

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

Kohei WATANABE¹⁾ and Yuuki KAMITE²⁾

¹⁾ Ishikawa Insect Museum, 3, Inu, Yawata-machi, Hakusan-shi, Ishikawa, 920–2113 Japan
E-mail: kontyu11@furekon.jp

²⁾ Nagoya City Public Health Research Institute, Hagiyama-chô 1–11, Mizuho-ku, Nagoya, 467–8615 Japan
E-mail: optioservus@yahoo.co.jp

Abstract *Laccophilus yoshitomii* n. sp. is described from Japan (Honshu and Kyushu) on the basis of 188 specimens. *Laccophilus yoshitomii* n. sp. is similar to *L. kobensis* SHARP, but is distinguishable from the latter by the following characteristics: body smaller; penis smaller, with U-shaped apex; each elytron with evident vittae, sutural vitta not extended to apex; short grooves of abdominal ventrites 4–6 slightly fewer.

Key words: *Laccophilus kobensis* species group, taxonomy.

Introduction

The diving beetle genus *Laccophilus* LEACH, 1815 is one of the largest genera in the family Dytiscidae, with 282 recognized species in the world (NILSSON, 2017). Of these, eleven species of the genus have been recorded from Japan (MORI & KITAYAMA, 2002; KAMITE *et al.*, 2005; NILSSON, 2017).

KAMITE *et al.* (2005) revised the Japanese species of the *kobensis* species group, and five species were recognized. KAMITE *et al.* (2005) also pointed out that *Laccophilus kobensis* SHARP, 1873, one of widely distributed species in Japan and its adjacent countries, has three types of the male genital structures (types 1–3). These infraspecific variations were recognized by NAKANE (1959) and BRANCUCCI (1983). In addition, SATÔ (1985) and MORI and KITAYAMA (2002) pointed out that the eastern population of *L. kobensis* is different from the western one in its body size and elytral vittae. As a result of our close reexamination of the specimens of *L. kobensis* and its related species in Japan, we concluded that the type 2 (*sensu* KAMITE *et al.*, 2005) is an independent species. In the present paper, we describe it as a new species with redescription of *L. kobensis*.

Materials and Methods

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

CIN: Collection of Masaki ISHIGURO, Nagoya, Japan

CKA: Collection of Katsumi AKITA, Tsu, Japan

CKN: Collection of Yuuki KAMITE, Nagoya, Japan

CKW: Collection of Kohei WATANABE, Nomi, Japan

EMEC: Essig Museum of Entomology collection, University of California, Berkeley, USA

EUMJ: Ehime University Museum, Matsuyama, Japan

HOWP: Hoshizaki Institute for Wildlife Protection, Izumo, Japan

IIM: Ishikawa Insect Museum, Hakusan, Japan

KMNH: Kitakyushu Museum of Natural History and Human History, Kitakyushu, Japan

NMNS: National Museum of Nature and Science, Tsukuba, Japan

Specimens were observed using stereoscopic microscopes (Nikon SMZ-10A and SMZ-745) and a scanning electron microscope (SEM; HITACHI Miniscope® TM3030Plus). Photographs of the habitus and penis were taken using a Nikon D500 digital camera attached to a Nikon SMZ-10A stereoscopic microscope. Multiple digital photographs were combined by focus stacking, using the digital image processing software Zerene Stacker version 1.04 (Zerene Systems LLC, Richland, WA, USA).

Abbreviations:

EW: maximum width of elytra

TL: anterior margin of clypeus to posterior margin of elytra

The mean and standard deviation of the measurements are indicated in parenthesis after the ranges.

Taxonomy

Laccophilus yoshitomii n. sp.

[Japanese name: Nise-kōbe-tsubu-gengorō]

(Figs. 1A, C, E, 2, 4A, C, 5A, C, E & G)

Laccophilus kobensis SHARP, 1873: KAMITE *et al.*, 2005: 620, fig. 1 [in part].

Type locality. Japan, Ishikawa Pref., Kanazawa-shi, Mageshihara-chō.

Type material. Holotype: 1 ♂ (NMNS), Mageshihara-chō, Kanazawa-shi, Ishikawa Pref., Japan, 31.III.2018, K. WATANABE leg. Paratypes: [Honshu] Akita Pref.: 1 ♀ (CKN), Nagaoka, Kisakata-machi, 27.III.1994, T. IKEDA leg.; 6 ♂♂, 2 ♀♀ (CKW, KMNH), Tōshi, Nikaho-machi, 31.VIII.2005, Y. MINOSHIMA leg. Yamagata Pref.: 1 ♂, 1 ♀ (CKN), Ninotaki, Yuza-chō, 23.X.1993, T. IKEDA leg. Miyagi Pref.: 1 ♂, 1 ♀ (EUMJ), Yutori-numa, 18.VIII.1978, M. SATŌ leg. Ishikawa Pref.: 74 ♂♂, 16 ♀♀ (CKW, CKN, EMEC, EUMJ, IIM), same data as for the holotype; 7 ♂♂, 5 ♀♀ (CKW), ditto, 4. III.2016, K. WATANABE leg.; 14 ♂♂, 10 ♀♀ (CKN), ditto, 12.V.2018, Y. & N. KAMITE leg.; 2 ♂♂, 3 ♀♀ (CKA), ditto, 26.III.1993, M. NONAKA leg.; 4 ♂♂ (CKW), Dairahonmachi, Kanazawa-shi, 28. III.2016, K. WATANABE leg.; 4 ♂♂, 1 ♀ (CKW), ditto, 3.IV.2016, K. WATANABE leg.; 1 ♂ (CKW), Tomurobessho, Kanazawa-shi, 28.III.2016, K. WATANABE leg.; 1 ♂, 1 ♀ (CKA), Shimbo-machi, Kanazawa-shi, 6.VI.1992, M. NONAKA leg.; 3 ♂♂, 3 ♀♀ (CKW), Daishojimitsumachi, Kaga-shi, 24. VIII.2016, K. WATANABE leg.; 1 ♂ (CKW), Kodomari, Misaki-machi, Suze-shi, 14.VI.2016, K. WATANABE leg.; 11 ♂♂, 12 ♀♀ (CKW, IIM), Wakamidori, Kahoku-shi, 20.V.2018, K. WATANABE leg. [Kyushu] Fukuoka Pref.: 1 ♀ (CKN), Shimotobaru, Taihei-mura, 2.XI.2003, J. NAKAJIMA leg.

