

A New Species of the Genus *Platambus* (Coleoptera, Dytiscidae) from Hokkaido, Japan

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Abstract A new lotic diving beetle *Platambus convexus* sp. nov. is described from Hokkaido, Japan. This new species is similar to *P. pictipennis* (SHARP, 1873), but differs from the latter mainly by the shape of prosternal process, the shape of aedeagus, and the body size.

Introduction

The genus *Platambus* THOMSON, 1859 belongs to the tribe Agabini and is characterized by the following characteristics: prosternal process with lateral bead broadly inflated to posterior of procoxae in most species, mesocoxae widely separated, epipleuron broad in many species (NILSSON, 2000). Since the revision of the genus by BRANCUCCI (1988), many new species have been described from China and Laos (BRANCUCCI, 1991, 2004 a, 2004 b, 2005 a, 2005 b, 2006, 2007; NILSSON, 2003; BIAN & LI, 2008). Consequently, 64 species of the genus are known from the Nearctic, Neotropical, Oriental and Palearctic Regions.

As for Japan, seven species of the three species-groups (sensu NILSSON, 2000, 2001) are recognized within this genus (BRANCUCCI, 1988; NILSSON, 2003). Of these, *Platambus pictipennis* (SHARP, 1873), included in the *maculatus*-group, is widely distributed from Hokkaido to Kyushu and known as one of the commonest lotic diving beetles in Japan (BRANCUCCI, 1988).

Recently, I found two different forms of *P. pictipennis* collected from Hokkaido. After careful observation, I concluded that the larger form was clearly different from smaller one, *P. pictipennis*, and recognized as an undescribed species. It represents the eighth species of *Platambus* occurring in Japan.

Material and Methods

Observation and dissection were carried out using Leica MZ9.5 stereoscopic microscope and Leica LED1000 compound light microscope.

Body measurements were taken using Leica DFC290 with an accuracy of ± 0.01 mm. The abbreviations of measurements used in the present paper are as follows: TL – total length, anterior margin of clypeus to posterior margin of elytra; TL-h – body length without head; EL – elytra length; PnALW – width between antero-lateral angles of pronotum; PnPLW – width between postero-lateral angles of pronotum; MW – maximum width of body; WC/WS – ratio between width of metacoxa and width of metaventricle (LARSON, 1975). The male genitalia were removed from the abdomen with a thin hooked pin, followed BRANCUCCI (1988).

The type series are deposited in the following collections: EUMJ – Laboratory of Entomology, Ehime University, Matsuyama, Ehime, Japan; SEHU – Systematic Entomology, Hokkaido University, Sapporo, Hokkaido, Japan; HHM – Historical Museum of Hokkaido, Japan; ROC –

private collection of Ryohei OKADA, Japan; S. HORI – private collection of Shigehisa HORI (HMH), Japan.

Regarding the morphological terminology, I generally follow BRANCUCCI (1988) and NILSSON (2003).

Description

Platambus convexus sp. nov.

[Japanese name: Nise-monkimame-gengorô]

Platambus pictipennis (not SHARP, 1873): HORI, 2002, 4, fig. 9; OKADA, 2010, 29 [misidentification].

Type locality. Japan: Hokkaido, Ebetsu-shi, Nopporo Forest Park, Nishinopporo-sawa, N 43° 02′ 01″, E141° 30′ 26″.

Type materials. Holotype (EUMJ), male: “Japan: Hokkaido”/“Ebetsu, Nopporo F. P.”/“Nishinopporo-sawa”/“15. IX. 2010”/“R. Okada leg.”/“ROC 0034”/“HOLOTYPE”/“*Platambus convexus* Okada 2011”//

Paratypes: 2 males & 8 females (EUMJ, SEHU), same data as the holotype; 7 males & 3 females (HMH, S. HORI), same locality and date, S. HORI leg.; 1 male & 1 female (ROC), Chirichiri riv., Yunosato, Shiriuchi-chô, Hokkaido (N41° 36′ 37″, E140° 19′ 32″), 25–VII–2010, R. OKADA leg.; 1 male & 1 female (ROC), Kuroiwa riv., Hanaishi, Imakane-chô, Hokkaido (N 42° 25′ 32″, E140° 09′ 29″), 15–V–2010, R. OKADA leg.; 1 female (ROC), Towarubetsu-riv., Kamiyakumo, Yakumo-chô, Hokkaido (N42° 18′ 06″, E140° 09′ 21″), 4–V–2010, R. OKADA leg.; 1 male & 3 females (ROC), same locality, 8–V–2010, R. OKADA leg.; 12 males & 11 females (EUMJ, SEHU), same locality, 4–VIII–2010, R. OKADA leg.; 1 male (ROC), Tazawa riv., Tazawa, Esashi-chô, Hokkaido (N41° 53′ 51″, E140° 10′ 41″), 6–IX–2009, R. OKADA leg.; 2 females (EUMJ), Minagoya riv., Yunosato, Shiriuchi-chô, Hokkaido (N41° 36′ 18″, E140° 19′ 23″), 19–VI–2008, H. YOSHITOMI leg.

