

Two New Pterostichine Carabids from the Islands of Shikoku and Kyushu, Southwest Japan

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Abstract Two new pterostichine carabids are described from Southwest Japan, namely *Pterostichus* (*Pterostichus**) *itoi* sp. nov. from the Island of Shikoku and *P. (P.) arcuaticarinatus* sp. nov. from that of Kyushu. Both the new species are closely allied to *P. (P.) kyushuensis* HABU, and are found in coexistence with the latter, on which some notes are also given.

A medium-sized apterous pterostichine carabid beetle, *Pterostichus* (*Pterostichus*) *kyushuensis* HABU (1955, pp. 143–144, 152–156), has been known from the Island of Kyushu, and its local forms also occur in the westernmost area of Honshu and the Island of Shikoku. There are two relatives of the species, each of which is found in coexistence with the latter in Shikoku and Kyushu, and may have probably been confused with one another.

One of the undescribed species, from Shikoku, was previously known from only one female found at Tsuchigoya on the Ishizuchi Mountains in Ehime Prefecture. Recently, I was able to examine its male specimens through the courtesy of Mr. Yoshiyuki Irô, who had obtained them on Mt. Takanosu-yama in Kôchi Prefecture, about 12 km distant to the east from the first locality. It is somewhat similar to *P. kyushuensis* HABU, but is readily separable from the latter by certain external and genitalic details.

The other species was found on the Kyushu Mountain Range in both Kumamoto and Miyazaki Prefectures. It agrees well with *P. kyushuensis* HABU in general appearance, but its aedeagus is peculiar and evidently different from that of the latter. It must be new to science like the preceding one.

In the present paper, I will describe the former under the name of *P. (P.) itoi*, and the latter under that of *P. (P.) arcuaticarinatus*, and will also give some supplementary notes on the local variation of *P. kyushuensis* HABU, which has hitherto been poorly known. The abbreviations used herein are the same as those explained in the foregoing papers of mine.

Before going further, I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his constant guidance and reading through the original manuscript of this paper, and to Dr. Kazuo TANAKA of the Laboratory of Teiso Kasei Co., Shizuoka, for his advice. Thanks are also due

* *Sensu* TANAKA (1985, p. 113).

to Messrs. Shōichi IMASAKA, Yoshiyuki ITÔ, Seiji MORITA and Norio OHTANI for their kind help in various ways.

Pterostichus (Pterostichus) itoi KASAHARA, sp. nov.

[Japanese name: Itô-nagagomimushi]

(Figs. 1-2, 4)

Description. Length (measured from apex of labrum to apices of elytra) 11.2–12.8 mm. Width 3.9–4.5 mm. Black, shiny; labrum and mandibles dark reddish brown; basal four segments of antennae blackish, the remaining reddish brown, tending to become paler towards apices; palpi and tarsi light reddish brown.

Head moderately convex, shiny; labrum and mandibles normal; eyes convex; tempora short, strongly contracted behind, slightly tumid; genae almost smooth or feebly rugose near buccal fissure; frontal furrows rather shallow, though distinct and wide, more or less divergent behind in posterior extremities, and reaching the level of anterior supraorbital setae; supraorbital areas convex in front; clypeal suture fine; lateral grooves deep, extending to a little behind the post-eye level; surface sparsely minutely punctate, microsculpture slightly visible, forming isodiametric meshes; both maxillary and labial palpi normal; antennae more or less thick, extending beyond shoulders of elytra, scape twice as long as wide, 1.2 times as long as segment 3, which is 1.5 times as long as segment 2, the latter ventrally unisetose at apex.

