Bull. Natn. Sci. Mus., Tokyo, Ser. A, **12** (4), pp. 179–184, December 22, 1986

Two New Subterranean *Trechiama* (Coleoptera, Trechinae) from the Vicinities of Yonezawa, Northeast Japan[1)]

By

Shun-Ichi UÉNO

Department of Zoology, National Science Museum, Tokyo

Abstract Two new anophthalmic species of the trechine genus *Trechiama* are described from the vicinities of Yonezawa City in northeastern Honshu, Northeast Japan, under the names of *Trechiama kusakarii* and *T. uncatus*. Both belong to the *echigonis* complex of the group of *T. habei*, and seem to be upper hypogean in nature.

Describing three upper hypogean species of the *Trechiama echigonis* complex, I made a comment on the strong possibility of further discoveries of new anophthalmic trechines belonging to the same group in northeastern Honshu (UÉNO, 1983, p. 8). This expectation was recently realized in the vicinities of Yonezawa City by Mr. Kôichi KUSAKARI, who obtained a close relative of *T. accipitris* in an abandoned conduit of a storage dam constructed across a small tributary of the Mogami-gawa River. Guided by him, Mr. Sumao KASAHARA and I made a trip to the area in which lies the storage dam in question, and succeeded not only in confirming that the species is actually upper hypogean in nature but also in discovering another new upper hypogean species on a nearby hill.

In the present paper, these new species will be described as the sixth and seventh species of the *echigonis* complex of the group of *Trechiama habei*. The abbreviations used herein are the same as those explained in other papers of mine.

I wish herewith to express my deep indebtedness to Messrs. Kôichi KUSAKARI and Sumao KASAHARA, whose kind aid enabled me to complete the present paper.

Trechiama (s. str.) ***kusakarii*** S. UÉNO, sp. nov.

[Japanese name: Kusakari-mekura-chibigomimushi]

(Figs. 1–3)

Length: 4.40–4.85 mm (from apical margin of clypeus to apices of elytra).

Externally very close to *T. accipitris* S. UÉNO (1983, p. 8, figs. 2–5; 1985, p. 74, pl. 14, fig. 15) of the Shirataka Hills, with which it agrees in every detail excepting slight differences in the shape of labrum, prothorax and elytra. Strikingly different from the northern species in the configuration of aedeagus, which is much more elongate with

1) This study is supported by the Grant-in-aid for Scientific Research No. 60304013 from the Ministry of Education, Science and Culture, Japan.

reduced lateral walls, longer and narrower apical lobe, and much smaller copulatory piece.

Colour somewhat darker than in *T. accipitris*. Head almost identical with that of *T. accipitris*, but the apical margin of labrum bears a broad central tubercle and is distinctly bisinuate; antennae almost reaching the middle of elytra in ♂. Pronotum usually a little wider at base than in *T. accipitris* but otherwise identical; PW/HW 1.34–1.47 (M 1.39), PW/PL 1.13–1.21 (M 1.17), PW/PA 1.42–1.48 (M 1.45), PW/PB 1.25–1.38 (M 1.32), PB/PA 1.05–1.14 (M 1.10). Elytra usually shorter than in *T. accipitris*, with prehumeral borders usually less oblique; EW/PW 1.58–1.70 (M 1.63), EL/EW 1.40–1.49 (M 1.43); stria 5 hardly deepened near base; apical striole more sharply impressed though merging anteriorly into stria 5. Ventral surface and legs as in *T. accipitris*.

Male genital organ elongate and moderately sclerotized. Aedeagus about three-sevenths as long as elytra, depressed and not arcuate at middle, gently sinuous in dorsal view, and widely open on the dorsal surface; lateral walls much reduced, low and narrow; basal part fairly large and elongate, abruptly bent, and deeply emarginate at the sides of relatively small basal orifice; sagittal aileron rudimentary; viewed laterally, apical lobe narrow, gradually narrowed apicad, slightly curved ventrad, and dorsoventrally thickened at the tip; viewed dorsally, apical lobe elongate, somewhat inclined to the left, gradually narrowed apicad, and narrowly rounded at the extremity; ventral margin almost straight at middle in profile. Inner sac largely exposed, bearing a simple hyaline copulatory piece and three patches of sclerotized teeth, two left lateral and one right dorsal; copulatory piece right lateral, thin, somewhat spatulate, widely rounded at apex, and becoming membraneous proximally; left proximal teeth-patch composed of large, heavily sclerotized teeth ranged in an irregular arc; left apical teeth-patch compact, consisting of thin spine-like scales; right dorsal teeth-patch small and horizontal, lying just inside apical orifice. Styles fairly large and elongate, left style much larger than the right, each bearing four long setae at apex.

