

## The *Kurasawatrechus* (Coleoptera, Trechinae) of the Yamizo Range, Central Japan<sup>1)</sup>

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**Abstract** The anophthalmic trechine beetles from the Yamizo Range, Central Japan, are dealt with. Two new species are described under the names of *Kurasawatrechus yamizonis* and *K. intermedius*, and a new locality is recorded for *K. ohkawai*.

No eyeless beetles were known from the Yamizo Range, stretching from north to south for more than 100 km along the northeastern edge of the Kwantô Plain, Central Japan, until an endogean species of *Kurasawatrechus* was recently discovered by Hideo OHKAWA at its southern part (UÉNO, 1988). For this reason, the whole mountains were excluded from the distributional range of anophthalmic trechines shown on my 1987 map (fig. 11 B in UÉNO, 1987, p. 604). Actually, the mountain range is divided into four blocks, the Yamizos (s. str.), Torinokos, Keisokus and Tsukubas, on the third one of which OHKAWA's discovery was made. Thus, our interest was aroused in finding out what trechines could be met in endogean or upper hypogean habitats of the other three blocks.

Our investigations progressed systematically and promptly, and now I have materials from all the four divisions of the Yamizo Range. All belong to the genus *Kurasawatrechus* as was expected, but they are not all conspecific. They are classified into three species of two different lineages; the species occurring on the Tsukubas is identical with the Keisoku one (*K. ohkawai*), and the specimens from the Torinokos belong to a new species of the same group (the *quadraticollis* group), whereas the trechine beetle occurring on the Yamizos is a new species of the group of *K. eriophorus*. It is difficult to elucidate at present why only the northernmost block harbours a species phylogenetically different from those of the three southern blocks of the same mountain range. However, it seems worth introducing them into science now, since the existence of these species on the Yamizo Range fills in the blank in our knowledge to a considerable extent.

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

Before going further, I wish to thank the following friends of mine, whose enthusiastic searches and help enabled me to complete the present paper: Messrs. Sumao

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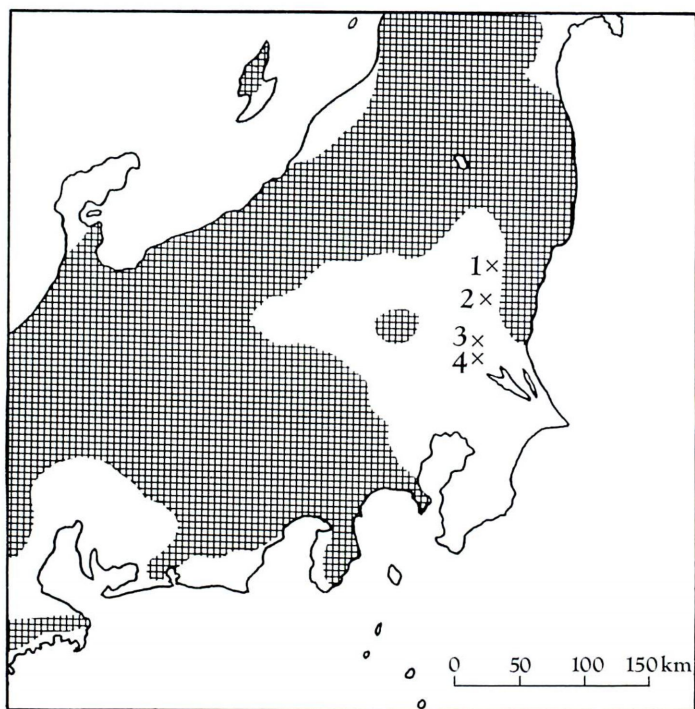


Fig. 1. Localities of *Kurawatrechus* on the Yamizo Range, superimposed on the central portion of my previous map showing the distribution of anophthalmic trechine beetles in Japan (fig. 11 B in UÉNO, 1987, p. 604). — 1, Mt. Yamizo-san (*K. yamizonis* S. UÉNO, sp. nov.); 2, Dônoiri at the northwestern foot of Mt. Torinoko-san (*K. intermedius* S. UÉNO, sp. nov.); 3, Mt. Amemaki-yama (*K. ohkawai* S. UÉNO); 4, Mt. Kaba-san (*K. ohkawai* S. UÉNO).

