

Discovery of Blind Trechine Beetles (Coleoptera, Trechinae) in the Amakusa Islands, Southwest Japan

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Abstract Two new species of blind trechine beetles were recently discovered from the upper hypogean zone of Amakusa-shimoshima, the largest one of the Amakusa Islands lying at the western side of central Kyushu, Southwest Japan. One of them is a member of the genus *Stygiotrechus* and is described in this paper under the name *S. miyamai*. The other one seems to belong to the genus *Allotrechiana*, and is doubtless new to science. Its description is, however, postponed, since the single specimen known is a dead body of a female with badly damaged appendages.

No blind trechine beetles have ever been known from the Amakusa Islands lying at the western side of central Kyushu, though there are a limestone and several sandstone caves in their main islands. The limestone cave in particular has been repeatedly investigated by experienced biospeologists including myself, but has yielded only a pselaphid beetle (*Batrisodellus cerberus* TANABE et NAKANE, 1989, p. 739, figs. 20–27) in spite of continuous trappings. It was therefore most surprising that a habitat of blind trechine beetles should have been met with in the central part of the largest island of the Amakusas.

In the spring of this year, Hiroshi MIYAMA made a trip to the Amakusa Islands for finding out blind beetles, particularly trechines. First, he went to re-examine the well known limestone cave (called Gongen-dô or Gongen'yama-dô), but failed in taking any blind beetle excepting a few specimens of the pselaphid. Then, he shifted his target to the upper hypogean zone, and succeeded in locating a seemingly favourable site for excavation at the central part of the largest island of the Amakusas. After two days' hard work, he finally dug out three specimens of blind trechines from small colluvia deposited at the sides of a narrow gully, and promptly submitted his collection to me for taxonomical study. It was soon found out by my close examination that two of the three specimens belong to the genus *Stygiotrechus* and are remotely related to *S. esakii* (UÉNO, 1969, pp. 491, 507, figs. 10, 13) from Mizunashi-dô Cave on the Sefuri Mountains of northern Kyushu, and that the remaining one may be a new species of the genus *Allotrechiana* (UÉNO, 1970 a, p. 93; 1978), which has theretofore been known from several limestone caves at the southwestern part of Kumamoto Prefecture in mainland Kyushu.

Unfortunately, the single available specimen of *Allotrechiana* was found dead sticking to the surface of a muddy stone deeply embedded in the colluvium, so that it was not in a good condition of preservation. Besides, we failed in finding out additional specimens in spite of careful searches made in August by UÉNO, MIYAMA and Shinzaburo SONE. The colluvia inhabited by blind trechines are by no means large, and the unsettled condition caused by excavation cannot be recovered in a short time. For these reasons, formal description of the new *Allotrechiana* is postponed for some time, and only the new *Stygiotrechus* will be dealt with in the present paper. The abbreviations used herein are the same as those explained in previous papers of mine.

Before going further, I wish to express my heartfelt thanks to Mr. Hiroshi MIYAMA and Dr. Shinzaburo SONE for their kind help in pursuing clarification of the trechine fauna of the Amakusa Islands.

Stygiotrechus miyamai S. UÉNO, sp. nov.

(Figs. 1, 2)

Length: 2.025–2.150 mm (from apical margin of clypeus to apices of elytra).

Very small species, smallest of all the congeners and of all the blind trechines of Japan. Probably belonging to the *esakii* group (cf. UÉNO, 1969, p. 506), though different from its type species in many details, above all shorter head and pronotum, slenderer antennae, shallower sculpture in basal area of pronotum, less prominent serration on humeral margins of elytra, lesser modification of protarsomeres in the male, and differently shaped male genitalia.

Colour light reddish brown, evidently more yellowish than in *S. esakii*, shiny; palpi, antennae and legs pale yellowish brown. Microsculpture not sharply impressed on head and pronotum, mostly consisting of mal-defined polygonal meshes on elytra.

