Elytra, *Tokyo*, New Series, **2** (1): 119−125
July 15, 2012

Two New Macrocephalic Pterostichines (Coleoptera, Carabidae) from Central Japan

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Abstract Two new species of macrocephalic pterostichine carabid beetles, *Pterostichus gujoensis* sp. nov., and *P. shikatai* sp. nov., are described from Gujô-shi of Gifu Prefecture and Matsumoto-shi of Nagano Prefecture, Central Honshu, Japan, respectively.

Up to now, eight macrocephalic *Pterostichus* species are known from Gifu and Nagano Prefectures, Central Honshu, Japan. Of these, only one species, *Pterostichus macrogenys* Bates, has a wide distributional range (Sasakawa, 2005), while the other species are restricted locally (Morita & Hirasawa, 1996; Morita & Kanie, 1997; Sugimura, 2005, 2006, 2007; Morita & Ohkawa, 2009). In recent years, I have repeatedly investigated in blank areas of macrocephalic *Pterostichus* distributions with some entomological friends of mine, and we obtained two new species which are described herein.

The abbreviations used in this paper are as follows: L, body length, measured from apical margin of clypeus to apices of elytra; 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.

Pterostichus gujoensis Toda, sp. nov.

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

(Figs. 1−7)

Diagnosis. A macrocephalic *Pterostichus* species with entirely flat eyes; body surface rather smooth; in ♂, elytral dorsal pores rather strongly depressed; aedeagal ventral side with a rather large ridge at about middle.

Description. L: 13.45−15.46 mm in ♂, 13.60−17.05 mm in ♀. Body rather flat and elongate. Colour dark brown to blackish brown; appendages dark brown.

Head very large, convex and usually slightly narrower than pronotum; PW/HW 1.05−1.10 (M 1.08) in ♂, 0.97−1.10 (M 1.02) in ♀; frontal furrows shallow, short and weakly curved inwards at the posterior ends; eyes entirely flat; lateral grooves deep, straight in front, curved inwards and becoming wider at the posterior halves, and then reaching the level of the posterior supraorbital pore on each side; additional groove situated a little outside lateral groove and joining posterior end of lateral groove on each side; surface usually sparsely and finely punctate; genae strongly convex; mentum tooth stout and bifid at the tips; microsculpture almost obliterated; relative lengths of antennal segments as follows: I : II : III : IV : V : VI : XI ≒ 1 : 0.52 : 0.80 : 0.83 : 0.82 : 0.81 : 0.70 in ♂, 1 : 0.56 : 0.83 : 0.80 : 0.80 : 0.76 : 0.68 in ♀.

Pronotum trapezoidal, weakly convex and widest at about apical 1/6 in ♂ (measured along the median line), apical 1/10 in ♀; apex widely and moderately emarginate; apical angles strongly produced and simply rounded at the tips; hind angles sharp; sides widely and weakly arcuate in front,

