Elytra, Tokyo, **22** (2): 227–237, Nov. 15, 1994

Three New Taxa of *Pterostichus* (Coleoptera, Carabidae) from Kyushu and Shikoku, Southwest Japan

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Abstract A new species with two new subspecies of apterous pterostichine carabid beetles are described from Southwest Japan. Of these, *Pterostichus* (*Pterostichus*[1)]) *hikosanus* sp. nov. with *P.* (*P.*) *hikosanus higonis* subsp. nov. is distributed in the Island of Kyushu, and *P.* (*P.*) *hikosanus kurosonis* subsp. nov. is found at the westernmost part of the Island of Shikoku.

In 1955, HABU gave an account of a pterostichine carabid beetle under the name *Pterostichus pachinus* BATES, 1883, and recorded it from Mt. Hiko-san in northern Kyushu, Japan. Later in 1960, he compared it and specimens from Mt. Ichifusa-yama in southern Kyushu with one of BATES' cotypes and observed that though the series of specimens from Kyushu were somewhat different from the cotype, they could not be regarded as an independent species or subspecies and that further specimens especially those from Honshu were needed for determining their systematic status.

In 1984, I made a collecting trip to Kyushu in the early summer, and succeeded in obtaining many pterostichine specimens on Mt. Hiko-san and other mountains, mostly in the southern part of Kyushu. The collection contained elongate large-sized pterostichines which were doubtless identical with the so-called *P. pachinus*. On the other hand, an unnamed pterostichine carabid occurs at the westernmost part of the Island of Shikoku. It seems isolated from other pterostichines of the island, and rather closely related to the preceding species from Kyushu, particularly to the population of its southern part. The existence of this population in the Island of Shikoku is very interesting and important from the zoogeographical viewpoint.

After carefully examining these specimens together with many others from Honshu, I have come to the conclusion that the species in question from Kyushu and Shikoku is more closely allied to *P. sphodriformis* BATES, 1873, than to *P. pachinus* BATES, though their characteristic facies and configuration of male genitalia are evidently different from the two species described by BATES. It must be new to science, and I am going to describe them in this article under the names *Pterostichus* (*Pterostichus*) *hikosanus* sp. nov., *P.* (*P.*) *hikosanus higonis* subsp. nov. and *P.* (*P.*) *hikosanus kurosonis* subsp. nov., from the northeastern part of Kyushu, the central part of Kyushu and the westernmost part of Shikoku, respectively. All the holo- and allotypes are preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.),

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

Tokyo. The paratypes are separately deposited in the collection of the Entomological Laboratory of Kyushu University and of mine. The abbreviations used herein are the same as those explained in other 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 advice and for reading the manuscript of this paper, and to Assoc. Prof. Michitaka CHÛJÔ for his kind support of my research on Hikosan. Thanks are also due to Messrs. Fuminori HIROKAWA, Shôichi IMASAKA, Yoshiyuki ITÔ, Norio OHTANI and Katsuro YAHIRO for their kind help in materials and field works.

Pterostichus (*Pterostichus*) *hikosanus* sp. nov.

[Japanese name: Hikosan-nagagomimushi]

(Figs. 1–2, 4–5, 11)

Pterostichus pachinus: HABU, 1955, pp. 150–153; 1960, p. 3. —— HIROKAWA, 1994, p. 29.
Pterostichus sp.: NAKANE, 1983, p. 12.

Description. Length (measured from apex of labrum to apices of elytra) 17.5–19.6 mm. Width 5.4–6.1 mm. Elongate, black and shiny; labrum, mandibles, antennae, femora and tibiae dark reddish brown to blackish; palpi and tarsi reddish brown.

Head moderately convex; neck weakly depressed above; mandibles relatively long; labrum slightly emarginate or almost straight at apex; eyes convex, often more or less prominent; postgenae strongly contracted behind, gently or slightly swollen; clypeal suture fine but distinct; frontal furrows distinct, smooth, almost parallel, though divergent posteriad at extremities, and extending to the mid-eye level; supraorbital areas convex in front; lateral grooves deep, extending a little beyond the post-eye level; surface sparsely and minutely punctate, microsculpture scarcely visible, formed by fine isodiametric meshes; antennae moderately long, extending to the basal fourth of elytra, segment 2 ventrally unisetose at apex.