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***Kurawatrechus yamizonis* S. UÉNO, sp. nov.**

[Japanese name: Yamizo-mekura-chibigomimushi]

(Figs. 2-4)

Length: 2.90–3.45 mm (from apical margin of clypeus to apices of elytra).

Belonging to the group of *K. eriophorus* and probably related to *K. ohshimai* S. UÉNO (1952, p. 15, pl. 2, fig. 1), but readily distinguished from that species by its broader facies with more transverse prothorax and more broadly ovate elytra, darker coloration, obviously shallower elytral striae, sparser pubescence on elytral intervals, and almost glabrous ventral surface.

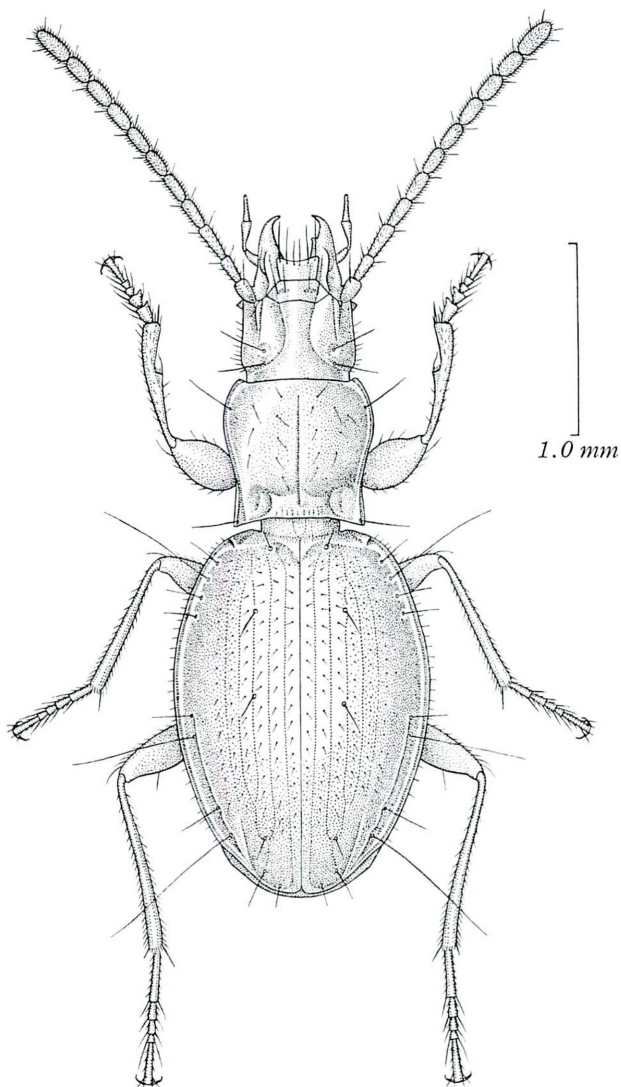


Fig. 2. *Kurasawatrechus yamizonis* S. UÉNO, sp. nov., ♂, from Shikanomata on Mt. Yamizo-san.

Colour relatively dark reddish brown, shiny; palpi pale; apical halves of antennae, ventral surface of hind body, and legs dark yellowish brown, more or less lighter than dorsum.

Head subquadrate, a little wider than long, and depressed above, with deep entire frontal furrows which are strongly arcuate and not angulate at middle; frons and supraorbital areas moderately convex and not pubescent; vertex also bare; two

supraorbital pores present on each side close to each other, the anterior one being foveolate; genae convex only near neck constriction, which is shallow though distinct; neck very wide; labrum shallowly emarginate at apex; mentum tooth porrect, narrow, and slightly bifid; palpi short and relatively thin; antennae fairly slender, subfiliform, reaching or nearly reaching basal third of elytra, or a little shorter than that especially in ♀, segment 2 about two-thirds as long as segment 3, segments 4–6 subequal in length to one another and a little shorter than segment 3, 7–10 each subovoid and fully twice as long as wide, terminal segment the longest, half as long again as scape and slightly thicker than the latter.

