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A New Species of the Genus *Hydrochus* (Coleoptera, Hydrochidae) from Fukushima, Northeastern Japan

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Abstract A new species, *Hydrochus mitamurai* sp. nov. is described from Honshu, Japan. This new species is similar to *H. chubu* Balfour-Browne et Satô, 1962, and is distinguished from the latter by the following characteristics: head and dorsal surface concolor, iridescent red green; pronotum wider than long; anterior half of 4th interstriae raised; apex of elytral suture shallowly and circularly excised; parameres long and slender.

Introduction

The genus *Hydrochus* Leach, 1817 is represented by about 300 species from all over the world, and four species, *H. japonicus* Sharp, 1873, *H. aequalis* Sharp, 1884, *H. chubu* Balfour-Browne et Satô, 1962, and *H. laferi* Schatrovskiy, 1995, have been known from Japan (Balfour-Browne & Satô, 1962; Satô & Yoshitomi, 2005, 2018).

In this paper we describe *Hydrochus mitamurai* sp. nov. as the fifth representative of *Hydrochus* in Japan. We also provide photographic images and a key to species of Japanese *Hydrochus* for accurate identification.

Material and Methods

Type specimens and the material examined in this study are deposited in the following collections:

CKH: Collection of Kei Hirasawa, Fukushima, Japan
CKY: Collection of Kazuya Yamazaki, Ibaraki, Japan
CTM: Collection of Toshimasa Mitamura, Fukushima, Japan
CSY: Collection of Shigeyuki Yoshii, Fukushima, Japan
EUMJ: Ehime University Museum, Matsuyama, Japan

Specimens were observed using a stereoscopic microscope (Nikon SMZ-800). Male genitalia were mounted on hollow slides with pure glycerin and observed under a microscope (Olympus BH-2). After observation, the parts were mounted on slides with Canada balsam. Ecological photo (Fig. 1B) was taken using an Olympus OM-D E-M1 Mark II digital camera with Olympus 60 mm macro lens. Photograph of the habitat (Fig. 1C) was taken using an iPhone 11 Pro. A series of photographs of specimens with different focal planes for each species were taken using an Olympus OM-D E-M1 Mark II digital camera equipped with an extension tube and Olympus 60 mm macro lens and combined by focus stacking software CombineZP (Hadley, 2010).

Measurements of various body parts are abbreviated as follows: EL — elytral length along the suture; EW — maximum width of elytra; HL — head length along the midline; HW — head width across eyes; PL — pronotal length along the midline; PW — maximum width of pronotum; TL — total length (HL + PL + EL). All measurements are in mm, the arithmetic mean is indicated in parenthesis after the range.

Taxonomy

Key to Species of Japanese *Hydrochus*

1. Elytra with odd interstriae slightly raised; mesal part of mentum concave and strongly impressed. ····· 2
— Elytra with odd interstriae distinctly raised; postero-mesal part of mentum concave. ····· 3
2. Pronotal depression distinct. Elytra with odd interstriae slightly raised. Pronotum slightly longer than wide. Coloration of dorsum dark brown, with weak green to indigo blue metallic luster. ····· *H. japonicus* SHARP (Fig. 3A)
— Pronotal depression indistinct. Elytra with odd interstriae flat. Pronotum wider than long. Coloration of dorsum black, with strong iridescent red green metallic luster. ····· *H. aequalis* SHARP (Fig. 3B)
3. Pronotal depression distinct. Head and dorsum black, with iridescent red green metallic luster. Anterior half of 4th elytral interstriae raised. Pronotum wider than long, with antero-lateral corners projecting anteriorly. ····· *H. mitamurai* sp. nov. (Figs. 1A & 3C)
— Pronotal depression indistinct. Head and dorsum bicolored. Fourth elytral interstriae flat. Pronotum with antero-lateral corners not projecting. ····· 4
4. Coloration of dorsum dark brown, with strong metallic luster. Head infuscate. Pronotum as long as wide. ····· *H. chubu* BALFOUR-BROWNE & SATÔ (Fig. 3D)
— Coloration of dorsum dark brown, with weak metallic luster. Head black. Pronotum wider than long. ····· *H. laferi* SCHATROVSKIY (Fig. 3E)

Hydrochus mitamurai sp. nov.

