

Description of a New Species of *Usechus* Motschulsky, 1845 (Coleoptera, Zopheridae) from Shikoku, Japan

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Abstract: *Usechus takumii*, sp. nov., is described from Shikoku, Japan.

Keywords: Taxonomy, new species, Coleoptera, Zopheridae, *Usechus*, East Palearctic Region, Shikoku island, Japan.

Introduction

The genus *Usechus* Motschulsky, 1845 (Coleoptera, Zopheridae) is composed of six species; two from North America and the others in East Asia, Japan and Korea. In Japan, four species of *Usechus* are known (Jung, Seung and Park, 2023; Saito, 1999; Schuh, 2020). *Usechus ohdaiensis* Sasaji, 1987 known from the Kii Peninsula on Honshu Island notably lacks elytral tubercles. In this time, a subpopulation of the *Usechus* without elytral tubercles was collected for the first time in Shikoku, located across a narrow strait from the Kii Peninsula.

Although the Shikoku population is very close to *U. ohdaiensis*, after careful study, I propose it represents a new species, *Usechus takumii*.

Materials and methods

Morphological abbreviations used herein are as follows: L—body length (length from apical margin of clypeus to elytral apices); W—maximum width of body; VW—width across vertex (distance between eyes, view from front); ED—compound eye diameter; AnW—distance between antennal insertions; PL—pronotal length (center line); PW—maximal pronotal width; HW—head width (distance between lateral margins of compound eyes); EW—elytral widest; EL—elytral length (along elytral suture, including scutellum); MtaL—length of meta-thoracic tibia; Mta 1stL—length of 1st metathoracic tarsomere; AL—aedeagal length; BpL—basal piece length; BpW—basal piece width; PmL—length of parameres; PmW—width of parameres. The average measurement are given in parenthesis after the range.

Exact label data are cited for each type specimen. Individual lines on labels are separated by a single slash (/), and individual labels are separated by a double slash (//). The holotype and paratypes are glued to cardboard plates. Type specimens of the newly described species are provided with additional red labels with the following printed text: “*Usechus / takumii* sp. nov. / HOLOTYPE, ♂ [or] PARATYPE, ♂ [or] ♀ / des. Masahiro SAITÔ, 2025 / ケンザンヨコミゾコブゴミムシダマシ”.

The entomological collection codes for each specimen depository are noted below and elsewhere in the text:

(MSC)—Collection of M. Saitō, Fukui, Japan;

(NSMT)—National Museum of Nature and Science, Tsukuba, Japan;

(TSC)—Collection of T. Saitō, Hyogo, Japan;

(OKC)—Collection of Dr. Ondřej Konvička, Zlín, Czech Republic;

(WIRC)—Wisconsin Insect Research Collection, USA.

Systematic part

Family **Zopheridae** Solier, 1834

Subfamily **Zopherinae** Solier, 1834

Tribe **Usechini** Horn, 1867

Genus **Usechus** Motschulsky, 1845

[Japanese name: Yokomizo-kobugomimushidamashi-zoku]

Type species. *Usechus lacerta* Motschulsky, 1845:79-80.

***Usechus ohdaiensis* Sasaji, 1987 (Figs 3, 5)**

[Japanese name: Oodai- yokomizo-kobugomimushidamashi]

Usechus ohdaiensis Sasaji, 1987, Mem. Fac. Educ., Fukui Univ., (2), (37): 52-54, fig. 13; typelocality: Ohdaigahara, Nara Pref., Japan. Saitô, 1999, Elytra, Tokyo, 27 (1): 105-106, figs. 7-9.

Notes: This species is similar to other Japanese species, *U. chujoi* Kulzer, 1960, *U. sasajii* M. Saitô, 1999 and *U. tsushimensis* H. Kamiya, 1963 but differs from those by lacking elytral tubercles.

Specimens examined. 1♀, “Ohdaigahara / Yoshino / Nara Pref., JPN / 10. X. 1984 / N. Narukawa leg.” (MSC); 1♂, “Ohdaigahara / Yoshino / Nara Pref., JPN / 3. IX. 1988 / M. Saito leg.” (MSC); 2♀, “ditto” (MSC); 1♂, “Mt. Myojin / Itaka / Mie Pref., JPN / 4. VII. 1998 / N. Narukawa leg.” (MSC).