Differential diagnosis. *Platambus convexus* sp. nov. is similar to *P. pictipennis*, but differentiated from the latter by the prosternal process (convex vs. flat), the aedeagus (deflected in apical part vs. not deflected), and the puncture row of the metatibiae (two rows vs. one row). By the convex prosternal process, this new species is also related to *P. fletcheri* ZIMMERMANN, 1928, *P. incrassatus* GSCHWENDTNER, 1935, *P. siouthami* BRANCUCCI, 2007, and *P. yaanensis* NILSSON, 2003. From them, *P. convexus* sp. nov. can be easily distinguished by its larger body size (7.7–8.9 mm TL vs. 7.3 mm TL, 5.4–6.2 mm TL, 6.3–6.6 mm TL, and ca. 7.0 mm TL, respectively) (BRANCUCCI, 1988, 2004 a, 2007; NILSSON, 2003). In addition, *P. convexus* sp. nov. differs from *P. fletcheri* by the anal sternite of male (distinctly sculptured vs. smooth) (BRANCUCCI, 1988). *P. convexus* sp. nov. also differs from *P. incrassatus* by the pronotal marking (broadly ferruginous on anterior corners vs. no marking) (BRANCUCCI, 1988, 2004 a). From *P. siouthami*, *P. convexus* sp. nov. differs by the aedeagus (strongly curved vs. weakly regularly curved) (BRANCUCCI, 2007). *P. convexus* sp. nov. can be distinguished from *P. yaanensis* by the following characters: prosternal process (distinctly convex and produced into a long point vs. slightly convex and weakly pointed) and apical part of parameres (narrow and elongate vs. broad and short) (NILSSON, 2003).

Description. Body broadly oval, distinctly convex, black with a bronze luster, and with testaceous band and spots on elytra (Fig. 1).

Head black with a bronze luster, labrum and two large spots on vertex testaceous brown.



Fig. 1. *Platambus convexus* sp. nov., holotype, male. — Habitus, dorsal and ventral view. Scale 5.0 mm.

Antennae testaceous. Reticulation consisting of well-impressed polygonal meshes, irregular in size, with 0–4 (mostly 1) small punctures within them and punctures at some of the intersections. Row alongside eyes and clypeal grooves consisting of medium-sized, confluent punctures.

Pronotum black with a bronze luster, broadly ferruginous on anterior corners. Reticulation consisting of small, well-impressed polygonal meshes, irregular in size; meshes more impressed along posterior margins, containing 1–3 (mostly 2) minute punctures on their inner surfaces. Anterior row of punctures complete, the punctures is different in size, irregularly distributed. Posterior row broadly interrupted on middle; punctures large and irregular, forming short wrinkles. Lateral margins distinctly bordered, with some punctures alongside the grooves.

Elytra black with a bronze luster, provided with a broad subbasal/lateral band, a large median patch, an angular postmedian patch, an preapical patch (Fig. 1); the postmedian patch provided with a brief prolongation on antemedian and preapical parts, though they are connected in some specimens. Epipleura testaceous. Reticulation consisting of slightly impressed polygonal meshes with 1–4 (mostly 2) minute punctures within them. Sutural row of punctures within restricted to apical third, consisting of 10 medium-sized punctures. Discal, sublateral and lateral rows not reaching base; punctures in well-impressed groups of 2–3 medium-sized and confluent punctures. Epipleura broad at base, slightly tapered posteriorly, remaining broad as far as apical region (Fig. 2 E).