[Japanese name: Bandai-hosogamushi]

(Figs. 1A, B, 2, 3C & F)

Type material. Holotype: ♂ (EUMJ), Konan-machi, Kôriyama-shi, Fukushima Pref., Japan, 14.IV.2021, K. HIRASAWA leg. Paratypes: Japan. [Honshu] Fukushima Pref.: 1 ♂, 3 ♀♀ (CKH, EUMJ), same locality as for the holotype, 21.VII.2018, K. HIRASAWA leg.; 1 ♂, 1 ♀ (CKY), ditto, 21.VII.2018, K. YAMAZAKI leg.; 1 ♀ (CTM), ditto, 21.VII.2018, T. MITAMURA leg.; 3 ♂♂, 8 ♀♀ (CKH, EUMJ), ditto, 8.IV.2021, K. HIRASAWA leg.; 7 ♀♀ (CKH), ditto, 11.IV.2021, K. HIRASAWA leg.; 2 ♂♂, 1 ♀ (CKH), ditto, 14.IV.2021, K. HIRASAWA leg.; 2 ♀♀ (CSY), ditto, 2.V.2021, S. YOSHII leg. ; 5 ♂♂, 15 ♀♀ (CKH, EUMJ), ditto, 24.VI.2021, K. HIRASAWA leg. ; 4 ♂♂, 6 ♀♀ (CKH), ditto, 24.VI.2021, K. HIRASAWA leg.; 8 ♂♂, 15 ♀♀ (CKH, EUMJ), ditto, 9.VII.2021, K. HIRASAWA leg.

Description. M a l e. Body (Figs. 1A, B & 3C) elongate, about 2.8 times as long as wide; coloration black, with iridescent red green metallic luster.

Head (Figs. 1A, B & 3C) iridescent red green, with metallic luster; HL/HW 0.59–0.66 (0.63).

Pronotum (Figs. 1A & 3C) wider than long, PW/PL 1.10–1.20 (1.14), widest slightly behind anterior margin, narrowed at base, strongly and clearly punctate; sides sinuate, minutely denticulate; anterior margin bisinuate; median depression deep.

Elytra (Figs. 1A & 3C) with odd interstriae distinctly raised; anterior half of 4th interstriae raised; humeri gently arcuate; suture shallowly and circularly excised just before apex; EL/EW 1.69–1.85 (1.77); EL/PL 2.77–3.11 (2.89); EW/PW 1.39–1.46 (1.43); TL/EW 2.68–2.92 (2.80).

Parameres (Fig. 2) long and slender, slightly widened in lateral subapical angles (*plsa* in PERKINS, 2020), sparsely punctate, obtuse at apices. Basal piece short, about 0.5 times as long as parameres, sub-