***Usechus takumii* M. Saitô, sp. nov. (Figs 1–2, 4, 6)**

[Japanese name: kenzan- yokomizo-kobugomimushidamashi]

Type locality: Japan, Shikoku island, Tokushima Prefecture, Mima-gun, Tsurugi-machi, Ichiu aza Tsuzura, Nearby Meoto pond.

Type material: Holotype (Fig. 1): ♂, “徳島県美馬郡つるぎ町一宇 / 字葛籠夫婦池付近 / 22. X. 2024 / leg. 齋藤 琢巳 // Nearby Meoto pond / Ichiu aza Tsu-zura / Tsurugi-machi / Tokushima Pref., JPN / 22. X. 2024 / T. Saitô leg.” (NSMT). Paratypes: 1♀, “same data as the holotype / 17. IX. 2024 / leg. 齋藤 琢巳 // ditto / 17. IX. 2024 / T. Saitô leg.” (TSC); 1♂, “徳島県三好市東祖谷菅生 / 見ノ越第2駐車場付近 / 17. IX. 2024 / leg. 齋藤 圭輔 // Nearby second parking, Minokoshi / Higashiyasugeoi, Miyoshi-shi / Tokushima Pref., JPN / 17. IX. 2024 / K. Saitô leg.” (MSC); 3♂3♀, “same data as the holotype / 17. IX. 2024 / leg. 齋藤 琢巳 // ditto / 17. IX. 2024 / T. Saitô leg.” (1♂1♀, WIRC; 2♀, TSC); 2♂5♀, “ditto / leg. 齋藤 圭輔 // ditto / K. Saitô leg.” (1♂2♀, MSC; 1♂3♀, TSC); 18♂12♀, “same data as the holotype // same data as the holo-type” (2♂2♀, OKC; 1♂1♀, WIRC; 1♀, NSMT; 5♂4♀, MSC; 10♂4♀, TSC).

Description:

Male: Body (Fig. 1) oblong-oval, L/W 2.14–2.24 (2.19, $n = 5$), weakly convex dorsally, flat ventrally; surface of body rather sparsely covered pale yellowish brown scale-like setae which are shorter on abdomen, antennae and legs than on dorsal surface of body. Body surface blackish brown, dully shining; antennae, mouth parts and legs dark reddish brown.

Head elliptical in dorsal view, small, usually retracted into pronotum, surface coarsely and roughly sculptured; antennal sockets weakly carinate. Frons flat with a pair of shallow longitudinal grooves; vertex weakly convex, VW/ED about 1.4 ($n = 1$), AnW/VW about 2.5 ($n = 1$); occiput weakly convex, separated from occiput by groove. Clypeus rectangular, roughly sculptured, anterior margin straight, frontoclypeal suture indistinct. Labrum rectangular, smooth with luster, anterior margin straight. Terminal maxillary palpomere oblique teardrop-shaped, length about 2.0 times width ($n = 1$); aboral side uniformly and slowly incurved, adoral side uniformly and slowly incurved; apex narrowly straight. Eyes flat, unknob protruding, sharply incurved under front edge. Antennae (Fig. 6) stout and short, capitate, reaching half of length of pronotum; terminal segment oblong oval-shaped with rounded tip; antennomeres 8(7)–10 forming the club; relative length of each antennomere from base to apex ($n = 1$): 1.51, 1.16, 0.80, 0.80, 0.75, 0.75, 0.85, 1.00, 1.00, 1.36; relative length to width of each antennomere from base to apex ($n = 1$): 1.20, 1.05, 0.73, 0.73, 0.68, 0.63, 0.59, 0.50, 0.45, 0.69. Gula with the characteristic secondary sexual tubercle in the center of the front edge, with apical setae that are shorter than the height of the tubercle.

Pronotum hexagonal in dorsal view, PW/PL 1.19–1.28 (1.22, $n = 5$), PW/HW about 2.0 ($n = 1$), PW/EW 0.88–0.95 (0.91, $n = 5$), widest at middle, distinctly and straightly narrowing toward the apex, weakly and straightly narrowing toward the base; anterior margin slightly emarginate, almost flattened; lateral margins strongly angulate at middle; ridge of lateral sides distinctly beaded and slightly throughout, each with sublateral carina along the inner side of lateral carina from anterior angles to widest angles, interval between lateral and sub-lateral carinae forming antennal grooves; basal margin strongly sinuate, indistinctly carinate, about 1.4 times as wide as width across anterior margin; anterior angles rounded; basal angles obtuse; disc weakly convex, surface coarsely and setiferously punctate, central longitudinal area and lateral depressions sometimes impunctate but coarsely sculptured; along the inside of each lateral margin with a wide depression which is interrupted at middle; basal margin weakly grooved and sometimes with feeble depression at the middle. Scutellum almost invisible.

