

Macrocephalic Pterostichines (Coleoptera, Carabidae)  
from Central Honshu, Japan

Seiji MORITA

Motoazabu 1–3–28–405, Minato-ku, Tokyo, 106 Japan

and

Hanmei HIRASAWA

Yutaka 2626–1, Misato-mura, Minamiazumi-gun,  
Nagano Prefecture, 399–81 Japan

**Abstract** Two macrocephalic pterostichine carabids are described or re-described from central Honshu, Japan. Both the species, *Pterostichus koheii* and *P. uedaorum*, are closely related to *P. macrogenys* BATES, but show striking differentiation in their male genitalia.

In 1963, NAKANE described a new macrocephalic pterostichine carabid under the name of *Pterostichus koheii* from the Yatsu-ga-take Mts., central Honshu, Japan, based on a single female. Though there is a possibility that it might be a geographical race of *P. macrogenys* (BATES, 1883, p. 245), almost nothing has since been added to our knowledge about the true systematic status of this beetle.

In recent years, specimens of the same type of pterostichine carabids have been accumulated from various mountains including the Yatsu-ga-take Mts. Judging from the shape of male genital organ, it has become evident that the specimens comprise two species, one of which is *P. koheii* and the other a new species. We are going to describe or redescribe them in this paper.

The abbreviations used herein are as follows: HW—greatest width of head; PW—greatest width of pronotum; PL—length of pronotum, measured along the median line; PA—width of pronotal apex; PB—width of pronotal base; EW—greatest width of elytra; EL—greatest length of elytra; FL—length of metafemur; ML—length of metatrochanter; NSMT—National Science Museum (Nat. Hist.), Tokyo.

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*Pterostichus koheii* NAKANE

[Japanese name: Yatsu-ôzu-naga-gomimushi]

(Figs. 1-3, 5-9, 12,13)

*Pterostichus koheii* NAKANE, 1963, *Fragm. coleopt.*, Kyoto, (6), p. 23; 1963, *Icon. Ins. Japon. Col. nat. ed.*, **2**, p. 34, pl. 17, fig. 23; 1983, *Nat. & Ins.*, Tokyo, **18** (6), p. 14. — SAKAGUTI, 1981, *Ins. of the World*, **5**, p. 72.

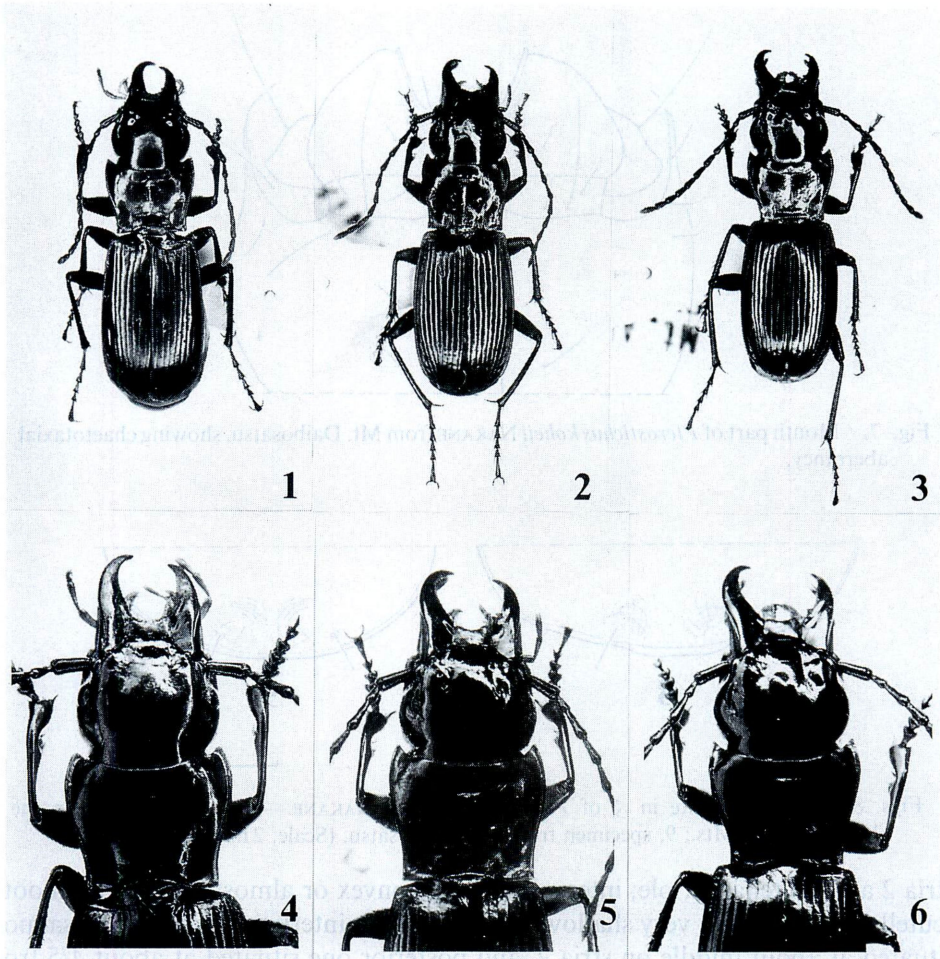
Length: 12.54–14.15 mm (from apical margin of clypeus to apices of elytra).