Description. M a l e. Dorsal aspect: Body broadly oval, gently convex, about 1.8 times as long as wide; almost yellowish brown, weakly lustrous (Figs. 1A, C, E & 2A).

Head yellowish brown, densely microreticulate in integument (Fig. 1A, C & E). Anterior outline not margined. Apical 1/2 of antennomere 11 darkish.

Pronotum gently convex, about 2.7 times as wide as long, densely microreticulate in integument, medial part slightly dent, middle of posterior margin darkish.

Elytra gently convex, about 1.5 times as long as wide, widest at basal 2/5, yellowish brown, densely microreticulate in integument; each elytron furnished with six dark vittae; 1st sutural vitta longest from base to apical 1/10, 2nd from basal 1/5 to apical 1/10, 3rd from basal 1/10 to apical 1/10, 4th from basal 1/10 to apical 1/5, 5th from basal 1/10 to apical 3/10, 6th inarticulate (Figs. 1A, C, E, 2C, D & 5G).

Ventral aspect: Almost yellowish brown, strongly lustrous. Metacoxal process sparsely pubescent

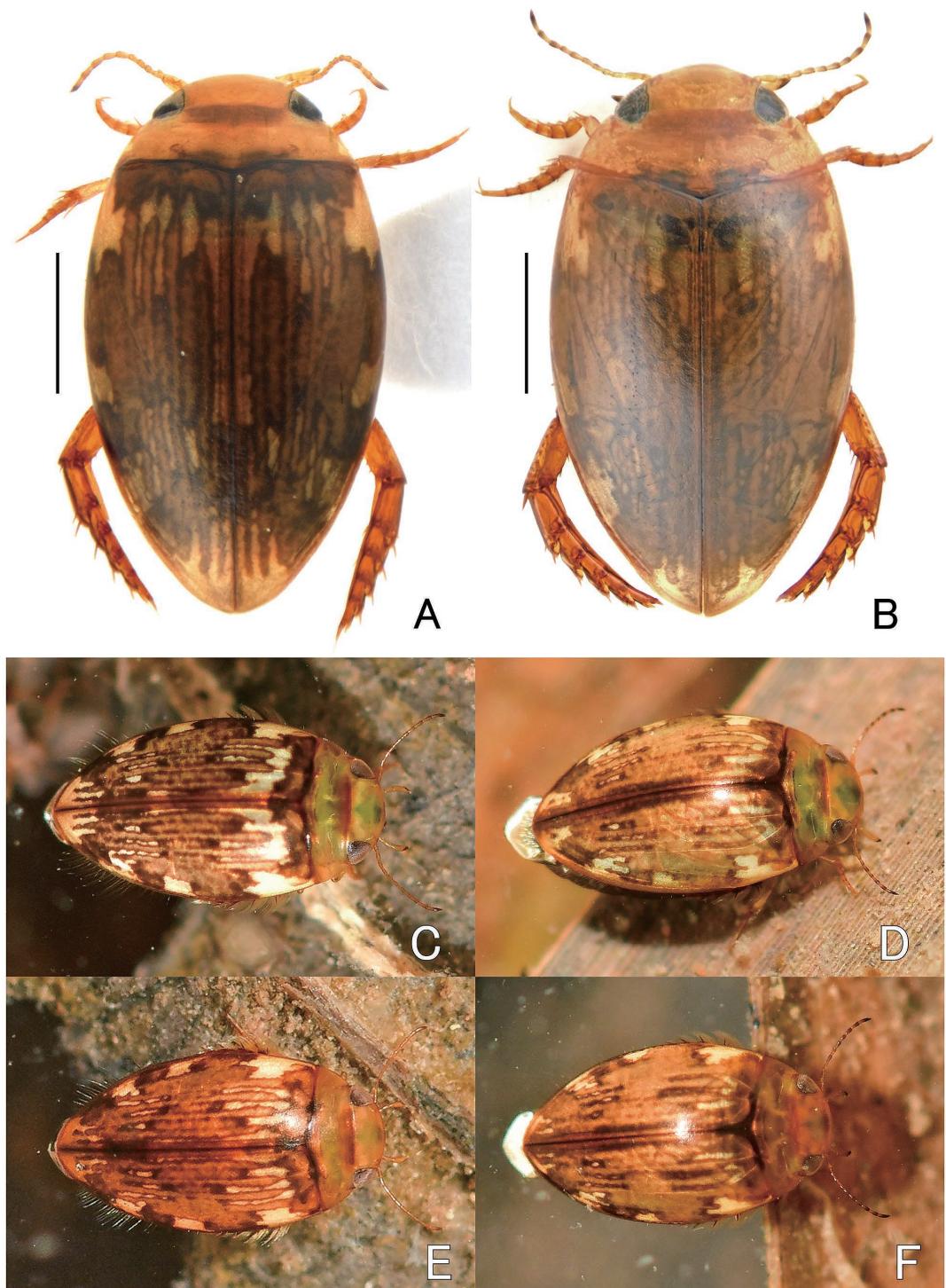


Fig. 1. *Laccophilus* spp. —— A, C & E, *L. yoshitomii* n. sp.; B, D & F, *L. kobensis* SHARP. —— A, Holotype; A & B, habitus; C–F, living specimens. Scales are 1.0 mm. Photographs by Kohei WATANABE.

