

The Anophthalmic Trechine Beetles from the Southwestern Tip of Hokkaido, Northeast Japan¹⁾

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Abstract Two anophthalmic species of trechine beetles are recorded from a low hill near the southwestern tip of Hokkaido, Northeast Japan. One of them is *Epaphiopsis* (*Epaphiama*) *oligops* S. UÉNO hitherto known from only the alpine zone of a nearby mountain. The other is a peculiar long-legged species probably belonging to the *Trechiana* group, and though the male is unknown, a new genus is erected for it. The new name given is *Accoella akirai*.

In the summer of 1989, a female specimen of a very strange trechine beetle was collected by Mr. Akira SATO on a low hill near Matsumaé at the southwestern tip of Hokkaido, Northeast Japan, and submitted to me for taxonomic study through the courtesy of Mr. Seiji MORITA. At first sight, it looked like a member of *Epaphiama*, but evidently differed from that subgenus in the slender buccal appendages, long legs and larger number of setiferous dorsal pores on the elytra. In these respects, it seemed closer to *Trechiana*, especially to the group of *T. borealis* (cf. UÉNO, 1971), but the unique configuration of its prothorax and elytral striae distinguished it from all the known species, both described and undescribed, of that genus, which amounted to well more than one hundred. To determine its true affinity, it was necessary to examine male genitalic characters usually adopted for analysing trechine phylogeny.

Since then, Mr. SATO searched for the beetle incessantly, but always without success. Then, in the summer of this year, I myself made two trips to the collecting site, and with the aid of three excellent researchers, made every possible effort to obtain additional material. Unfortunately, however, the small area in which lies the collecting site of the trechine in question is not good for excavating the upper hypogea, and we were able to locate only a very few spots suitable for the excavation. After all, we failed in obtaining any, and instead, found some specimens of another blind species, which had theretofore been known from only the alpine zone of a nearby mountain. This discouraging result of our field investigations led me to conclude that it would be extremely difficult to obtain male specimens of the strange trechine beetle, and though the single female specimen now at my hands is not sufficient for determining its systematic position, I have decided to describe it in the present paper, provisionally under a new genus, in view of its importance in many respects. I believe that the new

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taxon will hold its validity at least as a subgenus, even if future investigations may prove that it can be included in one of the well known genera.

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

Before going further, I wish to express my sincere thanks to Professor Masataka SATÔ, Professor Yoshiaki NISHIKAWA, Ms. Akiko SAITO and Mr. Akira SATO, all of whom kindly helped my investigations in the field, and to Mr. Seiji MORITA who entrusted me with the study of the very important specimen.

Epaphiopsis (Epaphiama) oligops S. UÉNO, 1978

Epaphiopsis (Epaphiama) oligops S. UÉNO, 1978, Bull. natn. Sci. Mus., Tokyo, (A), 4, pp. 128, 140, figs. 10–12; type locality: Mt. Nakasengen-daké; 1985, Coleopt. Japan Col., Osaka, 2, p. 66, pl. 13, fig. 10.

Epaphiama oligops: CASALE & LANEYRIE, 1982, Mém. Biospéol., 9, p. 83.

Additional specimens examined. 3 ♂♂, 1 ♀, Ohmori-yama, 130 m alt. on E slope, Matsumaé-chô, Oshima, SW Hokkaido, NE Japan, 4~5-VIII-1990, S. UÉNO, Y. NISHIKAWA & M. SATÔ leg. (NSMT); 1 ♀, same locality but 50 m in altitude, 5-VIII-1990, Y. NISHIKAWA leg. (NSMT).

Notes. The Matsumaé specimens recorded above are slightly different from the type series in the shape of the pronotum, whose sides are either straight or very slightly sinuate behind the middle. They are, however, otherwise identical with the latter, including the aedeagal characteristics, and cannot be discriminated even as a geographical race.