Head wider than long, HW/HL 1.46 in the holotype (H), 1.31 in the allotype (A), widest at about basal fourth, and contracted anteriorly; genae tumid in posterior halves and sparsely covered with short hairs; frontal furrows deeply impressed in front, becoming shallower behind, not angulate at middle, and widely divergent towards neck constriction, which is distinct and fairly deep; frons and supraorbital areas gently convex and covered with short hairs; vertex with a pair of short suprafrontal setae; eyes completely absent; labrum transverse, with the apical margin slightly bisinuate; mandibles stout, with the apical parts rather abruptly incurved and acute at the tips; mentum with a small simple tooth in apical emargination; palpi short and stout except for thin apical palpomeres; antennae slender, subfiliform though slightly dilated towards apices, and reaching basal fourth of elytra; scape thick, pedicel seven-tenths as long as scape, pedicel to antennomere 8 equal in length to one another, each ovoidal and four-sevenths as wide as long, terminal antennomere the longest, about twice as long as the preceding antennomere.

Pronotum transverse subcordate, wider than head, evidently wider than long, widest at four-fifths from base, and more gradually contracted towards base than

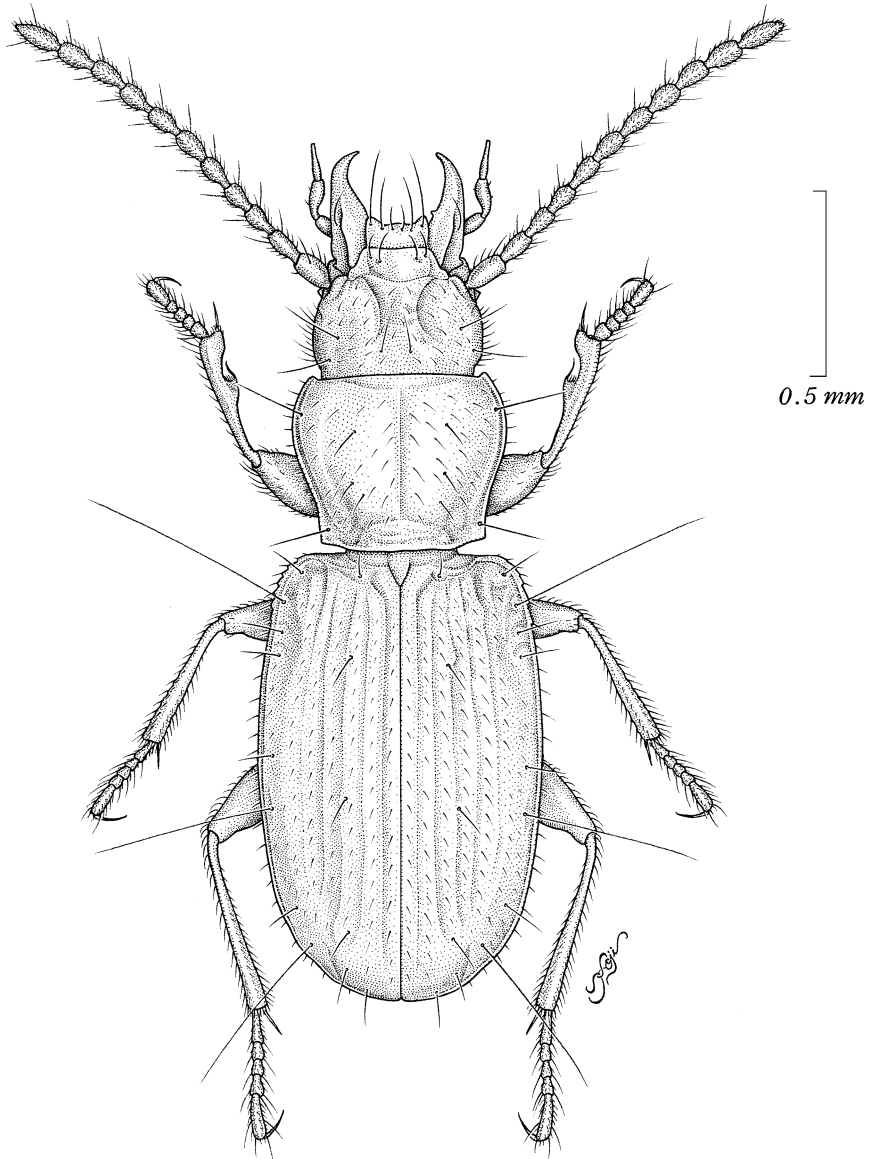


Fig. 1. *Stygiotrechus miyamai* S. UENO, sp. nov., ♂, from Horikiri of Haji'uto in the Island of Amakusa-shimoshima.

