

A New *Kurasawatrechus* (Coleoptera, Trechinae) Found in a Tuff Mine at the Northern Side of Central Japan¹⁾

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Until recently, no cave-dwelling trechine beetles were known in the coastal area of the central part of the Hokuriku District. This was mainly due to the scarcity of natural cavities in that part of Central Japan. However, the realization that troglomorphic animals frequently occur in artificial cavities enabled us to pursue biospeological investigations in such seemingly sterile areas (cf. UÉNO, 1977), and several collecting trips were made to the district in question. Our efforts were repaid by the discovery of two anophthalmic species of trechine beetles, a new *Trechiana* and a new *Kurasawatrechus*, both in mine adits driven into green tuffs. The former was found in a small isolated hill in Fukui City, and the latter near the southern edge of the Hôdatsu Hills at the base of the Noto Peninsula. As the new *Trechiana* will be included in my forthcoming paper dealing with the group of *T. ohshimai*, I am going to describe only the new *Kurasawatrechus* in the present paper.

The discovery of these new trechines is not only interesting from the taxonomic point of view, but is also important in biospeology, since a very few cavities formed in tuffs have previously been known to harbour specialized subterranean animals. Concerning Trechinae, *Rakantrechus tofaceus* S. UÉNO (1970, pp. 102, 106, fig. 9) from central Kyushu has been the only Japanese species ever found in a tuff cave. However, tuff beds are widely deposited on the Japan Sea side of Honshu, where natural caves are very scarce. It is expected that more species of anophthalmic trechines will be found by future investigations of tuff mines and that they will fill in blanks in our knowledge of their distributional patterns.

The abbreviations used in this paper are the same as explained elsewhere.

My hearty thanks are herewith expressed to Dr. Kunio SUZUKI, Dr. Kiyoshi KAMIMURA and Mr. Yoshiaki NISHIKAWA, whose kind aid in the field made it possible to bring the present interesting species to light.

***Kurasawatrechus aberrans* S. UÉNO, sp. nov.**

(Figs. 1-3)

Length: 3.50-3.90 mm (from apical margin of clypeus to apices of elytra).

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An isolated species readily recognized on its large size, elongate pronotum and elytra, and above all, on the absence of anterior dorsal pore on the third elytral stria. In the shape of male genitalia, it resembles *K. chinchiro* S. UÉNO (1974, p. 196, figs. 4–5) of the caves on the Mino Highlands, but besides the difference in the features noted above, it differs from the latter species in many points, e.g., slenderer appendages, especially antennae, shallower striae on elytra, and entirely glabrous ventral surface. *Kurasawatrechus torigaii* S. UÉNO (1973, p. 127, figs. 1–2) occurs in a cave geographically nearest to the type-locality of *K. aberrans*, but the two species are so decisively different from each other in both the external and genitalic characters that the relationship between them does not seem to be close.

Body elongate, with relatively long antennae and legs. Colour reddish brown, shiny, translucent when alive; palpi, antennae (segments 2–4 usually somewhat infuscated), ventral surface and legs yellowish brown.

Head subquadrate, about as long as wide, depressed above, and glabrous even on vertex; frontal furrows deep and entire, not angulate at middle, and rather gradually divergent in front and behind; frons and supraorbital areas gently convex; genae feebly convex only at the posterior part, being covered with erect pubescence; neck very wide, neck constriction shallow though distinct; labrum shallowly emarginate and slightly bisinuate at apex; mentum tooth narrow, porrect, and slightly bifid at the tip; palpi short and fairly thick, with apical segments subconical; antennae slender for a member of *Kurasawatrechus*, subfiliform and slightly dilated towards apices, reaching basal three-eighths of elytra in ♂, reaching basal one-third of elytra or extending beyond that level in ♀ though more or less shorter than in ♂; antennal segment 2 about two-thirds as long as segment 3 and about five-sixths as long as segment 4, segments 7–10 oblong-oval, each more than twice as long as wide, terminal segment the largest, much longer than scape.

Pronotum subcordate, evidently wider than head, about as wide as or very slightly wider than long, and widest at about five-sevenths from base, with ample basal part; PW/HW 1.37–1.44 (M 1.40), PW/PL 1.00–1.05 (M 1.03), PW/PA 1.28–1.35 (M 1.32), PW/PB 1.20–1.26 (M 1.22); surface convex and sparsely covered with fairly long, suberect hairs; sides smooth and not ciliated, narrowly bordered, gently arcuate in front, shallowly sinuate at about three-tenths from base, and then either subparallel or slightly divergent towards hind angles, which are usually somewhat sharp but sometimes rectangular; apex slightly arcuate, with front angles a little projecting forwards though blunt; base more or less wider than apex, PB/PA 1.03–1.12 (M 1.08), slightly bisinuate, and distinctly indented at the median part; median line distinctly impressed on the disc but not reaching base; apical transverse impression vague; basal transverse impression continuous, with a shallow longitudinal foveole on each side of median line and merging on each side into basal fovea, which is large but shallow, flat and smooth at the bottom; postangular carinae absent; basal area longitudinally strigose.

