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Pterostichine Carabid Beetles of the Subgenus *Cryobius* (Coleoptera, Carabidae) from North Japan

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Abstract Pterostichine carabid beetles from North Japan belonging to the subgenus *Cryobius* are enumerated. Two known species, *P.* (*C.*) *kurosawai* TANAKA and *P.* (*C.*) *korgei* JEDLIČKA are redescribed. A new subspecies is described under the name of *P.* (*C.*) *brevicornis yasudai*.

Introduction

My interest in the Japanese species of the pterostichine subgenus *Cryobius* (CHAUDOIR, 1838) was initially aroused by receiving many specimens of North American species from Dr. George BALL, who selected widespread species for my comparative study. The distributional ranges of several species extend to Siberia across the Bering Straits, and there is possibility that they also invaded the Japanese territory. However, I was unable to study them at that time, because my own knowledge was still premature.

The Japanese members of the subgenus are known from North Japan with the exception of *P.* (*C.*) *ishiharai* ISHIDA et SHIBATA (1961, p. 5). All of them are high altitude species, which means that the areas harbouring them are not easy of access. Besides, collecting seasons are limited in such alpine or subalpine places. In spite of these difficulties, my material has been slowly but steadily accumulated.

At present, I can fill in the blank in our taxonomic knowledge to some extent. In this paper, I am going to deal with three species mainly from Hokkaido, North Japan.

Abbreviations

The abbreviations used herein are as follows: L – body length, measured from apex of clypeus to apices of elytra; HW – greatest width of head; PW – greatest width of pronotum; PL – length of pronotum, measured along the mid-line; PA – width of pronotal apex; PB – width of pronotal base; EW – greatest width of elytra; EL – greatest length of elytra; EB – width of elytral base, measured between humeral teeth; FL – length of metafemur; ML – length of metatrochanter; TL – length of hind tarsus; M – arithmetic mean; NSMT – National Science Museum (Nat. Hist.), Tokyo; SEHU – Laboratory of Systematic Entomology, Hokkaido University, Sapporo.

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Pterostichus* (*Cryobius*) *kurosawai TANAKA

[Japanese name: Saharin-hime-naga-gomimushi]

(Figs. 1–12)

Pterostichus (*Cryobius*) *kurosawai* TANAKA, 1958, Akitu, Kyoto, **7**: 58, figs. 1, 1-a: type locality: Kaihoku-tôge, South Sakhalin, Russia.

Pterostichus (*Cryobius*) *kurasawai* [sic.]: BERLOV, O., & E. BERLOV, 1998, Ent. News Russia, **1**: 4, fig. 6.

Pterostichus subgibbus: NAKANE, 1963, Icon. Ins. Japon. Col. nat. ed., Tokyo, **2**: 33, pl. 17, fig. 13.

Diagnosis. Medium-sized species; palpi brown to light brown; sides of pronotum sinuate posteriad, and then parallel for a short way towards hind angles; basal foveae of pronotum with two impressions on each side; elytral microsculpture consisting of fine transverse lines or almost vanished in ♂; aedeagus elongate and moderately arcuate in lateral view, and with simply rounded apex; right paramere elongate; inner sac armed with two copulatory pieces.

Redescription based on the specimens from the Island of Sakhalin. L: 6.3−7.0 mm. Body robust. Body black and with weak metallic lustre; elytra with iridescent lustre; ventral side blackish brown; epipleuron brown to dark brown; legs brown; antennae and mouth parts dark brown; palpi brown to light brown.

Head smooth; frontal furrows deep, wide, short and reaching the level a little before anterior supraorbital pores; surface microscopically and very sparsely punctate; eyes moderately convex; microsculpture consisting of isodiametric meshes; posterior supraorbital pores situated a little behind the post-eye level or at the post-eye level; lateral grooves deep, straight and becoming shallower towards posterior ends; antennae rather slender; PW/HW 1.36–1.39 (M 1.38) in 4♂♂, 1.37, 1.40 (M 1.39) in 2 ♀♀; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI≒1 : 0.56 :

0.95 : 0.88 : 0.84 : 0.83 : 1.04 in 4♂♂, 2♀♀.

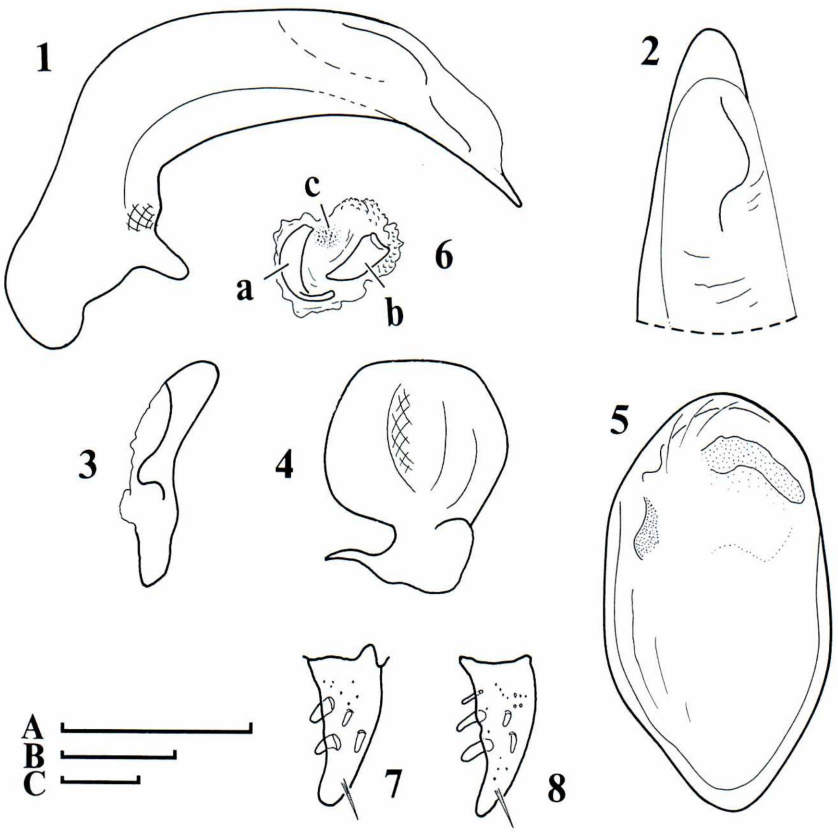
Pronotum wide and moderately convex; PW/PL 1.28–1.36 (M 1.32) in 4♂♂, 1.31, 1.33 (M 1.32) in 2♀♀; apex almost straight or weakly emarginate; PW/PA 1.38–1.43 (M 1.41) in 4♂♂, 1.37, 1.40 (M 1.39) in 2♀♀, PW/PB 1.30–1.34 (M 1.32) in 4♂♂, 1.25, 1.40 (M 1.33) in 2♀♀, PA/PB 0.93–0.95 (M 0.94) in 4♂♂, 0.91, 1.00 (M 0.96) in 2♀♀; apical angles weakly produced and moderately or narrowly rounded at the tips; sides widely arcuate, sinuate posteriad, and then parallel for a short way towards hind angles; reflexed lateral borders narrow; anterior transverse impression very shallow, posterior one obsolete; anterior pair of marginal setae inserted a little before the widest part; basal foveae deep, and with coarse punctures and two impressions on each side; basal part with several fine wrinkles or almost smooth; hind angles rectangular, and with carina on each side; microsculpture consisting of fine transverse meshes.