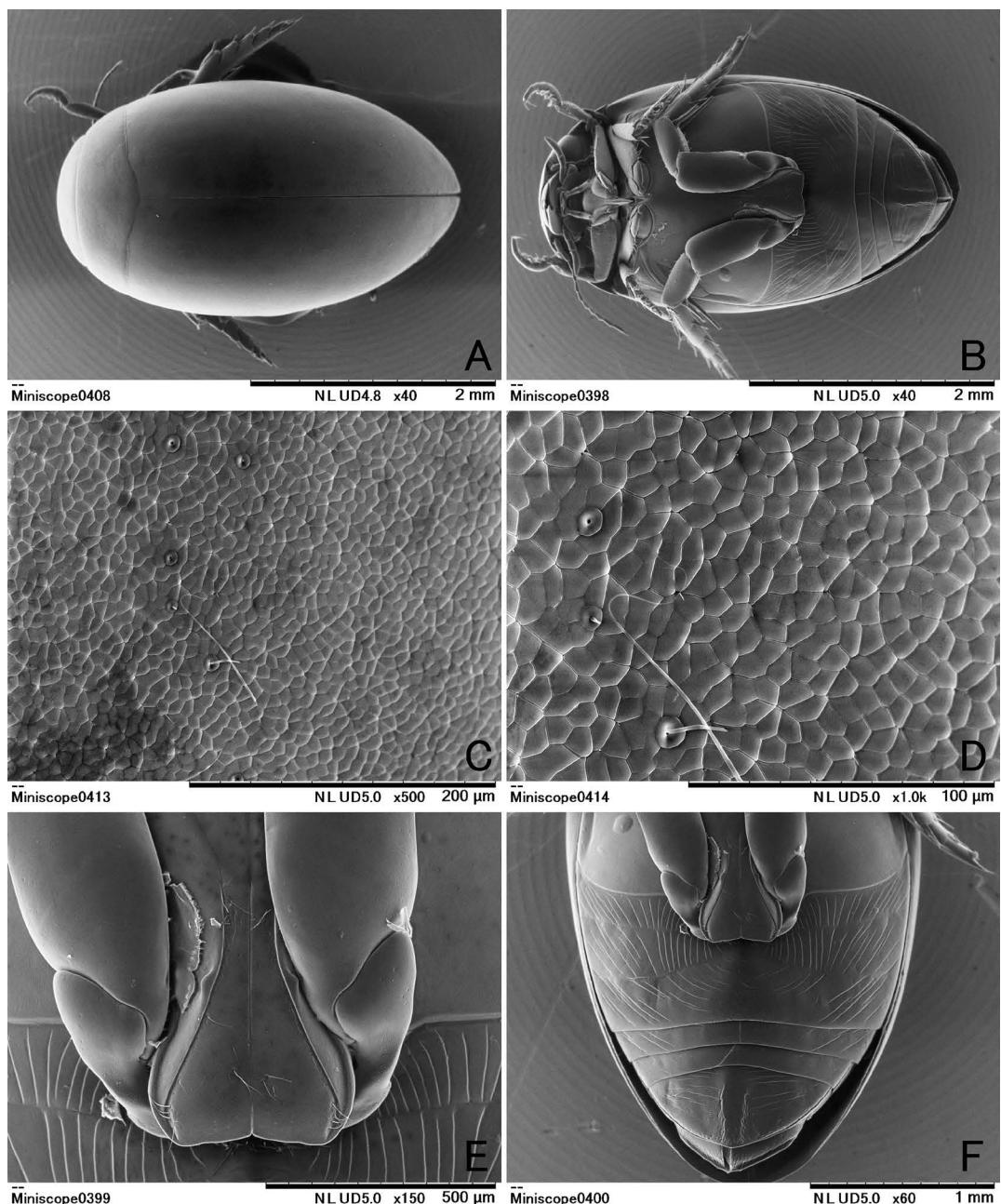


Fig. 2. SEM photographs of *Laccophilus yoshitomii* n. sp., male. —— A & B, Habitus; C & D, medial part of elytra; E, metacoxal process; F, abdomen. —— A, C & D, Dorsal view; B, E & F, ventral view. Photographs by Yuuki KAMITE.