Pronotum quadrate-cordate, moderately convex, widest at apical third, ca. 1.3 times as wide as head (PW/HW 1.24–1.32, mean 1.27), half as wide again as base (PW/PBW 1.46–1.54, mean 1.49), about a fifth as wide again as long (PW/PL 1.18–1.26, mean 1.22); lateral margins evenly well arcuate, then strongly convergent posteriad and sinuate before base, basal part almost parallel and often with irregular small notches; lateral reflexed borders narrow, though becoming wider towards apices in anterior parts; marginal grooves smooth; anterior marginal setae inserted a little before the widest level; apical margin gently emarginate, very finely and indistinctly bordered on each side, 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 on each side, which is often vaguely bordered, basal angles nearly rectangular though blunt at the tips; basal foveae distinct, smooth, linearly impressed at the bottoms, almost parallel in basal halves, though divergent anteriad in apical halves; me-

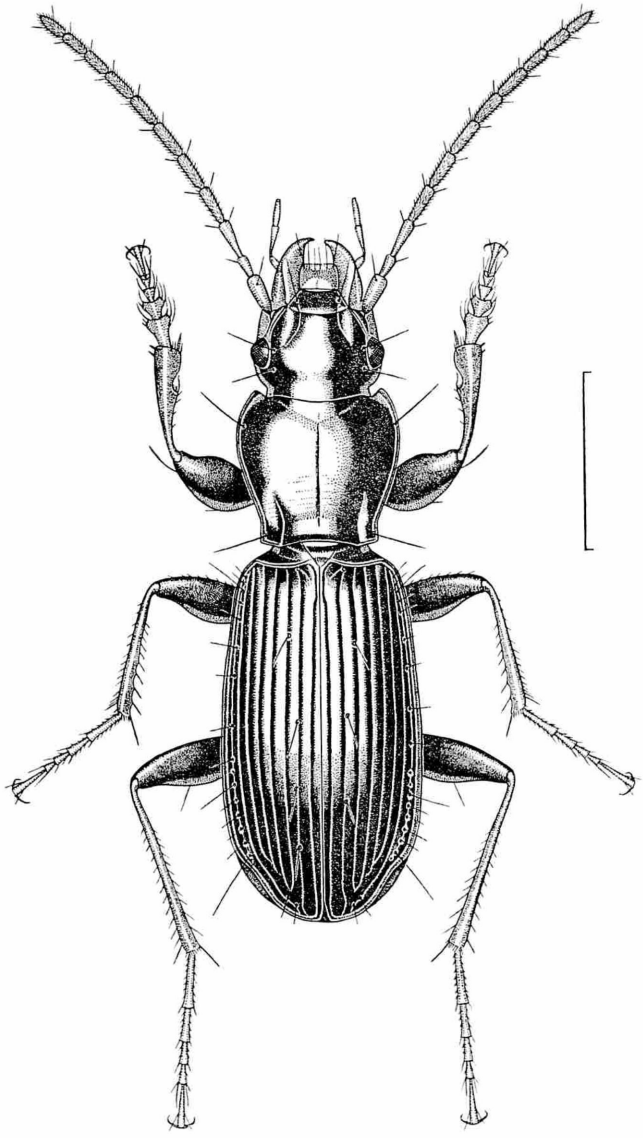


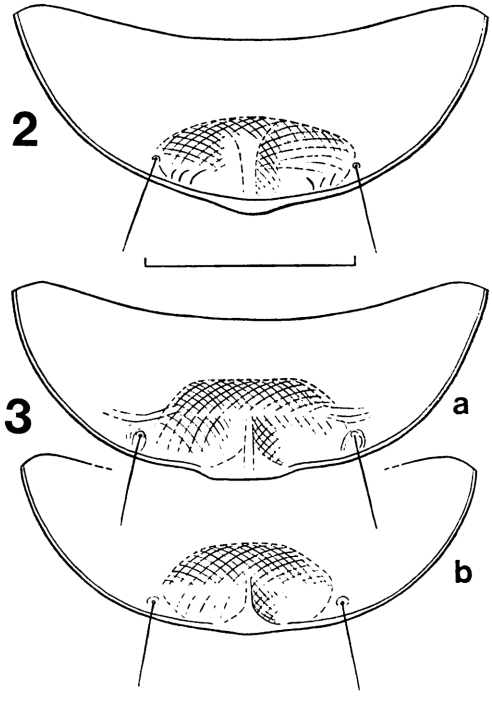
Fig. 1. *Pterostichus* (*Pterostichus*) *hikosanus* sp. nov., ♂, from Mt. Hiko-san in Fukuoka Pref. Scale 5 mm.