Elytra ovoid, slightly more convex than pronotum, widest a little before the middle of elytral length, lateral margins weakly arcuate, and strongly and arcuately narrowed posteriad from the widest; apices rounded, slightly produced; EL/EW 1.25–1.37 (1.31, $n = 5$); humeral area depressed and connecting lateral depression of pronotum; basal margins strongly bisinuate, corresponding to basal margin of pronotum; humeral corners obtusely but distinctly angulate; disc with ten punctate striae and scutellar striae, interstices between striae elevated; 9th stria complete, not fusing with the 10th; 10th interval complete (Fig. 4).

Ventral surface coarsely punctate. Mesoventral process with depressions along lateral sides. Abdominal 5th sternite roundly curved apically.

Legs slender, relatively short. Mta1stL/MtaL about 0.2 ($n = 1$), relative lengths of each metathoracic tarsomere from base to apex ($n = 1$): 1.13, 0.63, 0.69, 1.56. Each metathoracic tibia with the inner edge flared, the typical secondary sexual characteristic for the genus (Fig. 2).

Aedeagus (Fig. 7) oblong, AL/AW about 3.2 ($n = 1$). Basal piece short, elliptical, parallel-sided in dorsal view, the apex shallowly incurved; BpL/BpW about 1.7 ($n = 1$). Parameres oblong, narrowing toward the apex and rounded at apex; PmL/PmW about 1.7 ($n = 1$); PmL/BpL almost the same ($n = 1$).

Female: Similar to male, but without the two secondary sex characteristic of the male, lacking the flared inner edge of each metathoracic tibia, and a tubercle in the center of the front edge of gula. L/W 2.12–2.20 (2.17, $n = 5$); EL/EW 1.29–1.36 (1.32, $n = 5$); VW/ED about 1.2 ($n = 1$); AnW/VW about 2.0 ($n = 1$); PW/HW about 1.9 ($n = 1$); PW/PL 1.17–1.25 (1.21, $n = 5$); PW/EW 0.86–0.90 (0.87, $n = 5$). Relative lengths of each antennomere from base to apex ($n = 1$): 1.57, 1.14, 0.71, 0.85, 0.71, 0.86, 0.86, 1.00, 1.00, 1.29; relative length to width of each antennomere ($n = 1$): 1.57, 1.33, 0.71, 0.86, 0.71, 0.67, 0.67, 0.50, 0.50, 0.75. Fifth sternite widely rounded apically. Mta1stL/MtiL about 0.2 ($n = 1$), relative lengths of each metathoracic tarsomere from base to apex ($n = 1$): 1.06, 0.60, 0.68, 1.66.

Measurements ($n = 10$ ♂♂, 10 ♀♀ in mm). L: ♂ 2.45–3.28 (3.05), ♀ 3.05–3.85 (3.44); W: ♂ 1.28–3.30 (1.40), ♀ 1.40–1.70 (1.55).

Distribution: Tokushima Prefecture, Shikoku, Japan.

