



New Records of Genus *Wroughtonia* (Hymenoptera: Braconidae: Helconinae) from Japan

Hirose, Yuki
Fujie, Shunpei
Maeto, Kaoru

(Citation)

Japanese Journal of Systematic Entomology, 29(1):29-36

(Issue Date)

2023-07-15

(Resource Type)

journal article

(Version)

Version of Record

(Rights)

© Japanese Society of Systematic Entomology

(URL)

<https://hdl.handle.net/20.500.14094/0100482618>



New Records of Genus *Wroughtonia* (Hymenoptera: Braconidae: Helconinae) from Japan

Yûki HIROSE¹⁾, Shunpei FUJIE²⁾ and Kaoru MAETO³⁾

¹⁾ Laboratory of Entomology, Graduate School of Agriculture, Tokyo University of Agriculture, 1737 Funako, Atsugi, Kanagawa 243-0034, Japan; E-mail: yhirose1148@gmail.com

²⁾ Osaka Museum of Natural History, Nagaikoen 1-23, Higashisumiyoshi, Osaka 546-0034, Japan. Email: fujie@mus-nh.city.osaka.jp

³⁾ Kobe University, Rokkodai 1-1, Nada, Kobe 657-8501, Japan; E-mail: maeto@kobe-u.ac.jp

Abstract Two braconid species, *Wroughtonia extremiorientalis* (Belokobylskij & Tobias, 1989), comb. nov. and *W. nigra* (Tobias, 1967) (= *W. ruspator* sensu Watanabe, 1972), both previously known from the Russian Far East, are newly recorded from Japan. *W. orientalis* (Shevtakov, 1940) previously known from the Russian Far East, Korea, and Kunashir Island in Chishima Islands, is newly recorded from Honshu in Japan. The male of *W. extremiorientalis* is described for the first time. Bionomics and species group assignment for these species are also discussed.

ZooBank LSID: <https://zoobank.org/References/93AC8E98-D617-4A53-8C08-7057945ED507>

Introduction

The tribe Helconini Förster, 1863 (Braconidae, Helconinae) is known to be the koinobiont larval endoparasitoids of Cerambycidae and Buprestidae (e.g., Watanabe, 1972; van Achterberg, 1987; Yan *et al.*, 2017). Three genera of the tribe have been recorded in Japan: *Helcon* Nees, 1812 (three spp.), *Helconidea* Viereck, 1914 (one sp.), and *Wroughtonia* Cameron, 1899 (seven spp.) (Watanabe, 1931; 1972; Yan *et al.*, 2017; Fujie & Maeto, 2020). The genus *Wroughtonia* has its main distribution in the East Palaearctic and the northeastern part of the Oriental regions (Yan *et al.*, 2017; Long *et al.*, 2020). Yan *et al.* (2017) proposed the *sibirica*-group of the genus *Wroughtonia*.

The *sibirica*-group currently comprises six species from China: *W. acuta* Yan & Chen, 2017, *W. areolata* Yan & van Achterberg, 2017, *W. hei* Yan & Chen, 2017, *W. sibirica* (Tobias, 1967), *W. spinator* (Lepeletier, 1825), and *W. uchidai* (Watanabe, 1931). Chinese species of the *sibirica*-group can be distinguished from other congeneric species by the following morphological features: length of eye 0.7–1.1 times temple in dorsal view (1.3–1.8 times in other species); basal part of first metasomal sternite distinctly longer than wide and basally more or less sculptured (at most as long as wide and smooth basally in other species); length of first metasomal tergite of ♀ 1.5–2.3 times its apical width (1.2–1.5 times in other species). Yan *et al.* (2017) mentioned the species group assignment only for Chinese species, therefore comprehensive studies for the species group will be required.

In this study, we newly found two species of the genus *Wroughtonia* from Japan, i.e. *W. extremiorientalis* (Belokobylskij & Tobias, 1989), comb. nov. and *W. nigra* (Tobias, 1967), both of which were originally described from the Russian Far East. The male of *W. extremiorientalis* is described for the first time. We also newly recognized *W. orientalis* (Shevtakov, 1940) from Honshu in Japan, which was originally described from the Russian Far East and previously known from Korea and Kunashir Island in Chishima Islands (Belokobylskij, 1998; Ku *et al.*, 2001). As a result of this study, eight species of the genus *Wroughtonia*, i.e. *W. cornuta* (Cameron 1886), *W. extremiorientalis*, *W. mikagei* Hedqvist & Togashi, 1979, *W. nigra*, *W. nipponica* Watanabe, 1972, *W.*

orientalis, *W. planidorsum* (Watanabe, 1952), and *W. uchidai*, are currently recognized in Japanese fauna, including the Northern Territories. Bionomics and species group assignment for the three species will be also discussed.

Material & Methods

The specimens deposited in the following institutions/museums were examined: Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, Japan (ELKU), Ehime University Museum, Matsuyama, Japan (EUMJ), Kanagawa Prefectural Museum of Natural History, Odawara, Japan (KPMNH), Insect Museum, National Agriculture and Food Research Organization, Tsukuba, Japan (NARO) (previously referred to as NIAES, National Institute for Agro-Environmental Sciences), Osaka Museum of Natural History, Osaka, Japan (OMNH), Laboratory of Systematic Entomology, Hokkaido University, Sapporo, Japan (SEHU), Laboratory of Entomology, Faculty of Agriculture, Tokyo University of Agriculture, Atsugi, Japan (TUA). The second author also examined the holotypes of *H. extremiorientalis* and *H. nigra* and the specimen of *H. orientalis* deposited in the Zoological Institute of Russian Science Academy, St. Petersburg, Russia (ZISP). Six females of *W. uchidai* (Watanabe, 1931) from Japan [1♀ (holotype), “Kamimotoineppu” [= Nakagawa Dist., Ootoineppu Vil., Kamimotoineppu], 15. VII. 1929, T. Uchida leg. (SEHU); 1♀, Uryu Dist., Horokanai T., 15. VII. 2012, K. Watanabe leg. (KPMNH); 1♀, Kato Dist., Kamishihoro T., Mitsumata, 25. VII. 2022, Y. Hirose leg. (TUA); 1♀, Tochigi Pref., Nasushiobara City, Kamishiobara, 36°59'11.8"N, 139°46'32.4"E, 18. VI. 2016, Y. Kato leg. (KPMNH); 1♀, Tokyo Pref., Nishitama Dist., Okutama T., Mt. Kintai-san, 18. VII. 2022, Y. Hirose leg. (TUA); 1♀, Yamanashi Pref., Nirasaki City, Marunuma T., Malaise trap, 20. VII–1. VIII. 2007, K. Hosoda leg. (OMNH)] were also examined for comparison with *W. nigra* and *W. orientalis*.