Pronotum distinctly cordate, moderately convex and shiny, widest at apical third, 1.3 times as wide as head (PW/HW 1.22–1.38, mean 1.33), 1.2 times as wide as long (PW/PL 1.21–1.29, mean 1.24), 1.6 times as wide as basal width (PW/PBW 1.51–1.63, mean 1.57); lateral margins evenly well arcuate in apical half, then strongly convergent posteriad and fully sinuate before base, basal part with small irregular notches; lateral reflexed borders narrow, though becoming more or less wider towards apices; marginal grooves vaguely punctate on basal halves; anterior marginal setae inserted a little before the widest level; apical margin gently or weakly emarginate, not bordered, apical angles produced, rounded at the tips; basal margin always narrower than the apical, gently and widely emarginate at the median part, and rather oblique or often weakly sinuate on each side, which is vaguely bordered, basal angles rather variable, obtuse though usually almost rectangular; basal foveae deep, more or less divergent anteriad in front, with linear impressions at the bottoms, coarsely though rather strongly punctate; median line moderately impressed; apical crescent depression relatively weak, basal transverse one weak or obsolete; surface impunctate, though often with transverse wrinkles, microsculpture slightly visible, forming fine transverse meshes.

Apterous. Elytra oblong-ovate, moderately convex, shiny in both sexes, fused with each other at the suture, widest at the middle, 1.2 times as wide as pronotum (EW/PW 1.16–1.30, mean 1.22), 2.5 times as long as pronotum (EL/PL 2.34–2.59, mean 2.51), 1.7 times as long as wide (EL/EW 1.59–1.74, mean 1.68); basal border

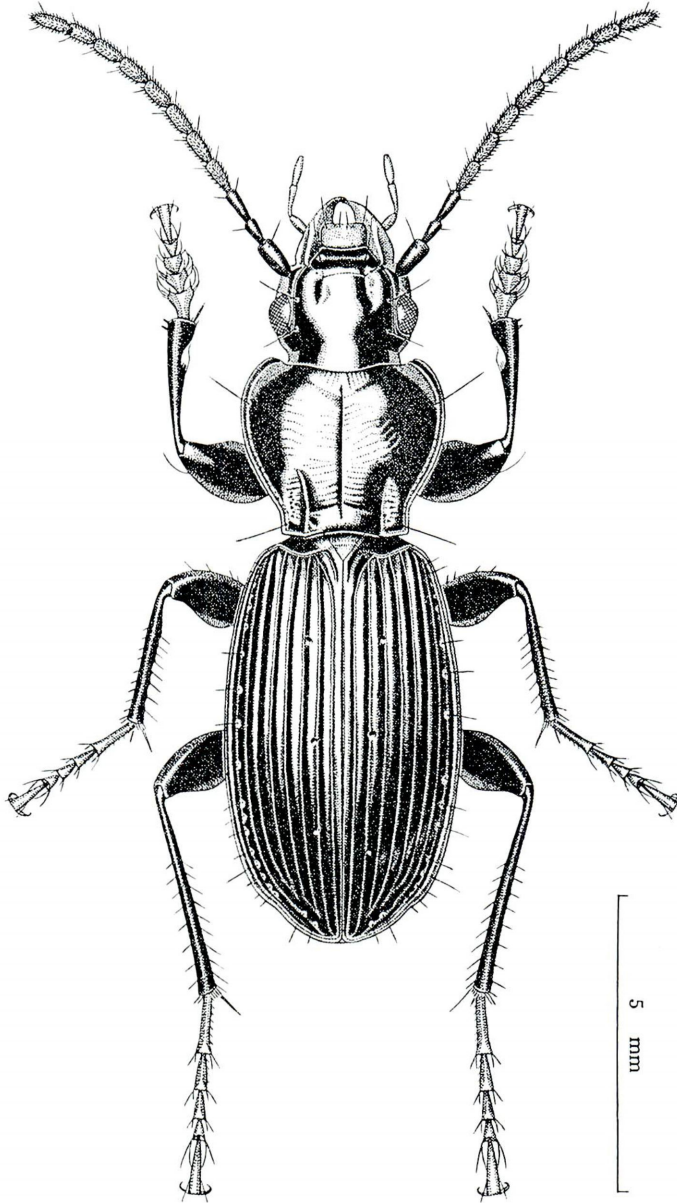


Fig. 1. *Pterostichus (Pterostichus) itoi* KASAHARA, sp. nov., ♂, from Mt. Takanosu-yama in Kōchi Prefecture.

complete, curved at the base of stria 4, thence obliquely extending to shoulder, and joining lateral border at an obtuse angle; shoulders widely rounded; lateral margins evenly gently arcuate from behind shoulders to preapical emarginations, which are

shallow; apices more widely rounded in the female than in the male; inner plica hardly visible; scutellar striole short, lying on interval 1; striae deeply impressed, almost smooth; intervals moderately convex, interval 3 with three dorsal pores, anterior one at about basal fourth and adjoining stria 3, while the posterior two adjoin stria 2 at about middle and apical fourth, respectively; marginal series of pores 16–18 in number, widely spaced at middle; microsculpture weakly impressed in both sexes, forming transverse meshes.