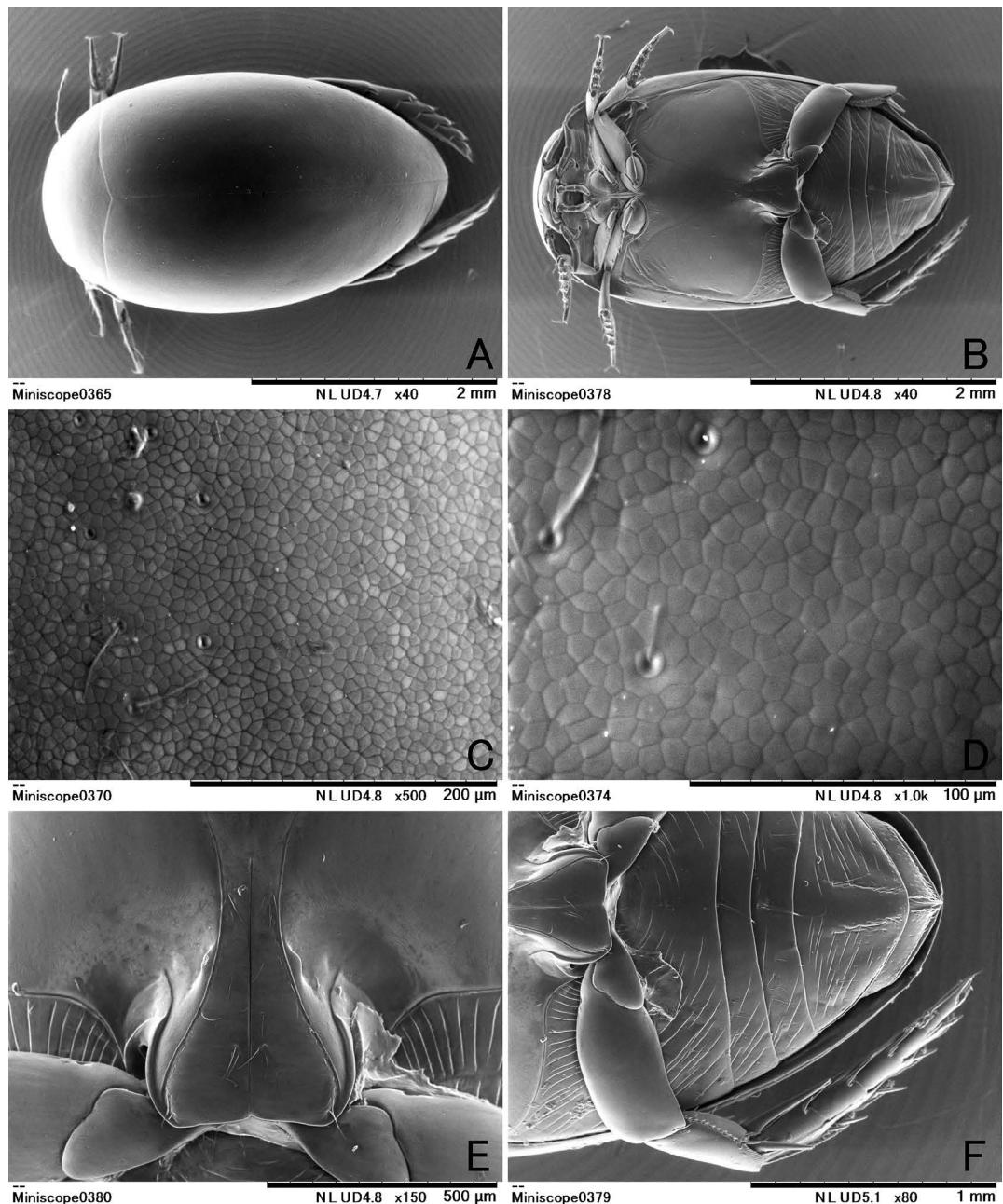


Fig. 3. SEM photographs of *Laccophilus kobensis* SHARP, male. —— A & B, Habitus; C & D, medial part of elytra; E, metacoxal process; F, metathoracic leg and abdomen. —— A, C & D, Dorsal view; B, E & F, ventral view. Photographs by Yuuki KAMITE.

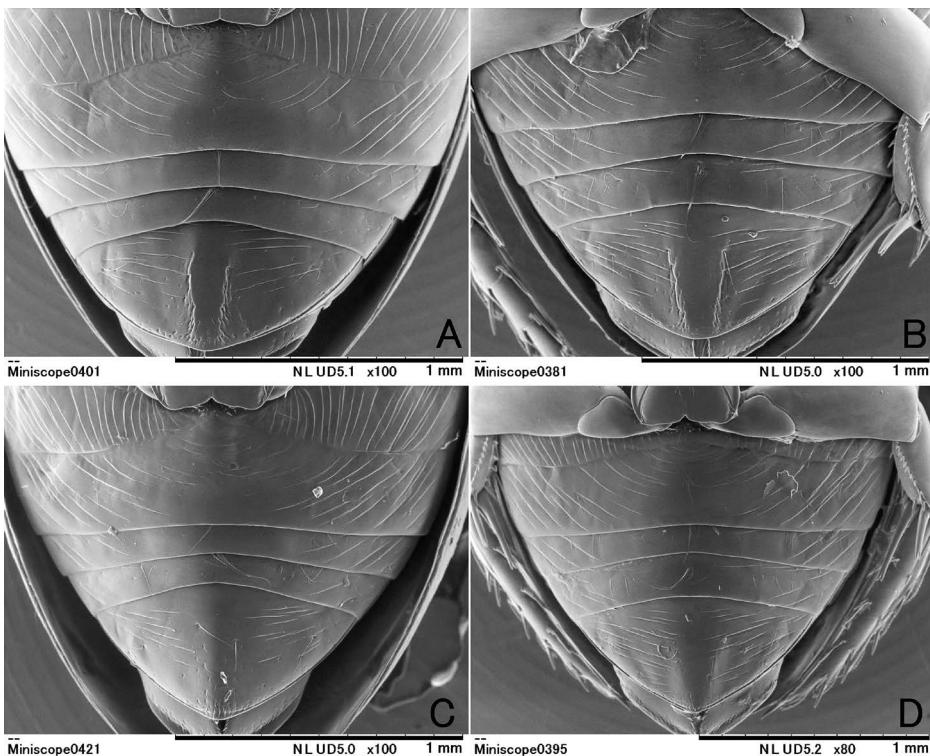


Fig. 4. Abdomen, comparison of short grooves of abdominal ventrites 4–6. —— A & C, *Laccophilus yoshitomii* n. sp.; B & D, *L. kobensis* SHARP. —— A & B, Male; C & D, female. Photographs by Yuuki KAMITE.

(Fig. 2E). Abdomen with slightly sparse striated (Figs. 2B, F, 4A & C), two parallel, densely setiferous puncto-striae in middle of ventrite 6 (Fig. 4A).

Legs: Fore and middle legs yellowish brown, hind legs slightly reddish; pro- and mesotarsi with large ventral fields of adhesive setae.

Male genitalia: Penis (Fig. 5A, C, E): Basal 1/2 of penis relatively stout; penis strongly curved from base to apex in lateral view; apical 1/4 curved outside; apical 1/6 slightly swollen, apex with dent of U-shape in dorsal view, forming a crest in dorso-lateral view.

Female: Externally similar to male but pro- and mesotarsi without large ventral fields of adhesive setae. Middle area of ventrite 6 sparsely punctate, each puncture with a seta (Fig. 4C).

Measurement data and ratios. TL, males ($n = 15$) 3.36–3.70 (3.57 ± 0.10) mm, females ($n = 15$) 3.32–3.82 (3.62 ± 0.14) mm; EW, males ($n = 15$) 1.84–2.13 (2.01 ± 0.07) mm, females ($n = 15$) 1.85–2.16 (2.02 ± 0.08) mm; TL/EW, males ($n = 15$) 1.74–1.82 (1.77 ± 0.02) mm, females ($n = 15$) 1.74–1.82 (1.79 ± 0.02) mm.

Distribution. Japan (Honshu, Kyushu).

Biological notes. The type locality of *Laccophilus yoshitomii* is an oligotrophic pond adjacent to the forest (Fig. 5I), and the following aquatic insects were collected in the same time: *Appasus major* (ESAKI), *Sigara septemlineata* (PAIVA), *Paraplea japonica* (HORVÁTH), *Notonecta triguttata* MOTSCHULSKY, *Microvelia kyushuensis* ESAKI & MIYAMOTO, *Gerris insularis* (MOTSCHULSKY), *G. gracilicornis* (HORVÁTH), *G. latiabdominis* MIYAMOTO, *Peltodytes intermedius* (SHARP), *Noterus japonicus*