The specimens were observed under a stereomicroscope (Nikon SMZ800N and Olympus SZX9). Their photos were taken by a digital microscope (Keyence VHX-1000) or a digital camera (Canon EOS 5D Mark IV) with a Canon MP-E 65 mm f/2.8 1–5× macro lens. The digital camera unit was attached to a Wemacro Automated Focus Stacking Macro Rail

to take several images of close focal plane distance, and these images were later combined by the software Helicon Focus 8. Morphological terminology mainly follows that of van Achterberg (1988).

Bionomical observations on *W. extremiorientalis* and *W. nigra* by the first author, R. Matsumoto, K. Tsuchiya, K. Watanabe, and Y. Yamaguchi are also included (Table 1).

Taxonomy

Family Braconidae

Subfamily Helconinae

Genus *Wroughtonia* Cameron, 1899

Wroughtonia Cameron, 1899: 56; Watanabe, 1972: 3; Gupta & Sharma, 1976: 353; van Achterberg, 1987: 276; Chou & Hsu, 1998: 298. Type species: *Wroughtonia cornuta* Cameron, 1899, by monotypy.

Duportia Kieffer, 1921: 129. Type species: *Duportia cincticornis* Kieffer, 1921 [= *Wroughtonia unicornis* (Turner, 1918)], by monotypy. Syn. by Watanabe (1972).

Spasskia Belokobylskij, 1989: 26; 1998: 420; Singh *et al.*, 2005: 95. Type species: *Spasskia sigalphoides* Belokobylskij, 1989, by original designation. Syn. by Yan *et al.* (2017).

Wroughtonia extremiorientalis (Belokobylskij & Tobias, 1989), comb. nov.

[Japanese name: Onaga-tsuno-komayubachi]

(Figs. 1, 4, 5, 7)

Helconidea extremiorientalis Belokobylskij & Tobias, 1989: 29. Type locality: Primorsky Kray, Russia.

Specimens examined. RUSSIA: 1♀ (holotype), Приморский край [Primorsky Kray], Уссурийский заповедник, 12. VII. 1976, Макаркин leg. (ZISP). JAPAN: [Hokkaido] 1♀, Sapporo City, Hitsujigaoka, 43°00'27"N, 141°24'53"E, 11–18. VII. 2011, Malaise trap, K. Konishi leg. (OMNH) 1♀, Sapporo City, Mt. Maruyama, 43°02'N, 141°18'E, 6. VII. 2017, J. Okayasu leg. (EUMJ); 1♀, same locality, 2. VIII. 2015, K. Kuroda leg. (EUMJ); [Honshu] 5♀♀, Iwate Pref., Mt. Hayachine, V. 1990, ex. beech log, 7–19. VI. 1990, H. Makihara leg. (EUMJ); 1♀, same locality and collector, X. 1989, ex. beech log, 12. VI–13. VII. 1990 (EUMJ); 1♀, Fukushima Pref., Kawairi, nr. Mts. Iide, 27–28. VII. 1987, K. Konishi leg. (NARO); 14♀♀, Fukushima Pref., Hinoemata Vil., 6–7. VIII. 1988, M. Yoshida leg. (NARO); 1♀, Fukushima Pref., Hinoemata Vil., Mt. Aizukomagatake, 30. VI. 1991, M. Yoshida leg. (NARO); 2♀♀, Tochigi Pref. Kuriyama Vil., Kinunuma, 1–14. VIII. 2004, H. Makihara leg. (TUA); 2♀♀, Gumma Pref., Numata City, Tambara, 15–17. VII. 1986, H. Makihara leg. (NARO); 3♀♀, Gumma Pref., Katashina Vil., Mt. Hotaka-san, 1. VIII. 1986, S. Saito leg. (NARO); 5♀♀2♂♂, same locality, 1–2. VIII. 2007, K. Watanabe & M. Irie leg. (TUA); 1♂, same locality, 11. VII. M. Gunji leg. (TUA); 1♀, same locality, 16. VII. 2016, S. Fujioka leg. (NARO); 1♀, Gumma Pref., Tsumagoi Vil., Takamine Highland, 23. VIII. 2016, M. Ito leg. (OMNH); 1♀, Saitama Pref., Chichibu City, Otaki, Forest of University of Tokyo, 5. IX. 2015, Y. Hirose leg. (TUA); 7♀♀, Tokyo, Nishitama Dist., Okutama T., Mt. Kintai-

san, 18. VII. 2022, Y. Hirose leg. (TUA); 1♀, Kanagawa Pref., Yamakita T., Nakagawa, Mt. Hinokibora-maru, 6. VIII. 2005, H. Miyatani leg. (KPMNH); 1♀, Kanagawa Pref., Kiyokawa Vil., Douhira, 1. VIII. 1993, T. Kinoshita leg. (KPMNH); 1♀, same locality and collector, 3. VII. 1994 (KPMNH); 1♀, same locality, 16. VII. 2005, M. Takakuwa leg. (KPMNH); 1♀, same locality and collector, 17. VII. 2005, M. Takakuwa leg. (KPMNH); 1♀, Yamakita Vil., Mt. Komotsurushi-yama, 35°27'N, 138°58'E, alt. 1100–1379m, 2. VIII. 2019, K. Watanabe leg. (KPMNH); 1♀, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkai-san, 35°51'N, 137°31'E, alt. 1670–2090m, 28. VII. K. Watanabe leg. (OMNH); 1♂, same locality, 28. VII. 2013, S. Yoshizawa leg. (OMNH); 2♀♀, Nara Pref., Kawakami Vil., Mt. Azamidake, Nikaidake–Kinomiyazuka, 16. VII. 2009, R. Matsumoto leg. (OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakagatake, 34°07'06"N, 135°53'10"E, alt. 1200m, 8. VIII. 2015, M. Ito leg. (NARO); 13♀♀, Hyogo Pref., Yabu City, Mt. Hyonosen, 35°19'54"N, 134°31'06"E, 4. VIII. 2003, R. Matsumoto leg. (OMNH); 1♂, Hyogo Pref., Yabu City, Mt. Hyonosen, 35. 20°N, 135. 31°E, alt. 880–1280m, 21–22. VII. 2012, K. Watanabe leg. (OMNH); 1♀, Hyogo Pref., Shisou City, Haga-cho, Tokura, 35°18'47.3"N, 134°31'22.6"E, 940 m alt., 14. VIII. 2020, R. Okano leg. (EUMJ); 2♀♀, Tottori Pref., Yazu Dist., Wakasa T., Mt. Hyonosen, 6. VIII. 2011, K. Watanabe leg. (KPMNH & OMNH).