Elytra ovate and convex; EW/PW1.23–1.28 (M 1.25) in 4♂♂, 1.22, 1.27 (M 1.25) in 2♀♀; EL/EW 1.48–1.49 (M 1.49) in 4♂♂, 1.45, 1.50 (M 1.48) in 2♀♀; EB/EW 0.66–0.70 (M 0.68) in 4♂♂, 0.68, 0.67 (M 0.68) in 2♀♀; shoulders widely rounded and dentate; basal border almost straight and arcuate at the sides; sides weakly arcuate from shoulders to the widest part and moderately arcuate in apical parts; preapical emargination very shallow or obsolete; apices narrowly rounded and forming a very small re-entrant angle at suture; microsculpture consisting of fine transverse lines or almost vanished in ♂, weakly impressed and consisting of fine transverse lines in ♀; intervals moderately convex and microscopically punctate; interval III with two setiferous dorsal pores; scutellar striole situated on interval II, short, free at the posterior end, and with basal pore at the base; striae rather shallow, weakly crenulate and becoming shallower towards apices; marginal series composed of (5+1)+7 pores.

Prosternum and prepisternum sometimes with several coarse punctures; mesosternum, mesepisternum, metepisternum and sides of sternites II and III with coarse punctures; in ♀, anal sternite (VII) with two pair of setae which are on a moderate arc open anteriorly; tergum VIII in ♀ similar in the shape to Fig. 20; ML/FL 0.48–0.53 (M 0.50) in 4♂♂, 0.45 in 1♀; TL/HW 0.96–1.06 (M 1.01) in 4♂♂, 0.91 in 1♀.

Genital segment elongated ovate; aedeagus elongate and moderately arcuate in lateral view; basal lobe with a very small triangular projection near the articulation of parameres; apical lobe narrow and simply rounded at the apex in dorsal view; inner sac armed with two copulatory pieces and a mat of minute spinules; proximal copulatory piece elongate and strongly rolled; apical copulatory piece wide, weakly rolled; a mat of minute spinules poorly sclerotized; right paramere elongate with simply rounded apex; left one oval. Apical styli as in Fig. 8.

Variation in elytral chaetotaxy. In the specimens from the Island of Sakhalin, the setiferous dorsal pores on the interval III are rather stable in their position: usually joining the stria 2, rarely on the interval III; the first pore situated between basal 2/5–3/5 of the elytra; the second one 4/5–17/20. The three males have one additional pore on one side; all of them joining the stria 2 and situated near the first ordinary pore.



Figs. 1–8. Genitalia of *Pterostichus* (*Cryobius*) *kurosawai* TANAKA. —— 1, Aedeagus, left lateral view; 2, apical part of aedeagus, dorsal view; 3, right paramere, left lateral view; 4, left paramere, left lateral view; 5, genital segment, ventral view; 6, extracted inner sac, showing proximal copulatory piece (a), apical copulatory piece (b) and a mat of minute spinules (c); 7, right stylus; 8, same. —— 1–4, 6, 7, Specimen from the Island of Rishiri; 5, specimen from Mt. Kuro-dake; 8, specimen from the Island of Sakhalin. Scale: A – 0.5 mm for 1–4, 6; B – 0.5 mm for 5; C – 0.1 mm for 7, 8.

In the specimens from the Island of Rishiri, the position is rather stable; they usually join the stria 2, rarely close to the stria 2 or on the interval III; the first pore situated at the middle to a little behind that level; the second at basal 4/5 of the elytra. Three males and one female are aberrant in the number of dorsal pores. One male and one female have an additional pore on the left elytron; it is located at basal 9/20 in the male, 2/5 in the female. In one male, the first ordinary pore on the right elytron is lacking. In another male, the first ordinary pore on the right elytron and the second one on the left elytron are lacking.

The populations of the Daisetsu Mountains show slight aberrancy of elytral chaetotaxy. Of the 20 specimens from the Kuro-dake population, 2♂♂ and 2♀♀ have

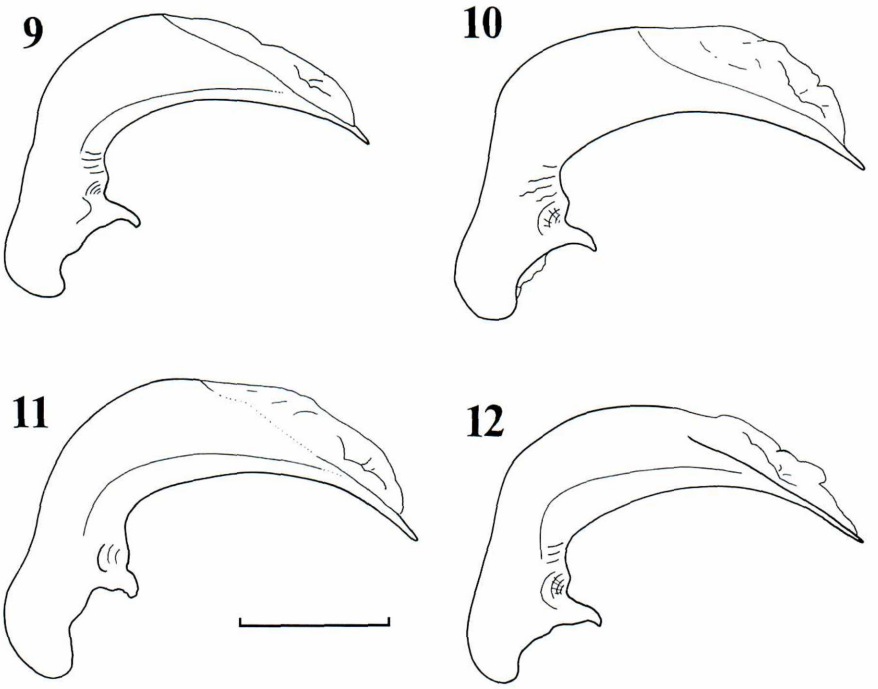
an additional pore on the left elytron. In this population, the position of ordinary pores is as follows: usually close to stria 2, sometimes joining stria 2, rarely on interval III in ♂; in ♀, usually joining stria 2, sometimes close to stria 2, rarely on interval III.

Similar variation is also found in the Akaishi-yama population. Of the twelve specimens examined, 4♂♂ and 1♀, have an additional pore on one side. The position of ordinary pores is as follows: usually close to stria 2, sometimes joining stria 2, and rarely on interval III or close to stria 3.