towards apex; PW/HW 1.26 in H, 1.32 in A, PW/PL 1.21 in H, 1.23 in A, PW/PA 1.24 in H, 1.21 in A, PW/PB 1.31 in H, 1.32 in A; sides moderately bordered and sparsely ciliated except near ante-basal situation, where the borders become narrower, widely

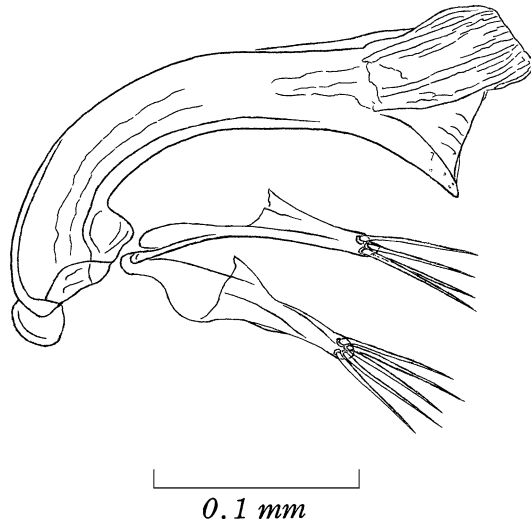


Fig. 2. *Stygiotrechus miyamai* S. UENO, sp. nov., from Horikiri of Haji'uto in the Island of Amakusa-shimoshima; male genital organ, left lateral view.

arcuate from front angles to basal fourth, then shallowly sinuate, and then very slightly convergent to hind angles, which are more or less obtuse though very minutely denticulate at the tips; both lateral and postangular setae present; apex slightly wider than base, PA/PB 1.05 in H, 1.09 in A, with front angles obtuse though more or less protrudent forwards; base nearly straight at middle, slightly and obliquely emarginate on each side just inside hind angle; dorsum gently convex, sparsely covered with short suberect hairs, and steeply declivous at antero-lateral parts, with two or three short dorsal setae on each side of median line, which are not readily recognised being mingled in discal hairs covering the dorsal surface; median line fine, apical transverse impression mal-defined; basal transverse impression fairly deep, arcuate, and laterally merging into round basal foveae without forming trifurcate furrows; no postangular carinae.

Elytra subovate, nearly parallel-sided, wider than pronotum, much longer than wide, widest a little before the middle, and widely rounded at apices; EW/PW 1.34 in H, 1.28 in A, EL/PL 2.55 in H, 2.46 in A, EL/EW 1.57 in H, 1.56 in A; shoulders square, with prehumeral borders nearly perpendicular to the mid-line; humeral margins bluntly serrulate, with six or seven minute teeth, of which median two or three are more or less larger than the others; sides narrowly bordered except for widely explanate humeral parts and sparsely ciliated, very slightly arcuate from behind shoulders to the level of apicalmost pore of the marginal umbilicate series, and very slightly emarginate before apices, which are conjointly rounded; dorsum gently convex and widely depressed on the disc; striae impunctate, moderately impressed on the disc but obsolete at the side, 1-4 entire, 5 fine and apically obsolete, 6 and 7 evanescent, 8 only partially visible; scutellar striole vestigial; apical striole mal-defined though directed to the site of stria 5; intervals

flat, each bearing an irregular row of short suberect pubescence; stria 3 with two setiferous dorsal pores at $1/6-1/4$ from base and about middle; preapical pore located at the apical anastomosis of striae 2 and 3, a little more distant from apex than from suture; arrangement of marginal umbilicate pores as in the other species.

Ventral surface sparsely covered with short pubescence; marginal setae on anal ventrite ordinary. Legs short; protibia widely dilated towards apex, whose apical portion is acuminate at the internal side and furnished with a spine at the tip; comb-organ large; mesotibia straight, about three-tenths as long as elytra, metatibia about two-fifths as long as elytra and almost invisibly outcurved at the apical part; tarsi fairly stout, tarsomere 1 about as long as tarsomeres 2 and 3 combined in both meso- and metatarsi; in ♀, protarsomere 1 fairly large, five-sevenths as wide as long, 2–4 short and wide, each about 1.5 times as wide as long; in ♂, protibia more widely dilated apicad and incurved at the acuminate apical part, protarsomere 1 slightly longer than wide, 2 obviously more transverse, each minutely angulate inwards at the apex but devoid of adhesive appendages on the ventral surface, 3–4 each about as long as wide.

