

Description of *Philydrodes houkibou* sp. nov. (Coleoptera, Staphylinidae, Omaliinae) from Western Shikoku, Japan

Yoshihiro SENDA

c/o Hiwa Museum of Natural Science, Hiwa 1119–1, Hiwa, Shōbara City, Hiroshima, 727–0301 Japan
e-mail: geostix666@gmail.com

Abstract A new streamside inhabiting omaliine species, *Philydrodes houkibou* sp. nov., is described from a mountainous area of western Shikoku, Japan. Distinctions from the closely related species and detail illustrations of male and female genital parts are given. A key for identification of the *Philydrodes* species known from Shikoku is also provided.

Introduction

Presently, the genus *Philydrodes* BERNHAUER, 1929, belonging to the subfamily Omaliinae, family Staphylinidae, consists of 34 species, all of which are distributed in East Asia (SCHÜLKE & SMETANA, 2015; SHAVRIN, 2017). Generally, members of this genus are found in streamside habitats in mountainous areas and the distribution range of each species is restricted to a narrow area.

Most of the known species of this genus are distributed in Japan, except five species recently described from China (SHAVRIN, 2017). Among the Japanese species, 22 have been known from Honshu, six from Shikoku, and the remaining one from Kyushu. In Shikoku, five *Philydrodes* species (*P. tsurugisanus* WATANABE, 1990, *P. yoshidai* WATANABE, 1990, *P. sanukiensis* WATANABE, 2009, *P. yuji* WATANABE, 2012, and *P. kumosoensis* WATANABE, 2012) are known from the eastern part (WATANABE, 1990, 2009, 2012), while only one species, *P. rufescens* WATANABE, 1990, is known from the western part (WATANABE, 1990) (Fig. 3). Therefore, the *Philydrodes* fauna have not yet been clarified satisfactorily in western Shikoku.

Recently, I examined a pair of *Philydrodes* specimens collected from a mountainous area of western Shikoku. After close examination, I came to a conclusion that it is an undescribed species, and I describe it as new species in this paper.

Material and Methods

This study was based on dried specimens preserved in the Ehime University Museum, Matsuyama (EUMJ).

The verbatim label data indicated by double quotation marks (“ ”) are given for the holotype and the line breaks of the label are indicated by a slash (/).

The observational methodology was mainly followed HANLEY and ASHE (2003) and MARUYAMA (2004, 2006), but female terminalia were soaked in 5 % KOH solution during 8–10 hours under the room temperature.

Terminology was mainly followed MARUYAMA (2006), but adopted HERMAN (2010) for female genital organs.

The abbreviations for measurements are follows: AL — antennal length; BL — body length (approximate whole length); EL — elytral maximum length; EW — elytral maximum width; FBL —

forebody length (HL + PL + EL); HL — head length (apex of clypeus to posterior margin of head capsule); HW — head maximum width; PL — pronotal maximum length; PW — pronotal maximum width.

Taxonomy

Philydrodes (Philydrodes) houkibou sp. nov.

(Figs. 1–3)

Type series. Holotype (EUMJ): ♂, “[Ehime: Japan] / Mt. Ishiduchi (名野川越) / Saijō-shi {Alt. 1450 m} / 1. VI. 2003 / T. Kurihara leg.” [printed on white label], “T. Kurihara / Collection” [printed on yellow label], “HOLOTYPE / *Philydrodes houkibou* / Senda, sp. nov. / Det. Y. Senda, 2018” [printed on red label]. (Left sixth to eleventh antennal segments and left elytron are missing. Right three antennal segments are repaired. Postgenae and the middle of basal 1/4 of the pronotum are broken.) Paratype (EUMJ): 1 ♀, same data as the holotype.

Comparative Material Examined. *Philydrodes (Philydrodes) rufescens* WATANABE, 1990: [Japan: Shikoku] 1 ♂, 1 ♀, The University Forest of Ehime University (alt. ca 900 m), Komeno-machi, Matsuyama-shi, Ehime Pref., 2.VI.2018, Y. SENDA leg.

Description. Coloration: Body black, lightly shining; mandibles, labrum, anterior part of frons, antennae, legs and elytra dark reddish brown, but mandibles, antennae, apical 1/4 of femora and tibiae darker; labial palpi and maxillae yellowish brown; maxillary palpi brown.