dian line deep; apical and basal depressions obsolete; surface impunctate, though generally with transverse wrinkles on each side of median line in basal part; microsculpture slightly and partially visible, formed by very fine transverse meshes.

Apterous. Elytra oblong, gently convex, widest at about middle, about a fifth as wide again as pronotum (EW/PW 1.19–1.26, mean 1.22), ca. 2.6 times as long as

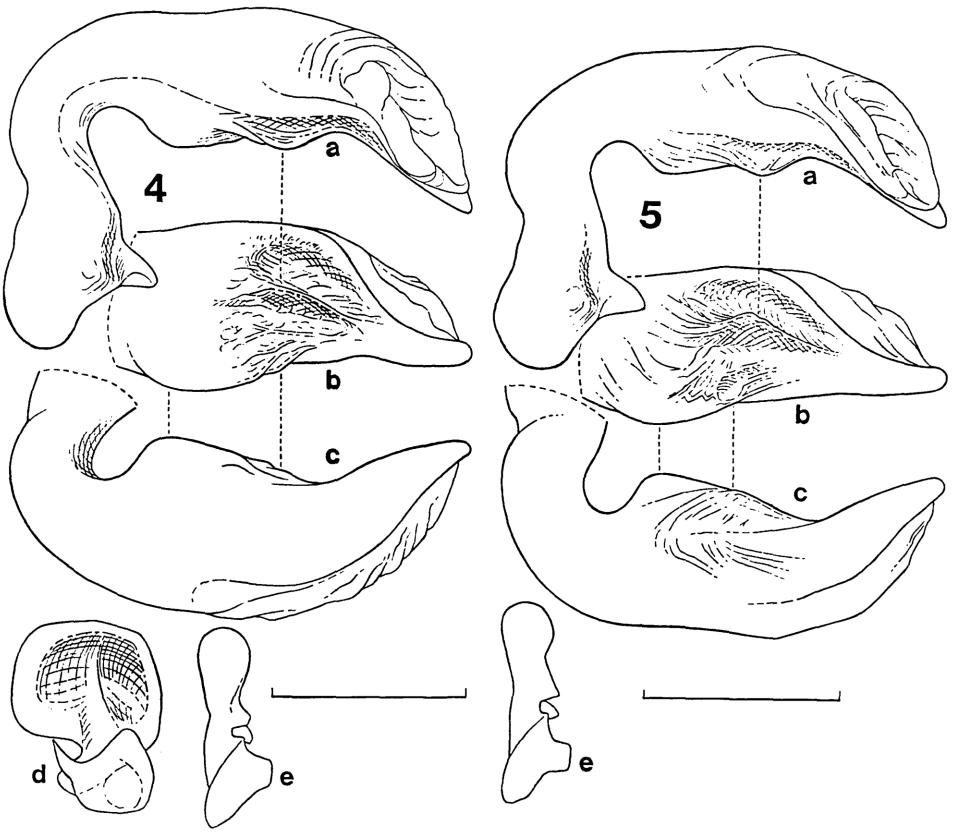
pronotum (EL/PL 2.56–2.67, mean 2.63), ca. 1.55 times as wide as base (EW/EBW[2] 1.49–1.60, mean 1.55), ca. 1.8 times as long as wide (EL/EW 1.75–1.84, mean 1.79); basal border complete, gently curved, obliquely extending to shoulder, and joining lateral border at an obtuse but well defined angle; shoulders rounded; lateral margins evenly and gently arcuate from behind shoulder to preapical emargination, which is shallow though distinct; apices rounded, sutural angles rounded; scutellar striole rudimentary, lying on interval 2, but frequently obsolete; striae deeply impressed throughout, smooth; intervals convex; interval 3 with three to four dorsal pores, anteriormost one adjoining stria 3 at about basal fourth, the remainings adjoining stria 2 and irregularly arranged at about middle to apical fourth, respectively; marginal series of pores 18–21 in number, widely spaced at middle; microsculpture well visible, formed by transverse meshes in both sexes.