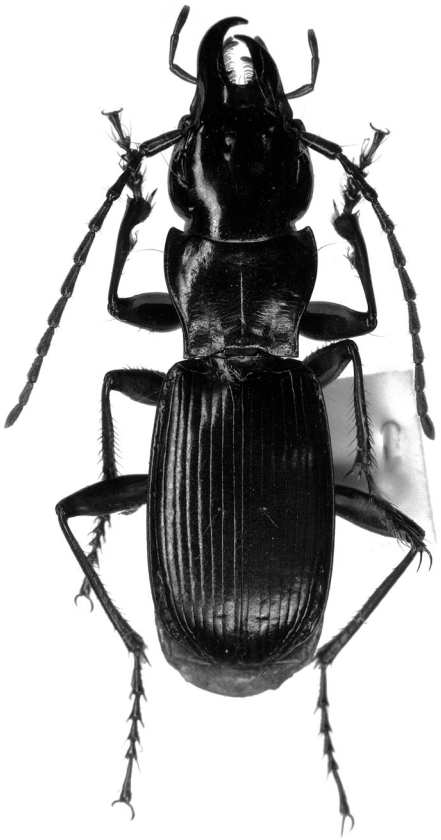
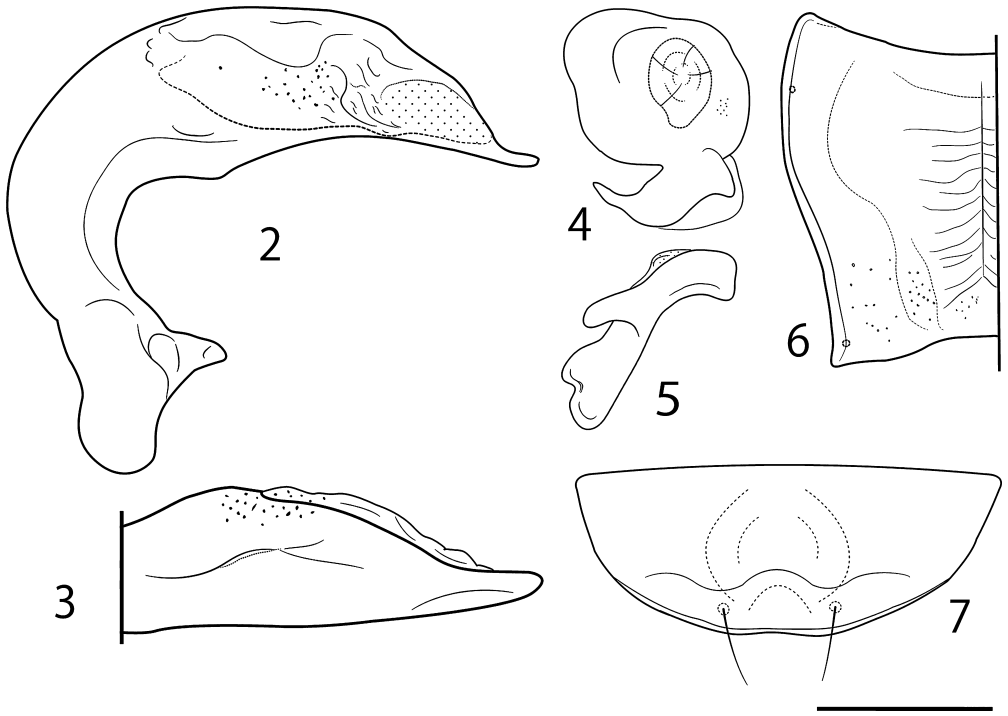


Fig. 1. *Pterostichus gujoensis* Toda, sp. nov., from Sakamoto-tôge, ♂.

shallowly sinuate at basal 1/5 (measured along the median line), and then, weakly divergent or parallel to each other towards hind angles; PW/PA 1.12−1.17 (M 1.13) in ♂, 1.09−1.13 (M 1.10) in ♀; PW/PB 1.30−1.36 (M 1.33) in ♂, 1.28−1.39 (M 1.33) in ♀; PA/PB 1.15−1.19 (M 1.18) in ♂, 1.16−1.28 (M 1.21) in ♀; base moderately emarginate at median part, slightly oblique at the sides; anterior marginal setae inserted a little before the widest portion, posterior ones a little before and inside hind angles; anterior transverse impression very shallow at the median part and obliterated at the sides; median line shallow, though distinct between anterior and posterior impressions; basal foveae very shallow, narrow, extending forwards, and sparsely punctate; microsculpture composed of fine and wide or transverse meshes; surface finely and sparsely punctate.

Elytra elongated ovate, very weakly convex and widest at about middle or a little behind the middle; EW/PW 1.16−1.24 (M 1.21) in ♂, 1.13−1.23 (M 1.20) in ♀; EL/EW 1.45−1.58 (M 1.49) in ♂, 1.47−1.52 (M 1.49) in ♀; shoulders angulate, though the corners are weakly rounded; sides straight and very weakly divergent from shoulders to the widest part, and moderately arcuate behind; epipleuron gradually narrower towards apex; inner plica hardly visible; apices separated from each other; apex rounded; striae rather shallow throughout and impunctate; scutellar striole very short, situated on interval I, weakly and outwardly curved; intervals scarcely convex and very sparsely and finely punctate; basal pore situated on interval I and adjoining stria 1; interval III with two dorsal pores which are strongly depressed, and adjoining stria 2; anterior dorsal pore situated at about middle; posterior dor-



Figs. 2−7. *Pterostichus gujoensis* Toda, sp. nov. —— 2, Aedeagus, left lateral view; 3, apical part of aedeagus, ventral view; 4, left paramere, left lateral view; 5, right paramere, left lateral view; 6, pronotum; 7, anal sternite in ♂. Scales: 1.0 mm for 2−5; 0.6 mm for 6−7.

sal pore situated at basal 4/5; umbilicate marginal series composed of 13−14 pores; microsculpture conposed of fine transverse meshes.