Basal three segments of meso- and metatarsi externally sulcate.

Ventral surface moderately shiny; pro- and mesepisterna and mesosternum punctate; prosternal process furrowed at middle, vaguely bordered at apex; terminal sternite concave in apical half in the male, the concavity longitudinally and weakly raised at middle, somewhat warped downwards at apex, which is more or less truncate or weakly emarginate.

Aedeagus strongly bent at about 90 degrees at basal third, rather abruptly curved downwards at apical fourth, apical lobe small, obtusely pointed at apex; left paramere wide, square; right one thick, blunt at apex.

Type series. Holotype: ♂, Mt. Takanosu-yama, 1,300 m alt., Hongawa-mura, Kôchi Pref., 4. VI. 1983, Y. ITÔ leg.; allotype: ♀, Tsuchigoya, 1,550 m alt., Ishizuchi Mountains, Ehime Pref., 1. IX. 1978, S. KASAHARA leg.; paratypes: 2 ♂♂, Mt. Takanosu-yama, 1,300 m alt., Hongawa-mura, Kôchi Pref., 4. VI. 1983, Y. ITÔ leg.; 1 ♂, 2 ♀♀, Mt. Takanosu-yama, 1,150–1,550 m alt., Hongawa-mura, Kôchi Pref., 1. VI. 1986, Y. ITÔ leg.; 1 ♂, Heikedaira, 1,520 m alt., Ôkawa-mura, Kôchi Pref., 15–19. VIII. 1982, Y. ITÔ leg.; 1 ♀, Tsuchigoya, 1,550 m alt., Ishizuchi Mountains, Ehime Pref., 1. IX. 1978, S. KASAHARA leg.; 1 ♀, Tsuchigoya, Ishizuchi Mountains, Ehime Pref., 4–7. IX. 1980, S. MORITA leg.

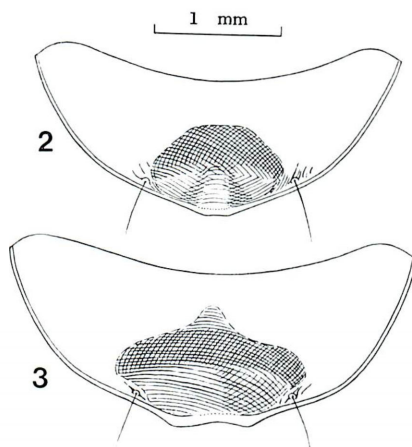
The holo- and allotypes are deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. The paratypes are separately deposited in the above collection and those of the collectors.

Notes. The present new species is somewhat allied to *P. (P.) kyushuensis* HABU, but is easily separable from the latter by having the following points: smaller body; shorter antennae with darker coloration; wider and more strongly cordate pronotum, with the basal margin clearly narrower than the apical; elytral microsculpture almost equally impressed in both sexes; peculiar terminal sternite in the male; aedeagus not tumid on the right side at apical third.