Specimens examined. [Russia: Sakhalin Is.] 6♂♂, 2♀♀, Mt. Chekhov, Sakhalin Is., 6–VI–1989, E. BERLOV leg.; 1♂, S. Sakhalin, V–1991, PTCHKOV leg. [Russia: Primorskij Territory] 1♂, Beryozovka, 600–700 m alt., Chuguyevsky, 25~30–VII–1996, K. AKITA leg. [Japan: Rishiri Is.] 6♂♂, 3♀♀, Mt. Rishiri-zan, 1,300 m alt., 30–VI–1982, S. & E. MORITA leg.; 2♂♂, same locality, 1–VII–1990, N. YASUDA leg.; 3♂♂, same locality, 23–VI–1993, M. SATÔ leg.; 7♂♂, 1♀, same locality, 8~9–VII–1993, M. SATÔ leg.; 4♂♂, 3♀♀, same locality, 8~19–VII–1994, M. SATÔ leg. [Japan: Daisetsu Mts.] 1♀, "Mt. Daisetsu Kumonodaira 22 VII 1952 H. Ishida"/"*Pterostichus subgibbus* Mannl. Det. T. Nakane"/"17–13" (SEHU); 1♂, Mt. Kuro-dake, 23–VII–1982, N. YASUDA leg.; 2♂♂, same locality, 28–VII–1982, N. YASUDA leg.; 1♂, same locality, 31–VII–1987, N. YASUDA leg.; 1♂, same locality, 2–VIII–1987, N. YASUDA leg.; 1♂, 13♀♀, same locality, 21–VIII–1987, N. YASUDA leg.; 1♀, 31–VIII–1987, same locality, N. YASUDA leg.; 5♂♂, 3♀♀, Mikura-zawa, Kamikawa-chô, 24–VII~7–VIII–1999, S. HORI leg.; 1♂, Hisagonuma, 28–VII–1973, A. ABE leg.; 1♂, same locality, 29–VII–1973, A. ABE leg.; 2♂♂, Mt. Aka-dake, 1,500–1,800 m alt., 16~23–VII–1975, M. SUWA, M. FURUKAWA, M. KIUCHI & T. SUNOSE leg. (SEHU); 8♂♂, 4♀♀, Mt. Akaishi-yama, 16–VII–1980, N. YASUDA leg.; 1♂, Kumonodaira, 9–VIII–1986, N. YASUDA leg.; 1♀, same locality, 25–VII–1992, N. YASUDA leg.; 1♂, Aizankei, 12–VI–1983, H. MATSUMOTO leg.; 1♀, Mt. Kaun-dake, 10–VIII–1990, N. YASUDA leg.; 1♂, Mt. Tomuraushi, 13–VII–1985, N. YASUDA leg.; 1♀, Hokkaidaira, 29–VIII–1985, N. YASUDA leg.; 1♀, Mt. Hira-yama, Shirataki-mura, 7–VIII–1983, H. MATSUMOTO leg.; 1♂, 3♀♀, same locality, 8~22–VII–1995, S. HORI leg.; 1♂, 1♀, Ishikari-zawa, Mt. Ishikari-dake, 28–VIII–1983, H. MATSUMOTO & N. YASUDA leg.; 1♀, Ishikari-zawa, Mt. Ishikari-dake, 1,300 m alt., 27–IX–1989, N. YASUDA leg.

Range. Russia (Primorskij Territory; Sakhalin Is.); Japan (Hokkaido: Rishiri Is., Daisetsu Mts.).

Notes. The specimens from the Island of Rishiri are different from those of the Island of Sakhalin in several details: frontal furrows usually with several oblique wrinkles at the posterior ends; PW/HW 1.33–1.42 (M 1.38) in 7♂♂, 1.38–1.44 (M 1.41) in 3♀♀; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI≒1 : 0.53 : 0.87 : 0.85 : 0.84 : 0.82 : 1.09. Pronotum somewhat narrower, and with wide reflexed lateral borders; PW/PL 1.26–1.35 (M 1.31) in 7♂♂, 1.30–1.36 (M 1.34) in 3♀♀, PW/PA 1.36–1.46 (M 1.41) in 7♂♂, 1.37–1.42 (M 1.40) in 3♀♀, PW/PB 1.29–1.38 (M 1.34) in 7♂♂, 1.29–1.38 (M 1.34) in 3♀♀, PA/PB 0.92–0.98 (M 0.95) in 7♂♂, 0.94–0.96 (M 0.95) in 3♀♀; EW/PW 1.23–1.29 (M 1.26) in 7♂♂, 1.26–1.31 (M 1.28)



Figs. 9–12. Aedeagi of *Pterostichus* (*Cryobius*) *kurosawai* TANAKA. —— 9, Specimen from the Island of Sakhalin; 10, specimen from Mt. Hira-yama; 11, specimen from Mt. Kuro-dake; 12, specimen from Mikura-zawa. Scale: 0.5 mm.

in 3♀♀; EL/EW 1.46–1.58 (M 1.52) in 7♂♂, 1.52–1.56 (M 1.54) in 3♀♀; EB/EW 0.64–0.70 (M 0.66) in 7♂♂, 0.63–0.66 (M 0.64) in 3♀♀; ML/FL 0.47–0.51 (M 0.48) in 6♂♂, 0.50 in 1♀; TL/HW 0.92–1.08 (M 1.01) in 6♂♂, 0.97, 1.01 (M 1.02) in 2♀♀; apical angles more rounded at the tips; basal foveae narrower; elytral shoulders more strongly rounded.

Of the four females from Mt. Akaishi-yama, one has an additional seta on both sides of the pronotum. Its aberrancy occurs symmetrically: setae situated a little before the anterior marginal setae. The standard ratios of body parts in this population are as follows: PW/HW 1.34–1.42 (M 1.38) in 4♂♂, 1.36–1.38 (M 1.37) in 3♀♀; PW/PL 1.32–1.46 (M 1.36) in 4♂♂, 1.29–1.36 (M 1.34) in 3♀♀; PW/PA 1.30–1.40 (M 1.36) in 4♂♂, 1.32–1.39 (M 1.36) in 3♀♀; PW/PB 1.28–1.33 (M 1.31) in 4♂♂, 1.28–1.33 (M 1.31) in 3♀♀; PA/PB 0.95–0.99 (M 0.96) in 4♂♂, 0.93–1.01 (M 0.96) in 3♀♀; EW/PW 1.27–1.39 (M 1.34) in 4♂♂, 1.26–1.33 (M 1.30) in 3♀♀; EL/EW 1.51–1.54 (M 1.52) in 4♂♂, 1.53–1.54 (M 1.54) in 3♀♀; EB/EW 0.61–0.68 (M 0.66) in 4♂♂, 0.66–0.67 (M 0.66) in 3♀♀; ML/FL 0.49–0.52 (M 0.50) in 3♂♂, 0.50 in 1♀; TL/HW 0.97, 0.98 (M 0.98) in 2♂♂, 0.91 in 1♀. The standard ratios of body parts in the populations from Mt. Kuro-dake (3♂♂, 5♀♀) and Mikurazawa (5♂♂, 1♀) are similar to

those of the Akaishi-yama population. In a single female specimen from Mt. Hirayama, the elytral microsculpture is more clearly impressed. Variation of aedeagi from four populations is shown in Figs. 9–12.

