

## Two New Endogean Trechines (Coleoptera, Trechinae) from the Shirakami Mountains, Northeast Japan<sup>1)</sup>

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**Abstract** Two new endogean species of trechine beetles are described from the Shirakami Mountains in northeastern Honshu, Japan. One of them is related to *Oroblemus caecus* and is named *O. yamauchii*. The other is a member of the genus *Kurasawatrechus* (s. lat.), but is widely isolated from all the other congeners previously described from Japan. It is named *K. nishikawai*.

The Shirakami Mountains (also called Shiragami Mountains) are a non-volcanic range stretching latitudinally on the borders of Aomori and Akita Prefectures on the Japan Sea side near the northern end of Honshu, Northeast Japan. The mountain range is not particularly high, only attaining to 1,243 m at the highest point, but is extensively covered with primeval beech forests now not common in the Japanese Islands. For this reason, the greater part of the mountain range is protected as a national nature conservation area and is selected as a candidate of the world cultural and natural heritage.

The insect fauna of this mountain range has not been intensively investigated as yet. However, recent field surveys made by myself and my friends have revealed that at least three new species of trechine beetles occur there, an oculate species of *Trechiamma* belonging to the group of *T. oreas*, an endogean species of *Oroblemus* related to *O. caecus*, and an endogean species of *Kurasawatrechus* of uncertain affinity. The latter two species have so far been known from single localities respectively, whereas the *Trechiamma* is widespread over the mountain range and is variable to some extent both individually and geographically. In any case, they are specifically different from their relatives occurring on Mt. Iwaki-san, a recent volcano that stands at the northern side of the Shirakamis. This fact poses an interesting problem to the origin of colonization by trechine beetles on recent — mostly Postglacial — volcanoes. However, it is not the subject of the present paper to analyse the process of trechine colonization of recent volcanoes. Its purpose is to introduce into science the new species of *Oroblemus* and *Kurasawatrechus* apparently endemic to the Shirakamis. The other species, an oculate *Trechiamma*, will be described in a separate paper to be published in near future.

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The abbreviations employed in this paper are the same as those explained in previous papers of mine.

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*Oroblemus yamauchii* S. UÉNO, sp. nov.

(Figs. 1-2)

Length: 3.15-3.55 mm (from apical margin of clypeus to apices of elytra).