Male. Body length 12.3–14.9 mm, fore wing length 8.9–11.2 mm. Very similar to female, except antennae with 41–45 segments (39–41 segments in female) and dorsal carinae of second metasomal tergites basally distinct (absent to indistinct in female).

Bionomics. Host is unknown. The adult wasps of *W. extremiorientalis* congregated for oviposition on the partly withering or withered trunk of Japanese oak, *Quercus crispula* Blume (Fagaceae) (Figs. 4, 5), on which some species of cerambycid beetles were observed (see detail in Table 1). These cerambycid beetles are therefore possibly the hosts of this species.

Distribution. Russia: Khabarovsk Kray, Primorsky Kray (Belokobylskij & Tobias, 1989; Belokobylskij, 1998); Japan: Hokkaido, Honshu (present study). New to Japan.

Remarks. The Japanese specimens run in the key by Belokobylskij (1998) to *H. extremiorientalis*. The Japanese specimens agree well with the original description (Belokobylskij & Tobias, 1989) and the key characters adopted by Belokobylskij (1998), except for the following character states: body length 12.2–17.5 mm (13–15.5 mm in the original description and the key); ovipositor sheath 2.3–3.2 times longer than body (Fig. 7) (2.7–3.0 times in the original description and the key); hind coxa often entirely darkened (pale brownish red and dark reddish brown apically in the original description and the key); hind femur often mostly reddish brown (pale brownish red, and dark reddish brown apically in the original description and the key). This species is easily distinguished from all other Palaearctic congeners by the long ovipositor sheath (more than 2.3 times as long as body), and the long and slender first and second metasomal tergites (2.4–3.0 times longer than its apical width and 1.2–1.6 times longer than its basal width, respectively).

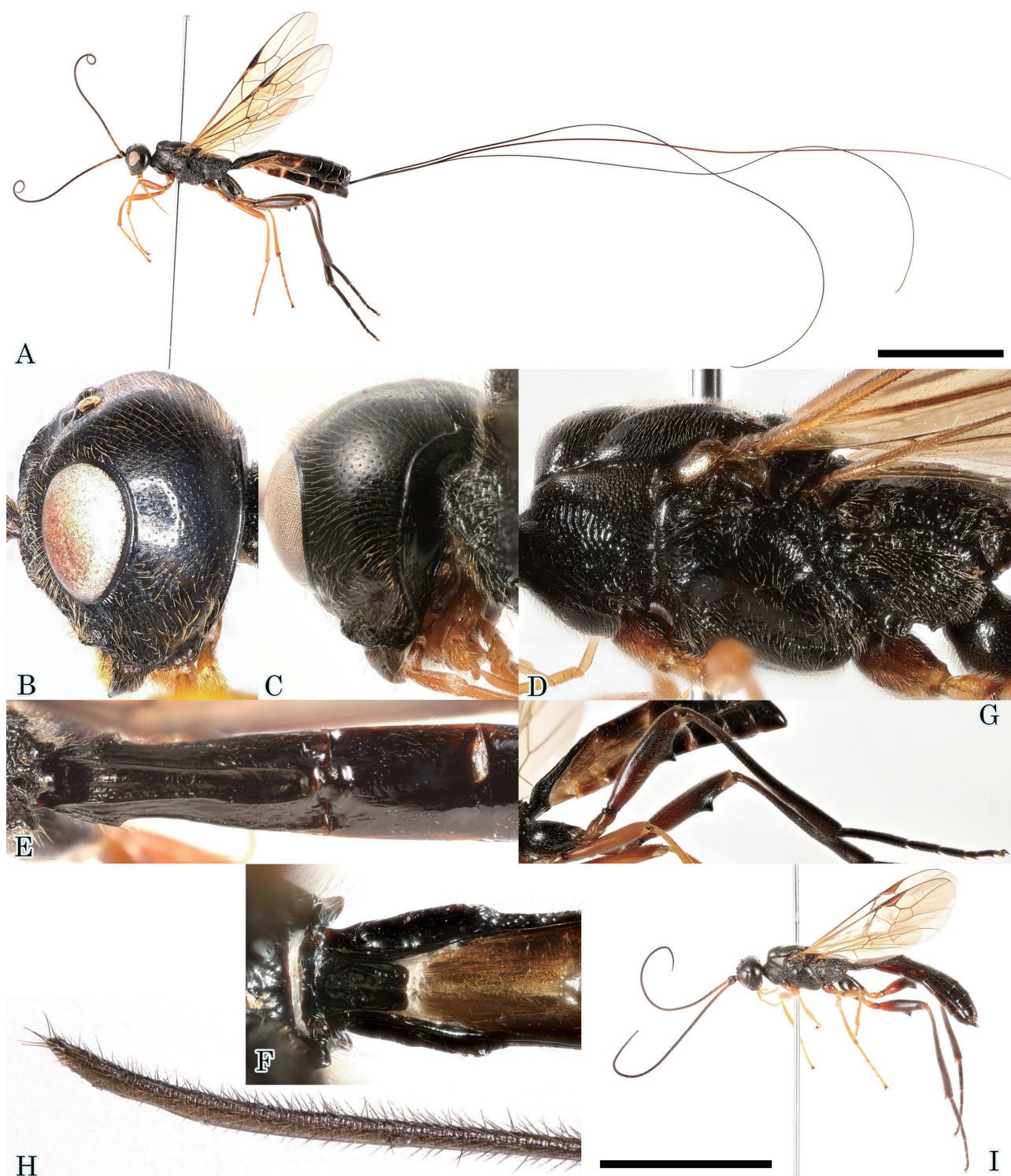


Fig. 1. *Wroughtonia extremiorientalis* (Belokobylskij & Tobias), females, from Tokyo Pref. (A–H); male, from Hyogo Pref. (I). — A, habitus in lateral view; B, head in lateral view; C, head in dorsolateral view; D, mesosoma in lateral view; E, first and second metasomal tergites in dorsal view; F, first metasomal sternite in ventral view; G, hind leg in lateral view; H, apex of ovipositor sheath in lateral view; I, habitus in lateral view. Scale bar 10.0 mm.