The ranges of each Japanese population broadly overlap those of the others, and the observed and measured variations are not notably correlated with geographical features. It is not advisable to split it into two or more geographical races.

Taxonomic status of a male specimen from the Primorskij Territory is questionable. Though it shares almost all the diagnostic characteristics with the specimens from the Island of Sakhalin, the following differences are observed: body robuster; palpi and legs lighter; eyes flatter (PW/HW 1.49); inner impressions of the basal foveae of the pronotum deeper and longer; basal part of pronotum more depressed; L: 6.57 mm; PW/PL1.28, PW/PA 1.46, PW/PB 1.32, PA/PB 0.90, EW/PW 1.27, EL/EW 1.53, EB/EW 0.67, TL/HW 1.08; basal part of the aedeagus narrower and higher in lateral view. A careful treatment with a few drops of lactic acid has revealed that the left side of the proximal copulatory piece is wider, but the apical copulatory piece is wholly concealed by the membraneous walls. It is impossible to examine them without damaging the aedeagus.

According to the original description of this species (TANAKA, 1958, p. 59), it is related to *P.* (*C.*) *scitus* MÄKLIN, and differences were noted. According to the check list of the ground beetles of Russia and adjacent lands (KRYZHANOVSKIJ *et al.*, 1995), *P.* (*C.*) *scitus* has a wide distributional areas in Siberia and North Cispacific Land, while *P.* (*C.*) *kurosawai* is localized on the Island of Sakhalin.

Pterostichus* (*Cryobius*) *korgei JEDLIČKA

[Japanese name: Nippon-hime-naga-gomimushi]

(Figs.13–22)

Pterostichus korgei JEDLIČKA, 1964, Annotnes. Zool. Bot., Bratislava, (3): 2, fig. 2; type locality: Mt. Daisetsu.

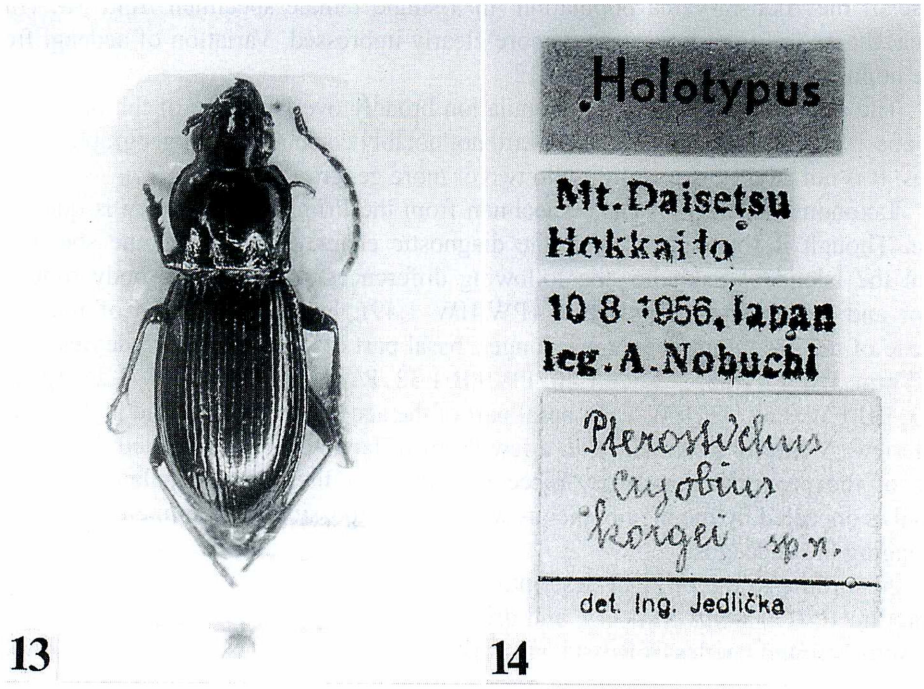
Pterostichus (*Cryobius*) *korgei*: NAKANE, 1979, Nat. & Ins., Tokyo, **14** (7): 10.

Pterostichus subgibbus: KUROSAWA & TANAKA, 1959, Nat. Sci. & Mus., Tokyo, **26**: 20, figs. 1, 1-a.—— TANAKA, 1985, Coleopt. Japan Col., Osaka, **2**: 112, pl. 21, fig. 18.

Diagnosis. Body narrow; PW/PL 1.21–1.28; EL/EW 1.53–1.65; in ♂, microsculpture consisting of transverse meshes; viewed laterally, aedeagus robust, rather strongly bent, and high at basal 1/3; basal lobe with a triangular projection on ventral side.

Redescription based on the holotype (♀). L: 7.2 mm. Body rather narrow. Body black; mandibles, antennal segments I–III and legs brown; antennal segment V almost dark brown; viewed dorsally, median parts of antennal segments VI–XI longitudinally dark brown, remaining parts of segments VI–X and apex of segment XI light brown.

Head moderately convex above; frontal furrows shallow, parallel, short and reaching the level a little before anterior supraorbital pores; surface microscopically and



Figs. 13–14. *Pterostichus* (*Cryobius*) *korgei* JEDLIČKA; 13, holotype; 14, labels attached to the holotype.

sparsely punctate; eyes weakly convex; microsculpture consisting of isodiametric meshes; posterior supraorbital pores situated a little behind the post-eye level; lateral grooves rather deep, linear, becoming shallower towards posterior ends, and reaching a little behind post-eye level; PW/HW 1.45; antennae robust; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI≒1 : 0.59 : 1.00 : — : 0.98 : 0.96 : 1.11.

Pronotum moderately convex; apex weakly emarginate, not bordered and narrower than base; PW/PL 1.27, PW/PA 1.49, PW/PB 1.34, PA/PB 0.90; apical angles weakly produced and moderately rounded at the tips; sides rather strongly arcuate, sinuate posteriad, and then parallel for a short way towards hind angles; reflexed lateral borders very narrow; anterior transverse impression lacking, posterior one obsolete; anterior pair of marginal setae inserted a little before the widest part; basal foveae deep, small, and with coarse punctures and two impressions on each side; inner impression linear at the bottom and with coarse punctures; basal part almost smooth; hind angles rectangular and with carina on each side; microsculpture consisting of fine transverse meshes.