Body flat, robust and parallel-sided.

Colour dark brown; sternites, mandibles, labrum, antennae and legs lighter than dorsum; palpi reddish brown.

Head very large and convex; PW/HW 1.11 in 1♂ from the Yatsu-ga-take Mts.; frontal furrows short, shallow and divergent posteriad; eyes small and entirely flat; genae strongly convex; lateral grooves deep, arcuate inwards and widely depressed at the posterior parts, and with a short furrow outside on each side; anterior supraorbital pores situated a little before the post-eye level; posterior supraorbital ones situated at the ends of lateral grooves; mentum tooth bifid; mentum with an oblique groove and a small pit on each side; small rounded pit situated at the meeting point of gular suture and basal margin of submentum on each side; mandibles very long and strongly hooked at apices; terminal segment of maxillary palpus a little longer than the penultimate; apex of labrum widely and deeply emarginate; antennae short and subfiliform; antennal segment 2 with one seta; relative lengths of antennal segments as follows: I:II:III:IV:V:VI:XI = 1:0.47:0.90:0.78:0.75:0.76:0.77 in 1♂ from the Yatsu-ga-take Mts., 1:0.47:0.93:0.77:0.76:0.79:0.83 in 1♂ and 1♀ from Mt. Akaguna-yama, 1:0.48:0.94:0.76:0.75:0.78:0.82 in 1♂ from Mt. Daibosatsu; microsculpture composed of polygonal meshes on neck in ♂ and ♀, and of wide or transverse meshes on most part of head in ♀, but largely obliterated in ♂.

Pronotum flat, nearly square, a little wider than head and widest at 1/9 from apex (measured along the median line); PW/PL 1.65, PW/PA 1.09, PW/PB 1.28, PA/PB 1.17 in 1♂ from the Yatsu-ga-take Mts.; apex widely emarginate, not bordered and a little wider than base; sides slightly arcuate in front, gradually convergent posteriad and slightly sinuate before hind angles; base strongly emarginate at median part, arcuately oblique inside each hind angle; apical angles strongly produced and obtusely pointed at the tips; anterior pair of setae inserted at about the widest part, posterior ones a little before hind angles; median line shallow, reaching neither apex nor base, and with some transverse wrinkles at the



Figs. 1-6. *Pterostichus* spp. — 1, *Pterostichus koheii* NAKANE from the Yatsu-ga-take Mts.; 2, 5, same species from Mt. Daibosatsu; 3, 6, same species from Mt. Akaguna-yama; 4, *P. macrogenys* BATES from Renge-onsen, Niigata Prefecture.

sides; basal foveae shallow, linear at the bottom and a little divergent anteriorly; basal part sparsely and finely punctate; microsculpture composed of wide or polygonal meshes in ♂ and ♀.