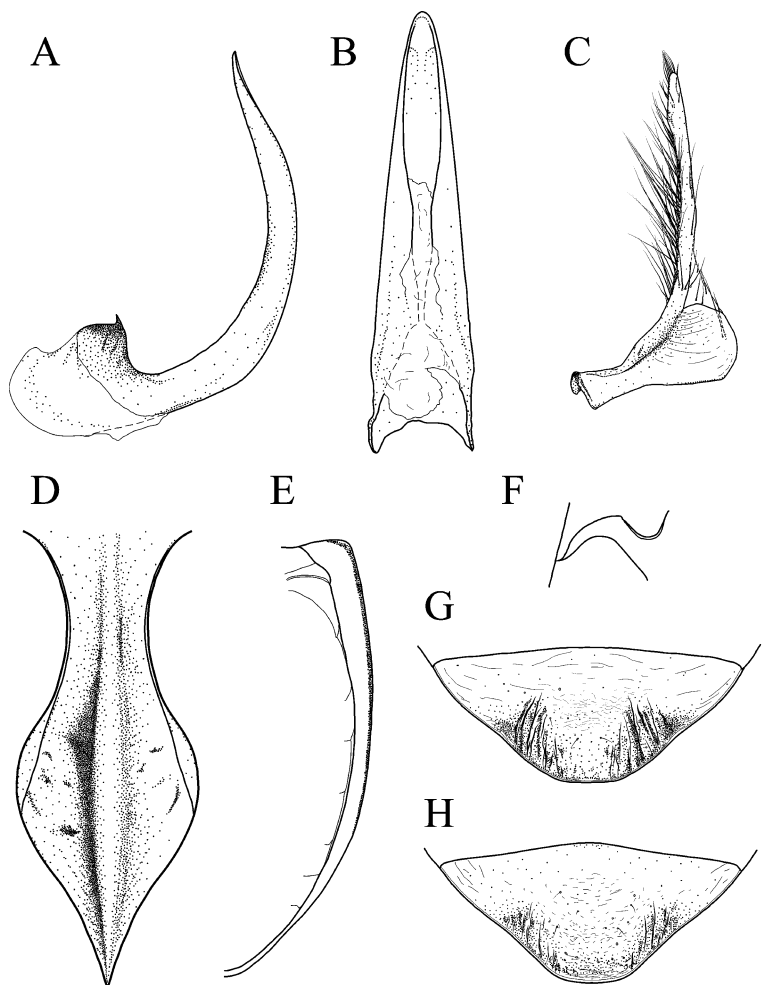


Fig. 2. *Platambus convexus* sp. nov. — A, aedeagus in lateral view; B, aedeagus in dorsal view; C, paramere; D, prosternal process; E, epipleura; F, metasternal wing; G, anal sternite of male; H, anal sternite of female. — A–G, holotype, male; H, one of paratypes from type locality, female. Scale 0.5 mm in A–D, F, G and 1.0 mm in E, F.

Underside predominantly light-ferruginous brown, but center of metacoxal process and abdominal sterna with dark ferruginous brown basal and apical margins (Fig. 1). Legs ferruginous brown. Prosternal process distinctly convex or subcarinate, broadly bordered at sides, suddenly tapered and produced into a long point (Figs. 2 D, 3 A). Metasternal wings narrow and strongly curved (Fig. 2 F). Metacoxae submat, with obsolescent sculpture. Metatrochanter transverse, finely rugose, and obtusely pointed at apex. Metafemora with oblique row of punctures at distal posterior angles, with short setae. Metatibiae with two rows of punctures; one along outer margin and consisting of 6–7 larger punctures, each bearing a strong but short seta, another one along inner margin, shortened distally with 4–8 punctures (Fig. 3 C).

M a l e. Protarsi and mesotarsi distinctly dilated with numerous pads. Anterior claws equal in length. Anal sternite microreticulate on anterior third, strongly wrinkled and punctured on