Elytra elongate and moderately convex; EW/PW 1.25, EL/EW 1.64, EB/EW 0.66; shoulders weakly angulate; basal border short and straight; sides weakly arcuate from shoulders to the widest part and moderately arcuate in apical parts, and with very shal-

low preapical emargination; microsculpture consisting of transverse meshes; intervals weakly convex; scutellar striole situated on interval I, joining basal border, free at the apical end, rather short on the left elytron, and very short on the right; stria 1 joining stria 2 at basal part and forming a short stria towards the elytral base; basal pore weak and situated on the anastomosis of striae 1 and 2 on the left elytron, situated at the base of the short stria on the right; apices narrowly rounded and forming a very small re-entrant angle at suture; interval III with two setiferous dorsal pores; the left pores situated on interval III, the right ones close to stria 2; the first pores on the both sides situated a little behind the middle, the second at 3/4 from base on the left elytron, at 4/5 from base on the right, respectively; striae rather shallow and vaguely crenulate; striae 1, 2 and 7 entire; stria 3 entire, but becoming shallower towards apex; striae 4–6 becoming shallower towards the elytral apex and indistinct near apices; marginal series composed of 5+4 pores on the right elytron, 6+5 ones on the left.

Sides and middle of mesosternum with coarse punctures; surface of metepisternum rough, and with some coarse punctures at anterior margin; anal sternite (VII) with two pair of setae which are on a shallow arc open anteriorly, and bordered between a little outside of the external setae.

Variation in elytral chaetotaxy. Elytral interval III usually has two dorsal pores on each side. Each dorsal pore is variable in position: on interval III, close to stria 2 or joining stria 2.

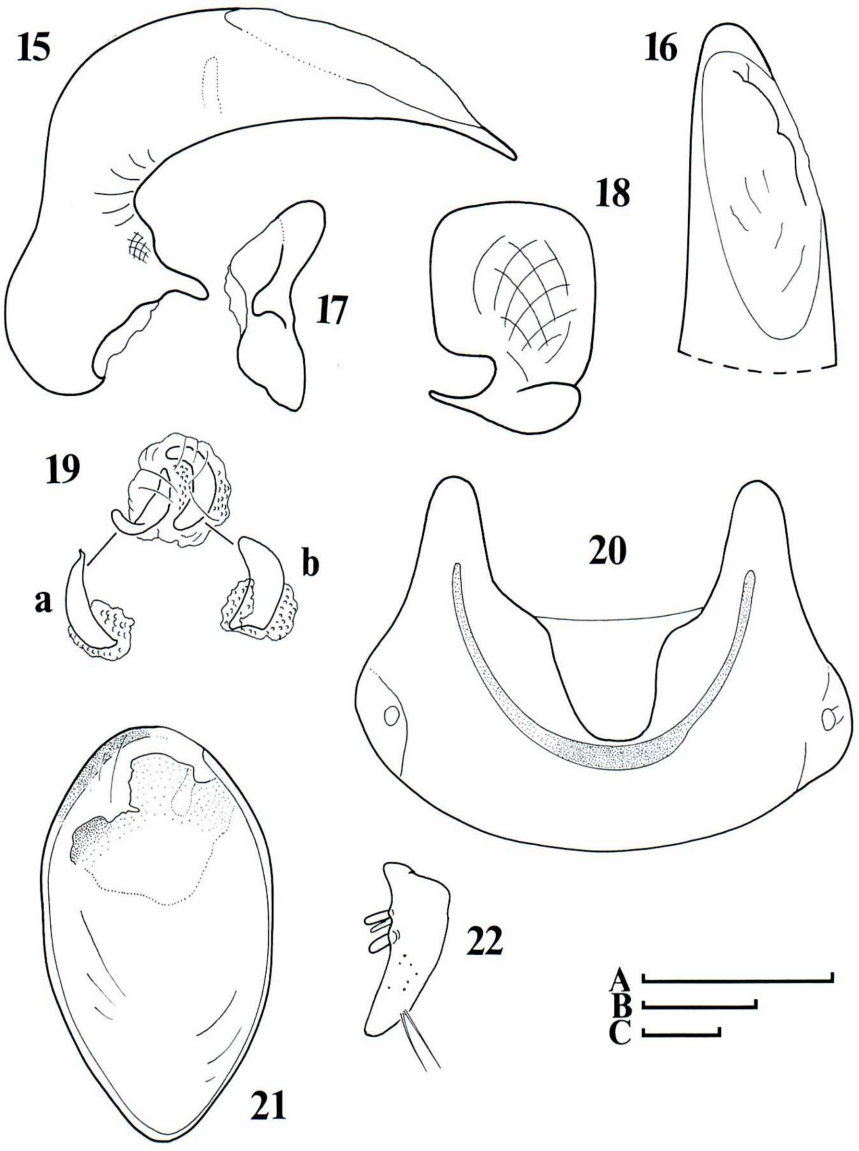
A pair of the specimens from Mt. Chûbetsu-dake have an additional pore on the left elytron: the pore joining stria III, and situated at basal 3/10 of elytra in the male; in the female, the pore is located on the middle of interval III and basal 3/11 of the elytra.

Specimens examined. 1♀, "Holotypus"/"Mt.Daisetsu Hokkaido"/"10 8. 1956, Japan, leg. A. Nobuchi"/"Pterostichus Cryobius korgei sp. n. det. Ing Jedlička"; 1♀, "Paratypus"/"Mt. Daisetsu Hokkaido"/"10 8. 1956, Japan, leg. A. Nobuchi"/"Cryobius Korgei sp. n. det. Ing. Jedlička"; 1♂, Mt. Hakuun-dake, Kamikawa-chô, 1–VII–1969, A. ABE leg.; 1♀, Mt. Aka-dake, 1,800–2,000 m alt., 16~23–VII–1975, M. SUWA, M. FURUKAWA, M. KIUCHI & T. SUNOSE leg. (SEHU); 2♂♂, 2♀♀, Mt. Asahi-dake, 26–VII–1975, S. MORITA leg.; 1♀, Mt. Kamihoro-kamettoku, 9~10–VII–1975, M. SUWA, M. KIUCHI & M. FURUKAWA leg. (SEHU); 1♂, same locality, 19–IX–1991, N. YASUDA leg.; 1♀, Mt. Nipesotsu-yama, 3–V–1996, WAKAMATSU leg.; 2♂♂, 1♀, same locality, 11–VII–1996, N. YASUDA leg.; 1♀, Mt. Tomuraushi, 13–VII–1985, N. YASUDA leg.; 1♂, Mt. Koizumi-dake, 12–VIII–1989, N. YASUDA leg.; 3♂♂, 1♀, Kumonodaira, 9–VIII–1986, N. YASUDA leg.; 1♂, 2♀♀, Mt. Chûbetsu-dake, 3–VII–2001, M. MARUYAMA & H. SUGAYA leg. (SEHU).

Range. Japan (Hokkaido: Daisetsu Mts.).

Notes. To the redescription of the holotype, the following details are added based on two pairs of specimens from Mt. Asahi-dake. They were found from under stones at the same place.