Basal three segments of meso- and metatarsi externally sulcate. Ventral side shiny, smooth, though mesepisterna and abdominal sternite 2–3 are punctate; prosternal process shallowly furrowed at middle, not bordered at apex; terminal sternite



Figs. 2–3. Terminal sternites in the males of *Pterostichus* (*Pterostichus*) *hikosanus* sp. nov. and subsp. *higonis* nov. —— 2. *P.* (*P.*) *hikosanus* sp. nov., from Mt. Hiko-san in Fukuoka Pref.; 3, *P.* (*P.*) *hikosanus higonis* subsp. nov.: a, from Shiiya-tôge in Miyazaki Pref.; b, from Hagi in Kumamoto Pref. Scale 2 mm.

2) Meaning the basal width of elytra.



Figs. 4–5. Male genitalia of *Pterostichus* (*Pterostichus*) *hikosanus* sp. nov.: 4, from Mt. Hiko-san in Fukuoka Pref.; 5, from Mt. Kuro-dake in Ôita Pref.; a–c, aedeagus; a, left lateral view; b, ventral view, basal part omitted; c, right dorso-lateral view; d, left paramere; e, right paramere. Scale 1.5 mm.

distinctly depressed in apical half in the male, the depression longitudinally raised at middle, apical margin a little produced and warped downwards at middle.

Aedeagus strongly bent at about 90 degrees at basal third, then strongly and widely tumid ventrad on the right side at middle, distinctly bent downwards at apical fourth, ventral side with longitudinally arcuate and distinct carina in apical third, depressed outside the carina and ruggedly rugose; apical lobe small, rounded at apex; left paramere wide, gently arcuate at apex; right paramere stout, rounded at apex.

Type series. Holotype: ♂, Mt. Hiko-san, Fukuoka Pref., 11–VI–1984, S. KASAHARA leg.; allotype: ♀, same data as for the holotype. Paratypes: 7 ♂♂, 1 ♀, same data as for the holotype; 3 ♂♂, 1 ♀, same locality, 12–VI–1984, S. KASAHARA leg.; 2 ♂♂, Mt. Takanosu-yama, Fukuoka Pref., 13–VI–1984, S. KASAHARA & M. T. CHÛJÔ leg.; 2 ♂♂, Mt. Kuro-dake, Kujû-san Mts., Ôita Pref., 28–V–1986, K. YAHIRO leg.

Distribution. Northeastern part of Kyushu.

Notes. The present new species is closely allied to *P. sphodriformis* BATES and resembles the latter in general appearance, but is easily distinguished from the latter by having different configuration of terminal sternite and genitalia in the male, the latter of which are especially peculiar in the carinate aedeagus.

Pterostichus (Pterostichus) hikosanus higonis subsp. nov.