Elytra rectangular, flat, widest a little behind the middle; EW/PW 1.14, EL/EW 1.61 in 1 ♂ from the Yatsu-ga-take Mts.; shoulders angulate; sides a little divergent from behind shoulders to the widest part, moderately arcuate in apical parts and with preapical emargination; epipleuron gradually narrowed towards apex; inner plica visible; apex of each elytron subangulate and separated from the other; basal border slightly arcuate; basal pore situated at the meeting point of

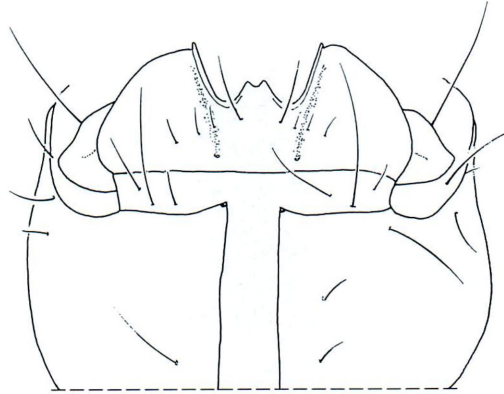
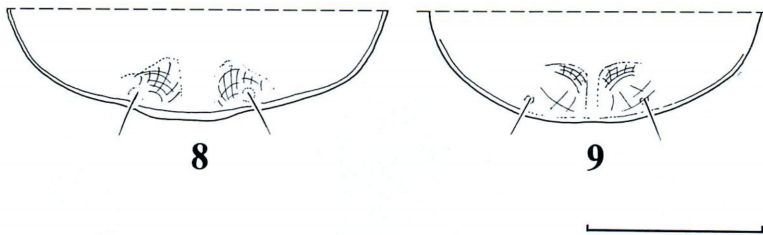


Fig. 7. Mouth part of *Pterostichus koheii* NAKANE from Mt. Daibosatsu, showing chaetotaxial aberrancy.