Male. Body spindle-shaped, flattened dorsoventrally. Head subtriangular in dorsal view, postocular part expanded laterally and constricted at neck, well convex dorsally, with distinct wide depression on frons between antennal tubercles and the rear of vertex; surface with sparse punctures. Eyes small, somewhat prominent. Ocelli small and distinct. Antennae long; first antennomere 1 widest at middle; antennomeres 3–10 almost fusiform; antennomere 11 bullet-shaped, rounded at apex; the ratio of length/width of each antennomere as follows: 3.20, 2.00, 3.00, 2.69, 2.92, 3.17, 3.50, 3.50, 3.15, 2.57, 3.62; relative lengths of antennomeres: 26.67 : 10.00 : 15.00 : 11.67 : 12.67 : 12.67 : 14.00 : 14.00 : 13.67 : 12.00 : 15.67, and relative widths: 20.83 : 12.50 : 12.50 : 10.83 : 10.83 : 10.00 : 10.00 : 10.00 : 10.83 : 11.67 : 10.83. Pronotum subtrapezoidal, widest just behind anterior corner; disk sparsely covered with punctures; anterior margin projected at middle, rounded at corners; posterior margin slightly emarginate at middle, orthogonally angulate at corners. Scutellar shield impunctate, with microsculpture. Elytra widest at apical 1/4, slightly and arcuately expanded from base to widest point, thence narrowed apically, with disk coarsely and very shallowly punctured. Mesoventrite aseptose, with microsculpture; inter coxal process very short, pointed at apex. Metaventricle shallowly and sparsely punctured, pubescent; inner coxal process very short, rounded at apex. Legs simple, slender. Abdomen covered with minute punctures and microsculptures; eighth tergite furnished with some macrosetae, arcuate at caudal margin; eighth sternite furnished with some macrosetae, emarginate at caudal margin; ninth tergite (Fig. 2A) with many micropores, setigerous in apical part; ninth sternite (Fig. 2B) elongate, widest at apical 1/4, feebly expanded toward widest point, thence strongly narrowed apically, with many micropores, setigerous in apical 1/3; tenth tergite (Fig. 2A) somewhat transverse, feebly narrowed apically, with many macrosetae and several pores, with caudal margin emarginate. Aedeagus (Fig. 2C, D) robust, well sclerotized; median lobe curved ventrally, bulbous about basal 1/2, narrowest at apical 1/5, feebly contracted to narrowest point, thence strongly dilated toward barely emarginate apex in ventral view, longitudinally and weakly raised to venter along the