According to the generic redefinition by Yan *et al.* (2017), this species should be classified into the genus *Wroughtonia* on the basis of the following combination of characters: occipital flange wide (Fig. 1B); area in front of tegulum without carina and punctulate or punctate (Fig. 1D); prepectal carina present medio-ventrally; apical half of ovipositor sheath with diagonal setae and some long setae apically (Fig. 1H).

This species should be classified into the *W. sibirica*-group by sharing the following morphological characters: the basal part of the first metasomal sternite more or less punctate and distinctly longer than its apical width (Fig. 1F), and the length of the first metasomal tergite of ♀ 2.4–3.0 times its apical width (1.5–2.3 times in Chinese species of the *W. sibirica*-group, while 1.2–1.5 times in other Chinese species), except

Table 1. Plants and Cerambycidae species associated with *Wroughtonia extremiorientalis* and *W. nigra*.

Wasp species	Cerambycidae species observed on the same trunk with the wasps	Host plant species	Locality	Source
<i>W. extremiorientalis</i>	<i>Necydalis odai</i> Hayashi	<i>Quercus crispula</i> (Fig. 4)	Mt. Hyonosen, Hyogo Prefecture, Japan	Observation by R. Matsumoto & K. Watanabe in August 2003 and 2011 (personal communication)
	<i>Leptura ochraceofasciata</i> (Motschulsky)			
	<i>Leptura annularis modicenotata</i> (Pic)			
	<i>Necydalis solida</i> Bates	<i>Quercus crispula</i> (Fig. 5)	Mt. Kintai-san, Tokyo, Japan	Observation by Y. Hirose in July 2019 and 2022
	<i>Necydalis harmandi</i> Pic			
	<i>Leptura ochraceofasciata</i> (Motschulsky)	<i>Tsuga diversifolia</i> (Fig. 6)	Yumoto, Tochigi Prefecture, Japan	Observation by Y. Yamaguchi in August 2022 (personal communication)
	<i>Etorofus vicaria</i> (Bates)			
	<i>Acanthocinus orientalis</i> K. Ohbayashi			
	<i>Megasemum quadricostulatum</i> Kraatz			
	<i>Monochamus nitens</i> (Bates)			
<i>W. nigra</i>	<i>Leptura annularis modicenotata</i> (Pic)	<i>Abies</i> sp.	Mt. Fuji-san, Shizuoka Prefecture, Japan	Observation by K. Tsuchiya in August 2022 (personal communication)
	<i>Leptura ochraceofasciata</i> (Motschulsky)	<i>Abies sachalinensis</i>	Tomuraushi, Hokkaido, Japan	Watanabe (1961)
	–	<i>Picea jezoensis</i>	Khabarovsk Kray, Russia	Tobias (1967)

for the length of eye 1.4 times temple in dorsal view (0.7–1.1 times in Chinese species of the *W. sibirica*-group).

Significant allometry was not found for the length of ovipositor sheath against the length of fore wing in this species (Fig. 7).

Wroughtonia nigra (Tobias, 1967)

[Japanese name: Momobuto-tsuno-komayubachi]

(Figs. 2, 6)

Helconidea nigra Tobias, 1967: 226. Type locality: Khabarovsk Kray, Russia.

Wroughtonia nigra (Tobias, 1967). Transferred by Yan *et al.* (2017).

Helcon ruspator: Watanabe (1931; 1937; 1961) (misidentified). *Wroughtonia ruspator*: Watanabe (1972) (misidentified).

Specimens examined. RUSSIA: 1 ♀ (holotype), Хабаровский край [Khabarovsk Kray], Кабули, ельник-зеленомошник, на стволе сухой ели, 22. VIII. 1962, Г. Юрченко leg. (ZISP). JAPAN: [Hokkaido] 11 ♀♀, “Tomuraushi” [= Kamikawa Dist., Shintoku T.], 25–27. VIII. 1954, C. Watanabe leg., “*Wroughtonia ruspator*”: det. C. Watanabe, 1971” (SEHU); 1 ♀, “Nukabira” [=Kato Dist., Kamishihoro T., Nukabiragensenkyo], 4. VIII. 1949, C. Watanabe leg., “*Wroughtonia ruspator*”: det. C. Watanabe, 1971” (SEHU); 2 ♀♀, Sapporo City, Jozankei, 31. VII. 1907, S. Matsumura leg., “*Wroughtonia ruspator*”: det. C. Watanabe, 1971” (SEHU); 1 ♀, Sapporo City, Jozankei, 16. IX. 1953, T. Oku leg., “*Helcon ruspator*”: det. C. Watanabe, 1961” (ELKU); 1 ♀, Sapporo City, Jozankei, alt. 350m, Malaise trap, 20–30. VII. 1989, K. Maeto & M. Sharkey leg. (NARO); 4 ♀♀, Sapporo City, Atsubetsu Ward, Nopporo Forest park, 12. VIII. 2012, S. Fujie leg. (OMNH); [Honshu] 2 ♀♀, Fukushima Pref., Hinoemata Vil., 28–29. VII. 1990, K. Konishi leg. (NARO); 1 ♀, Tochigi Pref., Nikko City, Yumoto, alt. 1500m, 16. VIII. 2022, Y. Yamaguchi leg. (TUA); 3 ♀♀, Gumma Pref., Tsumagoi Vil., Takamine Highland, 23. VIII. 2016, M. Ito