Genae usually smooth on ventral side; prepisternum, mesosternum, mesepisternum, metasternum and sides of sternite 1 sparsely and finely punctate; in ♂, anal sternite shallowly and widely concave at apical part, and with longitudinal carina at the middle.

Aedeagus elongate, strongly bent at basal third; viewed dorsally, apical part weakly inclined to the right; apex simply rounded in lateral view; ventral surface of apical part almost flat and smooth; ventral side with a rather large ridge at about middle.

Right paramere small, strongly bent at apical third, and with wide apex; in left lateral view, left paramere quadriangular and shallowly concave, and with rounded corners.

Type series. Holotype (National Museum of Nature and Science, Tokyo): ♂, Sakamoto-tôge, 16−X~5−XI−2005, S. Katô leg. Paratypes: 2 ♂♂, 1 ♀, Miyama-shônyûdô, 14−IX~12−X−2003, K. Akita leg.; 2 ♀♀, same locality, 12−X~1−XI−2003, K. Akita leg.; 1 ♂, Sakamoto-tôge, 16−X~5−XI−2005, S. Katô leg.; 1 ♂, 3 ♀♀, same locality, 13~26−XI−2005, S. Katô leg.; 1 ♂, 1 ♀, same locality, 15~29−X−2006, N. Toda & Y. Inagaki leg. 1 ♂, 1 ♀, same locality, 12~27−XI−2006, N. Toda & A. Sugimura leg.; 1 ♂, 2 ♀♀, same locality, 27−XI~12−XII−2006, N. Toda & A. Sugimura leg.

Localities. Sakamoto-tôge and Miyama-shônyûdô, Gujô-shi, Gifu Pref., Central Japan.

Notes. This new species is doubtlessly closely related to *Pterostichus kuraiyamanus* Morita et Ohkawa (2010, p. 99). It is, however, easily distinguished from the latter by the following points: 1) elytral dorsal pores strongly depressed, 2) in ♂, anal sternite shallowly and rather widely concave at

apical part, and 3) aedeagal ventral side with a rather large ridge at about middle.

Pterostichus shikatai Toda, sp. nov.

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

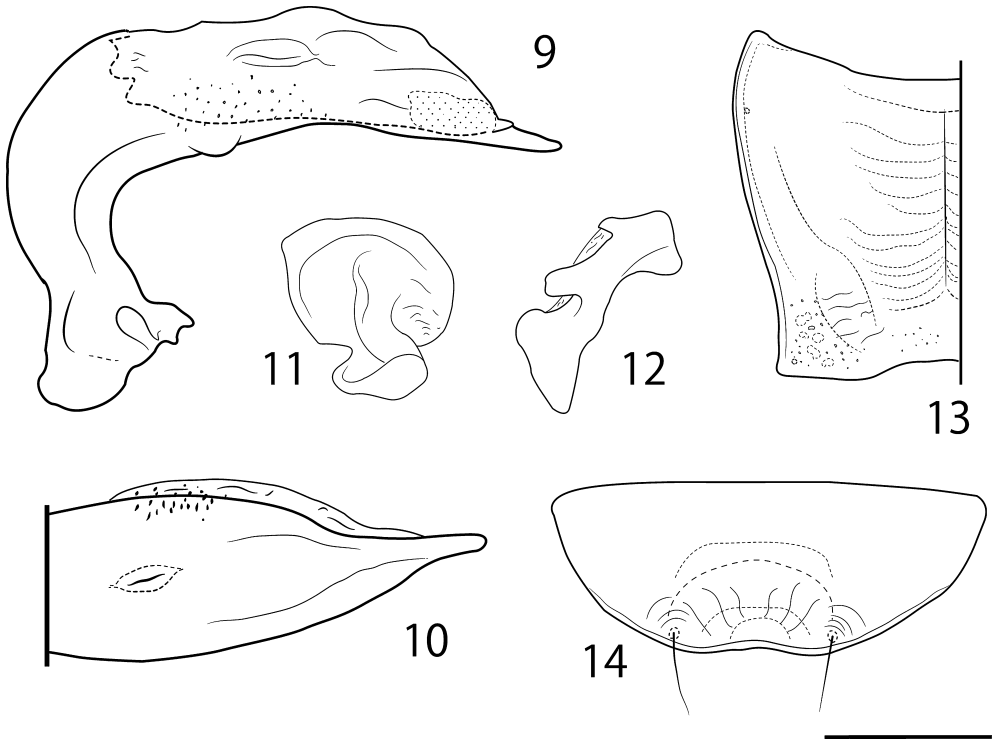
(Figs. 8–14)

Diagnosis. A macrocephalic *Pterostichus* species with entirely flat eyes; body rather small and robust; pronotum trapezoidal; elytra wide; elytral intervals transversely wrinkled and finely punctate; aedeagal ventral side with a very small tumor at about middle.