The new locality of *E. oligops* is only 12.2 km distant to the south by west from Mt. Nakasengen-daké, on which were found the type specimens, but lies at a much lower place. Consequently, the habitat of the new population is utterly different from that of the alpine one. While the types were found from beneath large stones lying at the bottoms of steep gullies in the alpine zone, the Matsumaé specimens were dug out from the upper hypogean zone 1 m or more below the surface. This is interesting, since certain anophthalmic trechines have been known to occur only in caves at low altitude but on the surface at high elevations. *Epaphiopsis oligops* shows the same pattern of altitudinal difference of its habitats, and if the alpine population were not known, it could be regarded as a true subterranean inhabitant.

Genus *Accoella* S. UÉNO, nov.

Type species: *Accoella akirai* S. UÉNO, sp. nov.

Intermediate between *Trechiana* JEANNEL (1927, pp. 129, 141) and *Epaphiama* JEANNEL (1962, pp. 175, 188); probably closer to the former because of its long-legged facies and chaetotaxial peculiarities, but unusually similar to the latter in the

conformation of its body though much elongated.

Body long and narrow with small head and prothorax, depigmented, anophthalmic, and devoid of inner wings; appendages long and slender, but the antennae are relatively short.

Head small, subquadrate, slightly narrower than long, with entire frontal furrows which are very deeply impressed before the level of posterior supraorbital pore; eyes not functional, completely flat, with remnants of ommatidia; genae only feebly convex and entirely glabrous; neck very wide; labrum transverse, with deeply emarginate apical margin; mandibles fairly slender though broad at the bases, rather feebly arcuate near sharp apices, right mandible tridentate, with an obtuse but distinct pre-molar tooth, left mandible bidentate; mentum transverse, not fused with submentum, with the tooth in apical emargination short and broad, almost simple though somewhat truncated at the tip; submentum sexsetose; ligula hardly porrect, with the apical margin very slightly arcuate, straight at the median part and octosetose; paraglossae thin, slightly arcuate, and extending much beyond the apex of ligula. Palpi slender, with penultimate segments gradually dilated towards apices, obviously shorter than apical segment and entirely glabrous in maxillary palpus, very slightly longer than apical segment and quadrisetose in labial palpus. Antennae relatively short though fairly slender, with the terminal segment not the longest.

Pronotum narrow, somewhat barrel-shaped, with arcuate sides and truncated apex and base, and without appreciable ante-basal sinuation of side borders; front angles obtuse and not produced; hind angles also obtuse though forming on each side a small rectangular tooth at the tip; sides entirely bordered and rather widely reflexed, with two pair of marginal setae, the posterior one of which is almost on hind angles; basal transverse impression widely interrupted at middle; basal foveae semicircular and fairly deep; postangular carinae very obtuse.

Elytra oblong-ovate, deeply, coarsely and entirely punctato-striate, with pre-humeral borders complete to the base of stria 5; stria 2 forming apical anastomosis with stria 3, on which lies the preapical pore at about the level of the terminus of apical striole; scutellar striole distinct though short; apical striole short but deep, moderately curved, and almost joining stria 5 which forms subapical anastomosis with stria 6; internal dorsal series composed of three setiferous pores, all lying on stria 3, external dorsal series of two or three pores on stria 5; marginal umbilicate pores aggregated and regular, the four pores of the humeral set being ranged equidistantly.

Microsculpture of head fine though distinct, mostly consisting of more or less wide meshes; that of pronotum and elytra mostly composed of fine transverse lines, though more or less degenerated on the latter. Ventral surface completely glabrous and smooth; anal sternite provided with two pair of setae in ♀. Legs long and slender; protibiae straight, gently dilated towards apices, longitudinally grooved on the external faces, and glabrous on the anterior faces even at the apical portions; tarsi slender, segment 4 with a long ventral apophysis in pro- and mesotarsi.

Male genitalia unknown.

Range. Known so far only from the southwestern tip of Hokkaido in Northeast Japan.