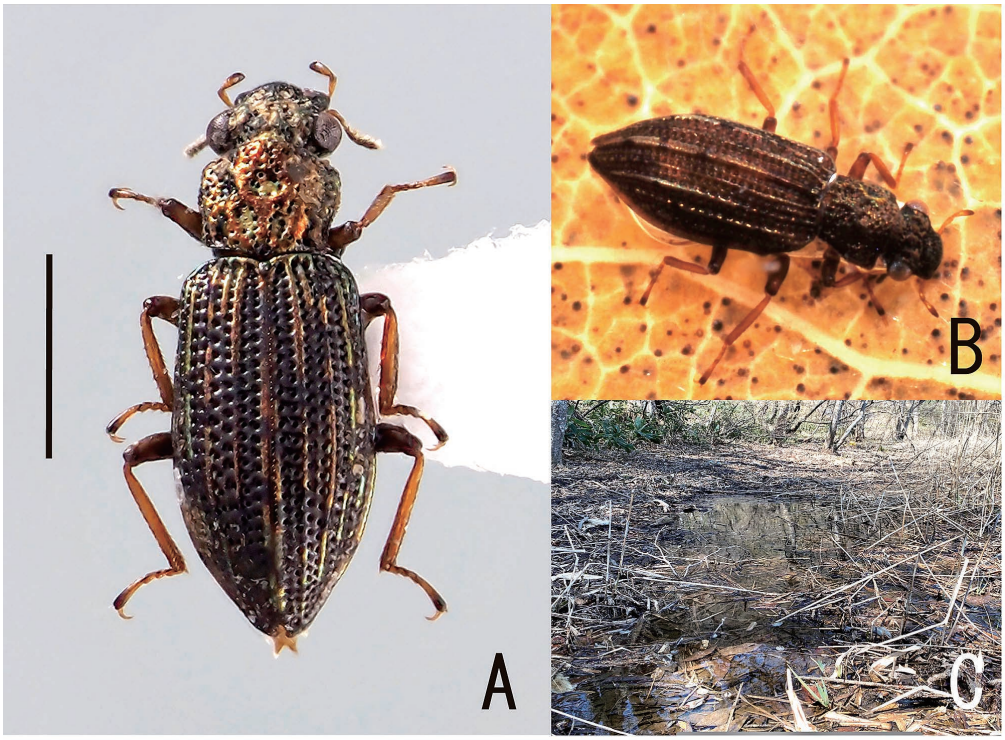

Fig. 1. *Hydrochus mitamurai* sp. nov. —— A, Holotype, male; B, living individuals (in laboratory); C, habitat (type locality).

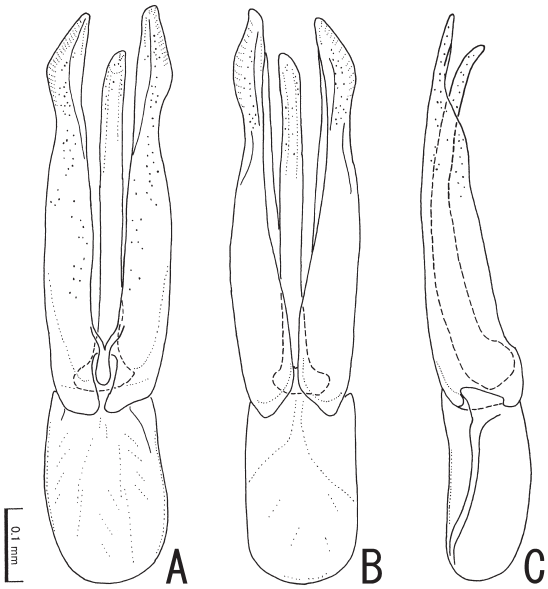

Fig. 2. Male genitalia of *Hydrochus mitamurai* sp. nov. —— A, Dorsal view; B, ventral view; C, lateral view.