Pronotum subquadrate, wider than head, a little wider than long, widest at about seven-tenths from base, and more strongly narrowed towards apex than towards base; PW/HW 1.32–1.43 (M 1.37), PW/PL 1.09–1.18 (M 1.13), PW/PA 1.26–1.36 (M 1.32), PW/PB 1.16–1.25 (M 1.20); surface moderately convex and sparsely covered with fairly long, suberect hairs; sides smooth, not ciliated, and narrowly bordered, gently arcuate in front, widely and shallowly sinuate at about basal third, and then either subparallel or slightly divergent towards hind angles, which are usually a little sharp; front angles produced forwards though fairly broad; apex very slightly arcuate in most individuals, more or less narrower than base, which is slightly, though widely, emarginate, PB/PA 1.05–1.15 (M 1.10); median line deeply impressed on the disc, neither reaching base nor deepening in basal area; apical transverse impression obsolete; basal transverse impression shallow and mal-defined, though rather deeply impressed along the basal border; basal foveae large though shallow, extending anteriorly along the side borders; basal area uneven, with notched basal border; no post-angular carinae. Scutellum invisible.

Elytra ovate, much wider than prothorax, widest at about three-sevenths from bases, and almost equally narrowed towards bases and towards apices; EW/PW 1.57–1.70 (M 1.61), EL/EW 1.34–1.41 (M 1.38); surface moderately convex in basal two-thirds, less so in apical parts; shoulders effaced, with feebly arcuate prehumeral borders; sides narrowly bordered and ciliated throughout, the reflexed borders becoming narrower towards apices, moderately arcuate at middle, less so behind, and hardly emarginate before apices, which are separately rounded and form a small obtuse re-entrant angle at suture; striae very shallow and fine, obsolete at the side, and impunctate, 1–3 nearly entire, 4 often merging into 3 before the level of anterior dorsal pore, 5 slight though usually traceable, 6 vestigial, 7 effaced, 8 deeply impressed behind the middle group of marginal umbilicate pores; scutellar striole short but distinct; apical striole deeply impressed on apical declivity, becoming shallower anteriorly, and usually directed to stria 5 but sometimes to the site of stria 7; intervals completely flat, each bearing a sparse row of short erect pubescence; apical carina obtuse; stria 3 with two setiferous dorsal pores at  $1/6-2/9$  and  $3/7-1/2$  from base respectively; in a paratype (♂), an extra dorsal pore present near the base of stria 4 on the left elytron; preapical pore situated at the apical anastomosis of striae 2 and 3, and more distant from apex than from suture.

Microsculpture relatively fine, mostly consisting of isodiametric meshes on head and apical area of pronotum, and of wide meshes on the large part of pronotum and elytra.

Ventral surface almost glabrous, sometimes with a few vestigial pubescence on prosternum and abdominal sternites; anal sternite more strongly rounded at the apical margin in ♂ than in ♀, with a pair of setae in the former and two pairs in the latter. Legs fairly slender; protibiae slightly bowed at the apical parts, entirely pubescent and externally carinate; tarsi thin, segment 1 about as long as segments 2–3 together in mesotarsus, longer than segments 2–3 together but a little shorter than segments 2–4 together in metatarsus; in ♂, two proximal segments of each protarsus rather widely dilated and sharply spurred inwards at apices.

Male genital organ very small and rather lightly sclerotized. Aedeagus only two-ninths as long as elytra, rather lightly or feebly arcuate at middle, lightly compressed, and distinctly curved ventrad at both the basal and apical parts; basal part small and rather abruptly bent, with small basal orifice whose sides are hardly emarginate; sagittal aileron fairly large though hyaline; apical lobe long, slightly inclined to the left, and more or less distinctly, sometimes rather abruptly, curved ventrad; viewed dorsally, apical lobe narrow, parallel-sided, and rounded at the extremity; viewed laterally, apical lobe fairly broad, not attenuate, and widely rounded at the extremity; ventral margin either hardly or shallowly emarginate in profile. Copulatory piece about two-fifths as long as elytra, spatulate in proximal half, and acuminate in apical part, with spiniform apex. Styles relatively slender, left style obviously larger than the right, each bearing three or four stout setae at the apex.