leg. (OMNH); 9 ♀♀, Tokyo, Nishitama Dist., Okutama T., Mt. Tenmoku-san, 14–15. VIII. 2013, N. Kikuchi leg. (OMNH); 3 ♀♀, Kanagawa Pref., Kiyokawa Vil., Douhira, 23. VIII. 1993, T. Kinoshita leg. (KPMNH); 1 ♀, same locality and collector, 29. VIII. 1993. (KPMNH); 1 ♀, same locality, 1–2. VIII. 2005, M. Takakuwa leg. (KPMNH); 1 ♀, Kanagawa Pref., Yamakita T., Mt. Kanyudouyama, 5. VIII. 1995, M. Takakuwa leg. (KPMNH); 6 ♀♀, Shizuoka Pref., Fuji City, Obuchi, Mt. Fuji-san, 35.305°N, 138.757°E, 31. VII. 2022, K. Tsuchiya leg. (TUA); 1 ♀, Yamanashi Pref., Hokuto City, Masutomi, Biwakubo-sawa Riv., 7. VIII. 2007, K. Watanabe leg. (TUA); 1 ♀, Yamanashi Pref., Koshu City, Enzan, Kamihagihara, 1. VIII. 2016, Y. Hirose leg. (TUA); 1 ♀, Yamanashi Pref., Minobu T., Onuta, 4. VII. 2020, Y. Hirose leg. (TUA); 1 ♀, Nagano Pref., Suwa Dist., Hara Vil., Tatsuba-gawa Riv., alt. 1600m, 6. VIII. 2017, K. Watanabe leg. (KPMNH); 2 ♀♀, Nagano Pref., Minamikoma Dist., Ina City, Hase, Karei Highland, alt. 1160–1800m, 30. VII. 2013, N. Kikuchi leg. (KPMNH); 4 ♀♀, Nagano Pref., Kiso Dist., Outaki Vil., Mt. Hakkai-san, 2. VIII. 2015, M. Ito leg. (OMNH); 1 ♀, Gifu Pref., Takane Vil., Hiwada Highland, 10. VIII. 2007, K. Watanabe leg. (TUA); 2 ♀♀, Gifu Pref., Takayama City, Nabadaira Highland, 36°16′53″N/, 137°34′46″E, alt. 1290m, 13. VIII. 2013, M. Ito leg. (OMNH); 2 ♀♀, Nara Pref., Totsukawa Vil., Mt. Shakagatake, 11. VIII. 2013, S. Fujie leg. (OMNH).

Male. Unknown.

Bionomics. This species appears to be a larval parasitoid of *Leptura ochraceofasciata* (Motschulsky), since it was obtained from timbers of Sakhalin fir, *Abies sachalinensis* (F. Schmidt) Mast., that had been attacked by the cerambycid species (Watanabe, 1961, as *H. ruspator*). The adult wasps of this species congregated for oviposition on the withered trunk of Northern Japanese hemlock, *Tsuga diversifolia* (Maxim.) Mast. (Pinaceae) (Fig. 6) and Pinaceae gen. sp., on which some species of cerambycid beetles were observed (see the detail in Table 1). These cerambycid beetles are therefore possibly additional hosts of this species.

Distribution. Russia: Khabarovsk Kray (Tobias, 1967;

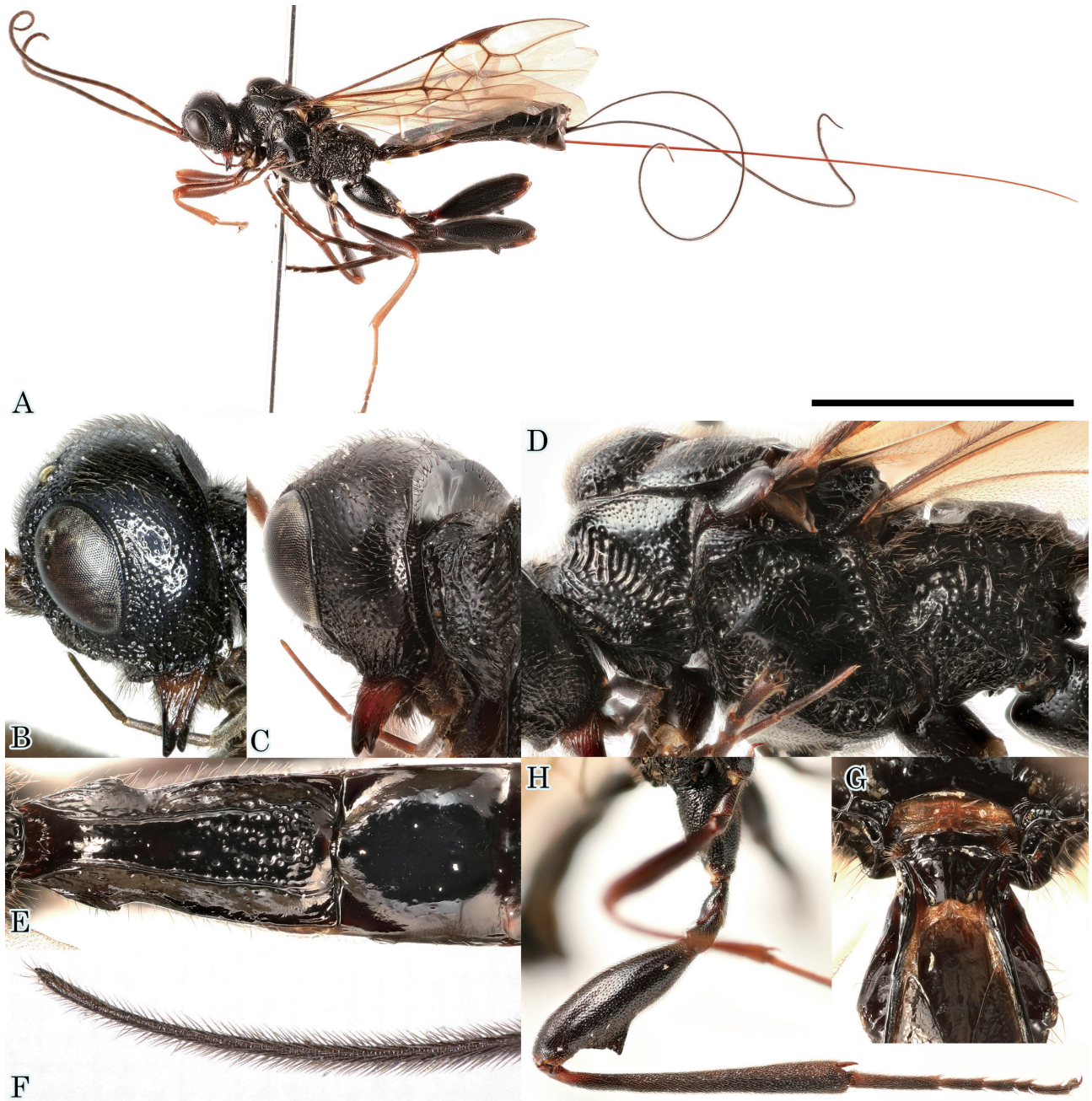


Fig. 2. *Wroughtonia nigra* (Tobias), females, from Gumma Pref. (A–F); from Hokkaido (G, H). — A, habitus in lateral view; B, head in lateral view; C, head in dorsolateral view; D, mesosoma in lateral view; E, first and second metasomal tergites in dorsal view; F, apex of ovipositor sheath in lateral view; G, first metasomal sternite in ventral view; H, hind leg in lateral view. Scale bar 10.0 mm.