(Figs. 3, 6–7, 11)

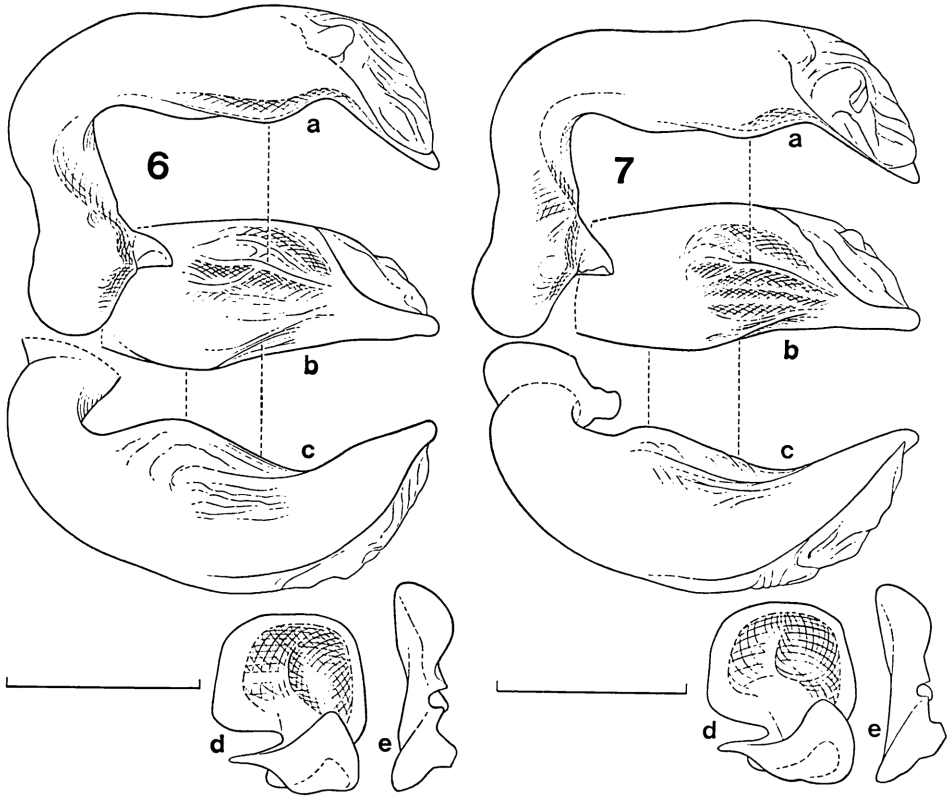
Description. Length (measured as in the preceding species) 16.6–19.0 mm. Width 5.5–6.4 mm. Colour almost the same as in the nominotypical subspecies. Head similar to that of the nominotypical subspecies. Pronotum cordate, wider than that of the nominotypical subspecies, ca. 1.24 times as wide as head (PW/HW 1.19–1.28, mean 1.24), about a half as wide again as base (PW/PBW 1.44–1.53, mean 1.49), ca. 1.3 times as wide as long (PW/PL 1.24–1.30, mean 1.27); lateral margins more strongly arcuate and more strongly convergent posteriad than in the nominotypical subspecies, then more distinctly sinuate before base, basal fifth parallel or somewhat divergent posteriad, basal angles rectangular, blunt at the tips; basal foveae and surface almost the same as in the nominotypical subspecies.

Elytra elliptical, wider than those of the nominotypical subspecies, widest a little behind the middle, ca. 1.3 times as wide as pronotum (EW/PW 1.20–1.38, mean 1.28), ca. 2.7 times as long as pronotum (EL/PL 2.62–2.80, mean 2.72), ca. 1.7 times as wide as base (EW/EBW 1.60–1.77, mean 1.68), as long as wide almost in the same proportion (EL/EW 1.58–1.72, mean 1.68); lateral margins more strongly arcuate than in the nominotypical subspecies; other characteristics almost the same as in the nominotypical subspecies. Terminal sternite distinctly depressed in apical half in the male as in the nominotypical subspecies, though the longitudinal median ridge is narrower and divergent towards the apical margin, which is slightly produced and warped downwards, marginal border terminating on each side of the median projection.

Aedeagus similar to that of the nominotypical subspecies, though the tumidity of the right ventral side at middle and the arcuate carina on the ventral side in apical third are not so distinct as in the nominotypical subspecies; right paramere somewhat pointed though narrowly rounded at the apex, instead of being widely rounded.