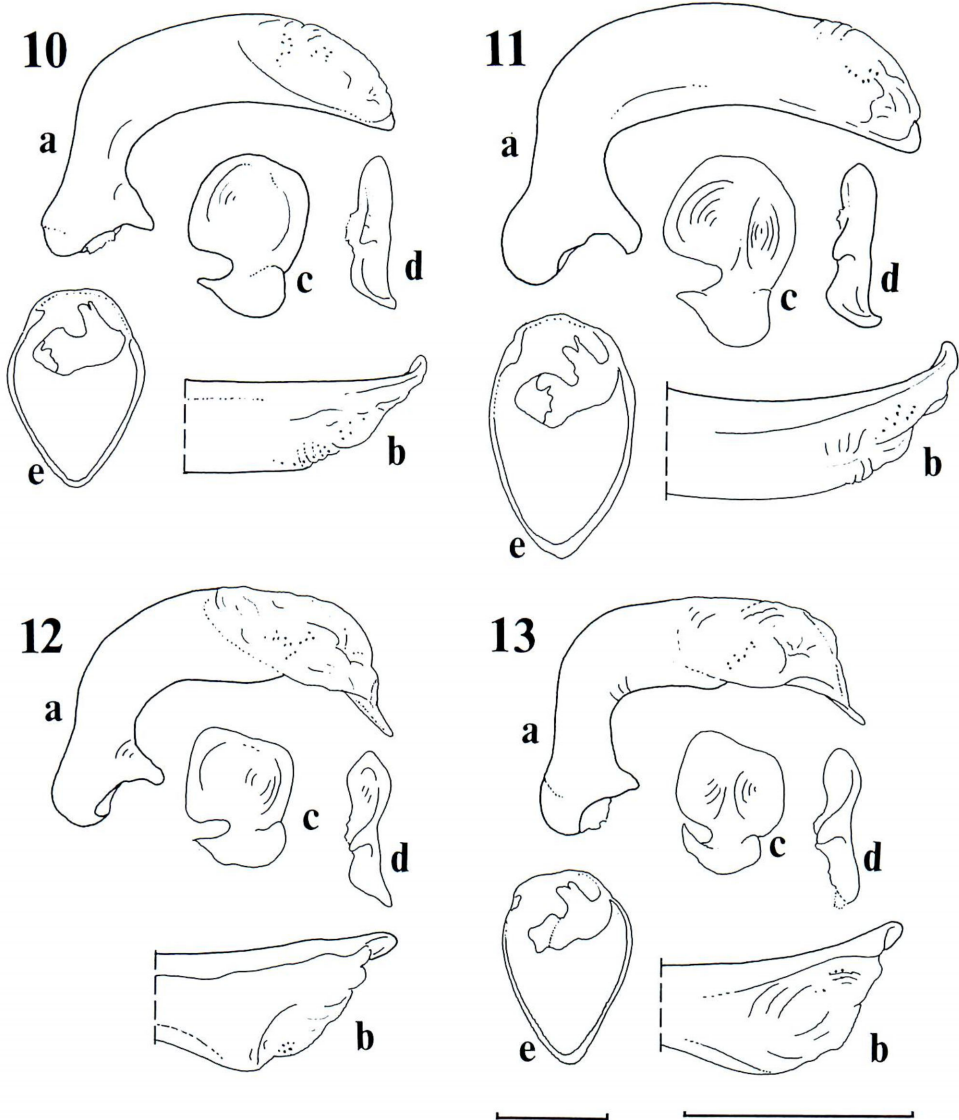


Figs. 8–9. Anal sternite in ♂ of *Pterostichus koheii* NAKANE.—8, Specimen from the Yatsu-ga-take Mts.; 9, specimen from Mt. Daibosatsu. (Scale: 2 mm.)

stria 2 and scutellar striole; intervals slightly convex or almost flat; striae smooth; scutellar striole short, very shallow and situated on interval 2; anterior dorsal pore situated at about middle on stria 2, and posterior one situated at about 4/5 from base on interval 3 and close to stria 2; marginal series composed of 6+5 pores; microsculpture clearly impressed in ♂ and ♀, and composed of wide or polygonal meshes, partially of irregular transverse lines.

Ventral side smooth except for rugose genae; sides of sternites 1–2 rarely finely and sparsely punctate; in ♂ from the Yatsu-ga-take Mts., apical part of anal sternite a little produced, and with a shallow longitudinal median ridge; in ♂ from Mt. Daibosatsu, apex of anal sternite very shallowly emarginate; anal sternite bordered throughout in ♂ from the Yatsu-ga-take Mts., but in ♂ from Mt. Daibosatsu not bordered at the sides.

Legs slender; in ♀ from Mt. Akaguna-yama, ventral sides of protarsi without adhesive hairs (cf. HABU, 1961); basal two segments of meso- and metatarsi with outer sulci in ♂, basal segments of meso- and metatarsi with outer sulci in ♀; protibiae weakly bowed; metatrochanter short and with rounded apex; ML/FL =



Figs. 10–13. Male genital organ in *Pterostichus macrogenys* BATES (10, 11) and *P. koheii* NAKANE (12, 13). — 10, Specimen from Renge-onsen, Niigata Prefecture; 11, specimen from Tobira-onsen, Nagano Prefecture; 12, specimen from the Yatsu-ga-take Mts.; 13, specimen from Mt. Akaguna-yama. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c, left paramere, left lateral view; d, right paramere, left lateral view; e, genital segment, dorsal view. (Scale: 2 mm.)

0.40 in 1 ♂ and 1 ♀.

Aedeagus robust; viewed laterally, ventral side slightly convex a little before the middle; apical lobe rather strongly produced and slightly twisted to the left, and with rounded apex; right paramere almost straight, widest at about apical 1/5, and with rounded apex; left one wide and square.

*Specimens examined.* 1 ♂, Natsuzawa-tôge, Yatsu-ga-take Mts., Nagano Pref., 13–VIII–1980, N. ITO leg.; 1 ♂ (teneral), Mt. Daibosatsu, Enzan-shi, Yamanashi Pref., 23–VI–1985, M. NISHIKAWA leg.; 1 ♂, Mt. Akaguna-yama, Gunma Pref., 15–X–1994, S. MORITA leg.; 1 ♀, same locality 23–X–1994, H. OHKAWA leg.

*Range.* Japan: central Honshu (Nagano Pref., Yamanashi Pref. and Gunma Pref.).

*Notes.* This species is closely allied to *P. macrogenys* BATES widely distributed in eastern Honshu. It is, however, distinguished from the latter by the smaller body, the flat and small eyes, the distinct elytral shoulders and more clearly impressed microsculpture on the elytra. The most definite differences between the two are in the shape of male genital organ: in *P. koheii*, the aedeagus is strongly bent at basal third, the apical part of aedeagus is wide in dorsal view, the apex is rather strongly produced, and the apical part of right paramere is wide in lateral view.