Belokobylskij & Tobias, 1989); Japan: Hokkaido, Honshu (present study). New to Japan.

Remarks. The Japanese specimens run in the key by Belokobylskij (1998) to *Helconidea nigra* and agree well with the original description (Tobias, 1967) and the key characters adopted by Belokobylskij (1998), except for the body length 9.8–13.7 mm (11.0–14.0 mm in the original description and the key). According to the original description and the key, the length of ovipositor sheath of this species is equal to the body length, but actually more or less longer in holotype and 1.3–1.5 times in Japanese specimens by our examination.

As a result of examining 15 specimens in SEHU and ELKU, the Japanese female specimens of *H. ruspator* sensu Watanabe (1931, 1937, 1961) and *W. ruspator* sensu Watanabe

(1972) should be assigned to *W. nigra*. However, the Japanese record of *Wroughtonia ruspator* should be retained since we could not examine all the specimens recorded by Watanabe (1931, 1937, 1961).

This species is similar to *W. ruspator* (Linnaeus, 1758), but differs in having the length of first metasomal tergites 1.8–2.4 times longer than its apical width (about 1.6 times in *ruspator*, according to a figure by Hedqvist (1967: Fig. B)) and the hind femur, tibia and tarsus black (Fig. 2H) (light reddish brown in *ruspator*). This species is also closely resembling *W. uchidai*, but differs in having the apical width of first metasomal tergites relatively narrow (Fig. 2E) (the apical width of first metasomal tergites 2.2 times less than its basal width) (2.3–2.6 times in *uchidai*) and the black hind tarsus (Fig. 2H) (yellowish

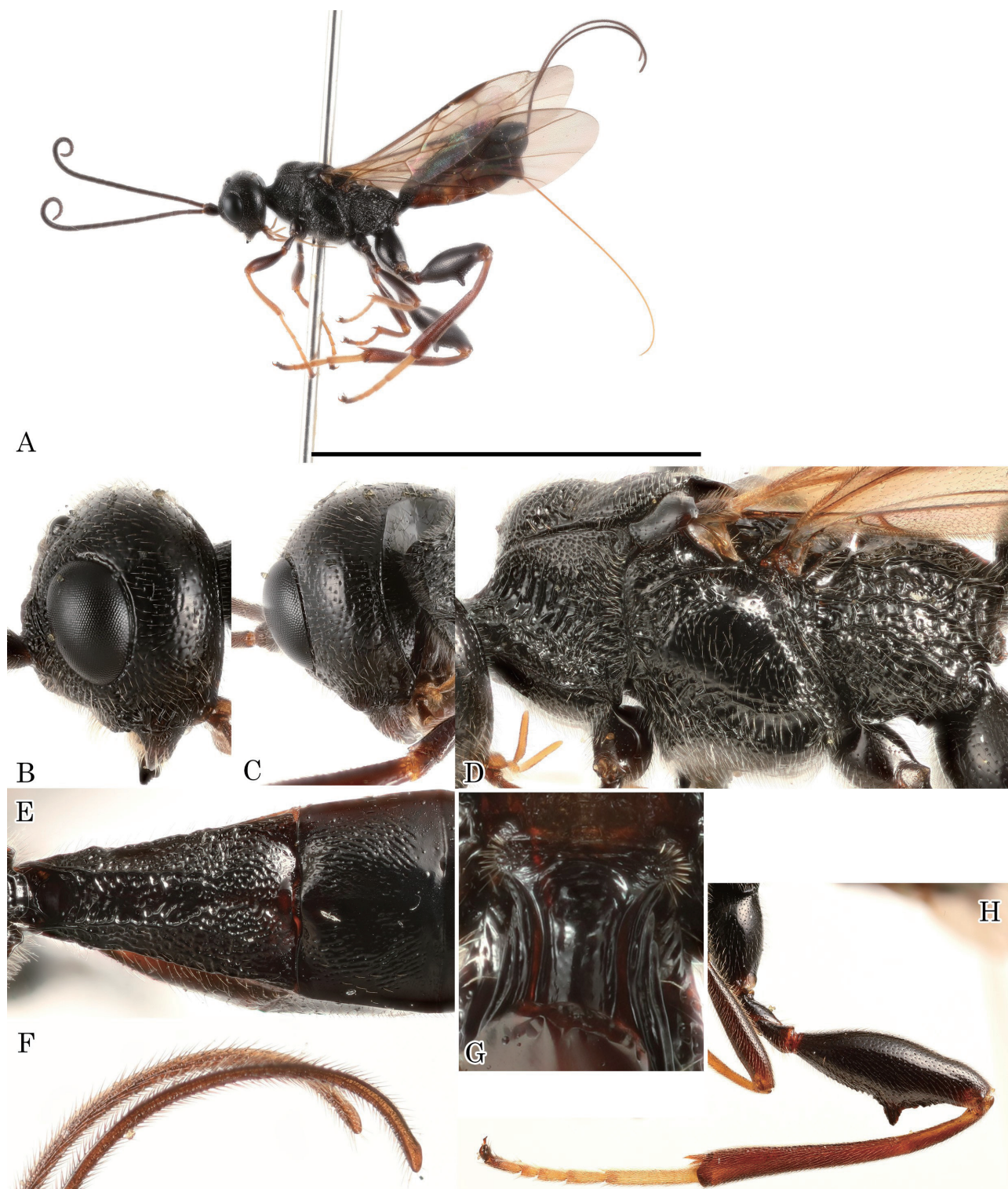


Fig. 3. *Wroughtonia orientalis* (Sheztakov, 1940), females, from Nagano Pref. (A–D, F–H) ; from Yamanashi Pref. (E). – A, habitus in lateral view.; B, head in lateral view; C, head in dorsolateral view; D, mesosoma in lateral view; E, first and second metasomal tergites in dorsal view; F, apex of ovipositor sheath in lateral view; G, first metasomal sternite in ventral view; H, hind leg in lateral view. Scale bar 10.0 mm.

white in *uchidai*). This species should be classified into the *W. sibirica*-group by sharing the following morphological characters: basal part of the first metasomal sternite more or less sculptured and distinctly longer than its apical width (Fig. 2G), and the length of the first metasomal tergite of ♀ 1.8–2.2 times its apical width, except for the length of eye 1.4–1.5

times temple in dorsal view (0.7–1.1 times in Chinese species of the *W. sibirica*-group).