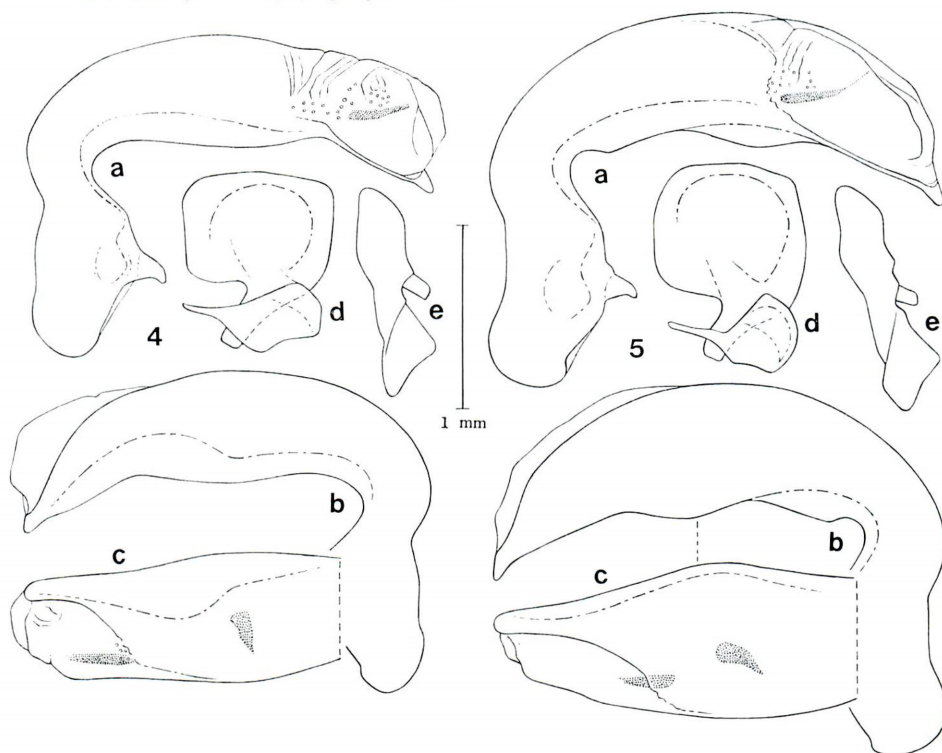
It also resembles *P. yoshikawai* ISHIDA (1958, p. 32), known from the Kii Peninsula, southwestern Honshu, but can be distinguished from the latter by having clearly punctate basal foveae of pronotum, smaller number of dorsal pores on elytra, and so on.

It is often found with *P. kyushuensis* HABU, whose occurrence in the Island of Shikoku was already noticed (KASAHARA, 1980, p. 121). This is almost the same in general features as the typical one, known from Mt. Hiko-san and its vicinities in the Island of Kyushu, though certain difference in the conformation of aedeagus can be detected between the two. In the typical form, the aedeagus is evidently tumid

Figs. 2-3. Terminal sternites in the males of *Pterostichus* (*Pterostichus*) spp. — 2, *P. (P.) itoi* KASAHARA, sp. nov., from Mt. Takanosu-yama in Kôchi Prefecture; 3, *P. (P.) kyushuensis* HABU from the same locality.



Figs. 4-5. Male genitalia of *Pterostichus* (*Pterostichus*) spp. — 4, *P. (P.) itoi* KASAHARA, sp. nov., from Mt. Takanosu-yama in Kôchi Prefecture; 5, *P. (P.) kyushuensis* HABU from the same locality. a-c, Aedeagus; a, left lateral view; b, right lateral view; c, apical half in ventral view; d, left paramere; e, right paramere.



latero-ventrad on the right side at apical third (Fig. 11 b), whereas the tumidity atrophies in the Shikoku form (Fig. 5 b). The difference appears to be of subspecific importance, but I prefer to refrain from naming it until the range of variation within

each population is examined on ampler material.

Pterostichus (Pterostichus) arcuaticarinatus KASAHARA, sp. nov.

[Japanese name: Nise-kyushu-nagagomimushi]

(Figs. 6–7, 10)

Description. Length (measured from apex of labrum to apices of elytra) 12.2–14.0 mm. Width 4.0–4.9 mm. Black, wholly shiny in the male, with less shiny elytra in the female; labrum and mandibles dark reddish brown; femora, tibiae and basal four segments of antennae blackish, remaining antennal segments tending to become paler towards apices.

Head moderately convex and shiny; labrum and mandibles normal; eyes convex, more or less prominent; tempora short, strongly contracted behind, hardly tumid; genae rugose near buccal fissure; frontal furrows distinct and wide, divergent behind in posterior parts, and extending to the level of anterior supraorbital setae; supra-orbital areas convex in front; clypeal suture fine; lateral grooves deep, extending to a little behind the level of posterior supraorbital setae, which are inserted at the post-eye level; surface sparsely and very minutely punctate, microsculpture slightly visible, forming isodiametric meshes; both maxillary and labial palpi normal; antennae rather thick, extending beyond shoulders of elytra, scape more than twice as long as wide, 1.2 times as long as segment 3, which is a half as long again as segment 2, the latter ventrally unisetose at apex.