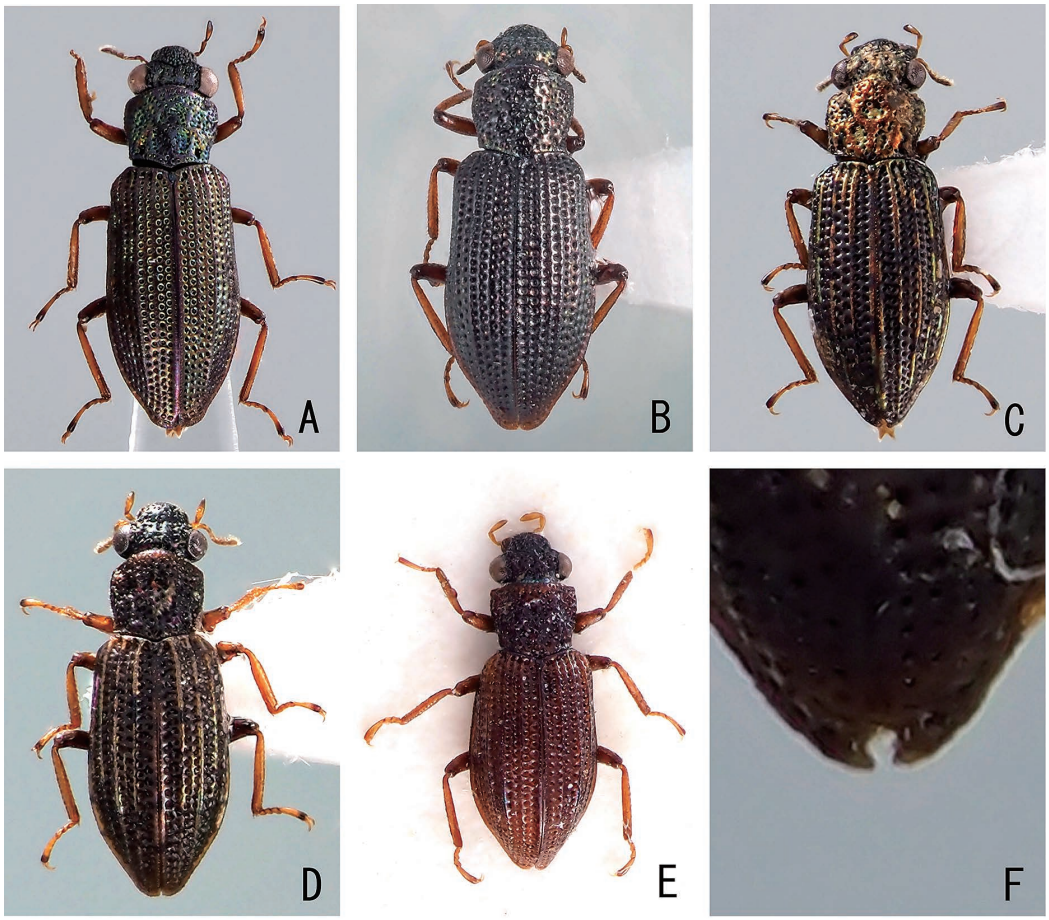

Fig. 3. *Hydrochus* spp. in Japan. —— A, *H. japonicus* SHARP, 1873; B, *H. aequalis* SHARP, 1884; C & F, *H. mitamurai* sp. nov. (F: apex of elytra); D, *H. chubu* BALFOUR-BROWNE & SATÔ, 1962; E, *H. laferi* SCHATROVSKIY, 1995.

parallel-sided, arcuate in basal margin. Aedeagus (Fig. 2) long and slender, slightly shorter than parameres, slightly curved dorsally, subparallel-sided from near base to apical 1/9, obtuse at apex (Fig. 2).

F e m a l e. Sexual dimorphism indistinct; HL/HW 0.62–0.77 (0.65); PW/PL 1.10–1.24 (1.16); EL/EW 1.60–1.78 (1.70); EL/PL 2.56–3.12 (2.91); EW/PW 1.37–1.61 (1.47); TL/EW 2.52–2.82 (2.71).

Measurements. Male (n = 5): TL 2.55–2.92 (2.74); HL 0.38–0.43 (0.40); HW 0.61–0.70 (0.64); PW 0.64–0.74 (0.69); PL 0.56–0.65 (0.60); EL 1.58–1.86 (1.74); EW 0.92–1.07 (0.98). Female (n = 14): TL 2.47–2.98 (2.74); HL 0.38–0.46 (0.42); HW 0.53–0.70 (0.65); PW 0.61–0.79 (0.69); PL 0.53–0.68 (0.59); EL 1.56–1.88 (1.73); EW 0.90–1.13 (1.01).

Distribution. Japan (Honshu: Fukushima Pref.).

Etymology. The specific name *mitamurai* is dedicated to Dr. Toshimasa MITAMURA, who taught the first author the splendor of the world of insects and has provided a lot of guidance.