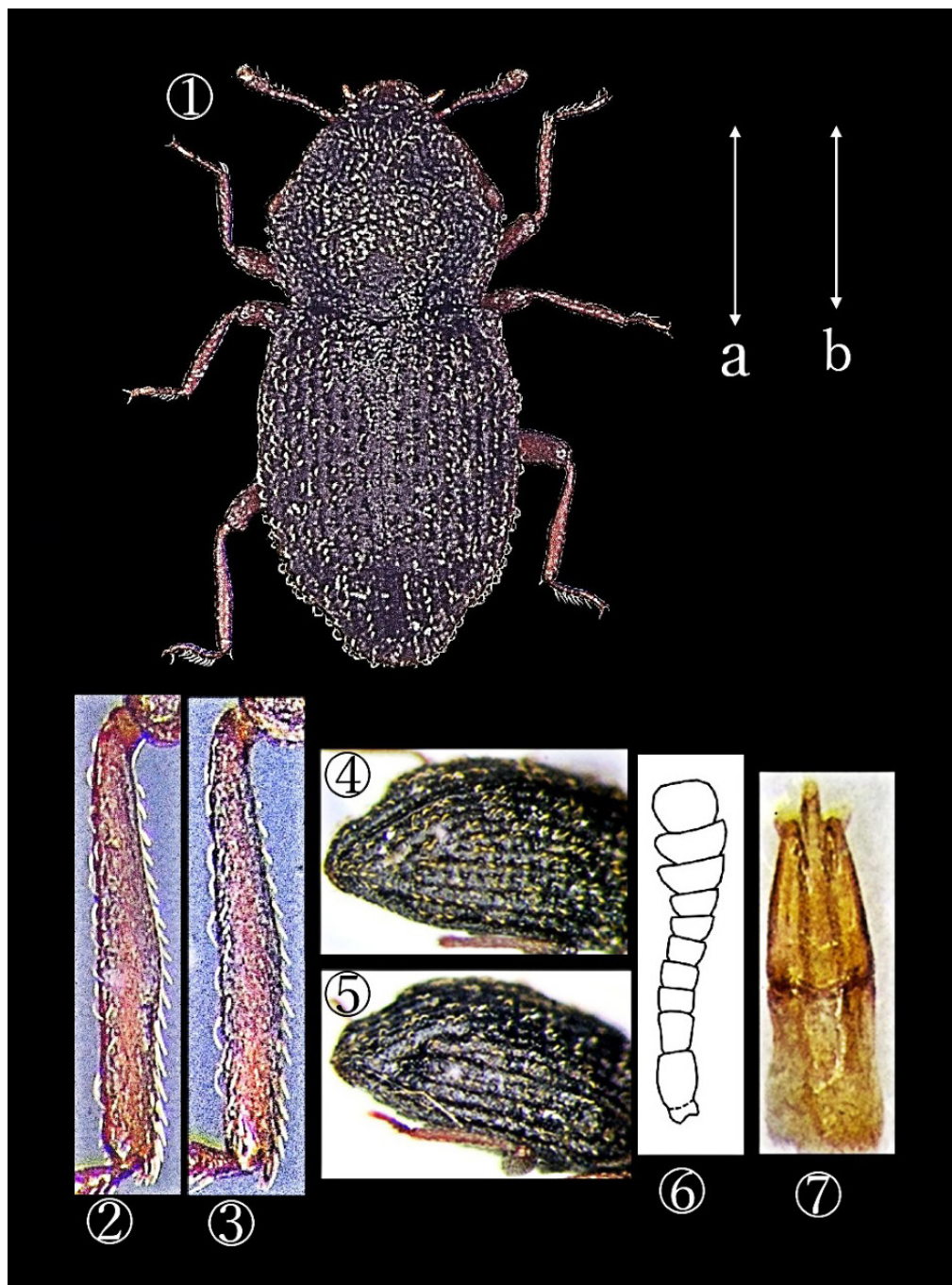
Bionomy: Unknown.

Collection circumstances: Type specimens were captured by beating the dead branches at the bottom of living fir trees, *Abies firma*.

Etymology. The species is dedicated in honor to Mr. Takumi Saitō, who collected the type specimens.

Differential diagnosis. *Usechus takumii* sp. nov. morphologically resembles *U. ohdaiensis* and is distinguished from the latter by the following characters: 1) the flared inner edge of each metathoracic tibia in male well developed in front of the center (Fig. 2), uniformly developed in male of the latter (Fig. 3); 2) the apical setae associated with the tubercle in the median of the front edge of gula are shorter than the height of the tubercle in male, longer than the height of the tubercle in male of the latter; 3) the ridge of interstriae on elytra are distinctly undulating (Fig. 4), tending to be more carinate in the latter (Fig. 5).

Observations: *Usechus ohdaiensis* and *U. takumii* sp. nov. are very closely related and are distributed in close proximity to each other, and they may have evolved from a direct common ancestor. Currently, both populations are geographically isolated by a narrow strait and they are flightless.



Figs 1–2, 4, 6, 7: *Usechus takumii* M. Saitô sp. nov. 1, Habitus (holo-type), dorsal view; 2, metathoracic tibia, male; 4, right elytron apex half, diagonally upwards view, male; 6, antennae, outline, male; 7, aedeagus, dorsal view, male. **Figs 3, 5:** *Usechus ohdaiensis* Sasaji 3, metathoracic tibia, male; 5, right elytron apex half, diagonally upwards view, male. Scale: a, 1.0 mm for 1, 4, 5; b, 0.25 mm for 2, 3, 6, 7.

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