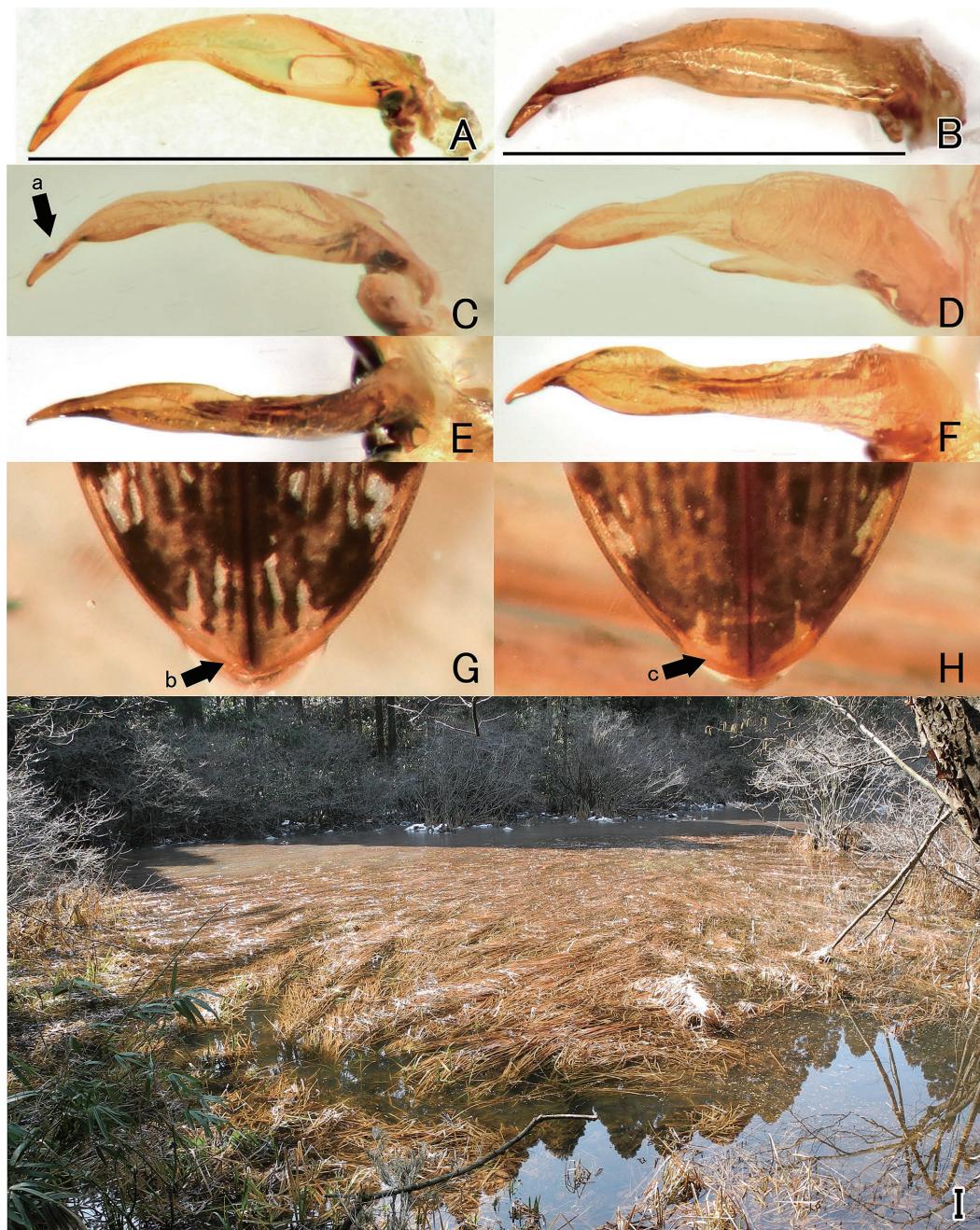


Fig. 5. Penis, parameres and apices of elytra of *Laccophilus* spp. and the type locality. — A–C, E & F, Penis; D, penis & paramere; A & B, lateral view; C & D, dorso-lateral view; E & F, dorsal view; G & H, apex of elytra; I, the type locality of *Laccophilus yoshitomii* n. sp., Mageshihara-chō, Kanazawa-shi, Ishikawa Pref. — A, C, E & G, *L. yoshitomii* n. sp. (paratype); B, D, F & H, *L. kobensis* SHARP. — A–F, Male; a, forming a crest of apex of penis; b, sutural vitta not extended to apex of elytra; c, sutural vitta extended to apex of elytra. Scales are 1.0 mm. Photographs by Kohei WATANABE.

SHARP, *Hydroglyphus japonicus* (SHARP), *Hydroporus uenoi* NAKANE, *Ilybius apicalis* SHARP, *Rhantus suturalis* (MACLEAY), *R. erraticus* SHARP, *Dytiscus sharpi* WEHNCKE, *Helochares nipponicus* HEBAUER, *Sternolophus rufipes* (FABRICIUS), and *Hydraena miyatakei* SATÔ.

Laccophilus yoshitomii has been collected mainly from eastern part of Honshu, and has not been collected with *L. kobensis* sympatrically.

Etymology. The species name *yoshitomii* is dedicated to Dr. Hiroyuki YOSHITOMI (EUMJ), who has provided a lot of guidance and support to us.

Diagnosis. Five species of *Laccophilus kobensis* species group, *L. kobensis* SHARP, *L. difficilis* SHARP, *L. nakajimai* KAMITE, HIKIDA et SATÔ, *L. vagelineatus* ZIMMERMANN and *L. dikinohaseus* KAMITE, HIKIDA et SATÔ, were previously known. *Laccophilus yoshitomii* is similar to *L. kobensis*, but is distinguishable from the latter by the following characteristics: body slightly smaller (Fig. 6); penis slightly smaller, apex with U-shaped dent (dorsal view), forming a crest in dorso-lateral view (Fig. 5A, C & E); each elytron with evident vittae, sutural vitta not extended to apex (Fig. 5G); short grooves of abdominal ventrites 4–6 slightly fewer (Fig. 4A & C). From the other member of the *kobensis* species group, this new species can be distinguished by the following combination of characteristics: body relatively small (smaller than *L. difficilis*, *L. nakajimai* and *L. dikinohaseus*, larger than *L. vagelineatus*); penis smaller than *L. difficilis*, *L. nakajimai* and *L. dikinohaseus*, not angulate at apical 1/6 in lateral view (distinctly angulate in *L. vagelineatus* and *L. dikinohaseus*).

But depending on the condition of specimens, elytral vittae may be not well developed, so the elytral vittae should be carefully used for identification.