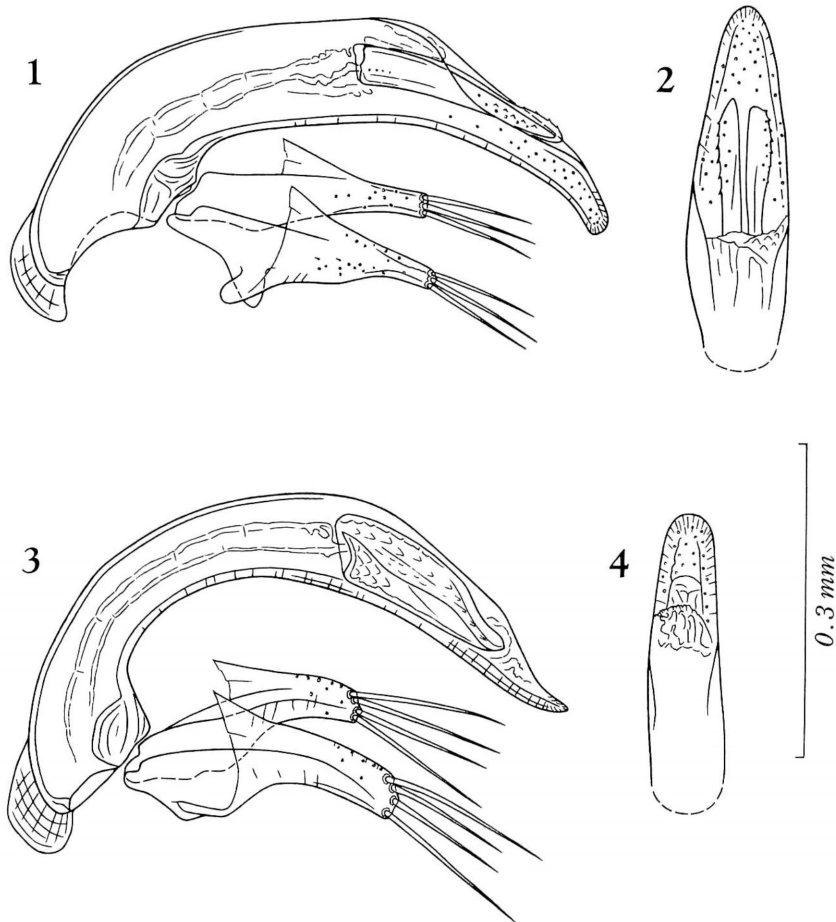
Closely allied to *O. caecus* S. UÉNO et A. YOSHIDA (1966, p. 80, figs. 1-2; UÉNO, 1983, p. 159, 1985, p. 85, pl. 16, fig. 7) and externally similar to the latter in every detail, with the exception of smaller fore-body. Colour as in *O. caecus*. Head and pronotum similar to those in *O. caecus*; antennae reaching basal third of elytra in ♂, basal two-sevenths of elytra in ♀; pronotum widest at about seven-tenths from base, with the sides distinctly sinuate at a level between basal seventh and sixth; PW/HW 1.25-1.31 (M 1.27), PW/PL 1.21-1.32 (M 1.27), PW/PA 1.34-1.39 (M 1.37), PW/PB 1.32-1.42 (M 1.37), PA/PB 0.97-1.04 (M 0.99) [PB/PA 0.96-1.03 (M 1.01)]. Elytra larger than in *O. caecus* though similar in conformation to those of the latter, with the sides a little more distinctly arcuate; EW/PW 1.46-1.53 (M 1.50), EL/EW 1.54-1.62 (M 1.58). Ventral surface and legs as in *O. caecus*.

Male genital organ small and lightly sclerotized, evidently differing from that of *O. caecus* in being more elongate and ventrally curved at the aedagal apex. Aedeagus about two-sevenths as long as elytra, moderately compressed in basal half, moderately curved ventrad in both basal and apical thirds, and hardly arcuate at median third; apical orifice somewhat asymmetrical, with more reduced left wall; basal part elongate, with fairly large basal orifice whose sides are shallowly emarginate; sagittal aileron well developed though rather narrow; viewed dorsally, apical lobe symmetrical, gradually narrowed towards narrowly rounded apex; viewed laterally, apical lobe narrow, curved ventrad, and blunt at the extremity; ventral margin nearly straight at middle but widely emarginate at apical third in profile. Inner sac armed with two slender copulatory pieces, the right one of which is smaller than in *O. caecus* though still longer than the left piece. Styles rather small, with narrow apical parts, left style a little longer than the right, each bearing three apical setae.

*Type series.* Holotype: ♂, allotype: ♀, paratypes: 5 ♂♂, 1 ♀, 29-VII-1992, S. YAMAUCHI leg. The holo- and allotypes are deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. The paratypes are distributed to the above collection and the collection of the Aomori Prefectural Museum.

*Type locality.* Mt. Shirakami-daké, 1,220 m in altitude, in Iwasaki-mura of Aomori Prefecture, on the western side of northeastern Honshu, Northeast Japan.

*Notes.* Though closely allied to *O. caecus* of Mt. Iwaki-san, the Shirakami-daké



Figs. 1-4. Male genitalia of endogean trechine beetles from the Shirakami Mountains; left lateral view (1, 3), and apical part of aedeagus, dorso-apical view (2, 4). — 1-2. *Oroblemus yamauchii* S. UÉNO, sp. nov., from Mt. Shirakami-daké. — 3-4. *Kurasawatrechus nishikawai* S. UÉNO, sp. nov., from Towada-yama in Ohwani-machi.

population of *Oroblemus* is specifically different from the Iwaki-san population beyond all doubt. When the Shirakami-daké specimens came to my hand, however, I had only three specimens of *O. caecus*, which were not sufficient to determine the range of individual variation. I therefore visited Mt. Iwaki-san again on September 24, 1992, and with the aid of NISHIKAWA and YAMAUCHI, succeeded in obtaining five additional specimens (3 ♂♂, 2 ♀♀) exactly at the same spot that the type material had been discovered. This collection enabled me to make a comparative study on a sounder basis, and to draw a final conclusion that the two populations represent two different species.