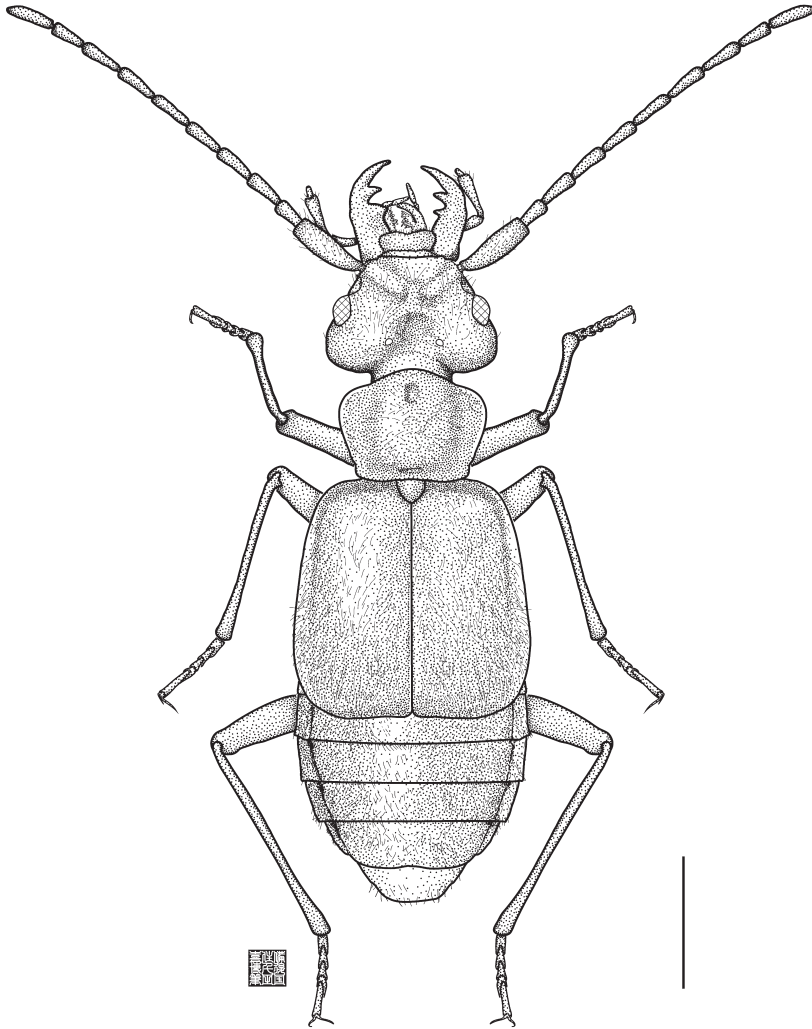


Fig. 1. Dorsal habitus of *Philydrodes houkibou* sp. nov., male. Scale: 2.00 mm.

median line in apical 1/3 of apical lobe; apex of the raised portion rounded in dorsal view, with some pores on ventral surface of apical lobe; parameres somewhat slender, shorter than apical lobe, rounded at apex, with pores mainly on ventral side; inner sac densely covered with numerous small aciculate spicules as in Fig. 2E.

F e m a l e. Similar to male in general appearance. Head smaller, subtrapezium in dorsal view. The ratio of length/width of each antennomere as follows: 3.89, 2.00, 3.58, 2.91, 3.17, 3.45, 3.17, 3.25, 3.17, 2.5, 3.75; relative lengths of antennomeres: 25.00 : 10.00 : 15.36 : 11.43 : 13.57 : 13.57 : 13.57 : 13.93 : 13.57 : 12.50 : 16.07, and relative widths: 16.36 : 12.73 : 10.91 : 10.00 : 10.91 : 10.00 : 10.91 : 10.91 : 10.91 : 12.73 : 10.91. Eighth tergite furnished with some macrosetae, truncate at caudal margin; eighth sternite furnished with some macrosetae, arcuate at caudal margin; ninth tergite (Fig. 2F, H) separated into two plates, with some micropores on ventral side; tenth tergite elongate, widest at apical 1/4, feebly expanded to widest point, thence narrowed apically, with some macrosetae