Judging from the flat eyes, the punctuation of basal foveae on pronotum and the shape of aedeagal apical lobe, this species is also closely allied to *P. asahinus* HABU et BABA (1960, p. 62), which was originally described as a subspecies of *P. macrogenys* from Mt. Dôrokujin, Niigata Prefecture, Central Japan. Later in 1977, it was regarded by HABU as an independent species. According to his account, *P. asahinus* is characterized by the following points: 1) anal sternite without short ridge in the male; 2) elongate and rather strongly bent aedeagal basal part, and 3) strongly bent right paramere. Were it not for such definite characters, it could be regarded as a subspecies of *P. koheii*. Needless to say, the known ranges of the two species, *P. koheii* and *P. asahinus*, are widely distant and are separated from each other at least by several rivers of moderate size. It is to be hoped that more materials of macrocephalic pterostichine carabids will be found in the wide blank area by future investigations.

The single known specimen from Mt. Daibosatsu, which lies about 55 km southeast of the type locality, is of stout body. The standard ratios of body parts are as follows: PW/HW 1.12; PW/PL 1.54; PW/PA 1.14; PW/PB 1.17; PA/PB 1.03; EW/PW 1.15; EL/EW 1.54. Chaetotaxial aberrancy is found in this specimen: clypeus with an additional seta at about middle; left anterior supraorbital seta with two short additional setae; the area between two supraorbital setae on the right side with seven long setae. Aberrancy is also observed in the mouth part: genae with total seven setae on ventral side; three short setae present on buccal fissure; submentum with a pair of short setae just inside a pair of long ordinary

ones; mentum probably with a pair of short seta.

Only a single female specimen known from Mt. Akaguna-yama, which lies about 45 km northeast of the type locality, is relatively small-sized (12.54 mm in the length of body). The standard ratios of body parts are: PW/HW 1.09; PW/PL 1.59; PW/PA 1.07; PW/PB 1.31; PA/PB 1.22; EW/PW 1.09; EL/EW 1.63.

The male specimen from the Yatsu-ga-take Mts. was found from under a large stone lying at the side of a path. The male from Mt. Akaguna-yama was found from a deep fissure of a weathering outcrop of rocks, together with several specimens of *Brososoma doenitzi* HAROLD.

***Pterostichus uedaorum* MORITA et HIRASAWA, sp. nov.**

[Japanese name: Ueda-ôzu-naga-gomimushi]

(Figs. 14–19)

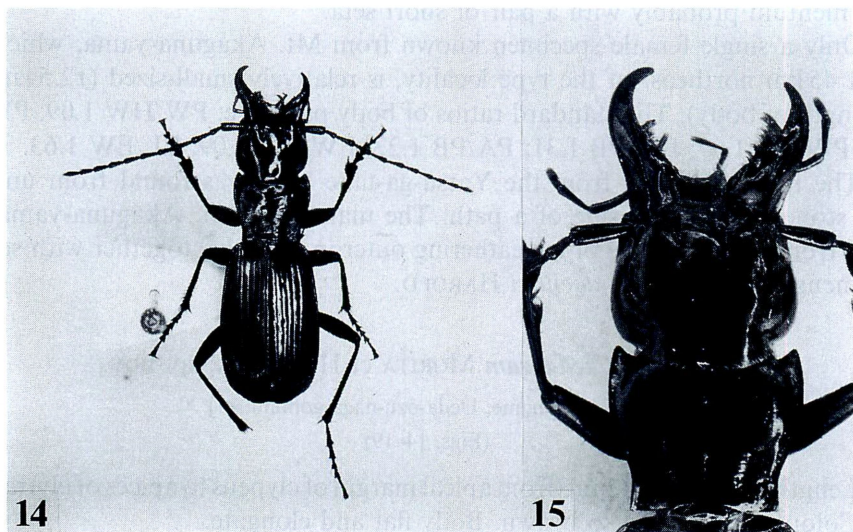
Length: 13.87–15.53 mm (from apical margin of clypeus to apices of elytra).

Colour dark brown to brown. Body flat and elongate.