Pronotum cordate, moderately convex and shiny, widest at about apical fourth, 1.3 times as wide as head (PW/HW 1.27–1.32, mean 1.29), as wide as long in almost the same proportion (PW/PL 1.22–1.30, mean 1.27), half as wide again as basal width (PW/PBW 1.46–1.56, mean 1.50); lateral margins evenly well arcuate in apical two-thirds, then fully convergent posteriad and sinuate before base, basal part with minute notches; lateral reflexed borders narrow, though becoming somewhat wider towards apices; marginal grooves almost smooth or vaguely punctate; anterior marginal setae inserted at a level a little before the widest part; apical margin gently emarginate, unbordered, apical angles produced, rounded at the tips; basal margin widely emarginate at median part, rather oblique on each side, which is vaguely bordered, basal angles rectangular, rounded at the tips; basal foveae deep, with linear impressions at the bottoms, somewhat divergent in front, sparsely and vaguely punctate; median line moderately impressed, not reaching apical margin, often indistinctly reaching basal one; apical crescent depression weak, basal transverse one obsolete; surface impunctate, microsculpture slightly visible, forming fine transverse meshes.

Apterous. Elytra oblong-ovate, moderately convex, shiny in the male, rather mat in the female, fused with each other at the suture, widest at about middle, 1.2 times as wide as pronotum (EW/PW 1.17–1.31, mean 1.23), 2.6 times as long as the latter (EL/PL 2.60–2.81, mean 2.64), 1.7 times as long as wide (EL/EW 1.63–1.76, mean 1.70); basal border complete, rather obliquely extending to shoulder and meeting

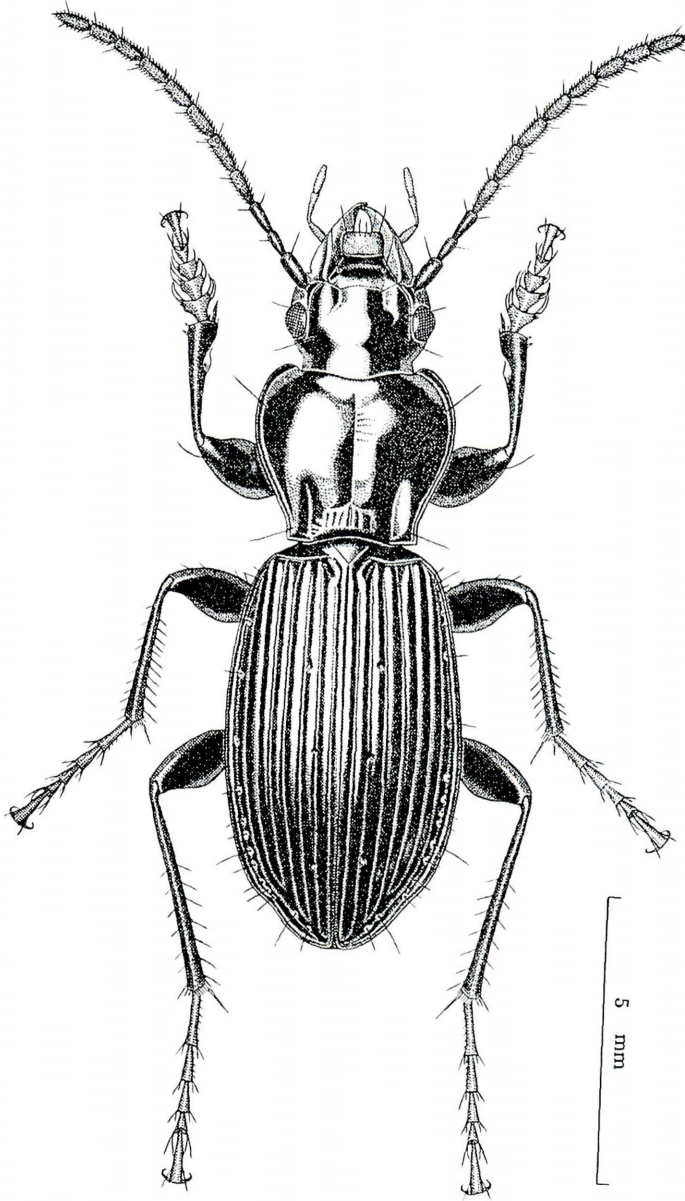


Fig. 6. *Pterostichus (Pterostichus) arcuaticarinatus* KASAHARA, sp. nov., ♂, from Mt. Haku-chô-zan in Kumamoto Prefecture.

