

The Cave Trechids from the Central Part of
the Chûgoku District, Japan

I. A New Species of *Trechiana* from the Taishaku Limestone Area¹⁾

By

Shun-Ichi UÉNO

Zoological Institute, College of Science, University of Kyoto

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The speleological expedition by the biologists of Kyoto University (Prof. Riozo YOSII, Mr. Gentaro IMADATÉ and the writer himself) visited the central part of the Chûgoku district in the summer of 1953. Its main object was focused to investigate the cave fauna of the Taishaku limestone area that lay at about 80 km northeast of Hiroshima. This expedition seemed to be successful in bringing many cave animals to light, and in particular in obtaining numerous specimens of two species of cave trechids. One of these two species was found only in the depths of limestone caves and appeared to be at a high grade of adaptation to cave life²⁾, while the other was less evolved and was abundant particularly at the places between the twilight and the dark zones. The former species seemed obviously to be much ancient a cave dweller than the latter. At that time, however, there was no other way to ascertain the presumption than the comparison of morphological features between the two species.

After that time, extensive surveys were made in the caves of central Chûgoku, and numerous trechids were taken there. The epigeal habitats of the latter species were also found. As our present knowledge on the trechid fauna of that part of the Japanese Islands has thus become fairly good, the writer takes this opportunity of enumerating them. Three or four papers dealing with the subject will appear in a series, of which the first part will be devoted to the description of the less evolved trechid found in the limestone caves in the Taishaku limestone area.

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1) Contribution No. 12 from the Speleological Society of Japan.

2) This new species, belonging to the group of *Trechiana oni*, will be described in the third part of the present series of reports.

Trechiana (s. str.) **yokoyamai** S. UÉNO, sp. nov.

Length: 5.4–6.4 mm (from front margin of clypeus to anal end).

Body elongate and glabrous, fore body hardly narrowed; depigmented and microphthalmic. Colour reddish brown to dark reddish brown, shiny, translucent when alive; elytra usually paler than the fore body; palpi pale; apical segments of antennae, apical sternites, tibiae and tarsi usually yellowish brown (at least more or less paler than the body).

Head fairly large and relatively wide; flat on dorsal side, though both supra-orbital areas and front moderately convex; frontal furrows deep throughout, fairly distant from one another and not angulate at middle; microsculpture well marked, composed mostly of wide meshes; eyes small and flat, evidently faceted, though apparently not functional (very rarely covered with a coat of chitin); genae gently convex and glabrous, nearly twice as long as eyes; mandibles stout but rather elongate, hooked at apices; mentum tooth stout, with the tip truncated, emarginate or deeply cleft according to individuals; ligula rounded at apex; palpi slender, with the apical segments elongate and subacuminate; antennae fairly long and slender, extending beyond the middle of elytra, with segment 3 a little less than twice as long as segment 2 and nearly as long as segment 4.

Pronotum transverse subcordate and convex, fully 1.4 times wider than head (range 1.34–1.51, mean 1.42), about 1.1 times wider than long (range 1.07–1.14, mean 1.10), widest at three-fifths to two-thirds from base according to individuals (usually widest at about five-eighths from base); the ratio of the greatest width to the width of apex ranging 1.44–1.57 (mean 1.50), that to the width of base ranging 1.39–1.50 (mean 1.44); lateral sides entirely bordered and reflexed, with marginal gutters fairly wide behind the widest part but becoming narrower near front angles, widely and rather strongly rounded in front, shortly but rather deeply sinuate just before hind angles; both lateral and postangular setae present, the latter of which is removed a little before hind angle; apex slightly emarginate; base usually a little wider than apex but sometimes nearly as wide as the latter (range 1.00–1.07, mean 1.03), nearly straight at middle, and more or less (sometimes deeply) emarginate on each side just inside hind angle; front angles slightly advanced and rounded, hind angles more or less acute; median line clearly impressed, not reaching apex but widening near base; apical transverse impression shallow, vaguely wrinkled near median line; basal transverse impression fairly wide and deep, provided with an obvious fovea on each side of median line and merging on each side into deep basal fovea, which is somewhat rugose on the bottom and extends anteriorly parallel with the side border; postangular carina fairly long and more or less prominent; surface smooth, with vague transverse striations, basal area longitudinally strigose (rarely smooth); microsculpture formed by transverse meshes and fine transverse lines.

Elytra oblong-ovate and convex, though rather flat on the disk, 1.51–1.61 times wider than pronotum (mean 1.58), 1.58–1.67 times longer than wide (mean 1.63),

widest at about middle; shoulders distinct and rounded, prehumeral borders terminating perpendicularly to the suture; lateral sides rather widely explanate and reflexed, very slightly emarginate behind shoulders, slightly rounded at middle and slightly emarginate before apices, which are rounded; striae shallow but entire, evidently crenulate; scutellar striole long; apical striole deep, becoming nearly parallel with the suture and joining stria 5; intervals flat, apical carina moderately prominent; microsculpture composed of fine transverse lines but rather indistinct. Setiferous dorsal pores remarkably variable both in the number and in the position; in the typical specimens, there are three dorsal pores on stria 3 at one-tenth to one-seventh, three-eighths to the middle, and about two-thirds from base respectively, and a single dorsal pore on stria 5 at one-fifth to two-ninths from base (*cf.* Fig. 1); according to individuals, the second or the third pore on stria 3 frequently disappearing, a fourth pore rarely appearing on stria 3, and a second pore sometimes present on stria 5 of one elytron or both elytra³⁾; in these aberrant individuals, the position of the second or the third pore on stria 3 variable to a high degree; preapical pore always situated at the meeting point of striae 2 and 3.