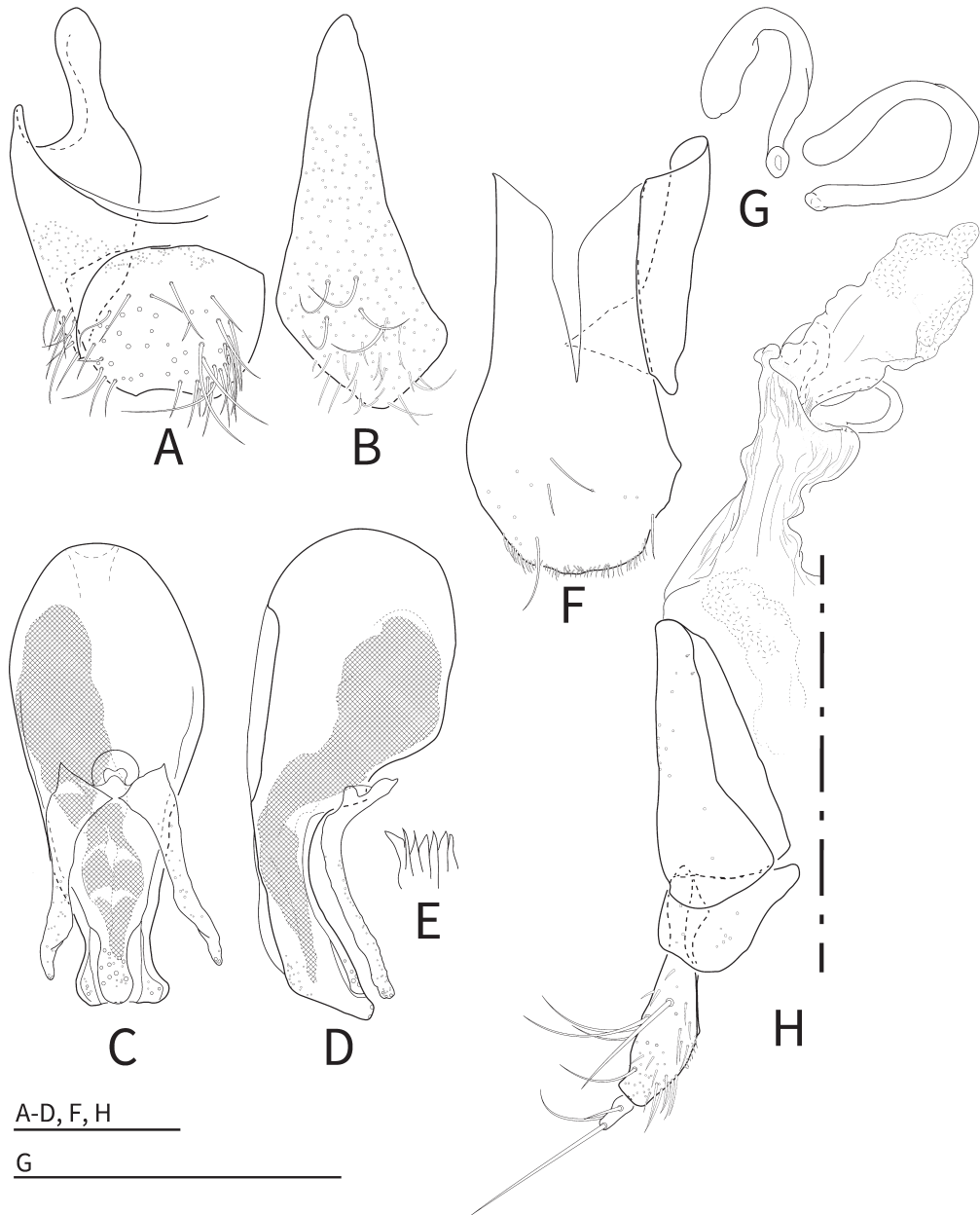


Fig. 2. Male (A–E) and female (F–H) terminalia of *Philydrodes houkibou* sp. nov. — A & F, Ninth (left half in male and right half in female) and tenth tergite; B, ninth sternite; C, aedeagus in ventral view; D, aedeagus in lateral view; E, small spicules on internal sac; G, spermatheca in ventral view; H, gonocoxites with vagina. Scale: 0.20 mm

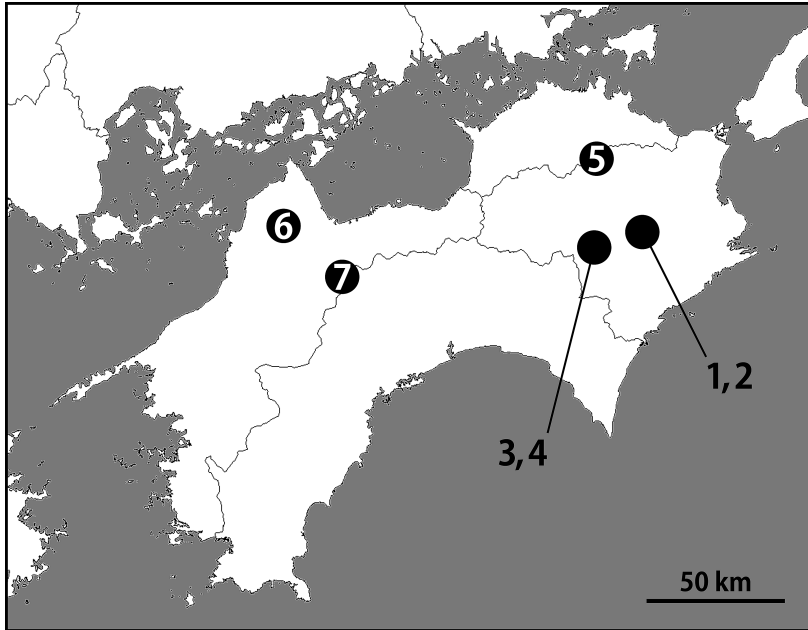


Fig. 3. Geographical distributions of *Philydrodes* spp. in Shikoku, Japan — 1, *P. kumosoensis*; 2, *P. yujii*; 3, *P. yoshidai*; 4, *P. tsurugisanus*; 5, *P. sanukiensis*; 6, *P. rufescens*; 7, *P. houkibou* sp. nov.