Type series. Holotype: ♂, allotype: ♀, abandoned conduit of the Omono-gawa Dam, 14–IV–1986, K. KUSAKARI leg. Paratypes: 1 ♂ (somewhat teneral), 1 ♀, same locality as the holotype, 6–VI–1986, K. KUSAKARI & S. KASAHARA leg.; 2 ♀♀, same locality, 7–VII–1986, K. KUSAKARI leg. (found in baited traps set by S. UÉNO on 6–VI–1986); 2 ♀♀, Shibakura, 6–VI–1986, S. UÉNO leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Localities. Abandoned conduit of the Omono-gawa Dam at Yamanashizawa, 380 m in altitude (type locality!), and Shibakura, 420–430 m in altitude, both in Yanazawa of Yonezawa-shi, northeastern Honshu, Northeast Japan.

Notes. Though very peculiar in the configuration of aedeagus, this new species must have become differentiated from a common ancestor with *T. accipitris* in rather a recent time. The two species are not only very similar to each other in external morphology, but are identical in the basic structure of male genitalia. Perhaps the ancestral trechine was once widespread on the hills surrounding the Yonezawa Basin,

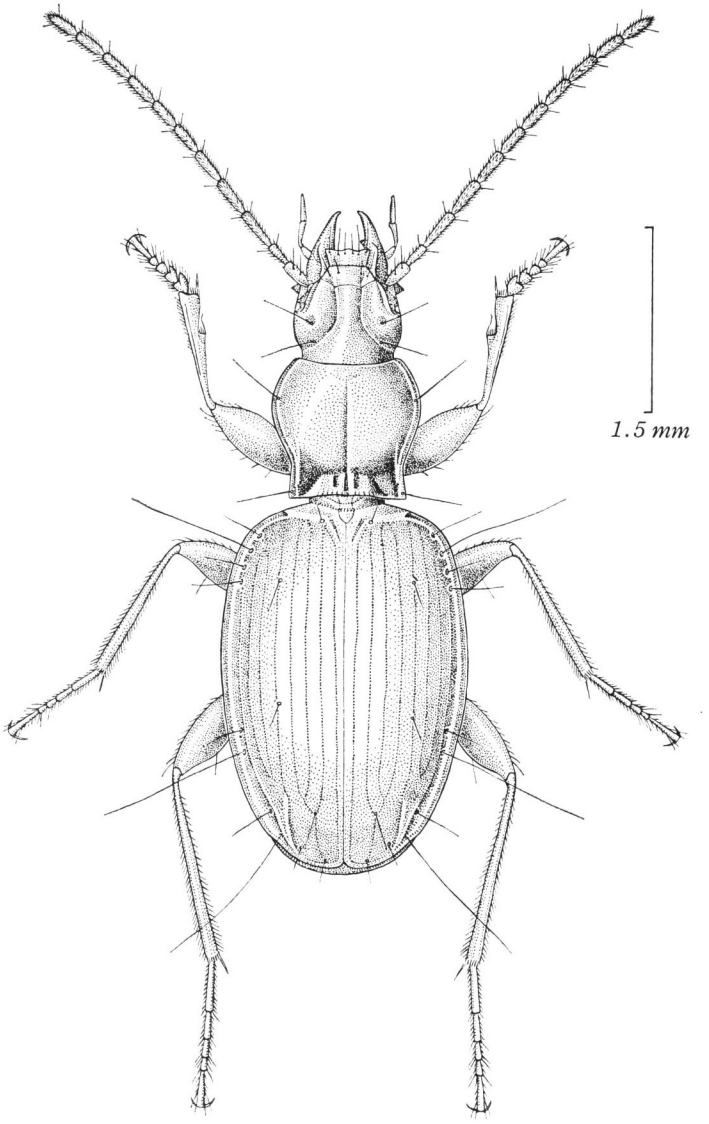


Fig. 1. *Trechiama* (s. str.) *kusakarii* S. UÉNO, sp. nov., ♂, from the abandoned conduit of the Omono-gawa Dam at Yamanashizawa.

but later split up into several sibling species when isolation of different populations took place, probably due to the erosion of the hills by the tributary valleys of the Mogami-gawa River.