The type specimens of *O. yamauchii* were found in a gully only twelve metres

below the summit of Mt. Shirakami-daké, the second highest point of the Shirakamis, lying near the western end of the mountain range, together with a new oculate species of *Trechiana*. The distance from Mt. Iwaki-san to Mt. Shirakami-daké is about 29 km in a southwestward direction. Like *O. caecus*, it dwells under stones embedded in moist clayey ground in the subalpine zone. Judging from the fact that the two localities are close to each other both geographically and topographically, it seems possible that *O. caecus*, which is confined to the alpine zone of a very recent volcano, is derived from the ancestor of *O. yamauchii*, an inhabitant of an old, non-volcanic mountain.

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

(Figs. 3–5)

Length: 3.90–4.20 mm (from apical margin of clypeus to apices of elytra).

A very remarkable species of uncertain affinity distinguished at first sight from all the other congeners hitherto described from Japan by a combination of glabrous dorsum of head, extremely short pubescence on pronotum and elytra, externally grooved protibiae whose anterior faces are almost glabrous, and strongly arcuate aedeagus whose apical lobe is distinctly reflexed and pointed at the extremity in lateral view.

Body short and broad, more or less covered with pubescence except on head; anophthalmic and apterous. Colour reddish brown to dark reddish brown, shiny, hardly iridescent even on elytra; palpi, antennae, ventral surface and legs more or less lighter than dorsum, usually dark yellowish brown.

Head subquadrate, wider than long, and depressed above, with the sides moderately convex; frontal furrows entire, distinctly impressed throughout, rather feebly arcuate in front, not angulate at middle, and curved round behind towards neck constriction; frons and supraorbital areas gently convex, the latter with two pair of supraorbital setae on lines slightly convergent posteriad, the anterior pair of them arising from distinct foveoles; genae moderately and evenly convex, covered with short pubescence; neck very wide, with the anterior constriction distinct at the sides though not deep; labrum deeply emarginate at the apex; mandibles stout though sharply hooked at the apices; mentum widely concave, with the tooth in apical emargination rather narrow, either simple or slightly truncated at the tip; palpi short and fairly stout, with subconical apical segments and distally dilated penultimate ones; antennae short but not so stout, subfiliform, reaching basal fourth of elytra in ♀, slightly longer than that in ♂, segment 2 about three-fourths as long as segment 3, segments 4 and 5 subequal in length to each other and slightly shorter than segment 3, segments 6–10 still shorter and subequal in length to one another, each more than twice as long as wide, terminal segment the longest though slightly narrower than scape.

Pronotum transverse subcordate, widest at about two-thirds from base, and a little more gradually narrowed towards apex than towards base, with the sides rather