L: 6.57–7.00 mm; palpi brown and each apex pale; mentum tooth bifid at the tip; antennae stout and relatively short, reaching basal 1/5 of elytra in ♂, 1/7 in ♀; in ♂,



Figs. 15–22. Genitalia and tergum of *Pterostichus* (*Cryobius*) *korgei* JEDLIČKA. —— 15, Aedeagus, left lateral view; 16, apical part of aedeagus, dorsal view; 17, right paramere, left lateral view; 18, left paramere, left lateral view; 19, extracted inner sac, showing proximal copulatory piece (a) and apical copulatory piece (b); 20, tergum VIII in ♀; 21, genital segment, ventral view; 22, right stylus. —— 15–18, Specimen from Mt. Asahi-dake; 19, specimen from Kumonodaira; 20–21, specimen from Mt. Chûbetsu-dake; 22, specimen from Mt. Aka-dake. Scale: A – 0.5 mm for 15 – 20; B – 0.5 mm for 21; C – 0.1 mm for 22.

microsculpture as in the holotype (♀); relative length of antennal segments as follows:— I : II : III : IV : V : VI : XI ≒ 1 : 0.56 : 0.88 : 0.80 : 0.76 : 0.77 : 1.01; in ♀, anal sternite bordered between a little outside of a pair of setae; tergum VIII as in Fig. 20; genital segment as in Fig. 21; aedeagus robust; viewed laterally, aedeagus rather strongly bent, high at basal 1/3 and with a triangular projection on the ventral side; apical lobe rather short and moderately rounded in dorsal view; inner sac armed with two copulatory pieces; proximal copulatory piece elongate, narrow and strongly rolled, and bent at the left wall of inner sac; apical copulatory piece wide, short and weakly rolled. Right paramere short and with a short apical part and moderately rounded apex; left one square. The standard ratios of these specimens are as follows: PW/HW 1.37, 1.40, PW/PL 1.24, 1.28, PW/PA 1.46, 1.47, PW/PB 1.33, 1.36, PA/PB 0.91, 0.92, EW/PW 1.29, 1.27, EL/EW 1.65, 1.58, EB/EW 0.67, 0.66, ML/FL 1.47, 1.50, TL/HW 1.14, 1.18 in 2♂♂; PW/HW 1.40, 1.38, PW/PL 1.26, 1.22, PW/PA 1.43, 1.43, PW/PB 1.37, 1.27, PA/PB 0.96, 0.90, EW/PW 1.28, 1.34, EL/EW 1.57, 1.53, EB/EW 0.68, 0.67, ML/FL 0.48, 0.45 in 2♀♀; TL/HW 1.06 in 1♀.

The two female specimens from Mt. Asahi-dake are different from the holotype (♀) in the following points: 1) eyes more convex, 2) reflexed lateral sides of pronotum narrower, 3) elytral side more strongly arcuate between shoulder and the widest part, 4) scutellar striole situated on interval II, and 5) elytral striae more strongly crenulate.

The single female from Kumonodaira is distinguished from the holotype mainly by the following points: 1) body darker on dorsum, 2) body wider, 3) eyes more convex, and 4) pronotum less convex. The standard ratios of body parts are: PW/HW 1.40, PW/PL 1.26, PW/PA 1.43, PW/PB 1.34, PA/PB 0.93, EW/PW 1.29, EL/EW 1.56, EB/EW 0.65.

The single known male specimen from Mt. Hakuun-dake has a narrow pronotum: PW/HW 1.36, PW/PL 1.20.

In general appearance, a male specimen of this species from Mt. Chûbetsu-dake is similar to *P.* (*C.*) *kurosawai* in having brown legs, robust body, and rather strongly arcuate elytral sides in the basal halves, but the microsculpture is clearly impressed on the elytra and the aedeagus is high in lateral view. The standard ratios of body parts are PW/PL 1.21, EL/EW 1.53.

This species is closely allied to *P.* (*C.*) *subgibbus* MANNERHEIM known from the Kuril Archipelago, but is distinguished from it by the following points: 1) body much smaller and narrower, 2) elytra elongate and much narrower, 3) elytral intervals weakly convex, 4) legs more slender, 5) aedeagus less robust, and with narrower apex, and 6) right paramere robuster.

There is no doubt about the close relationship between this species, *P.* (*C.*) *kurosawai* and *P.* (*C.*) *subgibbus*, as is clearly shown by the similarity of their external features as well as of their genitalia, above all structures of the aedeagi. Therefore, they can be regarded as forming a small group within the subgenus.

In order to avoid hopeless confusion of the Japanese names, I have proposed a new name "Nippon-hime-naga-gomimushi" for this species.

Pterostichus* (*Cryobius*) *brevicornis yasudai MORITA, subsp. nov.

[Japanese name : Yasuda-hime-naga-gomimushi]

(Figs. 23–34)

Diagnosis. Body small; antennal segment I brown; palpi brown; tibiae reddish brown to brown; tarsi dark brown; pronotal sides moderately arcuate in front, sinuate just before hind angles; apex of aedeagus wide; basal part of aedeagus with a triangular projection on ventral side; inner sac of aedeagus armed with three copulatory pieces.

Description. L: 5.2–5.7 mm. Body black with metallic lustre; ventral side blackish brown to dark brown; epipleuron brown; antennal segments I–III to basal halves of IV, and mouth parts brown; apical 1/3 of apical segments of palpi pale reddish brown, remaining parts brown, but middle parts are usually darker; remaining segments of palpi brown; tarsi dark brown; tibiae reddish brown to brown.

Head moderately convex above; a small rounded fovea rarely present on frons; PW/HW 1.36–1.41 (M 1.38) in 10♂♂, 1.37–1.44 (M 1.40) in 10♀♀, in the Chûbetsu-dake population; frontal furrows shallow, rather wide, becoming shallower towards apices and reaching the level a little before anterior supraorbital pores; lateral grooves straight, becoming shallower towards apices, and reaching the post-eye level; surface sparsely and microscopically punctate; eyes moderately convex; microsculpture strongly impressed and consisting of isodiametric meshes; posterior supraorbital pores situated a little behind the post-eye level; antennae short, reaching basal 1/9 of elytra in ♂, 1/10 in ♀; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI ≒ 1 : 0.56 : 0.90 : 0.85 : 0.82 : 0.80 : 1.11.