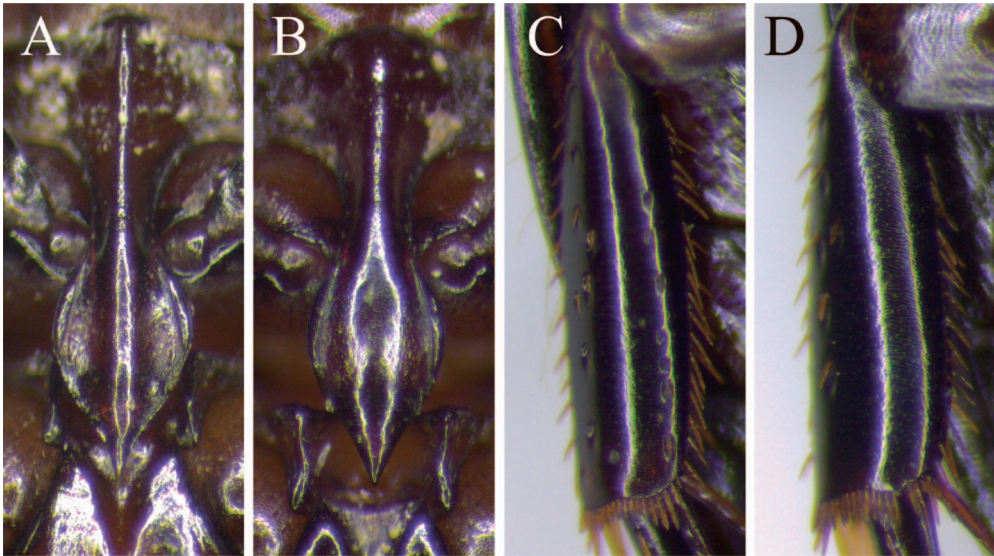


Fig. 3. Comparison of prosteral process (A, B) and puncture rows of right metatibia (C, D) in sympatric species of *Platambus* spp. from Towarubetsu riv., Yakumo-chô. — A, C, *Platambus convexus* sp. nov.; B, D, *Platambus pictipennis*. Scale 1.0 mm.

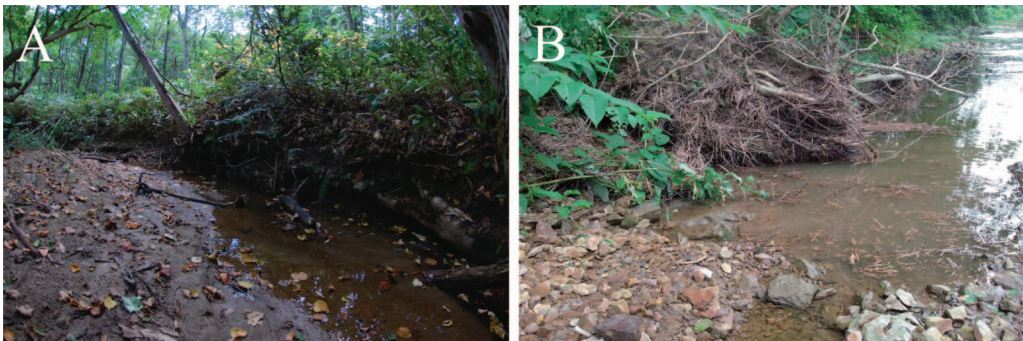


Fig. 4. Habitat. — A, Nishinoppo-sawa, Nopporo Forest Park, Ebetsu-shi (type locality), 15. Sep. 2010. Photo by S. HORI; B, Towarubetsu riv., Yakumo-chô, Hokkaido. 5. Aug. 2010. Photo by the author.

posterior two-thirds (Fig. 2 G). Posterior margin flattened on middle and finely bordered.

Aedeagus arcuate and strongly curved in lateral view, evenly tapered and very slightly deflected in apical part (Fig. 2 A); narrow in dorsal view, tapered apically with very narrowly rounded apex (Fig. 2 B). Parameres transverse in basal part, with apical part narrow, elongate and 1.38 times as long as base (Fig. 2 C).

Female. Similar to male. Anal sternite superficially microreticulate with minute punctures on their inner sides, distinct wrinkles on posterior third (Fig. 2 H). Posterior margin broadly rounded, finely bordered.

Measurements (n=55). TL: 7.79–8.91 (8.35 ± 0.27) mm; TL-h: 7.23–8.14 (7.65 ± 0.21) mm; EL: 5.90–6.76 (6.37 ± 0.17) mm; PnALW: 2.43–2.74 (2.59 ± 0.07) mm; PnPLW: 3.75–4.24 (4.04

± 0.12) mm; MW: 4.35–4.89 (4.61 ± 0.11) mm; WC/WS: 4.72–6.88 (5.67 ± 0.45); TL/MW: 1.73–1.88 (1.81 ± 0.03); EL/MW: 1.34–1.42 (1.38 ± 0.02).

Distribution. Japan (Hokkaido).

Habitat. At the type locality, the type series were collected from a small stream flowing under the broadleaved trees (Fig. 4 A). In this stream, they were collected from restricted point and no other lotic diving beetle was found. At other five localities, the type series were collected from pools and quiet areas of small stream or moderate sized river. In these waters, this species occurred sympatrically with *P. pictipennis* and *P. fimbriatus* but was rare and collected only from the deep point of the pool where exposed tree roots trapped floating debris (Fig. 4 B).

Etymology. The specific name is a Latin adjective *convexus*, referring to the convex prosternal process.