Notes. The type species of this new genus differs from all the known species of *Trechiamma* in the unique shape of prothorax, which does not show any tendency to become cordate and whose hind angles are not sharply produced, and in the deeply impressed and coarsely punctate elytral striae, which remind us of those of *Epaphiamma* or *Thalassoduvallius* (UÉNO, 1956, 1978 b). Its relatively short antennae are also exceptional if it takes part in the genus *Trechiamma*, since they are not in due proportion to long legs and buccal appendages. On the other hand, rather peculiar elytral chaetotaxy shown by the type species is of the same type as that found in several undescribed species of the *oreas* group of *Trechiamma*, which may indicate its remote affinity to the latter group. Having been unable to scrutinize male genitalic features, I prefer to regard the new species as belonging to an isolated taxonomic group generically different from *Trechiamma*.

This new genus of indeterminable affinity is dedicated to Ms. "Akko" SAITO of the Natural History Museum and Institute, Chiba, who devoted painstaking but unsuccessful effort to obtain additional specimens of the type species.

Accoella akirai S. UÉNO, sp. nov.

[Japanese name: Matsumaé-mekura-chibigomimushi]

(Fig. 1)

Length: 5.40 mm (from apical margin of clypeus to apices of elytra).

Anophthalmic species of elongate body form, with narrow fore body and rather parallel-sided elytra. Colour reddish brown, shiny, with mandibles and elytra somewhat darker; labrum, palpi, scape and apical halves of antennae, ventral surface of hind body, and legs more or less lighter than dorsum, mostly yellowish brown.

Head subquadrate, very slightly longer than wide, and depressed above, with frontal furrows rather lightly arcuate and not angulate; frons and supraorbital areas gently convex, the latter bearing two pair of supraorbital pores lying on lines convergent posteriorly, the anterior one of which is lightly foveolate; genae feebly convex behind middle, flat at the anterior parts which bear completely flat trace of eyes; neck constriction very shallow though distinct; antennae relatively short, reaching basal four-ninths of elytra in ♀, with segment 2 about two-thirds as long as segment 3, which is equal in length to segment 4 or 5, segments 6–10 subcylindrical, gradually decreasing in length towards terminal segment, which is longer but obviously narrower than scape and about as long as or slightly shorter than one of segments 3–5, segments 8–9 each fully three times as long as wide.

Pronotum small though wider than head, not transverse, as long as wide, subquadrate, and widest at about apical third, with the sides almost straight at middle, very feebly arcuate and lightly convergent in apical third and basal two-ninths; apex