with lateral margin at an obtuse angle; shoulders widely rounded; lateral margins gently divergent from behind shoulder to the widest part, then gently roundly convergent to preapical emarginations, which are shallow; apices rounded, sutural angles rather

angulate though rounded at the tips in the male; inner plica scarcely visible; scutellar striole short, often rudimentary; striae deep, almost smooth; intervals moderately convex, interval 3 with three dorsal pores, anterior one at about basal fourth and adjoining stria 3, while the posterior two adjoin stria 2 at about middle and apical fourth, respectively; marginal series of pores 17–19 in number, widely spaced at middle; microsculpture weakly impressed, forming fine transverse meshes in the male, while it is strongly impressed and forms wider meshes in the female.

Basal three segments of meso- and metatarsi externally sulcate.

Ventral surface moderately shiny; pro- and mesepisterna, mesosternum and sternites 3–4 sparsely or weakly punctate in part; prosternal process furrowed at middle, unbordered at apex; terminal sternite concave in apical half in the male, the concavity being longitudinally carinate at the middle, and narrowly but distinctly emarginate at apex.

Aedeagus strongly bent at more than 90 degrees at basal third, distinctly tumid latero-ventrad on the right side at apical third, rather abruptly curved downwards at apical fourth; apical lobe small and pointed, though rounded at the tip; ventral surface with arcuate fin-like carina at the middle, being concave and transversely wrinkled between the carina and the right edge; left paramere wide, square; right one thick, somewhat pointed though blunt at the tip.

Type series. Holotype: ♂, allotype: ♀, Mt. Hakuchô-zan, 1,400 m alt., Kumamoto Pref., 17. VI. 1984, S. KASAHARA leg.; paratypes: 1 ♂, 1 ♀, Mt. Hakuchô-zan, 1,400 m alt., Kumamoto Pref., 7. VIII. 1983, S. IMASAKA leg.; 1 ♂, 1 ♀, Mt. Hakuchô-zan, 1,400 m alt., Kumamoto Pref., 17. VI. 1984, S. KASAHARA leg.; 1 ♂, 2 ♀♀, Shiiya-tôge, 1,250 m alt., Miyazaki Pref., 21–22. VI. 1984, S. KASAHARA leg.; 1 ♂, Mt. Shiraiwa-yama, Miyazaki Pref., 7. VIII. 1978, S. IMASAKA leg.

The holo- and allotypes are deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. The paratypes are separately deposited in the private collection of Mr. IMASAKA and mine.

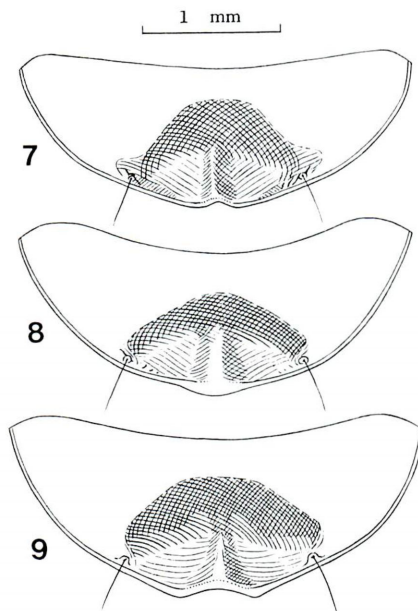
Notes. The present new species is so closely allied to *P. kyushuensis* HABU that the external differences are rather slight, but it is clearly distinguished from the latter by the peculiarity of its aedeagus, which is quite unique among its allies.