Ventral surface glabrous; anal sternite with one seta on each side in ♂, two in ♀. Legs slender; each protibia provided with an external groove; in ♂ segments 1 and 2 of each protarsus widely dilated and sharply produced inwards at apices.

Male genital organ⁴⁾ relatively small and moderately chitinized. Aedeagus

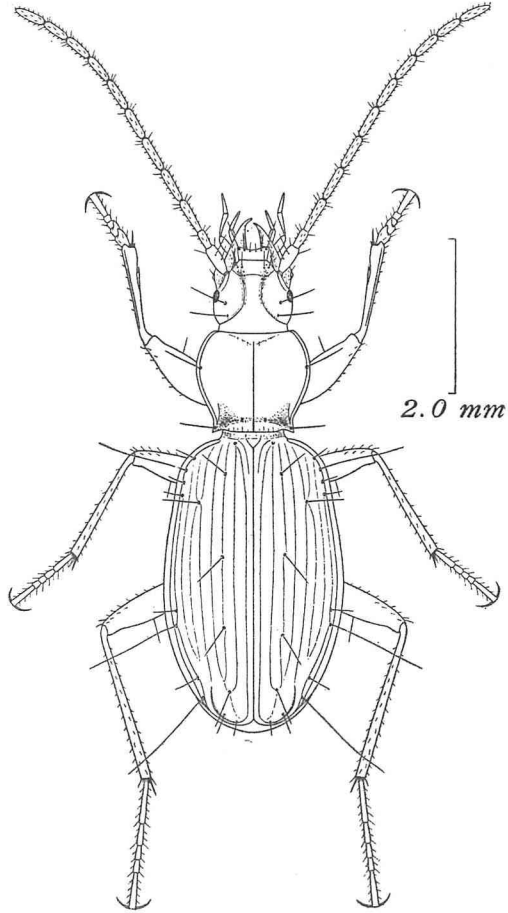


Fig. 1. *Trechiamia* (s. str.) *yokoyamai* sp. nov., ♂, of Aidogō-no-kaza-ana Cave.

3) *Cf.* Table 1 in the second part of this series (see p. 197).

4) A figure of the male genitalia of this new species will be given in the text in the second part of this series (see p. 192, fig. 4).

fairly slender, not arcuate and attenuated towards apex, which is dorsally denticulate at the tip in profile; basal part well bending towards ventral side, with a large hyaline sagittal aileron; basal orifice large, with lateral sides deeply emarginate; ventral side very slightly convex at middle and slightly concave before apex. Inner sac without developed copulatory piece but with two groups of teeth; the basal group of these two groups composed of large compact teeth and covering the left wall of the sac at about middle; the apical group placed close to apical orifice and composed of small loose teeth, which are weakly chitinized. Styles not very long, left style evidently wider and longer than right style, each provided with four setae at apex (sometimes five setae present on one style, rarely on both styles).

Type-specimens: Described on the basis of 127 specimens, which were taken in 4 different limestone caves, as listed below.

Holotype: ♂, allotype: ♀ (Aidogô-no-kaza-ana Cave, 24-VIII-1953, collected by S. UÉNO). Paratypes: 53 ♂♂, 61 ♀♀ (Aidogô-no-kaza-ana Cave, 23~24-VIII-1953, by S. UÉNO, G. IMADATÉ and R. YOSUI); 1 ♂, 1 ♀ (Kozaru-ga-ana Cave, 23-VIII-1953, by S. UÉNO); 1 ♂ (Natsumori-daiichi-dô Cave, 9-VIII-1956, by J. ISHIKAWA); 5 ♂♂, 3 ♀♀ (Oni-no-iwaya Cave, 21-VIII-1953, by S. UÉNO).

All the type-specimens are preserved in the writer's collection.

Type-localities: A limestone cave called "Aidogô-no-kaza-ana", Aido, at Nagato of Jinseki-chô; a limestone cave called "Kozaru-ga-ana", Hinokubi, at Nagato of Jinseki-chô; a limestone cave called "Natsumori-daiichi-dô", Natsumori, at Taishaku of Tôjô-chô; a limestone cave called "Oni-no-iwaya", at Kami-Taishaku of Tôjô-chô; all in the Taishaku limestone area in Hiroshima Prefecture, on the central massif of the Chûgoku district, western Honshu.

The present new species seems to be related to *T. oreas* H. W. BATES, known from Mt. Iwaki-san in northern Honshu. However, it may easily be distinguished from the latter by the depigmented body, much smaller eyes, longer antennae, more elongate elytra and so on. The presence of eyes, though small, is peculiar to this species among the cave trechids of southwestern Japan.

As mentioned before, this beetle may be a recent cave dweller. Its main habitat is usually the places not far from the entrances, though the beetle is found also in the depths of the caves. It hides itself under stones or rotten boards, sometimes swarming in vegetable debris. The present writer who investigated a small limestone cave called "Aidogô-no-kaza-ana", on August 23rd and 24th, 1953, was surprised by an assemblage of a great number of its individuals in a small room of about three square metres. This room was situated at the bottom of a shaft that was placed but several metres inside the narrow opening. On the floor of the room there heaped a good deal of decayed straws, which were thrown in by the natives, yielding the nutriment of the beetle.

Trechiamia yokoyamai has the widest range of distribution among the Japanese cave trechids. However, some characters, particularly the shape of pronotum and of aedeagus, vary from local population to population. It may be separated into several subspecies, as will be described in the following part of this series.