The two known localities of *T. kusakarii* lie in the Ohta-gawa Valley, a small tributary of the Mogami-gawa River, to the southwest of Yonezawa City, and are

opposite to the type locality of *T. accipitris* beyond the Yonezawa Basin. Its type locality, the abandoned conduit of the Omono-gawa storage dam, is about 29 km distant to the south-southwest from the latter, and is about 380 m above sea-level. It is a cemented tunnel used for detouring the water of the valley when the dam was under construction, and is now blocked at a point not far from the lower entrance. Near the blocking point, there is a heap of mud and stones formed by a collapse, in which lives the trechine beetle. A female specimen was also found from under a stone just inside the entrance.

The second known locality of *T. kusakarii* is a gully at Shibakura about 1.3 km south-southwest of the type locality. Here the beetle is typically upper hypogean, having been found from beneath colluvia accumulated at the side of the stream.

This interesting new species is dedicated to Mr. Kôichi KUSAKARI, who has devoted himself to the clarification of the fauna of Yamagata Prefecture.

Trechiama (s. str.) ***uncatus*** S. UÉNO, sp. nov.

[Japanese name: Yanazawa-mekura-chibigomimushi]

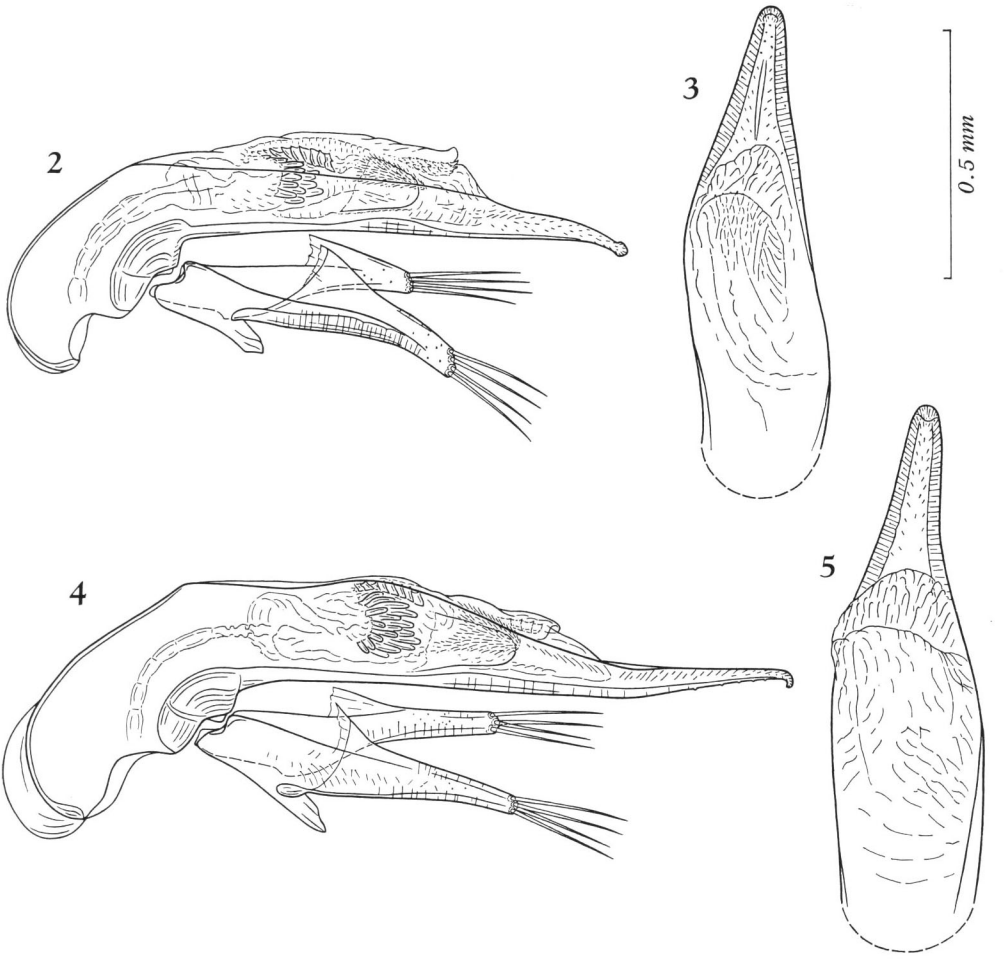
(Figs. 4–5)

Length: 5.05 mm (from apical margin of clypeus to apices of elytra).