Laccophilus kobensis SHARP, 1873

[Japanese name: Kôbe-tsubu-gengorô]

(Figs. 1B, D, F, 3, 4B, D, 5B, D, F & H)

Laccophilus kobensis SHARP, 1873: 53; TAKIZAWA, 1932: 23; KAMIYA, 1938: 6; KUROSA, 1949: 8; NAKANE, 1959: 48; ZAITSEV, 1972: 108; BRANCUCCI, 1983: 277; SATÔ, 1985, 190; NILSSON, 1995: 69; MORI & KITAYAMA, 2002: 101; HÁJEK, 2003: 117; KAMITE et al., 2005, 620; LEE & AHN, 2015: 66; NILSSON, 2017: 219.

Type locality. Kobé (Hiogo) (SHARP, 1873).

Specimens examined. [Honshu] Yamagata Pref.: 8 ♂♂, 4 ♀♀ (CKA, CKW), Iimoriyama, Saka-ta-shi, 19.IX.1993, A. SATÔ leg. Aichi Pref.: 1 ♂ (EUMJ), Donko, Nagoya, 24.III.1944, M. SATÔ leg.; 1 ♂ (EUMJ), Kasugai, 20.V.1956, M. SATÔ leg.; 1 ♂, 2 ♀♀ (CIN), Noma, Mihamachi, Chita-gun, 13.X.1998, M. ISHIGURO leg.; 1 ♀ (CKA), Kôtô (Kiso R.), Bisai-shi, 10.VIII.1995, K. AKITA leg. Gifu Pref.: 1 ♀ (CKN), Ama-ike, Senbiki, Seki-shi, 31.III.1997, K. KINOMURA leg.; 1 ♀ (CKN), Nishikoyabu, Hashima-shi, Nagara-River, 23.IV.2000, K. KINOMURA leg.; 1 ♀ (CIN), Ashimata, Mizunami-shi, 26.IX.1998, M. ISHIGURO leg. Ishikawa Pref.: 6 ♂♂, 5 ♀♀ (CKN, CKW), Kamiyama-machi, Wajima-shi, 26.IX.2016, K. WATANABE leg.; 26 ♂♂, 17 ♀♀ (CKN, CKW), ditto, 1.IV.2018, K. WATANABE leg.; 1 ♀ (CKN), Suzu-shi, Noto, 29.IX.2002, Y. KAMITE leg. Shiga Pref.: 1 ♂ (CKN), Matsunokinaiko, Adogawa-chô, 31.X.2004, Y. KAMITE leg.; 1 ♂ (CKA), Kônan-chô, Kôka-shi, 2.XI.2013, K. AKITA leg.; 4 ♂♂, 4 ♀♀ (CKW), Fukamizo, Shinasaki-chô, Takashima-shi, 4.VII.2017, K. WATANABE leg. Mie Pref.: 3 ♂♂ (CKA), Moto-machi, Hisai-shi, 23.XI.1992, K. AKITA leg.; 1 ♂ (CKA), Katadaido-chô, Tsu-shi, 3.V.1994, K. AKITA leg.; 1 ♂ (CKA), Hokke, Ueno-shi, 2.IX.1994, K. AKITA leg.; 1 ♂ (CKN), ditto, 11.VIII.2001, H. KOUSA & K. KINOMURA leg.; 1 ♂, 1 ♀ (CKN), ditto, 19.VIII.2002, Y. KAMITE leg.; 1 ♂ (CKA), Heki (nr. Kazahaya-ike), Hisai-shi, 21.IX.1993, K. AKITA leg.; 1 ♀ (CKA), ditto, 29.VIII.1999, K. AKITA leg.; 2 ♂♂ (CKA), Utsuho, Ayama-chô, 15.IX.1993, K. AKITA leg.; 1 ♂ (CKA), ditto, 2.X.1993, K. AKITA leg.; 6 ♂♂, 4 ♀♀ (CKA), Yûmen, Ayama-chô, Iga-

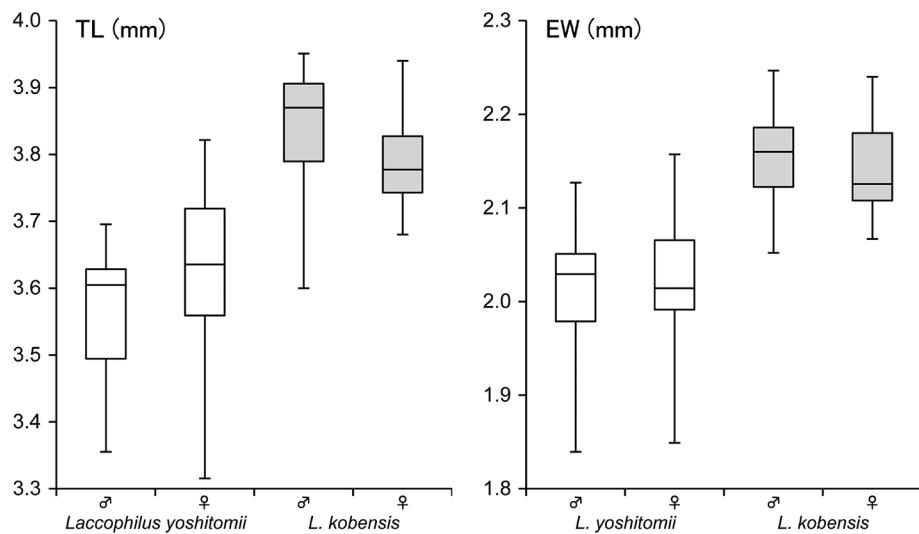


Fig. 6. Box plot showing TL and EW in *Laccophilus yoshitomii* n. sp. and *L. kobensis* SHARP. Both sex and species measured in $n = 15$.