It is often found in coexistence with *P. kyushuensis* HABU. The latter is almost the same in general appearance and conformation of aedeagus as the topotypical form, but is slightly different in the shape of terminal sternite in the male. It is distinctly emarginate at apex in the topotypical individuals (Fig. 9), but is somewhat roundly produced in the Hakuchô-zan and Shiiya-tôge specimens (Fig. 8). However, this seems to be a mere geographical variation.

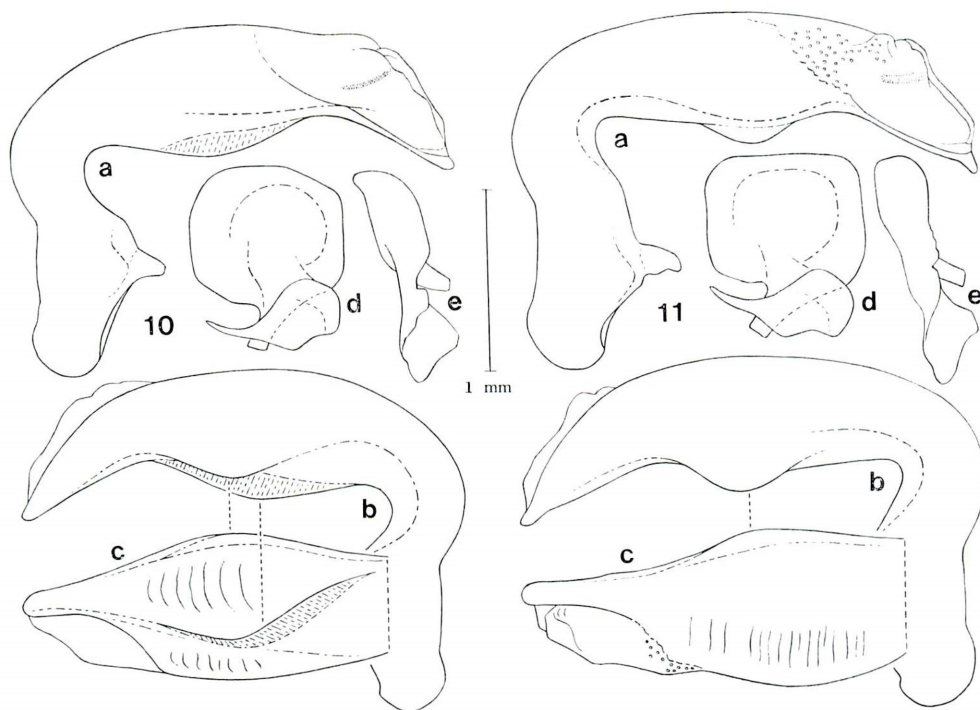
摘 要

四国と九州から、ナガゴミムシ属 *Pterostichus* の2新種を記載した。すなわち、四国の石鎚山系に産する、イトウナガゴミムシ *P. (Pterostichus) itoi* と、九州の九州山地に産する、ニセキュウシュウナガゴミムシ *P. (P.) arcuaticarinatus* である。両種とも、キュウシュウナガゴミムシ *P. (P.) kyushuensis*

Figs. 7-9. Terminal sternites in the males of *Pterostichus* (*Pterostichus*) spp. — 7, *P. (P.) arcuaticarinatus* KASAHARA, sp. nov., from Mt. Hakuchô-zan in Kumamoto Prefecture; 8, *P. (P.) kyushuensis* HABU from the Shiiya-tôge in Miyazaki Prefecture; 9, same from Mt. Hiko-san in Fukuoka Prefecture.



Figs. 10-11. Male genitalia of *Pterostichus* (*Pterostichus*) spp. — 10, *P. (P.) arcuaticarinatus* KASAHARA, sp. nov., from Mt. Hakuchô-zan in Kumamoto Prefecture; 11, *P. (P.) kyushuensis* HABU from the Shiiya-tôge in Miyazaki Prefecture. a-c, Aedeagus; a, left lateral view; b, right lateral view; c, apical half in ventral view; d, left paramere; e, right paramere.



shuensis HABU に近縁で、各産地では同時に見出される。また因みに、これまで知見のとぼしかった キュウシュウナガゴミムシの、四国と九州における地理的変異についても、補足的に触れておいた。

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