Pronotum moderately convex; apex rather V-shaped and weakly emarginate, not bordered at middle; apical angles weakly produced and moderately rounded at the tips; sides moderately arcuate in front, sinuate just before hind angles; reflexed lateral borders very narrow except for hind angles; PW/PL 1.21–1.30 (M 1.28) in 10♂♂, 1.24–1.31 (M 1.28) in 10♀♀; PW/PA 1.36–1.44 (M 1.40) in 10♂♂, 1.34–1.41 (M 1.38) in 10♀♀; PW/PB 1.29–1.35 (M 1.32) in 10♂♂, 1.27–1.35 (M 1.33) in 10♀♀; PA/PB 0.85–0.98 (M 0.94) in 10♂♂, 0.94–0.99 (M 0.96) in 10♀♀ in the Chûbetsu-dake population; anterior transverse impression fine, joining lateral borders near the apical angles, and obliterated at middle; posterior one obsolete; anterior pair of marginal setae inserted a little before the widest part; basal area narrow, convex, and with several vague wrinkles; basal foveae deep, small, and with two impressions on each side and coarse punctures; no distinct postangular carinae; hind angles rectangular; microsculpture consisting of fine transverse meshes; surface sparsely and microscopically punctate.

Elytra elongate; EW/PW 1.25–1.30 (M 1.27) in 10♂♂, 1.21–1.32 (M 1.28) in 10♀♀; EL/EW 1.50–1.62 (M 1.55) in 10♂♂, 1.50–1.59 (M 1.55) in 10♀♀; EB/EW 0.63–0.69 (M 0.66) in 10♂♂, 0.65–0.68 (M 0.66) in 10♀♀ in the Chûbetsu-dake population; shoulders with a small tooth; sides moderately arcuate in front, either straight or

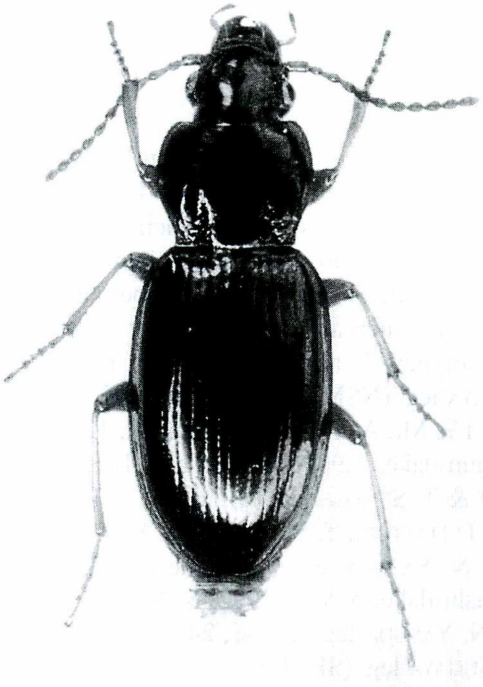


Fig. 23. *Pterostichus* (*Cryobius*) *brevicornis yasudai* subsp. nov., from Mt. Chûbetsu-dake.

very weakly arcuate at about middle, and then gently arcuate posteriad and very shallowly sinuate before apices; inner plica distinct; apices forming a small re-entrant angle at suture, and each roundly subangulate; scutellar striole very short and situated on interval II or obsolete; basal borders short and strongly arcuate at the sides; basal pore situated at base of scutellar striole or on interval II and close to stria 2; striae entire and rather strongly crenulate, but becoming indistinct at apices; microsculpture composed of wide or transverse meshes; intervals weakly convex; surface very sparsely and microscopically punctate.

Prepisternum usually coarsely punctate, rarely obsolete at the sides; mesepisternum sparsely and rather coarsely punctate; sides of sternites II–VI with irregular wrinkles; anal sternite (VII) bordered between a little outside ordinary setae in ♀; tergum as in Fig. 32; ML/FL 0.45–0.51 (M 0.49) in 9♂♂, 0.48–0.52 (M 0.50) in 8♀♀; TL/HW 0.92–0.98 (M 0.95) in 7♂♂, 0.80–0.90 (M 0.86) in 9♀♀ in the Chûbetsu-dake population.

Aedeagus elongate; basal lobe robust and with a triangular projection on ventral side; viewed dorsally, apical lobe slightly inclined to the right, and rather wide at the tip; apical lobe narrowly produced in lateral view. Inner sac armed with three copulatory pieces, herewith called "a", "b" and "c"; proximal copulatory piece "a" elongate

and moderately sclerotized, and with wide and rolled basal part which is heavily sclerotized; apical copulatory piece "b" short and moderately sclerotized; copulatory piece "c" very small, rather weakly sclerotized and lying between copulatory pieces "a" and "b"; right paramere with large basal part and blunt apex; left one wide and widely concave. Apical styli as in Fig. 34.

Variation in elytral chaetotaxy. Samples from Mt. Chûbetsu-dake were selected at random. Twenty males and twenty females have four setiferous dorsal pores on interval III on each side, rarely three, five or six. Their position is usually on interval III or joining stria 3, sometimes close to stria 3, rarely joining stria 2, close to stria 2 or on stria 3; 1 male and 1 female are aberrant in the number and position of these pores: an additional pore is present on interval V and situated at about the middle of the elytron.

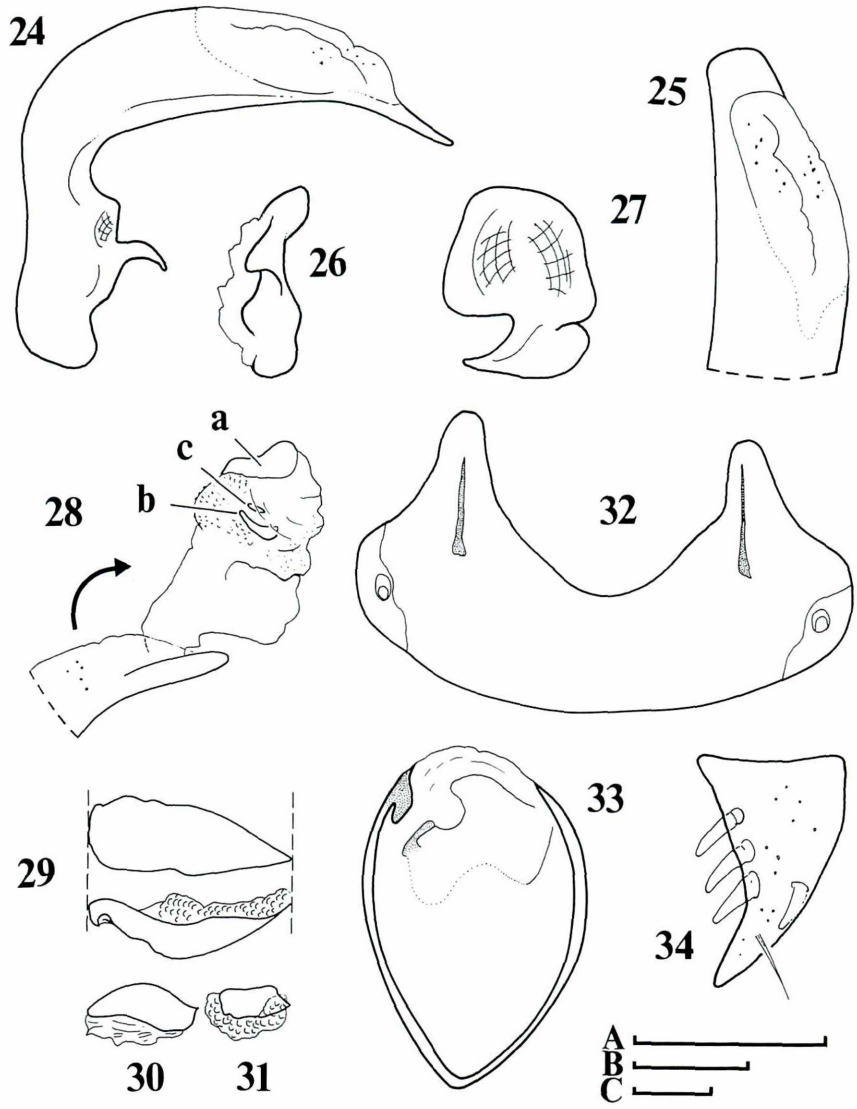
Type series. Holotype: ♂, allotype: ♀, Mt. Chûbetsu-dake, 3–VII–2001, M. MARUYAMA & H. SUGAYA leg. (NSMT). Paratypes: 3♂♂, 2♀♀, Kumonodaira, 21–VII–1986, N. YASUDA leg.; 1♀, Mt. Aka-dake, 1,800 m alt., 12–VIII–1984, N. YASUDA leg.; 3♂♂, 2♀♀, Mt. Hakuun-dake, 1,900–2,000 m alt., 16~23–VII–1975, M. SUWA, M. FURUKAWA, M. KIUCHI & T. SUNOSE leg. (SEHU); 1♂, 1♀, same locality, 28–VII~3–VIII–1983, M. SUWA, T. HATTORI, T. SUNOSE & A. SAKAI leg. (SEHU); 1♂, 1♀, same locality, 1–VIII–1983, N. YASUDA leg.; 1♂, same locality, 28–VIII–1985, N. YASUDA leg.; 1♂, Mt. Tomuraushi-dake, 5–VIII–1992, N. YASUDA leg.; 1♀, Mt. Yuni-ishikari-dake, 12–VIII–1995, N. YASUDA leg.; 27♂♂, 24♀♀, Mt. Chûbetsu-dake, 3–VII–2001, M. MARUYAMA & H. SUGAYA leg. (SEHU).