shi, 4.V.2005, K. AKITA leg.; 7♂♂, 12♀♀ (CKA), ditto, 8.X.2011, K. AKITA leg.; 1♀ (CKA), ditto, 24.VIII.2016, K. AKITA leg.; 2♂♂, 1♀ (CKA), Yûmen, Tamataki, Ayama-chô, Iga-shi, 13.X.2012, K. AKITA leg.; 1♀ (CKA), Tamataki, Ayama-chô, Iga-shi, 6.XI.1994, K. AKITA leg.; 1♀ (CKA), Mayumi, Ouchiyama, Taiki-chô, 10.IX.1994, K. AKITA leg.; 1♂, 1♀ (CKA), Momotori, Toshi-jima Is., Toba-shi, 13.X.2001, M. NAKANISHI leg.; 1♂ (CKA), ditto, 28.IV.2013, K. AKITA leg.; 1♀ (CKA), Kuzozu-gawa Riv., Karasu-chô, 20.VI.1997, K. AKITA leg.; 5♂♂, 8♀♀ (CKA), Kuronohama, Kaino, Kiinagashima-chô, 24.VI.2001, I. TAGAMI leg. Wakayama Pref.: 4♀♀ (CKW), Tawara, Kushimoto-chô, 27.VII.2014, R. OKADA leg. Hyôgo Pref.: 2♂♂ (CKN), Aonogahara, Ono, 10.III.1992, M. MORI leg.; 2♂♂ (CKN), Aonogahara, 10.III.1992, M. MORI leg.; 1♂, 1♀ (CKN), ditto, 23.VIII.1993, M. MORI leg.; 2♂♂, 1♀ (CIN), Aonogahara, Kasai-shi, 20.VI.1999, M. ISHIGURO leg. Shimane Pref.: 1♂ (EUMJ), Mitoya-Town, Takuwa, 26.V.1998, H. NAKANISHI leg.; 1♀ (HOWP), Hata, Nozato-chô, Izumo-shi, 16.IV.2008, M. HAYASHI leg.; 3♀♀ (CKW), Hata, Nozato-chô, Hirata-shi, 22.XI.2001, K. KAWANO leg.; 2♂♂, 3♀♀ (CKW), Oohata, Nozato-chô, Hirata-shi, 30.XI.2001, K. KAWANO leg. [Shikoku] Tokushima Pref.: 1♂, 2♀♀ (EUMJ), Mt. Tsurugi, 11–12.VII.1993, N. OHBAYASHI leg.; 1♀ (EUMJ), Mt. Tsurugi, Awa, 29.VII.1960, T. SHIBATA leg.; 6♂♂ (CKA), Shimohamabe, Nada, Mugi-chô, Kaifu-gun, 23.XII.1992, K. UCHIDA leg. Ehime Pref.: 3♂♂, 2♀♀ (CKW), Masuda, Ainan-chô, 19.VIII.2008, K. WATANABE leg.; 1♂, 2♀♀ (CKW), ditto, 30.XI.2008, K. WATANABE leg. [Kyushu] Fukuoka Pref.: 4♂♂, 1♀ (KMNH), Ishikaki, Minou-mura, Ukiha-gun, 13.IX.1938, N. GYOTOKU leg. Nagasaki Pref.: 5♂♂, 3♀♀ (CKW), Kashi-dake, Nakabaru, Tsushima-shi, Tsushima Is., 3.V.2014, R. OKADA leg.; 1♂, 3♀♀ (EUMJ), Tomie, Gotô, 20.IV.1976, S. MORITA leg. [Ryukyu Isls.] Okinawa Pref.: 2♂♂, 7♀♀ (CKA, CKW), Komi, Iriomote-jima Is., 2.V.1993, K. AKITA leg.; 3♂♂, 2♀♀ (IIM), Ootomi-rindô, Haiminaka, Taketomi-chô, Iriomote-jima Is., 16.V.2017, K. WATANABE leg.

Redescription. Male. Dorsal aspect: Body broadly oval, gently convex, about 1.8 times as long as wide, widest at the middle; almost yellowish brown, weakly lustrous (Figs. 1B, D & F). Anterior outline not margined. Apical 1/2 of antennomere 11 darkish.

Head yellowish brown, densely microreticulate in integument (Fig. 1B, D & F). Anterior outline not margined. Apical 1/2 of antennomere 11 darkish.

Pronotum gently convex, about 2.7 times as wide as long, densely microreticulate in integument, medial part slightly dent, middle of posterior margin darkish.

Elytra gently convex, about 1.5 times as long as wide, yellowish brown, densely microreticulate in integument; each elytron furnished with six dark vittae; sutural vitta longest, occupying from base to apex, 2nd from basal 1/8 to near apex, 3rd to 6th inarticulate (Figs. 1B, D, F, 3C, D & 5H).

Ventral aspect: Almost yellowish brown, strongly lustrous. Metacoxal process sparsely pubescent (Fig. 3E). Abdomen with densely striated (Figs. 3F, 4B & D), two puncto-striae with dense setae in middle of ventrite 6 (Fig. 4B).

Legs: Fore and middle legs yellowish brown, hind legs slightly reddish; pro- and mesotarsi with large ventral fields of adhesive setae.

Male genitalia: Penis (Fig. 5B, D, F) gently curved from base to apex; basal 3/5 of penis stout; apical 1/4 curved outside; apical 1/6 slightly swollen, not forming a crest.

Females. Externally similar to male but pro- and mesotarsi without large ventral fields of adhesive setae. Middle area of ventrite 6 sparsely punctate, each puncture with a seta (Fig. 4D).

Measurement data and ratios. TL, males ($n = 15$) 3.60–3.95 (3.83 ± 0.11) mm, females ($n = 15$) 3.68–3.94 (3.80 ± 0.08) mm; EW, males ($n = 15$) 2.05–2.25 (2.15 ± 0.05) mm, females ($n = 15$) 2.07–2.24 (2.15 ± 0.05) mm; TL/EW, males ($n = 15$) 1.74–1.82 (1.78 ± 0.02) mm, females ($n = 15$) 1.65–1.81 (1.77 ± 0.04) mm.

Distribution. Japan: Honshu, Shikoku, Kyushu, Gotô Isls.; Tsushima Isls. — new record, Ryukyu Isls.; Taiwan, China, Korea (LEE & AHN, 2015).

Key to the Japanese Species of *Laccophilus kobensis* Species Group

The key is modified from KAMITE *et al.* (2005).