***Wroughtonia orientalis* (Sheztakov, 1940)**

[Japanese name: Touyou-tsuno-komayubachi]

(Fig. 3)

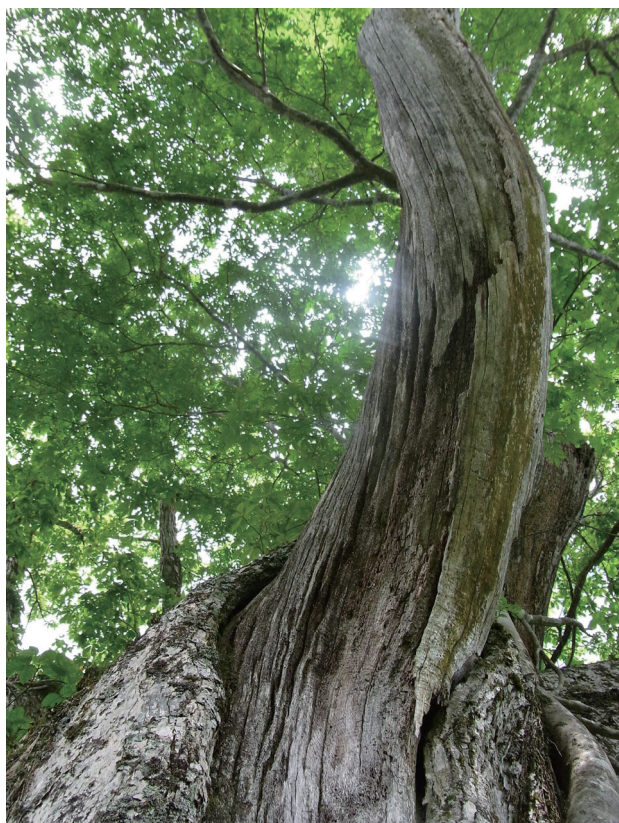


Fig. 4. A habitat of *W. extremiorientalis* at Mt. Hyonosen, Yabu City, Hyogo Prefecture in August 2011 (by the courtesy of Kyohei Watanabe). On the partly withering trunk of Japanese oak, *Quercus crispula* Blume, adults of *W. extremiorientalis* were observed with several species of cerambycid beetles.



Fig. 6. A habitat of *W. nigra* at Yumoto, Nikko City, Tochigi Prefecture, in August 2022 (by the courtesy of Yuto Yamaguchi). On the withered trunk of Northern Japanese hemlock, *Tsuga diversifolia* (Maxim.), adults of *W. nigra* were observed with several species of cerambycid beetles.



Fig. 5. Adults of *W. extremiorientalis* on the withered trunk of Japanese oak, *Quercus crispula* Blume., at Mt. Kintai, Okutama Town, Nishitama District, Tokyo in July 2022.

Helconidea orientalis Sheztakov, 1940: 19. Type locality: Primorsky Kray, Russia.

Wroughtonia orientalis: Yan *et al.*, 2017: 402.

Specimens examined. Russia: 1♀, “оз. Берчикуль, Мариин. у. Томск.” 28. VII. 1911, Горчаковский leg. “*Helconidea orientalis*: det. Belokobylskij” (ZISP); 1♀, Saghalin, Komma, 23. VII. 1934, C. Watanabe & T. Inoue

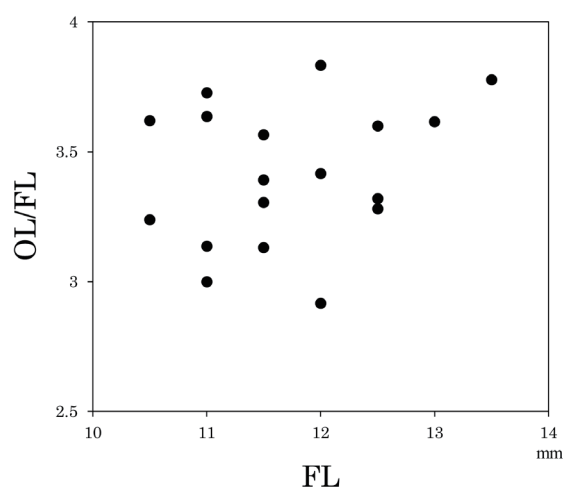


Fig. 7. Relation between the length of fore wing (FL) and the length of ovipositor sheath divided by the length of fore wing (OL/FL) in females of Japanese *W. extremiorientalis*. Spearman's rank correlation coefficient = 0.117 ($n = 19$, $P = 0.633$).

leg. “*Helconidea orientalis*: det. C. Watanabe, 1971” (SEHU). JAPAN: [Honshu] 1♀, Gumma Pref., Katashina Vil., Hanasaku, 36°44'59"N, 139°12'5"E, alt. 820m, 2. VII. 2008, S. Yoshizawa leg. (TUA); 1♀, Tokyo Pref., Nishitama Dist., Okutama T., Hikawa, 29. VI. 2007, M. Irie leg. (TUA); 1♀, Yamanashi Pref., Kōshū City, Kaminikkawa Pass,

35°43'44"N, 139°49'51"E, alt. 1560–1600 m, 8. VI. 2009, T. Kidokoro leg. (KPMNH); 1♀, Nagano Pref., Suwa Dist., Hara Vil., 21–22. VI. 2000, A. Shimizu leg. (KPMNH).

Male. Not described but recorded by Belokobylskij & Tobias (1989).

Bionomics. A recorded host is *Monochamus* sp. (Cerambycidae) (Tobias, 1967).

Distribution. Russia: Primorsky Krai (Shevtakov, 1940), Khabarovsk Krai, Kemerovo Oblast, Sakhalin Oblast (Belokobylskij & Tobias, 1989; Belokobylskij, 1998); Korea (Ku *et al.*, 2001); Japan: Chishima Islands (Kunashir Is.) (Belokobylskij, 1998), Honshu (present study). New to Honshu.

Remarks. The Japanese specimens run in the key by Belokobylskij (1998) to *H. orientalis*. The Japanese specimens agree well with the original description (Shevtakov, 1940) and the key to species of the Russian Far East (Belokobylskij, 1998).