Type series. Holotype: ♂, Shiiya-tôge, Shiiba-mura, Miyazaki Pref., 21–VI–1984, S. KASAHARA leg.; allotype: ♀, same data as for the holotype. Paratypes: 1 ♂, 3 ♀♀, same data as for the holotype; 1 ♂, 1 ♀, Hagi, Gokanoshô, Kumamoto Pref., 25–VI–1982, S. IMASAKA leg.; 1 ♂, 1 ♀, same locality, 8–VIII–1982, S. IMASAKA leg.; 10 ♂♂, 11 ♀♀, same locality, 16～17–VI–1984, S. KASAHARA leg.; 1 ♂, Mt. Ichifusa-yama, Kumamoto Pref., 19～20–VI–1984, S. IMASAKA leg.; 3 ♂♂, 2 ♀♀, Mt. Shiraga-dake, Kumamoto Pref., 19–VI–1984, S. KASAHARA & S. IMASAKA leg.; 1 ♂, 1 ♀, same locality, 12–IX–1992, F. HIROKAWA leg.

Distribution. Watershed mountains in the central part of Kyushu.



Figs. 6–7. Male genitalia of *Pterostichus* (*Pterostichus*) *hikosanus higonis* subsp. nov.: 6, from Shiiya-tôge in Miyazaki Pref.; 7, from Hagi in Kumamoto Pref.; a–c, aedeagus; a, left lateral view; b, ventral view, basal part omitted; c, right dorso-lateral view; d, left paramere; e, right paramere. Scale 1.5 mm.

Notes. The present new subspecies is clearly discriminated from the nominotypical one by its evidently cordate pronotum and rounded elytra.

Pterostichus* (*Pterostichus*) *hikosanus kurosonis subsp. nov.

(Figs. 8–11)

Description. Length (measured as in the preceding) 16.1–18.8 mm. Width 5.3–6.2 mm. Similar in general appearance to the preceding subspecies, though the appendages are more reddish and lighter in colour. Head somewhat smaller than in the preceding subspecies. Pronotum more convex, ca. 1.33 times as wide as head (PW/HW 1.30–1.37, mean 1.33), about a half as wide again as base (PW/PBW 1.48–1.55, mean 1.52), ca. 1.3 times as wide as long (PW/PL 1.25–1.28, mean 1.26); lateral margins well arcuate and strongly convergent posteriad as in the preceding subspecies.