*Type series.* Holotype: ♂, allotype: ♀, Shikanomata, 3–VII–1988, K. KUSANO & K. ONDA leg. Paratypes: 4 ♂♂, 3 ♀♀, same collecting data as for holotype; 1 ♂, Iriyama, 3–VII–1988, K. KUSANO leg.; 1 ♀, Kaburéishi-zawa, 28–V–1988, S. UÉNO leg.; 5 ♀♀, Kaburéishi-zawa, 29–V–1988, S. UÉNO, S. KASAHARA & S. SONE leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

*Type locality.* Mt. Yamizo-san (Shikanomata, 600 m alt., above Kaminanbô of Kurobané-machi in Tochigi Pref.; Iriyama, 850 m alt., of Tanagura-machi in Fukushima Pref.; and Kaburéishi-zawa, 480 m alt., of Daigo-machi in Ibaraki Pref.), at the northern part of the Yamizo Mountain Range, Central Japan.

*Notes.* It was most unexpected that the northernmost and highest part of the Yamizo Range should harbour an isolated species of the group of *Kurasawatrechus eriophorus*. Before the discovery of *K. yamizonis*, we assumed that the whole mountain range might be included in the territory of the *quadraticollis* group. We now know that this supposition was only partially true. As was mentioned in the introduction of this paper, it is difficult to elucidate at present why and how such a discontinuous distribution of the *eriophorus* group was established. Mt. Yamizo-san is about 78 km distant to the northeast from the northeastern edge of the hitherto known range of the *eriophorus* group, and moreover, separated from it by the wide alluvium of the

Kinu-gawa River. It is necessary to see if the range of the species-group extends further north along the western side of the alluvial plain, so as to enable us to speculate on the possibility of detour dispersal of ancestral trechines onto Yamizo-san from the northwest.

This interesting new species was found at three different sides of Mt. Yamizo-san (1,022 m in height). Shikanomata, where adequate materials including the holo- and allotypes were obtained, lies at the head of the Mumo-gawa, a tributary of the Naka-gawa River, on the western slope of the mountain. It is about 25.2 km north by east of Dônoiri, the type locality of *K. intermedius* to be described on later pages. The second collecting site, Iriyama, lies just at the northern side of the main ridge, and is about 3.1 km east by north of the Shikanomata site. The other known habitat, at the Kaburêishi-zawa, is on the southeastern slope, about 3.3 km south-southeast of Iriyama, about 4.9 km east-southeast of Shikanomata, and about 24.1 km north-northeast of Dônoiri. At the first two places, the trechine was dug out from colluvia but was considered endogean, while at the Kaburêishi-zawa, all the six known specimens were found in the upper hypogean zone about 2 m below the surface. We removed, in two days, more than 30 m<sup>3</sup> of soil and gravel from a scree at the side of a narrow branch stream of the Kaburêishi-zawa, and searched for the minute beetle. It was invariably found near the bed rock just like true upper hypogean trechines.