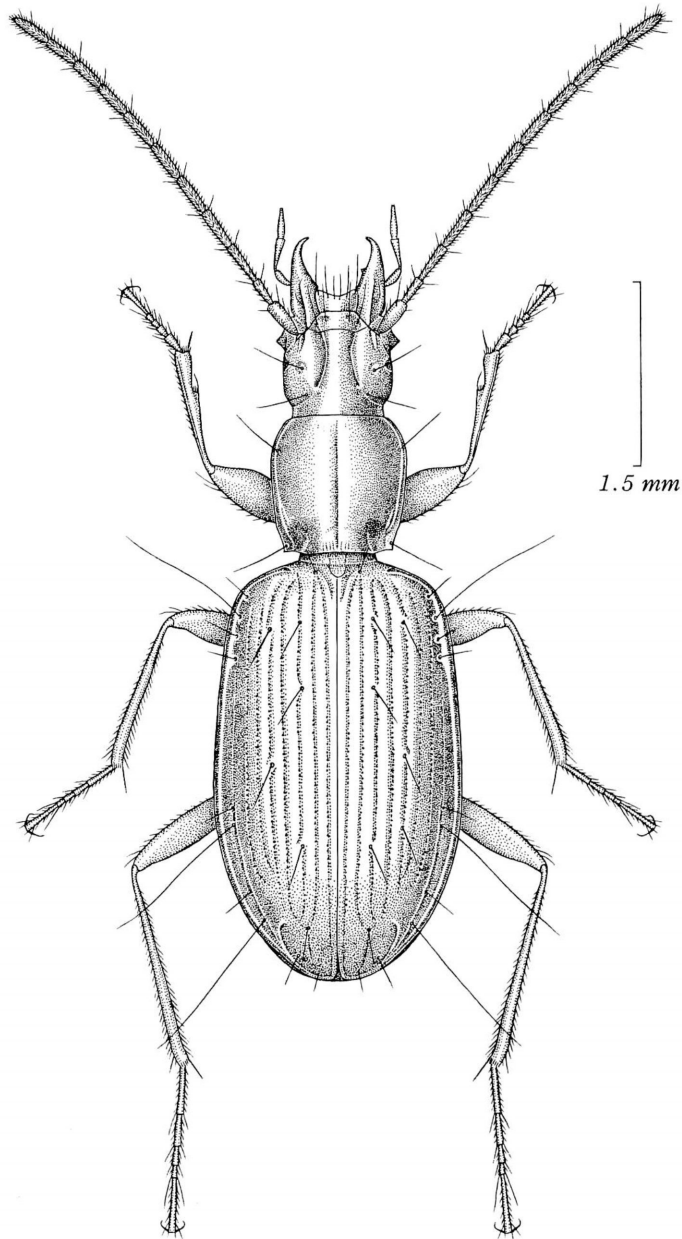


Fig. 1. *Accoella akirai* S. UÉNO, gen. et sp. nov., ♀, from Ohmori-yama in Matsumaé-chô.

very slightly arcuate, with front angles obtuse though distinct; base a little wider than apex, straight at middle, slightly oblique and very slightly emarginate on each side just inside hind angle, which is obtuse but widely reflexed and forms a small rectangular

tooth at the tip; PW/HW 1.29, PW/PL 1.00, PW/PA 1.44, PW/PB 1.25, PB/PA 1.15; surface gently convex, not steeply declivous at the sides except near front angles, with vague transverse striations at the lateral parts; median line deeply impressed on the disc, almost reaching both apex and base, but neither widening nor deepening in basal area; apical transverse impression close to apical margin though indistinct; basal transverse impression not sharply defined, laterally included in large basal foveae, which are deep and smooth at the bottoms; basal area longitudinally strigose.

Elytra oblong-ovate, much wider than prothorax, widest slightly before the middle, and more regularly narrowed towards apices than towards bases; EW/PW 1.81, EL/EW 1.62; shoulders distinct though rounded, with prehumeral borders very feebly arcuate and not particularly oblique; sides very slightly arcuate from behind shoulders to the middle, then lightly so to shallow but distinct preapical emargination, and rounded at apices which form a narrow re-entrant angle at suture; surface widely depressed on the disc, hardly convex except for lateral and narrow apical parts, which are steeply declivous; striae deeply impressed and coarsely punctate throughout, 1–5 deepened in basal area, 3 forming apical anastomosis with 4 and then with 2, 5 forming subapical anastomosis with 6, 7 deeply impressed to apical end which is curved inwards and abruptly terminated, 8 somewhat deepened behind the middle set of marginal umbilicate pores and coarsely punctate even in that part; scutellar and apical striae as described under the genus; intervals convex throughout though less so at the side than on the disc, apical carina short but prominent; stria 3 with three setiferous dorsal pores at about 1/8, 2/7 and 2/3 from base respectively, stria 5 also with three setiferous dorsal pores on the right elytron of the holotype at about 1/8, 4/9 and 2/3 from base respectively, but the third pore is lacking on the left elytron; preapical pore lying near the anterior end of the field of apical stria, more widely distant from apex than from suture, and about equidistant from suture and from the terminal portion of apical stria.

Ventral surface and legs as described under the genus; sternites 3–5 each with a single pair of setae along the posterior margin; segment 1 longer than segments 2–3 together but shorter than segments 2–4 together in both meso- and metatarsi.

Male unknown.