This species is similar to *W. uchidai*, but differs in having the length of first metasomal tergites 1.4–1.6 times longer than its apical width (1.8–2.1 times in *uchidai*), the second metasomal tergite largely rugose (Fig. 3E) (smooth in *uchidai*), and the length of ovipositor sheath 0.6–0.7 times longer than body (1.3–1.4 times in *uchidai*). This species should be classified into the *W. sibirica*-group by sharing the following morphological characters: the basal part of the first metasomal sternite more or less sculptured and distinctly longer than its apical width (Fig. 3G), and the length of the first metasomal tergite of ♀ 1.4–1.6 times its apical width, except for the length of eye 1.3–1.5 times temple in dorsal view (0.7–1.1 times in Chinese species of the *W. sibirica*-group).

Acknowledgements

The second author thanks Sergey Belokobylskij and Konstantin Samartsev for a kind support during the investigation in ZISP. We cordially thank Shinsuke Fujioka, Masato Ito, Namiki Kikuchi, Kazuhiko Konishi, Rikio Matsumoto, Kousei Tsuchiya, Kyohei Watanabe, Kenzo Yamagishi, and Yuto Yamaguchi for offering us the specimens examined in this study as well as valuable bionomical information and photos. First author is also grateful to Hiroaki Kojima and Kyohei Watanabe for their encouragement and critical advice.

References

- Achterberg, C. van, 1987. Revision of the European Helconini (Hymenoptera: Braconidae: Helconinae). *Zoologische Mededelingen*, **61**: 263–285.
- Achterberg, C. van, 1988. Revision of the subfamily Blacinae Foerster (Hymenoptera, Braconidae). *Zoologische Verhandlungen*, **249**: 1–324.
- Belokobylskij, S. A., 1998. Subfamily Helconinae. pp. 411–435. In: P. A. Lehr (Ed.), *Opredelitel' na sekomykh Dal'nego Vostoka Rossii*. Tom 4. Setchato krylo obraznye, skorpionnity, pereponchatokrylye Chast' 3. (Key to insects of the Russian Far East. Vol. 4. Neuropteroidea, Mecoptera, Hymenoptera. Part 3.). Dal'nauka, Vladivostok. (In Russian).
- Belokobylskij, S. A. & I. V. Tobias, 1989. A new and little known taxa of braconids of this subfamily Helconinae (Hymenoptera, Braconidae) from the Far East of the USSR. *Trudy Zoologicheskogo Instituta. Leningrad*, **188**: 23–38. (In Russian)
- Cameron, P., 1899. Hymenoptera Orientalia or contribution to a knowledge of the Oriental zoological region. Part 8. The Hymenoptera of the Khasia Hills. *Memoirs and Proceedings of the Manchester Literary and Philosophical Society*, **43** (3): 1–220.
- Chou, L.Y. & T.C. Hsu, 1998. The Braconidae (Hymenoptera) of Taiwan 8. Brulleini, Diospilini and Helconini. *Journal of Agricultural Research of China*, **47**: 283–314.
- Förster, A., 1863. Synopsis der Familien und Gattungen der Braconiden. *Verhandlungen des Naturhistorischen Vereins der Preussischen Rheinlande und Westfalens*. **19** (1862): 225–288.
- Fujie, S. & K. Maeto, 2020. Family Braconidae. pp. 194–357. In: The editorial committee of catalogue of the insect of Japan (Ed.), *Catalogue of the Insects of Japan*. Vol. 9. Hymenoptera. Part 2 Apocrita, Parasitica. Toka Shobo, Fukuoka.
- Gupta, V.K. & V. Sharma, 1976. Studies on *Wroughtonia* (Hymenoptera: Braconidae: Helconinae). *Oriental Insects*, **10**: 353–362.
- Hedqvist, K. J., 1967. Notes on Helconini (Ichneumonoidea, Braconidae, Helconinae). Part I. *Entomologisk Tidskrift*, **88**: 133–143.
- Kieffer, J.J., 1921. Sur divers Hyménoptères destructeurs des Cerambycides nuisibles au caféier et au bambou. *Bulletin Agriculture d'Institut des Sciences, Saigon*, **3**: 129–140.
- Ku, D.S., S.A., Belokobylskij & J.Y., Cha, 2001. Hymenoptera (Braconidae). In: *Economic Insects of Korea* 16. Insecta Koreana, 23 (Supplement), pp. 1–283.
- Shevtakov, A., 1940. Zur Kenntnis der Braconiden Ostsibiriens. *Arkiv för Zoologi*, **32A** (19): 1–21.
- Singh, S., S. A. Belokobylskij, N. Chauhan, & S. Pande, 2005. Description of a new species of the genus *Spasskia* Belokobylskij, 1989 (Hymenoptera, Braconidae) from India, with first record of the genus in the Oriental Region. *Annales Zoologici*, **55**: 95–98.
- Tobias, V. I., 1967. The Soviet Far East—the centre of abundance of the tribe Helconini (Hymenoptera, Braconidae) in the Palearctic. *Trudy Zoologicheskogo Instituta. Leningrad*, **41**: 222–238. (In Russian)
- Watanabe, C., 1931. Notes on Braconidae of Japan. I. Helconini. *Insecta Matsumurana*, **6**: 22–31.
- Watanabe, C., 1937. A contribution to the knowledge of the Braconid fauna of the Empire of Japan. *Journal of the Faculty of Agriculture, Hokkaido Imperial University*, **42**: 1–188.
- Watanabe, C., 1961. Notes on five braconid parasites of some wood-boring beetles (Hymenoptera, Braconidae). *Publication of Entomological Laboratory, College of Agriculture, University of Osaka Prefecture*, **6**: 111–114.
- Watanabe, C., 1972. A revision of the Helconini of Japan and a review of the Helconine genera of the World (Hymenoptera, Braconidae). *Insecta Matsumurana*, **35**: 1–18.
- Yan, C. J., J. H. He & X. X. Chen, 2014. The discovery of the genus *Spasskia* Belokobylskij, 1989 (Hymenoptera: Braconidae) in China, with description of a new species. *Journal of Insect Science*, **14** (119): 1–5.
- Yan, C. J., C. van Achterberg, J. H. He, & X. X. Chen, 2017. Review of the tribe Helconini Foerster s.s. from China, with the description of 18 new species. *Zootaxa*, **4291** (3): 401–457.

[Received: April 7, 2023; accepted: June 1, 2023]