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

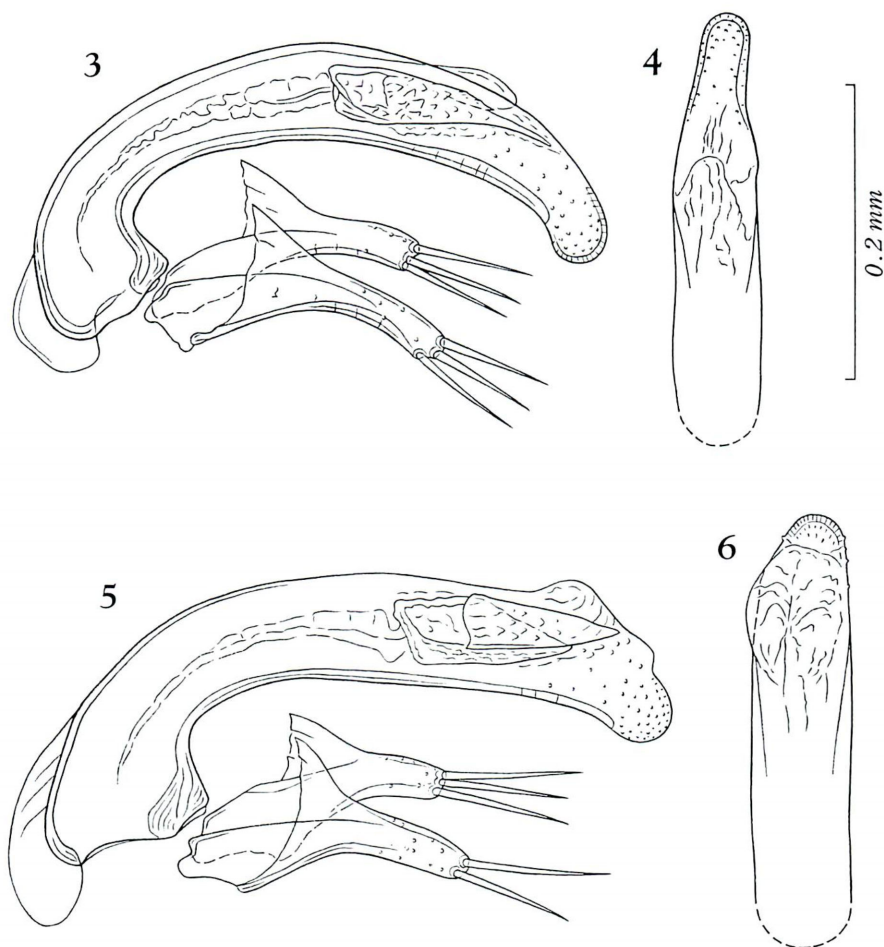
[Japanese name: Torinoko-mekura-chibigomimushi]

(Figs. 5–6)

Length: 2.80–3.05 mm (from apical margin of clypeus to apices of elytra).

Closely allied to *K. quadraticollis* S. UÉNO (1974, p. 112, figs. 7–9; 1985, p. 87, pl. 16, fig. 18), with which it agrees in many details, but readily distinguished from that species by the smaller size, narrower pronotal base, more distinctly sinuate pronotal sides, shorter and more regularly ovate elytra with narrower basal areas, and so on. From *K. ohkawai* S. UÉNO, it is discriminated by the larger head, broader pronotal apex, and differently shaped elytra. Decisively different from the two species in the configuration of male genitalia, above all in the short broad apical lobe of aedeagus.

Colour reddish brown and shiny, though more or less lighter than in *K. quadraticollis*. Head as in *K. quadraticollis*, though a little more transverse with more widely convex genae; antennae reaching basal third of elytra. Pronotum rather subcordate than subquadrate, wider than head, wider than long, widest at about seven-tenths from base, and a little more strongly narrowed towards front angles than towards ante-basal situation, which is at about three-tenths from base and more or less obviously deeper than in *K. quadraticollis*; PW/HW 1.35–1.39 (M 1.36), PW/PL 1.14–1.21 (M 1.18), PW/PA 1.23–1.30 (M 1.28), PW/PB 1.16–1.18 (M 1.17); disc a little more strongly convex than in *K. quadraticollis*, though similarly sculptured to the latter; sides more strongly arcuate in front and slightly divergent basad behind ante-



Figs. 3-6. Male genitalia of *Kurasawatrechus* spp.; left lateral view (3, 5), and apical part of aedeagus, dorso-apical view (4, 6). — 3-4. *K. yamizonis* S. UÉNO, sp. nov., from Shikanomata on Mt. Yamizo-san. — 5-6. *K. intermedius* S. UÉNO, sp. nov., from Dōnoiri at the northwestern foot of Mt. Torinoko-san.

basal situation; base slightly but widely emarginate, more or less narrower than in *K. quadraticollis* though still a little wider than apex, which is either straight or very slightly arcuate, PB/PA 1.07-1.12 (M 1.10); front angles usually broader and less pointed than in *K. quadraticollis*, hind angles more or less sharp.

Elytra ovate, shorter than in *K. quadraticollis*, widest at about two-fifths from bases, and more gradually narrowed towards apices than towards bases; EW/PW 1.46-1.54 (M 1.49), EL/EW 1.42-1.44 (M 1.43); surface more strongly convex than in *K. quadraticollis*, with the apical declivity less steep; shoulders effaced, with pre-humeral borders distinctly arcuate at the proximal portions; sides more evenly and a

little more strongly arcuate in basal two-thirds than in *K. quadraticollis*; apices separately rounded, forming an obtuse but rather large re-entrant angle at suture; striation and pubescence on intervals as in *K. quadraticollis*.

