翅が退化したグループにしばしば見られる傾向であるが、ヒサゴゴミムシダマシ属の雄交尾器は単純で、変異も顕著であり、種の同定には有効とは言えず、系統的あるいは安定的な特徴の指摘が求められる。今回記載したタカクワヒサゴゴミムシダマシ(新称) *Misolampidius takakuwai* sp. nov. は中部地方の約1,000 mを超える標高域に分布し、雄の二次性徴および防御物質貯蔵囊の外部形態で近似種と明瞭に分けることができる。他の1新種、トゲナシマルチビゴミムシダマシ(新称) *Brachyidium edentatum* sp. nov. は硫黄島に分布し、前脛節外縁に歯状突起を具えず、雌産卵管に付帯する陰具片基板の外部形態が既知種と明らかに異なる。

前種は、甲虫界に多大の貢献をされ、若くして他界された故高桑正敏博士に深い哀悼の意を込めて献名した。

Reference

- AKITA, K., & K. MASUMOTO, 2016. Descriptions of new species, subspecies, new taxonomical treatment and species newly recorded from Japan. Pp. 6–16. In AKITA, K., & K. MASUMOTO, *The Tenebrionid Beetles of Japan. Mushi-Sha's Iconographic Series of Insect*, 9. 302 pp. Mushi-sha, Tokyo.

Manuscript received 23 July 2017;
revised and accepted 23 September 2017.