and pores in apical 1/3, fringed with fine setae along barely emarginate caudal margin, with basal margin deeply incised. Gonocoxites as shown in Fig. 2H; proximal gonocoxite smaller than distal gonocoxites, without macrosetae, with some minute pores; distal gonocoxite with several macrosetae and pores, sparsely fringed with fine setae on inner side; styli subconical, with several macrosetae; medial gonocoxite lacking. Vagina (Fig. 2H) membranous, without any sclerites. Spermatheca (Fig. 2G, H) membranous, distinctly curved, more or less bulbous in apical 1/3.

Measurements. Male ($n = 1$; in mm) — BL: 6.34; FBL: 4.54; HL: 1.15; HW: 1.75; AL: 4.74; PL: 1.04; PW: 1.60; EL: 2.35; EW: 2.06. — HL/HW = 0.66; AL/FBL = 1.04; PL/PW = 0.65; PW/HW = 0.91; EL/EW = 1.14; EW/PW = 1.29.

Female ($n = 1$; in mm) — BL: 6.66; FBL: 4.58; HL: 1.01; HW: 1.37; AL: 4.44; PL: 1.07; PW: 1.43; ELL: 2.50; ELW: 2.58. — HL/HW = 0.74; AL/FBL = 0.97; PL/PW = 0.57; PW/HW = 1.04; EL/EW = 0.97; EW/PW = 1.80.

Diagnosis. This new species is closely similar to *Philydrodes rufescens*, but distinguishable from the latter by following character states: 1) elytra very shallowly punctured; 2) apical lobe of aedeagal median lobe longitudinally and weakly raised ventrad along the median line in apical 1/3 (in *P. rufescens*: elytral punctures slightly shallow, and apical lobe of aedeagal median lobe longitudinally and distinctly raised ventrad along the median line in apical 1/2).

Distribution. Japan: Shikoku (known only from Mt. Ishizuchi-san in the western part of the Shikoku Mountains.)

Etymology. The specific name is derived from “Ishizuchisan-houkibou”, which is a kind of Tengu (a type of legendary creature, god, or supernatural beings in Japan) in a local folk religion in Mt. Ishizuchi-san area, the type locality of this new species.

Key to the Species of the Genus *Philydrodes* from Shikoku, Japan

The following key is modified from WATANABE (1990).

1. Postocular part not expanded laterally in male; elytra with a pair of oblique yellowish maculae; penultimate maxillary palpomeres distinctly thickened apically and less than three times as long as broad; lateral margins of pronotum invisible from above in anterior 1/3.
..... Subgenus *Minyphilydrodes* WATANABE 2
- Postocular part expanded laterally in male; elytra unicolored, without any maculae; penultimate maxillary palpomeres somewhat slender, weakly thickened apically, and more than three times as long as broad; lateral margins of pronotum completely visible from above in full length.
..... Subgenus *Philydrodes* BERNHAUER 3
2. FBL \geq 2.5 mm; apical lobe of aedeagal median lobe gradually narrowed apicad.
..... *P. kumosoensis* WATANABE
- FBL < 2.5 mm; apical lobe of aedeagal median lobe strongly narrowed apicad.
..... *P. yujii* WATANABE
3. Small species (BL \leq 5.0 mm); apex of paramere reaching half point of apical lobe of aedeagal median lobe.
..... *P. yoshidai* WATANABE
- Large species (BL > 6.0 mm); apex of paramere completely exceeding over half point of apical lobe of aedeagal median lobe. 4
4. Head broader than pronotum in both sexes; median lobe of aedeagus curved ventrad, but not raised to venter along the median line in apical lobe.
..... *P. tsurugisanus* WATANABE
- Head broader than pronotum in male, but as broad as one in female; median lobe of aedeagus more or less longitudinally raised to venter along the median line in apical 1/2–1/3 of apical lobe. 5
5. Apex of the raised portion in apical lobe of aedeagal median lobe acutely pointed in dorsal view.
..... *P. sanukiensis* WATANABE
- Apex of the raised portion in apical lobe of aedeagal median lobe rounded in dorsal view. 6
6. Apical lobe of aedeagal median lobe longitudinally and distinctly raised ventrad along the median line in apical 1/2.
..... *P. rufescens* WATANABE
- Apical lobe of aedeagal median lobe longitudinally and weakly raised ventrad along the median line in apical 1/3.
..... *P. houkibou* sp. nov.