Type specimen. Holotype ♀, I–VII–1989, A. SATO leg. Deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Ohmori-yama, 100 m in altitude on the ENE slope, in Matsumaé-chô of Oshima, near the southwestern tip of Hokkaido, Northeast Japan.

Notes. The type specimen of this interesting species was found, together with *Nebria ochotica*, from beneath a large stone lying on a narrow grass-grown terrace at the side of a narrow shaded stream flowing down through a deciduous broadleaved forest on the eastern slope of Ohmori-yama Hill. It is, however, obvious that this spot was not the natural habitat of the trechine beetle, since that terrace was subject to occasional floods of the stream. When I visited the gully at the beginning of July, 1990, both the terrace and the large stone were there as they had been one year before,

but when I revisited the place at the beginning of August, the terrace was scraped away by the previous flood and transformed into a barren platform. Most probably, therefore, the type specimen was carried down by a flood water from somewhere near the source of that stream, though we were unable to locate its original habitat. Judging from its facies, *Accoella akirai* must be an upper hypogean species, whose natural habitat cannot be easily found out due to the unfavourable ground condition of the low hill.

This new species is named after Mr. Akira SATO, who is eagerly investigating the carabid fauna of the Matsumaé area and unexpectedly collected the type specimen of the present trechine beetle.

要 約

上野俊一：北海道松前地方のメクラチビゴミムシ類。——北海道の南西端に位置する松前地方の大森山から、複眼の退化した2種のチビゴミムシ類を記録した。そのひとつは、これまで中千軒岳の高山帯のみから知られていたセンゲンチビゴミムシ *Epaphiopsis (Epaphiama) oligops* S. UÉNO で、標高の低い (50~130 m) 大森山では、地表から 1 m 以上も下の地下浅層に生息していた。他の1種は、ナガチビゴミムシ属とケムネチビゴミムシ属のキタチビゴミムシ亜属との中間的な特徴をもつ特異な新種で、雄が未知であるために確かな類縁関係はわからないが、おそらく前者と同じ属群のものではないかと考えられる。分類学的にも生物地理学的にも重要な発見であることと、採集地点付近の地質条件があまり良好でなく、雄の標本が容易には得られそうにないことを考慮して、この新種をいちおう新属のものと認め、マツマエメクラチビゴミムシ *Accoella akirai* S. UÉNO と命名した。

References

- CASALE, A., & R. LANEYRIE, 1982. Trechodinae et Trechinae du monde. Tableau des sous-familles, tribus, séries phylétiques, genres, et catalogue général des espèces. *Mém. Biospéol.*, **9**: i+1-226.
- JEANNEL, R., 1927. Monographie des Trechinae. Morphologie comparée et distribution géographique d'un groupe de Coléoptères. (Deuxième livraison). *Abeille, Paris*, **33**: 1-592.
- 1962. Les Trechini de l'Extrême-Orient. *Rev. fr. Ent.*, **29**: 171-207.
- UÉNO, S.-I., 1956. New halophilous trechids of Japan (Coleoptera, Harpalidae). *Mem. Coll. Sci. Univ. Kyoto*, (B), **23**: 61-68.
- 1971. The trechine beetles of the Hidaka and the Yûbari Mountain Ranges in Hokkaido, northern Japan. *Mem. natn. Sci. Mus., Tokyo*, (4): 5-28.
- 1978 a. The cryptozoic trechines of the subgenus *Epaphiama* (Coleoptera, Trechinae). *Bull. natn. Sci. Mus., Tokyo*, (A), **4**: 123-146.
- 1978 b. The *Thalassoduvallius* (Coleoptera, Trechinae) of the Izu area, Central Japan. *Mem. natn. Sci. Mus., Tokyo*, (11): 123-130, pl. 6.
- 1985. Carabidae (Nebriinae, Elaphrinae, Loricarinae, Scaritinae, Broscinae, Trechinae). In UÉNO, S.-I., Y. KUROSAWA & M. SATÔ (eds.), *The Coleoptera of Japan in Color*, **2**: 54-88. Hoi-kusha, Osaka. (In Japanese.)