

A Remarkable New Cave Trechid from Eastern Kyushu of Japan
(Coleoptera, Harpalidae)¹⁾

By

Shun-Ichi UÉNO

Zoological Institute, College of Science, University of Kyoto

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In the central part of the Island of Kyushu, there are a number of Palaeozoic limestone blocks spread from Tsukumi in the northeast to Sashiki in the southwest. They are found on the western part of the remains of the ancient Kuma-Kii mountain range, and belong to the same system of formation with that of the Island of Shikoku. The isolation of these two parts of the ancient massif may be said to have occurred by the subsidence of the Bungo Channel either late in Pliocene or early in Pleistocene. It is therefore natural that the cave beetles of central Kyushu may be related to those of western Shikoku. Troglobiontic trechids have hitherto been known in sixteen caves and mines in the area in question. All of them belong to the genus *Rakantrechus* and may be distributed to two different subgenera. They will be enumerated in several papers, to be published hereafter.

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***Pilosotrechiana* S. UÉNO, subgen. nov.**

Type-species: Rakantrechus mirabilis S. UÉNO, sp. nov.

Body elongate and pubescent; depigmented. Head with entire frontal furrows which are not angulate at middle; genae pubescent; mentum free, not fused with submentum; mentum tooth large and triangular, with the tip blunt; palpi fairly thick. Pronotum cordate, contracted posteriorly; pronotal base emarginate on each side just inside hind angle, which is relatively small. Elytra elongate and striate; scutellar striole present; stria 3 with two setiferous dorsal pores before middle, stria 5 with a single dorsal pore behind middle, preapical pore placed on the meeting point of striae 2 and 3. Humeral group of umbilicate pores irregular and not aggregated; the first and the second pores adjoining marginal gutter, while the other two distant from the gutter; the third pore closest to the second, and the fourth isolated from the other three.

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Prosternum sparsely pubescent. Sternites 3-6, each with a row of a few hairs along the hind margin; anal sternite with one seta in ♂, two in ♀ on each side. Legs slender; protibiae externally grooved and glabrous even at the apical part; in ♂ protarsal segments 1 and 2 widely dilated and well produced inwards at apices.

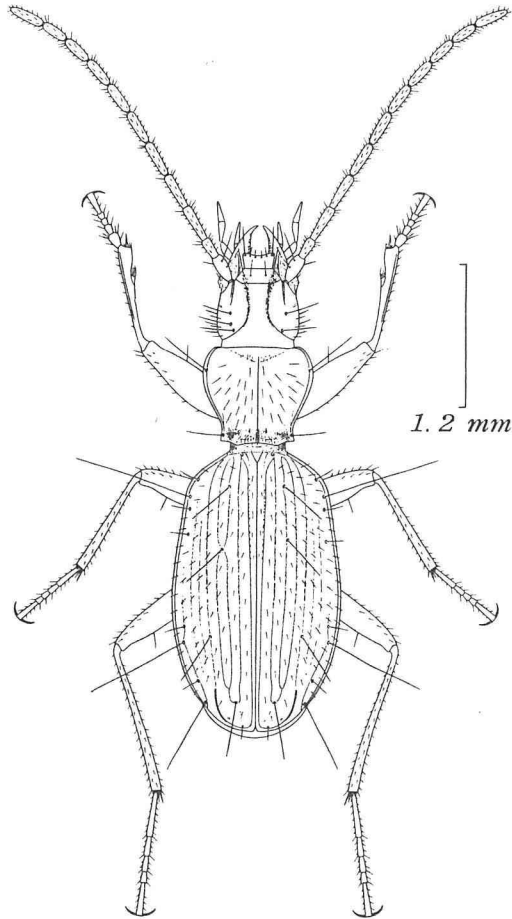


Fig. 1. *Rakantrechus* (*Pilosotrechiana*) *mirabilis*
subgen. et sp. nov., ♀, of Tokura-no-ana Cave.

Aedeagus small, with elongate basal part which bends towards ventral side; basal orifice small; sagittal aileron present but narrow; apical part prolonged into a long beak, which is slightly dilated towards apex in dorsal aspect. Inner sac armed with a large copulatory piece and a group of large teeth; copulatory piece

asymmetric and placed at the ventral position inside the sac, with rounded apex. Each style provided with four apical setae.

This new subgenus seems to be related to *Rakantrechus* (s. str.), but is different from the latter in the pubescent pronotum and elytra, the simple tooth of mentum, the different arrangement of the humeral group of marginal umbilicate series, and so on. So far as known to the writer, it comprises only a single species, which is restricted to the northeastern corner of the limestone cave area in central Kyushu.

***Rakantrechus (Pilosotrechiana) mirabilis* S. UÉNO, sp. nov.**

Length: 3.9–4.1 mm (from front margin of clypeus to anal end).

Colour light reddish brown, translucent and shiny; palpi pale; antennae becoming paler towards apices; basal segment of antennae, epipleura, apical sternites and legs yellowish brown.

Head subquadrate, with frontal furrows deep throughout, fairly distant from one another and not strongly curved at middle; dorsal surface glabrous, with supraorbital areas and front moderately convex; microsculpture well marked, composed mostly of wide meshes; eyes absent, the trace of them discernible by a patch situated at a position a little behind the insertion of each antenna; genae moderately convex, provided with fairly long pubescence; present two supraorbital pores, the hind one of which adjoins frontal furrow; in the allotype, a third supraorbital pore present on the left side between the ordinary two pores (Fig. 1); mandibles slender, slightly hooked at apices; antennae long and slender, reaching apical one-fourth of elytra in the holotype, reaching apical one-third of elytra in the allotype, with segment 3 nearly as long as segment 4 and much longer than segment 2.