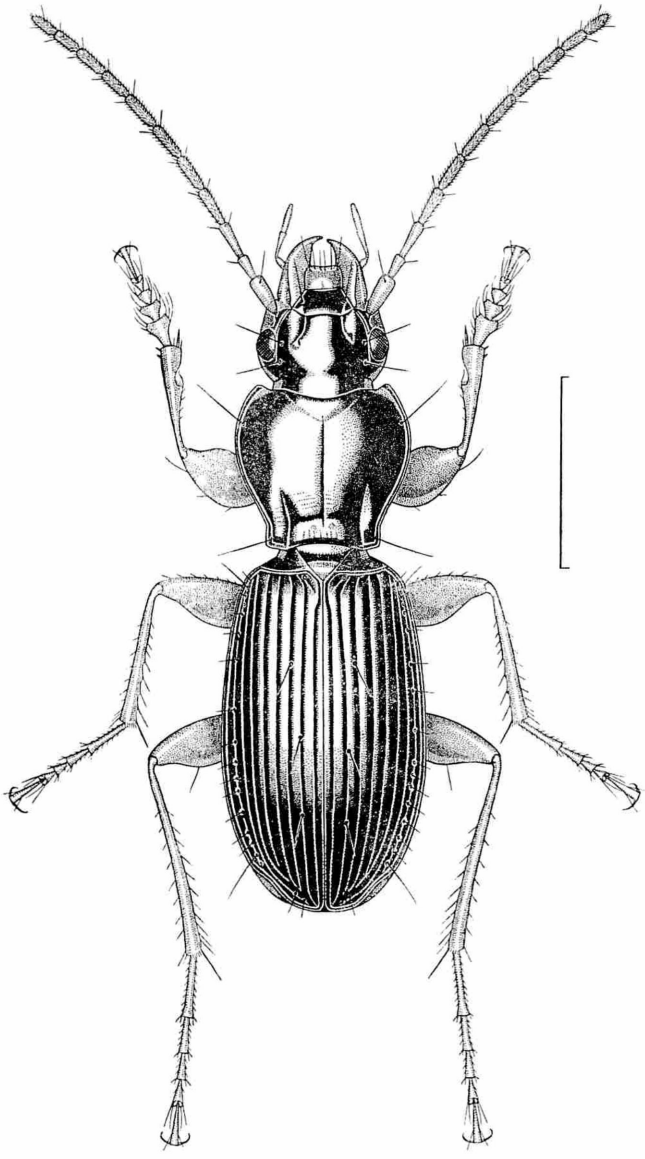


Fig. 8. *Pterostichus* (*Pterostichus*) *hikosanus kurosonis* subsp. nov., ♂, from Kuroson in Kôchi Pref. Scale 5 mm.

Elytra narrower than those of the preceding subspecies, ca. 1.22 times as wide as pronotum (EW/PW 1.18–1.25, mean 1.22), ca. 2.6 times as long as pronotum (EL/PL 2.54–2.68, mean 2.62), ca. 1.6 times as wide as base (EW/EBW 1.59–1.64, mean 1.61), ca. 1.7 times as long as wide (EL/EW 1.66–1.72, mean 1.70), lateral margins less arcuate than in the preceding subspecies. Ventral side almost the same as in the

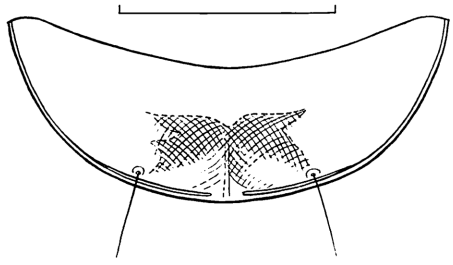


Fig. 9. Terminal sternite in the male of *Pterostichus* (*Pterostichus*) *hikosanus kurosonis* subsp. nov., from Kuroson in Kôchi Pref. Scale 2 mm.

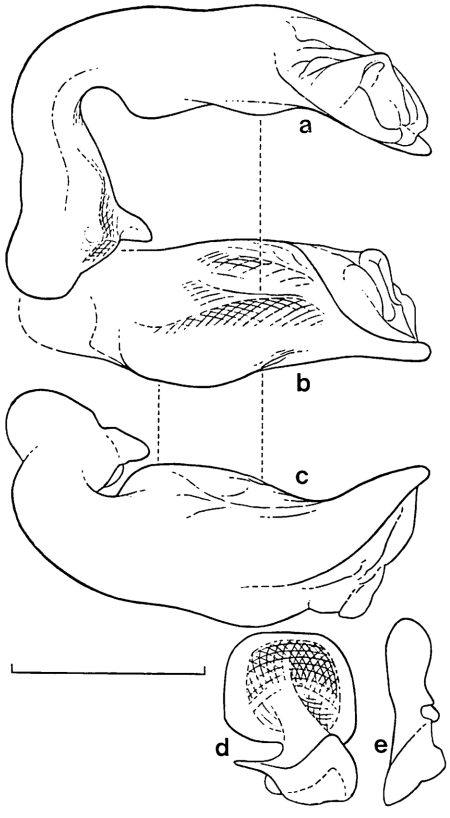


Fig. 10. Male genitalia of *Pterostichus* (*Pterostichus*) *hikosanus kurosonis* subsp. nov., from Kuroson in Kôchi Pref. —— a–c, Aedeagus: a, left lateral view; b, ventral view; c, right dorso-lateral view; d, left paramere; e, right paramere. Scale 1.5 mm.

preceding subspecies; terminal sternite depresssed in apical half in the male, though the depression and longitudinal median ridge are weaker than in the preceding subspecies, apex not produced but slightly warped downwards, marginal border interrupted at middle.