Very closely allied to *T. kusakarii* S. UÉNO, but slightly larger, with smaller head and anteriorly contracted prothorax. Readily distinguished from *T. kusakarii* by the peculiarity of its aedeagus, whose lateral walls are hardly reduced and whose apical lobe is obviously longer and ventrally recurved at the extremity.

Colour as in *T. kusakarii*. Head smaller than in *T. kusakarii*, though almost identical in conformation with the latter; apical margin of labrum slightly bisinuate, with the central tubercle less prominent. Pronotum narrower at apex than in *T. kusakarii*, with the sides more strongly rounded in front; PW/HW 1.47, PW/PL 1.18, PW/PA 1.52, PW/PB 1.30, PB/PA 1.17. Elytra as in *T. kusakarii* though less convex, especially in apical area; EW/PW 1.59, EL/EW 1.45. Other features as in *T. kusakarii*.

Male genital organ larger, more elongate and more heavily sclerotized than in *T. kusakarii*. Aedeagus a half as long as elytra, depressed, widely open on the dorsal surface and not arcuate at middle as in *T. kusakarii*, but the lateral walls are hardly reduced and the dorso-lateral parts of inner sac are not exposed; basal part more elongate and less strongly bent ventrad than in *T. kusakarii*, with fairly large basal orifice, whose sides are widely emarginate; sagittal aileron large; apical lobe narrow, obviously longer than in *T. kusakarii*, reflexed at the base, almost straight, and gradually narrowed towards apex, which is ventrally recurved and forms a distinct hook; viewed dorsally, apical lobe blunt at the extremity; ventral margin almost straight at middle in profile. Inner armature as in *T. kusakarii*, but the copulatory piece is more elongate and the left proximal teeth-patch is larger. Styles slender, with narrow apical parts, left style longer than the right but not much larger than the latter, each bearing four long setae at apex.



Figs. 2–5. Male genitalia of *Trechiama* spp.; left lateral view (2, 4), and apical part of aedeagus, dorsal view (3, 5). —— 2–3. *T.* (s. str.) *kusakarii* S. UÉNO, sp. nov., from the abandoned conduit of the Omono-gawa Dam at Yamanashizawa. —— 4–5. *T.* (s. str.) *uncatus* S. UÉNO, sp. nov., from Itoguro.

Female unknown.

Type specimen. Holotype: ♂, 6–VI–1986, S. UÉNO leg. Deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Itoguro, 440 m in altitude, in Yanazawa of Yonezawa-shi, northeastern Honshu, Northeast Japan.

Notes. It was most unexpected that a very close relative of *T. kusakarii* did occur in the Tsunaki-gawa Valley on the other side of the Yanazawa Hills from the Ohta-gawa Valley, in which lie the known localities of the latter species. The hills separating the two parallel valleys are by no means high, being only 700 m above sea-level even

at the highest point, or only 300 m or so above the known habitats of the trechine beetles. Besides, the spot at which the type specimen of *T. uncatus* was found is only 2.3 km distant to the southeast in a bee-line from Shibakura, the southern known locality of *T. kusakarii*. It is difficult to determine the cause of speciation within such a small, seemingly uniform area, though certain barrier against their dispersal should exist somewhere on the Yanazawa Hills.

The single known specimen of *T. uncatus* was dug out from the lower part of a talus accumulated on the right bank of the gully called Ni-no-sawa, a small branch of the Tsunaki-gawa. It was found at the wet muddy bottom about 50 cm below the surface. We endeavoured to obtain some more specimens of the trechine beetle, but were unable to make satisfactory investigation, mainly because of the danger of collapse of the loose talus.

References

UÉNO, S.-I., 1972. A new endogean *Trechiama* (Coleoptera, Trechinae) from the northern side of Central Japan. *Annot. zool. japon.*, **45**: 42–48.

———— 1983. New anophthalmic *Trechiama* (Coleoptera, Trechinae) from the upper hypogean zone of Northeast Japan. *J. speleol. Soc. Japan*, **8**: 7–17.

———— 1985. Carabidae (Nebriinae, Elaphrinae, Loricerinae, Scaritinae, Broscinae, Trechinae). *In* UÉNO, S.-I., Y. KUROSAWA & M. SATÔ (eds.), *The Coleoptera of Japan in Color*, **2**: 54–88. Hoikusha, Osaka. (In Japanese.)