1. Body broad oval. Elytra furnished with some vague trace of oblique pale markings. Body length: 4.0–4.9 mm. *L. difficilis* SHARP, 1873
- Body oval. Elytra furnished with six dark longitudinal vittae. 2
2. Basal areas of elytra somewhat broadly yellowish brown; some vittae distinct. Body length: 3.9–4.6 mm. *L. nakajimai* KAMITE, HIKIDA et SATÔ, 2005
- Basal areas of elytra blackish. 3
3. Elytra roughly microreticulate in integument, furnished with distinct vittae. Penis distinctly angulate at apical sixth in lateral view. Body length: 3.8–4.7 mm. *L. dikanohaseus* KAMITE, HIKIDA et SATÔ, 2005
- Elytra densely microreticulate in integument. Body length: 3.3–3.7 mm. 4
4. Blackish area of elytra relatively darker. Penis stout and distinctly angulate at apical sixth in lateral view. *L. vagelineatus* ZIMMERMANN, 1922
- Blackish area of elytra relatively paler. Penis slender in lateral view. 5
5. Body larger. Apex of penis without U-shaped dent, not forming a crest in dorso-lateral view. Sutural vitta extended to apex. *L. kobensis* SHARP, 1873
- Body smaller. Apex of penis with U-shaped dent, forming a crest in dorso-lateral view. Sutural vitta not extended to apex. *L. yoshitomii* n. sp.

Acknowledgements

We express our sincere gratitude to Dr. Hiroyuki YOSHITOMI (EUMJ) and Dr. William D. SHEPARD (EMEC) for a critical reading of the manuscript, Dr. Masakazu HAYASHI (HOWP), Dr. Keisuke

KAWANO (The Firefly Museum of Toyota Town), Dr. Yûsuke N. MINOSHIMA (KMNH), Mr. Ryohei OKADA, Mr. Katsumi AKITA and Mr. Masaki ISHIGURO for their kind offer of specimens, Dr. Shûhei NOMURA (NMNS) for his consenting to deposit the specimen in the museum, Mr. Gentarou FUKAGAWA for providing distribution information, Mr. Hirokazu FUKUTOMI (IIM) and Mr. Hisayuki MORITA for providing document, the whole staff of the Ishikawa Insect Museum for showing great cooperation during this research.

要 約

渡部晃平・上手雄貴：日本から発見されたツブゲンゴロウ属 *Laccophilus* (鞘翅目ゲンゴロウ科) の 1 新種。———本州および九州から発見されたツブゲンゴロウ属の新種ニセコウベツブゲンゴロウ (和名新称) *Laccophilus yoshitomii* n. sp. を 188 個体の標本に基づいて記載した (タイプ产地: 石川県金沢市曲子原町)。本種はコウベツブゲンゴロウ *L. kobensis* SHARP に似るが、体長とオス交尾器中央片がやや小さいこと、オス交尾器中央片の先端部がトサカ状になり、先端部背面に U 字状の窪みが認められること、上翅会合部から 1–2 列目の縦条が末端から離れること、腹部腹板 4–6 節の溝状の印刻がより粗いことにより区別できる。

References

- BRANCUCCI, M., 1983. Révision des espèces est-paléarctiques, orientales et australiennes du genre *Laccophilus* (Col. Dytiscidae). *Entomologische Arbeiten Museum G. FREY*, **31/32**: 241–426.
- HÁJEK, J., 2003. The genus *Laccophilus* LEACH in China. Pp. 115–123. In JÄCH, M. A., & L. Ji (eds.), *Water Beetles of China*, **3**. 572 pp. Zoologische-Botanische Gesellschaft in Österreich und Wiener Coleopterologenverein, Wien.
- KAMITE, Y., N. HIKIDA & M. SATÔ, 2005. Notes on the *Laccophilus kobensis* species-group (Coleoptera, Dytiscidae) in Japan. *Elytra, Tokyo*, **33**: 617–628.
- KAMIYA, K., 1938. A systematic study of the Japanese Dytiscidae. *Journal of the Tokyo Nogyo Daigaku*, **5**: 1–68, 7 pls. (In Japanese.)
- KUROSA, K., 1949. Some additions to the Dytiscid-fauna of Shikoku and Kyushu, with a list of Dytiscidae from Oita Prefecture. *The Transaction of the Kinki Coleopterological Society, Osaka*, **4**: 5–10. (In Japanese, with English title.)
- LEE, D. H., & K. J. AHN, 2015. A taxonomic review of the genus *Laccophilus* LEACH (Coleoptera: Dytiscidae: Laccophilinae) in Korea. *Korean Journal of Applied Entomology*, **54**: 63–71.
- MORI, M., & A. KITAYAMA, 2002. Dytiscoidea of Japan (2nd ed.). 231 pp. Bun-ichi Sogo Shuppan, Tokyo. (In Japanese, with English book title.)
- NAKANE, T., 1959. The Coleoptera of Japan, (47). Family Dytiscidae. *Shin-Konchû, Tokyo*, **12** (7/8): 47–52. (In Japanese.)
- NILSSON, A. N., 1995. Annotated check list of the Noteridae and Dytiscidae of China (Coleoptera). Pp. 35–96. In JÄCH, M. A., & L. Ji (eds.), *Water Beetles of China*, **1**. 410 pp. Zoologische-Botanische Gesellschaft in Österreich und Wiener Coleopterologenverein, Wien.
- NILSSON, A. N., 2017. A World Catalogue of the Family Dytiscidae, or the Diving Beetles (Coleoptera, Adephaga). Version 31.I.2017. http://www.waterbeetles.eu/documents/W_CAT_Dytiscidae_2017.pdf
- SATÔ, M., 1985. Dytiscidae. Pp. 183–201, pls. 33–36. In UÉNO, S., Y. KUROSAWA & M. SATÔ (eds.), *The Coleoptera of Japan in Color*, **2**. 514 pp. Hoikusha, Osaka. (In Japanese, with English book title.)
- SHARP, D., 1873. The water beetles of Japan. *Transactions of the Entomological Society of London*, **1873**: 45–67.
- TAKIZAWA, M., 1932. The Dytiscidae of Japan (Part 1) (Noterinae, Laccophilinae). *Insecta Matsumurana, Sapporo*, **7** (1/2): 17–24.
- ZAITSEV, F. A., 1972. Coleoptera IV, Families Amphizoidae, Hygrobiidae, Halipidae, Dytiscidae, Gyrinidae. *Fauna of the U.S.S.R.*, (n. ser.), (58): 1–401. Academii Nauk, Moskva-Leningrad, 1953, Translated from Russian.

Manuscript received 2 June 2018;
revised and accepted 2 November 2018.