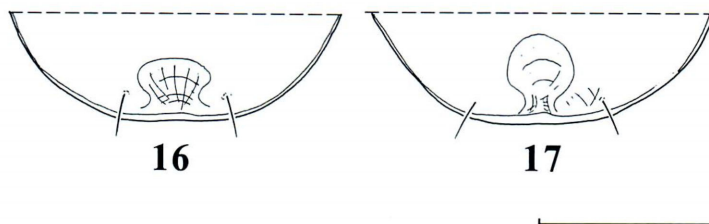
Head very large, a little narrower than pronotum; PW/HW 1.08 in the holotype; frontal furrows short, shallow and almost parallel; eyes entirely flat and small; genae strongly convex; lateral grooves arcuate and widely depressed at posterior ends and reaching posterior supraorbital pores; anterior supraorbital ones situated a little before the post-eye level; mentum tooth bifid and with a pair of setae; mentum with an oblique groove and a small pit on each side; small rounded pit situated on each side at the meeting point of gular suture and basal margin of submentum; submentum with two pair of setae on each side; mandibles very long and strongly hooked at apices; surface sparsely and finely punctate; antennae filiform; relative lengths of antennal segments as follows: I:II:III:IV:V:VI:XI = 1:0.49:0.80:0.76:0.76:0.75:0.72; microsculpture almost vanished or composed of irregular meshes but partially disordered.

Pronotum flat, nearly square, a little wider than head and widest at about 1/7–1/5 from apex (measured along the median line); PW/PL 1.51, PW/PA 1.17, PW/PB 1.32 in the holotype; apex widely emarginate, not bordered and a little wider than base; PA/PB 1.13 in the holotype; sides slightly arcuate in front, shallowly sinuate behind and then parallel to each other towards hind angles; base strongly emarginate at median part, arcuately oblique or almost straight inside each hind angle; apical angles strongly produced and obtusely pointed at the tips; anterior pair of setae inserted a little before the widest part, posterior ones a little before hind angles; anterior transverse impression shallow; median line clearly impressed, reaching neither apex nor base; basal foveae rather deep and linear; surface sparsely and finely punctate, densely so in basal part; microsculpture composed of wide meshes but partially disordered.

Elytra flat and elongate; shoulders slightly rounded; EW/PW 1.25, EL/EW 1.63 in the holotype; sides a little divergent from behind shoulders to the widest



Figs. 14–15. *Pterostichus uedaorum* MORITA et HIRASAWA, sp. nov. — 14, Specimen from Mt. Iwōzen; 15, specimen from Shiramine-mura.

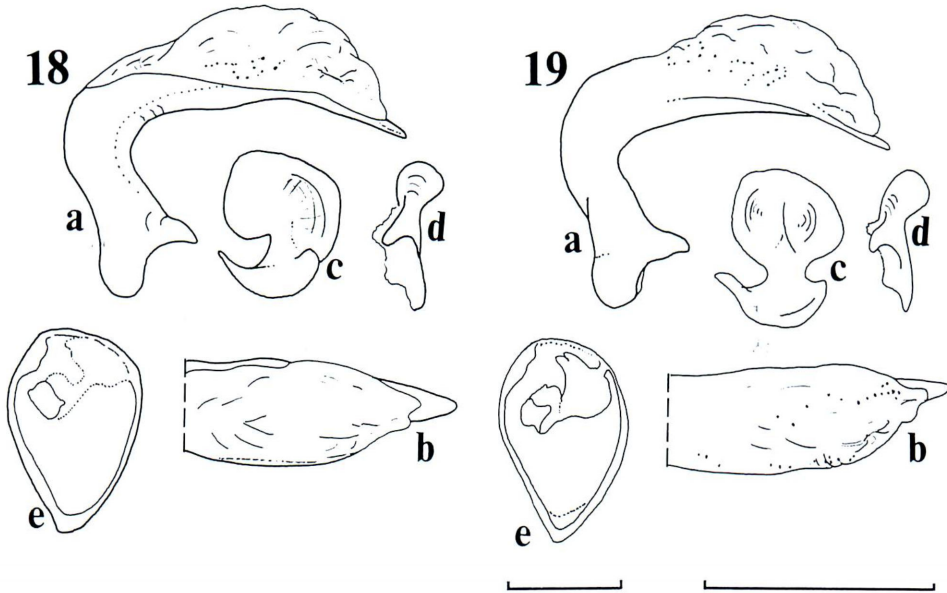


Figs. 16–17. Anal sternite in ♂ of *Pterostichus uedaorum* MORITA et HIRASAWA, sp. nov. — 16, Specimen from Mt. Iwōzen; 17, specimen from Shiramine-mura. (Scale: 2mm.)