Range. Japan (Hokkaido: Daisetsu Mts.).

Notes. The range of variation in *P.* (*C.*) *brevicornis* (KIRBY, 1837, p. 31) was fully studied by BALL (1966) based on long series of specimens from various localities in North America and Siberia. He divided it into four groups and a subspecies, *P.* (*C.*) *brevicornis delicatus* (CASEY, 1918, p. 375) known from St. Paul Is.

This new subspecies is distinguished from the nominotypical form from Alaska by the following points: 1) body more elongate, 2) tarsi darker, 3) pronotum flatter, 4) basal foveae of pronotum shallower, and with coarse punctures, 5) elytra narrower. [In 1♀ from Glenn Hway, Alaska, PW/PL 1.22; EL/ EW 1.49.]

On the other hand, this species shows two forms of aedeagal apex: broadly rounded and truncate, and the intermediate forms were observed. BALL (1966, p.106) regarded *Pseudocryobius quinquepunctatus* described by MOTSCHULSKY (1860, p.93) from the Kamtschatka Peninsula as a junior synonym of *P.* (*C.*) *brevicornis*. The specimens from that peninsula and those from the Bering Sea islands including Kodiak Island have truncate apex of the aedeagus. The subspecies, *P.* (*C.*) *brevicornis delicatus* also exhibits truncate apex of the aedeagus. My own direct comparative study was made between a pair of the specimens of *P.* (*C.*) *brevicornis delicatus* from the type locality and the specimens from the Japanese population, and the following differences are observed: in *P.* (*C.*) *brevicornis delicatus*, the body larger; the colour of appendages and body darker; impression of basal foveae of the pronotum shorter and deeper; basal foveae almost smooth; elytra elongate; EL/EW 1.66 in ♂, 1.60 in ♀.



Figs. 24–34. Genitalia and tergum of *Pterostichus* (*Cryobius*) *brevicornis yasudai* subsp. nov., from Mt. Chûbetsu-dake. —— 24, Aedeagus, left lateral view; 25, apical part of aedeagus, dorsal view; 26, right paramere, left lateral view; 27, left paramere, left lateral view; 28, extracted inner sac, showing proximal copulatory piece (a), apical copulatory piece (b), and copulatory piece (c); 29, proximal copulatory piece (a); 30, apical copulatory piece (b); 31, copulatory piece (c); 32, tergum VIII in ♀; 33, genital segment, ventral view; 34, right stylus. Scale: A – 0.5 mm for 24 – 28, 32; B – 0.5 mm for 33; C – 0.1 mm for 29–31, 0.05 mm for 34.

Through the courtesy of Dr. BELOUSOV, I was able to examine a pair of the specimens of this species from Mt. Tsholpony at the northwestern part of Kuturtshinskoye Belogorie, in the Asiatic part of Russia. They are different from the type series of *P.* (*C.*) *brevicornis yasudai* in several details: dorsal side and appendages darker; sides of elytra more strongly arcuate; elytral striae more strongly crenulate; apex of aedeagus moderately rounded in dorsal view.

It was clarified by the comparative study of these specimens that the diagnostic features of the Japanese specimens are as a whole indicative of its isolated status.

I am pleased to name this distinctive subspecies after Mr. Nobuki YASUDA, a coleopterist, who has contributed so much to the clarification of the beetle fauna of the Daisetsu Mountains.

要　　約

森田誠司：北日本の*Cryobius*亜属の種について．—— 北方系のグループである*Cryobius*亜属の種について，おもに北海道産の標本をもとに3種を記載した．そのうちの1種は，シベリアから北米まで広く分布する*Pterostichus* (*C.*) *brevicornis* (KIRBY) の亜種とみなし，亜種*yasudai*を記載した．それぞれの種の変異に関しても，できるかぎり言及した．

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Occurrence of *Devia prospera* (Coleoptera, Staphylinidae, Aleocharinae) in Japan

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The aleocharine staphylinid beetle *Devia prospera* (ERICHSON, 1839) (tribe Oxypodini) was originally described from Germany and has been known from Europe, Siberia, and North America, i.e., widely recorded from the Holarctic Region. However, this species has not been known in East Asian regions including Japan but is expected to be collected from there. Recently, the second author donated several species of Aleocharinae collected in Hokkaido to the first author, and the collection included a large number of specimens of a species agreeing well with the description of *D. prospera*. The first author sent some specimens of this species to Mr. Volker ASSING, a specialist of the Aleocharinae, for asking comparison with European material of *D. prospera*, and was informed that they are the same species. In the present paper, the authors will record this species from Japan for the first time.

Before going further, the authors wish to express their hearty thanks to Mr. V. ASSING (Hannover) for his identification of this species, and to Dr. Shun-Ichi UÉNO (Tokyo) for critically reading the manuscript.