Discussion

BRANCUCCI (1988) reported that *Platambus pictipennis*, the most similar species to *P. convexus* sp. nov., shows geographic variations in the elytral color pattern, the body size and the aedeagal shape. In addition, *P. pictipennis* shows a weak individual variation also in the shape of prosternal process according to the present study. However, *P. convexus* sp. nov. and *P. pictipennis* are sympatric in their habitats at least in several localities in Hokkaido and clearly distinguished from each other in the shape of aedeagus and prosternal process. For body size, *P. convexus* sp. nov. is larger than *P. pictipennis* on an average, though the range of two species are more or less overlapped (7.79–8.91, 8.35 ± 0.27 vs. 7.06–8.67, 8.00 ± 0.37). Furthermore, *P. convexus* sp. nov. always represents the developed ferruginous marking on the elytra, whereas *P. pictipennis* from Hokkaido mostly represents the reduced ferruginous marking, and two species were easily separable by these external characters. Therefore, it is doubtless that the present new species is not a local or individual variation of *P. pictipennis*, but should be treated as an independent species separable from other members of the genus.

Key to the Japanese Species of *Platambus maculatus* Species-group

1. Body elongate (TL/MW > 1.89). Pronotum broadly testaceous at sides.
.....*P. fimbriatus* (SHARP, 1884)
- Body oval (TL/MW < 1.88). Pronotum broadly or slightly ferruginous on anterior corners
.....2.
2. Prosternal process flat or subflat. Aedeagus not deflected in lateral view. Metatibiae with an
outer row of punctures.*P. pictipennis* (SHARP, 1873)
- Prosternal process convex or subcarinate. Apical part of aedeagus deflected in lateral view.
Metatibiae with two rows of punctures.*P. convexus* sp. nov.

Comparative specimens examined. *Platambus pictipennis* (SHARP, 1873) (50 specimens from 8 localities in Hokkaido): [Sympatric] 1 male, Chirichiri riv., Yunosato, Shiriuchi-chô, 15–VI–2008; 1 male, Kuroiwa riv., Hanaishi, Imakane-chô, 12–X–2008; 2 males, same locality, 15–V–2010; 1 female, Towarubetsu riv., Kamiyakumo, Yakumo-chô, 4–V–2010; 13 males & 12 females, same locality, 8–V–2010; 2 males & 1 female, same locality, 4–VIII–2010; 3 females, Tazawa riv., Tazawa, Esashi-chô, 6–IX–2009; [Allopatric] 3 males & 5 females, Shirarika riv., Kuroiwa, Yakumo-chô, 8–V–2010; 1 male, Pipairo riv., Fushimi, Memuro-chô, 10–VIII–2009; 4 males &

1 female, Anntaroma riv., Touunn, Aibetsu-chô, 19-IX-2010.

Platambus fimbriatus (SHARP, 1884) (30 specimens from 8 localities in Hokkaido): [Sympatric] 1 male, Kuroiwa riv., Hanaishi, Imakane-chô, 12-X-2008; [Allopatric] 4 males & 6 females, Kisonnpetanu riv., Kamiyakumo, Yakumo-chô, 18-X-2008; 2 males & 1 female, Yuurappu riv., Kamiyuurappu, Yakumo-chô, 15-V-2010; 2 females, Shirarika riv., Kuroiwa, Yakumo-chô, 16-IX-2009; 4 males & 1 female, same locality, 8-V-2010; 1 male, Pipairo riv., Fushimi, Memuro-chô, 10-VIII-2009; 1 male & 1 female, Touro (pond), Shibechea-chô, 8-VIII-2009; 1 male, Anntaroma riv., Touunn, Aibetsu-chô, 19-IX-2010; 2 males & 3 females, Shiriuchi riv., Kamirai, Shiriuchi-chô, 16-X-2010. All specimens were collected by R. OKADA, deposited in ROC and measured for comparison.

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要 約

岡田亮平：北海道から発見されたモンキマメゲンゴロウ属 *Platambus* (コウチュウ目ゲンゴロウ科) の 1 新種。——北海道から発見されたモンキマメゲンゴロウ属の 1 種を新種と認め、*Platambus convexus* (ニセモンキマメゲンゴロウ) として記載した。本種は、国内の流水性ゲンゴロウの中で最普通種とされるモンキマメゲンゴロウ *Platambus pictipennis* に類似するが、前胸腹板突起が竜骨状を呈すること、雄交尾器中央片の先端部が反り返ること、および体サイズが大きいことで次種とは容易に識別される。加えて、本種とモンキマメゲンゴロウは北海道の複数の河川において同所的に生息することから、これらが別種であると判断した。

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