Bionomics. The type locality of *Hydrochus mitamurai* is a swamp adjacent to the lake (Fig. 1C). This species is collected only in this place, and the following aquatic insects were collected in the same time: *Aquarius paludum* (FABRICIUS), *Gerris latiabdominis* MIYAMOTO, *Micronecta sedula* HOR-

VÁTH, *Hebrus pilosellus* KANYUKOVA, *Chartoscirta elegantula* (FALLÉN), *Appasus major* (ESAKI), *Laccotrephes japonensis* SCOTT, *Noterus japonicus* SHARP, *Leiodytes frontalis* (SHARP), *Hyphydrus laeviventris* SHARP, *Laccophilus difficilis* SHARP, *Laccophilus lewisius* SHARP, *Ilybius apicalis* SHARP, *Enochrus haroldi* (SHARP), *Enochrus japonicus* (SHARP), *Hydrochus chubu* BALFOUR-BROWNE & SATÔ, *Hydraena miyatakei* SATÔ.

In general, four Japanese hydrochid species have different suitable habitats, and only one species is found in one place (MORI, 2017). The only exception has been known from Tsugaru, Aomori Prefecture, Japan, where *H. aequalis* and *H. chubu* were collected sympatrically (MORI, 2019). Present study is the second report of two hydrochid species collected in same locality.

Remarks. This species is distinguished from the sympatric species *Hydrochus chubu* Balfour-Browne & SATÔ (Fig. 3D) by the following characteristics: head and dorsal surface concolor, with iridescent red green luster (Figs. 1A & 3C); pronotum wider than long; anterior half of 4th interstriae raised (Figs. 1A & 3C); apex of elytral suture shallowly and circularly excised (Fig. 3F); parameres long and slender (Fig. 2).

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要　　約

平澤　桂・吉富博之：日本産ホソガムシ属 *Hydrochus*（鞘翅目ホソガムシ科）の 1 新種．――――日本産ホソガムシ科の 5 番目の種として福島県郡山市から 1 新種バンダイホソガムシ *Hydrochus mitamurai* sp. nov. を記載した．本種は同所的に分布するチュウブホソガムシ *Hydrochus chubu* BALFOUR-BROWNE & SATÔ とは頭部と体背面が赤緑色の光沢を有し同色であること，前胸背板は長さより幅広いこと，鞘翅第 4 間室の前半が隆起すること，鞘翅先端は会合部で弱く円形にえぐれることから区別される．日本産ホソガムシ属 5 種の検索表も示した．

References

BALFOUR-BROWNE, J., & M. SATÔ, 1962. On the Japanese species of the genus *Hydrochus* LEACH (Coleoptera, Hydrochidae). *Niponius*, *Acta Coleopterologica*, *Takamatsu*, **1** (19):1–6.

HADLEY, A., 2010. Combine ZP [freeware]. Downloaded from: http://www.hadleyweb.pwp.blueyonder.co.uk/ (downloaded on 20 Dec. 2020; currently available from: https://combinezp.software.informer.com/).

MORI, M., 2017. [Aquatic water scavenger beetles in Hyogo Prefecture]. *Kiberihamushi*, *Kobe*, **39**: 42–52. (In Japanese.)

MORI, M., 2019. [Sympatric case of two *Hydrochus* species]. *Gekkan-Mushi*, *Tokyo*, (582): 42–44. (In Japanese.)

PERKINS, P. D., 2020. Taxonomy of Guatemalan water beetles in the genus *Hydrochus* (Coleoptera: Hydrochidae). *Acta Entomologica Musei Nationalis Pragae*, *Praha*, **60**: 291–301.

SATÔ, M., & H. YOSHITOMI, 2005. Taxonomic notes on the aquatic Coleoptera of Japan, IV. *Coleopterists' News*, *Tokyo*, (151): 1–6. (In Japanese, with English title & summary.)

SATÔ, M., & H. YOSHITOMI, 2018. [Coleoptera.] Pp. 707–790. *In* KAWAI, T., & K. TANIDA (eds.), *Aquatic Insects of Japan*: *Manual with Keys and Illustrations*. Second edition. 1,730 pp. Tokai University Press, Hiratsuka. (In Japanese.)

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