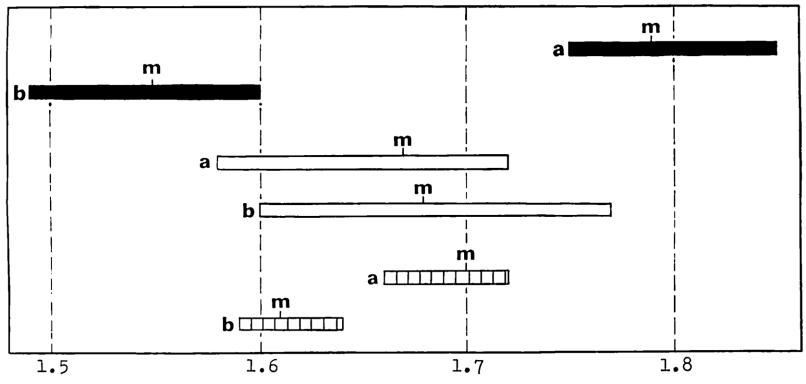


Fig. 11. Diagram showing the proportions of elytra in *Pterostichus* (*Pterostichus*) *hikosanus* sp. nov., and its subspecies. —— Black bar, *P.* (*P.*) *hikosanus* sp. nov.; white bar, *P.* (*P.*) *hikosanus higonis* subsp. nov.; blocked bar, *P.* (*P.*) *hikosanus kurosonis* subsp. nov.; a, EL/EW; b, EW/EBW; m, mean.

Aedeagus similar to that of the preceding subspecies, though the tumidity of the right ventral side is wide and strong as in the nominotypical subspecies, and the arcuate carina in apical third is weaker than in the preceding subspecies; parameres somewhat smaller than in the preceding subspecies.

Type series. Holotype: ♂, Kuroson, Nishitosa-mura, Kôchi Pref., 6–IX–1986, S. KASAHARA & Y. ITÔ leg.; allotype: ♀, same data as for the holotype. Paratypes: 1 ♂, 1 ♀, same data as for the holotype.

Distribution. Westernmost part of Shikoku; known only from the type locality.

Notes. This new subspecies is doubtless closely related to the preceding subspecies. It seems isolated from the other pterostichine species in the Island of Shikoku, which suggests a close zoogeographical relationship between the westernmost part of Shikoku and Kyushu.

要　約

笠原須磨生：九州と四国産ナガゴミムシ属の1新種とその2新亜種. —— これまで疑問視されながらも，ジュンサイナガゴミムシ *Pterostichus pachinus* BATES とされていた北九州の英彦山産の種を，新種ヒコサンナガゴミムシ *Pterostichus* (*Pterostichus*) *hikosanus* として記載し，九州中央山地に分布するものをその亜種 *higonis*，また，四国西端部にみられる個体群を亜種 *kurosonis* として記載した．四国産の亜種の存在は，この地域と九州との関連を示唆するもので，動物地理学的見地からも興味深い．

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Elytra, Tokyo, **22** (2): 237–238, Nov. 15, 1994

A New Subspecies of *Rupa japonica* (Coleoptera, Carabidae) from Okayama Prefecture, Western Honshu, Japan

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The brachypterous platynine carabid beetle, *Rupa japonica* JEDLIČKA, 1935, was described from Mt. Kongô-san in Osaka, Japan. According to ISHIDA (1953) and HABU (1978), it is distributed to the Kinki District of Honshu (Kyoto, Osaka, Mie, Nara and Wakayama Prefectures). Recently, I have examined many examples of this platynine collected in Okayama Prefecture, which is not only the westernmost locality but also new record from the Chûgoku District for the species.

The population of Okayama Prefecture is not different from those of the Kinki District in external features, though the aedeagus is conspicuously different from that of the latter, especially in its denticulate apex, and seems to belong to a new taxon. In the following lines, I will describe it under the name *uncinata* subsp. nov.

I am grateful to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his guidance. Thanks are also due to Messrs. Tatsuya NIISATO, Kôichi NOJIMA and Osamu YAMAJI for their kind help in materials.