Elytra oblong-ovate, widest at about three-sevenths from base, and more gradually

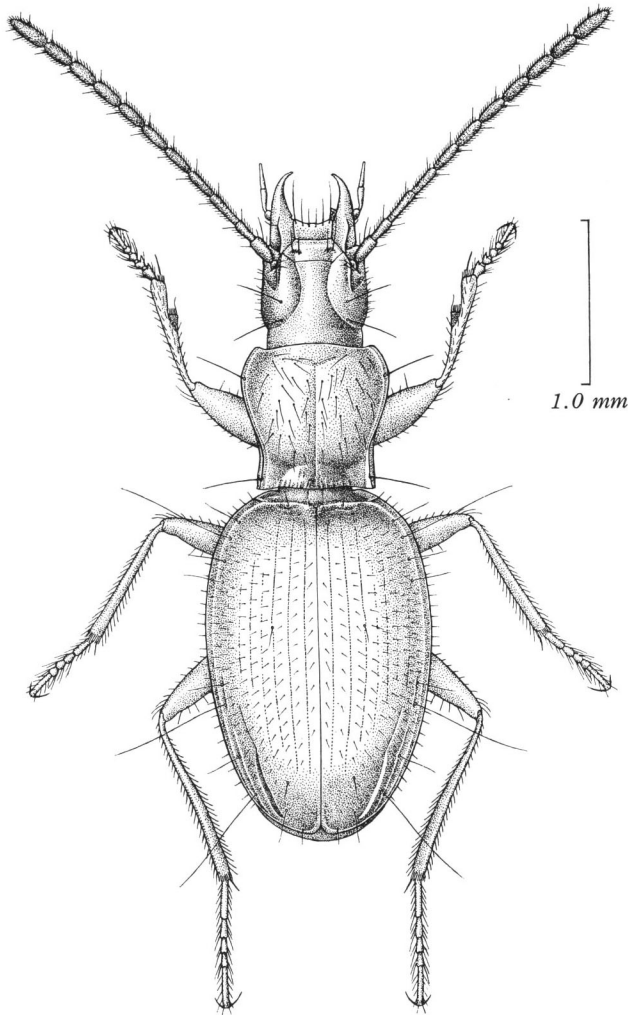


Fig. 1. *Kurasawatrechus aberrans* S. UÉNO, sp. nov., ♂, of Kōmori-dōkutsu Mines on Inaba-yama Hill.

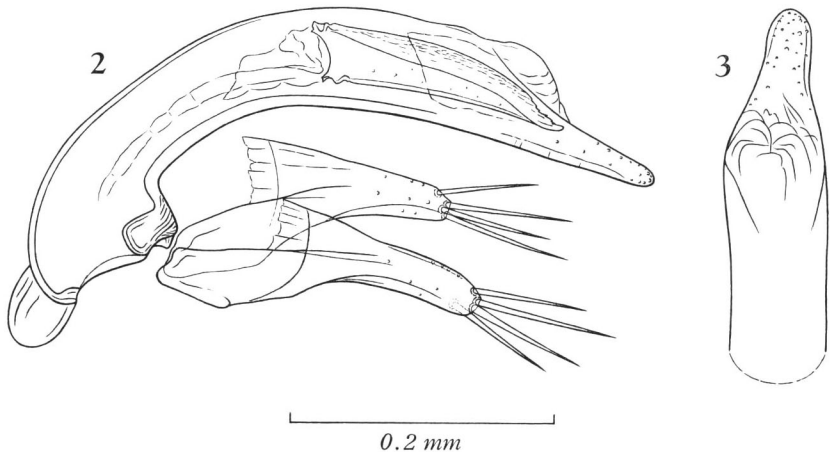
attenuated towards apices than towards bases; EW/PW 1.50–1.57 (M 1.55), EL/EW 1.45–1.52 (M 1.50); surface convex, especially in basal two-thirds; shoulders effaced, with prehumeral borders feebly arcuate and very oblique; sides narrowly bordered except for rather widely reflexed basal portion, gently but regularly arcuate in front, less so behind middle to the level of the apicalmost pore of marginal umbilicate series, and then rather abruptly rounded to suture without distinct preapical emarginations, the apices forming a distinct re-entrant angle; striae superficial, indistinctly crenulate, obsolete at the side and towards apices, 1–2 usually entire though sometimes disap-

pearing near apices, 3 also distinct though apically abbreviated, 4-5 traceable on the disc, 6-7 very slight and fragmentary, 8 deeply impressed behind the middle group of marginal umbilicate pores; scutellar striole absent; apical striole deep, long, almost straight anteriorly, and directed to the site of stria 7; intervals flat, each bearing a row of short erect pubescence; apical carina long though obtuse.