Description. L: 12.30–14.31 mm in ♂, 13.74–14.53 mm in ♀. Body rather short and flat. Colour brown to dark brown; appendages brown to light brown.

Head large, convex and slightly narrower than pronotum; PW/HW 1.09–1.15 (M 1.13) in ♂, 1.01–1.13 (M 1.05) in ♀; frontal furrows short, shallow, parallel to each other, and becoming deeper posteriad; eyes entirely flat; lateral grooves deep and straight in apical halves, and then becoming shallower posteriad, and terminating a little before the posterior supraorbital pore on each side; additional groove situated a little outside lateral groove, and with oblique wrinkles; surface punctate and transversely wrinkled; genae strongly convex; mentum tooth bifid; microsculpture almost obliterated; relative lengths of antennal segments as follows: I : II : III : IV : V : VI : XI ≒ 1 : 0.51 : 0.75 : 0.77 : 0.78 : 0.73 : 0.74 in ♂, 1 : 0.47 : 0.71 : 0.72 : 0.72 : 0.70 : 0.68 in ♀.

Fig. 8. *Pterostichus shikatai* Toda, sp. nov., from Shirahone-onsen, ♂.



Figs. 9−14. *Pterostichus shikatai* Toda, sp. nov. —— 9, Aedeagus, left lateral view; 10, apical part of aedeagus, ventral view; 11, left paramere, left lateral view; 12, right paramere, left lateral view; 13, pronotum; 14, anal sternite in ♂. Scales: 1.0 mm for 9−12; 0.6 mm for 13−14.

Pronotum trapezoidal, weakly convex and widest at about apical 1/6 in ♂ (measured along the median line), about apical 1/8 in ♀; apex widely and moderately emarginate; apical angles strongly produced, with simply rounded apex; sides widely and weakly arcuate in front, shallowly sinuate at basal 1/5 (measured along the median line), and then weakly divergent towards hing angles; PW/PA 1.08−1.17 (M 1.13) in ♂, 1.07−1.16 (M 1.11) in ♀; PW/PB 1.26−1.31 (M 1.29) in ♂, 1.28−1.36 (M 1.31) in ♀; PA/PB 1.10−1.17 (M 1.13) in ♂, 1.15−1.19 (M 1.17) in ♀; hind angles sharp; base moderately emarginate at median part and almost transverse at the sides; a pair of anterior marginal setae inserted before the widest portion, posterior ones a little before and inside hind angles; anterior transverse impression very shallow at the median part and obliterated at the sides; median line moderately impressed between anterior and posterior impressions; basal foveae shallow, small and with fine punctures; disc with transverse, short and fine wrinkles; microsculpture composed of fine transverse meshes or irregular ones; surface finely and sparsely punctate.

Elytra wide, widest at about middle or a little behind that level; EW/PW 1.14−1.20 (M 1.18) in ♂, 1.15−1.21 (M 1.18) in ♀; EL/EW 1.41−1.52 (M 1.47) in ♂, 1.40−1.53 (M 1.47) in ♀; shoulders distinct though the corners are weakly rounded; sides straight and very weakly divergent from shoulders to the widest part, and strongly arcuate behind; epipleuron gradually narrower towards apex; inner plica visible; apices separated from each other; apex obtuse; striae rather shallow throughout; scutellar striole very short, shallow and situated on interval I; intervals transversely and briefly wrinkled and finely punctate; basal pore situated on interval I and adjoining stria 1; interval III usually with two

dorsal pores and sometimes one additional pore; anterior dorsal pore situated at a litlle before the middle; posterior dorsal pore situated at basal 4/5; an additional pore sometimes present on one side, usually situated at basal 1/4 of elytra and adjoining striae 2 or 3 in ♂, but the elytral chaetotaxy in ♀ is stable; umbilicate marginal series composed of 11−16 pores; microsculpture composed of fine meshes.

Genae usually with rather transverse wrinkles on ventral side; prepisterntm usually finely punctate; mesosternum, mesepisternum, metasternum and sides of sternite 1 usually moderately to rather coarsely puncatate; in ♂, anal sternite shallowly concave at apical part, with very narrowly emarginate apex.