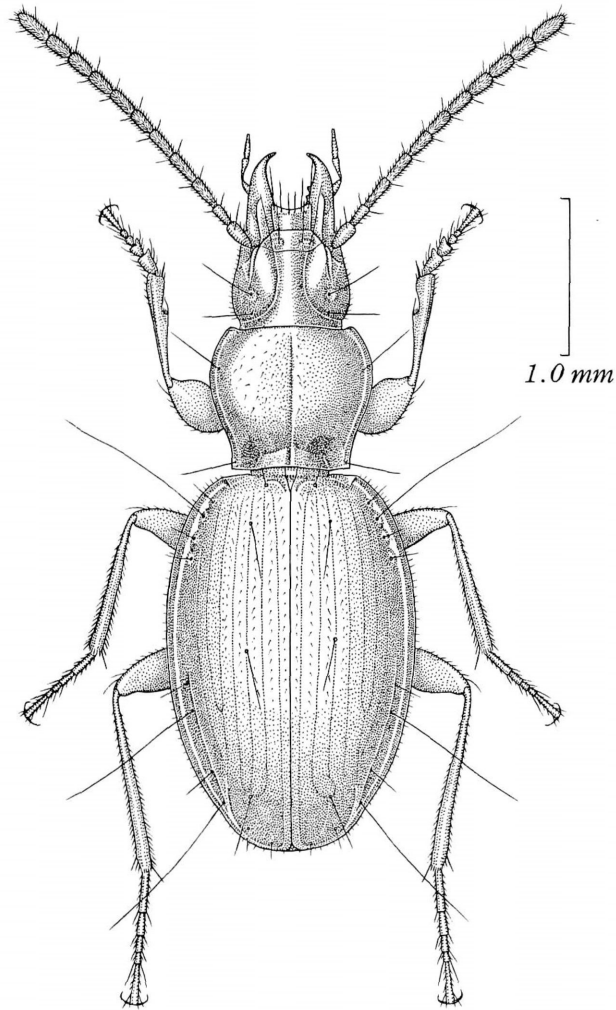


Fig. 5. *Kurasawatrechus nishikawai* S. UÉNO, sp. nov., ♂, from Towada-yama in Ohwani-machi.

widely reflexed throughout and vestigially ciliated; PW/HW 1.36–1.45 (M 1.39), PW/PL 1.14–1.21 (M 1.19), PW/PA 1.36–1.41 (M 1.39), PW/PB 1.34–1.43 (M 1.39); sides rather strongly and almost evenly arcuate in front, deeply sinuate at a level between basal sixth and fifth, and then either subparallel or slightly divergent towards hind angles, which are either rectangular or somewhat obtuse, with two pair of marginal setae, the posterior one of which is slightly removed forwards; apex about as wide as base, PB/PA 0.98–1.01 (M 0.99), slightly bisinuate, with front angles produced forwards though obtuse; base either slightly bisinuate or straight at middle, usually somewhat oblique on each side inside hind angle; surface rather strongly convex, sparsely

covered with very short pubescence; median line clearly impressed, deepened posteriorly; apical transverse impression obsolete though the apical area is longitudinally wrinkled; basal transverse impression broad and continuous though not sharply defined, laterally merging into large basal foveae, which are deep and somewhat uneven at the bottom; postangular carinae very obtuse; basal area longitudinally strigose. Scutellum visible though largely concealed by the basal part of pronotum.

Elytra subovate, much wider than prothorax, widest at about three-sevenths from bases, and more gradually narrowed towards apices than towards bases; EW/PW 1.54–1.59 (M 1.56), EL/EW 1.45–1.55 (M 1.49); shoulders effaced, with prehumeral borders oblique and feebly arcuate; sides rather widely reflexed and microscopically ciliated, gently arcuate from bases to the middle, more feebly so behind, and almost conjointly rounded at apices, without appreciable preapical emargination; surface moderately convex, especially at the sides, with fairly steep apical declivity; striae entire, lightly crenulate, clearly impressed on the disc but becoming shallower at the side, stria 8 deepened in apical two-fifths; scutellar striole short but distinct; apical striole deep, moderately curved, and usually merging into stria 7, sometimes free at the anterior end and directed to stria 5; intervals slightly convex on the disc, flat at the side, each bearing an irregular row of very short pubescence; apical carina distinct though obtuse; stria 3 with two setiferous dorsal pores at  $1/8-1/7$  and  $3/8-1/2$  from base, respectively; preapical pore situated at the apical anastomosis of striae 2 and 3 near the level of the terminus of apical striole, more distant from apex than from suture, and nearer to apical striole than to suture; marginal umbilicate pores aggregated and regular.

Microsculpture distinct throughout, mostly consisting of polygonal meshes on head, irregular transverse meshes on pronotum, and fine transverse lines on elytra.

Ventral surface sparsely pubescent except at the sides; anal sternite provided with a pair of marginal setae in ♂, with two pair of them in ♀. Legs short but rather thin; protibiae slightly arcuate in apical parts and dilated towards apices, each with a deep longitudinal groove on the external face and almost glabrous on the anterior face, though a few vestigial hairs are sometimes observed under high magnification; tarsi fairly stout, segment 1 about as long as segments 2–3 together in mesotarsus, longer than that in metatarsus; in ♂, two proximal segments of each protarsus widely dilated, stoutly produced inwards at apices, and furnished beneath with sexual adhesive appendages.