Pronotum cordate and convex, surface covered with fairly long pubescence, 1.32–1.35 times wider than head, 1.08–1.13 times wider than long, widest at about three-fourths from base (in the allotype) or more in front (in the holotype); lateral sides narrowly bordered and reflexed, with marginal gutters becoming wider at the widest part, moderately rounded in front, nearly straight at middle and rather deeply sinuate before hind angles; both lateral and postangular setae present, the latter of which is situated at a position a little before hind angle; apex nearly straight or very slightly bisinuate, 1.06 times wider than base, which is slightly reduced at middle and distinctly emarginate on each side just inside hind angle; front angles rounded, hind angles rather small and sharp; median line distinct, not reaching apex but widening near base; apical transverse impression shallow and rugose; basal transverse impression wide, fairly deep and more or less uneven, provided with a small fovea on each side of median line, and merging on each side into deep basal fovea, which is not very large but extends anteriorly, parallel with the side border; postangular carina long but obtuse; basal area irregularly wrinkled; microsculpture formed by transverse meshes and fine transverse lines. The expanded parts of the ventro-lateral sides of prothorax hardly or only very slightly visible from above.

Elytra oblong-oval and convex, 1.55–1.63 times wider than pronotum, 1.60–1.64 times longer than wide, widest at about middle; basal part of each elytron somewhat depressed; shoulders distinct but widely rounded, with prehumeral borders very oblique and nearly straight; lateral sides narrowly bordered throughout, nearly straight behind shoulders, gently rounded behind middle and slightly emarginate before apices, which are rounded; striae deep on the disk, but becoming fainter at the sides, deeply crenulate or somewhat catenulate, stria 1 becoming very close to suture behind middle, striae 1–5 deeply impressed near base, stria 8 nearly obsolete before the middle group of marginal umbilicate series; scutellar striole short and rather indistinct; apical striole deep but not very long, slightly divergent anteriorly and directed to the termination of stria 5; intervals slightly convex and more or

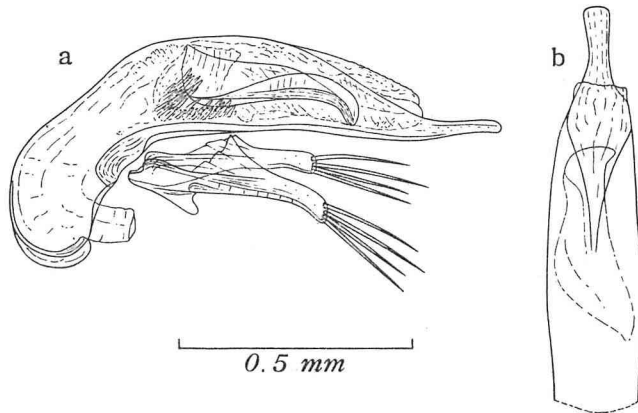


Fig. 2. Male genital organ of *Rakantrechus (Pilosotrechiana) mirabilis* subgen. et sp. nov., of Tokura-no-ana Cave; left lateral view (a), and apical part of aedeagus, dorsal aspect (b).

less uneven, each with an irregular row of pubescence; apical carina prominent; stria 3 with two dorsal pores placed at about one-eighth and two-sevenths to one-third from base respectively; stria 5 with a single dorsal pore at three-fifths to two-thirds from base; microsculpture consisting of fine transverse lines.

Ventral surface smooth. Legs long and slender; meso- and metatarsi thin.

Male genital organ small but moderately chitinized. Aedeagus fairly wide at middle and rather suddenly attenuated towards apex in profile, having nearly parallel sides in dorsal aspect; apical part prolonged into a long beak, which is slightly turned up in profile and is slightly dilated towards apex in dorsal aspect; the tip of apical beak narrowly rounded in profile, subtruncated in dorsal aspect; basal part elongate and well bent towards ventral side, with a narrow sagittal aileron; lateral sides of basal orifice slightly emarginate; ventral side slightly concave behind

middle and slightly convex at the base of apical beak. Copulatory piece remarkably large, imperfectly rolled and placed at the ventral position; right lamella of the piece well developed, particularly at the basal part; apex widely rounded in dorsal aspect and bent towards ventral side; basal part of the piece covered with an irregular mat of large teeth. Styles rather short but fairly slender, left style longer than right style, each with four long setae at apex.

Type-specimens: Described on the basis of a pair of specimens, as given below.

Holotype: ♂ (9-X-1953, collected by T. KUBOTA). *Allotype*: ♀ (22-III-1955, by S. UÉNO).

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

Type-locality: A limestone cave called "Tokura-no-ana", at Tokura of Tsukumi City, Ōita Prefecture, on the eastern coast of the Island of Kyushu.

As mentioned before, the type-locality of this interesting new species is found at the northeastern corner of the limestone cave area in central Kyushu. It is situated at the eastern foot of Mt. Kōnobori-yama (258 m above the sea), not far from the sea, in the northern suburbs of the city of Tsukumi. Lime manufactories developed around the city have destroyed several caves. Tokura-no-ana Cave, too, suffered heavily from one of such manufactories. At present, cave animals are extremely scarce in the remnant of this cave. It is miraculous that such a highly evolved cave beetle as the present species can survive in such a habitat that appears to be unsuitable for it. The type-specimens were found under a collapse of the cave wall at the bottom of a small pit, situated at the innermost of the grotto. In the same habitat, there were found three different kinds of troglobionts, i. e. a polydesmid diplopod, a tomocerid springtail and a tanypleurine pselaphid.