Microsculpture of head distinct, consisting of polygonal meshes, which are fine and almost isodiametric on frons but coarse and more or less wide on vertex; that of pronotum and elytra composed of wide polygonal meshes but much less sharply impressed than on head even on pronotum and largely obliterated on elytra.

Chaetotaxy normal except for the loss of anterior dorsal pore on elytra; submentum with a transverse row of eight setae; posterior marginal seta on pronotum evidently distant from hind angle; elytral stria 3 with a single setiferous dorsal pore at about two-fifths from base; preapical pore obviously more distant from apex than from suture and closer to apical striole than to suture.

Ventral surface entirely glabrous. Legs fairly long and slender; protibiae almost straight, entirely pubescent and not externally grooved; tarsi thin, segment 1 a little longer than segments 2-3 together in mesotarsus, almost as long as segments 2-4 together in metatarsus; in ♂, two proximal segments of each protarsus moderately dilated and inwardly denticulate at apices.



Figs. 2-3. *Kurasawatrechus aberrans* S. UÉNO, sp. nov., of Kōmori-dōkutsu Mines on Inabayama Hill. — 2. Male genitalia, left lateral view. — 3. Apical part of aedeagus, dorsal view.

Male genital organ exceedingly small though moderately sclerotized. Aedeagus only two-ninths as long as elytra, tubular, moderately arcuate in basal three-fifths but rather straight in apical part, and not strongly bent at the basal part; basal orifice small, with the sides shallowly emarginate; sagittal aileron small though protruding;

apical lobe narrowly produced, straight and inclined to the left, with the tip blunt in lateral view and narrowly rounded in dorsal view; viewed laterally, ventral side widely emarginate before middle but almost straight in apical part. Copulatory piece elongate and spatulate, being serrulate at apex. Styles short and broad, left style obviously longer than the right, each provided with four setae at apex.

Type-series. Holotype: ♂, allotype: ♀, paratypes: 2 ♂♂, 4 ♀♀, 23-IV-1977, Y. NISHIKAWA & K. SUZUKI leg. (NSMT).

Type-locality. Tuff mines called "Kômorî-dôkutsu", at Miné on Inaba-yama Hill in Oyabé-shi, Toyama Prefecture, on the Japan Sea side of central Honshu, Japan.

Notes. The discovery of the present species is noticeable in several points. First of all, it is the first species of *Kurasawatrechus* ever found in a tuff mine; its discovery has offered a favourable prospect of looking for other species of the genus in wide blank areas on the Japan Sea side of central and northern Honshu. Secondly, its locality is on the northeastern continuation of the range of the group of *Trechiana ohshimai*, which belongs to an entirely different group of trechine beetles. It is true that Kômorî-dôkutsu Mines are only 52 km distant to the northwest from Hyak-kendaki-dô Cave, the type-locality of *K. torigaii*, but they belong to different topographic areas and lie at different altitudes; the former is situated at an elevation of 250 m on a slope of a low hill of only 347 m in height, while the latter lies at an elevation of 860 m on a range of mountains 1,300 m or more in height. This seems to have brought about the isolated morphological features of *K. aberrans*, whose true affinity cannot be determined at present. Thirdly, its occurrence in the Hôdatsu Hills suggests that whole of the Noto Peninsula, and possibly also the Island of Sado, might be included in the distributional range of *Kurasawatrechus*.

Kômorî-dôkutsu is a group of mine adits driven into the green tuff on either side of a small valley at the northwestern slope of Inaba-yama Hill, which lies near the southern edge of the Hôdatsu Hills at the base of the Noto Peninsula. The adits were excavated for the purpose of taking out building stones, and were abandoned many years ago. We investigated seven adits on the right side of the valley, but were able to find the trechine beetle only in the fourth one from the upper stream. This adit was considerably different from the others, all of which were scanty of clay as is usual for tuff mines, in that a surface stream flowed into it from the entrance and deposited a thick layer of mud mingled with organic debris in the dark zone. The trechine beetle was found from near the entrance to the innermost, always from beneath large stones lying on or embedded in wet mud.

References

- UÉNO, S.-I., 1970. The cave trechines (Coleoptera, Trechinae) of Kumamoto Prefecture in Southwest Japan. *Bull. Natn. Sci. Mus., Tokyo*, **13**: 91-116, 1 folder.
——— 1973. Two new cavernicolous *Kurasawatrechus* (Coleoptera, Trechinae) from the northern side of central Honshu, Japan. *Annot. zool. Japon.*, **46**: 127-134.

- UÉNO, S.-I., 1974. The *Kurasawatrechus* (Coleoptera, Trechinae) of the Mino Highlands and the adjacent areas, Central Japan. *Bull. Natn. Sci. Mus., Tokyo*, 17: 193–204.
- 1977. The biospeleological importance of non-calcareous caves. *Proc. 7th Int. Speleol. Congr., Sheffield 1977*, pp. 407–408.