Male genital organ very small and lightly sclerotized. Aedeagus only two-ninths as long as elytra, tubular, highest behind middle, and strongly arcuate from base to near apex, especially in basal half, with the dorsal margin semicircularly rounded in profile; basal part small, with small basal orifice whose sides are hardly emarginate; sagittal aileron large and prominent; viewed dorsally, apical lobe nearly parallel-sided and rounded at the apex; viewed laterally, apical lobe narrowly produced, gently but distinctly reflexed, and pointed at the extremity; ventral margin deeply emarginate in basal half in profile, but only slightly so behind middle. Inner sac armed with a large

spatulate copulatory piece almost two-fifths as long as aedeagus, its apex being pointed in dorsal view. Styles large and broad, left style obviously larger than the right, each bearing four long setae at the apex.

*Type series.* Holotype: ♂, allotype: ♀, paratypes: 1 ♂, 3 ♀♀, 25-IX-1992, Y. NISHIKAWA leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

*Type locality.* Towada-yama, 220 m in altitude at the NW foot in the Mitsumenai-gawa Valley, in Ohwani-machi of Aomori Prefecture, on the western side of northeastern Honshu, Northeast Japan.

*Notes.* It was most unexpected that a *Kurasawatrechus* did occur on the Shirakami Mountains at the western side of northeastern Honshu, or within the distributional range of *Oroblemus*. The northernmost records of *Kurasawatrechus* hitherto published are from the central Abukumas (*K. zenbai* S. UÉNO, 1990) and the northern Yamizos (*K. yamizonis* S. UÉNO, 1988). They belong to the typical species-groups of the genus and are radically different from the present species. In many respects, *K. nishikawai* seems closer to Korean species (cf. UÉNO & NAMKUNG, 1968) than to Central Japanese, especially in view of the externally grooved protibiae and the reflexed apical lobe of aedeagus, although none of the described species from Korean caves seem directly related to it. Several undescribed species of *Kurasawatrechus* in a broad sense have been collected in northeastern Honshu, mostly from the Kitakami Mountains at the eastern side and partly from the Ôu Mountains at the central part. They may have certain relationship with *K. nishikawai*, as can be expected from geographical proximity. In any case, generic or subgeneric classification of *Kurasawatrechus* (s. lat.) should be revised when these undescribed species are properly introduced into science.

The type locality of *K. nishikawai* is situated near the eastern end of the Shirakami Mountains, about 41 km east by south of Mt. Shirakami-daké, about 27 km southeast of Mt. Iwaki-san, and more than 370 km north of that of *K. zenbai*. It lies in the Mitsumenai-gawa Valley and at the northwestern foot of Towada-yama (664 m in height). The type specimens of the trechine beetle were dug out from a colluvium deposited at the right side of the Mitsumenai-gawa River at an elevation of 220 m, together with a new oculate species of *Trechiana* to be described in a forthcoming paper. It may be regarded as an upper hypogean inhabitant, but the mode of its occurrence suggests that the species is actually endogean rather than upper hypogean. This can be surmised also from its short-legged facies, which are typically endogean.

## 要 約

上野俊一：白神山地に産する地中性チビゴミムシ類の2新種。——青森県と秋田県との県境に位置する白神山地からは、盲目のチビゴミムシ類がこれまで知られていなかった。昨年になって、山脈東部の十和田山と西部の白神岳から、西川喜朗、山内 智の両氏により、それぞれ新種と判定される地中性のメクラチビゴミムシ類が発見されたので、これらにオオワニメクラチビゴミムシ *Kurasawatrechus nishikawai* S. UÉNO およびシラカミメクラチビゴミムシ *Oroblemus yamauchii* S. UÉNO とい

う新名を与えて記載した。後者は、隣接する岩木山に固有のイワキメクラチビゴミムシ *O. caecus* に近縁であるが、前者は日本からこれまでに記載された同属のどの種とも系統が異なり、むしろ朝鮮半島産の種群に似ている点が多い。

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