Male genital organ small and lightly sclerotised. Aedeagus two-ninths as long as elytra, tubular, moderately arcuate from base to the base of apical lobe, and then almost straightly produced into narrow apical lobe in lateral view; basal part small, abruptly curved ventrad, with small basal orifice, whose sides are slightly emarginate; sagittal aileron distinct though small; viewed laterally, apical lobe short and gradually tapered to blunt extremity; ventral margin widely arcuate in profile. Inner sac armed with a subspatulate copulatory piece, whose apical part appears to be covered with acicular scales. Styles narrow, particularly at the apical parts, left style a little longer than the right, bearing five apical setae in the holotype, while the right style only bearing four apical setae.

Type series. Holotype: ♂, allotype: ♀, 29-IV-2009, H. MIYAMA leg. Deposited in the collection of the Department of Zoology, National Museum of Nature and Science, Tokyo.

Type locality. Horikiri, 180 m in altitude, at Haji'uto of Amakusa-shi in Amakusa-shimoshima, Kumamoto Prefecture, Southwest Japan.

Notes. The type habitat of *Stygiotrechus miyamai* was found at Horikiri, a cutting for a road on a pass at the central part of the Island of Amakusa-shimoshima. A small narrow gully less than 10 m in length lies in a plantation of cryptomeria with undergrowths of bamboo and broadleaved coppice just at the northern side of the cutting. Small colluvia of sandstone detritus mingled with clayey soil are deposited on both sides of the gully, forming a good habitat for upper hypogean inhabitants. The type specimens of *S. miyamai* were found from these colluvia, leisurely crawling on the surfaces of upturned stones dug out from a depth of 30–50 cm.

It was really astonishing that a second species of the *esakii* group of *Stygiotrechus* was discovered in Shimoshima of the Amakusa Islands. Until then, the species-group was considered monotypical and restricted to a limestone cave on the Sefuri Mountains, about 117 km distant to the north by west in a beeline from the type locality of the new

species. Besides, the latter is separated from the former by the Tsukushi Plain, the Ariaké Sea, the Unzen Volcanoes on the Shimabara Peninsula, and the Hayasaki Straits. Though four other species of *Stygiotrechus* have been known from Kyushu and an island belonging to it, they are classified into three different species-groups, the *unidentatus* group of the Hirao-dai and Fukuchi Hills, the *kubotai* group of the Nishisonoki Peninsula (cf. UENO, 1969, pp. 498–506, 511), and the *pachys* group of the Island of Fukué-jima (cf. UENO, 1970 b, pp. 606–610), of which the first two occur in the northernmost parts of mainland Kyushu, and the third one is restricted to the Gotô Islands off the northwestern coast of Kyushu. In the straight-line distance, the type locality of *S. miyamai* in the Island of Amakusa-shimoshima is much nearer to that of *S. kubotai* S. UENO (1958, p. 125, figs. 1–5) at the northwestern part of the Nishisonoki Peninsula (75 km to the northwest) than to that of *S. esakii* S. UENO on the Sefuri Mountains, but the topography between the former two is much more complicated with many barriers than between the latter two.

要 約

上野俊一：天草諸島で発見された盲目のチビゴミムシ類。——天草諸島の天草下島の中央部で、地下浅層にすむ盲目のチビゴミムシ類が2種、見山 博氏によって発見された。そのひとつはノコメクラチビゴミムシ属の一種で、九州北部の背振山地の洞窟にすむエサキメクラチビゴミムシ *Stygiotrechus esakii* S. UENO に、ある程度の類縁関係をもつ。他の一種は、熊本県南西部の洞窟数カ所に局地的な分布をするクマメクラチビゴミムシ属 *Allotrechiamia* の新種だろうと判定された。残念なことに、後者はただ1点の死体が掘り出されただけなので、新種記載の材料としては不十分である。それで将来、完全な標本が得られるまで、記載命名するのを留保した。いっぽう、ノコメクラチビゴミムシ属のものには、アマクサメクラチビゴミムシ *Stygiotrechus miyamai* S. UENO という新名を与えたが、この極端に微小なチビゴミムシは、日本産最小の盲目種として記録される。

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