part, widely arcuate in apical parts and with shallow preapical emargination; epipleuron gradually narrowed towards apex; inner plica visible; apices separated from each other, and forming a re-entrant angle at suture; basal border slightly arcuate; basal pore situated at the meeting point of stria 2 and scutellar striole; intervals slightly convex or flat; striae almost smooth; scutellar striole short, very shallow and situated on interval 2; anterior dorsal pore situated at about middle on stria 2, and posterior one situated at about 4/5 from base on interval 3 and close to stria 2; marginal series composed of 6 + 5 pores; microsculpture composed of wide or transverse meshes in ♂, of polygonal or wide meshes, partially irregular transverse lines, in ♀.

Genae smooth on ventral side; prepisternum, mesepisternum, sides of metasternum, metepisternum and sides of sternites 1–2 sparsely and coarsely





Figs. 18–19. Male genital organ of *Pterostichus uedaorum* MORITA et HIRASAWA, sp. nov. — 18, Specimen from Mt. Iwôzen; 19, specimen from Shiramine-mura. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c, left paramere, left lateral view; d, right paramere, left lateral view; e, genital segment, dorsal view. (Scale: 2 mm.)

punctate; sides of sternite 3–5 finely and sparsely punctate; in ♂, apex of anal sternite slightly emarginate, and with rather a deep concavity.

Legs slender; tarsi smooth on dorsal side; in ♀, ventral sides of protarsi without adhesive hairs; protibiae slightly bowed; metatrochanter short and with rounded apex;  $ML/FL \approx 0.37$ .

Aedeagus robust and strongly bent at basal third; viewed dorsally, apical part almost straight; apical lobe rather strongly produced, and with rounded apex; right paramere weakly bent at apical third, and with widely rounded apex; left one wide.

*Type series.* Holotype: ♂, 12–IX–1992, Mt. Iwôzen, N. UÉDA leg. (NSMT). Allotype: ♀, 18–VIII–1991, Shiramine-mura, N. UÉDA leg. Paratype: 1 ♂, Shiramine-mura, 18–VIII–1991, N. UÉDA leg.

*Localities.* Mt. Iwôzen, Kanazawa-shi and Mt. Haku-san (Shaka-rindô), Shiramine-mura, Ishikawa Prefecture, central Honshu, Japan.

*Notes.* This new species is separable from the other members of macrocephalic pterostichine carabids by having a combination of the following characters: 1) flat body with slender legs and antennae; 2) in ♀, anal sternite with a deep concavity; 3) strongly bent aedeagus; 4) rather strongly produced apical

lobe of aedeagus, and 5) bent right paramere with widely rounded apex.

The standard ratios of body parts in the specimens from Shiramine-mura are as follows:—PW/HW 1.06, 1.07; PW/PL 1.48, 1.62; PW/PA 1.08, 1.13; PW/PB 1.33, 1.35; PA/PB 1.20, 1.23; EW/PW 1.20, 1.24; EL/EW 1.55, 1.60.

## 要 約

森田誠司・平沢伴明：中部日本産のオオズナガゴミムシ類について。——原記載以降、記録のなかったヤツオオズナガゴミムシ *Pterostichus koheii* NAKANE を、基産地付近からの雄に周辺部からの標本を加えて再記載した。また、北陸地方から発見された1新種をあわせて記載した。この新種は、体が平たく、頭部が非常に大きく、陰茎が強く屈曲し、先端部も細く伸長すること、および右側片が屈曲し先端が広く丸みを帯びることで、容易にほかのオオズナガゴミムシ類とは区別される。

種名 *P. uedaorum* は、快く研究材料を提供され、種々お世話くださった上田昇氏とご家族の皆様に献名した。

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