Microsculpture and pubescence on ventral surface as in *K. quadraticollis*. Legs somewhat shorter and stouter than in *K. quadraticollis*, though structurally similar to the latter.

Male genital organ small and rather lightly sclerotized. Aedeagus nearly one-fourth as long as elytra, hardly or only very slightly arcuate except for basal part, which is abruptly bent ventrad; basal orifice small, with the sides only very slightly emarginate; sagittal aileron large though narrow and hyaline; apical lobe very short and broad, slightly curved ventrad as well as to the left, and very widely rounded at the tip in both dorsal and lateral views; ventral margin either straight or slightly emarginate at middle in profile. Copulatory pieces as in *K. ohkawai*. Styles short and stout, left style larger than the right and devoid of ventral projection, each bearing two, three or four setae at the apex.

*Type series.* Holotype: ♂, allotype: ♀, paratype: 1 ♂, 20-V-1988, H. OHKAWA leg. Deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

*Type locality.* Dônoiri, 260 m alt., at the northwestern foot of Torinoko-san, Yamata of Batô-machi in Tochigi Prefecture, Central Japan.

*Notes.* In many respects, this new species is intermediate between *K. quadraticollis* S. UÉNO and *K. ohkawai* S. UÉNO, and is probably closer to the former than to the latter. Its type locality is situated at the western side of the Torinokos, and is nearly 39 km distant to the west-northwest from that of *K. quadraticollis* beyond the Kuji-gawa Valley. From the type locality of *K. ohkawai*, it is about 32 km distant to the north by east beyond the Naka-gawa Valley. Thus, *K. intermedius* is isolated from its direct relatives both geographically and topographically, and the zoogeographical gap is much larger between its habitat and those of the other members of the *quadraticollis* group than between the former and those of *K. yamizonis*.

The type specimens of *K. intermedius* were found in a gully at the left side of the Yamata-gawa about 2 km northwest of the top of Torinoko-san (427 m in height). They were dug out from a colluvium, but seemed to be endogean rather than upper hypogean.

#### *Kurasawatrechus ohkawai* S. UÉNO, 1988

*Kurasawatrechus ohkawai* S. UÉNO, 1988, Elytra, Tokyo, **16**, p. 2, figs. 1-3; type locality: Amemaki-yama of the Keisoku Hills.

*Additional specimens examined.* 4 ♂♂, 1 ♀, Amemaki-yama, 290 m alt., Ohkawado, Mashiko-machi, Tochigi Pref., 29-IV-1988, H. OHKAWA leg. (NSMT); 2 ♂♂, 1 ♀, Mt. Kaba-san, 550 m alt. on NNE slope, Yasato-machi, Ibaraki Pref., 10-VIII-1988, S. UÉNO & A. SAITO leg. (NSMT).



*Notes.* The specimens from Mt. Kaba-san, which is 13.6 km south of Amemakiyama, are slightly different from the topotypical ones in somewhat narrower pronotal base and the reduction of pronotal discal setae. They are, however, identical with the latter in other details including the configuration of male genitalia, and are regarded as a geographical variant of *K. ohkawai*. The standard ratios in the Kaba-san specimens (3.05–3.40 mm in the length of body) are as follows: PW/HW 1.40–1.44 (M 1.43), PW/PL 1.15–1.19 (M 1.16), PW/PA 1.35–1.37 (M 1.36), PW/PB 1.14–1.19 (M 1.17), PB/PA 1.13–1.20 (M 1.16), EW/PW 1.48–1.52 (M 1.50), EL/EW 1.40–1.42 (M 1.41).

Mt. Kaba-san (709 m in height) is a head at the northern part of the Tsukuba Hills, the southernmost block of the Yamizo Range which is separated from the Keisoku block by the courses of the Sakura-gawa and the Hinuma-gawa Rivers. However, the topographical gap between these blocks is not so definite as that between the Keisoku and the Torinoko blocks, and this is probably why differentiation of *Kurasawatrechus* has not yet attained to the species level between the two southern blocks of the Yamizo Range.