Acknowledgements

I gratefully acknowledge the kind help of Dr. Masahiro SAKAI and Dr. Hiroyuki YOSHITOMI (both EUMJ) for reviewing the draft, as well as their kind cooperation in various ways, and to Dr. Junsuke YAMASAKO (National Institute for Agro-Environmental Sciences), Mr. Yûji KATAYAMA (Kôchi City), and Mr. Ryôhei NITTA (Takahashi City) for their support during the field survey.

要 約

千田喜博：イシヅチカタホソヨツメハネカクシ (新種新称) (鞘翅目ハネカクシ科ヨツメハネカクシ亜科) を四国西部から記載。———愛媛県石鎚山において採集されたカタホソヨツメハネカクシ属 *Philydrodes* BERNHAUER の一種を詳細に検討した結果、未記載種であると考えられたので、新種イシヅチカタホソヨツメハネカクシ *Philydrodes houkibou* sp. nov. と命名記載した。本新種は愛媛県高縄半島から知られるチャイロカタホソヨツメハネカクシ *P. rufescens* WATANABE に明らかに近縁と考えられるが、上翅の点刻の状態や雄交尾器の形状によって区別できる。なお、本論文では、四国産本属の種の検索表を付与した。

References

- HANLEY, R. S., & J. S. ASHE, 2003. Techniques for dissecting adult aleocharine beetles (Coleoptera: Staphylinidae). *Bulletin of Entomological Research, Cambridge*, **93**: 11–18.
- HERMAN, L. H., 2010. Generic revision of the Procirrina (Coleoptera: Staphylinidae: Paederinae: Pinophilini). *Bulletin of the American Museum of Natural History, New York*, **347**: 1–78.
- MARUYAMA, M., 2004. A permanent slide under a specimen. *Elytra, Tokyo*, **32**: 276.
- MARUYAMA, M., 2006. Revision of the Palearctic species of myrmecophilous genus *Pella* (Coleoptera, Staphylinidae, Aleocharinae). *National Science Museum Monographs, Tokyo*, (32): 1–207.
- SCHÜLKE, M., & A. SMETANA, 2015. Staphylinidae. Pp. 304–900. In LÖBL, I., & D. LÖBL (eds.), *Catalogue of Palaearctic Coleoptera*, **2/1. Hydrophiloidea – Staphylinoidea. Revised and updated edition**. xxv + 900 pp. Brill, Leiden / Boston.
- SHAVRIN, A. V., 2017. Five new species of the genus *Philydrodes* BERNHAUER, 1929 from China (Coleoptera: Staphylinidae: Omaliinae: Anthophagini). *Zootaxa, Auckland*, **4231** (2): 169–186.
- WATANABE, Y., 1990. A taxonomic study on the subfamily Omaliinae from Japan (Coleoptera, Staphylinidae). *Memoirs of the Tokyo University of Agriculture, Tokyo*, **31**: 55–391.
- WATANABE, Y., 2009. A new species of *Philydrodes* (Coleoptera, Staphylinidae) from Eastern Shikoku, Japan. *Japanese Journal of Systematic Entomology, Matsuyama*, **15**: 343–346.
- WATANABE, Y., 2012. Two new species of the subgenus *Minyphilydrodes* (Coleoptera, Staphylinidae) from eastern Shikoku, Japan. *Japanese Journal of Systematic Entomology, Matsuyama*, **18**: 17–22.

Manuscript received 1 January 2019;
revised and accepted 27 March 2019.