Aedeagus elongate and strongly bent at basal third; apical lobe rather elongate, strongly inclined and twisted to the right in dorsal view; median part of ventral surface with a small tumor at apical half.

Right paramere small and with wide apex; left paramere quadrangular, weakly winkled and with round corners.

Type series. Holotype (National Museum of Nature and Science, Tokyo): ♂, Shirahone-onsen, Matsumoto-shi, Nagano Pref., 30−IX~18−X−2007, K. Shikata leg. Paratypes: 1 ♂, Shirahone-onsen, 27−VII−2004, H. Ohkawa leg.; 1 ♀, same locality, 3~27−X−2005, K. Shikata leg.; 1 ♀, same locality, 23−X−2005, T. Fukuzawa and M. Hama leg.; 2 ♂♂, 2 ♀♀, same locality, 4~25−X−2006, K. Shikata leg.; 1 ♂, same locality, 23−X−2006, T. Fukuzawa and M. Hama leg.; 4 ♂♂, 6 ♀♀, same locality, 3~30−IX−2007, K. Shikata leg.; 4 ♂♂, 5 ♀♀, same locality, 30−IX~18−X−2007, K. Shikata leg.; 1 ♀, same locality, 18−X~10−IX−2007, K. Shikata leg.; 1 ♀, same locality, 11~25−IX−2011, N. Toda & R. Toyoshima leg.; 2 ♂♂, 2 ♀♀, Shirakaba-tôge, Matsumoto-shi, Nagano Pref., 3~30−IX−2007, K. Shikata leg.; 4 ♂♂, 2 ♀♀, same locality, 30−IX~18−X−2007, K. Shikata leg.; 3 ♀♀, same locality, 18−X~10−IX−2007, K. Shikata leg.

Localities. Shirahone-onsen and Shirakaba-tôge, Matsumoto-shi, Nagano Pref., Central Japan.

Notes. This new species is also related to *Pterostichus kuraiyamanus* Morita et Ohkawa (2010, p. 99). It is, however, easily distinguished from the latter by the following points; 1) body smaller, L: 12.30−14.65 mm, 2) pronotum wider, PW/HW 1.09−1.15 (M 1.13) in ♂, 1.01−1.13 (M 1.05) in ♀, 3) sides of pronotum less strongly sinuate, 4) elytra wider, EL/EW 1.41−1.52 (M 1.47) in ♂, 1.40−1.53 (M 1.47) in ♀, 5) elytral intervals more strongly wrinkled and punctate, 6) in ♂, anal sternite more strongly dpressed and winkled, and 7) aedeagus elongate and more strongly bent.

Acknowledgments

I wish to express my hearty thanks to Mr. Seiji Morita of Tokyo for his critical reading of the manuscript. Thanks are also due to Messrs. Katsumi Akita of Tsu-shi, Mie Prefecture, Keiichirô Shikata of Iida-shi, Nagano Prefecture, Akemichi Sugimura of Kiyosu-shi, Aichi Prefecture, Ryôji Toyoshima of Nagoya-shi, Aichi Prefecture, and Mrs. Yoriko Inagaki of Yokkaichi-shi, Mie Prefecture for their kind cooperation in collecting the materials. The late Mr. Shôji Katô affectionately watched my study of carabid beetles for a long time. My deep thanks are also due to him.

要　　約

戸田尚希：岐阜県と長野県から発見されたオオズナガゴミムシの2新種(コウチュウ目オサムシ科)．―― 岐阜，長野両県からは，8種類のいわゆるオオズナガゴミムシの仲間が知られている．筆者は，さらにクライヤマオオズナガゴミムシ *Pterostichus kuraiyamanus* Morita et Ohkawa に近縁の2種を新種と認めここに記

載した．そのうちのひとつは，岐阜県から見つかったカトウオオズナガゴミムシ *P. gujoensis* Toda で，鞘翅の孔点周囲がくぼみ，雄交尾器中央片に稜があるなどの特徴で識別される．和名は筆者の研究を暖かく見守ってくださり，この種の発見者である故加藤昭児氏に献名した．

もうひとつは，長野県から発見された種で，やや小型であり，鞘翅はより幅広で，前胸背板側縁の波曲は弱く，体の表面は短く細いシワが多い．種名は発見者の四方圭一郎氏に献名し，シラホネオオズナガゴミムシ *P. shikatai* Toda とした．

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Manuscript received 23 February 2012;
revised and accepted 7 March 2012.