The three specimens of *K. ohkawai* known from Mt. Kaba-san were dug out from a colluvium deposited at the side of a gully in a deciduous broadleaved forest on the eastern slope of the watershed ridge. They were found in the upper hypogean zone at a depth of 60–70 cm, but the mode of their life was typically endogean, all crawling about on the under surfaces of fist-sized stones embedded in clayey parts.

## 摘 要

上野俊一：八溝山地のメクラチビゴミムシ類。——福島県境から南へ、栃木、茨城両県の県境上を南北方向に延びて筑波山にいたる八溝山地は、総延長が 100 km を越えるが、北から八溝、鷲子、鶏足、筑波の 4 山塊に区分される。この山地からは、最近までメクラチビゴミムシ類が知られていなかったが、1987 年の秋にオオカワメクラチビゴミムシ *Kurasawatrechus ohkawai* S. UÉNO が発見されたのを契機にして、急速に調査が進み、4 山塊のどれにもクラサワメクラチビゴミムシ属の地中種の生息することがわかった。

これらのメクラチビゴミムシ類は 3 種に分類されるが、北端にあって標高のもっとも高い八溝山にのみクラサワメクラチビゴミムシ群の種（ヤミゾメクラチビゴミムシ *K. yamizonis* S. UÉNO）が分布し、他のみつつの山塊にはアブクマメクラチビゴミムシ群のものがひろがっている。後者は、那珂川を境にして 2 種に分かれ、北側には新種のトリノコメクラチビゴミムシ *K. intermedius* S. UÉNO が、南側の鶏足、筑波両山地にはオオカワメクラチビゴミムシがそれぞれ分布する。あまり顕著な境界のない北部の 2 山塊に、系統の異なる 2 種のメクラチビゴミムシが生息するという事実は注目に値するが、その由来は今のところはっきりしない。将来、栃木県の北西部におけるメクラチビゴミムシ類の分布状況がもっと詳しくわかってくれば、この問題に対する解答が得られるかもしれない。

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*Elytra, Tokyo*, **16** (2): 116, November 15, 1988

## 新雑誌紹介

“Elytron” (Bulletin of the European Association of Coleopterology), Barcelona, Spain.

最近ヨーロッパで、新しい甲虫の専門誌があいついで刊行された。そのひとつは、Deutsch-Italienischen Coleopterologischen Gesellschaft (のちに Societas Coleopterologica と改称) によって、1985 年の秋から刊行されている “Acta Coleopterologica” で、現在は第 4 巻にかかっている。もうひとつが、ここに紹介する “Elytron” で、スペインのバルセロナに本部をおく Asociación Europea de Coleopterologia の機関誌である。その刊行はかねてから予告されていたが、今年の初夏に第 1 巻が配布された (雑誌そのものには発行月日が明記されていないが、7 月上旬ヴァンターヴァーで開催された第 18 回国際昆虫学会議で回覧されたので、おそらく 6 月の刊行だろうと思われる)。メディアム・オクタヴォの変形判で、厚手のコート紙 115 ページのなかなか立派な雑誌になっている。

この巻に掲載されているのは、12 篇の論文と、意見および追悼記事が各 1 篇の計 14 篇で、論文のうち分類に関するものが 9 篇 (オサムシ、ハネカクシ、コケムシ、タママシ、シバンムシ、ゴミムシダマン、ハムシ、カミキリムシ、ゾウムシの各科に関するもの 1 篇ずつ)、ホソシバンムシの生態に関するもの 1 篇、土壌甲虫の体重/体長比について論じたもの 1 篇、甲虫類における核型の多様性について論じたもの 1 篇と、なかなか読みごたえのある多彩な内容になっている。また、「意見」は、W. G. EBERHARD の “Sexual Selection and Animal Genitalia” の批評で、一種の書評だと考えてよい。

甲虫類に関するこのように包括的な専門誌が発足したことは誠に喜ばしく、今後いっそうの発展を祈りたい。それにつけても残念なのは、日本鞘翅目学会の国際的な知名度の低さで、こちらに先取権があるとはいえ、機関誌の名称も単複が異なるだけでシノニムに近い。国際的な交流をもっと盛んにする努力が必要だろう。

(上野俊一)